

## Foreword and Approval Page

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The Instituto de Aviação Civil de Moçambique (IACM) . the Civil Aviation Authority of Mozambique, approves this Aviation Training Organization (ATO) Certification Manual for the use and guidance of PEL Inspectors, Officers and other relevant staff members in the performance of their duties.

This Manual contains information and instructions on the manner in which those duties are to be performed. All personnel, directly or indirectly concerned with ATO certification, inspection, investigation and approval are to be informed and apply the applicable procedures contained in this Manual.

It is emphasized that all matters pertaining to an inspector's duties and responsibilities cannot be covered in this manual. Inspectors are expected to use good judgement in matters where specific guidance has not been given. Changes in aviation technology, legislation and within the industry will necessitate changes to requirements.

Comments and recommendations for revision/amendment action to this publication should be forwarded to the Director of Flight Safety, Civil Aviation Authority of Mozambique:

Jeremias Francisco Chitoquico  
Director of Flight Safety  
E-mail: [jchitoquico@iacm.gov.mz](mailto:jchitoquico@iacm.gov.mz)  
Phone: (+258) 21465682/ 21 465685  
Fax: (+258) 21465576/ 21 465415

**Approved by:**

**CHAIRMAN OF IACM**

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**Capt. João Martins de Abreu**

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**Date**

Instituto de Aviação Civil de Moçambique

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**ATO CERTIFICATION MANUAL**

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## Chapter 1 - General Information

### 1.1 Purpose

- 1.1.1 This Manual outlines the IACM practices and procedures with respect to the certification of Aviation Training Organizations (ATO/s). Adherence to the procedures and guidelines contained herein will enable all technical inspectors (PLI/s, FOI/s, AWI/s, and Airspace Specialists) involved with the certification of ATO/s to perform their duties in a uniform manner.
- 1.1.2 This chapter provides general introductory information, as well as other general information and procedures, the nature and scope of which does not lend itself to be incorporated into other chapters of this manual.

### 1.2 Application

- 1.2.1 This Manual will apply to all ATO operations falling within the scope of Part 141 of the *Mozambique Civil Aviation Regulations* (MCAR) and is to be applied in conjunction with the Regulatory Audit Procedures Manual.
- 1.2.2 Considering the broad scope of operations covered by this Manual and the many variables involved, no attempt is made to provide detailed procedures and guidance for all exigencies, therefore, good judgment must be applied in the use of this Manual. Officers and Inspectors should have a thorough knowledge of the content of this Manual and to the extent practical, adhere to the policies, procedures and guidelines contained herein.

### 1.3 Status

- 1.3.1 This Manual is an internal document and its contents may be made available to the public upon request.

## 1.4 Preparation and Distribution

1.4.1 This Manual has been prepared by the Personnel Licensing (PEL) Department. Preparation, distribution, amendment and cancellation of material will continue to be carried out by the PEL Department in line with the procedures contained in the PEL Manual. A copy of this Manual and amendments thereto will be issued to inspectors and other designated personnel who are involved in related duties.

## 1.5 Revisions

- 1.5.1 To keep pace with Civil Aviation advancements, good regulations and directives require continuous updating. Consequently, field input is essential to accomplish our objective and inspectors should be aware of their responsibilities in this regard.
- 1.5.2 In the execution of their duties, officers and inspectors should be alert to the adequacy of the regulations and directives with which they work.

## 1.6 Applicability of Statutory Requirements

- 1.6.1 An ATO renders an important training role in the aviation industry and involves a contract between the ATO and the person being trained. Although IACM, via the ATO certification process and the audit or inspection service, clearly plays a role in the matter, nothing relieves the ATO of its responsibility of providing a safe and efficient service.
- 1.6.2 The public's protection in this regard is safeguarded by the *Mozambique Civil Aviation Regulations* (MOZCAR), requirements and the associated technical standards and ATO certificates, which include operations procedures and specifications. These statutory requirements are the main instruments for ensuring that Aviation Training operations are conducted safely. It is an IACM officer or inspector's duty to be familiar with all statutory requirements and to check, during the course of his/her

inspections that they are complied with. No deviation from essential air safety standards can be permitted.

1.6.3 Subparts of the MOZCAR of prime concern are contained in Part 141 and officers and inspectors should have a copy of the relevant regulations available when exercising their authority under this Part. It should be clearly understood that an officer and inspector qualifies as "a person authorized by the DG+as referenced in this Part.

1.6.4 MCAR, Part 141 states that: "no organization shall conduct standard aviation training except under the authority of, and in accordance with the provisions of aviation training organization (ATO) approval certificate issued under this Subpart.+

1.6.4 Nothing in this Manual should be taken as contravening or superseding any statutory requirement. Officers and inspectors must refrain from expressing opinions, which could be construed as being in disagreement with any statutory document. To the extent possible, all concerned with the certification and inspection process should avoid taking part in discussions centered upon criticism of the regulations which, by their nature, may be regarded by interested parties as being inhibiting to ATOs and thus may be a subject on which strong views may be expressed.

## **1.7 Conflict of Interest**

1.7.1 Conflict of Interest is defined as any relationship that might influence an inspector to act, either knowingly or unknowingly, in a manner that does not hold the safety of the traveling public as the primary and highest priority.

1.7.2 All contracted or subcontracted inspectors are held to be in a ~~perceived~~ *conflict of interest*+ in that they are simultaneously employees or agents (regular or contract) of a company and delegates of the Director when

performing their inspection duties. To avoid a ~~real~~ *conflict of interest*, it is imperative that inspectors strictly adhere to the policy and guidelines contained in this and other applicable manuals.

1.7.3 When conducting inspector duties, the following are examples (not exhaustive) of situations that could be considered as possible conflict of interest for the inspector:

1.7.3.1 level of the inspector's financial interest in the company inspected/audited;

1.7.3.2 the inspector's direct involvement in company ownership;

1.7.3.3 the inspector owning a substantial number of voting shares of the company;

1.7.3.4 the inspector having family ties with company owners; and

1.7.3.5 any privileges or favors which could bias the inspector's ability to conduct his or her duties.

1.7.4 In order to determine whether an inspector's conflict of interest is real or perceived, each inspector shall declare any conflict of interest of which they have knowledge, and shall be prepared to disclose any change to their status in this regard. The results of this shall be recorded in the inspector's file.

1.7.5 The final authority for deciding whether there is any conflict of interest that might affect the inspector's ability to conduct his duties in an impartial manner rests with the Director.

1.7.6 Should any inspector come into a situation of conflict of interest, a full report of the circumstances shall be immediately submitted to the Director for review.

## Chapter 2 - Certification of ATOs

### 2.1 General

- 2.1.1 The DG's duty to develop, regulate and supervise aeronautics under the Mozambique Flight Safety Law is symbolized by the issue of Aviation Documents such as Certificates of Registration and Airworthiness, Personnel Licenses, AOC certificates, and aviation training organization (ATO) certificates.
- 2.1.2 In an ATO, the relationship between the ATO and the persons trained is generally one of contract and therefore an impersonal one. There must be some guarantee not only that all ATO's personnel shall be competent and the aircraft airworthy, but that the ATO's equipment will be suitable for the proposed training. The ATO must demonstrate the ability to operate the service safely, properly and in accordance with the prescribed regulating standards and procedures of the MOZCAR and its associated technical standards.
- 2.1.3 Aviation Training Operations embody features, which are unlike any other training. Any recommendation on the issuance of ATO certificates must be based on the determination as to whether or not the applicant meets the standards set forth in the MOZCAR relative to the type of training proposed and meets the certification requirements.

### 2.2 Starting an Aviation Training Organization

- 2.2.1 An applicant for an ATO should be provided with the appropriate Aeronautical Information Circular (AIC) that provides comprehensive advice on what matters should be considered when planning a proposed ATO and sets out the basic requirements of IACM.
- 2.2.2 The applicant's ability to conduct the proposed training safely involves a determination as to whether or not the company's facilities and organizational structure, including properly licensed and qualified personnel, meet the Part 141 and IACM policy requirements. This

determination necessitates that IACM officers and inspectors, as the first step, make themselves thoroughly familiar with all aspects of the proposed training operation; identify all applicable requirements and then, assess the applicant's facilities and organizational structure (including properly licensed and qualified personnel in sufficient numbers) against the requirements.

2.2.3 The adequacy of the applicant's equipment will relate to:

- a. the conditions under which it is to be trained i.e., IFR, VFR, day, night in the case of pilot training;
- b. its aircraft operating performance limitations relative to available runway lengths at designated bases and scheduled points, alternate airports and terrain configuration; and
- c. the type of training i.e. ab initio, type rating training, ATC training etc.

2.2.4 The applicant must also outline the proposed facilities at his/her base(s) and any other satellite stations.

2.2.5 The basic intent of all inspections relative to certification is an on-going process of determining whether or not the ATO meets and continues to satisfy the requirements.

### **2.3 Description of ATO Certification Process**

2.3.1 Inspection of the applicant's aircraft and facilities should commence when the IACM receives from the applicant, properly and correctly completed application forms.

2.3.2 It is essential that IACM officers or inspectors ensure that the applicant's forms are properly completed and they are verified by inspecting his/her aircraft and facilities and by reviewing the applicant's personnel.

- 2.3.3 The importance of properly inspecting the facilities to be provided cannot be over emphasized.
- 2.3.4 The ATO Certificate Application Forms require the signature of the appropriate Managers and Directors of the ATO.
- 2.3.5 The certification process is a coordinated effort, which involves the participation of various IACM officers and inspectors.

## **2.4 ATO Certificates**

All aviation training organizations approved under Part 141 of the MOZCAR, shall, when all regulatory requirements are met, be issued an applicable ATO certificate by the DG. However, the DG may refuse to issue any aviation document (ATO certificate), where he is of the opinion that in the public's interest and, in particular, the record in relation to aviation of the applicant or of any principal of the applicant warrant it.

## **2.5 Types of training provided by ATO/s**

- 2.5.1 The following are the types of training that are allowed to be carried out by ATO/s. The ATO certificate shall reflect each course that is approved.
- a. Pilot training: all training specified in Part 61 of the MOZCAR.
  - b. Flight Engineer training: all training specified in Part 63 of the MOZCAR.
  - c. Air Traffic Service Personnel training: all training and theoretical knowledge examinations specified in Part 65 of the MOZCAR.
  - d. Flight Dispatcher training: all training and theoretical knowledge examinations specified in Part 65 of the MOZCAR.
  - e. Radiotelephony operator training: all training and theoretical knowledge examinations specified in Part 65 of the MOZCAR.
  - f. Aircraft Maintenance Engineer training: all training specified in Part 66 of the MCAR.



## Chapter 3 - Application for an ATO Certificate

### 3.1 General

- 3.1.1 This section provides guidelines and procedures for processing an application for an ATO Certificate.
- 3.1.2 Applicants for an ATO Certificate should be informed, at an early stage that the certification process involves a comprehensive IACM program of inspection and be advised against planning to receive an ATO Certificate in less than the days referred to in Part 141.
- 3.1.3 Usually, receipt of an application for an ATO Certificate will have been preceded by informal contacts with the applicant. Some information is normally obtained concerning the type of operation intended, location of their main office and identity of key personnel. From the time the certification process is initiated to its completion, IACM inspectors and officers assigned to the certification project may be in daily contact with the applicant.
- 3.1.4 The IACM inspectors and officers become involved in advising the applicant, inspecting and evaluating, his/her personnel, proposals, facilities and equipment. In the beginning it is important to establish a working relationship with key officials in the applicant's organization. Normally, this is accomplished by a formal meeting of the assigned IACM inspectors with management personnel.
- 3.1.5 The applicant is to be advised that processing will not commence until properly and correctly completed ATO Certificate application forms are received. IACM inspectors and officers are to ensure that improperly completed application forms are never allowed to enter the remainder of the processing system until they are appropriately amended.
- 3.1.6 The organization and facilities of the ATO will be inspected by the IACM inspectors after the properly completed application forms are received and

- the applicant advises that he/she is ready for inspection. Detailed comments and recommendations are to be included in the appropriate space on the application.
- 3.1.7 It is important for IACM officers to ensure that the application forms are completed in detail and that the recommendations and comments are concise and relate to the service(s) applied for.
- 3.1.8 When the application and supporting documentation is received, it is recommended that a file be opened to hold current correspondence. The completed copy of each application form is to be retained in the ATO/s file.
- 3.1.9 It is the responsibility of the Director: Flight Safety Standards to ensure that co-ordination and consultation between the various IACM sections and departments occurs as necessary.
- 3.1.10 An ATO Certificate is issued only after all regulatory certification requirements, including the payments of charges, have been met.
- 3.1.11 An ATO can hold **more than one** ATO Certificate as follows:
- a. If they have a separate operating base which operates as a separate business unit with full responsibility for training operations;
- 3.1.12 No ATO Certificate shall be issued to an applicant where he intends to have his operations managed by another ATO under an Agreement. Both ATO/s must hold an ATO Certificate before operations are undertaken under an Agreement.
- 3.1.13 In some instances, the inspector's authority can be seen either as a threat to the individual flight instructor and DE or a challenge to the Pilot-in-Command's status. While maintaining the status of his/her own position, the inspector must recognize and support the Pilot-in-Command's authority unless he/she is obviously about to violate a regulation or operate in a hazardous manner. Even in these conditions, the inspector should at first appear to be acting in an advisory capacity and only resort

to the powers vested in him/her by the aeronautical legislation as a last resort.

## **3.2 IACM Inspector Assignments**

- 3.2.1 The Manager PEL may assign an IACM Inspector in Charge of the certification process. The latter will be responsible for determining whether the applicant meets all regulatory and IACM policy requirements for the types of training operations to be conducted. The IACM Inspector in Charge will enlist the assistance of other inspectors and officers, where necessary, to complete his/her evaluation.
- 3.2.2 Where an application involves the proposed use of large turbine engine aircraft, an Evaluation Team under a "Team Leader" may be formed for the purpose of evaluating the qualifications and competency of the applicant to operate the particular type of aircraft.

## **3.3 IACM Inspector Guidelines - General**

- 3.3.1 Assessment of the applicant's fitness and ability to conduct the proposed operation will require review, inspection and evaluation of the applicant's facilities, equipment, service arrangements, manuals, personnel background, training programs and qualifications.
- 3.3.2 IACM inspectors may arrange for meetings with ATO personnel and/or organizations to discuss and resolve problems. These meetings address general topics or specific problems. Notes or Minutes of all such meetings should be prepared and retained on file.
- 3.3.3 The following guidelines will be of assistance in the certification process and the inspectors must ascertain:
  - 3.3.3.1 That the ATO is controlled and owned by Mozambique citizens and that at least fifty-one percent of the voting interests are owned and controlled by them.

- 3.3.3.2 the nature of the proposed training operation; and
- 3.3.3.3 the type of ATO Certificate desired or appropriate to the proposed training operation and the regulations under which the applicant must be certificated;
- 3.3.4 Inspectors must advise ATO applicants to:
  - 3.3.4.1 Apply for an Agency License, if applicable. A License is only required for the carriage of passengers and/or goods and not for aerial work operations.
  - 3.3.4.2 Satisfy the requirements and develop procedures for obtaining the ATO certificate. This should include a review of the application forms required for the proposed training and a thorough briefing on the regulatory requirements of the appropriate and applicable subpart(s) of the MCAR.
- 3.3.5 Inspectors must develop a plan of action to determine if the applicant is qualified to conduct the proposed training operations safely. Part of the plan of action is the establishment of a timeframe for the different phases of certification and the establishment of a target date for the issue of an ATO Certificate.
- 3.3.6 Where it becomes evident that the target dates cannot or have not been met, the inspector is required to communicate this by letter to the applicant with the notification that the delay may affect the target date for issuance of the ATO Certificate.
- 3.3.7 Wherever possible inspectors should assist the ATO by providing guidance regarding acceptable solutions.
- 3.3.8 Inspectors must conduct a thorough analysis of all facets of the applicant's training operation to assure compliance with the applicable subpart(s) of MCAR and good operating practices to:

3.3.9 Inspectors must determine the adequacy and qualifications of management personnel and the overall organizational structure;

3.3.10 They must determine:

3.3.10.1 if the Manual of Procedure is consistent with the MOZCAR and any ATO Certificate to be issued;

3.3.10.2 the adequacy of the main base and/or sub-base;

3.3.10.3 the adequacy of curricula, classrooms, training aids and devices, simulators, instructors, procedures, flight maneuvers (where applicable), aircraft records and the training syllabi and programs. The depth will depend upon the size of the applicant's organization, the type of equipment used and type of operation proposed;

3.3.10.4 the ATO/s ability to conduct the proposed training safely by means of demonstration, through an appropriate series of aircraft training flights or other demonstration;

3.3.10.5 the adequacy of airport(s) or aerodrome(s); and

3.3.10.6 the adequacy of the applicant's record keeping system for controlling company and operations personnel records as required.

3.3.11 Much of the communication between the IACM inspector and officer and the applicant will be verbal or informal; however, significant ATO commitments and deficiencies should be confirmed in writing.

3.3.12 The inspector must ensure that all applicable airworthiness requirements have been met for all aircraft to be utilized by the ATO.

3.3.13 Only when the applicant meets all the statutory requirements may the appropriate ATO Certificate be issued.

### **3.4 Aircraft Requirements**

- 3.4.1 An applicant for an ATO Certificate must register his aircraft as a training aircraft pursuant to Part 21 of the MCAR.
- 3.4.2 No applicant for an ATO Certificate shall start a training operation with a leased aircraft unless the aircraft is leased and registered under his company name and this applicant will have the legal custody and control of the aircraft.

### **3.5 Base and Sub-Base of Operations**

- 3.5.1 An ATO who intends to operate from more than one base shall indicate this in its application and shall describe its whole operation fully in its Manual of Procedure, clearly highlighting the types of training conducted at the base and each sub-base.
- 3.5.2 Military aerodromes are not certified. A military aerodrome to be used either as an ATO/s base of operations or sub-base shall:
  - 3.5.2.1 not be used by an ATO unless prior permission has been received.;
  - 3.5.2.2 meet the training operation requirements for airports; and
  - 3.5.2.3 have facilities available for civil use and aerodrome maintenance adequate for the type of aircraft and level of training proposed.
- 3.5.3 The airport certificate need not be issued in the name of the applicant. When his/her operation is to be conducted from an airport certified in the name of another person, the applicant must show that he/she either possesses or has arranged for hangar accommodation, maintenance facilities, communications facilities and other items considered essential to a safe and proper training operation. An applicant must have the airport operator's or landowner's written permission prior to commencing training operations at that airport.

3.5.4 If necessary, the Aerodrome Safety inspector shall certify that the physical aspects of the airports meet the training operation requirements for the proposed training.

3.5.5 Where the holder of an ATO Certificate operates from more than one base, all bases of operation would be inspected.

### **3.6 Support Services and Equipment Requirements**

3.6.1 The requirements for training operation support services and equipment are specified in Part 141 of the MOZCAR.

### **3.7 Application Forms**

3.7.1 The application forms together with all applicable data, should be completed and submitted for the training operation to be operated.

3.7.2 The Aerodrome Safety inspector will certify that the airport information given is correct.

3.7.3 The Airworthiness inspector shall certify that the aircraft to be used are serviceable, airworthy and fit for purpose and approve the maintenance facilities to be utilized.

3.7.4 The PLI shall certify that the instructors to be used are qualified for the type of training intended.

3.7.5 The PLI shall ensure the approval of the ATO Manual.

### **3.8 ATO Certificate Fees**

3.8.1 Fees applicable to the issuance of an ATO Certificate are listed in Part 187 of the MCAR.

### **3.9 Approval of Manual of Procedure**

3.9.1 Inspectors should, when requested by an ATO, provide as much assistance and information as possible in the preparation of and

amendments to company manuals; however, it is the ATO/s responsibility to produce a satisfactory manual not for the officer to provide a consultation service.

- 3.9.2 The contents of ATO Manual will vary depending on the type of training authorized, number of aircraft types operated, etc. Each ATO should therefore be encouraged to produce practical manuals that accurately reflect their operations.
- 3.9.3 The ATO Manual shall be reviewed by the vetting inspector at least once per audit period (before commencement of the audit) to ensure that they are up to date and accurately reflect the ATO/s current operations. Bear in mind that it is not the mandate of the officer to write documents or manuals for the Industry, but rather to review or approve them on behalf of the DG.
- 3.9.4 The ATO/s Manual of Procedure as required by Part 141 of the MCAR must be submitted (2 copies) to IACM together with the application form, prescribed fee and other organizational documentation.
- 3.9.5 The inspector in charge are responsible to approve the Manual of Procedure by assessing its content with the legal and other requirements for safe practices with respect to the training operation intended. The appropriate Checklist must be used for this purpose.
- 3.9.6 The inspector has to ensure that the training manual covers all aspects of the intended operation and approves the manual by stamping and signing off on the amendment page(s).
- 3.9.7 Final approval is a multi-level process. Inspectors have a shared responsibility with other civil aviation safety inspectors. Co-ordination of manual reviews is necessary to ensure ATOs are in compliance with regulatory requirements. An appropriate quality review process are established for the review of manuals with individuals involved holding the appropriate Delegation of Authority

- 3.9.8 The inspector is responsible to ensure that the details concerning aircraft types and maintenance are certified as correct and suitable for the type of training to be conducted, by the Airworthiness Inspector.
- 3.9.9 The inspector is responsible to ensure that the details concerning airports and/or aerodromes are certified as correct and suitable for the type of training to be conducted, by the Aerodrome Safety Inspector.
- 3.9.10 Inspectors will examine each Manual to assess whether or not it meets the following general and specific requirements:
- 3.9.10.1 The Manual must contain all information required by Part 141 and the applicable technical standards. Wherever appropriate, cross-reference to the specific requirements of the MCAR or TS may be made to encourage the ATO/s familiarity with the regulations and standards.
- 3.9.10.2 The contents of the Manual must be consistent with the MCAR, including the conditions imposed by the ATO certificate and specifications forming part of the ATO certificate.
- 3.9.11 Staffing:
- 3.9.11.1 The organizational chart should accurately depict an ATO/s supervisory chain of command. Duties and responsibilities of each position on the organizational chart should be clearly stated in the duty/responsibility section and be consistent with the organizational chart.
- 3.9.11.2 Confirm that the responsible managers and instructional staff meet the qualifications required.
- 3.9.11.3 Where one person is responsible for different managerial positions, pay particular attention to the resultant workload. Be mindful of the legislative definition of "full-time".

3.9.12 Each approval will be formally communicated by letter to the ATO, with prior internal co-ordination through the inspector and other interested parties as required.

3.9.13 One copy of the Manual is returned to the ATO whilst one copy of the Manual is retained on file by the PEL Department.

3.9.14 The operator will then be required to publish and distribute a copy of the approved version of the document.

3.9.15 Printing and distribution costs can be substantial. Inspectors and/or officers are advised to encourage their ATO/s to first discuss any proposed changes and to refrain from printing/distribution until they have received the formal letter of approval or acceptance.

3.9.16 The contents of a Manual are not limited to and may extend to areas of responsibility other than that of the training staff and instructors.

3.9.17 Areas where different manuals overlap must be consistent. The contents of a Manual must not contradict, distort or otherwise interfere with the publications governing the activities of other personnel.

3.9.18 Deficient Manuals:

3.9.18.1 Officers are to stop the review/approval process upon finding significant errors in a submitted manual or document (five significant items uncovered in a preliminary assessment) and return the manual or document to the originator for further action.

3.9.18.2 Significant errors to manuals or documents are considered to be errors with respect to compliance with the MOZCAR and Standards. Significant errors are not spelling or formatting. However, poor organization or presentation of material is a significant error.

3.9.18.3 Significant errors shall be identified to the originator of the manual or document by quoting the Regulatory requirement and

deficiency. i.e. *"Section XX of the submitted manual does not meet the requirement of paragraph c) of TS 141.02.3 in that it does not contain a list of effective pages"*.

3.9.18.4 If the originator then re-submits the manual or document and three significant errors are found, the manual or document is to be returned again to the originator for further action.

3.9.18.5 The inspector at his discretion and after consultation with his superior may continue the review/approval process after significant errors have been found.

3.9.18.6 When typographical or editorial errors are observed, the approved manual/amendment will be returned with a covering letter requiring that the required changes be included in the next amendment.

**Note 1:** During company audits, the team should verify that the operator's master copy contains only approved pages, or current pages as per the latest amendment sheet, and that copies agree with the master.

**Note 2:** Verify that operators amend their Manual during base audits and inspections. Verify, for each ATO certificate and date, that the applicable section of the manual is up-to-date.

### **3.10 ATO Initial Inspection/Audit**

3.10.1 The approval of the documentation, including the Manual of Procedure of the ATO is a pre-requisite for the on-site inspection of the ATO/s facilities before commencement of the training.

3.10.2 The inspector in charge is responsible for the authorization and for the scheduling of the site inspection at a date suitable to the ATO, but before commencement of the training.

3.10.3 The inspector is responsible to make the required arrangements for the inspection and to also ensure that the correct number of skilled IACM employees are involved.

3.10.4 The procedures prescribed in the Regulatory Audit Procedures Manual must be followed for all audits or inspections carried out with regard to ATO Certification and Surveillance/Monitoring/Oversight.

3.10.5 Findings made during the inspection/audit must be classified as follows:

3.10.5.1 Major findings of non-conformance: These types of non-conformances pose an immediate very serious safety risk. Immediate (short term) corrective action is required (7 . 30 days) before the ATO certificate may be considered. Re-inspection would be required to close out these findings.

3.10.5.2 Findings of non-compliance: These types of non-compliances pose a less serious safety risk. Rectification action is required within 1 . 3 months and can be accepted by the IACM based on action plans determined by the applicant. Depending on the nature of the finding, the applicant may or may not be allowed to start operation. A re-inspection could be required, however the findings could be closed out during the next surveillance inspection of the applicant.

3.10.5.3 Observations: Observations are potential problems that could lead to findings of non-conformance should they not be addressed. They do not pose an immediate safety risk and their closure is left to the discretion of the ATO. In some instances observations lead to parallel findings, which result in the amendment of the MOZCAR.

3.10.6 The procedure for the inspection and audit is outlined in the Regulatory Audit Procedures Manual.

3.10.7 IACM PEL Department receives the application for the issuance of an initial ATO Certificate.

3.10.7.1 PLA registers the application, opens a file and forwards documentation on file to the PLI.

3.10.7.2 The PLI reviews and evaluates the application for correctness and completeness and obtains additional information from the applicant when required.

3.10.7.3 The PLA ensures that the correct fee has been paid or informs the client of the outstanding amount when applicable.

3.10.7.4 The PLI requests the convening authority to authorize the audit and to appoint the proposed audit manager, team leaders and team members as appropriate to the size and scope of the ATO.

3.10.7.5 The PLI forwards the aerodrome and airworthiness documentation to the Aerodrome Safety and Airworthiness team member for certification for correctness and suitability.

3.10.7.6 The PLI forwards the airspace documentation to the airspace specialist for certification for correctness and suitability.

3.10.7.7 The PLI and other team members evaluate the Manual of Procedure and other supporting documentation against the requirements of the MOZCAR, taking all comments from the other technical inspectors into account.

3.10.7.8 The audit manager plans, arranges and schedules the on-site inspection with the client and the relevant IACM inspectors.

3.10.7.9 The audit manager prepares for the inspection and leads the team during the inspection.

3.10.7.9.1 When required, an itinerary are prepared by the audit manager in accordance with the master surveillance

program and inspection plan and approved by Director: Flight Safety prior to leaving for the inspection.

- 3.10.7.9.2 Prior to conducting an inspection, the pre-audit phase is conducted and PLI and other inspectors must review the ATO file, ATO certificate(s), procedures manuals, current company policy and operational procedures and company-specific SOPs for the a/c type targeted to acquire background knowledge. This will provide a basis for conducting an inspection.
- 3.10.7.10 During the on-site inspection an entry meeting must be held with the employees of the applicant to explain the procedures that would be followed during the inspection, as well as how findings would be treated. Record of the issues covered during the opening meeting must be kept.
- 3.10.7.11 On conclusion of the inspection a de-brief meeting of the inspection team needs to take place to collate all findings and the feedback to the applicant.
- 3.10.7.12 A closing meeting must be held with the applicant during which the process that was followed is again reiterated, after which the findings are shared with the applicant. Action taken by the applicant would depend upon the seriousness of the findings. (See 3.10.4) The issues discussed at the closing meeting must be recorded.
- 3.10.7.13 The audit manager may leave a preliminary report of findings with the applicant.
- 3.10.7.14 The audit manager must collaborate and review all factual information and documentation relating to the inspection and draft a final report to the applicant, which indicates the

recommendation made with regard to the issuance of the ATO Certificate.

3.10.7.15 The final report must be reviewed by the Manager: PEL and approved after which a cover letter and ATO Certificate is prepared and submitted for signature by the Director: Flight Safety Standards.

3.10.7.16 The Director: Flight Safety Standards signs the documentation submitted on behalf of the DG and returns it to PEL for dispatch.

3.10.7.17 The cover letter, final report and ATO Certificate are sent to the ATO applicant by the PLA.

3.10.7.18 PLA retains copies of all relevant documentation on the ATO file.

### **3.11 Issue of Formal ATO CERTIFICATE**

3.11.1 The issuance of an ATO Certificate is dependent upon the ATO demonstrating an adequate organisation, method of control and supervision of flight operations, training programs and maintenance arrangements consistent with the nature and extent of the operation specified.

3.11.2 Complete documentation must be in the possession of the IACM prior to the issue of a formal ATO Certificate.

3.11.3 The ATO Certificate signifies the ATO's capability to demonstrate a safe and efficient conduct of all training operations in compliance with the MOZCAR and TS as amended.

3.11.3 Presently, ATO Certificate states that ATOs are authorized to provide aviation training. Therefore, an ATO may interpret this as justification to start operations without possessing an Agency licence. The wording of the ATO Certificate gives the ATO a legal defence against a charge of operating without a licence. Therefore, in response to the Agency's

request, **any temporary or formal authority issued for an ATO** requiring a license, the covering letter to the ATO shall include a statement to the effect that "*air services under this authority may not be operated unless the company holds a valid and subsisting License issued.*

### **3.12 Records to be maintained**

3.12.1 As a preliminary to an inspector carrying out an inspection and/or audit of an ATO he/she will review the ATO/s file, ATO Certificates, operations specifications in order to confirm the services authorized, company policy, personnel and operating procedures.

3.12.2 The justification for the various valid and subsisting authorizations, managerial positions, aircraft as well as showing that the operator is meeting and continues to meet the conditions of its ATO Certificate, would be available on the ATO/s file.

3.12.3 The file can contain the following documents:

3.12.3.1 Application form with applicable business documents and Manual of Procedure;

3.12.3.2 All in-house approvals and certifications pertaining to the ATO approval certificate, the ATO facilities, equipment or any other requirement of the MOZCAR.

3.12.3.3 All Summaries of Findings and Recommendations and, if necessary, a covering memorandum;

3.12.3.4 any authorization given; and

3.12.3.5 copies of any correspondence, memos, reports, (the content of which may result in suspension or cancellation action taken against an ATO Certificate); copies of these documents are also to be placed on the file.

3.12.4 The file should contain the latest authority issued to the ATO along with the historical copies of the superseded documents. (A complete history).

3.12.5 All records pertaining to the issuance of an ATO Certificate must be retained for a period of 10 years after the ATO has been dismantled.

### **3.13 Archiving And/Or Reactivating ATO Files**

3.13.1 If during the initial certification process an applicant has not replied to a letter from the Minister within 9 months, a further letter is to be sent to the applicant. If no answer is received within 3 months, the files are then to be archived. If the applicant desires to reactivate his application, the files are then retrieved from archives and the certification process is continued.

3.13.2 All files which have not been used for 24 months must be archived for the remainder of the 10 years specified in 3.12.5.

### **3.14 Enforcement action**

3.14.1 Enforcement action relates to the action that would be taken in cases of continued non-conformance with the requirements of the MOZCAR in relation to the issuance of an ATO Certificate or in cases of non-compliance with violation creating regulations.

3.14.2 To ensure that all non-conformances and non-compliances are treated consistently, a database of this information must be maintained on all ATO Certificate holders.

3.14.3 Repetitive and continued non-conformances and non-compliances indicate a bigger problem and depending on the seriousness, could lead to Enforcement action being taken, such as suspension or cancellation of an ATO Certificate. (See PEL Manual and Enforcement Manual)

## Chapter 4 – Amendment to and Renewal of ATO Certificates

### 4.1 General

- 4.1.1 Renewal of an ATO Certificate is required on expiry of the existing ATO Certificate.
- 4.1.2 An amendment to an ATO Certificate can be made together with the renewal of the Certificate or within the period of validity of an existing ATO Certificate.
- 4.1.3 An amendment of an ATO Certificate is usually required when the scope of the training provided is expanded or additional training courses are added. Depending on the nature of the additions, amendments to the ATO Manual might be required.
- 4.1.4 Generally speaking, amendments to an ATO Manual are required whenever the contents of the latter no longer accurately reflect the ATO/s operations. Amendments are necessary whenever changes occur in the following areas:
  - 1. Managerial and key ATO personnel;
  - 2. Training Operations;
  - 3. Operating conditions or procedures; or
  - 4. Aircraft and other equipment.

### 4.2 Requirements for renewal

- 4.2.1 The requirements for the renewal of an ATO Certificate are stipulated in Pat 141 and the associated technical standard.
- 4.2.2 As far as evaluation and approval is concerned, the renewal of an ATO is treated in the same way as a new application. All guidelines to inspectors and officers described in Chapter 3 apply to the review and approval of a renewal application and supporting company documentation, including the ATO Manual.

### **4.3 Requirements for amendment**

- 4.3.1 The requirements for the amendment of an ATO Certificate are stipulated in Part 141 and the associated technical standard.
- 4.3.2 As far as the evaluation and approval of an amendment to an existing ATO Certificate is concerned, the inspector has to ensure that all the relevant company documentation is submitted for review.
- 4.3.3 The inspector must ensure that the amendment of the ATO Certificate does not introduce procedures that conflict with the existing training operation, which is approved.
- 4.3.4 All significant amendments (e.g. amendments that results in different training operations or different aircraft types) to an ATO Certificate will result in the amendment of the ATO Manual.
- 4.3.5 If the amendment concerns the addition of new types of training or training on new aircraft types, this must be reviewed and approved by the relevant technical inspectors within IACM.
- 4.3.6 All guidelines to inspectors described in Chapter 3 apply to the review and approval of an amendment application and supporting company documentation.
- 4.3.7 Depending on the nature of the amendment, an on-site inspection might be required after the approval of the amendments to the ATO Manual.

### **4.4 Application**

- 4.4.1 The application form, together with all applicable data, should be completed and submitted for the amendment to or renewal of the training operation.
- 4.4.2 If applicable, the Aerodrome Safety Inspector shall certify that the airport information given is correct.

4.4.3 If applicable, the Airworthiness Inspector shall certify that the aircraft to be used are serviceable, airworthy and fit for purpose and approve the maintenance facilities to be utilized.

4.4.4 If applicable, the PLI shall certify that the instructors to be used are qualified for the type of training intended.

4.4.5 The PLI shall ensure the approval of the amendment to the ATO Manual.

#### **4.5 ATO Certificate Fees**

4.5.1 Fees applicable to the amendment or renewal of an ATO Certificate are published in Part 187 of the MOZCAR.

#### **4.6 Approval of Amendments to Manual of Procedure**

4.6.1 Each amendment to an operations manual will be examined along the same general guidelines as those given for the Manual itself. (See 3.9)

4.6.2 Amendments shall include an amendment instruction sheet and each page of the amendment shall show the appropriate page number and effective date. For ease of reference, it is recommended that the amendment is clearly marked. The objective is to notify the reader of all changes.

#### **4.7 Inspection/Audit**

4.7.1 Inspection planning:

4.7.1.1 It is the responsibility of the PLI to develop an inspection program for all existing ATO Certificate holders, and where known, all potential ATO Certificate holders and to ensure that this program is included in the Master Surveillance Plan.

4.7.1.2 The inspection program is established to measure compliance and conformance with the requirements of the MOZCAR and TS, and

the operational and safety standards and practices of ATO/s. Each inspection is a snapshot of the certificate holder's ability to operate safely within the aviation system, considering elements that are both internal and external.

- 4.7.1.3 The goal of the ATO inspection program is to cover a large enough sample of the ATO/s facilities and stations, to assess the ATO/s continued compliance with regulations and standards and the relevancy of its operating procedures.
- 4.7.1.4 Routine inspections may be conducted on any ATO in terms of Part 141 of the MCAR. The ATO/s systems, policies, procedures and safety practices are critically assessed against the requirements to ensure that training outcomes is achieved.
- 4.7.1.5 When conducting an ATO inspection, the PLI must always determine whether training are conducted safely and in accordance with approved company manuals.
- 4.7.1.6 In-flight inspections assist to establish and confirm the level of training provided to license holders for flight training organizations.
- 4.7.1.7 The inspection program must therefore include all known initial certification, renewal certification, routine and monitoring inspections (see Chapter 5) planned for each ATO.
- 4.7.1.8 The PLI must develop a detailed inspection plan for all the ATO/s certified by the IACM. The PLI must ensure that the plan is coordinated with other technical inspectors to ensure their availability for inspections of ATO/s in their fields of expertise.

#### 4.7.2 Frequencies:

- 4.7.2.1 ATO/s must be inspected annually for the renewal of their existing ATO Certificates.

4.7.2.2 Inspections to certify the amendment to ATO/s operations would be arranged as and when required.

4.7.3 Inspection/Audit Procedure:

4.7.3.1 The same procedure as for the initial certification inspection described under 3.10 is followed for renewal inspections.

4.7.3.2 Inspections related to the amendment of operations, are specifically focused on approval of the amendment itself, but may also be used to verify any other aspect of the training operation.

## **4.8 Amended or Renewed Certificates**

4.8.1 The issuance of an amended ATO Certificate is dependent upon the ATO demonstrating that the amendment still allows an adequate organisation, method of control and supervision of new flight operations, training programs and maintenance arrangements consistent with the nature and extent of the operation specified.

4.8.2 The renewal of an ATO Certificate is dependent upon the ATO demonstrating that an adequate organisation, method of control and supervision of new flight operations, training programs and maintenance arrangements consistent with the nature and extent of the operation specified, are still maintained.

4.8.3 Complete documentation must be in the possession of the IACM prior to the issue of a formal ATO Certificate.

## **4.9 Records to be maintained**

4.9.1 All records concerning the amendment to or renewal of an ATO Certificate must be maintained as specified in 3.12.

#### **4.10 Archiving and/or Reactivating ATO Files**

4.10.1 All files which have not been used for 24 months must be archived for the remainder of the 10 years specified in 3.12.5.

#### **4.11 Enforcement Action**

4.11.1 Enforcement action is specified in 3.14.

## Chapter 5 – ATO Compliance Monitoring

### 5.1 Monitoring Activities

#### 5.1.1 Types of monitoring activities:

5.1.1.1 The following are means for ensuring that ATO/s comply with the legal requirements set out in the MCAR and safety practices instituted by the IACM:

5.1.1.1.1 Assessing, evaluating and approving applications and submissions made for ATO Certificates.

5.1.1.1.2 Assessing, evaluating and approving safety procedures and practices implemented by ATO/s, normally submitted in the form of ATO Manuals.

5.1.1.1.3 Assessing, evaluating and approving requests for special dispensation, such as exemption, extensions and special approvals.

5.1.1.1.4 Inspecting and auditing of compliance to regulatory requirements and conformance to technical standards and safety practices and procedures.

5.1.1.1.5 Investigating causes for non-compliance & non-conformance and ensuring that the deficiencies are rectified.

5.1.1.1.6 Taking enforcement action when contraventions to the applicable regulations, technical standards and other provisions.

5.1.2 Documentation review and inspections and/or audits of ATO/s are described in this Chapter. Enforcement actions are dealt with in Chapter 6 and Exemptions in the PEL Manual.

## **5.2 Documentation review**

5.2.1 Documentation review includes:

5.2.1.1 the review done by inspectors on the application for ATO Certification, the application for renewal of an ATO Certificate and the application for an amendment to an ATO Certificate;

5.2.1.2 the review done by inspectors to ensure continued compliance of ATO/s;

5.2.1.3 the review done by inspectors and officers on the ATO Manual; and

5.2.1.4 the review done by inspectors and officers when special requests for consideration are made.

5.2.2 Inspectors are obliged to ensure that all submissions made for consideration by the DG, are reviewed to ensure compliance with the MCAR and TS, and the operational and safety standards and practices implemented by ATO/s.

## **5.3 Monitoring Inspection/Audit**

5.3.1 As indicated in 4.7 it is the responsibility of the PLI to develop an inspection program for all existing ATO Certificate holders.

5.3.2 The program consists of routine, monitoring and special purpose inspections. Routine inspections are already covered in 4.7.

5.3.3 Monitoring (surveillance/oversight) inspections are conducted to determine the certificate holder's continued ability to operate safely within the aviation system in accordance with regulatory requirements. It is usually intended to identify and correct any window dressing by the ATO.

5.3.4 All types and classes of audits and inspections as well as the procedures to be followed are described in the Regulatory Audit Procedures Manual.

5.3.5 Monitoring inspections is planned in advance and included in the inspection program, but can be announced and ad hoc (unannounced) inspections.

5.3.6 Special purpose inspections take priority over routine and monitoring inspections and are conducted when significant or unusual changes at an ATO occur. Priority is given to flights involving new aircraft types, new instructors, new training programmes, etc. .A PLI should inspect the new ATO training operations until fully satisfied the ATO meets the standards.

5.3.7 Special purpose inspections may also be required when a safety hazard is suspected.

5.3.8 In all instances where special purpose inspections is necessitated as a result of a major non-conformance or non-compliance found during a previous inspection, the hourly rate shall be charged.

5.3.9 Frequencies:

5.3.9.1 Annual frequencies for ATO monitoring inspections/audits are:

5.3.9.1.1 Base inspections . 2 per year per ATO

5.3.9.1.2 Sub-base inspections . 1 per year per ATO (where applicable)

5.3.9.1.3 Practical training inspections/observations/monitors (In-flight inspections for flight training) . 2 per year per type of training.

5.3.9.1.3.1 For flight training: all aircraft types to be covered in a period of 3 years

5.3.9.1.3.2 For ATC training: all rating types (positions) to be covered in a 3-year period.

5.3.9.1.3.3 For AME training: all rating categories to be covered in a 3-year period.

5.3.10 Inspection/Audit Procedure:

5.3.10.1 Although monitoring inspections are very focused and usually concerns only a partial inspection of the ATO/s training operation, the same procedure as for the initial certification inspection described under 3.10 is followed as far as possible.

5.3.10.2 For unannounced inspections, the ATO is not notified beforehand.

**5.4 Records to be maintained**

5.4.1 All records concerning the monitoring (surveillance/oversight) of an ATO must be maintained as specified in 3.12.

## Chapter 6 – Suspension and or cancellation of ATO Certificate

### 6.1 General

- 6.1.1 The Minister of Transport and Communications delegated powers for aviation oversight to the Director General (DG) in terms of Decree No. 41/2001.
- 6.1.2 As provided for in the Mozambique Flight Safety Law the DG can in turn delegate certain of his powers to the employees of the IACM by means of their job descriptions and a delegation of authority. These instruments give the inspectors and officers the required authority to perform their duties and responsibilities.
- 6.1.3 The MOZCAR contains the legal (regulatory) requirements for compliance to ensure a safe civil aviation environment and system. The MOZCAR are accompanied by technical standards, which contains the conditions under which certain activities would be performed.
- 6.1.4 Enforcement powers of inspectors are contained in the Mozambique Flight Safety Law and the MOZCAR Part 183, which allows for the suspension or cancellation of any license or certificate.
- 6.1.5 Chapter 2 of the Mozambique Flight Safety Law contains provisions for the appointment and the powers of authorized officers. Authorized officer powers are given to inspectors and officers by means of specific appointment by the DG.

### 6.2 Authorised Officer powers

- 6.2.1 Authorized officer powers are delegated to specific inspectors and officers to allow them to carry of enforcement action.
- 6.2.2 Authorized officers are appointed by the DG and may only conduct enforcement action in their areas of expertise.

6.2.3 Chapter 2, Article 9 of the Mozambique Flight Safety Law allows authorized officers to:

- 6.2.3.1 enter any aerodrome for the purpose of inspecting the aerodrome and inspecting any aircraft, aviation document or aviation facility located on the aerodrome;
- 6.2.3.2 enter any aircraft whether or not in flight, any facility related to civil aviation, or any premises used for the design, manufacture, maintenance or installation of aeronautical products for the purpose of conducting oversight investigations relating to the enforcement of civil aviation regulation;
- 6.2.3.3 detain any aircraft when he has reasonable grounds to believe that it will be operated in an unsafe manner and take reasonable steps to ensure its continued detention;
- 6.2.3.4 seize anything found in any place referred to in the above paragraphs that he believes on reasonable grounds will afford evidence with respect to a violation of civil aviation regulation or to an investigation;
- 6.2.3.5 require any person whom he has reasonable grounds to believe may provide information relevant to the oversight or investigation to answer such questions as the inspector thinks fit to ask and to sign a record of his answers;
- 6.2.3.6 require the production of any records to be kept under civil aviation regulation, or any other books, records or documents necessary for the purpose of his inspection or investigation, and make copies thereof.
- 6.2.3.7 Where any place referred to above is a private residence, the inspector may not enter that private residence without the consent of the occupant except under the authority of a warrant delivered by a magistrate. In executing a warrant, the inspector shall not use force unless accompanied by a member of the law enforcement authorities

and only if and to the extent the use of force has been specifically authorized in the warrant.

6.2.4 Authorized officers are appointed as described in 9.2.3 of the PEL Manual.

### **6.3 Suspension & cancellation**

6.3.1 Suspension and cancellation are allowed in terms of Part 183 of the MOZCAR, under the following conditions.

6.3.1.1 If it is evident that the holder of the license, validation, approval, rating or certificate does not comply with the requirements of these regulations, and such holder fails to remedy such non-compliance within 30 days after receiving notice in writing from the authorized person to do so; or

6.3.1.2 the suspension is necessary in the interests of aviation safety.

6.3.2 The PLI may suspend an aviation document when authorized by the DG to do so.

6.3.3 When the need for suspension is identified the PLI must discuss his findings with the PEL: Manager and agree on the necessity for the suspension.

6.3.4 On suspension the PLI develops a report indicating the reasons for the suspension including a recommendation about the action required to be taken is to be developed and submitted to the PEL Manager for review and onward submission to the Director: Flight Safety Standards.

6.3.5 Action required depends upon the circumstances surrounding the suspension and the possible impact on aviation safety and the general public.

6.3.6 The Director: Flight Safety Standards must add his comments to the report and submit it to the DG for review.

- 6.3.7 The Director: Flight Safety authorizes the release of the report to the individual or company affected by the suspension as specified in Part 183 and instructs the PEL Manager to release the report.
- 6.3.8 The PEL Manager releases the report as required under a cover letter informing the individual or company of its right to appeal to the DG.
- 6.3.9 All records and documentation concerning the suspension or cancellation of the aviation document must be filed on the individual's or the company's file.

## Chapter 7 . Leasing of Aircraft

### 7.1 General

7.1.1 Aircraft are leased by flight training ATO/s in the instance that they do not own aircraft. Even when aircraft are leased by an ATO, they are expected to remain responsible for the safe operation and for the proper maintenance of the aircraft.

7.1.2 IACM has the responsibility to ensure that all leased aircraft are operated safely and are maintained in accordance with the legal requirements of the MOZCAR.

### 7.2 Leasing of Aircraft

7.2.1 Aircraft may only be leased to/by ATO/s after conclusion of a lease agreement between the ATO/s Chief Executive and the aircraft owner.

7.2.2 The lease agreement must include at least the following

7.2.2.1 Financial and legal terms and conditions of the lease,

7.2.2.2 Period of the lease,

7.2.2.3 Transfer of operational control and responsibility to the ATO,

7.2.2.4 Transfer of maintenance control and responsibility to the ATO,

7.2.2.5 Aircraft registration, configuration specifications,

7.2.2.6 Insurance specifications, and

7.2.2.7 Sub-leasing.

7.2.3 It is the responsibility of the inspector to ensure that the lease agreement fully covers the abovementioned aspects, where it is applicable to the operation of the ATO.

7.2.4 The inspector has to ensure that the arrangements covered within the lease agreement does not infringe on the safety of the training operation.

7.2.5 The ATO/s Manual of Procedures must include procedures for aircraft leasing and the control and maintenance of leased aircraft, if this differs from that for other aircraft.

### **7.3 Sub-leasing of Aircraft**

7.3.1 An ATO may not sub-lease an aircraft operated by it on a lease agreement, unless covered in the lease agreement or with the permission of the aircraft owner.

7.3.2 The conditions of sub-leasing must be specified in writing.

7.3.3 The inspector is responsible to review the conditions and to ensure that safety is not compromised.

## Chapter 8 . Synthetic training devices

### 8.1 General

- 8.1.1 An ATO may make use of a synthetic training device for the purposes of training. The training device must be approved and certified by the IACM.
- 8.1.2 An ATO may continue to use a synthetic training device for training only if its condition and level of performance is maintained at the same level as required for initial certification.
- 8.1.3 Technical inspectors are responsible to approve the use of the specific device for its intended use.

### 8.2 Approval and Certification of Flight Training Synthetic Training Devices

- 8.2.1 Advancement in affordable technology created the potential for the use of simulation training equipment by ATO/s
- 8.2.2 It has therefore become necessary to develop a classification and evaluation/approval system for simulation equipment to be used within approved training programs for flight training.
- 8.2.3 The FAA, JAA and Australian requirements for flight simulation equipment form the foundation for classification and are attached as Annex 1.
- 8.2.4 For initial approval the ATO/s is required to submit to the IACM a Master Quality Test Guide (MQTG) document that contains:
  - 8.2.4.1 Statements of compliance as given in the examples for each category.
  - 8.2.4.2 Documented results for the validation flight test according to the requirements laid out in the table Flight Training Device Validation Tests+. The table contains performance and evaluation parameters that need to be verified either as satisfactory or to fall within the stated tolerance limits of the figures published in the Pilot's Operating Handbook of the type being simulated.
  - 8.2.4.3 An application for approval.

- 8.2.5 The relevant technical inspector is responsible to ensure that the application is assessed, inspected and approved. The approval of synthetic training devices is conducted in conjunction with the certification of the ATO.
- 8.2.6 The MQTG accepted by the IACM for the initial approval becomes the benchmark document for subsequent annual renewal inspections.
- 8.2.7 The Flight Training Device Validation Tests have been compiled such that the required aircraft data for comparison purposes can be obtained from the Pilot Operating Handbook or Aircraft Flight Manual directly, not requiring the acquisition of costly actual flight test data from the manufacturer. (The Validation tests are attached as Annex 2.)

### **8.3 Approval and Certification of other Synthetic Training Devices**

- 8.3.1 Synthetic training devices can also be used for the training and qualification of Air Traffic Controllers.
- 8.3.2 The IACM is responsible to approve synthetic training devices when they are used for the purposes of training conducted towards the achievement of a Mozambique license or rating.
- 8.3.3 The IACM must ensure that the synthetic training device accurately simulates the true behavior of the equipment, which it is intended to simulate.
- 8.3.4 The synthetic training device may not be used when it has not been approved and certified by the IACM as being acceptable for its intended use.
- 8.3.5 The relevant technical inspector would be responsible to review and approve the synthetic training device.
- 8.3.6 Any ATO intending to use a synthetic training device should incorporate information on its use and operation in its ATO certification application.
- 8.3.7 The synthetic training device would be considered for approval in conjunction with the application for certification, or amendment or renewal of the ATO Certificate.

8.3.8 Depending on the type of device, the IACM may issue additional conditions for the approval of these synthetic training devices.

#### **8.4 Action If Synthetic Training Device is Below Performance Standard**

8.4.1 An inspector will terminate a practical skill test or training session when:

8.4.1.1 The performance of a simulator does not accurately simulate the flight characteristics of the aeroplane; or

8.4.1.2 Special techniques not in common with the aeroplane are necessary to control the simulator; or

8.4.1.3 Any of flight or trim control system fails; or

8.4.1.4 Aircraft systems required for the checking or for the training event are unserviceable and the unserviceability interferes with the approved training program.

8.4.2 For situations other than the preceding, an inspector may either continue or terminate the skill test or training at his or her discretion. However, the inspector request a further skill test or briefing to establish the pilot's use and understanding of an inoperative or malfunctioning system.

#### **8.5 Synthetic Device Condition Reports**

8.5.1 Inspectors are to monitor the maintenance standard and operation of simulators to ensure that they meet the performance standards required for certification. Where serious or long-term deficiencies are noted, the ATO will be advised, detailing the simulator operator's name, location, aircraft type, identification number and the discrepancy(s).

8.5.2 Where the ATO has used a simulator the inspector should verify that no training exercises prohibited or restricted by the training programme have been conducted or credited.

## Chapter 9 . Foreign ATOs

### **9.1 General**

- 9.1.1 From time to time IACM would have to deal with requests for certification of foreign ATO/s, which has established sub-bases within the borders of Mozambique.
- 9.1.2 It could also happen that Mozambique license holders attend training courses with foreign ATO/s for the purposes of adding ratings to Mozambique licenses or even to obtain Mozambique licenses.
- 9.1.3 It could further happen that Mozambique ATO/s establish sub-bases outside the borders of Mozambique for purposes of training Mozambique license holders or potential license holders.
- 9.1.4 The IACM remains responsible for all aviation training activities carried out within its borders, including those of foreign ATO/s.
- 9.1.5 The IACM also has the responsibility to ensure that training provided for the purposes of obtaining Mozambique pilot licenses and ratings are in compliance with the requirements of the relevant part of the MCAR and technical standards.
- 9.1.6 This Chapter covers the approval of training conducted by foreign ATO/s.

### **9.2 Approval of training provided by Foreign ATO/s**

- 9.2.1 When a potential applicant for a Mozambique license or rating plans to undergo training at a Foreign ATO for the purpose of obtaining a Mozambique license or ratings, the applicant must first submit a request to IACM for the approval of the intended training course, instructors to be utilized, and standards implemented by the ATO.
- 9.2.2 The request must be submitted to the PEL Department and must contain the following information and supporting documentation:

- 9.2.2.1 Information of the type of training to be undergone at the foreign ATO,
- 9.2.2.2 Information about the certification of the foreign ATO,
- 9.2.2.3 An original or certified copy of the valid ATO approval certificate of the certifying country,
- 9.2.2.4 A certified copy of the syllabus and training exercises for the intended training,
- 9.2.2.5 A certified copy of the qualifications and experience of the instructor/s who would conduct the training, and if applicable the theoretical knowledge examination.
- 9.2.2.6 A certified copy of the practical skill test exercises, when applicable.
- 9.2.2.7 A certified copy of the qualifications and experience of the instructor/s or examiners who would conduct the practical skill test.
- 9.2.3 On receipt of the request, the PLA enters it into a register and forwards it to the PLI for attention.
- 9.2.4 The PLI ensures that the request is forwarded to the applicable technical inspector.
- 9.2.5 The technical inspector is responsible to review the request and to ensure that the intended training meets all requirements of the MOZCAR, technical standards, and IACM, including at least the following:
  - 9.2.5.1 The training course must cover all contents listed in the respective technical standard for the particular type of training. (e.g. PPL theoretical training and practical training syllabus contained in 61.03.3 of the MOZCAR)
  - 9.2.5.2 The instructors must meet the qualification and experience requirements stipulated in the relevant part of the MOZCAR.

- 9.2.5.3 The safety standards implemented by the ATO must meet the requirements of Part 141.
- 9.2.5.4 The safety practices of the ATO must be equivalent to that which is endorsed by the IACM.
- 9.2.6 A technical inspector may need to review the regulations and standards of the country of issue of the ATO certificate in order to establish equivalency.
- 9.2.7 When satisfied that the above requirements are met and that the ATO can maintain safety at an equivalent level to the standards implemented in Mozambique, the technical inspector approves the intended training and forwards the request back to the PLA.
- 9.2.8 The PLA is responsible to advise the applicant of the outcome of the decision.

### **9.3 Approval of Foreign ATO/s within Mozambique**

- 9.3.1 When a foreign ATO establishes a base within Mozambique for the training of Mozambique license holders, the IACM is responsible to ensure that the training provided meets the requirements of the MCAR and technical standards, as well as safety policies and practices.
- 9.3.2 All foreign ATO/s, which establish itself in Mozambique, would be treated as a Mozambique ATO and the certification process for ATO/s described in this Manual would have to be followed. All requirements of Part 141 and IACM must be met by the ATO.
- 9.3.3 The ATO would at the same time still be certified and overseen by the authority of its own country, and where the requirements differ, both the Mozambique and the other country's requirements would have to be met. Any conflicting requirements would have to be resolved with both parties.

### **9.4 Approval of Mozambique ATO/s in other countries**

- 9.4.1 The IACM remains responsible for the certification and oversight (surveillance/monitoring) of Mozambique ATO/s, who want to establish a base/s outside the borders of Mozambique.
- 9.4.2 All requirements of the MOZCAR, technical standards and the IACM would still have to be met by the ATO, irrespective of its location.
- 9.4.3 All requirements of this Manual pertaining to the certification and oversight (surveillance/monitoring) of the ATO, would apply.

## **Annex 1: Classification of Simulation Equipment**

### **FNPT I**

A static training device, which represents the flight deck environment of a class of aeroplanes. It is in compliance with the minimum standards for FNPT I qualification. To easily distinguish this category the registrations allocated commence with P1, e.g. P1-AAA.

### **FNPT II and FNPT II MCC**

A static training device which represents the flight deck environment of a multi engine aeroplane type or class to the extent that the systems appear to function as in an aeroplane. It incorporates a visual system providing an out of the cockpit view. It is in compliance with the minimum standards for FNPT II and/or FNPT II MCC qualification. To easily distinguish this category the registrations allocated commence with P2 for FNPT II, e.g. P2-AAA, and PM for FNPT II MCC, PM-AAA.

### **FTD**

A full size replica of a specific type or make, model and series of aeroplane flight deck, including the assemblage of equipment and computer software programmes necessary to represent the aeroplane in ground and flight operations to the extent of the systems installed in the device and a visual system providing an out of the flight deck view. It does not require a force cueing motion system. It is in compliance with the minimum standards for FTD qualification. To easily distinguish this category the registrations allocated commence with F, e.g. F-AAA.

### **Flight Simulator**

A full size replica of a specific type or make, model and series of aeroplane flight deck, including the assemblage of equipment and computer software programmes necessary to represent the aeroplane in ground and flight operations, a visual system providing an out of the flight deck view and a force cueing motion system. It is in compliance with the minimum standards for Flight Simulator qualification.

***Note: This category is not covered by this document as it falls under Part 121 and an established classification and approval system.***

## **Annex 2: Flight Training Device Validation Tests**

### **1 Flight Navigation Procedures Trainer I (FNPT I)**

The technical requirements for this category, being the entry level of approvable training devices are directly derived from JAR STD3A, being:

#### **1.1 General regulatory description of Device:**

A training device without motion system that in its flight deck/cockpit layout generically replicates a class of aircraft (e.g. all single engine land aircraft up to 2000kg)

#### **1.2 Technical Requirements and compliance:**

- 1.2.1 A cockpit/flight deck sufficiently enclosed to exclude distraction, which will replicate that of the aeroplane or class of aeroplane simulated and in which the switches and all the controls will operate as, and represent those in, that aeroplane or class of. The use of a computer mouse to actuate simulated aircraft controls and or interfaces in the cockpit is not allowed.
- 1.2.2 Instruments, equipment, panels, systems, primary and secondary flight controls sufficient for the training events to be accomplished [shall] be located in a spatially correct flight deck area.
- 1.2.3 Lighting environment for panels and instruments sufficient for the operation being conducted.
- 1.2.4 In addition to the flight crew membersq stations, suitable viewing arrangements for the instructor [shall be provided. These shall] provide an adequate view of the crewmembers, panels and station.
- 1.2.5 Effects of aerodynamic changes for various combinations of drag and thrust normally encountered in flight, including the effect of change in aeroplane attitude, sideslip, altitude, temperature, gross mass, centre of

gravity location and configuration. Full 6 degree of freedom simulation model is employed, recreating aerodynamic effects attributable to combinations of in-flight drag and thrust, to include effects due to changes in aircraft attitude, altitude, environmental temperature, wind, turbulence, weight, loading and aircraft configuration. Conformance is to be proven according to the principle of correct trend and magnitude (CT&M) demonstrated in a flight test.

- 1.2.6 Full complement and functionality of navigation equipment with operational tolerances equivalent to reality, including the simulation of air-to-ground communication procedures.
- 1.2.7 Control forces and control travel shall broadly correspond to that of the replicated aeroplane or class of aeroplane.
- 1.2.8 Complete navigational data for at least 5 different South African airports with corresponding precision and non-precision approach procedures including current updating within a period of 3 months. All navigational aids should be useable, if within range, without restriction and without instructor intervention
- 1.2.9 Engine sounds shall be available
- 1.2.10 The following shall be available
  - 1.2.10.1 Variable effects of wind and turbulence
  - 1.2.10.2 Hard copy of map and approach plot
  - 1.2.10.3 Provision for position freeze and flight freeze
  - 1.2.10.4 Instructor controls necessary to perform the training task
- 1.2.11 Stall recognition device corresponding to that of the replicated aeroplane or class of aeroplane
- 1.2.12 A Statement of compliance document outlining in a qualitative form the manner of meeting the technical requirements, which shall be submitted by the Operator together with the application for approval to the SACAA.

**1.3 Example of Statement of Compliance:**

	<u>Technical Requirement:</u>	<u>Statement of Compliance:</u>
<u>1.</u>	A cockpit/flight deck sufficiently enclosed to exclude distraction, which will replicate that of the aeroplane or class of aeroplane simulated and in which the switches and all the controls will operate as, and represent those in, that aeroplane or class of aeroplane.	A fully enclosed flight deck for 1 crewmember measuring approx. ... mm wide and ... mm long ... mm high at the entrance is provided.  <u>The following features are included to exclude distraction:</u> The flight deck is laid out and functionally equipped as per the ... aeroplane being simulated. No mouse control is used in the cockpit. Access to the flight deck is gained from the rear centre, behind the pilot station
<u>2.</u>	Instruments, equipment, panels, systems, primary and secondary flight controls sufficient for the training events to be accomplished [shall] be located in a spatially correct flight deck area.	The flight deck layout and instrument panel is designed to replicate in spatially correct form and function, as required for the intended training events outlined in the operator's FNPT Training Manual,  The instruments, equipment, panels, systems, primary and secondary flight controls of the ... aeroplane or class of aeroplane being simulated.
<u>3.</u>	Lighting environment for panels and instruments sufficient for the operation being conducted.	The flight deck is equipped with the following lamps/lighting:  <ul style="list-style-type: none"> <li>• Overhead directionally adjustable map reading lamp in addition to instrument panel mounted and dimmable post lighting.</li> <li>• The instructor's station is equipped with overhead spot lamps to provide suitable lighting at the instructor's console without distracting the flight crew.</li> </ul>
<u>4.</u>	In addition to the flight crew member's stations, suitable viewing arrangements for the instructor shall be provided. These shall] provide an adequate view of the crew members, panels and station.	The instructor's station is situated behind and to the side of the flight deck with a mobile chair that allows the instructor to also position himself behind and between the flight crew for observation and/or instruction purposes with unobstructed view of the events unfolding in the flight deck.

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:	<u>Technical Requirement:</u>	<u>Statement of Compliance:</u>
<u>5.</u>	Effects of aerodynamic changes for various combinations of drag and thrust normally encountered in flight, including the effect of change in aeroplane attitude, sideslip, altitude, temperature, gross mass, centre of gravity location and configuration. Full 6 degree of freedom simulation model is employed, recreating aerodynamic effects attributable to combinations of in flight drag and thrust, to include effects due to changes in aircraft attitude, altitude, environmental temperature, wind, turbulence, weight, loading and aircraft configuration. Conformance is to be proven according to the principle of correct trend and magnitude (CT&M) demonstrated in a flight test.	<p>The??? Software package is used as the main simulation engine. The software utilises 6 degree of motion freedom algorithms to recreate all aerodynamic behaviour of the aeroplane or class of aeroplane being simulated. Flight models are:</p> <ul style="list-style-type: none"> <li>• Pre-programmed by the software developer with no facility for user modification OR</li> <li>• Programmed by the user through the creation of a configuration file read and utilised by the main simulation software engine algorithms. This file contains a number of aircraft parameters defining geometric dimensions, mass &amp; balance, engine and aerodynamic performance and handling as well as aesthetic input data</li> </ul> <p>The net result is a highly realistic simulation model that includes, amongst others, the aerodynamic effects attributable to combinations of inflight drag and thrust, to include effects due to changes in aircraft attitude, altitude, environmental temperature, wind, turbulence, weight, loading and aircraft configuration.</p>
<u>6.</u>	Full complement and functionality of navigation equipment with operational tolerances equivalent to reality, including the simulation of air-to-ground communication procedures.	The flight deck is equipped with a Communications Radio coupled to a 2-3 way intercom system linking the flight crew to each other and via the Push To Talk (PTT) buttons on the respective control wheels to the instructor. Further navigation equipment comprises 2 Navigation Radios with OBI and/or HSI indicators, a Distance Measuring Equipment (DME) receiver, an Automatic Direction Finding (ADF) Radio with RMI indicator and a Mode C Transponder.
<u>7.</u>	Control forces and control travel shall broadly correspond to that of the replicated aeroplane or class of aeroplane.	Control travel corresponds in all three axes to that of the class of aircraft being simulated. Control forces correspond qualitatively to the average control force feel of the aircraft being simulated and are generated through a mechanical system of springs and dampers where required.

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	<b><u>Technical Requirement:</u></b>	<b><u>Statement of Compliance:</u></b>
<b><u>8.</u></b>	Complete navigational data for at least 5 different South African airports with corresponding precision and non-precision approach procedures including current updating within a period of 3 months. All navigational aids should be useable, if within range, without restriction and without instructor intervention.	Navigation database for South Africa and generally the world with all nav aids required for navigation, precision and non-precision letdowns is available. All navigation aids exhibit the same transmission and reception characteristics (geographical location, frequency, ICAO designator, morse code identification) as the real facilities and are useable without the intervention of the instructor being required. Bearing in mind that the navigation database of the FNPT is used solely for training purposes and the fact that relatively few changes take place to the navigation aid equipment in the Southern African region, a regular update of the database is not provided at this time.
<b><u>9.</u></b>	Engine sounds shall be available.	Realistic stereo engine, cockpit and navigation sounds are provided through a installed speaker system.
<b><u>10.</u></b>	<p>The following shall be available</p> <ul style="list-style-type: none"> <li>• variable effects of wind and turbulence</li> <li>• hard copy of map and approach plot</li> <li>• provision for position freeze and flight freeze</li> </ul> <p>Instructor controls necessary to perform the training task.</p>	<p>Meteorological simulation in terms of variable cloud, wind, turbulence, visibility, temperature and atmospheric pressure is provided</p> <p>Colour or black and white printable output of approach flight path, including navigation aids from the instructor's station printer is provided</p> <p>Both the flight deck and the instructor's station are equipped with a pause/freeze and un-pause/unfreeze button to control this function.</p> <p>The instructor's station is equipped with a console containing the required controls and switches to perform the training task, e.g. the introduction of aircraft system failures. Additionally it is equipped with a computer, keyboard, mouse and monitor to manage the training session.</p>

	<b><u>Technical Requirement:</u></b>	<b><u>Statement of Compliance:</u></b>
	Stall recognition device corresponding to that of the replicated aeroplane or class of aeroplane.	A stall warning system, representative of that found in the class of aircraft being simulated is provided in the form of aural and/or visual stall and overspeed warning.

#### **1.4 Final approval of an installation is subject to:**

- 1.4.1 Verification of the Statement of compliance through comparison with the hardware and documentation where required.
- 1.4.2 Test flying the flight model/s for acceptable realistic behaviour according to the principle of correct trend and magnitude (CT&M) demonstrated.
- 1.4.3 Evaluation of an outcomes based training session conducted by the ATO/s nominated Simulator Instructor (SI) according to the ATO MOP and course curriculum outline. He is authorized to appoint further personnel as simulator instructors, these reporting to him/her.
- 1.4.4 The **FNPT I** is approved in the Instrument Procedural Trainer category allowing credits for the following simulator training:
  - 5 hours towards the initial night rating
  - 15 hours towards the initial IF rating.

## **2 Flight Navigation Procedures Trainer II (FNPT II)**

The technical requirements for this category, being the second level of approvable training devices are directly derived from JAR STD3A, being:

### **2.1 General regulatory description of Device:**

A training device without motion system that in its flight deck/cockpit layout replicates the cockpit of a multi-engined class or type of aircraft with the aircraft systems realistically represented. It includes a visual system providing an "out of the cockpit" view.

## **2.2 Technical Requirements Compliance:**

As for the FNPT I with the following additional compliance:

- 2.2.1 The flight deck, including the instructor's station, shall be enclosed.
- 2.2.2 Circuit breakers shall function accurately when involved in procedures or malfunctions requiring or involving flight crew response.
- 2.2.3 Crew member's seats shall be provided with sufficient adjustment to allow the occupant to achieve the design eye reference position appropriate to the aeroplane or class of aeroplane and for the visual system to be installed to align with that eye position.
- 2.2.4 A generic ground handling model shall be provided to enable representative flare and touchdown effects to be produced by the sound and visual systems.
- 2.2.5 Systems [shall] be operative to the extent that it shall be possible to perform all normal, abnormal and emergency operations as may be appropriate to the aeroplane or class of aeroplane being simulated and as required for the training. Once activated, proper systems operation must result from system management by the crew member and not require any further input from the instructor's controls.
- 2.2.6 Control forces and control travels which respond in the same manner under the same flight conditions as in the aeroplane or class of aeroplane being simulated. Conformance is to be proven according to the principle of correct trend and magnitude (CT&M) demonstrated in a flight test.
- 2.2.7 Aerodynamic modelling shall reflect:
  - i. effects of airframe icing
  - ii. the rolling moment due to yawing
- 2.2.8 Significant cockpit/flight deck sounds, responding to pilot actions, corresponding to the aeroplane or class of aeroplane being simulated.
- 2.2.9 A visual system (night/dusk or day) capable of providing a field-of-view of a minimum of 45 degrees horizontally and 30 degrees vertically, unless restricted by the type of aeroplane, simultaneously for each pilot, including adjustable cloud base and visibility. The visual system need not be

collimated. The responses of the visual system and the flight deck instruments to control inputs shall be closely coupled to provide the integration of the necessary cues.

**2.2.10** The instructor's station shall include the following controls:

- i. representative crosswinds
- ii. a facility to enable the dynamic plotting of the flight path on approaches,
- iii. commencing at the final approach fix, including the vertical profile.

**2.3 Example of Statement of Compliance:**

	<b><u>Technical Requirement:</u></b>	<b><u>Statement of Compliance:</u></b>
<b><u>1.</u></b>	The flight deck, including the instructor's station, shall be enclosed.	A fully enclosed flight deck for ... crew members measuring ... mm wide ... mm long ... mm high at the entrance is provided. The flight deck is laid out and functionally equipped as per the ... aeroplane/class of aeroplane being simulated. Additionally, it is provided with a suitable front windscreen for viewing of the out of the cockpit scenery and dummy side windows to exclude distraction. Access to the flight deck is gained from the rear centre, behind the crew stations, through the instructor's station.
<b><u>2.</u></b>	Circuit breakers shall function accurately when involved in procedures or malfunctions requiring or involving flight crew response.	Circuit breaker panels accurately replicating the circuit breaker panels found in the ... aeroplane being simulated are provided on the flight deck. The circuit breakers are integrated into the functionality of the relevant aircraft systems being simulated in as far as:  They can be used by the crew to isolate an aircraft system if procedures or malfunctions requiring or involving flight crew response require such action.  And/or are additionally remotely able to be tripped from

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		the instructor's station
	<b><u>Technical Requirement:</u></b>	<b><u>Statement of Compliance:</u></b>
<b><u>3.</u></b>	Crew member's seats shall be provided with sufficient adjustment to allow the occupant to achieve the design eye reference position appropriate to the aeroplane or class of aeroplane and for the visual system to be installed to align with that eye position.	Fully adjustable crew seats, i.t.o for and aft, up and down tilt and seatback with armrests, to allow the setting of the eye reference position of the crew members so that the full realistic effect of the visual system is utilised.
<b><u>4.</u></b>	A generic ground handling model shall be provided to enable representative flare and touch down effects to be produced by the sound and visual systems.	Referring to requirement 5 for FNPT I above, the 6 degree of motion freedom software simulation model caters for handling simulation on the ground and in ground proximity to replicate the effects during the landing flare and touchdown through the visual and sound system. It also allows start-up and taxiing, including the performance of the relevant checklists, to and from the apron and runway at all the airports included in the nav database.
<b><u>5.</u></b>	Systems [shall] be operative to the extent that it shall be possible to perform all normal, abnormal and emergency operations as may be appropriate to the aeroplane or class of aeroplane being simulated and as required for the training. Once activated, proper systems operation must result from system management by the crew member and not require any further input from the instructor's controls.	Simulation of normal, abnormal and emergency situations, from start-up right through to shut down, as required by the??? Aircraft type and the intended training curriculum are provided. Functioning of the respective system is achieved through system control on the part of the flight crew. No inputs from the instructor's station, other than those to introduce abnormalities or emergencies, are required to this end.
<b><u>6.</u></b>	The instructor's station shall include the following controls:  Representative crosswinds  A facility to enable the dynamic plotting of the flight path on approaches commencing at the final approach fix, including the vertical profile.	Through the meteorological simulation model of???? Software, representative winds in any direction and of different strengths can be introduced to the training session from the instructor's station.  The instructors' station monitor screen can be configured to display the colour Dynamic plotting of the flight path including the vertical profile, also on approaches commencing at the final approach fix. These plots can

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		then be output to a hardcopy format through the colour printer provided at the instructor's station.
	<b>Technical Requirement:</b>	<b>Statement of Compliance:</b>
<u>7.</u>	Control forces and control travels which respond in the same manner under the same flight conditions as in the aeroplane or class of aeroplane being simulated. Conformance is to be proven according to the principle of correct trend and magnitude (CT&M) demonstrated in a flight test.	Control travel corresponds to that of the ... aircraft being simulated in all three axes. Control forces correspond qualitatively to the average control force feel of the aircraft being simulated and are generated through a mechanical system of springs and dampers where required. Control response and sensitivity is fine-tuned in software through the flight model configuration file to respond in the same manner as the aeroplane being simulated.
<u>8.</u>	Aerodynamic modelling shall reflect: <ul style="list-style-type: none"> <li>• effects of airframe icing</li> <li>• the rolling moment due to yawing.</li> </ul>	Through the meteorological simulation model of ... software, icing conditions with their respective effects can be introduced to the training session from the instructor's station.  The 6 degree of freedom software simulation model of ... software caters for the simulation of rolling moment due to yawing.
<u>9.</u>	A visual system (night/dusk or day) capable of providing a field-of-view of a minimum of 45 degrees horizontally and 30 degrees vertically, unless restricted by the type of aeroplane, simultaneously for each pilot, including adjustable cloud base and visibility. The visual system need not be collimated. The responses of the visual system and the flight deck instruments to control inputs shall be closely coupled to provide the integration of the necessary cues.	Projected visual system with the following characteristics is provided: <ul style="list-style-type: none"> <li>• Day, dusk and night visuals</li> <li>• Simultaneous field-of-view in excess of 45° horizontal and 30° vertical field of view to each crew member – For details please refer to drawing number ... on pages ... and these being a plan view and a side view of the simulator room.</li> <li>• Through the meteorological simulation model of ... software, adjustable cloud base and visibility can be controlled and adjusted from the instructor's station.</li> <li>• The visual model presented by the projection system in front of the flight deck, and viewed by the crew through the front windscreen, is driven by the same computing power and simulation model software, namely ??? software, as the flight deck instrument indications. This means that the closest possible level of coupling between the visual</li> </ul>

		system and flight deck instruments and indications is assured to be able to provide the required integration of the necessary cues.
	<b>Technical Requirement:</b>	<b>Statement of Compliance:</b>
	Significant cockpit/flight deck sounds, responding to pilot actions, corresponding to the aeroplane or class of aeroplane being simulated	Realistic stereo engine, cockpit and navigation sounds as well as appropriate flight deck sounds are provided through a suitable speaker system installed on the flight deck.

**2.4 Final approval of an installation is subject to:**

2.4.1 Verification of the Statement of compliance through comparison with the hardware and documentation, where required.

2.4.2 Test flying the flight model/s for acceptable realistic behaviour according to the principle of correct trend and magnitude (CT&M) demonstrated.

2.4.3 Evaluation of an outcomes based training session conducted by the ATO/s nominated Simulator Instructor (SI) according to the ATO MOP and course curriculum outline. He is authorized to appoint further personnel as simulator instructors, these reporting to him/her.

2.5 The FNPT II is approved in the Instrument Procedural Trainer category allowing credits for the following simulator training:

2.5.1 5 hours towards the initial night rating

2.5.2 15 hours towards the initial IF rating.

2.5.3 Extended and integrated simulator ILS training over and above the basic 20hrs

2.5.4 Allowed for FNPT I if coupled to an approved training curriculum

2.5.5 When in possession of an IACM approved training program, maintenance of IF proficiency requirements according to Part 61.19.13 (a) and (b).

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### **3 Flight Navigation Procedures Trainer II MCC (FNPT II MCC)**

The technical requirements for this category, being the second level of approvable training devices are directly derived from JAR STD3A, being:

#### **3.1 Technical Requirements Compliance:**

**3.1.1** For use in Multi-Crew Co-operation (MCC) training - as for the FNPT II with the following additions or amendments:

- 3.1.1.1** Turbo-jet or turbo-prop engines.
- 3.1.1.2** Performance and handling to be representative of the aircraft type or class being simulated.
- 3.1.1.3** Performance reserves in the case of an engine failure may be simulated by a reduction in the aeroplane gross mass. Conformance is to be proven according to the requirements contained in the table *%Flight Training Device Validation Tests+*
- 3.1.1.4** Retractable landing gear
- 3.1.1.5** Pressurization system
- 3.1.1.6** De-icing systems
- 3.1.1.7** Fire detection / suppression system
- 3.1.1.8** Dual Controls
- 3.1.1.9** Autopilot with automatic approach mode
- 3.1.1.10** 1 VHF Transceivers including oxygen masks intercom system.
- 3.1.1.11** 2 VHF NAV receivers (VOR, ILS, DME)
- 3.1.1.12** 1 ADF receiver.
- 3.1.1.13** 1 Marker receiver.
- 3.1.1.14** Transponder.
- 3.1.1.15** The following instrument indications shall be located in the same positions on the instrument panels of both pilots:
  - 3.1.1.15.1** Airspeed
  - 3.1.1.15.2** Flight Attitude with Flight Director
  - 3.1.1.15.3** Altimeter

3.1.1.15.4 Flight Director with ILS (HIS)

3.1.1.15.5 Vertical Speed

3.1.1.15.6 ADF

3.1.1.15.7 VOR

3.1.1.15.8 Marker Indication (as appropriate)

3.1.1.15.9 Stopwatch (as appropriate)

**3.2 Example of Statement of Compliance:**

	<b><u>Technical Requirement:</u></b>	<b><u>Statement of Compliance:</u></b>
<u>1.</u>	Turbo-jet or turbo-prop engines.	According to the replicated ... aeroplane, jet engines are simulated.
<u>2.</u>	Performance and handling to be representative of the aircraft type or class being simulated. Performance reserves in the case of an engine failure may be simulated by a reduction in the aeroplane gross mass. Conformance is to be proven according to the requirements contained in the table "Flight Training Device Validation Tests	The flight performance model is fine-tuned in software through the aircraft configuration file to also provide power reserves representative of the replicated ... aeroplane in case of an engine failure. Please refer to the validated results of the conformance flight tests attached as part of the MQTG.
<u>3.</u>	Retractable landing gear	Retractable undercarriage with emergency extension system is provided.
<u>4.</u>	Pressurization system	Procedural simulation of the pressurization system is included.
<u>5.</u>	De-icing systems	As per the ... aircraft replicated, the following de-icing system simulation is installed <ul style="list-style-type: none"> <li>• Pitot Heat</li> <li>• Surface De-ice</li> <li>• Fuel Control Heaters</li> </ul>
<u>6.</u>	Fire detection / suppression system	As per the ... aircraft replicated, fire detection / suppression simulation is provided.
<u>7.</u>	Dual Controls	Dual Controls for pitch, roll and yaw with toe brakes are provided.

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	<u>Technical Requirement:</u>	<u>Statement of Compliance:</u>
<u>8.</u>	Autopilot with automatic approach mode	Autopilot simulation is provided. Specifically, the following modes according to the replicated ... aircraft are installed as part of the autopilot/flight director:  (a) Alt Hold Mode (b) V/S Hold Mode (c) Heading Hold Mode (d) NAV1 Hold Mode (e) Approach Hold Mode (f) Flight Director (g) Flight Director Pitch Sync (h) Go Around Mode (i) Yaw damper
<u>9.</u>	1 VHF Transceivers including oxygen masks intercom system.	1 VHF Transceiver interfaced to the intercom system is installed at present. Where the replicated aeroplane or class of aeroplane is equipped with a supplemental oxygen supply system, this is taken into consideration
<u>10.</u>	2 VHF NAV receivers (VOR, ILS, DME)	2 VHF NAV receivers with station ID and radial facility coupled to VOR, ILS and DME indications are provided.
<u>11.</u>	1 ADF receiver.	1 ADF receiver with station ID facility coupled to RMI indication is provided.
<u>12.</u>	1 Marker receiver.	1 Marker receiver with OMI indication is provided.
<u>13.</u>	1 Transponder.	1 Mode-C Transponder with flight level indication is provided.
<u>14.</u>	The following instrument indications shall be located in the same positions on the instrument panels of both pilots:  (a) Airspeed (b) Flight Attitude with Flight Director (c) Altimeter (d) Flight Director with ILS (HSI) (e) Vertical Speed (f) ADF (g) VOR (h) Marker Indication (as appropriate)	Instrument Panel layout is according to the replicated Beechjet aeroplane and is equipped with the following instrument indications located in the same positions:  (a) Airspeed (b) Flight Attitude with Flight Director (c) Altimeter (d) Flight Director with ILS (HSI) (e) Vertical Speed (f) ADF (g) VOR (h) Marker Indication (i) Stopwatch is not included as the crew normally use their

(i) Stopwatch (as appropriate)	own.
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**3.3 Final approval of an installation is subject to:**

3.3.1 Verification of the Statement of compliance through comparison with the hardware and documentation where required.

3.3.2 Test flying the flight model/s to quantitatively verify the correlation with POH data and the correctness and acceptability of the simulator data submitted in the *%Flight Training Device Validation Tests+* table of the MQTG.

3.3.3 Evaluation of an outcomes based training session conducted by the ATO/s nominated Simulator Instructor (SI) according to the ATO MOP and course curriculum outline. He is authorized to appoint further personnel as simulator instructors, these reporting to him/her.

3.4 The FNPT II is approved in the Instrument Procedural Trainer category allowing credits for the following simulator training:

3.4.1 5 hours towards the initial night rating

3.4.2 15 hours towards the initial IF rating.

3.4.3 Extended and integrated simulator ILS training over and above the basic 20hrs allowed for FNPT I if coupled to an approved training curriculum

3.4.4 When in possession of an IACM approved training program, maintenance of IF proficiency requirements according to Part 61.19.13.

3.4.5 Every alternate Instrument Renewal Flight test must be conducted with a Designated Examiner according to an IACM approved testing procedure.

3.4.6 Generic CRM training for the class of aircraft represented by the type simulated by the FNPT

3.4.7 Generic LOS/LOS/SPOT training for the class of aircraft represented by the type simulated by the FNPT

3.4.8 Generic CPT and EPT training for the class of aircraft represented by the type simulated by the FNPT

## **4 (Type Specific) Flight Training Device (FTD)**

### **4.1 Technical Requirements Compliance:**

**4.1.1** For use in type specific initial, recurrent and refresher training - as for the FNPT II MCC with the following additions or amendments:

**4.1.1.1** Type specific cockpit layout in terms of form, feel and function. Use of original aircraft parts is not a requirement.

**4.1.1.2** For aircraft systems and CPT training accreditation according to the submitted training curriculum, integrated simulation of the respective aircraft systems and subsystems according to the type of aircraft being simulated. This includes the provision of functional circuit breakers as required by the training curriculum to be implemented.

### **4.2 Example of Statement of Compliance:**

	<b><u>Technical Requirement:</u></b>	<b><u>Statement of Compliance:</u></b>
	Type specific cockpit layout in terms of form, feel and function. Use of original aircraft parts is not a requirement.	The cockpit layout is type specific in terms of form feel and function according to the aircraft being simulated.
	For aircraft systems and CPT training accreditation according to the submitted training curriculum, simulation of the respective aircraft systems and subsystems according to the type of aircraft being simulated. This includes the provision of functional circuit breakers as required by the training curriculum to be implemented.	The simulator is equipped with systems simulation according to the POH for detail numbers - dated , as outlined in the table below:

<b>Aircraft System</b>	<b>Circuit Breakers (trippable)</b>	<b>Failures provided</b>
Hydraulic	N/A	Pump failures Overpressure Low pressure
Electrical	Main Bus (y) Emergency Bus (n) Bus tie (y) LH Bus 3x (y) RH Bus 3x (y)	LH bus RH bus Crossover Bus
Avionics	L Avionics (y) R Avionics (n) Com 1 (n) Nav 1 (y) Nav 2(y) ADF (y) Transponder (y) DME 1 (y) DME 2 (n)	L Avionics Bus Com 1 Nav 1 Nav 2 ADF Transponder DME1

**4.3 Final approval of an installation is subject to:**

- 4.3.1 Verification of the Statement of compliance through comparison with the hardware and documentation where required.
- 4.3.2 Test flying the flight model/s to quantitatively verify the correlation with POH data and the correctness and acceptability of the simulator data submitted in the *%Flight Training Device Validation Tests+* table of the MQTG.
- 4.3.3 Evaluation of an outcomes based training session conducted by the ATO/s nominated Simulator Instructor (SI) according to the ATO MOP. He is authorized to appoint further personnel as simulator instructors, these reporting to him/her.

- 4.4 The FTD is approved in the Type Specific Flight Training Device category allowing credits for the following simulator training:
  - 4.4.1 5 hours towards the initial night rating
  - 4.4.2 15 hours towards the initial IF rating.
  - 4.4.3 Generic and type specific extended and integrated simulator ILS training over and above the basic 20hrs allowed for FNPT I if coupled to an approved training curriculum
  - 4.4.4 When in possession of an IACM approved training program, maintenance of IF proficiency requirements according to Part 61.19.13.
  - 4.4.5 Every alternate Instrument Renewal Flight test must be undergone with a Designated Examiner according to an IACM approved testing procedure.
  - 4.4.6 Generic CRM training for the class of aircraft represented by the type simulated by the FTD
  - 4.4.7 Generic LOFT training for the class of aircraft represented by the type simulated by the FTD
  - 4.4.8 Generic CPT and EPT training for the class of aircraft represented by the type simulated by the FTD
  - 4.4.9 According to the level of aircraft type specific system and subsystem simulation of the FTD as per technical requirement (2) and training curriculum requirement above:
    - 4.4.9.1 Type specific CRM training for the type of aircraft represented by the FTD
    - 4.4.9.2 Type specific LOS/LOE/SPOT training for the class and type of aircraft represented by the FTD
    - 4.4.9.3 Type specific CPT and EPT training for the class and type of aircraft represented by the FTD
    - 4.4.9.4 Type specific initial type conversion and recurrency training. This is not zero flight time training as for the Level D simulators. The final checkride for the initial conversion still needs to be taken in an actual aircraft.

## **5 FNPT and FTD Validation Tests**

### 5.1 Generally:

- 5.1.1 The term evaluation, when used in the table, refers to an assessment not requiring the quantification of the results for purposes of validation against available AFM or POH data.
- 5.1.2 The term test, when used in the table, refers to an assessment that requires the quantification of the results with the purpose of validating these against available AFM or POH data. In the event that AFM or POH data is not available, this data may be replaced by data obtained from an actual test flight, unless the flight testing required is deemed inherently risky/unsafe in which case this should be stated and justified and an evaluation will be accepted.
- 5.1.3 CT&M refers to an evaluation of correct trends and magnitude of the characteristics stipulated in the Tolerance column.
- 5.1.4 Y refers to the requirement for an evaluation and quantification of the characteristics stipulated in the Tolerance column. The required characteristic extracted from the POH and/or AFM should be entered in the POH/Flight Data column together with the recording of the test results in the Sim Data column.

- 5.2 The environmental conditions for the tests are to be documented and should be chosen such that aircraft simulated performance represents more marginal or critical operating conditions.

Field Elevation: Up to instructor

Temperature: Up to instructor

QNH: Up to instructor

Winds: calm

Visibility: CAVOK

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Test	Tolerance (of POH data or actual sample flight data)	POH Flight Data	Sim Data	Comments	FNPT I	FNPT II	FNPT II MCC	FTD
<b>1. PERFORMANCE</b>								
<b>a) Taxi</b>								
1) Steering		N/A		Evaluation of sensitivity and general ground handling		CT&M	CT&M	CT&M
<b>b) Take Off</b>				Unless otherwise specified tests should be carried out at MTOW				
1) Ground Acceleration time	± 5% time to V <sub>1</sub> to V <sub>r</sub> or ± 10% of distance			Acceleration time should be recorded for a minimum of 80% of the total time from brake release to V <sub>r</sub> & V <sub>1</sub>	CT&M	CT&M	CT&M	Y
2) V <sub>mcg</sub>	± 2kn POH			Engine failure to be introduced within ±2kn of the POH published V <sub>mcg</sub> at MTOW. Control of heading by use of aerodynamic controls only, holding the nose wheel slightly off the ground or disabling nosegear steering.	CT&M	CT&M	CT&M	CT&M
3) Normal Take Off	V <sub>r</sub> ± 3kt IAS Pitch ± 1.5°			Test required for MTOW at mid centre of gravity and light take off mass at aft centre of gravity for individual take off flap settings. Test to be flown from brake release to 200ft AGL	CT&M	CT&M	Y	Y
4) Critical Engine Failure on take off	V <sub>r</sub> ± 3kt IAS Pitch ± 1.5° ± 10% OEI climb rate: Gr dn/fl t-o Gr up/fl t-o Gr up/fl up			Test required for MTOW at mid centre of gravity flown to 1200ft AGL. Engine failure to be introduced within ±3 kn IAS of V <sub>1</sub>	CT&M	CT&M	Y	Y

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5) Cross wind take off	Vr ± 3kt IAS Pitch ± 1.5° Correct trends to be evaluated during take off run and climb out			Test required for evaluating handling at MTOW from brake release to 200ft AGL with a crosswind component of at least 60% of the AFM value	CT&M	CT&M	CT&M	CT&M
6) Rejected Take Off	±10 % ASDA			Test required for MTOW. Speed for reject should be at least 80% of V1. Maximum braking effort as per POH recommendations should be employed.	CT&M	CT&M	Y	Y
<b>c) Climb</b>								
1) Normal climb, all engines operating	± 3 kt IAS ± 10% rate of climb Initial Climb Alt			Record at normal climb speed and mid initial climb altitude over at least 1000 ft climb interval	CT&M	CT&M	Y	Y
2) OEI 2 <sup>nd</sup> segment climb	± 3 kt IAS ± 10% OEI rate of climb Initial Climb Alt			Record at MTOW, blue line speed speed and WAT limiting conditions over at least 1000 ft climb interval.	CT&M	CT&M	Y	Y
3) OEI en-route climb	±10% time Initial Climb Alt			Record at MTOW, clean configuration over a 5000ft segment	CT&M	CT&M	Y	Y
4) OEI approach climb	± 3 kt IAS ± 10% OEI rate of climb Initial Climb Alt			Test at MLW over a climb interval of at least 1000 ft.	CT&M	CT&M	Y	Y
<b>d) Cruise/Descent</b>								
1) Level flight acceleration	time	N/A		Evaluation of minimum of 50kt speed increase using max continuous thrust	CT&M	CT&M	CT&M	CT&M
2) Level flight deceleration	time	N/A		Evaluation of minimum of 50kt speed decrease using idle power	CT&M	CT&M	CT&M	CT&M
3) Cruise performance	±.1% EPR ± 5% N1 ± 5% torque ± 5% fuel flow			Tested during 3 minutes of steady flight.	CT&M	CT&M	Y	Y

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4) Idle descent	± 3 kt IAS ± 10% rate of climb descent			Idle power stabilised descent at normal descent speed and mid altitude over at least 1000 ft descent interval	CT&M	CT&M	Y	Y
5) Emergency descent	± 3 kt IAS ± 10% rate of climb descent			Stabilised descent to be conducted as per AFM at mid altitude and near V <sub>mo</sub> over an interval of at least 3000ft	CT&M	CT&M	Y	Y
<b>e) Landing</b>								
1) Normal landing	As per AFM / POH	N/A		Evaluation required for evaluating handling from a minimum height of 200 ft AGL to nosewheel touchdown for the following configurations: <ul style="list-style-type: none"> <li>• MLW full flap</li> <li>• MLW min flap</li> <li>• Midweight full flap</li> <li>• Midweight min flap</li> </ul>	CT&M	CT&M	CT&M	CT& M
2) Cross wind landing	As per AFM / POH	N/A		Evaluation required for evaluating handling at MLW from a minimum height of 200 ft AGL through nosewheel touchdown to rollout at 50% of the touchdown speed, with a crosswind component of at least 60% of the AFM value.	CT&M	CT&M	CT&M	CT& M
3) OEI landing	As per AFM / POH	N/A		Evaluation required for evaluating handling at MLW from a minimum height of 200 ft AGL through nosewheel touchdown to rollout at 50% of the touchdown speed	CT&M	CT&M	CT&M	CT& M
4) OEI go around	As per AFM / POH	N/A		Evaluation required for condition of critical engine inoperative at	CT&M	CT&M	CT&M	CT& M

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				MLW with and without autopilot being engaged.				
<b>f) Stopping</b>								
1) Deceleration time, manual brakes, no thrust reversers, dry runway	± 10% time or ± 10% of distance			Deceleration time should be recorded for a minimum of 80% of the total time from touchdown to full stop	CT&M	CT&M	CT&M	Y
2) Deceleration time, no brakes, thrust reversers, dry runway	± 10% time or ± 10% of distance			Deceleration time should be recorded for a minimum of 80% of the total time from touchdown to full stop	CT&M	CT&M	CT&M	Y
3) Stopping distance, wheel brakes, wet runway	± 10% of distance			POH performance data or alternatively dry runway POH data with allowance for contaminated runway braking coefficients can be used as guideline.			CT&M	CT&M
3) Stopping distance, wheel brakes, icy runway	± 10% of distance			POH performance data or alternatively dry runway POH data with allowance for contaminated runway braking coefficients can be used as guideline.			CT&M	CT&M
<b>g) Engines</b>								
1) Acceleration	± 20% time			Total time from initial throttle movement from idle to 90% of full power to be used as guideline.			CT&M	CT&M
2) Deceleration	± 20% time			Total time from initial throttle movement from maximum take off power to idle to be used as guideline.			CT&M	CT&M
<b>2. HANDLING QUALITIES</b>								
<b>a) Static Checks</b>								
1) Pitch Controller	± 10% Controller movement			Purpose of test is to verify that the controller throw is equivalent to that found in aircraft i.t.o.	CT&M	CT&M	CT&M	Y

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				angular or linear movement. It is acceptable to measure positions from a corresponding fixed point identifiable both in the aircraft and simulator				
2) Roll Controller	± 10% Controller movement			Purpose of test is to verify that the controller throw is equivalent to that found in aircraft i.t.o. angular or linear movement	CT&M	CT&M	CT&M	Y
3) Rudder Pedal Controller	± 10% Controller movement			Purpose of test is to verify that the controller throw is equivalent to that found in aircraft i.t.o. angular or linear movement	CT&M	CT&M	CT&M	Y
4) Pitch trim rate	± 10% trim rate, limit to limit			Trim rate to be checked at pilot primary induced trim rate.		CT&M	CT&M	Y
5) Alignment of cockpit engine control levers	As per position parameters measured in aircraft			Correspondence of lever position and movement to that found in aircraft. It is acceptable to measure lever positions from a corresponding fixed point identifiable both in the aircraft and simulator			CT&M	Y
<b>b) Dynamic Checks</b>				These evaluations rely on the %feel+ assessment of the evaluating personnel.				
1) Pitch sensitivity		N/A		A qualitative assessment of simulator response to control input evaluated against actual aircraft behaviour.	CT&M	CT&M	CT&M	CT&M
2) Pitch force feedback		N/A		A qualitative assessment of the general %feel+ of the force feedback			CT&M	CT&M

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				system evaluated against the feel-in the actual aircraft				
3) Roll sensitivity		N/A		A qualitative assessment of simulator response to control input evaluated against actual aircraft behaviour.	CT&M	CT&M	CT&M	CT&M
3) Roll force feedback		N/A		A qualitative assessment of the general feel of the force feedback system evaluated against the feel-in the actual aircraft			CT&M	CT&M
5) Rudder sensitivity		N/A		A qualitative assessment of simulator response to control input evaluated against actual aircraft behaviour.	CT&M	CT&M	CT&M	CT&M
6) Rudder force feedback		N/A		A qualitative assessment of the general feel of the force feedback system evaluated against the feel-in the actual aircraft			CT&M	CT&M
7) Pitch changes with change in configuration of: <ul style="list-style-type: none"> <li>• Flap</li> <li>• Gear</li> <li>• Spoilers</li> </ul>		N/A		A qualitative assessment of simulator pitch response to configuration changes evaluated against actual aircraft behaviour.	CT&M	CT&M	CT&M	CT&M
8) Stall characteristics	± 3kn IAS $V_s$ for clean and landing config.			A qualitative assessment of simulator stall characteristics with a quantified verification of stall speeds and warnings where (Y) is indicated	CT&M	CT&M	Y	Y
9) Minimum control speed air, $V_{mca}$	± 3kn IAS $V_{mca}$			A qualitative assessment of loss of directional control with the critical engine inoperative	CT&M	CT&M	Y	Y

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				and the operative engine set at take off thrust within the tolerance of $V_{mca}$ specified				
10) Overspeed warning	$\pm 5\text{kn IAS}$			A test to demonstrate the correct functioning of the overspeed warning system	CT&M	CT&M	Y	Y
11) A test to demonstrate ground effect modelling		N/A		Evaluation of the presence of ground effect modelling. This can be either: <ul style="list-style-type: none"> <li>• A statement issued by the software developer</li> <li>• An appropriate evaluation exercise where the presence of ground effect modelling can be perceived.</li> </ul>			CT&M	CT&M
12) A test to demonstrate wind shear models		N/A		Evaluation of the effect of introducing wind shear on the handling of the simulator to qualitatively assess its suitability in providing training in the specific skills required for the recognition of wind shear phenomena and execution of recovery manoeuvres			CT&M	CT&M