European Aviation Safety Agency 4 Oct 2010

COMMENT RESPONSE DOCUMENT (CRD) TO NOTICE OF PROPOSED AMENDMENT (NPA) 2008-22C & 2009-02C

for an Agency Opinion on a Commission Regulation establishing the Implementing Rules for organisations in the field of air operations and personnel requirements

and

a draft Decision of the Executive Director of the European Aviation Safety Agency on Acceptable Means of Compliance and Guidance Material

related to the Implementing Rules for organisations in the field of air operations and personnel requirements

"Organisation Requirements"

CRD b.3 – Resulting text Part-OR (AMCs and GMs)

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IV. Draft Decision AMC and GM to PART-OR

Acceptable Means of Compliance and Guidance Material to Annex I – Part Organisation requirements (OR)

SUBPART GEN – General requirements

SECTION I – GENERAL

GM1-OR.GEN.105 Competent authority

NON-COMMERCIAL OPERATIONS

1. For the determination of the principal place of business "activities referred to in this Part" means those activities to which Part-OR, Part-NCC or Part-SPO apply. For organisations that also exercise activities that are not subject to Part-OR, Part-NCC or Part-SPO, the determination of the principal place of business should consider that part of the organisation that is responsible for the operation of aircraft subject to Part-OR, Part-NCC and Part-SPO. For non-commercial operations, this is usually the home base or the main maintenance base of the aircraft concerned, or the location of the flight department.
2. For organisations that also exercise activities not subject to Part-OR, Part-NCC or Part-SPO, the reference to the accountable manager is intended to mean the manager who has the authority to ensure that all activities subject to Part-OR, Part-NCC or Part-SPO can be financed and carried out in accordance with the applicable requirements
3. If the accountable manager is not located in that part of the organisation that is responsible for the operation of aircraft, but the majority of other management personnel are located there, the location of the accountable manager may not need to be considered for the determination of the principal place of business.

AMC1-OR.GEN.120(a) Means of compliance

DEMONSTRATION OF COMPLIANCE

In order to demonstrate that the implementing rules are met, a risk assessment should be completed and documented. The result of this risk assessment should demonstrate that an equivalent level of safety to that established by the acceptable means of compliance adopted by the Agency is reached.

AMC1-OR.GEN.125 Terms of approval and privileges of an organisation

MANAGEMENT SYSTEM DOCUMENTATION

The management system documentation should contain the privileges and detailed scope of activities for which the organisation is certified, as relevant to the applicable Parts or Subparts. The scope of activities defined in the management system documentation should be consistent with the terms of approval.

AMC1-OR.GEN.130 Changes to organisations subject to certification

APPLICATION TIME FRAMES

1. The application for the amendment of an organisation certificate should be submitted at least 30 days, before the date of intended changes.
2. In the case of a planned change of a nominated post holder, the organisation should inform the competent authority at least 10 days before the date of the proposed change.
3. Unforeseen changes should be notified at the earliest opportunity, in order to enable the competent authority to determine continued compliance with this Part and to amend, if necessary, the organisation certificate and related terms of approval.

GM1-OR.GEN.130(a) Changes to organisations subject to certification

GENERAL

Typical examples of changes that may affect the certificate or the terms of approval are listed below:

1. the name of the organisation;
2. the organisation's principal place of business;
3. the organisation's scope of activities;
4. additional locations of the organisation;
5. the accountable manager;
6. any of the persons referred to in OR.GEN.210 (a) and (b);
7. the organisation's documentation as required by Part-OR, safety policy, procedures; or
8. the facilities.

Any changes to the organisation's procedure describing how changes not requiring prior approval will be managed and notified to the competent authority require prior competent authority approval.

Changes requiring prior approval may only be implemented upon receipt of formal approval by the competent authority.

GM2-OR.GEN.130(a) Changes to organisations subject to certification

CHANGE OF NAME OF THE ORGANISATION

A change of name requires the organisation to submit a new application as a matter of urgency stating that only the name of the organisation has changed including a copy of the documentation submitted to the competent authority demonstrating how it complies with the applicable requirements with the new name.

GM1-OR.GEN.130(b) Changes to organisations subject to certification

CHANGES REQUIRING PRIOR APPROVAL - OPERATORS

For commercial operations, the following Guidance Material is a non-exhaustive checklist, in alphabetical order, of items which require prior approval from the competent authority as specified in the applicable Implementing Rules:

1. Alternative means of compliance;
2. Cabin crew:
   a. Evacuation procedures with a reduced number of required cabin crew during ground operations or in unforeseen circumstances;
   b. For commercial air transport (CAT) operators, conduct of the training, examination and checking required by Part-CC, and issue of cabin crew attestations;
   c. Procedures for cabin crew to operate on four aircraft types;
   d. Training programmes, including syllabi;
3. Code share agreements;
4. Dangerous goods training programmes;
5. Flight crew:
   a. For commercial air transport (CAT) operations, alternative training and qualification programmes (ATQPs);
   b. Procedures for flight crew to operate on more than one type or variant;
   c. Training and checking programmes, including syllabi and use of flight simulation training devices (FSTDs);
6. Fuel policy;
7. Helicopter operations:
   a. Airborne radar approaches;
   b. Over a hostile environment located outside a congested area, unless the operator holds an approval to operate according to SPA.HEMS;
   c. Procedures for selecting off-shore alternates;
   d. To/from a public interest site;
   e. Without an assured safe forced landing capability;
8. Leasing agreements;
9. Local area: “use of local area”;
10. Mass and balance:
    a. Standard masses for load items other than standard masses for passengers and checked baggage;
    b. Use of on-board mass and balance computer systems;
11. Minimum equipment list (MEL):
    a. MEL;
    b. Operating other than in accordance with the MEL, but within the constraints of the MMEL;
    c. RIE procedures;

12. Minimum flight altitudes: method of determination;
13. Non-commercial operations by AOC holders;
14. Performance:
    a. Increased bank angles at take-off (performance class A aeroplanes);
    b. Short landing operations (performance class A and B aeroplanes);
    c. Steep approach procedures (performance class A and B aeroplanes);
15. Procedures regarding items to be notified to the competent authority;
16. Specific approvals in accordance with Part-SPA.

AMC1-OR.GEN.145 Declaration

CHANGES

The new declaration should be submitted when the change becomes effective.

GM1-OR.GEN.150 Findings

GENERAL

Remedial action is the action to eliminate the effects of a non-conformity. Corrective action is the action to eliminate the root cause of a non-conformity, in order to prevent its recurrence.

Determination of the root cause is crucial for defining effective corrective actions.

GM2-OR.GEN.150 Findings

COMPETENT AUTHORITY

1. When reference is made to the competent authority, this means either the competent authority responsible for the certificate or declaration or the competent authority ensuring oversight of activities in the territory of the Member State that has not issued the certificate or received the declaration.
2. Competent authority certifying or receiving the declaration means the competent authority that has issued the organisation certificate or received the declaration in accordance with Part-AR.
3. Findings may be raised by the competent authority certifying or receiving declaration, or the competent authority performing oversight of activities in the territory of the Member State. In the case of level 1 finding, the competent authority certifying or receiving declaration or the competent authority performing oversight of activities in the territory of the Member State may take immediate appropriate action to prohibit or limit the activities.
4. Only the competent authority certifying may take action on the certificate.

AMC1-OR.GEN.160-OPS Occurrence reporting

GENERAL

1. The organisation should report all occurrences defined in AMC 20-8, and as required by the applicable national rules implementing Directive 2003/43/EC of the European Parliament and of the Council of 13 June 2003 on occurrence reporting in civil aviation.

2. In addition to the reports required by AMC 20-8 and the Directive 2003/43/EC of the European Parliament and of the Council of 13 June 2003 on occurrence reporting in civil aviation, the organisation should report volcanic ash clouds encountered during flight.

SECTION II –MANAGEMENT

AMC1-OR.GEN.200(a)(1);(2);(3);(5) Non-complex Management System

GENERAL

1. Safety risk management may be performed using hazard checklists or similar risk management tools or processes, which are integrated into the activities of the organisation.
2. The organisation should manage safety risks related to a change. The management of change should be a documented process to identify external and internal change that may have an adverse effect on safety.. It should make use of the organisation's existing hazard identification, risk assessment and mitigation processes.
3. The organisation should identify a person that fulfils the role of safety manager and who is responsible for co-ordinating the safety management system. This person may be the accountable manager or a person with an operational role in the organisation.
4. Within the organisation, responsibilities should be identified for hazard identification, risk assessment and mitigation.
5. The safety policy should include a commitment to improve towards the highest safety standards, comply with all applicable legal requirements, meet all applicable standards, consider best practices and provide appropriate resources.
6. The organisation should, in co-operation with other stakeholders, develop, coordinate and maintain an emergency response plan (ERP) that ensures orderly and safe transition from normal to emergency operations, and return to normal operations.

   The ERP should provide the actions to be taken by the organisation or specified individuals in an emergency and reflect the size, nature and complexity of the activities performed by the organisation.

AMC1-OR.GEN.200(a)(1) Complex Management System

ORGANISATION AND ACCOUNTABILITIES

The management system of an organisation should encompass safety by including a safety manager and a safety review board in the organisational structure..

1. Safety manager.
   a. The safety manager should act as the focal point and be responsible for the development, administration and maintenance of an effective safety management system.
   b. The functions of the safety manager should be to:
      i. facilitate hazard identification, risk analysis and management;
      ii. monitor the implementation of the safety action plan ;
      iii. provide periodic reports on safety performance;
      iv. ensure maintenance of safety management documentation;

v. ensure that there is safety management training available and that it meets acceptable standards;

vi. provide advice on safety matters; and

vii. initiate and participate in internal occurrence / accident investigations.

2. Safety review board.

a. The Safety review board should be a high level committee that considers matters of strategic safety in support of the accountable manager's safety accountability.

b. The board should be chaired by the accountable manager and be composed of heads of functional areas.

c. The safety review board should monitor:

i. safety performance against the safety policy and objectives;

ii. that any safety action is taken in a timely manner; and

iii. the effectiveness of the organisation's safety management processes.

d. The safety review board should ensure that appropriate resources are allocated to achieve the established safety performance.

GM1 OR.GEN.200(a)(1) Complex Management System

SAFETY ACTION GROUP

a. A safety action group may be established as a standing group or as an ad-hoc group to assist or act on behalf of the safety review board.

b. More than one safety action group may be established depending on the scope of the task and specific expertise required.

c. A safety action group should report to and take strategic direction from the safety review board and should be comprised of managers, supervisors and personnel from operational areas.

d. The safety action group should:

i. monitor operational safety;

ii. resolve identified risks;

iii. assess the impact on safety of operational changes; and

iv. ensure that safety actions are implemented within agreed timescales.

v. A safety action group should review the effectiveness of previous safety recommendations and safety promotion.

AMC1-OR.GEN.200(a)(2) Complex Management System

SAFETY POLICY

1. The safety policy should:

a. be endorsed by the accountable manager;

b. reflect organisational commitments regarding safety and its proactive and systematic management;

c. be communicated, with visible endorsement, throughout the organisation; and

d. include safety reporting principles.

2. The safety policy should include a commitment:

   a. to improve towards the highest safety standards;

   b. to comply with all applicable legal requirements, meet all applicable standards, consider best practices;

   c. to provide appropriate resources;

   d. to enforce safety as one primary responsibility of all managers; and

   e. not to blame someone for reporting something which would not have been detected otherwise.

3. Senior management should:

   a. continually promote the safety policy to all personnel and demonstrate their commitment to it;

   b. provide necessary human and financial resources for its implementation; and

   c. establish safety objectives and performance standards.

GM1-OR.GEN.200(a)(2) Management System

SAFETY POLICY

The safety policy is the means whereby the organisation states its intention to maintain and, where practicable, improve safety levels in all its activities and to minimise its contribution to the risk of an aircraft accident as far as is reasonably practicable.

AMC1-OR.GEN.200(a)(3) complex Management System

SAFETY RISK MANAGEMENT

1. Hazard identification processes.

   a. Reactive and proactive schemes for hazard identification should be the formal means of collecting, recording, analysing, acting on and generating feedback about hazards and the associated risks that affect the safety of the operational activities of the organisation.

   b. All reporting systems, including confidential reporting schemes, should include an effective feedback process.

2. Risk assessment and mitigation processes.

   a. A formal risk management process should be developed and maintained that ensures analysis (in terms of probability and severity of occurrence), assessment (in terms of tolerability) and control (in terms of mitigation) of risks to an acceptable level.

   b. The levels of management who have the authority to make decisions regarding the tolerability of safety risks, in accordance with 2.a. above, should be specified.

3. Internal safety investigation.

   a. The scope of internal safety investigations should extend beyond the scope of occurrences required to be reported to the competent authority.

4. Safety performance monitoring and measurement.

   a. Safety performance monitoring and measurement should be the process by which the safety performance of the organisation is verified in comparison to the safety policy and objectives.

   b. This process should include:

      i. safety reporting

ii. safety studies, which are rather large analyses encompassing broad safety concerns;

iii. safety reviews including trends reviews, which are conducted during introduction and deployment of new technologies, change or implementation of procedures, or in situations of structural change in operations;

iv. safety audits which focus in the integrity of the organisation's management system, and periodically assess the status of safety risk controlsand

v. safety surveys, which examine particular elements or procedures of a specific operation, such as problem areas or bottlenecks in daily operations, perceptions and opinions of operational personnel and areas of dissent or confusion.

5. The management of change.

The organisation should manage safety risks related to a change. The management of change should be a documented process to identify external and internal change that may have an adverse effect on safety. It should make use of the organisation's existing hazard identification, risk assessment and mitigation processes.

6. Continuous improvement.

The organisation should continuously seek to improve its safety performance. Continuous improvement should be achieved through:

i. proactive and reactive evaluations of facilities, equipment, documentation and procedures through safety audits and surveys;

ii. proactive evaluation of individuals' performance to verify the fulfilment of their safety responsibilities; and

iii. reactive evaluations in order to verify the effectiveness of the system for control and mitigation of risk.

7. The Emergency Response Plan.

a. An Emergency Response Plan (ERP) should be established that provides the actions to be taken by the organisation or specified individuals in an emergency. The ERP should reflect the size, nature and complexity of the activities performed by the organisation.

b. The Emergency Response Plan should ensure:

i. an orderly and safe transition from normal to emergency operations;

ii. safe continuation of operations or return to normal operations as soon as practicable; and

iii. co-ordination with the emergency response plans of other organisations, where appropriate.

GM1-OR.GEN.200(a)(3) Management System

INTERNAL OCCURRENCE REPORTING SCHEME

1. The overall purpose of the scheme is to use reported information to improve the level of safety performance of the organisation and not to attribute blame.

2. The objectives of the scheme are:

   a. to enable an assessment to be made of the safety implications of each relevant incident and accident, including previous similar occurrences, so that any necessary action can be initiated; and

   b. to ensure that knowledge of relevant incidents and accidents is disseminated, so that other persons and organisations may learn from them.

3. The scheme is an essential part of the overall monitoring function and it is complementary to the normal day-to-day procedures and 'control' systems and is not intended to duplicate or supersede any of them. The scheme is a tool to identify those occasions where routine procedures have failed.

4. Occurrence reports should be retained when judged reportable by the person submitting the report as the significance of such reports may only become obvious at a later date.

AMC1OR.GEN.200(a)(4) Management System

TRAINING AND COMMUNICATION ON SAFETY

1. Training.

   a. All personnel should receive safety training as appropriate for their safety responsibilities.

   b. The safety training programme may consist of e-learning or similar training provided by training service providers.

2. Communication.

   a. The organisation should establish communication about safety matters that:

      i. ensures that all personnel are aware of the safety management activities;

      ii. conveys safety critical information, especially relating to assessed risks and analysed hazards;

      iii. explains why particular actions are taken; and

      iv. explains why safety procedures are introduced or changed.

   b. Regular meetings with personnel where information, actions and procedures are discussed may be used to communicate safety matters.

AMC1-OR.GEN.200(a)(5) Management System

ORGANISATION MANAGEMENT SYSTEM DOCUMENTATION

1. The organisation management system documentation should at least include the following information:

    i. a statement signed by the accountable manager to confirm that the organisation will continuously work in accordance with the applicable requirements and the organisation's documentation as required by Part-OR;

    ii. the organisation's scope of activities;

    iii. the titles and names of persons referred to in OR.GEN.210 (a) and (b);

    iv. an organisation chart showing the lines of responsibility between the persons referred to in OR.GEN.210;

    v. a general description and location of the facilities referred to in OR.GEN.215;

    vi. procedures specifying how the organisation ensures compliance with the applicable requirements; and

    vii. the amendment procedure for the organisation management system documentation.

2. The organisation management system documentation may be included in a separate manual or in (one of) the manual(s) as required by the applicable Subpart(s). A cross reference should be included.

GM1-OR.GEN.200(a)(5) Management System

ORGANISATION MANAGEMENT SYSTEM DOCUMENTATION

It is not required to duplicate information in several manuals. The information may be contained in any of the organisation manuals (e.g. aerodrome manual, operations manual, training manual), which may also be combined.

AMC1-OR.GEN.200(a)(5) Complex Management System

ORGANISATION SAFETY MANAGEMENT MANUAL

1. The safety management manual (SMM) should be the key instrument for communicating the approach to safety for the whole of the organisation. The SMM should document all aspects of safety management, including the safety policy, objectives, procedures and individual safety responsibilities.

2. The contents of the safety management manual should include:

    i. scope of the safety management system;

    ii. safety policy and objectives;

    iii. safety accountability of the accountable manager;

    iv. safety responsibilities of key safety personnel;

    v. documentation control procedures;

vi. hazard identification and risk management schemes;

vii. safety action plan;

viii. safety performance monitoring;

ix. incident investigation and reporting;

x. emergency response planning;

xi. management of change (including organisational changes with regard to safety responsibilities); and

xii. safety promotion.

3. The SMM may be a chapter in (one of) the manual(s) of the organisation.

GM2-OR.OPS.GEN.200(a)(5) Management system

DEVELOPMENT OF NEW/ AND AMENDING STANDARD OPERATING PROCEDURES (SOP)

1. General

Risk assessment is an element in the operator's risk management and as such part of its management system. Risk assessment should provide a basis for decision-making in processes like:

a. Strategic option or priority setting;

b. Planning;

c. Project management;

d. Performing activities;

e. Prioritising of activities in operations; and

f. Organisational change.

Two categories of decisions related to risk may be relevant in this context:

g. Business case decisions where safety risk is one of several other factors. In such cases, safety is weighed against other requirements such as functionality and profit.

h. Decisions on solutions to specific risk problems, e.g. choice of risk reducing measures for one specific solution or a decision to chose between alternative solutions.

This guidance material is intended to provide basic guidelines to operators helping them to develop SOPs based on a safety risk assessment as part of managing risk as called for by the management system requirements. It only addresses the principles and provides one very basic method and some skeleton forms to help operators with little or no previous experience in such work to get started. It is not a means of compliance as such. As an operator gathers experience, the method should be developed or changed to suite individual needs.

Assessments of safety risks are also required for other purposes, and the principles should be similar for all applications. However, these guidelines are especially adapted and simplified for the purpose mentioned above. Examples of other applications for assessment of safety risk in management processes are:

a. establishment of technical, organisational and operational risk control measures;

b. establishment of emergency response measures; and

c. risk management of technical, organisational and operational changes.

The result of the development process of an SOP should be one safe standard operating procedure for a certain type of operation, accompanied by one matching risk assessment providing evidence of the development process and the considerations and the measures taken to ensure that the risk of the operation will be acceptable. This material mainly gives guidance to the risk assessment part of the process and the interaction between the two. When applying to the competent authority for alternative means of compliance including a SOP, the risk assessment should be enclosed to document the development process.

A similar process as described here may be employed if organisations intend to develop “Codes of Practice” that could be published and made available for other organisations as best industry practices.

2. Scope

This guidance material only addresses the assessment of safety risks. It does not consider other kinds of risk, such as economic risk or opportunities, other than implicit in that the purpose of the operation normally is to gain a benefit such as to make profit. The safest option would of course in most cases be not to perform an operation at all, but in this context it is not considered as a relevant option if the operation can be performed with an acceptable risk.

Risk assessment consists of planning and completion of the risk analysis as well as of risk evaluation. Risk assessment includes identifying hazards and accidental events, analysing and evaluating risk and identifying measures that could eliminate or reduce the risk. This guidance material also indicates how the risk assessment of SOPs should be documented.

This risk assessment is one part of an operator’s safety and risk management. Other parts of these management processes will influence the planning and completion of a risk assessment and are, when relevant, mentioned here. These parts are communication and consultation, the context/framework, risk treatment, monitoring and review.

3. Definitions

a. *Accidental event:* An event that might cause injury to or loss of life or damage to or loss of property.

Note 1: Property may include health, material, functions, public values and reputation.

Note 2: An accidental event may be intentional (security related) or unintentional (safety related).

Note 3: The term “hazardous event” is often used simultaneously.

b. *Barrier:* Something that can either prevent an event form taking place or protect against its consequences.

Note: Barrier may also be referred to as a control or treatment measure.

c. *Consequence:* Possible outcome or impact of an event.

Note 1: There can be more than one consequence from one event.

Note 2: Only negative consequences are considered in this context

Note 3: Consequences can be expressed qualitatively or quantitatively.

d. *Frequency:* A measure of the number of occurrences per unit of time.

e. *Hazard*: The condition, object or activity with the potential of causing injuries to personnel, damage to equipment or structures, loss of material or reduction of ability to perform a prescribed function.

Note: Hazard is also often described as a source that could cause harm.

f. *Likelihood:* Chance of something happening.

Note: In this guidance material likelihood is used as a general term. The equivalent but more precise terms probability and frequency are often used depending on the context.

g. *Probability:* Extent to which an accidental event is likely to occur.

Note 1: Normally expressed as a number between 0 and 1.

Note 2: Frequency rather than “probability” may be used in describing risk.

Note 3: Degrees of belief about probability can be chosen as classes or ranks, such as

h. rare/unlikely/moderately likely/almost certain, or

i. incredible/improbable/remote/occasional/probable/frequent.

j. *Residual risk:* Risk remaining after implementation of risk treatment.

k. *Risk/Safety risk:* The likelihood of injury to personnel, damage to equipment or structures, loss of material or reduction of ability to perform a prescribed function, measured in terms of probability and severity.

l. *Risk acceptance criteria:* Criteria that form the basis for a decision on acceptable risk.

Note 1: Risk acceptance criteria may be expressed qualitatively of quantitatively.

Note 2: Acceptable risk is the risk that in the given circumstances is acceptable according to current values in society and the organisation.

m. *Risk analysis:* Systematic process to understand the nature of and to deduce the level of safety risk. The risk analysis involves identifying accidental events and their causes/contributing factors and consequences.

Note: Provides the basis for risk evaluation and decisions about risk treatment.

o. *Risk assessment:* The overall process of planning, hazard identification, risk analysis and risk evaluation.

p. *Risk evaluation:* Procedure based on the risk assessment to determine whether acceptable risk has been achieved.

Note 1: The process includes identification and documentation of risk reducing measures and recommendations.

Note 2: Risk evaluation assists in decisions about risk treatment.

q. *Risk identification:* The process of determining what, where, when, why and how something could happen.

r. *Risk management process:* The systematic application of management policies, procedures and practices to the tasks of communicating, establishing the context, identifying, analysing, evaluating, treating, monitoring and reviewing risk.

s. *Risk reduction:* Actions taken to lessen the likelihood, negative consequences, or both, associated with a safety risk.

t. *Risk treatment:* Process of selection and implementation of measures to modify risk.

Note 1: The term ‘risk treatment’ is sometimes used for the measures themselves.

Note 2: Risk treatment measures can include avoiding, modifying, sharing or retaining risk.

u. *Safety:* Is the state in which the risk of harm to persons or property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management.

v. *Stakeholders:* Those persons and organisations who may affect, be affected by, or perceive themselves to be affected by a decision, activity or risk.

w. *Threat:* Something that can release a hazard.

4. Communication and consultation

Good communication with internal and external interested parties is essential when performing risk assessments to help ensure access to all relevant information and assist in ensuring buy-in from all relevant parties affected by the assessment's conclusions and recommendations. Communication and consultation should take place at all relevant stages of the process.

5. Establishing the context

5.1 General

The need to establish a SOP normally stems from a desire to carry out business.

Experience has shown that the organisation's personnel is sometimes challenged to determine if an activity requested by a customer could be performed as a standard operation i.e. if the task can be performed within the predetermined set of conditions that are the basis for the existing SOPs. Coupled with a system of pre-authorisation or delegation of authorisation, this problem could potentially put pressure on personnel to conduct an activity for which no SOP exists, for which it is not qualified or does not have the right equipment. The organisation should not commit itself to carry out an activity until it is determined that it can be performed safely and in accordance with the organisation's privileges to avoid undue commercial pressure on its personnel.

If a requested activity does not fall within the predetermined set of conditions of an existing SOP, a new procedure should be developed.

It should be noted that often the organisation's approvals are limited by the SOPs that are subject to prior approval by the competent authority. In such cases no changes or additions to the set of SOPs are allowed without prior arrangement with that authority.

The method described in here may be used for development of SOPs for "standard operations" and procedures for "non-standard operations".

Often a new activity is in many aspects similar to activities for which the organisation already has established SOPs. In such cases, only the elements of the operation that are different need a full assessment. It is however important to make sure that all aspects of the changes are included. This includes particularly an assessment whether the changes affect any of the standard elements and the interface between new and old elements.

5.2 External and internal context

The external and internal context as well as stakeholder context should be established and taken into consideration particularly with respect to how they relate to the activity in question and influence the planning and completion of risk assessments.

The external context is associated with the environment where the operation takes place. The external context includes factors that the organisation should consider when developing the risk criteria such as:

a. legal and regulatory requirements;

b. industry best practices;

c. external interested parties' needs and perceptions;

d. company reputation; and

e. cultural and social values.

The internal context is the internal environment that will be involved with or could affect the activity. These may be factors such as:

f. strategies, objectives and goals;

g. culture, ethical guidelines, common values, etc.;

h. organisation; and

i. available resources.

Available resources are relevant with respect to capacity and competence:

j. for the risk assessment process (see below); and

k. for performing the activity, i.e. available to be considered for use in the SOPs (aircraft, equipment, personnel, experience, finances, etc.).

5.2.1. Regulatory requirements

The organisation should determine the regulatory requirements applicable for a particular activity as well as the necessary privileges.

Compliance with the relevant rules and regulations must be assured and an assessment should be made if additional privileges are required before the activity can be started.

Regulations are generally developed to control or mitigate certain safety risks that stem from specific or general hazards. Such hazards controlled by regulations do not need to be further developed in the organisation's risk assessment if the assessment determines that the regulatory treatment is sufficient. If the regulation is not specific, has several options or directly calls for a risk assessment, the hazard obviously should be assessed and the appropriate treatment implemented.

5.2.2. Industry standard/best practice

If an industry best practice exists for a particular type of activity, its applicability and suitability should be evaluated by the organisation. This evaluation could provide valuable input to the SOP and risk assessment. Some industry best practices (code of practices/COP) are developed specifically to function as basis for SOPs and should have associated hazard lists and proposals for treatment of relevant safety risks. Organisations developing SOPs based on such industry standard/best practice should still perform their own risk assessment to ensure the COP is suitable and customised to their own operation.

5.2.3. Organisation's resources

The organisation's current equipment and personnel are normally part of the risk assessment when planning an activity as most changes in this field are often time-consuming and costly. One outcome of an operational risk assessment may be that the organisation does not possess the right equipment or personnel for the activity. If this is the case for a single mission or missions on short notice, it would mean that the organisation is unable to perform the activity.

If the organisation however plans to expand into new activities, a recommendation to acquire different equipment or employ or train personnel could be a risk treatment measure to enable the organisation to perform the new activity by making the risk acceptable. In such cases the current equipment and personnel would not be part of the risk assessment, but the delivery and certification/approval times for new equipment or time to employ or train personnel might be as well as the changes required in the organisation to accommodate for example the more advanced and complex technology.

5.3. Risk acceptance criteria

As part of the overall management system, safety and risk strategies and goals should have been established. For the particular assessments, risk acceptance criteria should be established based on these strategies and goals. Furthermore, management responsibility on the acceptability of risks should be defined in the organisation's management system along with what constitutes minor and substantial risks. Minor risks may be accepted by line managers, whereas more significant risks may need to

be accepted by senior management. The risk acceptance criteria should help in decision making with respect to risk acceptance. The established criteria influence the planning and completion of a risk assessment, e.g. the selection of method as the assessment results will be compared with the acceptance criteria during risk evaluation. Risk acceptance criteria may be fixed targets or refer to accepted methods, standards and norms, such as regulations, Certification Specifications, AMCs and guidance material. The maximum acceptable risk is in most cases directly or indirectly influenced or determined by regulations which either specify a target (e.g. for safe forced landing it requires a reasonable expectancy of no injuries to persons in the aircraft or on the surface) or an acceptable means on how to achieve the minimum required safety level.

Safety risk acceptance criteria should at least address, in the following order of priority and as applicable to the type of activity:

a. third parties' life, health and property;

b. passengers and operational personnel;

c. crew members;

d. the natural environment; and

e. corporate well-being.

As low as reasonably practicable (ALARP) is a risk acceptance criterion that is not exclusively based on fixed risk level targets but is a systematic and documented process to reduce safety risk below the maximum allowed by requirements, standards or when the risk is otherwise considered unacceptable. For ALARP to be an acceptable method of establishing risk acceptance criteria, an adequate risk management system is required to form a solid basis for the decisions made when evaluating the risk.

ALARP means that the safety risk is managed to a level as low as reasonably practical whilst at all times staying below the maximum allowed risk. It also implies that the risk level should be monitored and ALARP considerations applied to any new identified treatment measures to contribute to a further reduction in the risk level. Increase in the risk level at any time should be considered unacceptable, even if the safety risk is below the maximum allowed. (An exception might be for very short periods when the reason for the risk increase is known and measures are immediately implemented to correct the situation.)

All identified treatment measures should be implemented unless it can be shown that the cost or disadvantages of the measure are grossly disproportionate to the safety risk reduction potential. It should be noted that ALARP is different from basic cost-benefit considerations and may not be implemented using just these as ALARP in this context addresses safety risk.

Related responsibilities and decisions should be documented to justify why an identified risk reduction measure has not been implemented and that the retained risk is still ALARP without the implementation of such measures.

Another method for establishing risk acceptance criteria is to compare the risk with ongoing safe activities. The risk acceptance criteria would in such a case be to ensure that new activities are at least as safe as the organisation's ongoing activities.

6 Risk Assessment

6.1 Planning

6.1.1 Establishment, description and purpose

The risk assessment should be initiated in time for the results to be available before the decisions regarding the activity have to be made. The person responsible for performing the risk assessment should be made aware of the background, objectives, conditions and the context for the assessment and of the risk acceptance criteria.

The following should be documented:

a. background;

b. purpose; and

c. stakeholders and their potential interest.

6.1.2 Organisation

A work plan should be established.

The risk assessment should be performed by a working group that includes suitable subject matter experts but may exceptionally be performed by one individual if the extent and complexity of the task allows. Particularly for 'one-off' assessments, personnel that will be involved in the activity should participate in the working group. Considerations should be given to the need for independence between the person(s) performing the risk assessment and the persons deciding if the risk is acceptable.

The working group should have participation to ensure availability of:

a. knowledge of and experience with the use of relevant risk analysis methods;

b. knowledge of the activity and associated hazards;

c. knowledge of the relationship between the activity and relevant internal and external factors; and

d. familiarity with all relevant disciplines associated with the activity.

It should be determined to what extent and how other stakeholders should be involved before the work starts. This should particularly consider the safety risk exposure of the stakeholder as well as practical considerations such as their availability. All working group meetings should be documented.

6.1.3 Selection of methods and data basis

The method proposed here is a basic analysis to determine, record, analyse and treat safety risk. This method should be complemented by other methods when the analysis in hand so dictates. Methods to determine causes and likelihood (e.g. fault tree analysis; failure mode, effects, and criticality analysis (FMECA); influence diagrams) as well as consequences (e.g. event tree analysis) of hazards may be useful.

Data used should be described, such as:

a. regulatory requirements;

b. existing SOPs and risk assessments;

c. organisation's risk register;

d. organisation's analyses including occurrences and safety concerns raised within the organisation;

e. Accident Investigation Board (AIB)investigations;

f. European Strategic Safety Initiative (ESSI) results;

g. authority audit and inspection reports;

h. expert judgment;

i. simulations;

j. codes of practice; and

k. industry standards.

Data sources should be assessed for suitability such as relevance, currency, representative amount of data, underestimation and accuracy.

An organisation should ensure that its own experience is available in a collated and systematized form. This 'databank' should contain information from investigation of

internal occurrences and accidents, reported deviations and proposals for improvement as well as experience collected from monitoring of normal operations. Whenever possible, it should be augmented with similar data exchanged with other organisations. Analysis of relevant experience data should provide input to a risk assessment.

Every organisation is expected to establish and maintain a register of significant hazards and their treatment as part of its safety management system. The risk register should be a valuable source of information on the various hazards that are inherent in a particular activity and how these have been addressed in the past and are currently treated in existing activities.

The risk register should reflect that different types of activities (e.g. for OPS: commercial air transport and commercial operations other than commercial air transport), which may be exposed to different hazards. It may also reflect that different treatment methods could be required and that different risk levels may be acceptable.

6.1.4 System description

The activity to be analysed should be described. The major part of the detailed description may be by reference to a procedure/SOP.

The risk assessment should contain a detailed description of what has been analysed and which factors have and have not been assessed such as, and as applicable:

a. type of the operation;

b. type(s) of aircraft;

c. phases of the operation;

d. environmental conditions (visibility, wind, turbulence, contrast, light, elevation, etc. unless evident from the SOP);

e. existing barriers and available emergency preparedness;

f. annual usage/exposure.

A risk assessment can build often upon parts of existing risk assessments. For example, for an assessment of a new type of activity conducted in a hostile environment, the organisation might already have a risk assessment for flights over hostile environment in general. What would be required for a complete new risk assessment is the assessment of new aspects of the activity and the combination with the relevant existing one(s). In such cases particular attention should be paid to the intersecting or overlapping areas to ensure that no gaps exist or that the combination does not give rise to new hazards.

The procedure elements and sequence should be outlined and detailed as far as possible based on existing requirements and previous experience. Known controls, safety measures and precautions should be included in the procedure.

6.2 Risk analysis

6.2.1 Hazard identification

Hazards should be identified as part of the risk analysis. The purpose of hazard identification is to ensure that representative and relevant accidental events that might occur during the operation are described.

Hazard identification should:

a. establish a list of all hazards relevant to the activity and the causes/threats that could release them;

b. describe accidental events based on the hazard information and specify the place, time, extent, nature, etc. of the event as required; and

c. establish a systematic overview of possible accidental events for the activity.

Where information on accidental events for the type of activity is available directly from databases (e.g. from reported accidents and occurrences or from results of analyses already entered in the risk register), it may be included in the list directly. However, direct use of reported accidental events may lead to unintended gaps in the list of accidental events as hazards that are contributing factors to one accidental event may under other circumstances contribute to a different accidental event. It must also be noted that the absence of past accidents does not mean absence of risk. It is therefore important to identify the underlying hazard. One way of doing it is to group similar events to find the underlying hazards.

The level of detail in the specification of accidental events should be adequate for the SOP/procedure to be developed. In some cases, major groups of hazards/events may be adequate (e.g. for OPS: flight over a hostile environment, forced landing, deviation from intended flight path, flight at low altitude), in other cases it may be necessary to be more specific (e.g. for OPS: single engine failure, tail rotor drive failure, loss of visual references, altitude judgement error, turbulence, etc.).

The procedure/SOP should be systematically examined to determine hazards and potential accidental events that could occur during operations.

Aids to the identification of accidental events may be:

d. other risk assessments;

e. occurrence and accident reports;

f. audits/deviation reports;

g. internal reviews;

h. monitoring results including flight data monitoring information;

i. prognoses;

j. threat assessments; and

k. standard checklists (origin should be identified if used and the lists assessed and revised as required to suit the purpose).

Examples of methods that may be used for hazard and risk identification are Preliminary Hazard Analysis (PHA), Hazard Identification (HAZID) and brainstorming.

If a hazard or accidental event is identified but not analysed further for probability or consequence, the reason should be documented (e.g. too insignificant consequence, too unlikely, outside the organisation's control, not relevant for the assessment, etc.).

In this context, it is not so much of importance, and sometimes not even possible, to distinguish exactly between hazards and accidental events. For the purpose of risk assessing procedures, accidental events are the tangible objects of the analysis. Hazards and threats are the sources in the background that could cause/trigger/escalate accidental events and that influence the likelihood of events.

6.2.2 Analysis of causes/contributing factors and likelihood

The main purpose of this analysis is to establish the likelihood for each accidental event.

Each accidental event should be analysed to establish possible causes/contributing factors. Causes/contributing factors should then be analysed to determine likelihood.

The causal analysis should normally be of a descriptive (qualitative) nature but where relevant calculations (quantitative) should be applied. A qualitative analysis describes the potential hazards and threats and the chains of events that could lead to the accidental events. Quantitative analysis calculates the probability or frequency of the accidental events.

In the causal analysis of each accidental event, human and organisational factors should always be considered for their possible contributing effects. It is normally necessary to consider direct causes ("unsafe acts"), workplace factors and organisational factors ("error provoking or latent conditions").

The effects of existing likelihood-reducing factors and barriers that influence the chain of events should be considered and listed in the risk analysis sheet such as:

a. certification requirements;

b. maintenance procedures;

c. existing normal and abnormal procedures;

d. technical measures/equipment;

e. training; and

f. other human and organisational factors.

Likelihood may be expressed using terminology such as "very low, low, medium, high and very high". In such cases the terms should be explained to indicate their meaning. For example, the meaning of each term could be expressed in words and/or numbers/ranges.

Causal analysis should be done to the level of detail necessary to establish relevant likelihoods.

Examples of methods that may be used for causal and likelihood analysis are Fault tree analysis, FMECA, influence diagrams and brainstorming.

Existing likelihood-reducing factors and barriers that influence the chain of events are those that are already described in the SOP or other relevant documentation. As the risk assessment progresses it is possible that there will be an iterative process where new factors and barriers could be found during analysis. These should then be added to the procedure and included in the analysis.

6.2.3 Analysis of consequences

Consequences of all accidental events should be analysed. The analysis should consider immediate consequences and consequences that only become apparent afterwards such as effects on the natural and work environment (e.g. for OPS: noise and vibration).

Consequences could be grouped such as loss or damage of life/health, environment, material values/assets, functions and reputation.

The consequence analysis should normally be of a descriptive (qualitative) nature but where relevant calculations (quantitative) should be applied. A qualitative analysis describes the chains of events that could follow from the accidental events and the possible consequences. Quantitative analysis could calculate the likelihood and extent of damage that could be caused by the accidental event.

In the consequence analysis of each accidental event, human and organisational factors should always be considered for their possible contributing effects.

The effects of existing consequence reducing factors/barriers that influences the consequence itself or the consequence chain should be considered such as, as applicable:

a. certification requirements (e.g. fire protection);

b. existing abnormal and emergency procedures;

c. secondary safety measures (e.g. crashworthiness, personal protective equipment);

d. technical measures/equipment;

e. training;

f. human and organisational factors; and

g. emergency preparedness.

Existing in this context means that they are already part of the organisation's management system or built into/part of the equipment and included in the SOP description.

Consequences may be expressed using terminology like "very small, small, medium, large and very large". In such cases the terms should be explained to indicate their meaning. For example, the meaning of each term could be expressed in words and/or numbers/ranges.

Consequence analysis should be done to the level of detail necessary to establish relevant consequences.

Examples of methods that may be used for consequence analysis are event tree analysis, structured "what-if", checklists and brainstorming.

Existing consequence factors and barriers that influence the chain of events are those that are already described in the SOP or other relevant documentation . As the risk assessment progresses it is possible that there will be an iterative process where new factors and barriers could be found during analysis. These should then be added to the procedure and included in the analysis.

6.2.4 Risk description

The risk should be described based on the results of the causal and consequence analysis.

The risk should be expressed as a combination of the consequence and the associated likelihood. If an accidental event has more than one consequence, the risk may be expressed as a combination of the consequence and associated likelihood for each of the consequences.

The risk description should form a relevant basis for risk evaluation and treating risk.

Depending on the analysis method and the risk acceptance criteria, the description could be qualitative and/or quantitative. The level of detail will depend on the level of detail in the causal and consequence analysis.

Uncertainties in the risk description should be presented and reviewed. If the analysis is based on critical assumptions or other conditions that could affect the risk, it should be identified and presented (if necessary in the form of a sensitivity analysis).

Examples of a method that may be used for risk description is a risk matrix.

The SOP should contain general statements about the safety risk involved and the management of the risk.

6.3 Risk evaluation

6.3.1 Comparison with risk acceptance criteria

The results of the risk analysis should be compared to the criteria for acceptable risk.

The comparison description should be in such a format that it can be used by decision makers and stakeholders.

If the risk acceptance criteria require the optimisation, for example with the ALARP principle, the comparison (iterative process) should describe the optimisation process. If the risk is compared to criteria that are not absolute or may be exempted, it should be elaborated in the description.

6.3.2 Identification of risk reduction measures and their effect

The risk evaluation forms the basis for deciding on new mitigating measures and to assess the risk reduction effects of these measures.

Risk reducing measures should be identified for accidental events with an unacceptable risk and for accidental events where further risk reduction measures are feasible and reasonable. Identification of possible controls should be based on the hazards, chain of events and consequences described in the analysis. Controls that could eliminate the accidental event, likelihood-reducing measures and consequence-reducing controls should be identified. The controls could be related to human factors (e.g. training and competence), equipment or organisational factors (e.g. procedures).

Identification of risk reducing measures should be performed in a systematic way and should involve the relevant parties.

Risk reducing measures should be implemented based on the following priorities with respect to accident development:

a. eliminate hazards and accidental events (e.g. OPS: fly around the hostile environment);

b. reduce the probability of accidental events (e.g. OPS: use multi-engine instead of single-engine aircraft); and

c. reduce the consequence of accidental events (e.g. use personal protective equipment).

The controls should be implemented in the following priority with respect to reliability:

a. passive technical controls (e.g. system redundancy, firewall);

b. active technical controls (e.g. automatic fire extinguishing system); and

c. controls by procedure (e.g. use of hand fire extinguisher).

The risk reducing effect of the controls should be assessed with respect to:

a. functionality (does the measure influence the ability to perform the activity);

b. robustness (will the measure be effective under varying conditions and over time); and

c. possible other effects such as introduction of new risks.

Any new risk reducing measures should be included in the SOP/procedure as appropriate.

6.3.3 Conclusions and documentation

The risk assessment should contain conclusions. The conclusion(s) should be unambiguous, precise and robust to enable decision makers to perform the risk treatment.

Conclusions should address issues such as:

a. the activity could be performed with an acceptable risk (the risk of performing the operation according to the SOP is acceptable);

b. the activity complies with regulatory requirements;

c. the activity is within the operators privileges; and

d. the organisation’s equipment is adequate for the activity.

The risk assessment should be in a written format. Any references to other documents should be specified. Any need for further work should be pointed out.

The risk assessment documentation should include or reference, as required, descriptions of:

The purpose of the risk assessment;

a. the activity analysed;

b. involvement of personnel and stakeholders;

c. preconditions, assumptions and simplifications;

d. context/framework for the activity;

e. the assessment of who is affected by the activity and how;

f. data used;

g. the analysis method;

h. the hazard(s);

i. the risk(s);

j. the risk reduction measures;

k. the risk evaluation; and

l. the conclusions.

If the task includes developing a new procedure, it should also include proposals for, as applicable:

a. The detailed procedure/SOP;

b. Detailed training requirements;

c. Changes in general procedure;

d. Changes in equipment;

e. Applications for approvals (alternative means of compliance, if required); and

f. Risk register update.

If the task is to re-assess a procedure, it should include proposals for change in any of the above mentioned issues based on the conclusions of the risk assessment.

The risk assessment and the SOP should be considered a matched pair and changes in either of them would require reassessment of the other and the totality to cater for the changes and ensure continued consistency.

7. Monitoring and review

Monitoring and review should be planned as part of the risk management process. Responsibilities for monitoring and review of risk assessments and SOP should be defined.

7.1 General

Monitoring should be conducted through the organisation's normal monitoring programmes such as occurrence and deviation reporting, monitoring of normal operations, flight data monitoring, proposals for improvement, etc.

SOPs and risk assessments should be subject to monitoring for the purpose of:

a. analysing and learning from events, changes and trends;

b. detecting changes in the internal and external context including changes to the risk itself;

c. ensuring that the risk control and treatment measures are effective; and

d. identifying emerging risks.

Monitoring and review should include periodic review, inspections and audits of the procedures, risk assessments and the risk management process.

7.2 Changes

Changes that could invalidate a risk assessment's conclusions (or require a reassessment) are:

a. significant changes in the preconditions and context;

b. new knowledge of risks involved (experience from accidents and occurrences, reporting of safety concerns, research, better risk analysis methods, internal inspections, audits and reviews, hazard reporting, risk register update);

c. significant changes in the data basis;

d. significant organisational changes that could affect the assessment; and

e. several smaller changes that together might constitute a significant change.

7.3 Improvements

As any amount of risk is considered to be negative in the context of safety risk, organisations should in managing risk, and regardless of the risk acceptance criteria chosen, always strive for a continuous reduction in the risk level through monitoring, analysis and improvements.

AMC1-OR.GEN.200(a)(6) Management System

COMPLIANCE MONITORING - GENERAL

1. Compliance Monitoring.

The implementation and use of a compliance monitoring function should enable the organisation to monitor compliance with the relevant requirements of Part-OR and other applicable Parts.

a. The organisation should specify the basic structure of the compliance monitoring function applicable to the activities conducted.

b. The compliance monitoring function should be structured according to the size of the organisation and the complexity of the activities to be monitored.

2. Organisations should monitor compliance with the procedures they have designed to ensure safe activities. In doing so, they should as a minimum, and where appropriate, monitor:

a. organisational structure;

b. plans and objectives;

c. privileges of the organisation;

d. manuals, logs, and records;

e. training standards;

f. management system

3. Organisational set up.

a. To ensure that the organisation continues to meet the requirements of this Part and other applicable Parts, the accountable manager should designate a compliance monitoring manager whose role is to verify, by monitoring the activities of the organisation, that the standards required by Part-OR and other applicable Parts, and any additional requirements as established by the organisation, are being carried out properly under the supervision of the relevant head of functional area.

b. The compliance monitoring manager should be responsible for ensuring that the compliance monitoring programme is properly implemented, maintained and continually reviewed and improved.

c. The compliance monitoring manager should:

i. have direct access to the accountable manager;

ii. not be one of the other persons referred to in OR.GEN.210(b); and

iii. have access to all parts of the organisation, and as necessary, any contracted organisation.

d. In the case of a non-complex organisation, this task may be exercised by the accountable manager.

4. Compliance monitoring documentation.

a. Relevant documentation should include the relevant part(s) of the organisation management system documentation.

b. In addition, relevant documentation should also include the following:

i. terminology;

ii. specified activity standards;

iii. a description of the organisation;

iv. the allocation of duties and responsibilities;

v. procedures to ensure regulatory compliance;

vi. the compliance monitoring programme, reflecting:

A. schedule of the monitoring programme;

B. audit procedures;

C. reporting procedures;

D. follow-up and corrective action procedures; and

E. recording system.

vii. the training syllabus referred to in 5b; and

viii. document control.

5. Training.

a. Correct and thorough training is essential to optimise compliance in every organisation. In order to achieve significant outcomes of such training, the organisation should ensure that all personnel understand the objectives as laid down in the organisation manual.

b. Those responsible for managing the compliance monitoring function should receive training on this task. Such training should cover the requirements of compliance monitoring, manuals and procedures related to the task, audit techniques, reporting and recording.

c. Time should be provided to train all personnel involved in compliance management and for briefing the remainder of the personnel.

d. The allocation of time and resources should be governed by the volume and complexity of the activities concerned.

GM1-OR.GEN.200(a)(6) Complex-ATO Management System

COMPLIANCE MONITORING PROGRAMME

1. Typical subject areas for compliance monitoring inspections for ATOs should be:

a. facilities;

b. actual flight and ground training;

c. technical standards.

2. ATOs should monitor compliance with the training and operations manuals they have designed to ensure safe and efficient training. In doing so, they should, where appropriate, additionally monitor:

   a. training procedures;

   b. flight safety;

   c. flight and duty time limitations, rest requirements, and scheduling;

   d. aircraft maintenance/operations interface.

AMC1-OR.GEN.200(a)(6) Non-complex-OPS Management System

COMPLIANCE MONITORING PROGRAMME

1. Compliance monitoring inspections

   a. Compliance monitoring inspections should be documented on a "Compliance Monitoring Inspection Checklist", and any findings should be recorded in a "Non-compliance Report". The following documents should be used for this purpose.

   b. To report the outcome of the Management Evaluation meeting the "Management Evaluation Report" form should be used.

COMPLIANCE MONITORING INSPECTION CHECKLIST Year:			
Subject	Date checked	Checked by	Comments / Non-compliance Report No.
Flight Operations			
Aircraft checklists checked for accuracy and validity.			
Minimum five flight plans checked and verified for proper and correct information.			
Flight planning facilities checked for updated manuals, documents and access to relevant flight information.			
Incident reports evaluated and reported to the appropriate competent authority			
Ground Handling			
Contracts with ground handling organisations established and valid, if applicable			

Instructions regarding fuelling and de-icing issued, if applicable			
Instructions regarding Dangerous Goods issued and known by all relevant personnel, if applicable			
Weight & Balance			
Min. five load sheets checked and verified for proper and correct information , if applicable			
Aircraft fleet checked for valid weight check, if applicable .			
Minimum one check per aircraft of correct loading and distribution, if applicable			
Training			
Training records updated and accurate			
All pilot licenses checked for currency, correct ratings and valid medical check			
All pilots received recurrent training			
Training facilities & Instructors approved			
All pilots received Daily Inspection (D.I.) training			
Documentation			
All issues of Operations Manual (OM) checked for correct amendment status			
AOC checked for validity and appropriate Operations Specifications			
Aviation Requirements applicable and updated			

Crew flight and duty time record updated, if applicable			
Flight documents record checked and updated			
Compliance monitoring records checked and updated			

- NON-COMPLIANCE REPORT - No:		
To MANAGER in charge of compliance monitoring	Reported by:	Date:
Category Flight Operations ☐ Ground Handling ☐ Weight & Balance ☐ Training ☐ Documentation ☐ Other ☐		
Description:		Reference:
Level of finding:		
Cause of non-compliance:		
Suggested solution:		

Manager in charge of compliance monitoring: ☐ Corrective action required ☐ Corrective action not required	
Responsible Person:	Time limitation:
Corrective action:	Reference:
Signature Responsible Person:	Date:
Manager in charge of the compliance monitoring ☐ Corrective action verified ☐ Report Closed	
Signature Manager in charge of compliance monitoring:	Date:

MANAGEMENT EVALUATION REPORT	
Date	Attendees;

Number of Non-compliance reports recorded during the period
from.....to.....

Flight Operations	Ground Handling	Weight & Balance	Training	Documents	Other	Total

Significant changes of trend compared with previous evaluation: ☐ No ☐ Yes

Auditors objective review of the compliance monitoring effectiveness:

General comments:

Improvements of the compliance monitoring function or parts thereof regarded necessary:

☐ No ☐ Yes, ref. Non-compliance Report(s)

No.....

.....	.....	.....
Signature	Signature	Signature
Manager in charge of compliance monitoring	Accountable Manager	Auditor

GM1-OR.GEN.200(a)(6) Complex-OPS Management System

COMPLIANCE MONITORING

1. Typical subject areas for compliance monitoring inspections for operators should be:
   a. actual flight operations;
   b. ground de-icing/anti-icing;
   c. flight support services;
   d. load control; and
   e. technical standards.
2. Operators should monitor compliance with the operational procedures they have designed to ensure safe operations, airworthy aircraft and the serviceability of both operational and safety equipment. In doing so, they should, where appropriate, additionally monitor:
   a. operational procedures;
   b. flight safety;
   c. operational control and supervision;
   d. aircraft performance;
   e. all weather operations;
   f. communications and navigational equipment and practices;
   g. mass, balance and aircraft loading;
   h. instruments and safety equipment;
   i. ground operations;
   j. flight and duty time limitations, rest requirements, and scheduling;
   k. aircraft maintenance/operations interface;
   l. use of the MEL;
   m. flight crew;
   n. cabin crew;
   o. dangerous goods; and
   p. security.

AMC1-OR.GEN.200(b) Management System

SIZE, NATURE AND COMPLEXITY OF THE ACTIVITY

1. An organisation should be assessed as complex when it has a workforce of more than 20 full time equivalents (FTEs) involved in the activity subject to the approval or the declaration.
2. Without prejudice to the size of the organisation, in terms of complexity, the extent and scope of contracted activities subject to the approval or the declaration should also be assessed.
3. Without prejudice to the criteria above, the following risk criteria should also be assessed:

a. use of the following special approvals: RNP-X, LVO, ETOPS, HHO, HEMS, NVIS, DG, SFL;

b. different types of aircraft used; and

c. the environment (offshore, mountainous area etc…);

d. commercial operators of other than complex motor powered aircraft performing local operations.

4. Notwithstanding the size of the organisation, the following organisations should be considered as non complex:

a. approved training organisations only providing training for LAPL, PPL, SPL or BPL;

b. commercial operators of other than complex motor powered aircraft performing local operations; and

c. aero-medical centres.

AMC1-OR.GEN.205 Contracting and purchasing

COMPLIANCE MONITORING RESPONSIBILITY WHEN CONTRACTING ACTIVITIES.

1. Contracted activities.

a. An organisation may decide to contract certain activities to external organisations.

b. A written agreement should exist between the organisation and the contracted organisation clearly defining the contracted activities and the applicable requirements.

c. The contracted safety related activities relevant to the agreement should be included in the organisation's compliance monitoring programme.

d. The organisation should ensure that the contracted organisation has the necessary authorisation or approval when required, and commands the resources and competence to undertake the task.

e. If the organisation requires the contracted organisation to conduct an activity which exceeds the contracted organisation’s authorisation or approval, the organisation is responsible for ensuring that the contracted organisation's compliance monitoring takes account of such additional requirements.

GM1-OR.GEN.205 Contracting and purchasing

CONTRACTING AND PURCHASING - OPERATORS

1. Operators may decide to contract certain activities to external organisations for the provision of services related to areas such as:

a. ground de-icing/anti-icing;

b. ground handling;

c. flight support (including performance calculations, flight planning, navigation database and dispatch);

d. training; and

e. manual preparation.

2. The ultimate responsibility for the product or service provided by external organisations should always remain with the operator.

AMC1-OR.GEN.215-ATO Facilities

APPROVED TRAINING ORGANISATIONSPROVIDING TRAINING FOR OTHER THAN LAPL, BPL, SPL AND PPL

1. For Approved Training Organisations providing flight training, the following flight operations accommodation should be available:
   a. an operations room with facilities to control flying operations;
   b. a flight planning room with the following facilities:
      i. appropriate current maps and charts;
      ii. current AIS information;
      iii. current meteorological information;
      iv. communications to ATC and the operations room;
      v. any other flight safety related material.
   c. adequate briefing rooms/cubicles of sufficient size and number;
   d. suitable offices for the supervisory personnel and room(s) to allow flight instructors to write reports on students, complete records, etc;
   e. furnished crew-room(s) for instructors and students.
2. For Approved Training Organisations providing theoretical knowledge training,the following facilities for theoretical knowledge instruction should be available:
   a. adequate classroom accommodation for the current student population;
   b. suitable demonstration equipment to support the theoretical knowledge instruction;
   c. a radiotelephony training and testing facility.
   d. a reference library containing publications giving coverage of the syllabus;
   e. offices for the instructional personnel.

AMC2-OR.GEN.215-ATO Facilities

APPROVED TRAINING ORGANISATIONS PROVIDING TRAINING FOR LAPL, BPL, SPL OR PPL ONLY

1. The following flight operations accommodation should be available:
   a. a flight planning room with the following facilities:
      i appropriate current aviation maps and charts;
      ii current AIS information;
      iii current meteorological information;
      iv communications to ATC (if applicable); and
      v any other flight safety related material.
   b. adequate briefing room(s)/cubicles of sufficient size and number;
   c. suitable office(s) to allow flight instructors to write reports on students, complete records, etc;
   d. suitable rest areas for instructors and students, where appropriate to the training task.

e. in the case of training organisations providing training for the BPL or LAPL(B) only, the flight operations accommodation listed in (a) to (d) above may be replaced by other suitable facilities when operating outside aerodromes.

2. The following facilities for theoretical knowledge instruction should be available:

a. adequate classroom accommodation for the current student population;

b. suitable demonstration equipment to support the theoretical knowledge instruction; and

c. suitable office(s) for the instructional personnel.

3. A single room may be sufficient to provide the above mentioned functions.

AMC1-OR.GEN.220(b) Record-keeping

RECORDS

1. Records should be kept in paper form or in electronic format or a combination of both. Records stored on microfilm or optical disc format are also acceptable. The records should remain legible throughout the required retention period. The retention period starts when the record has been created or last amended.

2. Paper systems should use robust material which can withstand normal handling and filing.

3. Computer systems should have at least one backup system which should be updated within 24 hours of any new entry. Computer systems should include safeguards against the ability of unauthorised personnel to alter the data.

4. All computer hardware used to ensure data backup should be stored in a different location from that containing the working data and in an environment that ensures they remain in good condition. When hardware- or software-changes take place, special care should be taken that all necessary data continues to be accessible at least through the full period specified in the relevant Subpart. In the absence of such indication, all records should be kept for a minimum period of five years.

GM1-OR.GEN.220(b) Record-keeping

RECORDS

Microfilming or optical storage of records may be carried out at any time. The records should be as legible as the original record and remain so for the required retention period.

Subpart OPS – Air operations

SECTION I – GENERAL REQUIREMENTS

AMC1-OR.OPS.GEN.105(c) Operator responsibilities

OPERATIONAL CONTROL

1. The organisation and methods established to exercise operational control should be included in the operations manual and should cover at least a description of responsibilities concerning the initiation, continuation and termination or diversion of each flight.

GM1-OR.OPS.GEN.105(c) Operator responsibilities

OPERATIONAL CONTROL

1. OR.OPS.GEN.100(c) does not imply a requirement for licensed flight dispatchers or a full flight watch system.
2. If an operator employs flight operations officers in conjunction with a method of operational control, training for these personnel should be based on relevant parts of ICAO Doc 7192 Training Manual, Part D-3. This training should be described in the operations manual.

SECTION II – MANUALS, LOGS AND RECORDS

AMC1-OR.OPS.MLR.100 Operations manual - General

GENERAL

1. The operations manual (OM) may vary in detail according to the complexity of the operation and of the type and number of aircraft operated.
2. The OM or parts thereof may be presented in any form, including electronic form. In all cases, the accessibility, usability and reliability should be assured.
3. The OM should be such that:
   a. all parts of the manual are consistent and compatible in form and content;
   b. the manual can be readily amended; and
   c. the content and amendment status of the manual is controlled and clearly indicated.
4. The OM should include a description of its amendment and revision process specifying:
   a. the person(s) who may approve amendments or revisions;

b. the conditions for temporary revisions and/or immediate amendments or revision required in the interest of safety; and

c. the methods by which operator personnel are advised of the changes.

5. The OM content may be based on, or may refer to, industry codes of practice.

6. When compiling an OM, the operator may take advantage of the contents of other relevant documents. Material produced by the operator for the type-related part of the OM may be supplemented with, or substituted by, applicable parts of the aircraft flight manual (AFM) or, where such a document exists, by an aircraft operating manual produced by the manufacturer of the aircraft.

7. In the case of commercial operations with other-than-complex motor-powered aircraft or non-commercial operations, a "pilot operating handbook" (POH), or equivalent document, may be used as the type-related part of the OM, provided that the POH covers the normal and abnormal/emergency operating procedures.

8. For the route and aerodrome part of the OM, material produced by the operator may be supplemented with or substituted by applicable route guide material produced by a specialist company.

9. If an operator chooses to use material from another source in the OM, either the applicable material should be copied and included directly in the relevant part of the OM, or the OM should contain a reference to the appropriate section of that applicable material.

10. If an operator chooses to make use of material from another source (e.g. a route manual producer, an aircraft manufacturer or a training organisation) this does not absolve the operator from the responsibility of verifying the applicability and suitability of this material. Any material received from an external source should be given its status by a statement in the OM.

AMC2-OR.OPS.MLR.100 Operations manual – General

CONTENTS – NON-COMMERCIAL OPERATIONS WITH COMPLEX MOTOR-POWERED AIRCRAFT

The OM should contain at least the following information, where applicable:

1. Table of contents;

2. Amendment control status and list of effective pages or paragraphs, unless the entire manual is re-issued and the manual has an effective date on it;

3. Duties, responsibilities and succession of management and operating personnel;

4. Description of the management system;

5. Operational control system;

6. Flight time limitations;

7. Standard operating procedures (SOPs);

8. Weather limitations;

9. Emergency procedures;

10. Accidents/incidents considerations;

11. Security procedures;

12. Minimum equipment list (MEL);

13. Personnel qualifications and training;

14. Record-keeping;

15. Normal flight operations;

16. Performance operating limitations;

17. Use/protection of flight data recorder (FDR)/cockpit voice recorder (CVR) records, where applicable; and

18. Handling of dangerous goods.

AMC3-OR.OPS.MLR.100 Operations manual – General

CONTENTS – COMMERCIAL AIR TRANSPORT OPERATIONS

1. The OM should contain at least the following information, where applicable, as relevant for the area and type of operation:

A GENERAL/BASIC

0. ADMINISTRATION AND CONTROL OF OPERATIONS MANUAL

0.1 Introduction:

0.1.1 A statement that the manual complies with all applicable regulations and with the terms and conditions of the applicable air operator certificate (AOC).

0.1.2 A statement that the manual contains operational instructions that are to be complied with by the relevant personnel.

0.1.3 A list and brief description of the various parts, their contents, applicability and use.

0.1.4 Explanations and definitions of terms and words needed for the use of the manual.

0.2 System of amendment and revision:

0.2.1 Details of the person(s) responsible for the issuance and insertion of amendments and revisions.

0.2.2 A record of amendments and revisions with insertion dates and effective dates.

0.2.3 A statement that handwritten amendments and revisions are not permitted, except in situations requiring immediate amendment or revision in the interest of safety.

0.2.4 A description of the system for the annotation of pages or paragraphs and their effective dates.

0.2.5 A list of effective pages or paragraphs.

0.2.6 Annotation of changes (in the text and, as far as practicable, on charts and diagrams).

0.2.7 Temporary revisions.

0.2.8 A description of the distribution system for the manuals, amendments and revisions.

1. ORGANISATION AND RESPONSIBILITIES

1.1 Organisational structure. A description of the organisational structure, including the general organigramme and operations departments' organigrammes. The organigramme should depict the relationship between the operations departments and the other departments of the operator. In particular, the subordination and reporting lines of all divisions, departments etc, which pertain to the safety of flight operations, should be shown.

1.2 Nominated persons. The name of each nominated person responsible for flight operations, crew training and ground operations, as prescribed in

OR.OPS.AOC.135. A description of their function and responsibilities should be included.

1.3 Responsibilities and duties of operations management personnel. A description of the duties, responsibilities and authority of operations management personnel pertaining to the safety of flight operations and the compliance with the applicable regulations.

1.4 Authority, duties and responsibilities of the commander. A statement defining the authority, duties and responsibilities of the commander.

1.5 Duties and responsibilities of crew members other than the commander.

2. OPERATIONAL CONTROL AND SUPERVISION

2.1 Supervision of the operation by the operator. A description of the system for supervision of the operation by the operator (see OR.OPS.GEN.105(c)). This should show how the safety of flight operations and the qualifications of personnel are supervised. In particular, the procedures related to the following items should be described:

2.1.1 Licence and qualification validity;

2.1.2 Competence of operations personnel;

2.1.3 Control, analysis and storage of the required records.

2.2 System and responsibility for promulgation of additional operational instructions and information. A description of any system for promulgating information which may be of an operational nature, but which is supplementary to that in the OM. The applicability of this information and the responsibilities for its promulgation should be included.

2.3 Operational control. A description of the procedures and responsibilities necessary to exercise operational control with respect to flight safety.

2.4 Powers of the authority. A description of the powers of the competent authority and guidance to staff on how to facilitate inspections by authority personnel.

3. MANAGEMENT SYSTEM

3.1 A description of the management system, including at least:

3.1.1 Safety policy;

3.1.2 The process for identifying safety hazards and for evaluating and managing the associated risks;

3.1.3 Compliance monitoring system;

3.1.4 Allocation of duties and responsibilities; and

3.1.5 Documentation of all key management system processes.

4 CREW COMPOSITION

4.1 Crew composition. An explanation of the method for determining crew compositions, taking account of the following:

4.1.1 The type of aircraft being used;

4.1.2 The area and type of operation being undertaken;

4.1.3 The phase of the flight;

4.1.4 The minimum crew requirement and flight duty period planned;

4.1.5 Experience (total and on type), recency and qualification of the crew members;

4.1.6 The designation of the commander and, if necessitated by the duration of the flight, the procedures for the relief of the commander or other members of the flight crew. (see OR.OPS.FC.105);

4.1.7 The designation of the senior cabin crew member and, if necessitated by the duration of the flight, the procedures for the relief of the senior cabin crew member and any other member of the cabin crew.

4.2 Designation of the commander. The rules applicable to the designation of the commander.

4.3 Flight crew incapacitation. Instructions on the succession of command in the event of flight crew incapacitation.

4.4 Operation on more than one type. A statement indicating which aircraft are considered as one type for the purpose of:

4.4.1 flight crew scheduling; and

4.4.2 cabin crew scheduling.

5 QUALIFICATION REQUIREMENTS

5.1 A description of the required licence, rating(s), qualification/competency (e.g. for routes and aerodromes), experience, training, checking and recency for operations personnel to conduct their duties. Consideration should be given to the aircraft type, kind of operation and composition of the crew.

5.2 Flight crew:

5.2.1 Commander;

5.2.2 Pilot relieving the commander;

5.2.3 Co-pilot;

5.2.4 Pilot relieving the co-pilot;

5.2.5 Pilot under supervision;

5.2.6 System panel operator;

5.2.7 Operation on more than one type or variant.

5.3 Cabin crew:

5.3.1 Senior cabin crew member;

5.3.2 Cabin crew member:

a. Required cabin crew member;

b. Additional cabin crew member and cabin crew member during familiarisation flights.

5.3.3 Operation on more than one type or variant.

5.4 Training, checking and supervision personnel:

5.4.1 For flight crew;

5.4.2 For cabin crew.

5.5 Other operations personnel (including technical crew and crew members other than flight, cabin and technical crew).

6 CREW HEALTH PRECAUTIONS

6.1 Crew health precautions. The relevant regulations and guidance to crew members concerning health, including:

6.1.1 Alcohol and other intoxicating liquids;

6.1.2 Narcotics;

6.1.3 Drugs;

6.1.4 Sleeping tablets;

6.1.5 Anti-depressants;

6.1.6 Pharmaceutical preparations;

6.1.7 Immunisation;

6.1.8 Deep-sea diving;

6.1.9 Blood/bone marrow donation;

6.1.10 Meal precautions prior to and during flight;

6.1.11 Sleep and rest; and

6.1.12 Surgical operations.

7 FLIGHT TIME LIMITATIONS

7.1 Flight and duty time limitations and rest requirements.

7.2 Exceedances of flight and duty time limitations and/or reductions of rest periods. Conditions under which flight and duty time may be exceeded or rest periods may be reduced, and the procedures used to report these modifications.

8 OPERATING PROCEDURES

8.1 Flight preparation instructions. As applicable to the operation:

8.1.1 Minimum flight altitudes. A description of the method of determination and application of minimum altitudes including:

a. a procedure to establish the minimum altitudes/flight levels for visual flight rules (VFR) flights; and

b. a procedure to establish the minimum altitudes/flight levels for instrument flight rules (IFR) flights.

8.1.2 Criteria and responsibilities for determining the adequacy of aerodromes to be used.

8.1.3 Methods and responsibilities for establishing aerodrome operating minima. Reference should be made to procedures for the determination of the visibility and/or runway visual range and for the applicability of the actual visibility observed by the pilots, the reported visibility and the reported runway visual range.

8.1.4 En-route operating minima for VFR flights or VFR portions of a flight and, where single-engine aircraft are used, instructions for route selection with respect to the availability of surfaces which permit a safe forced landing.

8.1.5 Presentation and application of aerodrome and en-route operating minima.

8.1.6 Interpretation of meteorological information. Explanatory material on the decoding of meteorological (MET) forecasts and MET reports relevant to the area of operations, including the interpretation of conditional expressions.

8.1.7 Determination of the quantities of fuel, oil and water methanol carried. The methods by which the quantities of fuel, oil and water methanol to be carried are determined and monitored in-flight. This section should also include instructions on the measurement and distribution of the fluid carried on board. Such instructions should take account of all circumstances likely to be encountered on the flight, including the possibility of in-flight re-planning and of failure of one or more of the aircraft's power plants. The system for maintaining fuel and oil records should also be described.

8.1.8 Mass and centre of gravity. The general principles of mass and centre of gravity including:

a. Definitions;

b. Methods, procedures and responsibilities for preparation and acceptance of mass and centre of gravity calculations;

c. The policy for using standard and/or actual masses;

d. The method for determining the applicable passenger, baggage and cargo mass;

e. The applicable passenger and baggage masses for various types of operations and aircraft type;

f. General instructions and information necessary for verification of the various types of mass and balance documentation in use;

g. Last-minute changes procedures;

h. Specific gravity of fuel, oil and water methanol;

i. Seating policy/procedures; and

j. For helicopter operations, standard load plans.

8.1.9 Air traffic services (ATS) flight plan. Procedures and responsibilities for the preparation and submission of the ATS flight plan. Factors to be considered include the means of submission for both individual and repetitive flight plans.

8.1.10 Operational flight plan. Procedures and responsibilities for the preparation and acceptance of the operational flight plan. The use of the operational flight plan should be described including samples of the operational flight plan formats in use.

8.1.11 Operator's aircraft technical log. The responsibilities and the use of the operator's aircraft technical log should be described, including samples of the format used.

8.1.12 List of documents, forms and additional information to be carried.

8.2 Ground handling instructions. As applicable to the operation:

8.2.1 Fuelling procedures. A description of fuelling procedures, including:

a. Safety precautions during refuelling and defuelling including when an auxiliary power unit is in operation or when rotors are running or when an engine is or engines are running and the prop-brakes are on;

b. Refuelling and defuelling when passengers are embarking, on board or disembarking; and

c. Precautions to be taken to avoid mixing fuels.

8.2.2 Aircraft, passengers and cargo handling procedures related to safety. A description of the handling procedures to be used when allocating seats, or passenger compartment in the case of balloons, and embarking and disembarking passengers and when loading and unloading the aircraft. Further procedures, aimed at achieving safety whilst the aircraft is on the ramp, should also be given. Handling procedures should include:

a. Special categories of passengers, including children/infants, persons with reduced mobility, inadmissible passengers, deportees and persons in custody;

b. Permissible size and weight of hand baggage;

c. Loading and securing of items in the aircraft;

d. Positioning of ground equipment;

e. Operation of aircraft doors;

f. Safety on the aerodrome/operating site, including fire prevention and safety in blast and suction areas;

g. Start-up, ramp departure and arrival procedures including, for aeroplanes, push-back and towing operations;

h. Servicing of aircraft;

i. Documents and forms for aircraft handling;

j. Special loads and classification of load compartments; and

k. Multiple occupancy of aircraft seats.

8.2.3 Procedures for the refusal of embarkation. Procedures to ensure that persons who appear to be intoxicated, or who demonstrate by manner or physical indications that they are under the influence of drugs, are refused embarkation. This does not apply to medical patients under proper care.

8.2.4 De-icing and anti-icing on the ground. A description of the de-icing and anti-icing policy and procedures for aircraft on the ground. These should include descriptions of the types and effects of icing and other contaminants on aircraft whilst stationary, during ground movements and during take-off. In addition, a description of the fluid types used should be given, including:

a. Proprietary or commercial names;

b. Characteristics;

c. Effects on aircraft performance;

d. Hold-over times; and

e. Precautions during usage.

8.3 Flight Procedures:

8.3.1 VFR/IFR Policy. A description of the policy for allowing flights to be made under VFR, or for requiring flights to be made under IFR, or for changing from one to the other.

8.3.2 Navigation Procedures. A description of all navigation procedures, relevant to the type(s) and area(s) of operation. Special consideration should be given to:

a. Standard navigational procedures, including policy for carrying out independent cross-checks of keyboard entries where these affect the flight path to be followed by the aircraft;

b. Required navigation performance (RNP), minimum navigation performance specification (MNPS) and polar navigation and navigation in other designated areas;

c. In-flight re-planning;

d. Procedures in the event of system degradation; and

e. Reduced vertical separation minima (RVSM), for aeroplanes.

8.3.3 Altimeter setting procedures, including use, where appropriate, of:

a. metric altimetry and conversion tables; and

b. QFE operating procedures.

8.3.4 Altitude alerting system procedures for aeroplanes or audio voice alerting devices for helicopters

8.3.5 Ground proximity warning system (GPWS)/terrain avoidance warning system (TAWS), for aeroplanes. Procedures and instructions required for the avoidance of controlled flight into terrain, including limitations

on high rate of descent near the surface (the related training requirements are covered in OM-D 2.1).

8.3.6 Policy and procedures for the use of traffic collision avoidance system (TCAS)/airborne collision avoidance system (ACAS) for aeroplanes and, when applicable, for helicopters.

8.3.7 Policy and procedures for in-flight fuel management.

8.3.8 Adverse and potentially hazardous atmospheric conditions. Procedures for operating in, and/or avoiding, adverse and potentially hazardous atmospheric conditions, including:

a. Thunderstorms;

b. Icing conditions;

c. Turbulence;

d. Windshear;

e. Jet stream;

f. Volcanic ash clouds;

g. Heavy precipitation;

h. Sand storms;

i. Mountain waves;

j. Significant temperature inversions; and

k. For balloons, severe thermal activity.

8.3.9 Wake turbulence. Wake turbulence separation criteria, taking into account aircraft types, wind conditions and runway/final approach and take-off area (FATO) location. For helicopters, consideration should also be given to rotor downwash.

8.3.10 Crew members at their stations. The requirements for crew members to occupy their assigned stations or seats during the different phases of flight or whenever deemed necessary in the interest of safety and, for aeroplane operations, including procedures for controlled rest in the flight crew compartment.

8.3.11 Use of restraint devices for crew and passengers. The requirements for crew members and passengers to use safety belts and/or harnesses or, in the case of balloons, the landing hand-holds during the different phases of flight or whenever deemed necessary in the interest of safety.

8.3.12 Admission to flight crew compartment. The conditions for the admission to the flight crew compartment of persons other than the flight crew. The policy regarding the admission of inspectors from an authority should also be included.

8.3.13 Use of vacant crew seats. The conditions and procedures for the use of vacant crew seats.

8.3.14 Incapacitation of crew members. Procedures to be followed in the event of incapacitation of crew members in-flight. Examples of the types of incapacitation and the means for recognising them should be included.

8.3.15 Cabin Safety Requirements. Procedures:

a. covering cabin preparation for flight, in-flight requirements and preparation for landing, including procedures for securing the cabin and galleys;

b. to ensure that passengers are seated where, in the event that an emergency evacuation is required, they may best assist and not hinder evacuation from the aircraft;

c. to be followed during passenger embarkation and disembarkation;

d. when refuelling/defuelling with passengers involving embarking, on board or disembarking;

e. covering the carriage of special categories of passengers;

f. covering smoking on board; and

g. covering the handling of suspected infectious diseases.

8.3.16 Passenger briefing procedures. The contents, means and timing of passenger briefing in accordance with Part-CAT.

8.3.17 Procedures for aircraft operated whenever required cosmic or solar radiation detection equipment is carried.

8.3.18 Policy on the use of auto-pilot and auto-throttle for aircraft fitted with these systems.

8.4 Low visibility operations (LVO). A description of the operational procedures associated with LVO.

8.5 Extended-range twin-engine operations (ETOPS). A description of the ETOPS operational procedures. (Refer to EASA AMC 20-6)

8.6 Use of the minimum equipment and configuration deviation list(s).

8.7 Non-revenue flights. Procedures and limitations for:

8.7.1 Training flights;

8.7.2 Test flights;

8.7.3 Delivery flights;

8.7.4 Ferry flights;

8.7.5 Demonstration flights; and Positioning flights, including the kind of persons who may be carried on such flights.

8.8 Oxygen Requirements:

8.8.1 An explanation of the conditions under which oxygen should be provided and used;

8.8.2 The oxygen requirements specified for:

a. Flight crew;

b. Cabin crew; and

c. Passengers.

9 DANGEROUS GOODS AND WEAPONS

9.1 Information, instructions and general guidance on the transport of dangerous goods, including:

9.1.1 Operator's policy on the transport of dangerous goods;

9.1.2 Guidance on the requirements for acceptance, labelling, handling, stowage and segregation of dangerous goods;

9.1.3 Special notification requirements in the event of an accident or occurrence when dangerous goods are being carried;

9.1.4 Procedures for responding to emergency situations involving dangerous goods;

9.1.5 Duties of all personnel involved in accordance with SPA.DG; and

9.1.6 Instructions on the carriage of the operator's personnel on cargo aircraft when dangerous goods are being carried.

9.2 The conditions under which weapons, munitions of war and sporting weapons may be carried.

10 SECURITY

Security instructions, guidance, procedures, training and responsibilities, taking into account Regulation (EC) No 300/2008. Some parts of the security instructions and guidance may be kept confidential.

11 HANDLING, NOTIFYING AND REPORTING ACCIDENTS, INCIDENTS AND OCCURRENCES

Procedures for handling, notifying and reporting accidents, incidents and occurrences. This section should include:

11.1 Definition of accident, incident and occurrence and of the relevant responsibilities of all persons involved;

11.2 Illustrations of forms to be used for reporting all types of accident, incident and occurrence (or copies of the forms themselves), instructions on how they are to be completed, the addresses to which they should be sent and the time allowed for this to be done;

11.3 In the event of an accident, descriptions of which departments, authorities and other organisations have to be notified, how this will be done and in what sequence;

11.4 Procedures for verbal notification to air traffic service units of incidents involving ACAS resolution advisories (RAs), bird hazards, dangerous goods and hazardous conditions;

11.5 Procedures for submitting written reports on air traffic incidents, ACAS RAs, bird strikes, dangerous goods incidents or accidents, and unlawful interference;

11.6 Reporting procedures. These procedures should include internal safety-related reporting procedures to be followed by crew members, designed to ensure that the commander is informed immediately of any incident that has endangered, or may have endangered, safety during the flight, and that the commander is provided with all relevant information.

11.7 Procedures for the preservation of recordings following a reportable event.

12 RULES OF THE AIR

12.1 Visual and instrument flight rules;

12.2 Territorial application of the rules of the air;

12.3 Communication procedures, including communication-failure procedures;

12.4 Information and instructions relating to the interception of civil aircraft;

12.5 The circumstances in which a radio listening watch is to be maintained;

12.6 Signals;

12.7 Time system used in operation;

12.8 ATC clearances, adherence to flight plan and position reports;

12.9 Visual signals used to warn an unauthorised aircraft flying in or about to enter a restricted, prohibited or danger area;

12.10 Procedures for flight crew observing an accident or receiving a distress transmission;

12.11 The ground/air visual codes for use by survivors, and description and use of signal aids; and

12.12 Distress and urgency signals.

13 LEASING / CODE SHARE

A description of the operational arrangements for leasing and code share, associated procedures and management responsibilities.

B AIRCRAFT OPERATING MATTERS – TYPE RELATED

Taking account of the differences between types/classes, and variants of types, under the following headings:

0. GENERAL INFORMATION AND UNITS OF MEASUREMENT

0.1 General information (e.g. aircraft dimensions), including a description of the units of measurement used for the operation of the aircraft type concerned and conversion tables.

1. LIMITATIONS

1.1 A description of the certified limitations and the applicable operational limitations should include:

a. Certification status (e.g. EASA (supplemental) type certificate, environmental certification, etc.);

b. Passenger seating configuration for each aircraft type including a pictorial presentation;

c. Types of operation that are approved (e.g. VFR/IFR, CAT II/III, RNP, flights in known icing conditions etc.);

d. Crew composition;

e. Mass and centre of gravity and for balloons lifting capacity;

f. Speed limitations;

g. Flight envelope(s);

h. Wind limits including operations on contaminated runways;

i. Performance limitations for applicable configurations;

j. (Runway) slope;

k. For aeroplanes, limitations on wet or contaminated runways;

l. Airframe contamination; and

m. System limitations.

2. NORMAL PROCEDURES

The normal procedures and duties assigned to the crew, the appropriate checklists, the system for their use and a statement covering the necessary coordination procedures between flight and cabin/other crew members. The following normal procedures and duties should include:

a. Pre-flight;

b. Pre-departure;

c. Altimeter setting and checking;

d. Taxi, take-off and climb;

e. Noise abatement;

f. Cruise and descent;

g. Approach, landing preparation and briefing;

h. VFR approach;

i. IFR approach;

j. Visual approach and circling;

k. Missed approach;

l. Normal landing;

m. Post-landing; and

n. For aeroplanes, operation on wet and contaminated runways.

3 ABNORMAL AND/OR EMERGENCY PROCEDURES

The abnormal and/or emergency procedures and duties assigned to the crew, the appropriate checklists, the system for their use and a statement covering the necessary coordination procedures between flight and cabin/other crew members. The following abnormal and/or emergency procedures and duties should include:

a. Crew incapacitation;

b. Fire and smoke drills;

c. For aeroplanes, un-pressurised and partially pressurised flight;

d. For aeroplanes, exceeding structural limits such as overweight landing;

e. Lightning Strikes;

f. Distress communications and alerting ATC to emergencies;

g. Engine/burner failure;

h. System failures;

i. Guidance for diversion in case of serious technical failure;

j. Ground proximity warning;

k. TCAS Warning for aeroplanes/audio voice alerting device (AVAD) warning for helicopters;

l. Wind shear;

m. Emergency landing/ditching; and

n. For aeroplanes, departure contingency procedures.

4 PERFORMANCE

4.0 Performance data should be provided in a form which can be used without difficulty.

4.1 Performance data. Performance material which provides the necessary data for compliance with the performance requirements prescribed in Part-CAT. For aeroplanes, this performance data should be included to allow the determination of:

a. Take-off climb limits – mass, altitude, temperature;

b. Take-off field length (for dry, wet and contaminated runway conditions);

c. Net flight path data for obstacle clearance calculation or, where applicable, take-off flight path;

d. The gradient losses for banked climb-outs;

e. En-route climb limits;

f. Approach climb limits;

g. Landing climb limits;

h. Landing field length (for dry, wet and contaminated runway conditions) including the effects of an in-flight failure of a system or device, if it affects the landing distance;

i. Brake energy limits; and

j. Speeds applicable for the various flight stages (also considering dry, wet and contaminated runway conditions).

4.1.1 Supplementary data covering flights in icing conditions. Any certified performance related to an allowable configuration, or configuration deviation, such as anti-skid inoperative.

4.1.2 If performance data, as required for the appropriate performance class, is not available in the AFM, then other data should be included. The OM may contain cross-reference to the data contained in the AFM where such data is not likely to be used often or in an emergency.

4.2 Additional performance data for aeroplanes. Additional performance data, where applicable, including:

a. All engine climb gradients;

b. Drift-down data;

c. Effect of de-icing/anti-icing fluids;

d. Flight with landing gear down;

e. For aircraft with 3 or more engines, one-engine-inoperative ferry flights; and

f. Flights conducted under the provisions of the configuration deviation list (CDL).

5 FLIGHT PLANNING

5.1 Data and instructions necessary for pre-flight and in-flight planning including, for aeroplanes, factors such as speed schedules and power settings. Where applicable, procedures for engine(s)-out operations, ETOPS for aeroplanes (particularly the one-engine-inoperative cruise speed and maximum distance to an adequate aerodrome determined in accordance with Part-CAT) and flights to isolated aerodromes should be included.

5.2 The method for calculating fuel needed for the various stages of flight.

5.3 When applicable, for aeroplanes, performance data for ETOPS critical fuel reserve and area of operation, including sufficient data to support the critical fuel reserve and area of operation calculation based on approved aircraft performance data. The following data should be included:

a. Detailed engine(s)-inoperative performance data including fuel flow for standard and non-standard atmospheric conditions and as a function of airspeed and power setting, where appropriate, covering:

i. Drift down (includes net performance), where applicable;

ii. Cruise altitude coverage including 10,000ft;

iii. Holding;

iv. Altitude capability (includes net performance); and

v. Missed approach.

b. Detailed all-engine-operating performance data, including nominal fuel flow data, for standard and non-standard atmospheric conditions and as a function of airspeed and power setting, where appropriate, covering:

i. Cruise (altitude coverage including 10,000ft); and

ii Holding.

c. Details of any other conditions relevant to ETOPS operations which can cause significant deterioration of performance, such as ice accumulation on the unprotected surfaces of the aircraft, ram air turbine (RAT) deployment, thrust-reverser deployment, etc.

d. The altitudes, airspeeds, thrust settings, and fuel flow used in establishing the ETOPS area of operations for each airframe-engine combination should be used in showing the corresponding terrain and obstruction clearances in accordance with Part-CAT.

6 MASS AND BALANCE

Instructions and data for the calculation of the mass and balance including:

6.1 Calculation system (e.g. index system);

6.2 Information and instructions for completion of mass and balance documentation, including manual and computer generated types;

6.3 Limiting masses, lifting capacity for balloons and centre of gravity for the types, variants or individual aircraft used by the operator; and

6.4 Dry operating mass and corresponding centre of gravity or index.

7 LOADING

Procedures and provisions for loading and unloading and securing the load in the aircraft.

8 CONFIGURATION DEVIATION LIST

The CDL(s), if provided by the manufacturer, taking account of the aircraft types and variants operated including procedures to be followed when an aircraft is being dispatched under the terms of its CDL.

9 MINIMUM EQUIPMENT LIST (MEL)

The MEL for each aircraft type or variant operated and the type(s)/area(s) of operation. The MEL should also include the dispatch conditions associated with operations required for a specific approval (e.g. RNAV, RNP, RVSM, ETOPS). Consideration should be given to using the ATA number system when allocating chapters and numbers.

10 SURVIVAL AND EMERGENCY EQUIPMENT INCLUDING OXYGEN

10.1 A list of the survival equipment to be carried for the routes to be flown and the procedures for checking the serviceability of this equipment prior to take-off. Instructions regarding the location, accessibility and use of survival and emergency equipment and its associated checklist(s) should also be included.

10.2 The procedure for determining the amount of oxygen required and the quantity that is available. The flight profile, number of occupants and possible cabin decompression should be considered.

11 EMERGENCY EVACUATION PROCEDURES

11.1 Instructions for preparation for emergency evacuation including crew coordination and emergency station assignment.

11.2 Emergency evacuation procedures. A description of the duties of all members of the crew for the rapid evacuation of an aircraft and the handling of the passengers in the event of a forced landing, ditching or other emergency.

12 AIRCRAFT SYSTEMS

A description of the aircraft systems, related controls and indications and operating instructions. Consideration should be given to use the ATA number system when allocating chapters and numbers.

C ROUTE/ROLE/AREA AND AERODROME/OPERATING SITE INSTRUCTIONS AND INFORMATION

1 Instructions and information relating to communications, navigation and aerodromes/operating sites including minimum flight levels and altitudes for each

route to be flown and operating minima for each aerodrome/operating site planned to be used, including:

a. Minimum flight level/altitude;

b. Operating minima for departure, destination and alternate aerodromes;

c. Communication facilities and navigation aids;

d. Runway/final approach and take-off area (FATO) data and aerodrome/operating site facilities;

e. Approach, missed approach and departure procedures including noise abatement procedures;

f. Communication-failure procedures;

g. Search and rescue facilities in the area over which the aircraft is to be flown;

h. A description of the aeronautical charts that should be carried on board in relation to the type of flight and the route to be flown, including the method to check their validity;

i. Availability of aeronautical information and MET services;

j. En-route communication/navigation procedures;

k. Aerodrome/operating site categorisation for flight crew competence qualification; and

l. Special aerodrome/operating site limitations (performance limitations and operating procedures etc.).

D. TRAINING

1 Description of scope: Training syllabi and checking programmes for all operations personnel assigned to operational duties in connection with the preparation and/or conduct of a flight.

2 Content: Training syllabi and checking programmes should include the following:

2.1 For flight crew, all relevant items prescribed in Part-CAT, Part-SPA and OR.OPS.FC;

2.2 For cabin crew, all relevant items prescribed in Part-CAT, Part-CC and OR.OPS.CC;

2.3 For technical crew, all relevant items prescribed in Part-CAT, Part-SPA and OR.OPS.TC; and

2.4 For operations personnel concerned, including crew members:

a. All relevant items prescribed in SPA.DG; and

b. All relevant items prescribed in Part-CAT and OR.OPS.SEC.

2.5 For operations personnel other than crew members (e.g. dispatcher, handling personnel etc.), all other relevant items prescribed in Part-CAT and in this Part pertaining to their duties.

3 Procedures:

3.1 Procedures for training and checking.

3.2 Procedures to be applied in the event that personnel do not achieve or maintain the required standards.

3.3 Procedures to ensure that abnormal or emergency situations requiring the application of part or all of the abnormal or emergency procedures, and simulation of instrument meteorological conditions (IMC) by artificial means, are not simulated during commercial air transport operations.

4 Description of documentation to be stored and storage periods.

2 Notwithstanding (1), an OM which is compiled in accordance with JAR-OPS 3 amendment 5 may be considered to be compliant.

AMC4-OR.OPS.MLR.100 Operations manual - General

CONTENTS – NON-COMMERCIAL SPECIALISED OPERATIONS WITH COMPLEX MOTOR-POWERED AIRCRAFT AND COMMERCIAL SPECIALISED OPERATIONS

The OM should contain at least the following information, where applicable, as relevant to the area and type of operation:

A GENERAL/BASIC

For chapters 0-7 refer to AMC3-OR.OPS.MLR.100.

In addition:

6.2 The relevant regulations and guidance to crew members concerning dangerous goods used for specialised tasks (pesticides and chemicals, etc.).

8 OPERATING PROCEDURES

8.1 Flight preparation instructions. As applicable to the operation:

8.1.1 General procedures;

8.1.2 Minimum flight altitudes. A description of the method of determination and application of minimum altitudes, including a procedure to establish the minimum altitudes/flight levels;

8.1.3 Criteria and responsibilities for determining the adequacy of aerodromes/operating sites to be used;

8.1.4 Interpretation of meteorological information. Explanatory material on the decoding of MET forecasts and MET reports relevant to the area of operations, including the interpretation of conditional expressions;

8.1.5 Determination of the quantities of fuel, oil and water methanol carried. The methods by which the quantities of fuel, oil and water methanol to be carried are determined and monitored in-flight. The system for maintaining fuel and oil records should also be described;

8.1.6 Procedure for the determination of the mass of loads, the calculation of performance margins and the centre of gravity;

8.1.7 Emergency procedures, e.g. load, fuel or chemical jettison (to include the actions of all personnel);

8.1.8 System for supply of NOTAMS, meteorological and other safety-critical information both at base and in field locations;

8.1.9 Mandatory equipment for specific tasks (mirror, cargo sling, load cell, special radio equipment, radar altimeters, etc.);

8.1.10 Guidance on the CDLand MEL;

8.1.11 Policy on completion and carriage of documents including operator's aircraft technical log and journey log, or equivalent;

8.1.12 Any task-specific standard operating procedures not covered above.

8.2 Ground handling instructions. As applicable to the operation:

8.2.1 Briefing requirements for in-flight and ground task specialists;

8.2.2 Decontamination procedures;

8.2.3 Fuelling procedures, including safety precautions during refuelling and defuelling including quality checks required in the field location, precautions against spillage and environmental damage;

8.2.4. De-icing and anti-icing on the ground. A description of the de-icing and anti-icing policy and procedures for aircraft on the ground.

8.3 Flight Procedures. As applicable to the operation:

8.3.1 Procedures relevant to the aircraft type, specific task and area;

8.3.2 Altimeter setting procedures;

8.3.3 Actions following alerts from audio warning devices;

8.3.4 GPWS/TAWS for aeroplanes. Procedures and instructions required for the avoidance of controlled flight into terrain, including limitations on high rate of descent near the surface (the related training requirements are covered in OM-D 2.1);

8.3.5 Policy and procedures for the use of TCAS/ACAS for aeroplanes and, when applicable, for helicopters;

8.3.6 Policy and procedures for in-flight fuel management;

8.3.7 Procedures for operating in adverse and potentially hazardous atmospheric conditions;

8.3.8 Wake turbulence and rotor downwash for helicopters;

8.3.9 Use of restraint devices;

8.3.10 Policy on use of vacant seats;

8.3.11 Cabin safety requirements including smoking.

8.4 Task-specific weather limitations.

8.5 Use of the minimum equipment and configuration deviation list(s).

8.6 Oxygen Requirements. An explanation of the conditions under which oxygen should be provided and used (altitude, exposure times, night etc.).

9 DANGEROUS GOODS AND WEAPONS

9.1 Information, instruction and general guidance on the transport of dangerous goods as internal or external loads, including:

9.1.1 The operator's policy on the transport of dangerous goods;

9.1.2 Guidance on the requirements for acceptance, labelling, handling, stowage, and segregation of dangerous goods;

9.1.3 Procedures for responding to emergency situations involving dangerous goods;

9.1.4 Duties of all personnel involved; and

9.1.5 Instructions on carriage of the operator's personnel on cargo aircraft when dangerous goods are being carried.

9.2 The conditions under which weapons, munitions of war and sporting weapons may be carried.

10 SECURITY

Security instructions, guidance, procedures, training and responsibilities, taking into account Regulation (EC) No 300/2008. Some parts of the security instructions and guidance may be kept confidential.

11 HANDLING, NOTIFYING AND REPORTING ACCIDENTS AND OCCURRENCES

Procedures for the handling, notifying and reporting of accidents and occurrences. This section should include:

11.1 Definitions of accidents and occurrences and responsibilities of all persons involved;

11.2 Reporting procedures (including any mandatory forms); and

11.3 Special notification when dangerous goods are carried.

12 RULES OF THE AIR

In addition to the items referred to in AMC3-OR.OPS.MLR.100, territorial procedures for obtaining permissions and exemptions, e.g. for underslung loads and lowflying clearances.

13 LEASING

Refer to AMC3-OR.OPS.MLR.100.

B AIRCRAFT OPERATING MATTERS – TYPE RELATED

For chapters 0-1 refer to AMC3-OR.OPS.MLR.100.

2 NORMAL PROCEDURES

The normal procedures and duties assigned to the crew, the appropriate checklists and the system for their use, including any task or specific role equipment procedures not contained in the AFM.

3 ABNORMAL AND/OR EMERGENCY PROCEDURES

The abnormal and/or emergency procedures and duties assigned to the crew, the appropriate checklists and the system for their use, including any task or specific role equipment emergency procedures not contained in the AFM.

4 PERFORMANCE

4.1 Performance data should be provided in a form in which it can be used without difficulty.

4.2 Performance data. Performance material which provides the necessary data for compliance with the performance requirements prescribed in Part-CAT.

5 FLIGHT PLANNING

5.1 Data and instructions necessary for pre-flight and in-flight planning.

5.2 Procedures for specialised tasks.

6 MASS AND BALANCE

Instructions and data for the calculation of the mass and balance, including:

6.1 Calculation system (e.g. index system);

6.2 Information and instructions for completion of mass and balance documentation; and

6.3 Limitations.

7 LOADING

Refer toAMC3-OR.OPS.MLR.100.

8 CONFIGURATION DEVIATION LIST (CDL)

Refer to AMC3-OR.OPS.MLR.100.

9 MINIMUM EQUIPMENT LIST (MEL)

The MEL for each aircraft type or variant operated and the type(s)/area(s) of operation. It should also contain procedures to be followed when an aircraft is being dispatched with one or more inoperative item, in accordance with the MEL.

10 SURVIVAL AND EMERGENCY EQUIPMENT INCLUDING OXYGEN

10.1 A list of the survival equipment to be carried, taking into account the nature of the area of operation, such as a hostile or a non-hostile environment.

10.2 A checklist for assessing the serviceability of the equipment and instructions for its use prior to take-off.

10.3 The procedure for determining the amount of oxygen required and the quantity that is available.

11 EMERGENCY EVACUATION PROCEDURES

11.1 Emergency evacuation procedures, crew coordination and occupant handling in the event of a forced landing, ditching or other emergency.

12 AIRCRAFT SYSTEMS

A description of the aircraft systems and all equipment specific to the tasks. Additional equipment, systems or fitting, related special procedures including any supplements to the AFM.

C TASKS AND OPERATING AREAS INSTRUCTIONS AND INFORMATION

Specific instructions related to the specialised tasks and operating areas in accordance with AMC3-OR.OPS.MLR.100.

D TRAINING

1 Training syllabi and checking programmes for all operations personnel assigned to operational duties in connection with the preparation and/or conduct of a flight.

2 Training syllabi and checking programmes should include:

2.1 For flight crew, all relevant items prescribed in Part-SPO, Part-SPA and OR.OPS.FC;

2.2 For other crew members, all relevant items prescribed in Part-SPO and this Part, as applicable;

2.3 For in-flight and ground task specialists concerned, including crew members:

a. All relevant items prescribed in SPA.DG; and

b. All relevant items prescribed in Part-SPO and OR.OPS.SEC; and

2.4 For operations personnel other than crew members, all other relevant items pertaining to their duties prescribed in Part-SPO and this Part.

3 Procedures:

3.1 Procedures for training and checking.

3.2 Procedures to be applied in the event that personnel do not achieve or maintain the required standards.

3.3 A system for tracking expiry dates for qualifications, checks, tests, recency and licences.

4 Description of documentation to be stored and storage periods.

GM1-OR.OPS.MLR.100 Operations manual – General

CONTENTS

If there are sections which, because of the nature of the operation, do not apply, it is recommended that operators maintain the numbering system described in OR.OPS.MLR.101 and associated AMCs and insert ‘Not applicable’ or ‘Intentionally blank’ where appropriate.

GM1-OR.OPS.MLR.100(k) Operations manual - General

HUMAN FACTORS PRINCIPLES

Guidance material on the application of human factors principles can be found in the ICAO Human Factors Training Manual (Doc 9683).

AMC1-OR.OPS.MLR.105(c) Minimum equipment list

AMENDMENTS TO THE MEL FOLLOWING CHANGES TO THE MMEL – APPLICABLE CHANGES AND ACCEPTABLE TIMESCALES

1 The following are applicable changes to the MMEL which require the amendment of the MEL:

a. A reduction of the rectification interval;

b. Change of an item, only when the change is applicable to the aircraft or type of operations and is more restrictive.

2 An acceptable timescale for submitting the amended MEL to the competent authority is 90 days from the date of applicability specified in the approved change to the MMEL.

3 Reduced timescales for the implementation of safety related amendments may be required if the Agency and/or competent authority consider it necessary.

AMC1-OR.OPS.MLR.105(d)(3) Minimu m equipment list

EXTENT OF THE MEL

The operator should include guidance in the MEL to deal with any failures which occur between the commencement of the flight and the start of the take-off. If a failure occurs between the commencement of the flight and the start of the take-off, any decision to continue the flight should be subject to pilot judgement and good airmanship. The commander/pilot-in-command may refer to the MEL before any decision to continue the flight is taken.

GM1-OR.OPS.MLR.105(e);(f) Minimum equipment list

RECTIFICATION INTERVAL (RI)

The definitions and categories of rectification intervals are provided in CS-MMEL.

AMC1-OR.OPS.MLR.105(f) Minimum equipment list

RECTIFICATION INTERVAL EXTENSION (RIE) - OPERATOR PROCEDURES FOR THE APPROVAL BY THE COMPETENT AUTHORITY AND NOTIFICATION TO THE COMPETENT AUTHORITY

1 The operator's procedures to address the extension of rectification intervals and ongoing surveillance to ensure compliance should provide the competent authority with details of the name and position of the nominated personnel responsible for the control of the operator's rectification interval extension (RIE) procedures and details of the specific duties and responsibilities established to control the use of RIEs.

2 Personnel authorising RIEs should be adequately trained in technical and/or operational disciplines to accomplish their duties. They should have necessary operational knowledge in terms of operational use of the MEL as alleviating documents by flight crew and maintenance personnel and engineering competence. The authorising personnel should be listed by appointment and name.

3 The operator should notify the competent authority within one month of the extension of the applicable rectification interval or within the appropriated timescales specified by the approved procedure for the RIE.

4 The notification should be made in a form determined by the competent authority and should specify the original defect, all such uses, the reason for the RIE and the reasons why rectification was not carried out within the original rectification interval.

GM1-OR.OPS.MLR.105(f) Minimum equipment list

RECTIFICATION INTERVAL EXTENSION (RIE)

Procedures for the extension of rectification intervals should only be applied under certain conditions, such as a shortage of parts from manufacturers or other unforeseen situations (e.g. inability to obtain equipment necessary for proper troubleshooting and repair), in which case the operator may be unable to comply with the specified rectification intervals.

AMC1-OR.OPS.MLR.105(g) Minimum equipment list

OPERATIONAL AND MAINTENANCE PROCEDURES

1 The operational and maintenance procedures referenced in the MEL should be based on the operational and maintenance procedures referenced in the MMEL. Modified procedures may however be developed by the operator when they provide the same level of safety as required by the MMEL.

2 Providing appropriate operational and maintenance procedures referenced in the MEL, regardless of who developed them, is the responsibility of the operator.

3 Any item in the MEL requiring an operational or maintenance procedure to ensure an acceptable level of safety, should be so identified in the "remarks" or "exceptions" column/part/section of the MEL. This will normally be "(O)" for an operational procedure, or "(M)" for a maintenance procedure. “(O)(M)” means both operational and maintenance procedures are required.

4 The satisfactory accomplishment of all procedures, regardless of who performs them, is the responsibility of the operator.

GM1-OR.OPS.MLR.105(g) Minimum equipment list

OPERATIONAL AND MAINTENANCE PROCEDURES

1 Operational and maintenance procedures are an integral part of the compensating conditions needed to maintain an acceptable level of safety, enabling the competent authority to approve the MEL. The competent authority may request presentation of fully developed (O) and/or (M) procedures in the course of the MEL approval process.

2 Normally, operational procedures are accomplished by the flight crew; however, other personnel may be qualified and authorised to perform certain functions.

3 Normally, maintenance procedures are accomplished by the maintenance personnel; however, other personnel may be qualified and authorised to perform certain functions.

4 Operator's manuals may include the OM, the Continued Airworthiness Management Organisation Manual or other documents.

AMC1-OR.OPS.MLR.105(h) Minimum equipment list

OPERATIONAL AND MAINTENANCE PROCEDURES - APPLICABLE CHANGES

Changes to the operational and maintenance procedures referenced in the MMEL are considered applicable and require the amendment of the maintenance and operating procedures referenced in the MEL:

1 when the modified procedure is applicable to the operator's MEL; and

2 when the purpose of this change is to improve compliance with the intent of the associated MMEL dispatch condition.

AMC1-OR.OPS.MLR.110 Journey log

GENERAL

1 The aircraft journey log, or equivalent, should include the following items, where applicable:

a. Aircraft nationality and registration;

b. Date;

c. Name/s of crew member/s;

d. Duty assignments of crew members;

e. Place of departure;

f. Place of arrival;

g. Time of departure;

h. Time of arrival;

i. Hours of flight;

j. Nature of flight (scheduled or non-scheduled);

k. Incidents, observations, if any;

l. Signature of person in charge.

2 The information, or parts thereof, may be recorded in a form other than on printed paper. Accessibility, usability and reliability should be assured.

3 'Journey log, or equivalent', means that the required information may be recorded in documentation other than a log book, such as the operational flight plan or the aircraft technical log.

GM1-OR.OPS.MLR.110 Journey log

SERIES OF FLIGHTS

The term 'series of flights' is used to facilitate a single set of documentation.

AMC1-OR.OPS.MLR.115 Record-keeping

TRAINING RECORDS

A summary of training should be maintained by the operator to show a crew member's completion of each stage of training and checking.

SECTION III – AIR OPERATOR DECLARATION

GM1-OR.OPS.DEC.100 Declaration

GENERAL

The intent of the declaration is to:

1. have the operator acknowledge its responsibilities under the applicable safety regulations and that it holds all necessary approvals;
2. inform the competent authority of the existence of an operator; and
3. enable the competent authority to fulfil its oversight responsibilities in accordance with AR.GEN.300 and 305.

MANAGED OPERATIONS

When the non-commercial operation of a complex motor-powered aircraft is managed by a third party on behalf of the owner, that party may be the operator in the sense of article 3 (h) of Regulation (EC) No 216/2008, and therefore has to declare its capability and means to discharge the responsibilities associated with the operation of the aircraft to the competent authority.

In such a case it should also be assessed whether the third party operator undertakes a commercial operation in the sense of article 3 (i) of Regulation (EC) 216/2008.

SECTION IV – AIR OPERATOR CERTIFICATION

AMC1-OR.OPS.AOC.100 Application for an air operator certificate (AOC)

APPLICATION TIME FRAMES

The application for the initial issue of an AOC should be submitted at least 90 days before the intended start date of operation. The operations manual may be submitted later, but in any case not later than 60 days before the intended start date of operation.

AMC1-OR.OPS.AOC.110 Leasing agreement

GENERAL

An operator intending to lease-in an aircraft registered in a third country should provide the competent authority with the following information:

1. the aircraft type, registration markings and serial number;
2. the name and address of the registered owner;
3. a copy of the valid certificate of airworthiness;
4. copy of the lease agreement or description of the lease provisions, except financial arrangements;

6 duration of the lease;

7 areas of operation; and

8 a copy of the AOC of the third country operator.

9. In the case of wet lease-in and when not applying the acceptable means of compliance or flight time certification schemes established by the Agency, a full description of the flight time scheme(s), operating procedures and safety assessment demonstrating compliance with the safety objectives set out in the essential requirements and applicable implementing rules.

   The information mentioned above should be accompanied by a statement signed by the lessee that the parties to the lease agreement fully understand their respective responsibilities under the applicable regulations.

AMC1-OR.OPS.AOC.110(c) Leasing agreement

WET LEASE-IN

If an operator is not intending to apply EU safety requirements when wet-leasing-in an aircraft registered in a third country, it should demonstrate to the competent authority that the standards complied with are equivalent to the following requirements:

1. for commercial air transport (CAT) operations Part–CAT;
2. for commercial operations other than CAT, Part-SPO;
3. Part-OR:
   a. OR.GEN Section 2;
   b. OR.OPS.GEN;
   c. OR.OPS.MLR excluding OR.OPS.MLR.105
   d. OR.OPS.FC;
   e. OR.OPS.CC, excluding OR.OPS.CC.200, OR.OPS.CC.210(a) and OR.OPS.CC.260;
   f. OR.OPS.TC;
   g. OR.OPS.FTL including related CS-FTL;
   h. OR.OPS.SEC;

   and
4. Part-SPA, if applicable.

AMC1-OR.OPS.AOC.115(d) Code-share arrangements

GENERAL

Compliance of the third country operator with the Annex IV to Regulation (EC) No 216/2008 should be demonstrated to the competent authority. For this purpose the EU operator should ensure that the requirements in the following table have been met:

[TABLE TO BE DEVELOPED]

AMC2-OR.OPS.AOC.115(d) Code share arrangements

CODE-SHARE AUDIT PROGRAMME

1. A code-share audit programme should include:
   a. the audit methodology (audit report + compliance statements);
   b. details of the specific operational areas to audit;
   c. criteria for defining satisfactory audit results;
   d. a system for reporting and correcting findings;

e. A continuous monitoring system;

f. auditor qualification and authorisation; and

g. the frequency of audits.

REGULAR AUDITS

2. Regular audits may be performed by a third party provider, using a recognised evaluation system approved by a recognised standardisation authority (e.g. the European Committee for Standardization (CEN), designed to assess the operational, management and control systems of the operator. Independence of the third party provider as well as the evaluation system used should be ensured.

3. The date of the initial audit closing meeting establishes the audit effective date. The initial audit is valid for 24 consecutive months beginning with the audit effective date and ending with the audit expiry date.

4. The EU operator should ensure a renewal audit of each third country code-share operator prior to the audit expiry date of the previous audit. The audit expiry date for the previous audit becomes the audit effective date for the renewal audit provided the closing meeting for the renewal audit is within 150 days prior to the audit expiry date for the previous audit. If the closing meeting for the renewal audit is more than 150 days prior to the audit expiry date from the previous audit, then the audit effective date for the renewal audit is the day of the closing meeting of the renewal audit. Renewal audits are valid for 24 consecutive months beginning with the audit effective date and ending with the audit expiry date.

5. In case a code-share audit is shared by several operators, the report should be made available for review by all duly identified sharing operators by electronic means or other means acceptable to the competent authority.

6. After closure of all findings identified during the audit, the EU operator should submit an audit compliance statement to the competent authority demonstrating that the third country operator meets all the applicable safety standards.

AMC1-OR.OPS.AOC.130 Flight data monitoring (FDM) aeroplanes

FLIGHT DATA MONITORING (FDM) PROGRAMME

1 The safety manager, as defined by the relevant AMC1-OR.GEN.200(a)(1), should be responsible for the discovery of issues and their transmission to the manager(s) responsible for the process(es) concerned. The latter should be responsible for taking appropriate and practicable safety action within a reasonable period of time that reflects the severity of the issue.

2 An FDM programme should allow an operator to:

a. identify areas of operational risk and quantify current safety margins;

b. identify and quantify operational risks by highlighting when non-standard, unusual or unsafe circumstances occur;

c. use the FDM information on the frequency of occurrence, combined with an estimation of the level of severity, to assess the safety risks and to determine which may become unacceptable if the discovered trend continues;

d. put in place appropriate procedures for remedial action once an unacceptable risk, either actually present or predicted by trending, has been identified; and

e. confirm the effectiveness of any remedial action by continued monitoring.

3 FDM analysis techniques should comprise:

a. Exceedence detection: this technique should search for deviations from aircraft flight manual limits, and standard operating procedures. A set of core events should be selected to cover the main areas of interest to the operator. A sample list is provided in Appendix 1 to AMC1-OR.OPS.AOC.130. The event detection limits should be continuously reviewed to reflect the operator's current operating procedures.

b. All flights measurement: a system that should define what is normal practice. This may be accomplished by retaining various snapshots of information from each flight.

c. Statistics - a series of data collected to support the analysis process: this technique should include the numbers of flights flown per aircraft and sector details sufficient to generate rate and trend information.

4 FDM analysis, assessment and process control tools: the effective assessment of information obtained from digital flight data should be dependent on the provision of appropriate information technology tool sets. A programme suite may include: annotated data trace displays, engineering unit listings, visualisation for the most significant incidents, access to interpretative material, links to other safety information, and statistical presentations.

5 Education and publication: sharing safety information should be a fundamental principle of aviation safety in helping to reduce accident rates. The operator should pass on the lessons learnt to all relevant personnel and, where appropriate, industry. Similar media to air safety systems may be used. These may include: newsletters, flight safety magazines, highlighting examples in training and simulator exercises, periodic reports to industry and the regulatory authority.

6 Accident and incident data requirements specified in OPS.GEN.505 should take precedence over the requirements of an FDM programme. In these cases the FDR data should be retained as part of the investigation data and may fall outside the de-identification agreements.

7 Every crew member should be responsible to report events. Significant risk-bearing incidents detected by FDM should therefore normally be the subject of mandatory occurrence reporting by the crew. If this is not the case then they should submit a retrospective report that should be included under the normal process for reporting and analysing hazards, incidents and accidents.

8 The data recovery strategy should ensure a sufficiently representative capture of flight information to maintain an overview of operations. Data analysis should be performed sufficiently frequently to enable action to be taken on significant safety issues.

9 The data retention strategy should aim to provide the greatest safety benefits practicable from the available data. A full dataset should be retained until the action and review processes are complete; thereafter, a reduced dataset relating to closed issues should be maintained for longer-term trend analysis. Programme managers may wish to retain samples of de-identified full-flight data for various safety purposes (detailed analysis, training, benchmarking etc.).

10 The data access and security policy should restrict information access to authorised persons. When data access is required for airworthiness and maintenance purposes, a procedure should be in place to prevent disclosure of crew identity.

11 The procedure document, which should be signed by all parties (airline management, flight crew member representatives nominated either by the union or the flight crew themselves) should, as a minimum, define:

a. the aim of the FDM programme;

b. a data access and security policy that should restrict access to information to specifically authorised persons identified by their position;

c. the method to obtain de-identified crew feedback on those occasions that require specific flight follow-up for contextual information; where such crew contact is required the authorised person(s) need not necessarily be the programme manager, or safety manager, but could be a third party (broker) mutually acceptable to unions or staff and management;

d. the data retention policy and accountability including the measures taken to ensure the security of the data;

e. the conditions under which, on rare occasions, advisory briefing or remedial training should take place; this should always be carried out in a constructive and non-punitive manner;

f. the conditions under which the confidentiality may be withdrawn for reasons of gross negligence or significant continuing safety concern;

g. the participation of flight crew member representative(s) in the assessment of the data, the action and review process and the consideration of recommendations;

h. the policy for publishing the findings resulting from FDM.

12 airborne systems and equipment used to obtain FDM data should range from an already installed full Quick Access Recorder, in a modern aircraft with digital systems, to a basic crash protected recorder in an older or less sophisticated aircraft. The analysis potential of the reduced data set available in the latter case may reduce the safety benefits obtainable. The operator should ensure that FDM use does not adversely affect the serviceability of equipment required for accident investigation.

Appendix 1 to AMC1-OR.OPS.AOC.130 Flight data monitoring – aeroplanes

TABLE OF FDM EVENTS

The following table provides examples of FDM events that may be further developed using operator and aeroplane specific limits. The table is considered illustrative and not exhaustive.

Event Group	**Description**
Rejected take-off	High speed rejected take-off
Take-off pitch	Pitch rate high on take-off
	Pitch attitude high during take-off
Unstick speeds	Unstick speed high
	Unstick speed low
Height loss in climb-out	Initial climb height loss 20 ft above ground level (AGL) to 400 ft above aerodrome level (AAL)
	Initial climb height loss 400 ft to 1 500 ft AAL
Slow climb-out	Excessive time to 1 000 ft AAL after take-off
Climb-out speeds	Climb-out speed high below 400 ft AAL
	Climb-out speed high 400 ft AAL to 1 000 ft AAL
	Climb-out speed low 35 ft AGL to 400 ft AAL
	Climb-out speed low 400 ft AAL to 1 500 ft AAL
High rate of descent	High rate of descent below 2 000 ft AGL

Event Group	Description
Missed approach	Missed approach below 1 000 ft AAL
	Missed approach above 1 000 ft AAL
Low approach	Low on approach
Glide slope	Deviation under glide slope
	Deviation above glide slope (below 600 ft AGL)
Approach power	Low power on approach
Approach speeds	Approach speed high within 90 seconds of touchdown
	Approach speed high below 500 ft AAL
	Approach speed high below 50 ft AGL
	Approach speed low within 2 minutes of touchdown
Landing flap	Late land flap (not in position below 500 ft AAL)
	Reduced flap landing
	Flap load relief system operation
Landing pitch	Pitch attitude high on landing
	Pitch attitude low on landing]
Bank angles	Excessive bank below 100 ft AGL
	Excessive bank 100 ft AGL to 500 ft AAL
	Excessive bank above 500 ft AGL
	Excessive bank near ground (below 20 ft AGL)
Normal acceleration	High normal acceleration on ground
	High normal acceleration in flight flaps up (+/- increment)
	High normal acceleration in flight flaps down(+/- increment)
	High normal acceleration at landing
Abnormal configuration	Take-off configuration warning
	Early configuration change after take-off (flap)
	Speed brake with flap
	Speed brake on approach below 800 ft AAL
	Speed brake not armed below 800 ft AAL
Ground proximity warning	GPWS operation - hard warning

Event Group	Description
	GPWS operation - soft warning
	GPWS operation – windshear warning
	GPWS operation - false warning
ACAS/TCAS warning	ACAS/TCAS operation – Resolution Advisory
Margin to stall/buffet	Stick shake
	False stick shake
	Reduced lift margin except near ground
	Reduced lift margin at take-off
	Low buffet margin (above 20 000 ft)
Aircraft flight manual limitations	V_{MO} exceedence
	M_{MO} exceedence
	Flap placard speed exceedence
	Gear down speed exceedence
	Gear selection up/down speed exceedence
	Flap/slat altitude exceedence
	Maximum operating altitude exceedence

GM1-OR.OPS.AOC.130 Flight data monitoring - aeroplanes

FLIGHT SAFETY PROGRAMME

1 Guidance material for the establishment of a safety programme and flight data monitoring can be found in:

a. ICAO Doc 9859 (Safety Management Manual);

b. ICAO Doc 9376 (Preparation of an Operational Manual);

c. UK Civil Aviation Authority CAP 739 (Flight Data Monitoring).

AMC1-OR.OPS.AOC.135(a) Personnel requirements

NOMINATED PERSONS

1 A person may hold more than one of the nominated posts if such an arrangement is considered suitable and properly matched to the scale and scope of the operation.

2 A description of the functions and the responsibilities of the nominated persons, including their names, should be contained in the operations manual.

3 The holder of an air operator certificate should make arrangements to ensure continuity of supervision in the absence of nominated persons.

4 A person nominated by the holder of an AOC should not be nominated by another holder of an AOC, unless agreed with the competent authorities concerned.

5 Persons nominated should be contracted to work sufficient hours to fulfil the management functions associated with the scale and scope of the operation.

6 Whenever the posts of the accountable manager and the compliance monitoring manager are combined, compliance monitoring audits should be conducted by independent personnel. The independence of the compliance monitoring audit should be established by always ensuring that audits are carried out by personnel not responsible for the function and procedures being checked.

AMC2-OR.OPS.AOC.135(a) Personnel requirements

COMBINATION OF NOMINATED PERSONS RESPONSIBILITIES

1 The acceptability of a single person holding several posts, possibly in combination with being the accountable manager, should depend upon the nature and scale of the operation. The two main areas of concern should be competence and an individual's capacity to meet his/her responsibilities.

2 As regards competence in different areas of responsibility, there should not be any difference from the requirements applicable to persons holding only one post.

3 The capacity of an individual to meet his/her responsibilities should primarily be dependent upon the scale of the operation. However the complexity of the organisation or of the operation may prevent, or limit, combinations of posts which may be acceptable in other circumstances.

4 In most circumstances, the responsibilities of a nominated person should rest with a single individual. However, in the area of ground operations, it may be acceptable for responsibilities to be split, provided that the responsibilities of each individual concerned are clearly defined.

GM1-OR.OPS.AOC.135(a) Personnel requirements

NOMINATED PERSONS

The smallest organisation that can be considered is the one-man organisation where all of the nominated posts are filled by the accountable manager, and audits are conducted by an independent person.

GM2-OR.OPS.AOC.135(a) Personnel requirements

COMPETENCE OFNOMINATED PERSONS

1 Nominated persons in accordance with OR.OPS.AOC.135 should be expected to possess the experience and licensing provisions which are listed in paragraphs 2 to 7 below. Exceptionally, in particular cases, the competent authority may accept a nomination which does not meet these provisions in full. In that circumstance, the nominee should have comparable experience and also the ability to perform effectively the functions associated with the post and with the scale of the operation.

2 Nominated persons should have:

a. practical experience and expertise in the application of aviation safety standards and safe operating practices;

b. comprehensive knowledge of:

i. the applicable European Union safety regulations and any associated requirements and procedures;

ii. the operator certificate holder's operations specifications;

iii. the need for, and content of, the relevant parts of the operator certificate holder's operations manual;

c. familiarity with management systems preferably in the area of aviation;

d. appropriate management experience, preferably in a comparable organisation; and

e. five years of relevant work experience of which at least two years should be from the aeronautical industry in an appropriate position.

3 Flight Operations. The nominated person should hold or have held a valid Flight Crew Licence and the associated ratings appropriate to a type of operation conducted under the operator certificate. In case the nominated person’s licence and ratings are not current his/her deputy should hold a valid flight crew licence and the associated ratings.

4 Crew Training. The nominated person or his/her deputy should be a current type rating instructor on a type/class operated under the operator certificate. The nominated person should have a thorough knowledge of the operator certificate holder’s crew training concept for flight, cabin and when relevant other crew

5 Ground Operations. The nominated person should have a thorough knowledge of the operator certificate holder’s ground operations concept.

SECTION V – FLIGHT CREW

CHAPTER 1 - COMMON REQUIREMENTS

AMC1-OR.OPS.FC.105(b)(2);(c) Designation as pilot-in-command/commander

ROUTE/AREA AND AERODROME KNOWLEDGEFOR COMMERCIAL OPERATIONS

For commercial operations, the experience of the route or area to be flown and of the aerodrome facilities and procedures to be used should include the following:

1. Area and route knowledge
   a. Area and route training should include knowledge of:
      i. terrain and minimum safe altitudes;
      ii. seasonal meteorological conditions;
      iii. meteorological, communication and air traffic facilities, services and procedures;
      iv. search and rescue procedures where available; and
      v. navigational facilities associated with the area or route along which the flight is to take place.
   b. Depending on the complexity of the area or route, as assessed by the operator, the following methods of familiarisation should be used:
      i. for the less complex areas or routes, familiarisation by self-briefing with route documentation, or by means of programmed instruction; and
      ii. in addition, for the more complex areas or routes, in-flight familiarisation as a pilot-in-command/commander or co-pilot under supervision, observer, or familiarisation in a flight simulation training device (FSTD) using a database appropriate to the route concerned.
2. Aerodrome knowledge
   a. Aerodrome training should include knowledge of obstructions, physical layout, lighting, approach aids and arrival, departure, holding and instrument approach procedures, applicable operating minima and ground movement considerations.
   b. The operations manual should describe the method of categorisation of aerodromes and, in the case of commercial air transport operations, provide a list of those aerodrome categorised as B or C.
   c. All aerodromes to which an operator operates should be categorised in one of these three categories:
      i. Category A -an aerodrome which meets all of the following requirements:
         A. an approved instrument approach procedure;
         B. at least one runway with no performance limited procedure for take-off and/or landing;
         C. published circling minima not higher than 1000 ft above aerodrome level; and
         D. night operations capability.

ii. Category B -an aerodrome which does not meet the category A requirements or which requires extra considerations such as:

A. non-standard approach aids and/or approach patterns;

B. unusual local weather conditions;

C. unusual characteristics or performance limitations; or

D. any other relevant considerations including obstructions, physical layout, lighting etc.

iii. Category C -an aerodrome which requires additional considerations to a category B aerodrome;

iv. Offshore installations may be categorised as Category B or C aerodromes, taking into account the limitations determined in accordance withAMC2-CAT.OP.105.H Use of operating sites - helidecks.

3. Prior to operating to:

a. a category B aerodrome, the pilot-in-command/commander should be briefed, or self-briefed by means of programmed instruction, on the category B aerodrome(s) concerned. The completion of the briefing should be recorded. This recording may be accomplished after completion or confirmed by the pilot-in-command/commander before departure on a flight involving category B aerodrome(s) as destination or alternate aerodromes.

b. a category C aerodrome, the pilot-in-command/commander should be briefed and visit the aerodrome as an observer and/or undertake instruction in an FSTD. The completion of the briefing, visit and/or instruction should be recorded.

AMC1-OR.OPS.FC.105(c) Designation as pilot-in-command/commander

ROUTE/AREA AND AERODROME RECENCY

1. The 12-month period should be counted from the last day of the month:

a. when the familiarisation training was undertaken; or

b. of the latest operation on the route or area to be flown and of the aerodromes, facilities and procedures to be used.

2. When the operation is undertaken within the last three calendar months of that period, the new 12-month period should be counted from the original expiry date.

AMC2-OR.OPS.FC.105(c) Designation as pilot-in-command/commander

ROUTE/AREA AND AERODROME RECENCY - COMMERCIAL OPERATIONS OTHER THAN COMMERCIAL AIR TRANSPORT AND PERFORMANCE CLASS B AEROPLANES OPERATED UNDER VISUAL FLIGHT RULES (VFR)BY NIGHT OR INSTRUMENT FLIGHT RULES (IFR)IN COMMERCIAL AIR TRANSPORT OPERATIONS

In the case of commercial operations other than commercial air transport and commercial air transport operations with performance class B aeroplanes operating VFR by night or IFR, the knowledge should be maintained as follows:

1. except for operations to the most demanding aerodromes, by completion of at least 10 flight sectors within the area of operation during the preceding 12 months in addition to any required self briefing;

2. operations to the most demanding aerodromes may be performed only if:

a. the pilot-in-command/commander has been qualified at the aerodrome within the preceding 36 months by a visit as an operating flight crew member or as an observer;

b. the approach is performed in visual meteorological conditions (VMC) from the applicable minimum sector altitude; and

c. an adequate self-briefing has been made prior to the flight.

GM1-OR.OPS.FC.105(d) Designation as pilot-in-command/commander

PERFORMANCE CLASS B AEROPLANES OPERATED VFR DAY IN COMMERCIAL AIR TRANSPORT OPERATIONS

For VFR day commercial air transport operations with performance class B aeroplanes, the operator should take account of any requirement that might be stipulated in specific cases by the State of the aerodrome.

AMC1-OR.OPS.FC.125 Differences and familiarisation training

GENERAL

1. Differences training requires additional knowledge and training on the aircraft or an appropriate training device. It should be carried out:

   a. when introducing a significant change of equipment and/or procedures on types or variants currently operated; and

   b. in the case of aeroplanes, when operating another variant of an aeroplane of the same type or another type of the same class currently operated; or

   c. in the case of helicopters, when operating a variant of a helicopter currently operated.

2. Familiarisation training requires only the acquisition of additional knowledge. It should be carried out when:

   a. operating another helicopter or aeroplane of the same type; or

   b. when introducing a significant change of equipment and/or procedures on types or variants currently operated.

AMC1-OR.OPS.FC.145(b) Provision of training

OPERATIONAL SUITABILITY DATA

When establishing the training programmes and syllabi, the operator should use the recommendations of the operational suitability data established in accordance with Part-21 for the relevant types.

AMC1-OR.OPS.FC.145(d) Provision of training

FLIGHT SIMULATION TRAINING DEVICES (FSTDS)

An operator should classify any differences between the aircraft and FSTD in accordance with the Air Transport Association (ATA) chapters as follows:

Compliance Levels

1. Level A differences:

   a. no influence on flight characteristics;

   b. no influence on procedures (normal and/or abnormal);

c. differences in presentation; and

d. differences in operation.

Method: self-instruction via the operations manual or flight crew information.

2. Level B differences:

a. no influence on flight characteristics;

b. influence on procedures (normal and/or abnormal); and

c. possible differences in presentation and operation.

Method: flight crew information, computer-based training, system device training or special instruction by instructor.

3. Level C differences:

a. influence on flight characteristics;

b. influence on procedures (normal and/or abnormal); and

c. eventually differences in presentation and operation.

Method: special instruction by instructor, a selected partial training on another FSTD or aircraft or a waiver because of previous experience, special instruction or training programme.

4. Level D differences:

a. influence on flight characteristics; and/or

b. influence on procedures (normal and/or abnormal); and/or

c. differences in presentation and/or operation; and

d. FSTD is level D qualified and is used for zero flight-time training (ZFTT).

Method: a specified partial training on another FSTD or aircraft or a waiver because of previous experience, special instruction or training programme

CHAPTER 2 - ADDITIONAL REQUIREMENTS FOR COMMERCIAL AIR TRANSPORT OPERATIONS

AMC1-OR.OPS.FC.200(a) Composition of flight crew

CREWING OF INEXPERIENCED FLIGHT CREW MEMBERS

The operator should establish procedures in the operations manual taking into account the following elements:

Aeroplanes

1. An operator should consider that a flight crew member is inexperienced, following completion of a type rating or command course, and the associated line flying under supervision, until he/she has achieved on the type either:
   a. 100 flight hours and flown 10 sectors within a consolidation period of 120 consecutive days; or
   b. 150 flight hours and flown 20 sectors (no time limit).
2. A lesser number of flight hours or sectors, subject to any other conditions which the competent authority may impose, may be acceptable to the competent authority when one of the following applies:
   a. a new operator is commencing operations;
   b. an operator introduces a new aeroplane type;
   c. flight crew members have previously completed a type conversion course with the same operator;
   d. credits are defined in the operational suitability data established in accordance with Part-21; or
   e. the aeroplane has a maximum take-off mass of less than 10 tonnes or a maximum passenger seating configuration of less than 20.

Helicopters

3. An operator should consider that, when two flight crew members are required, a flight crew member, following completion of a type rating or command course, and the associated line flying under supervision, is inexperienced until either:
   a. he/she has achieved 50 flight hours on the type and/or in the role within a period of 60 days; or
   b. he/she has achieved 100 flight hours on the type and/or in the role (no time limit).
4. A lesser number of flight hours, on the type and/or in the role, and subject to any other conditions which the competent authority may impose, may be acceptable to the competent authority when one of the following applies:
   a. a new operator is commencing operations;
   b. an operator introduces a new helicopter type; or
   c. flight crew members have previously completed a type conversion course with the same operator (reconversion); or
   d. credits are defined in the operational suitability data established in accordance with Part-21.

AMC1-OR.OPS.FC.205.H Command course

COMBINED UPGRADING AND CONVERSION COURSE– HELICOPTER

If a pilot is converting from one helicopter type or variant to another when upgrading to commander:

1. the command course should also include a conversion course in accordance with OR.OPS.FC.220; and
2. additional flight sectors should be required for a pilot transitioning onto a new type of helicopter.

AMC1-OR.OPS.FC.115&215 Crew Resource Management (CRM)

CRM TRAINING

1. General

a. Crew Resource Management (CRM) is the effective utilisation of all available resources (e.g. crew members, aircraft systems, supporting facilities and persons) to achieve safe and efficient operation.

b. The objective of CRM is to enhance the communication and management skills of the flight crew member concerned. The emphasis is placed on the non-technical aspects of flight crew performance.

c. CRM training should reflect the culture of the operator as well as type of operation and be conducted by means of both classroom training and practical exercises including group discussions and accident and serious incident reviews to analyse communication problems and instances or examples of a lack of information or crew management.

d. Whenever it is practicable to do so, consideration should be given to conducting relevant parts of CRM training in FSTDs which reproduce, in an acceptable way, a realistic operational environment and permit interaction. This includes, but is not limited to, appropriate line oriented flight training (LOFT) scenarios conducted in FSTDs.

e. It is recommended that, whenever possible, initial CRM training be conducted in a group session away from the pressures of the usual working environment so that the opportunity is provided for flight crew members to interact and communicate in an environment conducive to learning.

2. Initial CRM Training

   a. Initial CRM training programmes are designed to provide knowledge of, and familiarity with, human factors relevant to flight operations. The course duration should be a minimum of one day for single-pilot operations and two days for all other types of operations. It should cover all the elements indicated in paragraph 6 below.

   b. A CRM trainer should:

      i. possess group facilitation skills;

      ii. have and maintain adequate knowledge of the operation and the aircraft type, preferably through current commercial air transport experience as a flight crew member;

      iii. have successfully passed the human performance and limitations (HPL) examination whilst recently obtaining the airline transport pilot licence (ATPL) in accordance with Part-FCL; or followed a theoretical HPL course covering the whole syllabus of the HPL examination;

iv. have completed initial CRM training;

v. have received additional education in the fields of group management, group dynamics and personal awareness;

vi. be supervised by suitably qualified CRM training personnel when conducting his/her first initial CRM training session.

c. An operator should ensure that initial CRM training addresses the nature of the operations of the operator concerned, as well as the associated procedures and the culture of the operator. This will include areas of operations that produce particular difficulties or involve adverse climatic conditions and any unusual hazards.

d. If the operator does not have sufficient means to establish initial CRM training, use may be made of a course provided by another operator, or a third party or training organisation. In this event the operator should ensure that the content of the course meets his/her operational requirements. When crew members from several companies follow the same course, CRM core elements should be specific to the nature of operations of the companies and the trainees concerned.

e. A flight crew member's CRM skills should not be assessed during initial CRM training.

3. Operator conversion course – CRM training

a.. If the flight crew member undergoes a conversion course with a change of aircraft type, elements of CRM should be integrated into all appropriate phases of the operator's conversion course, in accordance with paragraph 6 below.

b. If the flight crew member undergoes a conversion course with a change of operator, elements of CRM should be integrated into all appropriate phases of the operator's conversion course, in accordance with paragraph 6 below.

c. A flight crew member should not be assessed when completing elements of CRM training that are included in the operator conversion course.

4. Command course – CRM training

a. An operator should ensure that elements of CRM are integrated into the command course in accordance with paragraph 6 below.

b. A flight crew member should not be assessed when completing elements of CRM training that are included in the command course, although feedback should be given.

5. Recurrent CRM training

a. An operator should ensure that:

i. elements of CRM are integrated into all appropriate phases of recurrent training every year, in accordance with paragraph 6 below, and that modular CRM training covers the same areas over a maximum period of three years; and

ii. relevant modular CRM training is conducted by CRM trainers qualified according to paragraph 2.b.

b. A flight crew member should not be assessed when completing elements of CRM training that are included in the recurrent training.

6. Implementation of CRM

a. The following table indicates which elements of CRM should be included in each type of training:

Table 1: Elements of CRM to be included in training

<table>
<tr><th>Core Elements</th><th>Initial CRM Training</th><th>Operator conversion course when changing type</th><th>Operator conversion course when changing operator</th><th>Command course</th><th>Recurrent training</th></tr>
<tr><td>Human error and reliability, error chain, error prevention and detection</td><td rowspan="9">In-depth</td><td>In-depth</td><td>Overview</td><td>Overview</td><td rowspan="9">Overview</td></tr>
<tr><td>Operator safety culture, standard operating procedures (SOPs), organisational factors</td><td rowspan="2">Not required</td><td>In-depth</td><td rowspan="8">In-depth</td></tr>
<tr><td>Stress, stress management, fatigue & vigilance</td><td rowspan="4">Not required</td></tr>
<tr><td>Information acquisition and processing situation awareness, workload management</td><td rowspan="4">Overview</td></tr>
<tr><td>Decision making</td></tr>
<tr><td>Communication and coordination inside and outside the flight crew compartment</td><td rowspan="2">Overview</td></tr>
<tr><td>Leadership and team behaviour synergy</td></tr>
<tr><td>Automation, philosophy of the use of automation (if relevant to the type)</td><td rowspan="2">As required</td><td rowspan="2">In-depth</td><td>In-depth</td><td rowspan="2">As required</td><td rowspan="2">As required</td></tr>
<tr><td>Specific type-related differences</td><td>Not required</td></tr>
</table>

Case studies	In-depth	In-depth	In-depth	In-depth	In-depth

7. Coordination between flight crew and cabin/technical crew training

   a. Operators should, as far as practicable, provide combined training for flight crew and cabin/technical crew including briefing and debriefing.

   b. There should be an effective liaison between flight crew and cabin/technical crew training departments. Provision should be made for transfer of relevant knowledge and skills between flight and cabin/technical crew instructors.

8. Assessment of CRM Skills

   a. Assessment of CRM skills is the process of observing, recording, interpreting and debriefing crews and crew member's performance and knowledge using an acceptable methodology in the context of overall performance. It includes the concept of self-critique, and feedback which can be given continuously during training or in summary following a check. In order to enhance the effectiveness of the programme this methodology should, where possible, be agreed with flight crew representatives.

   b. NOTECHS (non-technical skills evaluation) or other acceptable methods of assessment should be used. The selection criteria and training requirements of the assessors and their relevant qualifications, knowledge and skills should be established.

   c. Assessment of CRM skills should:

      i. provide feedback to the crew and the individual and serve to identify retraining where needed; and

      ii. be used to improve the CRM training system.

   d. Prior to the introduction of CRM skills assessment, a detailed description of the CRM methodology including terminology used should be published in the operations manual.

   e. Methodology of CRM skills assessment:

      i. An operator should establish the CRM training programme including an agreed terminology. This should be evaluated with regard to methods, length of training, depth of subjects and effectiveness.

      ii. A training and standardisation programme for training personnel should then be established.

      iii. The assessment should be based on the following principles:

         A. only observable, repetitive behaviours are assessed;

         B. the assessment should positively reflect any CRM skills that result in enhanced safety;

         C. assessments should include behaviour which contributes to a technical failure, such technical failure being errors leading to an event that requires debriefing by the person conducting the line check; and

         D. the crew and, where needed, the individual are verbally debriefed.

   f. De-identified summaries of all CRM assessments by the operator should be used to provide feedback to update and improve the operator's CRM training.

   g. Operators should establish procedures, including retraining, to be applied in the event that personnel do not achieve or maintain the required standards.

h. If the operator proficiency check is combined with the type rating revalidation/renewal check, the assessment of CRM skills will satisfy the multi-crew cooperation requirements of the type rating revalidation/renewal. This assessment will not affect the validity of the type rating.

9. Levels of Training.

a. Overview. When overview training is required it will normally be instructional in style. Such training should refresh knowledge gained in earlier training.

b. In-Depth. When in-depth training is required it will normally be interactive in style and should include, as appropriate, case studies, group discussions, role play and consolidation of knowledge and skills. Core elements should be tailored to the specific needs of the training phase being undertaken.

10. Use of automation.

a. The operator conversion course should include training in the use and knowledge of automation and in the recognition of systems and human limitations associated with the use of automation. An operator should therefore ensure that a flight crew member receives training on:

i. the application of the operations policy concerning the use of automation as stated in the operations manual; and

ii. system and human limitations associated with the use of automation.

b. The objective of this training should be to provide appropriate knowledge, skills and behavioural patterns for managing and operating automated systems. Special attention should be given to how automation increases the need for crews to have a common understanding of the way in which the system performs, and any features of automation which make this understanding difficult.

AMC2-OR.OPS.FC.115 &.215 Crew Resource Management (CRM)

CRM TRAINER

As an alternative to paragraph 2.b. of AMC1-OR.OPS.FC.115&215, the following qualifications and experience are also acceptable for a CRM trainer:

1. a flight crew member holding a recent qualification as a CRM trainer may continue to be a CRM trainer even after the cessation of active flying duties;

2. an experienced non-flight crew CRM trainer having a knowledge of HPL; and

3. a former flight crew member having knowledge of HPL may become a CRM trainer if he/she maintains adequate knowledge of the operation and aircraft type and meets the provisions of AMC1-OR.OPS.FC.115 & .215, paragraphs 2.b.i., iv., v. and vi.

AMC1-OR.OPS.FC.220 Operator conversion training and checking

OPERATOR CONVERSION TRAINING SYLLABUS

1. General

a. The operator conversion training should include, in the following order:

i. ground training and checking, including aircraft systems, and normal, abnormal and emergency procedures;

ii. emergency and safety equipment training and checking, (completed before any flight training in an aircraft commences);

iii. flight training and checking (aircraft and/or FSTD); and

iv. line flying under supervision and line check.

b. When a flight crew member has not previously completed an operator's conversion course, he/she should undergo general first-aid training and, if applicable, ditching procedures training using the equipment in water.

c. Where the emergency drills require action by the non-handling pilot, the check should additionally cover knowledge of these drills.

d. The operator's conversion may be combined with a new type/class rating training as required by Part-FCL.

e. The operator should ensure that the personnel integrating elements of CRM into conversion training are suitably qualified.

2. Ground training

a. Ground training should comprise a properly organised programme of ground instruction supervised by training staff with adequate facilities, including any necessary audio, mechanical and visual aids. Self-study using appropriate electronic learning aids, computer-based training (CBT) etc. may be used with adequate supervision of the standards achieved. However, if the aircraft concerned is relatively simple, unsupervised private study may be adequate if the operator provides suitable manuals and/or study notes.

b. The course of ground instruction should incorporate formal tests on such matters as aircraft systems, performance and flight planning, where applicable.

3. Emergency and safety equipment training and checking

a. Emergency and safety equipment training should take place in conjunction with cabin/technical crew undergoing similar training with emphasis on coordinated procedures and two-way communication between the flight crew compartment and the cabin.

b. On the initial conversion course and on subsequent conversion courses as applicable, the following should be addressed:

i. Instruction on first-aid in general (initial conversion course only); instruction on first-aid as relevant to the aircraft type of operation and crew complement including those situations where no cabin crew is required to be carried (initial and subsequent);

ii. Aero-medical topics including:

A. hypoxia;

B. hyperventilation;

C. contamination of the skin/eyes by aviation fuel or hydraulic or other fluids;

D. hygiene and food poisoning; and

E. malaria.

iii. The effect of smoke in an enclosed area and actual use of all relevant equipment in a simulated smoke-filled environment;

iv. Actual fire fighting, using equipment representative of that carried in the aircraft on an actual or simulated fire except that, with Halon extinguishers, an alternative extinguisher may be used;

v. The operational procedures of security, rescue and emergency services;

vi. Survival information appropriate to their areas of operation (e.g. polar, desert, jungle or sea) and training in the use of any survival equipment required to be carried;

vii. A comprehensive drill to cover all ditching procedures should be practised where flotation equipment is carried. This should include practice of the actual donning and inflation of a life-jacket, together with a demonstration or audio-visual presentation of the inflation of life-rafts and/or slide-rafts and associated equipment. This practice should, on an initial conversion course, be conducted using the equipment in water, although previous certified training with another operator or the use of similar equipment will be accepted in lieu of further wet-drill training; and

viii. Instruction on the location of emergency and safety equipment, correct use of all appropriate drills, and procedures that could be required of flight crew in different emergency situations. Evacuation of the aircraft (or a representative training device) by use of a slide where fitted should be included when the operations manual procedure requires the early evacuation of flight crew to assist on the ground.

4. Flight training

a. Flight training should be conducted to familiarise the flight crew member thoroughly with all aspects of limitations and normal, abnormal and emergency procedures associated with the aircraft and should be carried out by suitably qualified class and type rating instructors and/or examiners. For specialised operations such as steep approaches, ETOPS, or operations based on QFE, additional training should be carried out, based on any additional elements of training defined for the aircraft type in the operational suitability data in accordance with Part-21, where they exist.

b. In planning flight training on aircraft with a flight crew of two or more, particular emphasis should be placed on the practice of line oriented flight training (LOFT) with emphasis on CRM, and the use of crew coordination procedures, including coping with incapacitation.

c. Normally, the same training and practice in the flying of the aircraft should be given to co-pilots as well as commanders. The ‘flight handling’ sections of the syllabus for commanders and co-pilots alike should include all the requirements of the operator proficiency check required by OR.OPS.FC.230.

d. Unless the type rating training programme has been carried out in an FSTD usable for zero flight-time training (ZFTT), the training should include at least three take-offs and landings in the aircraft.

5. Line flying under supervision

a. Following completion of flight training and checking as part of the operator’s conversion course, each flight crew member should operate a minimum number of sectors and/or flight hours under the supervision of a flight crew member nominated by the operator.

b. The minimum flight sectors/hours should be specified in the operations manual and should be determined by the following:

i. previous experience of the flight crew member;

ii. complexity of the aircraft; and

iii. the type and area of operation.

c. For performance class B aeroplanes, the amount of LIFUS required is dependent on the complexity of the operations to be performed.

6. Passenger handling for operations where no cabin crew is required

Other than general training on dealing with people, emphasis should be placed on the following:

a. advice on the recognition and management of passengers who appear or become intoxicated with alcohol, under the influence of drugs or aggressive;

b. methods used to motivate passengers and the crowd control necessary to expedite an aircraft evacuation; and

c. the importance of correct seat allocation with reference to aircraft mass and balance. Particular emphasis should also be given on the seating of special categories of passengers.

7. Discipline and responsibilities, for operations where no cabin crew is required

Amongst other subjects, emphasis should be placed on discipline and an individual's responsibilities in relation to:

a. his/her ongoing competence and fitness to operate as a crew member with special regard to flight time limitation requirements; and

b. security procedures.

8. Passenger briefing/safety demonstrations, for operations where no cabin crew is required

Training should be given in the preparation of passengers for normal and emergency situations.

AMC2-OR.OPS.FC.220 Operator conversion training and checking

OPERATOR CONVERSION TRAINING SYLLABUS – FLIGHT ENGINEERS

1. Operator conversion training for flight engineers should approximate to that of pilots.
2. If the flight crew includes a pilot with the duties of a flight engineer, he/she should, after training and the initial check in these duties, operate a minimum number of flight sectors under the supervision of a nominated additional flight crew member. The minimum figures should be specified in the operations manual and should be selected after due note has been taken of the complexity of the aircraft and the experience of the flight crew member.

GM1-OR.OPS.FC.220(a)(2) Operator conversion training and checking

COMPLETION OF AN OPERATOR'S CONVERSION COURSE

1. An operator conversion course is deemed to have started when the flight training has begun. The theoretical element of the course may be undertaken ahead of the practical element.
2. Under certain circumstances the course may have started and reached a stage where, for unforeseen reasons, it is not possible to complete it without a delay. In these circumstances the operator may allow the pilot to revert to the original type.
3. Before the resumption of the operator conversion course, the operator should evaluate how much of the course needs to be re-covered before continuing with the remainder of the course.

GM1-OR.OPS.FC.220(c) Operator conversion training and checking

LINE FLYING UNDER SUPERVISION

1. Line flying under supervision provides the opportunity for a flight crew member to carry into practice the procedures and techniques he/she has been made familiar with during the ground and flight training of an operator conversion course. This is accomplished under the supervision of a flight crew member specifically nominated and trained for the task. At the end of line flying under supervision the respective crew member should be able to perform a safe and efficient flight conducted within the tasks of his/her crew member station.
2. A variety of reasonable combinations may exist with respect to:
   a. a flight crew member's previous experience;
   b. the complexity of the aircraft concerned; and
   c. the type of route/role/area operations.
3. Aeroplanes.

The following minimum figures for details to be flown under supervision are guidelines for operators to use when establishing their individual requirements:

a. turbo-jet aircraft
   i. co-pilot undertaking first operator conversion course:
      A. total accumulated 100 hours or minimum 40 flight sectors;
   ii. co-pilot upgrading to commander:

A. minimum 20 flight sectors when converting to a new type;

B. minimum 10 flight sectors when already qualified on the aeroplane type.

AMC1-OR.OPS.FC.230 Recurrent training and checking

RECURRENT TRAINING SYLLABUS

1. Recurrent training

Recurrent training should comprise:

a. Ground training

i. The ground training programme should include:

A. aircraft systems;

B. operational procedures and requirements including ground de-icing/anti-icing and pilot incapacitation; and

C. accident/incident and occurrence review.

ii. Knowledge of the ground training should be verified by a questionnaire or other suitable methods.

iii. When the ground training is conducted within three calendar months prior to the expiry of the 12 calendar months period, the next ground and refresher training should be completed within 12 calendar months of the original expiry date of the previous training.

b. Emergency and Safety Equipment Training

i. Emergency and safety equipment training may be combined with emergency and safety equipment checking and should be conducted in an aircraft or a suitable alternative training device.

ii. Every year the emergency and safety equipment training programme should include the following:

A. actual donning of a life-jacket, where fitted;

B. actual donning of protective breathing equipment, where fitted;

C. actual handling of fire extinguishers of the type used;

D. instruction on the location and use of all emergency and safety equipment carried on the aircraft;

E. instruction on the location and use of all types of exits; and

F. security procedures.

iii. Every three years the programme of training should include the following:

A. actual operation of all types of exits;

B. demonstration of the method used to operate a slide where fitted;

C. actual fire-fighting using equipment representative of that carried in the aircraft on an actual or simulated fire except that, with Halon extinguishers, an alternative extinguisher may be used;

D. the effects of smoke in an enclosed area and actual use of all relevant equipment in a simulated smoke-filled environment;

E. actual handling of pyrotechnics, real or simulated, where applicable;

F. demonstration in the use of the life-rafts where fitted. In the case of helicopters involved in extended over water operations, demonstration and use of the life-rafts.

Helicopter water survival training

Where life-rafts are fitted for helicopter extended over water operations (such as sea pilot transfer, offshore operation, regular, or scheduled, coast-to-coast over-water operations), a comprehensive wet drill to cover all ditching procedures should be practised by aircraft crews. This wet drill is to include, as appropriate, practice of the actual donning and inflation of a life-jacket, together with a demonstration or audio-visual presentation of the inflation of life-rafts. Crews should board the same (or similar) life-rafts from the water whilst wearing a life-jacket. Training should include the use of all survival equipment carried on board life-rafts and any additional survival equipment carried separately on board the aircraft;

- Consideration should be given to the provision of further specialist training such as underwater escape training. Where operations are predominately conducted offshore, operators are to conduct three-yearly helicopter underwater escape training at an appropriate facility;
- Wet practice drill should always be given in initial training unless the crew member concerned has received similar training provided by another operator;

and

G. particularly in the case where no cabin crew is required, first-aid, appropriate to the aircraft type, the kind of operation and crew complement.

iv. The successful resolution of aircraft emergencies requires interaction between flight crew and cabin/technical crew and emphasis should be placed on the importance of effective coordination and two-way communication between all crew members in various emergency situations.

v. Emergency and safety equipment training should include joint practice in aircraft evacuations so that all who are involved are aware of the duties other crew members should perform. When such practice is not possible, combined flight crew and cabin/technical crew training should include joint discussion of emergency scenarios.

vi. Emergency and safety equipment training should, as far as practicable, take place in conjunction with cabin/technical crew undergoing similar training with emphasis on coordinated procedures and two-way communication between the flight crew compartment and the cabin.

c. Crew resource management (CRM)

i. Elements of CRM should be integrated into all appropriate phases of recurrent training.

ii. A specific modular CRM training programme should be established such that all major topics of CRM training are covered over a period not exceeding three years, as follows:

A. human error and reliability, error chain, error prevention and detection;

B. operator safety culture, standard operating procedures (SOPs), organisational factors;

C. stress, stress management, fatigue and vigilance;

D. information acquisition and processing, situation awareness, workload management;

E. decision making;

F. communication and coordination inside and outside the flight crew compartment;

G. leadership and team behaviour, synergy;

H. automation and philosophy of the use of automation (if relevant to the type);

I. specific type-related differences;

J. case studies; and

K. additional areas which warrant extra attention, as identified by the safety management system.

iii. Operators should establish procedures to update their CRM recurrent training programme. Revision of the programme should be conducted over a period not exceeding three years. The revision of the programme should take into account the de-identified results of the CRM assessments of crews, and information identified by the safety management system.

d. Aircraft/FSTD training

i. General

A. The aircraft/FSTD training programme should be established in a way that all major failures of aircraft systems and associated procedures will have been covered in the preceding three year period.

B. When engine-out manoeuvres are carried out in an aircraft, the engine failure should be simulated.

C. Aircraft/FSTD training may be combined with the operator proficiency check.

D. When the aircraft/FSTD training is conducted within three calendar months prior to the expiry of the 12 calendar months period, the next aircraft/FSTD training should be completed within 12 calendar months of the original expiry date of the previous training.

ii. Helicopters

A. Where a suitable FSTD is available it should be used for the aircraft/FSTD training programme. If the operator is able to demonstrate, on the basis of a compliance and risk assessment, that using an aircraft for this training provides equivalent standards of training with safety levels similar to those achieved using an FSTD, the aircraft may be used for this training to the extent necessary.

B. The recurrent training should include the following additional items, which should be completed in an FSTD:

- settling with power and vortex ring; and
- loss of tail rotor effectiveness.

e. For operations with other-than-complex motor-powered aeroplanes, all training and checking should be relevant to the type of operation and class of aeroplane

on which the flight crew member operates with due account taken of any specialised equipment used.

2. Recurrent checking

Recurrent checking should comprise:

a. Operator proficiency checks

i. Aeroplanes

Where applicable, operator proficiency checks should include the following manoeuvres as pilot flying:

- rejected take-off when an FSTD is available to represent that specific aeroplane, otherwise touch drills only;
- take-off with engine failure between V_1 and V_2 or, if carried out in an aeroplane, at a safe speed above V_2;
- precision instrument approach to minima with, in the case of multi-engine aeroplanes, one-engine-inoperative;
- non-precision approach to minima;
- missed approach on instruments from minima with, in the case of multi-engined aeroplanes, one-engine-inoperative; and
- landing with one-engine-inoperative. For single-engine aeroplanes a practice forced landing is required.

ii. Helicopters

A. Where applicable, operator proficiency checks should include the following abnormal/emergency procedures:

- engine fire;
- fuselage fire;
- emergency operation of under carriage;
- fuel dumping;
- engine failure and relight;
- hydraulic failure;
- electrical failure;
- engine failure during take-off before decision point;
- engine failure during take-off after decision point;
- engine failure during landing before decision point;
- engine failure during landing after decision point;
- flight and engine control system malfunctions;
- recovery from unusual attitudes;
- landing with one or more engine(s) inoperative;
- IMC autorotation techniques;
- autorotation to a designated area;
- pilot incapacitation; and
- directional control failures and malfunctions.

B For pilots required to engage in IFR operations, proficiency checks include the following additional abnormal/emergency procedures:

- precision instrument approach to minima;
- go-around on instruments from minima with, in the case of multi-engined helicopters, a simulated failure of one engine;
- non-precision approach to minima;
- in the case of multi-engined helicopters, a simulated failure of one engine to be included in either the precision or non-precision approach to minima;
- landing with a simulated failure of one or more engines; and
- where appropriate to the helicopter type, approach with flight control system/flight director system malfunctions, flight instrument and navigation equipment failures.

C. Before a flight crew member without a valid instrument rating is allowed to operate VMC at night, he/she should be required to undergo a proficiency check at night. Thereafter, each second proficiency check should be conducted at night.

D. Once every 12 months the checks prescribed in sub-paragraph 2.a.ii.A. may be combined with the proficiency check for revalidation or renewal of the aircraft type rating.

E. Operator proficiency checks should be conducted by a type rating examiner (TRE) or a synthetic flight examiner (SFE), as applicable.

b. Emergency and safety equipment checks. The items to be checked should be those for which training has been carried out in accordance with paragraph 1.b. above.

c. Line checks

i. Line checks should establish the ability to perform satisfactorily a complete line operation including pre-flight and post-flight procedures and use of the equipment provided, as specified in the operations manual. The route chosen should be such as to give adequate representation of the scope of a pilot's normal operations. When weather conditions preclude a manual landing, an automatic landing is acceptable. The commander, or any pilot who may be required to relieve the commander, should also demonstrate his/her ability to 'manage' the operation and take appropriate command decisions.

ii. The flight crew should be assessed on their CRM skills in accordance with a methodology described in the operations manual. The purpose of such assessment is to:

A. provide feedback to the crew collectively and individually and serve to identify retraining; and

B. be used to improve the CRM training system.

iii. CRM assessment alone should not be used as a reason for a failure of the line check.

iv. When pilots are assigned duties as pilot flying and pilot monitoring they should be checked in both functions.

v. Line checks should be conducted by a commander nominated by the operator. The operator should inform the competent authority about the persons nominated. The person conducting the line check, who is described in 4.e.ii., should occupy an observer's seat where installed. His/her CRM assessments should solely be based on observations made during the initial

briefing, cabin briefing, flight crew compartment briefing and those phases where he/she occupies the observer's seat.

A. For aeroplanes, in the case of long haul operations where additional operating flight crew are carried, the person may fulfil the function of a cruise relief pilot and should not occupy either pilot's seat during take-off, departure, initial cruise, descent, approach and landing.

vi. Where a pilot is required to operate as pilot flying and pilot monitoring, he/she should be checked on one flight sector as pilot flying and on another flight sector as pilot monitoring. However, where an operator's procedures require integrated flight preparation, integrated cockpit initialisation and that each pilot performs both flying and monitoring duties on the same sector, then the line check may be performed on a single flight sector.

d. When the operator proficiency check, line check or emergency and safety equipment check are undertaken within the final three calendar months of validity of a previous check, the period of validity of the subsequent check should be counted from the expiry date of the previous check.

e. In the case of single-pilot operations with helicopters, the recurrent checks referred to in paragraphs 2.a., 2.b. and 2.cshould be performed in the single-pilot role on a particular helicopter type in an environment representative of the operation.

3. Flight crew incapacitation training, except single-pilot operations

a. Procedures should be established to train flight crew to recognise and handle flight crew incapacitation. This training should be conducted every year and can form part of other recurrent training. It should take the form of classroom instruction, discussion, audio-visual presentation or other similar means.

b. If an FSTD is available for the type of aircraft operated, practical training on flight crew incapacitation should be carried out at intervals not exceeding three years.

4. Personnel providing training and checking

Training and checking should be provided by the following personnel:

a. ground and refresher training by suitably qualified personnel;

b. flight training by a flight instructor (FI), type rating instructor (TRI) or class rating instructor (CRI) or, in the case of the FSTD content, a synthetic flight instructor (SFI), providing that the FI, TRI, CRI or SFI satisfies the operator's experience and knowledge requirements sufficient to instruct on the items specified in paragraphs 1.a.i. A. and B.;

c. emergency and safety equipment training by suitably qualified personnel; and

d. CRM:

i. integration of CRM elements into all the phases of the recurrent training by all the personnel conducting recurrent training. The operator should ensure that all personnel conducting recurrent training are suitably qualified to integrate elements of CRM into this training;

ii. modular CRM training by at least one CRM trainer who may be assisted by experts in order to address specific areas.

e. Recurrent checking should be conducted by the following personnel:

i. Operator proficiency check by a type rating examiner (TRE), class rating examiner (CRE) or, if the check is conducted in a FSTD, a TRE, CRE or a synthetic flight examiner (SFE), trained in CRM concepts and the

assessment of CRM skills. For operations of other than complex motor-powered helicopters by day and over routes navigated by reference to visual landmarks and performance class B aeroplanes, the check may be conducted by a suitably qualified commander nominated by the operator, trained in CRM concepts and the assessment of CRM skills. The operator should inform the competent authority about the persons nominated.

ii. Line checks by a suitably qualified commander nominated by the operator, trained in CRM concepts and the assessment of CRM skills;

iii. Emergency and safety equipment checking by suitably qualified personnel.

5. Use of FSTD

a. Training and checking provides an opportunity for the practice of abnormal/emergency procedures which rarely arise in normal operations and is a part of a structured programme of recurrent training. This should be carried out in an FSTD whenever possible.

b. The line check is performed in the aircraft. All other training and checking should be performed in an FSTD, or, if it is not reasonably practicable to gain access to such devices, in an aircraft of the same type or in the case of emergency and safety equipment training, in a representative training device. The type of equipment used for training and checking should be representative of the instrumentation, equipment and layout of the aircraft type operated by the flight crew member.

c. Because of the unacceptable risk when simulating emergencies such as engine failure, icing problems, certain types of engine(s) (e.g. during continued take-off or go-around, total hydraulic failure etc.), or because of environmental considerations associated with some emergencies (e.g. fuel dumping) these emergencies should preferably be covered in an FSTD. If no FSTD is available these emergencies may be covered in the aircraft using a safe airborne simulation, bearing in mind the effect of any subsequent failure, and the exercise must be preceded by a comprehensive briefing.

AMC2-OR.OPS.FC.230 Recurrent training and checking

FLIGHT ENGINEERS

1. The recurrent training and checking for flight engineers should meet the requirements for pilots and any additional specific duties, omitting those items that do not apply to flight engineers.

2. Recurrent training and checking for flight engineers should, whenever possible, take place concurrently with a pilot undergoing recurrent training and checking.

3. A line check should be conducted by a commander or by a flight engineer nominated by the operator, in accordance with national rules, if applicable.

GM1-OR.OPS.FC.230 Recurrent training and checking

LINE CHECK AND PROFICIENCY TRAINING AND CHECKING

1. Line checks, route and aerodrome knowledge and recent experience requirements are intended to ensure the crew member's ability to operate efficiently under normal conditions, whereas other checks and emergency and safety equipment training are primarily intended to prepare the crew member for abnormal/emergency procedures.

2. The line check is considered a particularly important factor in the development, maintenance and refinement of high operating standards, and can provide the operator with a valuable indication of the usefulness of his/her training policy and

methods. Line checks are a test of a flight crew member's ability to perform a complete line operation, including pre-flight and post-flight procedures and use of the equipment provided, and an opportunity for an overall assessment of his/her ability to perform the duties required as specified in the operations manual. The line check is not intended to determine knowledge on any particular route.

3. Proficiency Training and Checking.

When an FSTD is used, the opportunity should be taken, where possible, to use line oriented flight training (LOFT).

AMC1-OR.OPS.FC.235.H(d) Pilot qualification to operate in either pilot's seat

SINGLE-ENGINE HELICOPTERS – AUTO-ROTATIVE LANDING

In the case of single-engine helicopters, the auto-rotative landing should be carried out from left- and right-hand seats on alternate proficiency checks.

GM1-OR.OPS.FC.235(f);(g) Pilot qualification to operate in either pilot's seat

DIFFERENCES BETWEEN LEFT AND RIGHT-HAND SEATS

The differences between left- and right-hand seats may not be significant in cases where for example the autopilot is used.

AMC1-OR.OPS.FC.240 Operation on more than one type or variant

GENERAL

1. Aeroplanes

a. When a flight crew member operates more than one aeroplane class, type or variant listed in Part-FCL and associated procedures for class-single pilot and/or type-single pilot, but not within a single licence endorsement, the operator should ensure that the flight crew member does not operate more than:

i. three reciprocating engine aeroplane types or variants;

ii. three turbo-propeller aeroplane types or variants;

iii. one turbo-propeller aeroplane type or variant and one reciprocating engine aeroplane type or variant; or

iv. one turbo-propeller aeroplane type or variant and any aeroplane within a particular class.

b. When a flight crew member operates more than one aeroplane type or variant within one or more licence endorsement as defined by Part-FCL and associated procedures for type – multi pilot, an operator should ensure that:

i. the minimum flight crew complement specified in the operations manual is the same for each type or variant to be operated;

ii. a flight crew member does not operate more than two aeroplane types or variants for which a separate licence endorsement is required, unless credits related to the training, checking, and recent experience requirements are defined in the operational suitability data (OSD) established in accordance with Part-21 for the relevant types or variants; and

iii. only aeroplanes within one licence endorsement are flown in any one flight duty period, unless the operator has established procedures to ensure adequate time for preparation.

c. When a flight crew member operates more than one aeroplane type or variant listed in Part-FCL and associated procedures for type-single pilot and type-multi pilot, but not within a single licence endorsement, an operator should comply with:

i. paragraph b. above; and

ii. paragraph d. below.

d. When a flight crew member operates more than one aeroplane type or variant listed in Part-FCL and associated procedures for type-multi pilot, but not within a single licence endorsement, or combinations of aeroplane types or variants listed in Part-FCL and associated procedures for class-single pilot and type-multi pilot, the operator should comply with the following:

i. paragraph b. above;

ii. before exercising the privileges of more than one licence endorsement:

A. Flight crew members should have completed two consecutive operator proficiency checks and should have:

- 500 hours in the relevant crew position in commercial air transport operations with the same operator; or

- for IFR and VFR night operations with performance class B aeroplanes, 100 hours or flight sectors in the relevant crew position in commercial air transport operations with the same operator, if at least one licence endorsement is related to a class. A check flight should be completed before the pilot is released for duties as commander.

B. In the case of a pilot having experience with an operator and exercising the privileges of more than one licence endorsement, and then being promoted to command with the same operator on one of those types, the required minimum experience as commander is six months and 300 hours, and the pilot should have completed two consecutive operator proficiency checks before again being eligible to exercise more than one licence endorsement.

iii. Before commencing training for and operation of another type or variant, flight crew members should have completed three months and 150 hours' flying on the base aeroplane which should include at least one proficiency check, unless credits related to the training, checking and recent experience requirements are defined in the OSD established in accordance with Part-21 for the relevant types or variants.

iv. After completion of the initial line check on the new type, 50 hours flying or 20 sectors should be achieved solely on aeroplanes of the new type rating, unless credits related to the training, checking and recent experience requirements are defined in the OSD established in accordance with Part-21 for the relevant types or variants.

v. Recent experience requirements established in Part-FCL for each type operated.

vi. The period within which line flying experience is required on each type should be specified in the operations manual.

vii. When credits are defined in the OSD established in accordance with Part-21 for the relevant type or variant, this should be reflected in the training required in OR.OPS.FC.230 and:

A. OR.OPS.FC.230(b) requires two operator proficiency checks every year. When credits are defined in the operational suitability data established in accordance with Part-21 for operator proficiency checks to alternate between the types, each operator proficiency check revalidates the operator proficiency check for the other type(s). The operator proficiency check may be combined with the proficiency checks for revalidation or renewal of the aeroplane type rating or the instrument rating in accordance with Part-FCL.

B. OR.OPS.FC.230(c) requires one line check every year. When credits are defined in the OSD established in accordance for Part-21 for line checks to alternate between types or variants, each line check revalidates the line check for the other type or variant.

C. Annual emergency and safety equipment training and checking should cover all requirements for each type.

2. Helicopters

a. If a flight crew member operates more than one type or variant the following provisions should be met:

i. The recency requirements and the requirements for recurrent training and checking should be met and confirmed prior to commercial air transport

operations on any type, and the minimum number of flights on each type within a three-month period specified in the operations manual.

ii. OR.OPS.FC.230 requirements with regard to recurrent training.

iii. When credits related to the training, checking and recent experience requirements are defined in the OSD established in accordance with Part-21 for the relevant types or variants, the requirements of OR.OPS.FC.230 with regard to proficiency checks may be met by a six monthly check on any one type or variant operated. However, a proficiency check on each type or variant operated should be completed every 12 months.

iv. For helicopters with a maximum certified take-off mass (MCTOM) of more than5700 kg, or with a maximum passenger seating configuration (MPSC) of more than 19:

A. the flight crew member should not fly more than two helicopter types, unless credits related to the training, checking and recent experience requirements are defined in the OSD established in accordance with Part-21 for the relevant types or variants;

B. a minimum of three months and 150 hours experience on the type or variant should be achieved before the flight crew member should commence the conversion course onto the new type or variant, unless credits related to the training, checking and recent experience requirements are defined in the OSD established in accordance with Part-21 for the relevant types or variants;

C. 28 days and/or 50 hours flying should then be achieved exclusively on the new type or variant, unless credits related to the training, checking and recent experience requirements are defined in the OSD established in accordance with Part-21 for the relevant types or variants; and

D. a flight crew member should not be rostered to fly more than one type or significantly different variant of a type during a single duty period.

v. In the case of all other helicopters, a flight crew member should not operate more than three helicopter types or significantly different variants, unless credits related to the training, checking and recent experience requirements are defined in the OSD established in accordance with Part-21 for the relevant types or variants.

3. Combination of helicopter and aeroplane

a. A flight crew member may fly one helicopter type or variant and one aeroplane type irrespective of their maximum certified take-off mass (MCTOM) or the maximum passenger seating configuration (MPSC).

b. If the helicopter type is covered by paragraph 2.a.iv. then paragraphs 2.a.iv.B., 2.a.iv.C. and 2.a.iv.D. should also apply in this case.

AMC2-OR.OPS.FC.240 Operation on more than one type or variant

METHODOLOGY - USE OF OPERATOR DIFFERENCE REQUIREMENT (ODR) TABLES – AEROPLANES

1. Before assigning flight crew members to operate more than one type or variant of aeroplanes, the operator should conduct a detailed evaluation of the differences and/or similarities of the aeroplanes concerned in order to establish appropriate procedures and/or operational restrictions. This evaluation should be based on the evaluation conducted and defined in the OSD established in accordance with Part-21 and should be adapted to the operator's specific aeroplane configurations. This evaluation should take into account of the following:

   a. the level of technology;

   b. operational procedures; and

   c. handling characteristics.

   The methodology described below should be used as a means of evaluating aeroplane differences and similarities to justify the operation of more than one type or variant, and when credit is sought.

2. ODR tables

   a. Before requiring flight crew members to operate more than one type or variant, operators should first nominate one aeroplane as the base aeroplane from which to show differences with the second aeroplane type or variant, the 'difference aeroplane', in terms of technology (systems), procedures, pilot handling and aeroplane management. These differences, known as operator difference requirements (ODR), preferably presented in tabular format, constitute part of the justification for operating more than one type or variant and also the basis for the associated differences/familiarisation training for the flight crew.

3. The ODR tables should be presented as follows:

Table 1 - ODR 1 – general

BASE AEROPLANE: DIFFERENCE AEROPLANE:				COMPLIANCE METHOD		
GENERAL	DIFFERENCES	FLT CHAR	PROC CHNG	Training	Checking	Recent Experience
General description of aircraft (dimensions weight, limitations, etc.)	Identification of the relevant differences between the base aeroplane and the difference aeroplane.	Impact on flight characteristics (performance and/or handling)	Impact on procedures (Yes or No)	Assessment of the difference levels according to Table 4		

Table 2 - ODR 2 - systems

BASE AEROPLANE: DIFFERENCE AEROPLANE:				COMPLIANCE METHOD		
SYSTEM	DIFFERENCES	FLT CHAR	PROC CHNG	Training	Checking	Recent Experience
Brief description of systems and subsystems classified according to the ATA 100 index.	list of differences for each relevant subsystem between the base aeroplane and the difference aeroplane.	Impact on flight characteristics (performance and/or handling)	Impact on procedures (Yes or No)	Assessment of the difference levels according to Table 4		

Table 3 - ODR 3 - manoeuvres

BASE AEROPLANE: DIFFERENCE AEROPLANE:				COMPLIANCE METHOD		
MANOEUVRES	DIFFERENCES	FLT CHAR	PROC CHNG	Training	Checking	Recent Experience
Described according to phase of flight (gate, taxi, flight, taxi, gate)	List of relevant differences for each manoeuvre between the base aeroplane and the difference aeroplane.	Impact on flight characteristics (performance and/or handling)	Impact on procedures (Yes or No)	Assessment of the difference levels according to Table 4		

4. Compilation of ODR Tables

a. ODR 1 - aeroplane - general

i. The general characteristics of the difference aeroplane should be compared with the base aeroplane with regard to:

A. general dimensions and aeroplane design;

B. cockpit general design;

C. cabin layout;

D. engines (number, type and position); and

E. limitations (flight envelope).

b. ODR 2 - aeroplane systems

i. Consideration should be given to differences in design between the difference aeroplane and the base aeroplane. This comparison should be completed using the ATA 100 index to establish system and subsystem classification and then an analysis performed for each index item with respect to main architectural, functional and/or operations elements, including controls and indications on the systems control panel.

c. ODR 3 - Aeroplane manoeuvres (operational differences)

i. Operational differences encompass normal, abnormal and emergency situations and include any change in aeroplane handling and flight management. It is necessary to establish a list of operational items for consideration on which an analysis of differences can be made. The operational analysis should take the following into account:

A. flight crew compartment dimensions (e.g. size, cut-off angle and pilot eye height);

B. differences in controls (e.g. design, shape, location, function);

C. additional or altered function (flight controls) in normal or abnormal conditions;

D. procedures;

E. handling qualities (including inertia) in normal and abnormal configurations;

F. performance in manoeuvres;

G. aeroplane status following failure; and

H. management (e.g. electronic centralised aircraft monitor (ECAM), engine indicating and crew alerting system (EICAS), navaid selection, automatic checklists).

d. Once the differences for ODR 1, ODR 2 and ODR 3 have been established, the consequences of differences evaluated in terms of flight characteristics (FLT CHAR) and change of procedures (PROC CHNG) should be entered into the appropriate columns.

e. Difference Levels - crew training, checking and currency

i. The final stage of an operator’s proposal to operate more than one type or variant is to establish crew training, checking and currency requirements. This may be established by applying the coded difference levels from Table 4 to the compliance method column of the ODR Tables.

5. Differences items identified in the ODR systems as impacting flight characteristics, and/or procedures, should be analysed in the corresponding ATA section of the ODR manoeuvres. Normal, abnormal and emergency situations should be addressed accordingly.

Table 4 - Difference Levels versus training

Difference Level	Method/minimum specification for training device
A: Represents knowledge requirement	Self-instruction through operating bulletins or differences handouts
B: Aided instruction is required to ensure crew understanding, emphasise issues, aid retention of information, or aided instruction with partial application of procedures	Aided instrucion e.g. computer-based training (CBT), classroom instruction or audio-visual presentations. Interactive CBT
C: For variants having part task differences affecting skills or abilities as well as knowledge. Training device required to ensure attainment and retention of crew skills	FSTD (flight trainning device (FTD)(A), Level 1)
D: Full task differences affecting knowledge, skills and/or abilities using FSTDs capable of performing flight manoeuvres.	FSTD (FTD(A), Level 2)
E: Full tasks differences requiring high fidelity environment to attain and maintain knowledge skills and abilities.	FSTD (full flight simulator (FFS), Level C)

a. Levels A and B require familiarisation training, levels C, D and E require differences training. For Level E, the nature and extent of the differences may be such that it is not possible to fly both types or variants with a credit in accordance with AMC1-OR.OPS.FC.235, 1.d.vii.

GM1-OR.OPS.FC.240 Operation on more than one type or variant

TERMINOLOGY AND PHILOSOPHY - AEROPLANES

1. Terminology

a. The terms used in the context of the operation of more than one type or variant have the following meaning:

i. Base aeroplane means an aeroplane, or a group of aeroplanes, designated by an operator or manufacturer and used as a reference to compare differences with other aeroplane types/variants within an operator's fleet.

ii. Aeroplane variant means an aeroplane, or a group of aeroplanes, with the same characteristics but which have differences from a base aeroplane which require additional flight crew knowledge, skills, and or abilities that affect flight safety.

iii. Credit means the recognition of training, checking or recent experience on one type or variant as being valid for another type or variant because of sufficient similarities between the two types or variants.

iv. Differences training. See AMC to FCL.710.

v. Familiarisation training. See AMC to FCL.710.

vi. Operator difference requirements (ODRs) means a formal description of differences between types or variants flown by a particular operator.

b. Training and checking difference levels

i. Level A

A. Training. Level A training can be adequately addressed through self-instruction by a crew member through page revisions, bulletins or differences handouts. Level A introduces a different version of a system or component which the crew member has already shown the ability to use and understand. The differences result in no, or only minor, changes in procedures.

B. Checking. A check related to differences is not required at the time of training. However, the crew member is responsible for acquiring the knowledge and may be checked during proficiency checking.

ii. Level B

A. Training. Level B training can be adequately addressed through aided instruction such as slide/tape presentation, computer-based instruction which may be interactive, aided by audio-visual presentations or classroom instruction. Such training is typically used for part-task systems requiring knowledge and training with, possibly, partial application of procedures (e.g. fuel or hydraulic systems etc.).

B. Checking. A written or oral check is required for initial and recurrent differences training.

iii. Level C

A. Training. Level C training should be accomplished by use of “hands-on” flight training device (FTD) Level 1 or higher. The differences affect skills, abilities as well as knowledge but do not require the use of “real time” devices. Such training covers both normal and non-normal procedures (for example for flight management systems).

B. Checking. An FSTD used for training level C or higher is used for a check of conversion and recurrent training. The check should utilise a “real time” flight environment such as the demonstration of the use of a flight management system. Manoeuvres not related to the specific task do not need to be tested.

iv. Level D

A. Training. Level D training addresses differences that affect knowledge, skills and abilities for which training will be given in a simulated flight environment involving “real time” flight manoeuvres for which the use of an FTD Level 1 would not suffice, but for which motion and visual clues are not required. Such training would typically involve an FTD Level 2.

B. Checking. A proficiency check for each type or variant should be conducted following both initial and recurrent training. However, credit may be given for manoeuvres common to each type or variant and need not be repeated. Items trained to level D differences may be checked in FTD Level 2. Level D checks will therefore comprise at

least a full proficiency check on one type or variant and a partial check at this level on the other.

v. Level E

A. Training. Level E provides a realistic and operationally oriented flight environment achieved only by the use of Level C or D full flight simulators (FFSs) or the aeroplane itself. Level E training should be conducted for types and variants which are significantly different from the base aeroplane and/or for which there are significant differences in handling qualities.

B. Checking. A proficiency check on each type or variant should be conducted in a level C or D FFS or the aeroplane itself. Either training or checking on each Level E type or variant should be conducted every six months. If training and checking are alternated, a check on one type or variant should be followed by training on the other so that a crew member receives at least one check every six months and at least one check on each type or variant every 12 months.

2. Philosophy

a. The concept of operating more than one type or variant depends upon the experience, knowledge and ability of the operator and the flight crew concerned.

b. The first consideration is whether or not the two aeroplane types or variants are sufficiently similar to allow the safe operation of both.

c. The second consideration is whether or not the types or variants are sufficiently similar for the training, checking and recent experience items completed on one type or variant to replace those required on the similar type or variant. If these aeroplanes are similar in these respects, then it is possible to have credit for training, checking and recent experience. Otherwise, all training, checking and recent experience requirements prescribed in this guidance material should be completed for each type or variant within the relevant period without any credit.

3. Differences between aeroplane types or variants

a. The first stage in any operator's submission for crew multi-type or variant operations is to consider the differences between the types or variants. The principal differences are in the following three areas:

i. Level of technology. The level of technology of each aircraft type or variant under consideration encompasses at least the following design aspects:

A. cockpit layout (e.g. design philosophy chosen by a manufacturer);

B. mechanical versus electronic instrumentation;

C. presence or absence of flight management system (FMS);

D. conventional flight controls (hydraulic, electric or manual controls) versus fly-by-wire;

E. side-stick versus conventional control column;

F. pitch trim systems; and

G. engine type and technology level (e.g. jet/turbo-propeller/reciprocating engine, with or without automatic protection systems.

ii. Operational differences. Consideration of operational differences involves mainly the pilot-machine interface, and the compatibility of the following:

A. paper checklist versus automated display of checklists or messages (e.g. ECAM, EICAS) during all procedures;

B. manual versus automatic selection of navaids;

C. navigation equipment; and

D. aircraft weight and performance.

iii. Handling characteristics. Consideration of handling characteristics includes control response, crew perspective and handling techniques in all stages of operation. This encompasses flight and ground characteristics as well as performance influences (e.g. number of engines). The capabilities of the autopilot and auto-thrust systems may affect handling characteristics as well as operational procedures.

4. Training, checking and crew management. Alternating training and proficiency checking may be permitted if the submission to operate more than one type or variant shows clearly that there are sufficient similarities in technology, operational procedures and handling characteristics.

5. An example of completed ODR tables for an operator's proposal for flight crews to operate more than one type or variant may appear as follows:

Table 1 - ODR 1 –aeroplane general

BASE AEROPLANE: 'X' DIFFERENCE AEROPLANE: 'Y'				COMPLIANCE METHOD		
GENERAL	DIFFERENCES	FLT CHAR	PROC CHNG	Training	Checking	Recent Experience
Flight crew compartment	Same cockpit arrangement, 2 observers seats on 'Y'	NO	NO	A	/	/
Cabin	'Y' max certificated passenger capacity: 335, 'X': 179	NO	NO	A	/	/

Table 2 - ODR 2 - systems

BASE AEROPLANE: 'X' DIFFERENCE AEROPLANE: 'Y'				COMPLIANCE METHOD		
SYSTEMS	DIFFERENCES	FLT CHAR	PROC CHNG	Training	Checking	Recent Experience
21 Air Conditioning	- Trim air system - packs - cabin	NO NO NO	YES NO YES	B	B	B

	temperature					
22 Auto flight	- FMGS architecture - FMGES functions - reversion modes	NO NO NO	NO YES YES	B C D	B C D	B B D
23 Communications						

Table 3 - ODR 3 –manoeuvres

BASIC AEROPLANE: 'X' DIFFERENCE AEROPLANE: 'Y'				COMPLIANCE METHOD		
MANOEUVRES	DIFFERENCES	FLT CHAR	PROC CHNG	Training	Checking	Recent Experience
Taxi	- Pilot eye height, turn radius, - two engine taxi (1&4)	YES NO	NO NO	D A	D /	/ /
Take-off	Flight Characteristics in ground law	YES	NO	E	E	E
Rejected take-off	Reverser actuation logic	YES	NO	D	D	D
Take-off engine failure	- V_1/V_r split - Pitch attitude/lateral control	YES(P)* YES(H)*	NO NO	B E	B E	B

*P = Performance, H = Handling

AMC1-OR.OPS.FC.245.A Alternative training and qualification programme

COMPONENTS AND IMPLEMENTATION

1. Alternative training and qualification programme (ATQP) components. An ATQP should comprise the following:

   a. Documentation that details the scope and requirements of the programme, including the following:

      i. The programme should demonstrate that the operator is able to improve the training and qualification standards of flight crew to a level that exceeds the standards prescribed in OR.OPS.FC and SPA.LVO.

      ii. The operator's training needs and established operational and training objectives.

      iii. A description of the process for designing and gaining approval for the operator's flight crew qualification programmes. This should include quantified operational and training objectives identified by the operator's internal monitoring programmes. External sources may also be used.

      iv. A description of how the programme will:

         A. enhance safety;

         B. improve training and qualification standards of flight crew;

         C. establish attainable training objectives;

         D. integrate CRM in all aspects of training;

         E. develop a support and feedback process to form a self-correcting training system;

         F. institute a system of progressive evaluations of all training to enable consistent and uniform monitoring of the training undertaken by flight crew;

         G. enable the operator to be able to respond to new aeroplane technologies and changes in the operational environment;

         H. foster the use of innovative training methods and technology for flight crew instruction and the evaluation of training systems; and

         I. make efficient use of training resources, specifically to match the use of training media to the training needs.

   b. A task analysis to determine:

      i. the knowledge;

      ii. the required skills;

      iii. the associated skill-based training; and

      iv. the validated behavioural markers, where appropriate.

      For each aeroplane type/class to be included within the ATQP the operator should establish a systematic review that determines and defines the various tasks to be undertaken by the flight crew when operating that type/class. Data from other types/classes may also be used. The analysis should determine and describe the knowledge and skills required to complete the various tasks specific to the aeroplane type/class and/or type of operation. In addition, the analysis should identify the appropriate behavioural markers that should be exhibited. The task analysis should be suitably validated in accordance with 2.c below. The task analysis, in conjunction with the data gathering programme(s) permit the

operator to establish a programme of targeted training together with the associated training objectives.

c. Curricula. The curriculum structure and content should be determined by task analysis, and should include proficiency objectives including when and how these objectives should be met.

i. The training programme should have the following structure:

1. Curriculum, specifying the following elements:

1.1 Entry requirements: A list of topics and content, describing what training level will be required before start or continuation of training.

1.2 Topics: A description of what will be trained during the lesson.

1.3 Targets/Objectives

1.3.1 Specific target or set of targets that have to be reached and fulfilled before the training course can be continued.

1.3.2 Each specified target should have an associated objective that is identifiable both by the flight crew and the trainers.

1.3.3 Each qualification event that is required by the programme should specify the training that is required to be undertaken and the required standard to be achieved.

2. Daily lesson plan.

ii. Each lesson/course/training or qualification event should have the same basic structure. The topics related to the lesson should be listed and the lesson targets should be unambiguous.

iii. Each lesson/course or training event whether classroom, CBT or simulator should specify the required topics with the relevant targets to be achieved.

d. A specific training programme for:

i. each aeroplane type/class within the ATQP;

ii. instructors (class rating instructor rating/synthetic flight instructor authorisation/type rating instructor rating — CRI/SFI/TRI), and other personnel undertaking flight crew instruction; and

iii. examiners (class rating examiner/synthetic flight examiner/type rating examiner — CRE/SFE/TRE).

This should include a method for the standardisation of instructors and examiners.

Personnel who perform training and checking of flight crew in an operator's ATQP should receive the following additional training on:

- ATQP principles and goals;
- knowledge/skills/behaviour as learned from task analysis;
- line oriented evaluation (LOE)/ LOFT scenarios to include triggers / markers / event sets / observable behaviour;
- qualification standards;
- harmonisation of assessment standards;
- behavioural markers and the systemic assessment of CRM;
- event sets and the corresponding desired knowledge/skills and behaviour of the flight crew;

- the processes that the operator has implemented to validate the training and qualification standards and the instructors part in the ATQP quality control; and
- line oriented quality evaluation (LOQE).

e. A feedback loop for the purpose of curriculum validation and refinement, and to ascertain that the programme meets its proficiency objectives.

i. The feedback should be used as a tool to validate that the curricula are implemented as specified by the ATQP; this enables substantiation of the curriculum, and that proficiency and training objectives have been met. The feedback loop should include data from operations flight data monitoring, advanced FDM programme and LOE/LOQE programmes. In addition, the evaluation process should describe whether the overall targets/objectives of training are being achieved and should prescribe any corrective action that needs to be undertaken.

ii. The programme's established quality control mechanisms should at least review the following:

A. procedures for approval of recurrent training;

B. ATQP instructor training approvals;

C. approval of event set(s) for LOE/LOFT; and

D. procedures for conducting LOE and LOQE.

f. A method for the assessment of flight crew during conversion and recurrent training and checking. The assessment process should include event-based assessment as part of the LOE. The assessment method should comply with OR.OPS.FC.230.

i. The qualification and checking programmes should include at least the following elements:

A. a specified structure;

B. elements to be tested/examined;

C. targets and/or standards to be attained; and

D. the specified technical and procedural knowledge and skills, and behavioural markers to be exhibited.

ii. An LOE event should comprise tasks and sub-tasks performed by the crew under a specified set of conditions. Each event has one or more specific training targets/objectives, which require the performance of a specific manoeuvre, the application of procedures, or the opportunity to practise cognitive, communication or other complex skills. For each event the proficiency that is required to be achieved should be established. Each event should include a range of circumstances under which the crews' performance is to be measured and evaluated. The conditions pertaining to each event should also be established and they may include the prevailing meteorological conditions (ceiling, visibility, wind, turbulence etc.); the operational environment (navigation aid inoperable etc.); and the operational contingencies (non-normal operation etc.).

iii. The markers specified under the operator's ATQP should form one of the core elements in determining the required qualification standard. A typical set of markers are shown in the table below:

EVENT	MARKER
Awareness of Aeroplane Systems:	1. Monitors and reports changes in automation status.
	2. Applies closed loop principle in all relevant situations.
	3. Uses all channels for updates.
	4. Is aware of remaining technical resources.

iv. The topics / targets integrated into the curriculum have to be measurable and progression on any training/course is only allowed if the targets are fulfilled.

g. A data monitoring/analysis programme consisting of.

i. A flight data monitoring (FDM) programme: This programme should include systematic evaluation of operational data derived from equipment that is able to record the flight profile and relevant operational information during flights conducted by the operator's aeroplane. Data collection should reach a minimum of 60% of all relevant flights conducted by the operator before ATQP approval is granted. This proportion may be increased as determined by the competent authority.

ii. An advanced FDM when an extension to the ATQP is requested: An advanced FDM programme is determined by the level of integration with other safety initiatives implemented by the operator, such as the operator's safety management system. The programme should include both systematic evaluations of data from an FDM programme and flight crew training events for the relevant crews. Data collection should reach a minimum of 80% of all relevant flights and training conducted by the operator. This proportion may be varied as determined by the competent authority.

The purpose of either an FDM or advanced FDM programme is to enable the operator to:

- provide data to support the programme's implementation and justify any changes to the ATQP;
- establish operational and training objectives based upon an analysis of the operational environment; and
- monitor the effectiveness of flight crew training and qualification.

iii. Data gathering. FDM programmes should include a system that captures flight data, and then transforms the data into an appropriate format for analysis. The programme should generate information to assist the operations safety personnel in analysing the data. The analysis should be made available to the person responsible for ATQP within the organisation. The data gathered should:

A. include all fleets that are planned to be operated under the ATQP;

B. include all crews trained and qualified under the ATQP;

C. be established during the implementation phase of ATQP; and

D. continue throughout the life of the ATQP.

iv. Data Handling. The operator should establish a process, which ensures strict adherence to any data handling protocols, agreed with flight crew representative bodies, to ensure the confidentiality of individual flight crew members. The data handling protocol should define the maximum period of time that detailed FDM or advanced FDM programme data, including exceedences, should be retained. Trend data may be retained permanently.

v. An operator that has a flight data monitoring programme prior to the proposed introduction of ATQP may use relevant data from other fleets not part of the proposed ATQP.

2. Implementation. An operator should develop an evaluation and implementation process including the following stages:

a. A safety case that demonstrates equivalency of:

i. the revised training and qualification standards compared to the standards of OR.OPS.FC and/or SPA.LVO prior to the introduction of ATQP; and

ii. any new training methods implemented as part of ATQP.

A safety case is a documented body of evidence that provides a demonstrable and valid justification that the ATQP is adequately safe for the given type of operation. The safety case should encompass each phase of implementation of the programme and be applicable over the lifetime of the programme that is to be overseen. The safety case should:

- demonstrate the required level of safety;
- ensure the required safety is maintained throughout the lifetime of the programme; and
- minimise risk during all phases of the programmes implementation and operation.

The elements of a safety case include:

- planning: integrated and planned with the operation (ATQP) that is to be justified;
- criteria;
- safety-related documentation including a safety checklist;
- programme of implementation to include controls and validity checks; and
- oversight, including review and audits.

Criteria for the establishment of a safety case. The safety case should:

- be able to demonstrate that the required or equivalent level of safety is maintained throughout all phases of the programme;
- be valid to the application and the proposed operation;
- be adequately safe and ensure the required regulatory safety standards or approved equivalent safety standards are achieved;
- be applicable over the entire lifetime of the programme;
- demonstrate completeness and credibility of the programme;
- be fully documented;

- ensure integrity of the operation and the maintenance of the operations and training infrastructure;
- ensure robustness to system change;
- address the impact of technological advance, obsolescence and change; and
- address the impact of regulatory change.

b. A task analysis as required by paragraph 1.b. to establish the operator's programme of targeted training and the associated training objectives.

c. A period of operation whilst data is collected and analysed to validate the safety case and task analysis. During this period the operator should continue to operate in accordance with OR.OPS.FC and/or SPA.LVO, as applicable. The length of this period should be determined by the competent authority.

GM1-OR.OPS.FC.245.A Alternative training and qualification programme

TERMINOLOGY

1. Line Oriented Evaluation (LOE). LOE is an evaluation methodology used in the ATQP to evaluate trainee performance, and to validate trainee proficiency. LOEs consist of flight simulator scenarios that are developed by the operator in accordance with a methodology approved as part of the ATQP. The LOE should be realistic and include appropriate weather scenarios and in addition should fall within an acceptable range of difficulty. The LOE should include the use of validated event sets to provide the basis for event-based assessment.
2. Line Oriented Quality Evaluation (LOQE). LOQE is one of the tools used to help evaluate the overall performance of an operation. LOQEs consist of line flights that are observed by appropriately qualified operator personnel to provide feedback to validate the ATQP. The LOQE should be designed to look at those elements of the operation that are unable to be monitored by FDM or Advanced FDM programmes.
3. Skill-based training. Skill-based training requires the identification of specific knowledge and skills. The required knowledge and skills are identified within an ATQP as part of a task analysis and are used to provide targeted training.
4. Event-based Assessment. This is the assessment of flight crew to provide assurance that the required knowledge and skills have been acquired. This is achieved within an LOE. Feedback to the flight crew is an integral part of event-based assessment.

AMC1-OR.OPS.FC.245.A(a) Alternative training and qualification programme

OPERATOR EXPERIENCE

The appropriate experience should be at least 2 years' continuous operation.

AMC1-OR.OPS.FC.245.A(d)(e)(2) Alternative training and qualification programme

COMBINATION OF CHECKS

1. The line orientated evaluation (LOE) may be undertaken with other ATQP training.
2. The line check may be combined with a line oriented quality evaluation (LOQE).

SECTION VI – CABIN CREW

CHAPTER 1 - COMMON REQUIREMENTS

AMC1-OR.OPS.CC.100-CAT Number and composition of cabin crew

DETERMINATION OF THE NUMBER AND COMPOSITION OF CABIN CREW

1. Factors to be taken into account when determining the minimum number of cabin crew required to operate aircraft engaged in commercial air transport operations should include:
   a. the number of exits;
   b. the type of exits and their associated slides;
   c. the location of exits in relation to cabin crew seats and the cabin layout;
   d. the location of cabin crew seats taking into account direct view requirements and cabin crew duties in an emergency evacuation including:
      i. opening floor level exits and initiating stair or slide deployment;
      ii. assisting passengers to pass through exits; and
      iii. directing passengers away from inoperative exits, crowd control and passenger flow management;
   e. actions required to be performed by cabin crew in ditching, including the deployment of slide-rafts and the launching of life-rafts;
   f. additional actions required to be performed by cabin crew members when responsible for a pair of exits; and
   g. the type and duration of the flight to be operated.
2. When scheduling cabin crew for a flight, an operator should establish procedures which take account of the experience of each cabin crew member such that the required cabin crew includes some cabin crew members who have at least three months operating experience as a cabin crew member.

GM1-OR.OPS.CC.100-CAT Number and composition of cabin crew

MINIMUM NUMBER OF CABIN CREW

1. The number of cabin crew referred to in OR.OPS.CC.100(b)(1) may be:
   a. the number of cabin crew who actively participated in the aircraft cabin during the relevant emergency evacuation demonstration, or who were assumed to have taken part in the relevant analysis, carried out by the aircraft manufacturer when demonstrating the maximum passenger seating capacity (MPSC) of the aircraft type at the time of initial type certification; or
   b. a lower number in the case of other cabin configurations within the same aircraft type for which the aircraft manufacturer, or another approved design organisation, has shown by a demonstration or an analysis that this lower number of cabin crew is sufficient to meet the evacuation requirements of the applicable airworthiness code.
2. An operator intending to determine the minimum required cabin crew for a specific aircraft cabin configuration should:

a. take into account the factors specified in AMC1-OR.OPS.CC.100-CAT; and

b. consult the organisation responsible for showing compliance with the evacuation requirements of the applicable airworthiness code.

AMC1-OR.OPS.CC.115 Conduct of training courses and associated checking

TRAINING METHODS

An operator should establish training methods that take into account the following:

1. training should include the use of mock-up facilities, audio-visual presentations, computer-based training and other types of training, as most appropriate to the training subject; and

2. a reasonable balance between the different training methods should be ensured so that the cabin crew member achieves the level of proficiency necessary for a safe performance of all related cabin crew duties and responsibilities.

TRAINING DEVICES

When assessing the representative training devices to be used, an operator should:

1. take into account that a representative training device may be used for the training of cabin crew as an alternative to the use of the actual aircraft or required equipment;

2. ensure that those items relevant to the training and checking intended to be given accurately represent the aircraft in the following particulars:

   a. layout of the cabin in relation to exits, galley areas and safety and emergency equipment stowage as relevant;

   b. type and location of passenger and cabin crew seats;

   c. exits in all modes of operation, particularly in relation to method of operation, their mass and balance and operating forces and including failure of power-assist systems where fitted; and

   d. safety and emergency equipment of the type provided in the aircraft (such equipment may be 'training use only' items and, for oxygen and protective breathing equipment, units charged with or without oxygen may be used); and

3. assess the following factors when determining whether an exit can be considered to be a variant of another type:

   a. exit arming/disarming;

   b. direction of movement of the operating handle;

   c. direction of exit opening;

   d. power-assist mechanisms; and

   e. assist means such as evacuation slides and ropes.

TRAINING PROGRAMMES

When developing the training programmes for aircraft-type specific training required in OR.OPS.CC.125(b), in addition to complying with the standards included in the relevant Operational suitability data for the applicable aircraft type, an operator should also follow any further recommendations contained therein.

EXAMINATION AND/OR CHECKING

1. Elements of training which require individual practical participation may be combined with practical checks.

2. Examination and/or checking required for each training course should be accomplished by the method appropriate to the type of training, including:

   a. practical demonstration;

   b. computer based assessment;

   c. in-flight checks; and/or

   d. oral or written tests.

GM1-OR.OPS.CC.115(a) Conduct of training courses and associated checking

EQUIPMENT AND PROCEDURES

For the purpose of programme content and conduct of training and checking on equipment and procedures,

1. '*Safety equipment'* should be understood as equipment installed/carried to be used during day-to-day normal operations for the safe conduct of the flight and protection of occupants (e.g. seatbelts, infant/extension seatbelts, child restraint device, safety card, safety demonstration kit).

2. '*Emergency equipment'* should be understood as equipment installed/carried to be used in case of abnormal and emergency situations that demand immediate action for the safe conduct of the flight and protection of occupants including life preservation (e.g. drop-out oxygen, axe, fire extinguisher, protective breathing equipment, manual release tool; slide raft).

3. '*Normal procedures'* should be understood as all procedures established by the operator in the operations manual for day-to-day normal operations (e.g. pre-flight briefing of cabin crew, pre-flight checks, passenger briefing, securing of galleys and cabin, cabin surveillance during flight).

4. '*Emergency procedures'* should be understood as all procedures established by the operator in the operations manual for abnormal and emergency situations. For this purpose, '*abnormal'* refers to a situation that is not typical or usual, deviates from normal operation and may result in an emergency.

AMC1-OR.OPS.CC.115(e) Conduct of training courses and associated checking

CREW RESOURCE MANAGEMENT– CRM INSTRUCTORS AND TRAINING PROGRAMMES

1. CRM Instructor qualifications

   a. All personnel conducting training should be suitably qualified to integrate elements of CRM into all appropriate training programmes.

   b. A training and standardisation programme for CRM instructors should be established.

   c. Cabin crew CRM instructors should:

      i. have suitable experience of commercial air transport as a cabin crew member;

      ii. have received instruction on Human Factors Performance Limitations (HPL);

      iii. have completed an Introductory CRM course and the cabin crew CRM training courses applicable by operators;

      iv. have received instructions in training skills in order to conduct CRM courses; and

      v. be supervised by suitably qualified CRM instructors when conducting their first CRM training course.

   d. An experienced non-cabin crew CRM instructor may continue to be a cabin crew CRM instructor, provided that the provisions specified in (c.) points ii. to v. are satisfied and that a satisfactory knowledge has been demonstrated of the nature of the operation and the relevant specific aircraft types showing a suitable knowledge of the cabin crew working environment.

   e. Instructors integrating elements of CRM into aircraft type training, recurrent training, or senior cabin crew training should have acquired relevant knowledge of human factors and have completed appropriate CRM training.

2. CRM training programmes

   a. There should be an effective liaison between flight crew and cabin crew training departments. Provision should be made for flight and cabin crew instructors to observe and comment on each others training. Consideration should be given to creating flight deck scenarios on video for playback to all cabin crew during recurrent training, and to providing the opportunity for cabin crew, particularly senior cabin crew, to participate in flight crew line oriented flying training (LOFT) exercises.

   b. The programme of each CRM training course, their contents and the level to be achieved, should comply with the relevant elements specified in the CRM training table in (3.) as applicable to the appropriate training course to be completed.

   c. CRM training for senior cabin crew

      i. CRM training for senior cabin crew members should be the application of knowledge gained in previous CRM training and operational experience relevant to the specific duties and responsibilities of a senior cabin crew member.

      ii. The senior cabin crew member should demonstrate ability to manage the operation and take appropriate leadership/management decisions.

3. CRM training table

CRM TRAINING- TABLE Training Elements	Operator's CRM Training	Operator's Aircraft Type Training CRM	Operator's Annual Recurrent CRM Training	Senior Cabin Crew Course
General Principles				
Human factors in aviation General instructions on CRM principles and objectives Human performance and limitations	Not required	Not required	Not required	Overview
Relevant to the individual cabin crew member				
Personality awareness, human error and reliability, attitudes and behaviours, self-assessment Stress and stress management Fatigue and vigilance Assertiveness, situation awareness, information acquisition and processing	Not required	Not required	Overview (3 year cycle)	Not required
Relevant to the entire aircraft crew				
Error prevention and detection	In-depth	Relevant to the type(s)	Overview (3 year cycle)	Rein-forcement (relevant to the senior cabin crew duties)
Shared situation awareness, information acquisition and processing				
Workload management				
Effective communication and coordination between all crew members including the flight crew as well as inexperienced cabin crew members, cultural differences				
Leadership, cooperation, synergy, decision-making, delegation				
Individual and team responsibilities, decision making, and actions				
Identification and management of the passenger human factors: crowd control, passenger stress, conflict management, medical factors				
Specifics related to aircraft types (narrow/wide bodies, single/multi deck), flight crew and cabin crew composition and number of passengers	Not required	In-depth		
Relevant to the operator and the organisation				
Company safety culture, SOPs, organisational factors, factors linked to the type of operations Effective communication and coordination with other operational personnel and ground services Participation in cabin safety incident and accident reporting	In- depth	Relevant to the type(s)	Overview (3 year cycle)	Rein-forcement (relevant to the Senior cabin crew duties)
Case- studies	Required		Required	

GM1 OR.OPS.CC.115(e) Conduct of training courses and associated checking

CREW RESOURCE MANAGEMENT (CRM)

1. CRM - General

   a. Crew Resource Management should be the effective utilisation of all available resources (e.g. crew members, aircraft systems, and supporting facilities) to achieve safe and efficient operation.

   b. The objective of CRM should be to enhance the communication and management skills of the crew member, as well as the importance of effective coordination and two-way communication between all crew members.

   c. Operator's CRM training should reflect the culture of the operator, the scale and scope of the operation together with associated operating procedures and areas of operation which produce particular difficulties.

   d. Accordingly, where required during CRM training, if relevant aircraft type-specific case studies are not available, then case studies relevant to the scale and scope of the operation should be considered.

2. General principles for CRM training for cabin crew

   a. Cabin crew CRM training should focus on issues related to cabin crew duties, and therefore, should be different from flight crew CRM training. However, the co-ordination of the tasks and functions of flight crew and cabin crew should be addressed.

   b. Whenever it is practicable to do so, combined training should be provided to flight crew and cabin crew, particularly senior cabin crew members, including feedback.

   c. Where appropriate, CRM principles should be integrated into relevant parts of cabin crew training.

   d. CRM training should include group discussions and the review of accidents and incidents (case- studies).

   e. Whenever it is practicable to do so, relevant parts of CRM training should form part of the training conducted in cabin mock-ups or aircraft.

   f. CRM training courses should be conducted in a structured and realistic manner.

   g. There should be no assessment of CRM skills. Feedback from instructors or members of the group on individual performance should be given during training to the individuals concerned.

AMC1-OR.OPS.CC.125(b) Aircraft type-specific training and operator conversion training

TRAINING PROGRAMME– AIRCRAFT TYPE-SPECIFIC TRAINING

The following aircraft type-specific training elements should be covered as relevant to the aircraft type:

1. Aircraft general description

   a. type of aircraft; principal dimensions; narrow or wide bodied; single or double deck;

   b. typical speed/altitude/range;

   c. typical passenger seating capacity (certified capacity);

   d. typical flight crew number and typical minimum number of required cabin crew;

e. cabin doors location and sill height;

f. cargo and un-pressurised areas as relevant;

g. aircraft systems – general: auxiliary power unit (APU)/aircraft electrical power/air conditioning and pressurisation;

h. flight crew compartment presentation- general: pilot seats and their mechanism; cockpit exits; storage;

i. typical cabin crew stations;

j. passenger seats-general presentation;

k. flight crew compartment security-general: door components and use;

l. access to avionics bay where relevant;

m. lavatories- general: doors; systems; emergency equipment, calls and signs;

n. galleys- general: appliances; water and waste; control panels; calls and signs; and

o. least risk bomb location.

2. Safety and emergency equipment and systems installed

Each cabin crew member should receive realistic training on, and demonstration of, the location and use of all aircraft type-specific safety and emergency equipment including the following:

a. slides, and where non-self-supporting slides are carried, the use of any associated ropes;

b. life rafts and slide rafts, including the equipment attached to, and/or carried in, the raft;

c. drop-out oxygen system;

d. communication equipment; and

e. all other cabin equipment and systems installed relevant to cabin crew duties.

3. Operation of doors and exits

This training should be conducted in a representative training device or in the actual aircraft and should include failure of power assist systems where fitted and the action and forces required to operate and deploy evacuation slides. The demonstration of the operation of the other doors and exits should include the security door of the flight crew compartment where installed.

4. Fire and smoke protection equipment

Each cabin crew member should be trained in using fire and/or smoke protection equipment where fitted.

5. Evacuation slide training:

a. each cabin crew member should descend an evacuation slide from a height representative of the aircraft main deck sill height;

b. the slide should be fitted to a representative training device or to the actual aircraft; and

c. a further descent should be made when the cabin crew member qualifies on an aircraft type in which the main deck exit sill height differs significantly from any aircraft type previously operated.

6. Operation of equipment related to pilot incapacitation

The training should cover any type-specific elements or conditions relevant to cabin crew actions to be taken in case of pilot incapacitation. Each cabin crew member

should be trained to operate all equipment that must be used in case of pilot incapacitation.

AMC1-OR.OPS.CC.125(c) Aircraft type-specific training and operator conversion training

TRAINING PROGRAMME – OPERATOR CONVERSION TRAINING

The following operator-specific training elements should be covered as relevant to the aircraft type:

1. Description of the cabin configuration

   The description should cover all elements specific to the operator's cabin configuration and any differences with those previously covered in accordance with AMC1-OR.OPS.CC.125(b), including:

   a. cabin crew seats (including direct view) location/restraint systems/control panels;

   b. passenger seats-presentation;

   c. flight crew compartment security door-components/use;

   d. designated stowage areas;

   e. lavatories location/lavatory doors and lavatory systems/emergency equipment in the lavatory/calls and signs;

   f. galley-location/appliances/water and waste system, including shut off, sinks, drains/stowage/control panels/calls;

   and where applicable:

   g. crew rest areas- location/systems/controls/safety equipment;

   h. cabin dividers/curtains/partitions;

   i. lift location/use/controls;

   j. stowage for the containment of waste; and

   k. passenger hand rail system or alternative means.

2. Safety and emergency equipment

   Each cabin crew member should receive realistic training on and demonstration of the location and use of all safety and emergency equipment carried including:

   a. lifejackets, infant lifejackets and flotation cots;

   b. first-aid and drop-out oxygen, including supplementary systems;

   c. fire extinguishers and protective breathing equipment (PBE);

   d. fire axe or crow-bar;

   e. emergency lights including torches;

   f. communication equipment, including megaphones;

   g. sliderafts, liferafts, survival packs and their contents;

      i. slides, and where non-supporting slides are carried the use of any associated ropes."

      ii. slideraft, including the equipment attached to and anchored on, or carried in the raft."

   h. pyrotechnics (actual or representative devices);

   i. first-aid kits, emergency medical kits and their contents; and

j. other portable safety equipment where applicable.

3. Normal and emergency procedures

Each cabin crew member should be trained to the operator's normal and emergency procedures as applicable with particular emphasis on the following:

a. passenger briefing, safety demonstration and cabin surveillance;

b. severe air turbulence;

c. slow/non pressurisation and sudden decompression, including the donning of portable oxygen equipment by each cabin crew member; and

d. other in-flight emergencies.

4. Passenger handling and crowd control

Training should be provided on the practical aspects of passenger preparation and handling, as well as crowd control, in various emergency situations as applicable to the operator's aircraft cabin configuration, and should cover the following:

a. communications between flight crew and cabin crew and use of all communications equipment, including the difficulties of coordination in a smoke-filled environment;

b. verbal commands;

c. the physical contact that may be needed to encourage people out of an exit and onto a slide;

d. the redirection of passengers away from unusable exits;

e. the marshalling of passengers away from the aircraft;

f. the evacuation of special categories of passengers with emphasis on passengers with disabilities or reduced mobility; and

g. authority and leadership.

5. Fire and smoke training

a. Each cabin crew member should receive realistic and practical training in the use of all fire-fighting equipment including protective clothing representative of that carried in the aircraft;

b. Each cabin crew member should:

i. be trained in extinguishing an actual fire characteristic of an aircraft interior fire except that, in the case of halon extinguishers, an alternative extinguishing agent may be used;

ii. be trained in the donning and use of protective breathing equipment in an enclosed simulated smoke-filled environment with particular emphasis on identifying the actual source of fire and smoke; and

iii. individually extinguish an actual fire and exercise the donning and use of PBE in an enclosed simulated smoke-filled environment."

6. Evacuation procedures

Training should include all operator's procedures applicable to planned or unplanned evacuations on land and water including where relevant the additional actions required from cabin crew members responsible for a pair of exits and the recognition of when exits are unusable or when evacuation equipment is unserviceable.

7. Pilot incapacitation procedures

Unless the minimum flight crew is more than two, each cabin crew member should be trained in the procedure for pilot incapacitation. Training in the use of flight crew

checklists, where required by the operator's standard operating procedures (SOP's), should be conducted by a practical demonstration.

8. Crew resource management (CRM)

   a. Each cabin crew member should complete the operator's CRM training covering the applicable training elements specified in AMC1-OR.OPS.CC.115(e)(3)CRM training table.

   b. When a cabin crew member undertakes a type training course on another aircraft type, the applicable training elements specified in CRM Training Table should be covered.

   c. The operator's CRM training and aircraft type CRM training should be conducted by at least one cabin crew CRM instructor.

AMC1-OR.OPS.CC.125/OR.OPS.CC.130 Aircraft type-specific training and operator conversion training/ Differences training

TRAINING PROGRAMMES

The programmes of aircraft type-specific training, operator conversion training and differences training should be determined taking into account the cabin crew member's previous training as documented in the training records of the cabin crew member concerned.

AMC1-OR.OPS.CC.135 Familiarisation

FAMILIARISATION FLIGHTS AND AIRCRAFT VISITS

1. For non-commercial operations, the cabin crew member should be assigned to operate at least two familiarisation flights under supervision on the aircraft type to be operated, or comply with one of the following provisions.

2. For commercial air transport operations, familiarisation of cabin crew to a new aircraft type or variant should be completed in accordance with the following as relevant:

   a. New entrant cabin crew

   Each new entrant cabin crew member having no previous comparable operating experience should participate:

      i. in a visit as described in point 4. to the aircraft to be operated; and

      ii. in familiarisation flights as described in point 3.

   b. Cabin crew operating on a subsequent aircraft type

   A cabin crew member assigned to operate on a subsequent aircraft type with the same operator should participate either:

      i. in a familiarisation flight as described in point 3; or

      ii. in a visit as described in point 4 to the aircraft type to be operated.

3. Familiarisation flights

   a. During familiarisation flights, the cabin crew member should be additional to the minimum number of cabin crew required by OR.OPS.CC.100, and OR.OPS.CC.200if applicable.

   b. Familiarisation flights should be:

      i. conducted under the supervision of the senior cabin crew member;

      ii. structured and involve the cabin crew member in the participation of safety related pre-flight, in-flight and post-flight duties;

iii. operated with the cabin crew member wearing the operator's cabin crew uniform; and

iv. recorded in the training record of each cabin crew member.

4. Aircraft visits

a. The purpose of aircraft visits is to familiarise the cabin crew member with the aircraft environment and its equipment. Accordingly, aircraft visits should be conducted by suitably qualified persons. The aircraft visit should provide an overview of the aircraft's exterior, interior and systems including the following:

i. interphone and public address systems;

ii. evacuation alarm systems;

iii. emergency lighting;

iv. smoke detection systems;

v. safety/emergency equipment;

vi. flight crew compartment;

vii. cabin crew stations;

viii. lavatories;

ix. galleys, galley security and water shut-off;

x. cargo areas if accessible from the passenger compartment during flight;

xi. circuit breaker panels located in the passenger compartment;

xii. crew rest areas; and

xiii. exit location and its environment.

b. An aircraft familiarisation visit may be combined with aircraft type-specific training or operator conversion training required by OR.OPS.CC.125.

AMC1-OR.OPS.CC.140 Recurrent training

TRAINING PROGRAMMES

1 Elements of annual recurrent training programme

a. Training on the location and handling of safety and emergency equipment should include all relevant oxygen systems, and any equipment such as defibrillators if carried on-board.

b. Training on emergency procedures should cover pilot incapacitation procedures and crowd control techniques.

c. Crew resource management training should satisfy the following:

i. the applicable training elements in AMC1-OR.OPS.CC.115(e)CRM Training Table should be covered within a three year cycle to the level required by Column 'Operator's Annual Recurrent CRM Training'.

ii. the definition and implementation of the programme should be managed by a cabin crew CRM instructor.

iii. when CRM training is provided by stand-alone modules, it should be conducted by at least one cabin crew CRM instructor.

2. Additional triennial elements of training

a Training on operation of normal and emergency exits should be conducted in an aircraft or representative training device; and cover failure of power assist systems where fitted. This is to include the action and forces required to operate and deploy evacuation slides, and additional training when relevant for cabin crew members responsible for a pair of exits.

b. Training in the use of all fire-fighting equipment, including protective clothing, representative of that carried in the aircraft should include individual practice by each cabin crew member to extinguish a fire characteristic of an aircraft interior fire except that, in the case of halon extinguishers, an alternative extinguishing agent may be used. Training should place particular emphasis on identifying the actual source of fire or smoke.

AMC1-OR.OPS.CC.145 Refresher training

TRAINING PROGRAMME

1. Training on procedures should include pilot incapacitation and crowd control as applicable to the aircraft type; and
2. Operation of doors and exits by each cabin crew member should include failure of power assist systems where fitted as well as the action and forces required to operate and deploy evacuation slides.

GM1-OR.OPS.CC.145 Refresher training

FREQUENCY OF REFRESHER TRAINING

For aircraft with complex equipment or procedures, the operator should consider the need for refresher training to be completed by cabin crew members who have been absent of flying duties for less than six months.

CHAPTER 2 - ADDITIONAL REQUIREMENTS FOR COMMERCIAL AIR TRANSPORT

AMC1-OR.OPS.CC.205(b) Minimum number of cabin crew in unforeseen circumstances and during ground operations

IN UNFORESEEN CIRCUMSTANCES

When the number of cabin crew is reduced below the applicable minimum required cabin crew, for example in the event of incapacitation or unavailability of cabin crew in case of unforeseen circumstances, the procedures established in the operations manual should take into consideration at least the following:

1. reduction of passenger numbers;
2. reseating of passengers with due regard to exits and other applicable limitations; and
3. relocation of cabin crew taking into account the factors specified in AMC1-OR.OPS.CC.100-CAT and any change of procedures.

DURING GROUND OPERATIONS WITH PASSENGERS ON BOARD

During ground operations, when reducing the applicable minimum required number of cabin crew, an operator should ensure that the procedures required by OR.OPS.CC.205specify that:

1. electrical power is available on the aircraft;
2. a means of initiating an evacuation is available to the senior cabin crew member or at least one member of the flight crew is in the flight crew compartment;
3. cabin crew stations and associated duties are specified in the operations manual; and
4. cabin crew remain aware of the position of servicing and loading vehicles at and near the exits;

Additionally in the case of passengers embarkation,

5. the senior cabin crew member should have performed the pre-boarding safety briefing to the cabin crew; and
6. the pre-boarding cabin checks should have been completed.

GM1-OR.OPS.CC.210(c) Conditions for assignment to duties

UNIFORM

The uniform to be worn by operating cabin crew should be such as not to impede the performance of their duties as required for the safety of passengers and flight during operations, and should allow passengers to identify the operating cabin crew including in an emergency situation.

AMC1-OR.OPS.CC.250 Operations on more than one type or variant

DETERMINATION OF SIMILARITIES FOR TYPES AND VARIANTS RELATED TO OPERATOR'S SPECIFICS

1. When determining similarity of location and type of portable safety and emergency equipment the following factors should be assessed to justify the finding of similarity:
    a. all portable safety and emergency equipment is stowed in the same, or in exceptional circumstances, in substantially the same location;
    b. all portable safety and emergency equipment requires the same method of operation;
    c.. portable safety and emergency equipment includes:
        i. fire fighting equipment;
        ii. protective breathing equipment (PBE);
        iii. oxygen equipment;
        iv. crew lifejackets;
        v. torches;
        vi. megaphones;
        vii. first-aid equipment;
        viii. survival and signalling equipment; and
        ix. other safety and emergency equipment where applicable.

2. The emergency procedures should include at least the following:
   a. land and water evacuation;
   b. in-flight fire;
   c. slow/non-pressurisation and decompression; and
   d. pilot incapacitation.

GM1-OR.OPS.CC.250 Operations on more than one type or variant

SAFETY BRIEFING FOR CABIN CREW

When changing aircraft type or variant during a series of flight sectors, the cabin crew safety briefing should include a representative sample of type-specific normal and emergency procedures and safety and emergency equipment applicable to the actual aircraft to be operated for the immediately subsequent flight sector.

AMC1-OR.OPS.CC.260(b) Senior cabin crew member

TRAINING PROGRAMME

The senior cabin crew member training course should at least cover all the following elements:

1. Pre-flight briefing:
   a. operating as a crew;
   b. allocation of cabin crew stations and responsibilities; and
   c. consideration of the particular flight, including aircraft type, equipment, area and type of operation including ETOPS, and special categories of passengers with particular attention to persons with disability or reduced mobility, infants and stretcher cases.
2. Cooperation within the crew:
   a. discipline, responsibilities and chain of command;
   b. importance of coordination and communication; and
   c. pilot incapacitation.
3. Review of operator requirements and legal requirements:
   a. passenger safety briefing, safety cards;
   b. securing of galleys;
   c. stowage of cabin baggage;
   d. electronic equipment;
   e. procedures when fuelling with passengers on board;
   f. turbulence, and
   g. documentation.
4. Accident and incident reporting
5. Human factors and crew resource management

   The operator should ensure that all applicable elements specified in AMC1-OR.OPS.CC.115(e)(3) CRM training table are integrated into the training and covered to the level required by Column ‘Senior Cabin Crew Course’.
6. Flight and duty time limitations and rest requirements.

GM1-OR.OPS.CC.260(b)(5) Senior cabin crew member

TRAINING ON HUMAN FACTORS AND CREW RESSOURCE MANAGEMENT (CRM)

Whenever practicable, training should include the participation of senior cabin crew members in flight crew line oriented flying training (LOFT) exercises.

AMC1-OR.OPS.CC.260(c) Senior cabin crew member

RESPONSIBILITY TO THE COMMANDER

When the level of turbulence so requires, and in the absence of any instructions from the flight crew, the senior cabin crew member should discontinue non-safety-related duties and advise the flight crew of the level of turbulence being experienced and the need for the fasten seat belt signs to be switched on. This should be followed by the cabin crew securing the passenger cabin and other applicable areas.

SECTION VII – TECHNICAL CREW MEMBER IN HEMS, HHO OR NVIS OPERATIONS

GM1-OR.OPS.TC.105 Conditions for assignment to duties

GENERAL

1. A technical crew member in HEMS, HHO or NVIS operations should undergo an initial medical examination or assessment and, if applicable, a re-assessment before undertaking duties.
2. Any medical assessment or re-assessment should be carried out according to best aero-medical practice by a medical practitioner who has sufficient detailed knowledge of the applicant's medical history.
3. An operator should maintain a record of medical fitness for each technical crew member.
4. Technical crew members should:
   a. be in good health;
   b. be free from any physical or mental illness which might lead to incapacitation or inability to perform crew duties;
   c. have normal cardio respiratory function;
   d. have normal central nervous system;
   e. have adequate visual acuity 6/9 with or without glasses;
   f. have adequate hearing; and
   g. have normal function of ear, nose and throat.

AMC1-OR.OPS.TC.110 Training and Checking

GENERAL

1. Elements of training which require individual practice may be combined with practical checks.

2. The checks should be accomplished by the method appropriate to the type of training including:

   a. practical demonstration;

   b. computer-based assessment;

   c. in-flight checks; and/or

   d. oral or written tests.

AMC1-OR.OPS.TC.115 Initial training

ELEMENTS

1. The elements of initial training mentioned in OR.OPS.TC.115 should include in particular:

   a. General theoretical knowledge on aviation and aviation regulations relevant to duties and responsibilities:

      i. The importance of crew members performing their duties in accordance with the operations manual;

      ii Continuing competence and fitness to operate as a crew member with special regard to flight and duty time limitations and rest requirements;

      iii. An awareness of the aviation regulations relating to crew members and the role of the competent and inspecting authority;

      iv. General knowledge of relevant aviation terminology, theory of flight, passenger distribution, meteorology and areas of operation;

      v. Pre-flight briefing of the crew members and the provision of necessary safety information with regard to their specific duties;

      vi. The importance of ensuring that relevant documents and manuals are kept up-to-date with amendments provided by the operator;

      vii. The importance of identifying when crew members have the authority and responsibility to initiate an evacuation and other emergency procedures; and

      viii. The importance of safety duties and responsibilities and the need to respond promptly and effectively to emergency situations.

   b. Fire and smoke training:

      i. reactions to emergencies involving fire and smoke and identification of the fire sources;

      ii. The classification of fires and the appropriate type and techniques of application of extinguishing agents, the consequences of misapplication, and of use in a confined space; and

      iii. The general procedures of ground-based emergency services at aerodromes.

   c. When conducting extended overwater operations, water survival training, including the use of personal flotation equipment.

   d. Before first operating on an aircraft fitted with life-rafts or other similar equipment, training on the use of this equipment, including practice in water.

   e. Survival training appropriate to the areas of operation, (e.g. polar, desert, jungle, sea or mountain).

f. Aero-medical aspects and first aid, including:

i. Instruction on first aid and the use of first-aid kits; and

ii. The physiological effects of flying.

g. Effective communication between technical crew members and flight crew members including common language and terminology.

h. Relevant CRM elements of AMC1- and AMC2-OR.OPS.FC.115 & .215.

AMC1-OR.OPS.TC.120 Operator conversion traning and OR.OPS.TC.125 Differences training

ELEMENTS

1. Operator conversion training mentioned in OR.OPS.TC.120 (b) and differences training mentioned in OR.OPS.TC.125 (a) should include:

a. Fire and smoke training, including practical training in the use of all fire fighting equipment as well as protective clothing representative of that carried in the aircraft. Each technical crew member should:

i. extinguish a fire characteristic of an aircraft interior fire except that, in the case of Halon extinguishers, an alternative extinguishing agent may be used; and

ii. practise the donning and use of protective breathing equipment (when fitted) in an enclosed, simulated smoke-filled environment.

b. Practical training on operating and opening all normal and emergency exits for passenger evacuation in an aircraft or representative training device and demonstration of the operation of all other exits.

c. Evacuation procedures and other emergency situations, including:

i. Recognition of planned or unplanned evacuations on land or water. This training should include recognition of unusable exits or unserviceable evacuation equipment;

ii. In-flight fire and identification of fire source; and

iii. Other in-flight emergencies.

d. When the flight crew is more than one, training on assisting if a pilot becomes incapacitated, including a demonstration of:

i. The pilot's seat mechanism;

ii. Fastening and unfastening the pilot's seat harness;

iii. Use of the pilot's oxygen equipment, when applicable; and

iv. Use of pilots' checklists.

e. Training on, and demonstration of, the location and use of safety equipment including the following:

i. Life-rafts, including the equipment attached to, and/or carried in, the raft, where applicable;

ii. Lifejackets, infant lifejackets and flotation cots, where applicable;

iii. Fire extinguishers;

iv. Fire axe or crow-bar;

v. Emergency lights including portable lights;

vi. Communication equipment, including megaphones;

vii. Survival packs, including their contents;

viii. Pyrotechnics (actual or representative devices);

ix. First-aid kits, their contents and emergency medical equipment; and

x. Other safety equipment or systems, where applicable.

f. Training on passenger briefing/safety demonstrations and preparation of passengers for normal and emergency situations.

g. Training on the use of dangerous goods, if applicable.

h. Task-specific training.

AMC2-OR.OPS.TC.120 Operator conversion training and OR.OPS.TC.125 Differences training

GENERAL

1. An operator should determine the content of the conversion or differences training taking account of the technical crew member's previous training as documented in the technical crew member's training records.
2. Aircraft conversion or differences training should be conducted according to a syllabus and include the use of relevant equipment and emergency procedures and practice on a representative training device or on the actual aircraft.
3. The operator should specify in the operations manual the maximum number of types or variants that can be operated by a technical crew member.

AMC1-OR.OPS.TC.135 Recurrent training

ELEMENTS

1. The 12-month period mentioned in OR.OPS.TC.135 (a) should be counted from the last day of the month when the first checking was made. Further training and checking should be undertaken within the last three calendar months of that period. The new 12-month period should be counted from the original expiry date.
2. The recurrent practical training should include every year:
   a. emergency procedures including pilot incapacitation;
   b. evacuation procedures;
   c. touch-drills by each technical crew member for opening normal and emergency exits for (passenger) evacuation;
   d. the location and handling of emergency equipment and the donning by each technical crew member of lifejackets and protective breathing equipment (PBE), when applicable;
   e. first aid and the contents of the first-aid kit(s);
   f. stowage of articles in the cabin;
   g. use of dangerous goods, if applicable;
   h. incident and accident review;
   i. crew Resource Management. All major topics of the initial CRM training should be covered over a period not exceeding three years.

3. Recurrent training should include every three years:

   a. practical training on operating and opening all normal and emergency exits for passenger evacuation in an aircraft or representative training device and demonstration of the operation of all other exits;

   b. practical training in the use of all fire fighting equipment as well as protective clothing representative of that carried in the aircraft. Each technical crew member should:

      i. extinguish a fire characteristic of an aircraft interior fire except that, in the case of Halon extinguishers, an alternative extinguishing agent may be used; and

      ii. practise the donning and use of protective breathing equipment (when fitted) in an enclosed, simulated smoke-filled environment.

   c. Use of pyrotechnics (actual or representative devices); and

   d. Demonstration of the use of the life-raft, where fitted.

AMC1-OR.OPS.TC.140 Refresher training

ELEMENETS

1. Refresher training may include familiarisation flights.

2. Refresher training should include at least the following:

   a. Emergency procedures, including pilot incapacitation;

   b. Evacuation procedures;

   c. Practical training on operating and opening all normal and emergency exits for passenger evacuation in an aircraft or representative training device and demonstration of the operation of all other exits; and

   d. The location and handling of emergency equipment, and the donning of lifejackets, and protective breathing equipment, when applicable.

Subpart ATO - Approved Training Organisations

SECTION I – GENERAL

AMC1-OR.ATO.105 Application

APPLICATION FORM

APPLICATION FORM FOR AN ATO CERTIFICATE		
N°	**Question**	**Supplementary information**
1.	Name of training organisation under which the activity is to take place	address, fax number, e-mail, URL
2.	Training courses offered	theory and/or flight training
3.	Name of head of training	type and number of licence full/part-time
4.	Name of chief flight instructor	as (3)
5.	Name of chief theoretical knowledge instructor	as (3)
6.	Name of flight instructor(s), where applicable	as (3)
7.	Aerodrome(s) / operating site(s) to be used	IFR approaches, if applicable night flying, if applicable air traffic control flight testing facilities, if applicable data reply facilities, if applicable
8.	Flight operations accommodation	location, number and size of rooms
9.	Theoretical instruction facilities	location, number and size of rooms
10.	Description of training devices(as applicable)	FFS, FNPT I, II and III, FTD 1, 2 and 3, and 3, and BITD

11.	Description of aircraft	Class/type(s) of aircraft registration of aircraft IFR equipped, if applicable Flight test instrumentation, if applicable
12.	Proposed administration and manuals : (submit with application if required)	(a) course programmes (b) training records (c) operations manual (d) training manual
13.	Details of proposed compliance monitoring system	

Note 1: If answers to any of the above questions are incomplete, the applicant should provide full details of alternative arrangements separately.

I, *(name)*, on behalf of (name of training organisation) certify that all the above named persons are in compliance with the applicable requirements and that all the above information given is complete and correct.

(Date) (Signature)

AMC1-OR.ATO.110(a) Personnel requirements

HEAD OF TRAINING

The nominated head of training (HT) should have the overall responsibility to ensure that the training is in compliance with the appropriate requirements. In an ATO providing training courses for different aircraft categories the HT shall be supported by one or more nominated deputy HT(s) for certain flight training courses in order to assist.

AMC1-OR.ATO.110(b) Personnel requirements

THEORETICAL KNOWLEDGE INSTRUCTORS

Theoretical knowledge instructors should, before appointment, prove their competency by giving a test lecture based on material they have developed for the subjects they are to teach.

AMC1-OR.ATO.120(a)(1);(2) Record keeping

ATOS PROVIDING TRAINING ONLY FOR THE LAPL, PPL, SPL OR BPL

The details of ground, flight and flight simulation instruction given to a specific individual student and the detailed progress reports from instructors may be kept also in a student's progress card. This progress card should contain all the exercises of the training syllabus. The instructors should sign this card if a certain exercise has been completed or a specific assessment has been conducted.

AMC1-OR.ATO.125 Training programme

GENERAL

Flight training in an FSTD and theoretical knowledge instruction should be phased in such a manner as to ensure that students are able to apply to flight exercises the knowledge gained on the ground. Arrangements should be made so that problems encountered during instruction can be resolved during subsequent training.

AMC2-OR.ATO.125 Training programme

TYPE RATING COURSES – AEROPLANES

1. Introduction.

   a. When developing the training programme for a type rating course, in addition to complying with the standards included in the OSD, as establishes in accordance with Part-21 for the applicable type, the ATO should also follow any further recommendations contained therein.

   b. A type rating course should, as far as possible, provide for a continual process of ground, FSTD and flight training to enable the student to assimilate the knowledge and skills required to operate a specific aircraft type safely and efficiently. The student's ability to do this should be determined by the demonstration of a satisfactory level of theoretical knowledge of the aircraft determined by progressive checking of knowledge and examination, progressive assessment by the ATO during flight training and the successful completion of a practical skill test with an examiner.

   c. A type rating course should normally be conducted as a single, full-time course of study and training. However, in the situation where the course is intended to enable a pilot to fly a further aircraft type while continuing to fly a current type, such as to enable mixed fleet flying with the same operator, some elements of the theoretical knowledge course conducted by self-study may be undertaken while the student continues to fly the current type.

2. Variants.

   a. Familiarisation training: Where an aeroplane type rating also includes variants of the same aircraft type requiring familiarisation training, the additional familiarisation training may be included in the theoretical knowledge training of the initial type rating course. Flight training should be conducted on a single variant within the type.

   b. Differences training: Where an aeroplane type rating also includes variants of the same aircraft type for which difference training is required, the initial training course should be directed towards a single variant. Additional training to operate other variants within the same type rating should be completed after successful completion of the initial type rating course, although elements of this differences training may be undertaken at appropriate stages of the initial course, with the agreement of the competent authority.

3. Programme of theoretical knowledge and flight training.

   a. The training programme should specify the time allocated to theoretical knowledge training, FSTD training and, if not approved for zero flight-time training (ZFTT), the aeroplane. The initial type rating course should be programmed on the basis that the student has the minimum licensing and experience requirements for entry to the course. For a first type rating on a multi-pilot aeroplane, the course should also provide for consolidation and type-specific training in those elements of basic MCC training relevant to the type or variant.

b. If an ATO wishes to provide a training course that includes credit for previous experience on similar types of aircraft, such as those with common systems or operating procedures with the new type, the entry requirements to such courses should be specified by the ATO and should define the minimum level of experience and qualification required of the flight crew member.

c. An ATO is permitted to contract elements of training to a third party training provider. In such cases the contracted organisation should normally be approved to conduct such training. When the contracted organisation is not an ATO, the competent authority should, within the approval process of the ATO, include the contracted organisation and be satisfied that the standard of training intended to be given meets the requirements. The other obligations of the ATO, such as student progress monitoring and an adequate management system can be exercised by the ATO seeking approval and which retains responsibility for the whole course.

GROUND TRAINING

4. Syllabus.

The ground training syllabus should provide for the student to gain a thorough understanding of the operation, the function and, if appropriate, the abnormal and emergency operation of all aircraft systems. This training should also include those systems essential to the operation of the aircraft, such as 'fly-by-wire' flight control systems, even if the flight crew have little or no control of their normal or abnormal operation.

5. Theoretical knowledge instruction.

The theoretical knowledge instruction training should meet the general objectives of (but not be limited to):

a. giving the student a thorough knowledge of the aircraft structure, powerplant and systems, and their associated limitations, including mass and balance, aircraft performance and flight planning considerations;

b. giving the student a knowledge of the positioning and operation of the cockpit controls and indicators for the aircraft and its systems;

c. giving the student an understanding of system malfunctions, their effect on aircraft operations and interaction with other systems; and

d. giving the student the understanding of normal, abnormal and emergency procedures

6. Facilities and training aids.

The ATO should provide adequate facilities for classroom instruction and have available appropriately qualified and experienced instructors. Training aids should enable students to gain practical experience of the operation of systems covered by the theoretical knowledge syllabus and, in the case of multi-pilot aeroplanes, enable such practical application of the knowledge to be carried out in a multi-crew environment. Facilities should be made available for student self-study outside the formal training programme.

7. Computer-based training (CBT).

CBT provides a valuable source of theoretical instruction, enabling the students to progress at their own pace within specified time limits. Many such systems ensure that syllabus subjects are fully covered and progress can be denied until a satisfactory assimilation of knowledge has been demonstrated. Such systems may allow self-study or distance learning, if they incorporate adequate knowledge testing procedures. When CBT is used as part of the theoretical knowledge instruction phase, the student should also have access to a suitably qualified instructor able to assist with areas of difficulty for the student.

8. Self-study and distance learning.

Elements of the theoretical knowledge syllabus may be adequately addressed by distance learning, if approved, or self-study, particularly when utilising CBT. Progress testing, either by self-assessed or instructor-evaluated means should be included in any self-study programme. If self-study or distance learning is included in the theoretical knowledge training, the course should also provide for an adequate period of supervised consolidation and knowledge testing.

9. Progress tests and final theoretical knowledge examination.

a. The theoretical knowledge training programme should provide for progressive testing of the assimilation of the required knowledge. This testing process should also provide for retesting of syllabus items so that a thorough understanding of the required knowledge is assured. This should be achieved by intervention by a qualified instructor or, if using CBT with a self-testing facility, and by further testing during the supervised consolidation phase of the ground course.

b. The final theoretical knowledge examination should cover all areas of the theoretical knowledge syllabus. The final examination should be conducted as a supervised written (including computer-based) knowledge test without reference to course material. The pass mark of 75% assumes the achievement of satisfactory levels of knowledge during the progressive phase tests of the course. The student should be advised of any areas of lack of knowledge displayed during the examination and, if necessary, given remedial instruction.

A successful pass of the theoretical knowledge course and final examination should be a pre-requisite for progression to the flight training phase of the type rating course.

FLIGHT TRAINING

10. Flight simulation training devices (FSTDs).

A type rating course for a multi-pilot aeroplane should include FSTD training.

The amount of training required when using FSTDs will depend on the complexity of the aeroplane concerned, and to some extent on the previous experience of the pilot. Except for those courses giving credit for previous experience (3.b.), a minimum of 32 hours of FSTD training should be programmed for a crew of a multi-pilot aeroplane, of which at least 16 hours should be in a FFS operating as a crew. FFS time may be reduced if other qualified FSTDs used during the flight training programme accurately replicate the cockpit environment, operation and aeroplane response. Such FSTDs may typically include FMC training devices using hardware and computer programmes identical to those of the aeroplane.

11. Aeroplane training with full flight simulator.

a. With the exception of courses approved for ZFTT, certain training exercises normally involving take-off and landing in various configurations should be completed in the aeroplane rather than an FFS. For multi-pilot aeroplanes where the student pilot has more than 500 hours of MPA experience in aeroplanes of similar size and performance, these should include at least four landings of which at least one should be a full-stop landing, unless otherwise specified in the OSD established in accordance with Part-21, when available. In all other cases the student should complete at least six landings. This aeroplane training may be completed after the student pilot has completed the FSTD training and has successfully undertaken the type rating skill test, provided it does not exceed two hours of the flight training course.

b. Courses approved for ZFTT

During the specific simulator session before line lying under supervision (LIFUS), consideration should be given to varying conditions, for example:

i. runway surface conditions;

ii. runway length;

iii. flap setting;

iv. power setting;

v. crosswind and turbulence conditions; and

vi MTOW and MLW.

The landings should be conducted as full-stop landings. The session should be flown in normal operation.

Special attention should be given to the taxiing technique.

a. A training methodology should be agreed with the competent authority that ensures the trainee is fully competent with the exterior inspection of the aeroplane before conducting such an inspection un-supervised.

b. The LIFUS should be performed as soon as possible after the specific FFS session.

c. The licence endorsement should be entered on the licence after the skill test, but before the first four4 take-offs and landings in the aeroplane. At the discretion of the competent authority, provisional or temporary endorsement and any restriction should be entered on the licence.

Where a specific arrangement exists between the ATO and the commercial air transport operator, the operator proficiency check (OPC) and the ZFTT specific details should be conducted using the operator's standard operational procedures (SOPs).

12. Aeroplane without full flight simulator.

a. Flight training conducted solely in an aeroplane without the use of FSTDs cannot cover the crew resource management (CRM) and multi-crew cockpit (MCC) aspects of MPA flight training, and for safety reasons cannot cover all emergency and abnormal aircraft operation required for the training and skill test. In such cases, the ATO should demonstrate to the competent authority that adequate training in these aspects can be achieved by other means. For training conducted solely on a multi-pilot aeroplane where two pilots are trained together without the use of a flight simulator, a minimum of 8 hours of flight training as pilot flying (PF) for each pilot should normally be required. For training on a single-pilot aeroplane, 10 hours of flight training should normally be required. It is accepted that for some relatively simple single or multi-engine aircraft without systems such as pressurisation, FMS or electronic cockpit displays, this minimum may be reduced.

b Aeroplane training normally involves an inherent delay in achieving an acceptable flight situation and configuration for training to be carried out in accordance with the agreed syllabus. These could include ATC or other traffic delay on the ground prior to take-off, the necessity to climb to height or transit to suitable training areas and the unavoidable need to physically reposition the aircraft for subsequent or repeat manoeuvres or instrument approaches. In such cases it should be ensured that the training syllabus provides adequate flexibility to enable the minimum amount of required flight training to be carried out.

SKILL TEST

13. Upon completion of the flight training, the pilot will be required to undergo a skill test with an examiner to demonstrate adequate competency of aircraft operation for issue of the type rating. The skill test should be separate from the flight training syllabus, and provision for it cannot be included in the minimum requirements or training hours of the agreed flight training programme. The skill test may be conducted in a flight simulator, the aeroplane or, in exceptional circumstances, a combination of both.

COURSE COMPLETION CERTIFICATE

14. The HT, or a nominated representative, should certify that all training has been carried out before an applicant undertakes a skill test for the type rating to be included in the pilot's licence. If an ATO is unable to provide certain elements of the training that is required to be carried out on an aircraft the ATO may issue such a certificate confirming the completion of the ground training or the training in an FSTD.

AMC3-OR.ATO.125 Training programme

TYPE RATING COURSES - HELICOPTERS

1. Introduction.

   a. When developing the training programme for a type rating course, in addition to complying with the standards included in the OSD as established in accordance with Part-21 for the applicable type, the ATO should also follow any further recommendations contained therein.

   b. The course should, as far as possible, provide for integrated ground, flight simulator and flight training designated to enable the student to operate safely and qualify for the grant of a type rating. The course should be directed towards a helicopter type, but where variants exist, all flying and ground training forming the basis of the course should relate to a single variant.

2. Variants.

   a. Familiarisation training: where a helicopter type rating also includes variants of the same aircraft type requiring familiarisation training, the additional familiarisation training may be included in the theoretical knowledge training of the initial type rating course.

   b. Differences training: where a helicopter type rating also includes variants of the same aircraft type for which difference training is required, the initial training course should be directed towards a single variant. Additional training to operate other variants within the same type rating should be completed after successful completion of the initial type rating course, although elements of this differences training may be undertaken at appropriate stages of the initial course, with the agreement of the competent authority.

3. Training in helicopter and FSTDs

   The training programme should specify the amounts of flight training in the helicopter type and in FSTDs (FFSs, flight training devices (FTDs), or other training devices (OTDs)). Where a suitable FFS is geographically remote from the normal training base, the competent authority may agree to some additional training being included in the programme at a remote facility.

4. Skill Test.

   The content of the flight training programme should be directed towards the skill test for that type. The practical training given in Part-FCL should be modified as necessary.

   The skill test may be completed in a helicopter, in an FFS or partially in a helicopter and in an FSTD. The use of an FSTD for skill tests is governed by the level of approval of the flight simulator and the previous experience of the candidate. Where a flight simulator is not available, abnormal operations of systems should not be practised in a helicopter other than as allowed for in the skill test form for the type.

5. Phase progress tests and final theoretical knowledge examination.

   Prior to the final theoretical knowledge examination covering the whole syllabus, the training programme should provide for phase progress tests associated with each phase of theoretical knowledge instruction. The phase progress tests should assess the candidate's knowledge on completion of each phase of the training programme.

6. Facilities: ground school equipment, training facilities and aids.

An ATO should provide, as a minimum, facilities for classroom instruction. Additional classroom training aids and equipment including, where appropriate, computers, should reflect the content of the course and the complexity of the helicopter. For multi-engine and multi-pilot helicopters, the minimum level of ground training aids should include equipment that provides a realistic cockpit working environment. Task analysis and the latest state-of–the-art training technology is encouraged and should be fully incorporated into the training facilities wherever possible. Facilities for self and supervised testing should be available to the student.

7. Training devices.

An FTD or OTD may be provided to supplement classroom training in order to enable students to practice and consolidate theoretical instruction. Where suitable equipment is not available, or is not appropriate, a helicopter or flight simulator of the relevant variant should be available. If an FTD represents a different variant of the same helicopter type for which the student is being trained, then differences and/or familiarisation training is required.

8. Computer-based-training (CBT).

Where CBT aids are used as a training tool, the ATO should ensure that a fully qualified ground instructor is available at all times when such equipment is being used by course students. Other than for revision periods, CBT lessons should be briefed and debriefed by a qualified ground instructor.

9. Theoretical knowledge instruction.

The theoretical knowledge instruction training should meet the general objectives of giving the student:

a. a thorough knowledge of the helicopter structure, transmissions, rotors and equipment, powerplant and systems, and their associated limitations;

b. a knowledge of the positioning and operation of the cockpit controls and indicators for the helicopter and its systems;

c. a knowledge of performance, flight planning and monitoring, weight and balance, servicing and optional equipment items;

d. an understanding of system malfunctions, their effect on helicopter operations and interaction with other systems;

e. the understanding of normal, abnormal and emergency procedures and giving the student the understanding of potential control problems near the edge of the handling envelope. In particular, the phenomenon of ‘servo transparency’ (also known as ‘jack stall’) should be covered for those helicopter types where it is a known problem.

The amount of time and the contents of the theoretical instruction will depend on the complexity of the helicopter type involved and, to some extent, on the previous experience of the student.

10. Flight Training.

a. FSTDs

The level of qualification and the complexity of the type will determine the amount of practical training that may be accomplished in an FSTD, including completion of the skill test. Prior to undertaking the skill test, a student should demonstrate competency in the skill test items during the practical training.

b. Helicopter (with flight simulator)

With the exception of courses approved for ZFTT the amount of flight time in a helicopter should be adequate for completion of the skill test.

c. Helicopters (without flight simulator)

Whenever a helicopter is used for training, the amount of flight time practical training should be adequate for the completion of the skill test. The amount of flight training will depend on the complexity of the helicopter type involved and, to some extent, on the previous experience of the applicant.

AMC4-OR.ATO.125 Training programme – Flight Test training

FLIGHT TEST TRAINING COURSES – AEROPLANE AND HELICOPTERS

1. Introduction.

   a. A flight test training course should, as far as possible, provide for a continuous process of ground and flight training to enable the student to assimilate the knowledge and skills required to conduct flight testing safely and efficiently. The student's ability to do this should be determined by the demonstration of a satisfactory level of theoretical knowledge of flight testing determined by progressive checking of knowledge and examination and progressive assessment by the ATO during flying training. There should be no difference in the level of knowledge or competency required of the student, irrespective of the intended role of the student as test pilot or other flight test personnel (for example, flight test engineer) within the flight crew.

   b. A flight test training course should normally be conducted as a single, full-time course of study and training.

2. Programme of theoretical knowledge and flight training.

   a. The training programme should specify the time allocated to theoretical knowledge training and flying training.

   b. If an ATO wishes to provide a flight test training course that includes credit for previous experience on flight testing activity, the entry requirements to such courses should be specified by the ATO and should define the minimum level of experience and qualification required of the flight test crew member.

GROUND TRAINING

3. Syllabus.

   a. The ground training syllabus should provide for the student to gain a thorough understanding of flight testing techniques.

4. Theoretical knowledge instruction.

   a. The theoretical knowledge instruction training should give the student a thorough knowledge of the academic requirements of flight testing.

5. Facilities and training aids.

   a. The ATO should provide adequate facilities for classroom instruction and have available appropriately qualified and experienced instructors. Training aids should enable students to gain practical experience of flight testing covered by the theoretical knowledge syllabus and enable such practical application of the knowledge to be carried out in a multi-crew environment. Facilities should be made available for student self-study outside the formal training programme.

6. Computer-based training (CBT).

   a. CBT provides a valuable source of theoretical instruction, enabling the student to progress at his own pace within specified time limits. Many such systems ensure that syllabus subjects are fully covered and progress can be denied until a satisfactory assimilation of knowledge has been demonstrated. Such systems may allow self-study or distance learning, if they incorporate adequate knowledge testing procedures. When CBT is used as part of the theoretical knowledge instruction phase, the student should also have access to a suitably qualified instructor able to assist with areas of difficulty for the student.

7. Self-study and distance learning.

   a. Elements of the theoretical knowledge syllabus may be adequately addressed by distance learning, if approved, or self-study, particularly when utilising CBT. Progress testing, either by self-assessed or instructor-evaluated means should be included in any self-study programme. If self-study or distance learning is included in the theoretical knowledge training, the course should also provide for an adequate period of supervised consolidation and knowledge testing prior to the commencement of flight training.

8. Progress tests and final theoretical knowledge examination.

   a. The theoretical knowledge training programme should provide for progressive testing of the assimilation of the required knowledge. This testing process should also provide for retesting of syllabus items so that a thorough understanding of the required knowledge is assured. This should be achieved by intervention by a qualified instructor or, if using CBT with a self-testing facility, and by further testing during the supervised consolidation phase of the ground course.

   b. The theoretical knowledge examinations should cover all areas of the theoretical knowledge syllabus. The examinations should be conducted as supervised written or oral knowledge tests without reference to course material. The pass mark (as defined by the ATO assumes the achievement of satisfactory levels of knowledge during the progressive phase tests of the course. The student should be advised of any areas of lack of knowledge displayed during the examination and, if necessary, given remedial instruction.

FLIGHT TRAINING

9. Aeroplane/helicopter training.

   a. It is widely accepted that flying training normally involves inherent delay in achieving an acceptable flight situation and configuration for training to be carried out in accordance with the agreed syllabus. These could include ATC or other traffic delay on the ground prior to take off, the necessity to climb to height or transit to suitable training areas and the unavoidable need to physically reposition the aircraft for subsequent or repeat manoeuvres or instrument approaches. In such cases it should be ensured that the training syllabus provides adequate flexibility to enable the minimum amount of required flight training to be carried out.

FINAL IN-FLIGHT EXERCISE

10. Upon completion of the flight test training, the test pilot and/or flight test engineer will be required to undergo in-flight exercise with an FTI to demonstrate adequate competency of flight testing for issue of the flight test rating. The final in-flight exercise must be conducted in an appropriate aeroplane/helicopter.

COURSE COMPLETION CERTIFICATE

11. The HT is required to certify that the applicant has successfully completed the training course.

AMC1-OR.ATO.135 Training aircraft and FSTDs

ALL ATOs, EXCEPT THOSE PROVIDING FLIGHT TEST TRAINING

1. The number of training aircraft may be affected by the availability of FSTDs.

2. Each aircraft should be:

   a. except in the case of balloons, fitted with duplicated primary flight controls for use by the instructor and the student. Swing-over flight controls should not be used;

   b. equipped as required in the training specifications concerning the course in which it is used.

3 The fleet should include, as appropriate to the courses of training:

a. aircraft suitably equipped to simulate instrument meteorological conditions and for the instrument flight training required. For flight training and testing for the instrument rating, an adequate number of IFR-certificated aircraft should be available;

b. in the case of aeroplanes and sailplanes, aircraft suitable for demonstrating stalling and spin avoidance;

c. for the light aircraft flight instructor (LAFI) and flight instructor (FI) training courses on aeroplanes and sailplanes, aircraft suitable for spin recovery at the developed stage;

d. in the case of helicopters, helicopters suitable for autorotation demonstration;

e. in a non-complex ATO one aircraft fulfilling all the required characteristics for a training aircraft might be sufficient; and

f. each FSTD should be equipped as required in the training specifications concerning the course in which it is used.

AMC1-OR.ATO.140 Aerodromes and operating sites

GENERAL

1. Except in the case of balloons, the base aerodrome or operating site and any alternative base aerodromes at which flight training is being conducted should have at least the following facilities:

   a. at least one runway or take-off area that allows training aircraft to make a normal take-off or landing within the performance limits of all the aircraft used for the training flights.

   b. a wind direction indicator that is visible at ground level from the ends of each runway or at the appropriate holding points;

   c. adequate runway electrical lighting if used for night training; and

   d. an air traffic service, except for uncontrolled airfields or operating sites where the training requirements may be satisfied safely by another acceptable means of air-to-ground communication.

2. Except in the case of ATOs providing flight test training, in addition to 1, for helicopters, training sites should be available for:

   a. confined area operation training;

   b. simulated engine off autorotation; and

   c. sloping ground operation.

3. In the case of balloons, the take-off sites used by the ATO should allow a normal take-off and clearing of all obstacles in the take-off flight path by at least 50 ft.

AMC1-OR.ATO.145 Pre-requisites for training

ENTRANCE REQUIREMENTS

An ATO providing training for other than LAPL, PPL, SPL or BPL should establish entrance requirements for students in their procedures. The entrance requirements should ensure that the students have enough knowledge, particularly of physics and mathematics, to be able to follow the courses.

SECTION II - ADDITIONAL REQUIREMENTS FOR ATOS PROVIDING TRAINING FOR LICENCES AND RATINGS OTHER THAN THE LAPL, PPL, SPL AND BPL

AMC1-OR.ATO.210 Personnel requirements

GENERAL

1. The management structure should ensure supervision of all grades of personnel by persons having the experience and qualities necessary to ensure the maintenance of high standards. Details of the management structure, indicating individual responsibilities, should be included in the training organisation's operations manual.
2. The training organisation should demonstrate to the competent authority that an adequate number of qualified, competent staff is employed.
3. In the case of an ATO offering integrated courses, the HT, the CFI and the CGI should be employed full-time.
4. In the case of an ATO offering:
   a. modular courses only; or
   b. type rating courses only; or
   c. theoretical knowledge instruction only

   the positions of HT, CFI and CGI may be combined and filled by one or two persons with extensive experience in the training conducted by the training organisation, full-time or part-time, depending upon the scope of training offered.
5. The ratio of all students to flight instructors, excluding the HT, should not exceed 6:1.
6. Class numbers in ground subjects involving a high degree of supervision or practical work should not exceed 28 students.

THEORETICAL KNOWLEDGE INSTRUCTORS

7. The theoretical knowledge instruction for type or class ratings should be conducted by instructors holding the appropriate type/class rating, or having appropriate experience in aviation and knowledge of the aircraft concerned.
8. For this purpose, a flight engineer, a maintenance engineer or a flight operations officer should be considered as having appropriate experience in aviation and knowledge of the aircraft concerned.

AMC2-OR.ATO.210 Personnel requirements

QUALIFICATION OF HEAD OF TRAINING AND CHIEF FLIGHT INSTRUCTOR

1. *Head of training (HT)*. The nominated HT should hold or have held in the three years prior to first appointment as a HT, a professional pilot licence and associated ratings or certificates issued in accordance with Part-FCL, related to the flight training courses conducted.
2. Chief flight instructor (CFI). The CFI should:
   a. hold the highest professional pilot licence and associated ratings or certificates related to the flight training courses conducted; and
   b. except in the case of ATOs providing flight test training, have completed 1 000 hours of flight time as pilot-in-command of which at least 500 hours should be on flying instructional duties related to the flying courses conducted, of which 200 hours may be instrument ground time.

AMC1-OR.ATO.230(c) Training manual and operations manual

TRAINING MANUAL

Training manuals for use at an ATO conducting integrated or modular flight training courses should include the following:

1. The Training Plan

The aim of the course (ATP, CPL/IR, CPL, etc as applicable)	A statement of what the student is expected to do as a result of the training, the level of performance, and the training constraints to be observed.
Pre-entry requirements	Minimum age, educational requirements (including language), medical requirements. Any individual Member State requirements.
Credits for previous experience	To be obtained from the competent authority before training begins.
Training Syllabi	As applicable, the flying syllabus (single-engine or multi-engined, as applicable), the flight simulation training syllabus and the theoretical knowledge training syllabus.
The time scale and scale, in weeks, for each syllabus	Arrangements of the course and the integration of syllabi time.
Training programme	The general arrangements of daily and weekly programmes for flying, ground training and training in FSTDs, if applicable Bad weather constraints. Programme constraints in terms of maximum student training times, (flying, theoretical knowledge, on FSTDs), e.g. per day/week/month. Restrictions in respect of duty periods for students. Duration of dual and solo flights at various stages. Maximum flying hours in any day/night; maximum number of training flights in any day/night. Minimum rest period between duty periods.
Training records	Rules for security of records and documents. Attendance records. The form of training records to be kept. Persons responsible for checking records and students' log books. The nature and frequency of record checks. Standardisation of entries in training records. Rules concerning log book entries.

Safety training	Individual responsibilities. Essential exercises. Emergency drills (frequency). Dual checks (frequency at various stages). Requirement before first solo day/night/navigation etc, if applicable.
Tests and examinations	Flying a. progress checks; b. skill tests. Theoretical Knowledge a. progress tests; b. theoretical knowledge examinations. Authorisation for test. Rules concerning refresher training before retest. Test reports and records. Procedures for examination paper preparation, type of question and assessment, standard required for 'Pass'. Procedure for question analysis and review and for raising replacement papers. Examination resit procedures.
Training effectiveness	Individual responsibilities. General assessment. Liaison between departments. Identification of unsatisfactory progress (individual students). Actions to correct unsatisfactory progress. Procedure for changing instructors. Maximum number of instructor changes per student. Internal feedback system for detecting training deficiencies. Procedure for suspending a student from training. Discipline. Reporting and documentation.
Standards and Level of performance at various stages	Individual responsibilities. Standardisation. Standardisation requirements and procedures. Application of test criteria.

2. Briefing and Air Exercises

Air Exercise	A detailed statement of the content specification of all the air exercises to be taught, arranged in the sequence to be flown with main and sub-titles.
Air exercise reference list	An abbreviated list of the above exercises giving only main and subtitles for quick reference, and preferably in flip-card form to facilitate daily use by instructors.

Course structure – Phase of training	A statement of how the course will be divided into phases, indication of how the above air exercises will be divided between the phases and how they will be arranged to ensure that they are completed in the most suitable learning sequence and that essential (emergency) exercises are repeated at the correct frequency. Also, the syllabus hours for each phase and for groups of exercises within each phase should be stated and when progress tests are to be conducted, etc.
Course structure integration of syllabi	The manner in which theoretical knowledge and flight training in an aircraft or an FSTD will be integrated so that as the flying training exercises are carried out students will be able to apply the knowledge gained from the associated theoretical knowledge instruction and flight training.
Student progress	The requirement for student progress and include a brief but specific statement of what a student is expected to be able to do and the standard of proficiency he/she must achieve before progressing from one phase of air exercise training to the next. Include minimum experience requirements in terms of hours, satisfactory exercise completion, etc. as necessary before significant exercises, e.g. night flying.
Instructional methods	The ATO requirements, particularly in respect of pre- and post-flying briefing, adherence to syllabi and training specifications, authorisation of solo flights, etc.
Progress tests	The instructions given to examining staff in respect of the conduct and documentation of all progress tests.
Glossary of terms	Definition of significant terms as necessary.
Appendices	Progress test report forms. Skill test report forms. ATO certificates of experience, competence, etc. as required.

3. Flight training in an FSTD, if applicable

Structure generally as for 2.

4. Theoretical knowledge instruction

Structure of the theoretical knowledge course	A statement of the structure of the course, including the general sequence of the topics to be taught in each subject, the time allocated to each topic, the breakdown per subject and an example of a course schedule. Distance learning courses should include instructions of the material to be studied for individual elements of the course.
Lesson Plans	A description of each lesson or group of lessons including teaching materials, training aids, progress test organisation and inter-connection of topics with other subjects.
Teaching materials	Specification of the training aids to be used (e.g. study materials, course manual references, exercises, self-study materials, demonstration equipment).
Student progress	The requirement for student progress, including a brief but specific statement of the standard that must be achieved and the mechanism for achieving this, before application for

	theoretical knowledge examinations.
Progress testing	The organisation of progress testing in each subject, including topics covered, evaluation methods and documentation.
Review procedure	The procedure to be followed if the standard required at any stage of the course is not achieved, including an agreed action plan with remedial training if required.

AMC1-OR.ATO.230(d) Training manual and operations manual – all ATOs, except those providing flight test training

OPERATIONS MANUAL

The operations manual for use at an ATO conducting integrated or modular flight training courses should include the following:

1. General
   a. a list and description of all volumes in the Operations Manual;
   b administration (function and management);
   c. responsibilities (all management and administrative staff);
   d. student discipline and disciplinary action;
   e. approval/authorisation of flights;
   f. preparation of flying programme (restriction of numbers of aircraft in poor weather);
   g. command of aircraft;
   h. responsibilities of pilot-in-command;
   i. carriage of passengers;
   j. aircraft documentation;
   k. retention of documents;
   l. flight crew qualification records (licences and ratings);
   m. revalidation (medical certificates and ratings);
   n. flight duty period and flight time limitations (flying instructors);
   o. flight duty period and flight time limitations (students);
   p. rest periods (flight instructors);
   q. rest periods (students);
   r. pilots' log books;
   s. flight planning (general); and
   t. safety (general) – equipment, radio listening watch, hazards, accidents and incidents (including reports), safety pilots etc..
2. Technical
   a. aircraft descriptive notes;
   b. aircraft handling (including checklists, limitations, maintenance and technical logs, in accordance with relevant requirements, etc.);
   c. emergency procedures;
   d. radio and radio navigation aids; and
   e. allowable deficiencies (based on MMEL, if available).

3. Route

   a. performance (legislation, take-off, route, landing etc.);

   b. flight planning (fuel, oil, minimum safe altitude, navigation equipment etc.);

   c. loading (load sheets, mass, balance, limitations);

   d. weather minima (flying instructors);

   e. weather minima (students – at various stages of training); and

   f. training routes/areas.

4. Personnel Training

   a. appointments of persons responsible for standards/competence of flight personnel;

   b. initial training;

   c refresher training;

   d standardisation training;

   e proficiency checks;

   f. upgrading training; and

   g. ATO personnel standards evaluation.

SECTION III – ADDITIONAL REQUIREMENTS FOR ORGANISATIONS OPERATING FLIGHT SIMULATION TRAINING DEVICES (FSTDS) AND THE QUALIFICATION OF FSTDS

CHAPTER 1 - REQUIREMENTS FOR ORGANISATIONSOPERATING FSTDS

AMC1-OR.ATO.300 General

COMPLIANCE MONITORING PROGRAMME –ORGANISATIONS OPERATING FSTDS

1. Introduction.

   a. The purpose of this AMC is to provide additional and specific information and guidance to an organisation operating FSTDs on how to establish a compliance monitoring programme (CMP) that enables compliance with the applicable requirements.

2. Compliance Monitoring Programme.

   a. Typical subject areas for inspections are:

      i. Actual FSTD operation;

      ii. Maintenance;

      iii. Technical Standards; and

      iv. FSTD safety features.

3. Audit Scope.

   a. Organisations operating FSTDs are required to monitor compliance with the procedures they have designed to ensure specified performance and functions.

   In doing so they should as a minimum, and where appropriate, monitor:

      i. Organisation;

      ii. Plans and objectives;

iii. Maintenance procedures;

iv. FSTD qualification level;

v. Supervision;

vi. FSTD technical status;

vii. Manuals, logs, and records;

viii. Defect deferral;

ix. Personnel training;

x. Aircraft modifications; and

xi. FSTD configuration management.

AMC2-OR.ATO.300 General

COMPLIANCE MONITORING PROGRAMME –ORGANISATIONS OPERATING FSTDS

Standard Measurements for Full Flight Simulator Compliance

One acceptable means of measuring FSTD performance is contained in ARINC report 433 (May 15th, 2001 or as amended) *Standard Measurements for Flight Simulator Quality*.

AMC3-OR.ATO.300 General

COMPLIANCE MONITORING PROGRAMME –ORGANISATIONS OPERATING BASIC INSTRUMENT TRAINING DEVICES (BITD)

1. A compliance monitoring programme together with a statement acknowledging completion of a periodic review by the accountable manager should include the following:
   a. a maintenance facility which provides suitable BITD hardware and software test and maintenance capability;
   b. a recording system in the form of a technical log in which defects, deferred defects and development work are listed, interpreted, actioned and reviewed within a specified time scale; and
   c. planned routine maintenance of the BITD and periodic running of the qualification test guide (QTG) with adequate manning to cover BITD operating periods and routine maintenance work.
2. A planned audit schedule and a periodic review should be used to verify that corrective action was carried out and that it was effective. The auditor should have adequate knowledge of BITDs.

GM1-OR.ATO.300 General

COMPLIANCE MONITORING - ORGANISATIONS OPERATING FSTDS- GENERAL

1. The concept of compliance monitoring is a fundamental requirement for organisations operating FSTDs. An effective CM function is vitally important in supporting operation of the devices, in a structured way, to ensure they remain in compliance with the technical standards of CS-FSTD(A) and CS-FSTD (H) and continue to be effective training tools. An effective CM function is also essential to support any level of extended recurrent evaluation period as permitted by OR.ATO.375(b).
2. OR.ATO.375(b) provides the requirements on what is expected of a CM function. The following guidance has been developed to provide additional material to help both

organisations operating FSTDs and competent authorities in developing effective CM that satisfy the applicable requirements and ensure the highest standards of training are maintained.

3. For ease of use this guidance material has been laid out in the same way as AMC2-OR.GEN.200(a)(7). This guidance is equally applicable to other levels of FSTDs and both aeroplanes and helicopters. Where the expected standard differs this has been detailed in the guidance material.

4. Also included, as appendices to this guidance material are a compliance checklist for organisations operating FSTDs (GM2-OR.ATO.300) and guidance detailing the preparation for an evaluation by the competent authority (GM3-OR.ATO.300). The compliance checklist should be used by the authorities as a standardised checklist for the elements that are expected in the CM function of an organisation operating FSTDs. The organisation should complete as a minimum the second column of the checklist by providing appropriate manual or procedure references for each of the identified elements of the CM function. Additional information can be provided in the third column to aid assessment of the checklist as appropriate. This would then be provided to the competent authority. Use of this checklist should assist in ensuring a consistent approach by the competent authorities and also provide organisations operating FSTDs with additional guidance on all the elements of a CM function that the competent authorities will expect. The guidance is provided to help organisations operating FSTDs to prepare for authority visits.

5. The documentation of the CM may be electronic, provided the necessary controls can be demonstrated. This should include control of any paper copies that may be downloaded for use by individuals. It is recommended that any such copies are automatically designated as uncontrolled as part of the download process. Whilst electronic signatures on master documents may be accepted, with appropriate protections, a hardcopy master of the CM manual should be provided, with wet-ink signatures to be held by the applicant.

6. It should be recognised that whatever CM is developed, it will not be effective unless it becomes an integral part of the way in which the organisation works. It includes both the necessary procedures for maintaining compliance with all the applicable requirements and a compliance monitoring programme (CMP) to monitor the execution of these procedures. A successful CM will ensure that the highest training tool is available at all times. If the CM is viewed as an add-on to existing processes it will become a burden and it will never be wholly effective. It should also be noted that compliance control or inspection is only a small part of a CM. If the CM is working effectively, inspections such as fly-outs should become routine revealing little beyond day-to-day unserviceabilities. Systematic defects should be captured by the CMP.

7. The competent authority should be satisfied that the accountable manager is able to adequately provide the required level of resources to properly support the FSTD. Detailed knowledge of FSTD requirement standards are not necessary, only sufficient to understand his/her responsibility for ensuring the FSTD is properly supported. The assessment of the compliance monitoring manager should concentrate on establishing that the nominee has sufficient knowledge and experience of both compliance monitoring management and FSTD operations to operate a CMS within an organisation operating FSTDs. This is likely to require experience of working in the compliance monitoring field and sufficient knowledge of FSTDs and the technical standards with which they should comply.

8. If an organisation operating FSTDs is certified under any international quality standard it should assure that it fully covers the applicable organisation requirements (OR) and the qualification basis.

9. For small organisations, it is perfectly acceptable to combine the roles of compliance monitoring manager and Accountable Manager. For other organisations that hold multiple certificates and may cover multiple sites, it is advantageous to have a

common CM function with an overall compliance monitoring manager. However, it is essential, particularly where sites may be significantly separated geographically, that there is a nominated representative/focal at each site and possibly for each certificate. These representatives should hold the delegated responsibility of the compliance monitoring manager for the day-to-day compliance monitoring role at their site and in their function and have the necessary direct reporting line to the overall compliance monitoring manager. It will also be necessary to ensure that local representatives are also acceptable to the local NAA. In many cases the local representatives may perform other functions in addition to this role. This is acceptable provided the necessary independence of any compliance monitoring activity is maintained.

10. CM, as a whole, begins with the requirements with which the system seeks to comply. These include both the technical standards, in this case the relevant parts of CS-FSTD plus any other specific standards, for example Health and Safety regulations, and the compliance monitoring objectives, such as defect rates and rectification intervals and FSTD reliability targets. The CM should define the process by which these standards are made available to those who require them.

11. The next part of CM is that part which defines the day-to-day procedures or working practices by which the standards will be achieved. These procedures should include as a minimum defect reporting systems, defect rectification processes, tracking mechanisms, preventative maintenance programmes, spares handling, equipment calibration and configuration management of the device. They should include checks to assess the compliance of the performed actions. These procedures and standards should be made readily available to anybody involved in the maintenance and day-to-day operation of the FSTD.

12. The third part of CM is the method by which the organisation operating an FSTD confirms the device is maintained in compliance with the defined standards and is being operated in accordance with the defined procedures. This is the compliance monitoring programme (CMP) and includes the audit methods, reporting and corrective action procedures and feedback, management reviews and schedules for audits of all aspects of the FSTD operation.

13. Across all aspects of CM, and most important to it, are the people. CM includes the definition of the responsibilities of all staff and should include a declaration of the minimum levels of resource proposed for the direct support of the FSTD plus the levels of support and managerial staff proposed. The levels of resource can be affected by factors such as local health and safety regulations, existence of weekend and/or night usage of the device(s), etc. CM also includes definition of the skills and experience required for staff and leads to definition of any required training programmes. Training needs cover both technical training and audit training, including QTG running and checking and fly-out techniques for flight crew.

14. The documentation of CM may be provided in any number of documents provided there are appropriate cross-references in all documents such that the system is fully traceable in both directions from end to end. For all but small organisations at least two documents would be expected:

    a. Firstly, a CM manual containing the policy, terminology, organisational charts and responsibilities, an overview of all processes, within the system, including those for maintaining regulatory compliance such as QTG running and fly-outs (function and subjective testing), CMP including the audit schedule and audit procedures including reporting and corrective action procedures. In addition, the CM manual should include, either directly or by reference, the identification of skills and experience and associated training.

    b. Secondly, a procedures manual containing, as a minimum, software and hardware control procedures, configuration control procedures including, for example, control of training loads, updates to visual models, navigation and IOS databases, QTG running and checking procedures, fly-out procedures,

maintenance procedures including both defect rectification and preventative maintenance processes. Any standard forms and checklists should also be included.

15. The CM documentation also includes all records such as technical logs, QTG runs, fly-out reports and maintenance job cards.

16. For organisations with several certificates, separate and modular procedures manuals with a single CM manual covering all approvals, may be acceptable.

17. It is important to understand the difference between compliance assurance and compliance control. An effective CM will contain elements of both. Compliance control is normally done by inspection of the product; it provides confirmation at the time of the inspection that the product conforms to a defined standard.

18. The compliance assurance element is essential to ensure the standard is maintained throughout the periods between product (FSTD) inspections. Within a CMP, the processes are defined that are necessary to provide confidence that the FSTD(s) is being supported and maintained to the highest possible standard and in compliance with the relevant requirements. A programme of internal audits is then set in place to confirm that the processes are being followed and are effective. The competent authority would normally oversee a certified organisation by process and system audit, however, in the case of FSTDs, authority oversight includes an inspection element in the form of the recurrent FSTD evaluation.

19. In addition to the normal process and system audits, the compliance assurance audit schedule should include the schedule for each FSTD for fly-outs and QTG running through the audit year.

20. The audit procedure should include, at least, the following: statement of scope, planning, initiation of audit, collection of evidence, analysis, reporting of findings, identification and agreement of corrective actions and feedback, including reporting significant findings to the competent authority, where appropriate. The review of published material could include, in addition to the CM and procedures manuals, QTG records, fly-out reports, technical log sheets, maintenance records and configuration control records.

21. In addition to basic knowledge of FSTD requirements and operation, it is expected that auditors have received training in CM and audit techniques.

22. The routine fly-outs of the device are a specialised part of the audit programme. It is essential that the pilots tasked with carrying out these fly-outs are adequately experienced. They would be expected to be TRI/TRE qualified on the type, and should have experience of simulator evaluations carried out by the competent authority. The assignment of such pilots can present difficulties, particularly for the independent organisation operating FSTDs not directly associated with an airline. It is vital for the organisation to ensure their users are aware of the importance of the fly-outs as part of the continued qualification of the device and the need to assist in the provision of suitably qualified pilots to carry them out. It is worth noting that simulator users are required to satisfy themselves that the training devices they use are assessed for continued suitability, as part of there own CMP. Involvement in fly-outs assists in meeting this need.

23. Whilst it is accepted that the number of audits required in an organisation with a single device will be significantly less than those in larger organisations with multiple devices, the CMP should still meet the same criteria, and cover all aspects of the operation within a twelve-month period. The independence of the audit personnel should be maintained at all times. The audit programme, whether by full audit or by using a checklist system should still be sufficiently comprehensive to provide the necessary level of confidence that the device is maintained and operated to the highest possible standard. This includes monitoring and review of corrective actions and feedback processes.

24. The successful use of sub-contractors who play a significant role in the provision of services, such as maintenance or engineering services, to an organisation operating FSTDs is reliant on the sub-contractor operating under the CM of the organisation. All requirements that an organisation is expected to meet are equally applicable to his/her sub-contractor. It is the organisation's responsibility to ensure that the sub-contractor complies with its CM.

25. It is essential that a proper understanding of the CM and how it applies to each and every staff member is provided by appropriate training to all, not just those directly involved in operating the CM, such as the accountable manager, the compliance monitoring manager, representatives and the auditors. The training given to those directly involved in CM should cover the CM, audit techniques and applicable technical standards. CM familiarisation training should be an integral part of any induction training and recurrent training. Update training on technical standards for audit personnel, is also of particular importance.

26. Any effective CM will include measurement of its effectiveness. The organisation should develop performance measures that can be monitored against objectives. Such measures, often referred to as metrics, should be reviewed by the competent authority as part of its oversight of the CM within the organisation and during recurrent evaluations. In addition they should form part of the data reviewed during scheduled management reviews as part of the CM.

27. ARINC 433 provides good guidance on simulator compliance measurement. Metrics should monitor not only individual simulator performance but, for larger organisations, how each simulator is performing within the fleet. It is also recommended that metrics data be shared, regularly, with the simulator manufacturers to allow monitoring for generic problems such as design issues, which may be best addressed with a fleet-wide solution.

GM2-OR.ATO.300 General

COMPLIANCE MONITORING – ASSESSMENT FOR ORGANISATIONS OPERATING FSTDs

COMPLIANCE MONITORING ASSESSMENT FOR ORGANISATIONS OPERATING FSTDs			
Organisation:			
Site Assessed:			
Date of Assessment:			
Accountable Manager:			
Compliance Monitoring Manager:			
Number and Type of FSTDs:			
CM Manual Reference:			
Audit Area	**CM/Proc Ref**	**Comments**	**Satisfactory Y/N**
1. ACCOUNTABLE MANAGER			
Has an accountable manager with overall responsibility for compliance monitoring (CM) been nominated?			
Does the accountable manager have corporate authority to ensure all necessary activities can be financed and carried out to the standard required by the competent authority?			
Has a formal written compliance policy statement been established, included in the CM manual and signed by the accountable manager?			
2. COMPLIANCE MONITORING MANAGER			

Has a compliance monitoring manager (CM manager) been nominated?			
Are the posts of CM manager and AM combined? If so, is the independence of Compliance Audits assured?			
Does the CM manager have overall responsibility and authority to: a) verify that standards are met and b) ensure that the compliance monitoring programme is established, implemented and maintained?			
Does the CM manager have direct access to the AM?			
Does the CM manager have access to all parts of the organisation operating an FSTD and as necessary any subcontractor's organisation?			
3. COMPLIANCE MONITORING (CM)			
Has CM been established by the operator?			
Is CM properly documented? (see Section 4)			
Is the CM structured according to the size and complexity of the operator?			

Does the CM include the following as a minimum: a. Monitoring of compliance with required technical standards b. Identification of corrective actions and person responsible for rectification c. Feedback system to accountable manager to ensure corrective action are promptly addressed d. Reporting of significant non-compliances to the competent authority e. A compliance monitoring programme to verify continued compliance with applicable requirements, standards and procedures		a. b. c. d. e.	

Are the responsibilities of the CM manager defined to include, as a minimum:

a) Monitoring of corrective action programme — a)

b) To ensure that the corrective actions contain the necessary elements — b)

c) Provide management with an independent assessment of corrective action, implementation and completion — c)

d) Evaluation of the effectiveness of the corrective action programme — d)

Are adequate financial, material and human resources in place to support CM?

Are management evaluations/reviews of CM held at least quarterly?

Does the management evaluation ensure that the CMS is working effectively and is it comprehensive and well documented?

Does the compliance monitoring programme identify the processes necessary and the persons within the organisation who have the training, experience, responsibility and authority to carry out the following:

a. Schedule and perform quality inspections and audits, including unscheduled audits when required

b. Identify and record any concerns or findings, and the evidence necessary to substantiate such concerns or findings;

c. Initiate or recommend solutions to concerns or findings through designated reporting channels;

d. Verify the implementation of solutions within specific timescales;

a.

b.

c.

d.

Is there sufficient auditor resource available and can their required level of independence be demonstrated?

Do the auditors report directly to the compliance monitoring manager?

Does the defined audit schedule cover the following areas, within each 12 month period?

a. Organisation

b. Plans and objectives

c. Maintenance procedures

d. FSTD qualification level;

e. Supervision

f. FSTD technical status

g. Manuals, logs, and records

h. Defect deferral

a)

b)

c)

d)

e)

f)

g)

h)

i)

i. Personnel training

j)

j. Aircraft and simulator configuration management, including Airworthiness Directives

How are audit non-compliances recorded?

Are procedures in place to ensure that corrective actions are taken in response to findings?

Are records of the compliance monitoring programme: a) accurate b) complete and c) readily accessible		a) b) c)	
Is there an acceptable and effective procedure for providing a briefing on the CM to all personnel?			
Is there an acceptable and effective procedure for ensuring that all those responsible for managing the CM receive training covering: a) An introduction to the concept of the CM b) Compliance management c) The concept of Compliance Assurance d) CM manuals e) Audit Techniques f) Reporting and recording g) How the CM supports continuous improvement within the organisation		a) b) c) d) e) f) g)	
Are suitable training records maintained?			

Are activities within the CM sub-contracted out to external agencies?			
Do written agreements exist between the organisation and the sub-contractor clearly defining the services and standard to be provided?			
Are the procedures in place to ensure that the necessary authorisations/approval when required are held by a sub-contractor?			
Are the procedures in place to establish that the sub-contractor has the necessary technical competence?			
4. CM MANUAL			
What is the current status of the CM manual – amendment and issue date?			
Is there a procedure in place to control copies and the distribution of the CM manual?			
Is the CM manual signed by the accountable manager and the compliance monitoring manager?			
Does the CM manual include, either directly or by reference to other documents, the following: a) A description of the organisation b) Reference to appropriate FSTD technical standards c) Allocation of duties and responsibilities d) Audit procedures e) Reporting procedures f) Follow-up and corrective action procedures g) Document retention policy h) Training records		a) b) c) d) e) f) g) h)	

Is there a document retention policy covering a) Audit schedules a) Inspection and audit reports b) Responses to findings c) Corrective action reports d) Follow-up and closure reports e) Management evaluation reports		a) b) c) d) e) f)	

Does the CM manual include, either directly or by reference to other documents, the following procedures for day to day operation of the FSTD: a) Defect reporting systems b) Defect rectification processes c) Tracking mechanisms d) Preventative maintenance programmes e) Spares handling f) Equipment calibration g) Configuration management of the device including visual, IOS and navigation databases. h) Configuration control system to ensure the continued integrity of the hardware and software qualified. i) QTG running and function and subjective tests.		a) b) c) d) e) f) g) h) i)	

Does the CM manual include, either directly or by reference to other documents, procedures for notification of the competent authorities of the following: a) Any change in the organisation including Company name, location, management b) Major changes to a qualified device c) Deactivation or relocation of a qualified device d) Major failures of a qualified device e) Major safety issue associated with the installation		a) b) c) d) e)	

Does the CM manual define acceptable and effective procedures to ensure compliance with applicable health and safety regulations, including: a) Safety briefings b) Fire/Smoke detection and suppression c) Protection against electrical, mechanical, hydraulic and pneumatic hazards d) Other items as defined in AMC1-OR.ATO.315		a) b) c) d)	
Does the CM manual include acceptable and effective procedures for regularly checking FSTD safety features such as emergency stops and emergency lighting, and are such tests recorded?			
5. COMPLIANCE MEASURES			
Have compliance monitoring objectives been developed from the Policy statement, and included either directly or by reference in the CMS manual?			
Does the CMS include processes to produce and review appropriate metrics data?			

Do these compliance measures track the following: a) FSTD availability b) Numbers of defects c) Open defects d) Defect closure rates e) Training session interrupt rates f) Training session compliance rating		a) b) c) d) e) f)	
Do the compliance measures support the Compliance objectives?			
Required actions/Comments Signature:…… Date:…….			

GM3-OR.ATO.300 General

COMPLIANCE MONITORING SYSTEM – GUIDANCE FOR ORGANISATIONS OPERATING FSTDS TO PREPARE FOR A COMPETENT AUTHORITY EVALUATION

1. Introduction.

   The following material provides guidance on what is expected by the competent authorities to support the discussion during the preliminary briefing which is a first step of any initial or recurrent evaluation of an FSTD carried out by an competent authority.

   This document has been developed as well to standardise working methods throughout Member States and to develop effective CM spot checks to satisfy the applicable requirements and therefore to ensure the highest standards of training are attained.

2. Document form.

   Different document forms can be considered. Nevertheless, it appears that the best solution is a dossier, which includes all the information required by the Authorities.

3. Contents of the dossier for an initial evaluation:

   a. type of FSTD and qualification level requested;

   b. evaluation agenda: including date of evaluation, name of people involved for the competent authority, contact details for the FSTD operator, schedules for the subjective flight profile, QTG rerun;

   c. FSTD identification including, type of FSTD, manufacturer, registration number, date of entry into service, host computer, visual system, motion system, type of IOS, simulated version(s), standards of all the aircraft computers (if applicable);

   d. planned modifications;

   e. subjective open defect(s);

f. airport visual databases including for each visual scene, name of the airport, IATA and ICAO codes, type of visual scene (specific or generic), additional capabilities (e.g. snow model, WGS 84 compliance, EGPWS); and

g. QTG status: the list should include for each QTG test available the status of the tests following the FSTD operator and competent authority reviews;

4. Contents of the dossier for a recurrent evaluation:

a. type of FSTD and qualification level requested;

b. evaluation agenda, including date of evaluation, name of people involved for the competent authority, contact details for the operator, schedules for the subjective flight profile, QTG rerun and QTG review;

c. FSTD identification, including type of FSTD, manufacturer, registration number, date of entry into service, host computer, visual system, motion system, type of IOS, simulated version(s), standards of all the aircraft computers (if applicable);

d. status of items raised during the last evaluation and date of closure;

e. reliability data: training hours month by month during the past year, numbers of complaints mentioned in the technical log, training hours lost, availability rate;

f. operational data: a list of FSTD users over the previous 12 months should be provided, with number of training hours;

g. failure tabulation including categorisation of failures (by ATA chapter and Pareto diagram, ARINC classification);

h. details of main failures leading to training interruption or multiple occurrences of some failures;

i. recent and planned modifications;

j. subjective open defect(s);

k. airport visual databases including for each visual scene, name of the airport, ATA and ICAO codes, type of visual scene (specific or generic), additional capabilities (Snow model, WGS 84 compliance, EGPWS); and

l. QTG status: the list should include for each QTG test available, the date of run during the past year, any comment, and the status of the tests.

AMC1-OR.ATO.310(a)Modifications

GENERAL

1. The FSTD, where applicable, should be maintained in a configuration that accurately represents the aircraft being simulated. This may be a specific aircraft tail number or may be a representation of a common standard.

2. Users of the device should always establish a differences list for any device they intend to use, and to identify how any differences should be covered in training. In order to ensure each device is maintained in the appropriate configuration, the organisation operating an FSTD should have a system that ensures that all relevant airworthiness directives (ADs) are introduced where applicable on affected FSTDs.

3. Organisations are reminded that ADs from both the State of Design of the aircraft and the State where the FSTD is located need to be monitored. ADs from the State of Design of an aircraft are usually automatically applicable, unless specifically varied by the aircraft's State of Registry.

4. It may also be necessary to monitor ADs issued by States where users of the device have aircraft registered. In addition to ADs, the FSTD operator also needs to put in place processes that ensure all aircraft modifications are reviewed for any effect on training, testing and checking. This should usually require review of the aircraft

manufacturers service bulletins and may require a specific link to the aircraft manufacturer to be developed. In practice this link is often established through aircraft operators who use the device.

AMC1-OR.ATO.310(a) Modifications

EXAMPLES OF MAJOR MODIFICATIONS

1. The following are examples of modifications that *should* be considered as major. This list is not exhaustive and modifications need to be classified on a case-by-case basis:
   a. any change that affects the QTG;
   b. introduction of new standards of equipment such as flight management and guidance computer (FMGC) and updated aerodynamic data packages;
   c. re-hosting of the FSTD software;
   d. introduction of features that model new training scenarios; e.g. traffic alert and collision avoidance system (TCAS), enhanced ground proximity warning system (EGPWS);
   e. aircraft modifications which could affect the FSTD qualification; and
   f. FSTD hardware or software modifications that could affect the handling qualities, performance or system representation.
2. Organisations operating FSTDs are reminded that the requirement is for the competent authority to be notified of such changes.
3. This does not imply that the competent authority will always wish to directly evaluate the change. The competent authority should be mindful of the potential burden placed on the organisation by a special evaluation and should always consider that burden when deciding if such an evaluation is necessary.
4. The organisation operating FSTDs should have an internal acceptance process for modifications, to be used when implementing all modifications, even if the competent authority has made a decision to carry out an evaluation.

AMC1-OR.ATO.315 Installations

MINIMUM ELEMENTS FOR SAFE OPERATION

1. Introduction.
   a. This AMC identifies those elements that are expected to be addressed, as a minimum, to ensure that the FSTD installation provides a safe environment for the users and operators of the FSTD under all circumstances.
2. Expected Elements.
   a. Adequate fire/smoke detection, warning and suppression arrangements should be provided to ensure safe passage of personnel from the FSTD.
   b. Adequate protection should be provided against electrical, mechanical, hydraulic and pneumatic hazards, including those arising from the control loading and motion systems, to ensure maximum safety of all persons in the vicinity of the FSTD.
   c. Other areas that should be addressed include:
      i. a two-way communication system that remains operational in the event of a total power failure;
      ii. emergency lighting;
      iii. escape exits and escape routes;
      iv. occupant restraints (seats, seat belts etc.);

v. external warning of motion and access ramp or stairs activity;

vi. danger area markings;

vii. guard rails and gates;

viii. motion and control loading emergency stop controls accessible from either pilot or instructor seats; and

ix. a manual or automatic electrical power isolation switch.

GM1-OR.ATO.315 Installations

GENERAL

1. The intent of OR.ATO.315 is to establish that the organisation operating an FSTD has all the necessary procedures in place to ensure that the FSTD installation remains in compliance with all requirements affecting the safety of the device and its users.
2. Based on experience, the competent authority should pay particular attention to the quality of safety briefings on the FSTD provided to users and instructors, and to the execution of regular checks on the FSTD safety features.
3. It is recognised that certain checks, such as that of the emergency stop, can have adverse impact on the FSTD if carried out in full.
4. It is acceptable to develop a procedure that protects elements of the device by shutting them down in advance, in a more controlled manner, provided it can be shown that the procedure still demonstrates the whole device can be shut down by the operation of a single emergency stop button, when required.

CHAPTER 2 -REQUIREMENTS FOR THE QUALIFICATION OF FSTDS

AMC1-OR.ATO.350 Application for FSTD qualification

LETTER OF APPLICATION FOR INITIAL QUALIFICATION OF AN FSTD; EXCEPT BASIC INSTRUMENT TRAINING DEVICE (BITD)

A sample of letter of application is provided overleaf.

Part A
To be submitted not less tha n three months prior to requested qualification date

(Date)

(Office – Competent Authority)

(Address)…….

(City)……..

(Country)…….

Type of FSTD	Aircraft Type/class	Qualification Level Sought				
Full Flight Simulator FFS		A	B	C	D	Sp./Cat
Flight Training Device FTD		1	2	3		
Flight and Navigation Procedures Trainer FNPT		I	II	III	II MCC	III MCC

Interim Qualification Level requested: YES/NO

Dear,

<*Name of Applicant*> requests the evaluation of its flight simulation training device<*operator's identification of the FSTD*> for qualification. The <*FSTD manufacturer's name*> FSTD with its <*visual system and manufacturer's name, if applicable*>visual system.

Evaluation is requested for the following configurations and engine fits as applicable:

e.g. 767 PW/GE and 757RR

1.....

2.....

3.....

Dates requested are: <*date(s)*> and the FSTD will be located at <*place*>.

The objective tests of the QTG will be submitted by <*date*> and in any event not less than 30 days before the requested evaluation date unless otherwise agreed with the competent authority.

Comments:

……
……
…….

Signed

……

Print name: ……..

Position/appointment held: ……..

Email address: ……..

Telephone number: ……..

Part B

To be completed with attached QTG results

(Date) …….

We have completed tests of the FSTD and declare that it meets all applicable requirements except as noted below.

The following QTG tests are outstanding:

Tests	Comments

(Add boxes as required)

It is expected that they will be completed and submitted three weeks prior to the evaluation date.

Signed

……

Print name: ……..

Position/appointment held: ……..

E-mail address: ……..

Telephone number: ……..

Part C

To be completed not less than seven days prior to initial evaluation

(Date) …….

The FSTD has been assessed by the following evaluation team:

..... (Name) ..... Qualification .....

..... (Name) ..... Qualification .....

..... (Name) ..... Qualification .....

..... (Name) ..... Pilot's Licence Nr.....

..... (Name) ..... Flight Engineer's Licence Nr (if applicable)

- ☐ FFS/FTD: This team attests that the<*type of FSTD*> conforms to the aeroplane flight deck/helicopter cockpit configuration of <*name of aircraft operator (if applicable)*, *type of aeroplane/helicopter*> aeroplane/helicopter within the requirements for <*type of FSTD and level*> and that the simulated systems and subsystems function equivalently to those in that aeroplane/helicopter. The pilot of this evaluation team has also assessed the performance and the flying qualities of the FSTD and finds that it represents the designated aeroplane/helicopter.

- ☐ FNPT: This team attest(s) that the<type of FSTD>represents the flight deck or cockpit environment of a <*aeroplane/helicopter or class of aeroplane/type of helicopter*>within the requirements for <*type of FSTD and level*>and that the simulated systems appear to function as in the class of aeroplane/type of helicopter. The pilot of this evaluation team has also assessed the performance and the flying qualities of the FSTD and finds that it represents the designated class of aeroplane/type of helicopter.

(Additional comments as required)

……..

……..

……..

Signed

……

Print name: ……..

Position/appointment held: ……..

E-mail address: ……..

Telephone number: ……..

GM1-OR.ATO.350 Application for FSTD qualification

USE OF FOOTPRINT TESTS IN QUALIFICATION TEST SUBMISSION

1. Introduction

   a. Recent experience during initial qualification of some full flight simulators (FFS) has required acceptance of increasing numbers of footprint tests. This is particularly true for FFS' of smaller or older aircraft types, where there may be a lack of aircraft flight test data. However, the large number of footprint tests offered in some QTGs has given rise to concern.

   b. This guidance is applicable to FFS aeroplane, FTD aeroplane, FFS helicopter and FTD helicopter qualifications.

2. Terminology

   a. Footprint test - footprint test data are derived from a subjective assessment carried out on the actual FSTD requiring qualification. The assessment and

validation of these data are carried out by a pilot appointed by the competent authority. The resulting data are the footprint validation data for the FSTD concerned.

3. Recommendation

a. It is permitted to use footprint data where flight test data is not available. Only when all other alternative possible sources of data have been thoroughly reviewed without success may a footprint test be acceptable, subject to a case-by-case review with the competent authorities concerned, and taking into consideration the level of qualification sought for the FSTD.

b. Footprint test data should be:

i. constructed with initial conditions and FFS set up in the appropriate configuration (e.g. correct engine rating) for the required validation data;

ii. a manoeuvre representative of the particular aircraft being simulated;

iii. manually flown out by a type rated pilot who has current experience on type (see Note 1) and is deemed acceptable by the competent authority (see Note 2);

iv. constructed from validation data obtained from the footprint test manoeuvre and transformed into an automatic test;

v. an automatic test run as a fully integrated test with pilot control inputs; and

vi. automatically run for the initial qualification and recurrent evaluations.

Note 1: In this context, “current” refers to the pilot experience on the aircraft, and not to the Part-FCL standards.

Note 2: The same pilot should sign off the complete test as being fully representative.

c. A clear rationale should be included in the QTG for each footprint test. These rationales should be added to and clearly recorded within the validation data roadmap (VDR) in accordance with and as defined in Appendix 2 to AMC1-CS-FSTD(A).300.

d. Where the number of footprint tests is deemed by the competent authority to be excessive, the maximum level of qualification may be affected. The competent authority should review each area of validation test data where the use of footprint tests as the basis for the validation data is proposed. Consideration should be given to the extent to which footprint tests are used in any given area.

For example, it would be unacceptable if all or the vast majority of take-off tests were proposed as footprint tests, with little or no flight test data being presented. It should be recognised, therefore, that it may be necessary for new flight test data to be gathered if the use of footprint tests becomes excessive, not just overall, but also in specific areas.

e. For recurrent evaluation purposes an essential match is to be expected. Validation tests using footprint data which do not provide an essential match should be justified to the satisfaction of the competent authority.

f. The competent authority should be consulted at the point of definition of the aircraft data for qualification prior to the procurement of the device if footprint tests need to be used.

AMC1-OR.ATO.370 Interim FSTD qualification

NEW AIRCRAFT FULL FLIGHT SIMULATOR/FLIGHT TRAINING DEVICE (FFS/FTD) QUALIFICATION – ADDITIONAL INFORMATION

1. Aircraft manufacturers' final data for performance, handling qualities, systems or avionics are seldom available until well after a new or derivative aircraft has entered service. Because it is often necessary to begin flight crew training and certification several months prior to the entry of the first aircraft into service, it may be necessary to use aircraft manufacturer-provided preliminary data for interim qualification of FSTDs. This is consistent with the possible interim approval of operational suitability data (OSD) relative to FFS in the type certification process under Part-21.

2. In recognition of the sequence of events that should occur and the time required for final data to become available, the competent authority may accept the use of certain partially validated preliminary aircraft and systems data, and early release ('red label') avionics in order to permit the necessary programme schedule for training, certification and service introduction.

3. Organisations seeking qualification based on preliminary data should, however, consult the competent authority as soon as it is known that special arrangements will be necessary, or as soon as it is clear that preliminary data will need to be used for FSTD qualification. Aircraft and FSTD manufacturers should also be made aware of the needs and agree on the data plan and FSTD qualification plan. There should be periodic meetings to keep the interested parties informed of the project's status.

4. The precise procedure to be followed to gain competent authority acceptance to use preliminary data should vary from case to case and between aircraft manufacturers. Each aircraft manufacturer's new aircraft development and test programme is designed to suit the needs of the particular project and may not contain the same events or sequence of events as another manufacturer's programme or even the same manufacturer's programme for a different aircraft. Hence, there cannot be a prescribed invariable procedure for acceptance to use preliminary data, but instead there should be a statement describing the final sequence of events, data sources, and validation procedures agreed by the FSTD operator, the aircraft manufacturer, the FSTD manufacturer, and the competent authority. The approval by the Agency of the definition of scope of the aircraft validation source data to support the objective qualification as part of the OSD can also be an interim approval in case of preliminary data. The preliminary data to be used should be based on this interim approval.

5. There should be assurance that the preliminary data are the manufacturer's best representation of the aircraft and reasonable certainty that final data will not deviate to a large degree from these preliminary, but refined, estimates. First of all there should be an interim approval of operational suitability data (OSD) relative to flight simulators in the type certification process under Part-21. Furthermore, the data derived from these predictive or preliminary techniques should be validated by available sources including, at least, the following:

   a. *Manufacturer's engineering report*. Such reports explain the predictive method used and illustrate past successes of the method on similar projects. For example, the manufacturer could show the application of the method to an earlier aircraft model or predict the characteristics of an earlier model and compare the results to final data for that model.

   b. *Early flight tests results*. Such data will often be derived from aircraft certification tests, and should be used to maximum advantage for early FSTD validation. Certain critical tests, which would normally be done early in the aircraft certification programme, should be included to validate essential pilot training and certification manoeuvres. These include cases in which a pilot is expected to cope with an aircraft failure mode, including engine failures. The early data available will, however, depend on the aircraft manufacturer's flight test

programme design and may not be the same in each case. However it is expected that the flight test programme of the aircraft manufacturer includes provisions for generation of very early flight tests results for FSTD validation.

6. The use of preliminary data is not indefinite. The aircraft manufacturer's final data should be available within six months after the aircraft's first 'service entry' or as agreed by the competent authority, the organisation and the aircraft manufacturer, but usually not later than one year. When an organisation applies for an interim qualification using preliminary data, the organisation and the competent authority should agree upon the update programme. This should normally specify that the final data update will be installed in the FSTD within a period of six months following the final data release unless special conditions exist and a different schedule agreed. The FSTD performance and handling validation would then be based on data derived from flight tests. Initial aircraft systems data should be updated after engineering tests. Final aircraft systems data should also be used for FSTD programming and validation.

7. FSTD avionics should stay essentially in step with aircraft avionics (hardware and software) updates. The permitted time lapse between aircraft and FSTD updates is not a fixed time but should be minimal. It may depend on the magnitude of the update and whether the QTG and pilot training and certification are affected. Permitted differences in aircraft and FSTD avionics versions and the resulting effects on FSTD qualification should be agreed between the organisation and the competent authority. Consultation with the FSTD manufacturer is desirable throughout the agreement of the qualification process.

8. The following describes an example of the design data and sources which might be used in the development of an interim qualification plan:

   a. The plan should consist of the development of a QTG based upon a mix of flight test and engineering simulation data. For data collected from specific aircraft flight tests or other flights, the required designed model and data changes necessary to support an acceptable proof of match(POM) should be generated by the aircraft manufacturer.

   b. In order that the two sets of data are properly validated, the aircraft manufacturer should compare their simulation model responses against the flight test data, when driven by the same control inputs and subjected to the same atmospheric conditions as were recorded in the flight test. The model responses should result from a simulation where the following systems are run in an integrated fashion and are consistent with the design data released to the FSTD manufacturer:

      i. Propulsion

      ii. Aerodynamics

      iii. Mass properties

      iv. Flight controls

      v. Stability augmentation

      vi. Brakes and landing gear.

9. For the qualification of FSTD of new aircraft types, it may be beneficial that the services of a suitably qualified test pilot are used for the purpose of assessing handling qualities and performance evaluation.

GM1-OR.ATO.370 Interim FSTD qualification

NEW AIRCRAFT FFS/FTD QUALIFICATION – ADDITIONAL INFORMATION

1. A description of aircraft manufacturer-provided data needed for flight simulator modelling and validation is to be found in the IATA Document *Flight Simulator Design and Performance Data Requirements* (Edition 6 2000 or as amended).
2. The proof of match should meet the relevant tolerances in AMC-1-CS-FSTD(A).300 respectively AMC1-CS-FSTD(H).300.

AMC1-OR.ATO.375(b)(4) Duration and continued validity

The assigned person should have experience in FSTDs and training. The person may have FSTD experience or training experience with an education in FSTD evaluation procedures only, provided the other element of expertise is available within the organisation and a procedure for undertaking the annual review and reporting to the competent authority is documented within the compliance monitoring function.

AMC1-OR.ATO.380(b) Changes to the qualified FSTD

UPDATING AND UPGRADING EXISTING FSTDS

1. An update is a result of a change to the existing device where it retains its existing qualification level. The change may be certified through a recurrent inspection or an extra inspection if deemed necessary by the competent authority according to the applicable requirements in effect at the time of initial qualification.
2. If such a change to an existing device would imply that the performance of the device could no longer meet the requirements at the time of initial qualification, but that the result of the change would, in the opinion of the competent authority, clearly mean an improvement to the performance and training capabilities of the device altogether, then the competent authority might accept the proposed change as an update while allowing the device to retain its original qualification level.
3. An upgrade is defined as the raising of the qualification level of a device, or an increase in training credits, which can only be achieved by undergoing an initial qualification according to the latest applicable requirements.
4. As long as the qualification level of the device does not change, all changes made to the device should be considered to be updates pending approval by the competent authority.
5. An upgrade, and consequent initial qualification according to the latest applicable requirements, is only applicable when the organisation requests another qualification level (recategorisation) for the FSTD.

AMC1-OR.ATO.390 Record keeping

FSTD RECORDS

1. FSTD records to be kept should include:
    a. for the lifetime of the device:
        i. the MQTG of the initial evaluation;
        ii. the qualification certificate of the initial evaluation; and
        iii. the initial evaluation report;

b. for a period of at least 5 years (in paper or electronic format):

i. recurrent QTG runs;

ii. recurrent evaluation reports;

iii. reports of internal functions and subjective testing;

iv. Technical log;

v. CMS report;

vi. audit schedule;

vii. evaluation programme;

viii. Management evaluation reports; and

ix. obsolete procedures and forms.

SECTION IV - ADDITIONAL REQUIREMENTS FOR ATOs PROVIDING SPECIFIC TYPES OF TRAINING

CHAPTER 1 – GENERAL DISTANCE LEARNING COURSES

AMC1-OR.ATO.400 General

DISTANCE LEARNING

1. A variety of methods is open to ATOs to present course material. It is, however, necessary for ATOs to maintain comprehensive records in order to ensure that students make satisfactory academic progress and meet the time constraints laid down in Part-FCL for the completion of modular courses.
2. The following are given as planning guidelines for ATOs developing the distance learning element of modular courses:
   a. an assumption that a student will study for at least 15 hours per week;
   b. an indication throughout the course material of what constitutes a week's study;
   c. a recommended course structure and order of teaching;
   d. one progress test for each subject for every 15 hours of study, which should be submitted to the ATO for assessment. Additional self-assessed progress tests should be completed at intervals of five to 10 study hours;
   e. appropriate contact times throughout the course when a student can have access to an instructor by telephone, fax, email or the Internet;
   f. measurement criteria to determine whether a student has satisfactorily completed the appropriate elements of the course to a standard that, in the judgement of the HT, or CGI, will enable them to be entered for the Part-FCL theoretical examinations with a good prospect of success; and
   g. if the ATO provides the distance learning by help of IT solutions, for example the Internet, instructors should monitor students' progress by appropriate means.

CHAPTER 2 -ZERO FLIGHT-TIME TRAINING (ZFTT)

AMC1-OR.ATO.430 General

INITIAL APPROVAL

For an initial approval to conduct ZFTT, the operator should have held an air operator's certificate for commercial air transport for at least one year. This period may be reduced where the operator and the ATO have experience of type rating training.

AMC1-OR.ATO.435 Full Flight Simulator

Some equipment may be unserviceable provided that it is not required during the FFS lesson.

Subpart AeMC –Aero-medical Centres

SECTION I – GENERAL

AMC1-OR.AeMC.115 Application

GENERAL

1. The documentation for the approval of an AeMC should include the names and qualifications of all medical staff, a list of medical and technical facilities for initial class 1 aero-medical examinations and of supporting specialist consultants.
2. Clinical attachments to hospitals or medical institutions should consist of a formal agreement with the hospital or medical institution.

AMC1-OR.AeMC.135 Continued validity

EXPERIENCE

1. At least 200 class 1 aero-medical examinations and assessments should be performed at the AeMC every year.
2. In Member States where the number of aero-medical examinations and assessments mentioned in 1. cannot be reached due a low number of professional pilots, a proportionate number of class 1 aero-medical examinations and assessments should be performed.
3. In these cases, the continuing experience of the head of the AeMC and aero-medical examiners on staff should also be ensured by them performing aero-medical examinations and assessments for:
   a. class 2 medical certificates as established in Part-MED; and/or
   b. third country class 1 medical certificates.
4. Aero-medical research including publication in peer reviewed journals may also be accepted as contributing to the continued experience of the head of, and aero-medical examiners at, an AeMC.

SECTION II – MANAGEMENT

GM1-OR.AeMC.200 Management system

RESEARCH

1. If aero-medical research is conducted at an AeMC, its management system should include processes to conduct that research and publish the results.

AMC1-OR.AeMC.210 Personnel requirements

GENERAL

1. An aero-medical examiner (AME) should have held class 1 privileges for at least five years and have performed at least 200 aero-medical examinations for a class 1 medical certificate before being nominated as head of an AeMC.
2. An AeMC may provide practical AME training for persons fully qualified and licensed in medicine.

AMC1-OR.AeMC.215 Facility requirements

MEDICAL-TECHNICAL FACILITIES

The medical-technical facilities of an AeMC should consist of the equipment of a general medical practice and, in addition, of:

1. Cardiology.

   Facilities to perform:

   a. 12-lead resting ECG;

   b. stress ECG;

   c. 24-hour blood pressure monitoring; and

   d. 24-hour heart rhythm monitoring.

2. Ophthalmology.

   Facilities for the examination of:

   a. near, intermediate and distant vision;

   b. external eye, anatomy, media and fundoscopy;

   c. ocular motility;

   d. binocular vision;

   e. colour vision (anomaloscopy or equivalent);

   f. visual fields;

   g. refraction; and

   h. heterophoria.

3. Hearing

   a. pure-tone audiometer

4. Otorhinolaryngology.

   Facilities for the clinical examination of mouth and throat and:

   a. otoscopy;

   b. rhinoscopy;

   c. tympanometry or equivalent; and

   d. clinical assessment of vestibular system.

5. Examination of pulmonary function.

   a. spirometry

6. The following facilities should be available at the AeMC or on a contractual basis:

   a. clinical laboratory facilities; and

   b. ultrasound of the abdomen.