



AIRWORTHINESS

ADVISORY

CIRCULAR

CIVIL AVIATION AUTHORITY OF BOTSWANA

CAAB Document AAC-020

**TRAINING PROGRAM APPROVAL
PROCESS FOR APPROVED
MAINTENANCE ORGANISATIONS
(AMOs)**

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1. PURPOSE

This Advisory Circular is issued to provide guidance on the approval process for a Training Program for an AMO.

2. STATUS OF THIS ADVISORY CIRCULAR

This AAC is an original issuance.

3. EFFECTIVE DATE

This AAC becomes effective immediately.

4. APPLICABILITY

This guidance is applicable to any member of the aviation industry, including aircraft maintenance personnel and organisations and manufacturers.

5. RELATED REGULATIONS

Copies may be obtained from the Government Printer.

- Civil Aviation (Approved Maintenance Organisations) Regulations 19, 21, 22, 23
- Civil Aviation (Airworthiness) Regulations
- Civil Aviation (Personnel Licensing)(General) Regulations
- Civil Aviation (Personnel Licensing)(Other Personnel) Regulations

6. RELATED PUBLICATIONS

- Civil Aviation (Approved Training Organisation) Regulation 18
- CAAB Airworthiness Advisory Circular AAC-012 Human Factors in Aircraft Maintenance
- ICAO Document 7192 Part D-1 Training Manual

7. DEFINITIONS AND ACRONYMS

7.1 The following definitions are used in this circular

Applicable means relevant to any aircraft, component or process specified in the AMO's approval class rating schedule and in any associated capability list.

Authority means the CAAB unless otherwise specified.

Organisation. This refers to an approved maintenance organization, unless otherwise specified.

7.2 The following acronyms are used in this circular

AAC Airworthiness Advisory Circular

AMO Approved Maintenance Organisation

ATO Approved Training Organisation

CAA Civil Aviation Authority

CAAB Civil Aviation Authority of Botswana

Advisory Circulars (ACs) are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of complying with the regulations, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material. Where a regulation contains the words "prescribed by the Authority," the AC may be considered to prescribe a viable method of compliance, but status of that "prescription" is always "guidance" (never regulation).

CDCCL Critical Design Configuration Control Limitation

EASA European Aviation Safety Agency

EWIS Electrical Wiring Interconnection Systems

FAA Federal Aviation Administration (United States)

ICAO International Civil Aviation Organization

OJT On-the-job-training

8. BACKGROUND

- 8.1 Regulation 21 of the Civil Aviation (Approved Maintenance Organisations) Regulations, 2012 requires an AMO to have an employee training program approved by the Authority. The training program should consist of indoctrination, initial, recurrent, specialized and remedial training.
- 8.2 The AMO should carry out an assessment of the training needs of its personnel, including certifying personnel, and develop and update its training program based on the tasks associated with its scope of operating authority and capabilities.
- 8.3 The training program should ensure that each employee assigned to perform preventive maintenance, or alterations, and inspection functions is capable of performing the assigned task.
- 8.4 The AMO is required to document, in a form and manner acceptable to the Authority, the individual employee training required under Regulation 21 and should retain such records for a minimum of two (2) years.
- 8.5 Revisions of the training program should be submitted to the Authority for approval.

9. GUIDANCE AND PROCEDURES

- 9.1 The holder of an AMO Certificate is required to establish a training program for his/her maintenance and certifying staff which can be included in the Maintenance Procedures Manual (MPM) or a separate document and submit it for approval by the Authority. This program will include the curriculum and standards for training, as well as the pre-qualification standards for the personnel that will attend the training.
- 9.2 The program should specify the level of training required for each individual as a function of his/her experience and address the work he/she is expected or authorized to perform. In many cases the work may be complex and require the use of specialized equipment. In such cases, required training may range from on-the-job training (OJT) to formal classroom training and appropriate examinations. In every case, the program should provide sufficient training for each individual to enable him to competently perform the work he is authorized to perform.
- 9.3 An AMO is required to have a training program for all maintenance and inspection personnel; however, a small organization would not be expected to duplicate all of the facilities provided by a large AMO. Training of the certifying staff may be performed by the AMO or an aviation training organization (ATO).

10. INDOCTRINATION, INITIAL, RECURRENT, SPECIALISED AND REMEDIAL TRAINING

- 10.1 An AMO's training program shall provide indoctrination training for employees that includes at least 40 hours of instruction in at least the following subjects –

- (a) Regulations, particularly those associated with AMO's maintenance functions and authority as reflected on the certificate and operations specifications;
 - (b) Company manuals, policies, procedures and practices, including quality control processes, particularly those associated with ensuring compliance with maintenance (including inspection), preventive maintenance, and established alteration procedures;
 - (c) Dangerous goods training and other local and international training required for different categories of employees;
 - (d) Maintenance human factors with the elements focusing on aviation maintenance, and safety related issues;
 - (e) Computer systems and software as applicable to the repair station's maintenance (including inspection, preventive maintenance and alteration systems and procedures); and
 - (f) Facility security, which shall include company security objectives, specific security procedures, employee responsibilities, actions to take in the event of a security breach, and the organizational security structure.
- 10.2 An AMO is required to provide initial training for employees that includes at least 80 hours of instruction in at least the following subjects consistent with the specific employee position and assigned job activities –
- (a) General review;
 - (b) Specific job or task training;
 - (c) Shop safety;
 - (d) Records and record keeping;
 - (e) Materials and parts;
 - (f) Test equipment, including ground support equipment;
 - (g) Tools;
 - (h) Maintenance human factors (AAC-012 refers); and
 - (i) Any other items required by the Authority.
- 10.3 Where a maintenance organization is maintaining large aircraft, its maintenance personnel should undergo additional training in EWIS and fuel tank safety as well as associated inspection standards, and maintenance procedures should be required for maintenance organization's technical personnel, especially technical personnel involved in the compliance of CDCCL tasks. (*Note: FAA AC 25-27A, AC 120-94, and EASA AMC20-22 address EWIS, while FAA SFAR 88 addresses Fuel Tank Safety*).
- 10.4 An approved maintenance organization is required to provide recurrent training for employees that include at least eight hours of instruction in the following subjects -
- (a) Refresher of subjects covered in initial training;
 - (b) New items introduced in the approved maintenance organization since completion of initial training; and,
 - (c) Any other items required by the Authority.

- 10.5 An AMO is required to provide specialized training, including initial and recurrent, for employees whose duties require a specific skill.
- 10.6 The AMO is also required to provide remedial training to rectify an employee's demonstrated lack of knowledge or skill by providing information as soon as possible.

11. DANGEROUS GOODS TRAINING PROGRAMME

- 11.1 An AMO should have a dangerous goods training program for its employees, whether full time, part time, or temporary or contracted who are engaged in the following activities –
 - (a) Loading, unloading or handling of dangerous goods;
 - (b) Design, manufacture, fabrication, inspection, marking, maintenance, reconditions, repairs or tests of a package, container or packaging component that is represented, marked, certified, or sold as qualified for use in transporting dangerous goods;
 - (c) Preparation of hazardous materials for transport;
 - (d) Responsibility for the safety of transportation of dangerous goods;
 - (e) Operation of a vehicle used to transport dangerous goods; or
 - (f) Supervision of any of the above listed items.
- 11.2 An AMO employee should not perform or directly supervise an activity under paragraph 11.1 unless he or she has received the approved dangerous goods training.
- 11.3 The AMO training program should ensure that its dangerous goods training -
 - (a) Ensures that each employee performing or directly supervising any of the activities specified at paragraph 11.1 is trained to comply with all applicable procedures; and,
 - (b) Enables the trained person to recognize items that contain, or may contain, dangerous goods regulated under the Civil Aviation Regulations.
- 11.4 An AMO shall document, in a form and manner acceptable to the Authority, the individual employee training required and shall retain these records for a minimum of two (2) years.

12. CURRICULUM COMPONENTS

- 12.1 An acceptable curriculum will consist of at least the following elements:
 - (a) Subjects, appropriate ratings requested;
 - (b) Course content, appropriate to ratings requested;
 - (c) Objective testing and grading criteria;
 - (d) Theoretical/practical knowledge appropriate to ratings requested;
 - (e) Total number of hours required for successful completion;

- (f) A schedule of required tests, which indicates the sequence of examinations for each subject in the curriculum;
- (g) The order of instruction for each subject element; and
- (h) Name of instructor(s).

12.2 If there is any change to the curriculum, the AMO will be required to have such change approved by the Authority.

13. TRAINING COMPETENCY AND DOCUMENTATION

13.1 An AMO is required to assess the competency of each employee for performing his or her assigned duties after completion of initial, recurrent, specialized and remedial training. The assessment of competency should be appropriately documented in the employee's training records by any of the following methods, depending upon the size of the AMO, its capabilities and experience of its employees -

- (a) Written test;
- (b) Completion of a training course;
- (c) Skill test;
- (d) Group exercise;
- (e) On the job assessment; and,
- (f) Oral examination in the working environment.

13.2 Competence assessment procedure

13.2.1 The AMO should develop a procedure describing the process of competence assessment of personnel. The procedure should specify:

- (a) Persons responsible for this process;
- (b) When the assessment should take place;
- (c) Credits from previous assessment;
- (d) Validation of qualification records;
- (e) Means and methods for the assessment;
- (f) Means and methods for the continuous control of competence including feedback on personnel performance;
- (g) Competences to be observed during the assessment in relation with each job function;
- (h) Actions to be taken when assessment is not satisfactory; and,
- (i) Recording of assessment results.

13.2.2 For example, according to the job functions and the scope, size and complexity of the organization, the assessment may consider the following though not exhaustive. **(See Appendix 1: Table of Employee Competencies)**

14. THE APPROVAL PROCESS

- 14.1 Training curriculum approval follows a five phase process. The basic steps of this process should be followed. Each phase, however, may be adjusted to accommodate existing circumstances. Training curricula which have been granted approval and later found either to be in conflict with regulatory requirements or to be ineffective would need to be appropriately modified by the organization.
- 14.2 When the Authority determines that a training curriculum or curriculum segment meets the requirements for approval, an initial approval will be issued with an appropriate expiry date.
- 14.3 During the period of initial approval, an operator would be testing and refining his program to ensure that the detailed requirements for the final approval are met. However, if there are significant revisions to the program the operator would need to re-apply to the Authority for approval. Final approval will only be granted after the Authority has successfully evaluated the training in the demonstration and inspection phase.

15. PHASE ONE - INITIATING THE APPROVAL PROCESS

- 15.1 The AMO initiates the training approval process where –
 - 15.1.1 The AMO informs the Authority that it is planning to establish a new training curriculum or to change an existing curriculum, or;
 - 15.1.2 The Authority informs the AMO that revisions to its training program are required based on recently acquired information relative to training techniques, aviation technology, operator's performance, or regulatory changes.
- 15.2 When a proposal is initiated by the AMO, it should submit the following basic information:
 - (a) Type of equipment
 - (b) Proposed training schedules
 - (c) Proposed contract raining, if any
 - (d) Facilities to be used.

16. PHASE TWO – REQUEST FOR INITIAL APPROVAL

- 16.1 Phase 2 begins when the AMO submits its training curriculum for initial approval to the Authority. The AMO should submit to the Authority an outline of each curriculum segment and any additional relevant supporting information requested by the Authority. These should be accompanied by a letter requesting approval of the training curriculum. The curriculum may be a section of the MPM or a separate document.
- 16.2 An AMO must submit its own specific curriculum outlines appropriate for the ratings requested. Each curriculum should be easy to revise and should contain a method for controlling revisions, such as a revision numbering system, if not part of the MPM.
- 16.3 Each curriculum outline should include the following information:
 - (a) AMO Name
 - (b) Title of curriculum including the category of training, such as indoctrination,

initial or continuation training

- (c) Consecutive page numbers
- (d) Page revision control dates and revision numbers.
- (e) Each curriculum should also include the following details, as appropriate:
 - i. Pre-requisites prescribed by the Regulations or required by the AMO for enrolment in the curriculum;
 - ii. Statements of objectives of the entire curriculum and a statement of the objective of each curriculum segment;
 - iii. A list of training devices required;
 - iv. An outline of each training module within each curriculum segment (Each module should contain sufficient detail to ensure that the main features of the principal elements or events will be addressed during instructions.);
 - v. Training hours that will be applied to each curriculum segment and the total curriculum;
 - vi. The means for checking/testing of the modules used to determine successful course completion;
 - vii. Name and qualification of instructors assigned to each module.

16.4 Additional Relevant Supporting Information

16.4.1 The following list of supporting information is not all-inclusive, but includes typical information in support of an application for a training programme approval.

- (a) A description of facilities.
- (b) A list of instructors and their qualifications.
- (c) A detailed description of each training device.
- (d) A detailed description of minimum student qualifications and enrolment prerequisites.
- (e) Samples of training forms and records to be used for recording student progress and the completion of training. These forms, records, or computer transmittal worksheets must be designed so that attendance and course completion information is recorded and retrievable for verifying regulatory compliance;
- (f) Supporting information may include samples of courseware, such as training modules/lesson plans and instructor guides. Description of other types of courseware, such as home study, computer based instruction, should be in enough detail to provide an understanding of how the training will be administered and of the proposed instructional delivery method. This information should describe the instructor/student interaction and indicate methods for measuring student learning.

16.5 Initial Review of Requests for Approval

In Phase two, the Authority will review the submitted training curriculum and supporting information for completeness, general content, and overall quality. If the submission is determined to be incomplete or obviously unacceptable, the approval process is terminated and the documents returned to the AMO with a written explanation of the deficiencies. The approval process can be resumed when the revised training curriculum or curriculum segment is resubmitted.

17. PHASE THREE: IN-DEPTH REVIEW OF SUBMITTED CURRICULUM

17.1 Phase 3 is initiated when the Authority begins a detailed analysis and evaluation of a training curriculum or curriculum segment. The purpose of this phase is to determine the acceptability of training curricula for initial approval. The Authority will review the submission against the following:

- (a) Regulatory requirements;
- (b) Complexity of the specific aircraft or component;
- (c) Complexity of the type of operation involved;
- (d) Amount of detail that needs to be covered;
- (e) The experience and knowledge level of the students;
- (f) The performance of the AMO's entire training programme (including items such as instructor proficiency, training aids, facilities, courseware and the organization's experience with the aircraft.)

17.2 After completing the review and having determined that the curriculum or curriculum segment is satisfactory, adequately supported, and that the training hours are realistic, initial approval would be granted.

17.3 This phase ends either with the initial approval or with the rejection of all or part of the training curriculum.

18. PHASE FOUR - EVALUATING INITIALLY APPROVED TRAINING CURRICULUM

18.1 Phase 4 begins when the organization starts training under the initially approved curriculum during the Demonstration and Inspection Phase. This phase should provide the AMO with adequate time to test the programme and the flexibility to adjust the programme during evaluation by the Authority. An AMO should provide ongoing schedules of all training and checking to be accomplished under an initially approved training curriculum.

18.2 Sometimes proposed revisions may be transmitted to the Authority just before the initial approval expiration date. If the change is significant, the Authority may need to establish a different expiration date for the curriculum segment, or for the revised portions, to allow adequate time for a proper evaluation.

18.3 An inspection of training facilities, training devices, and instructional aids will be performed by the CAAB Inspector.

18.4 During Phase 4, the organization will be required to demonstrate the ability to effectively train maintenance and inspection personnel. There are four (4) main elements that will be evaluated when assessing the overall effectiveness of training programs. These four elements are:


- (a) Curriculum segment outlines;


- (b) Courseware;
- (c) Instructional delivery methods and training environment;
- (d) Testing and checking.

18.5 Each deficiency identified during the evaluation of training conducted under an initially approved curriculum will be discussed with the AMO. If the deficiencies are significant, they will be documented and kept on file. Each significant deficiency identified would need to be immediately corrected. If an organization does not take corrective action within a mutually acceptable timeframe, the Authority would advise the AMO in writing that initial approval is withdrawn.

19. PHASE FIVE - GRANTING FINAL APPROVAL

This phase involves the granting of final approval of an AMO's training curriculum. Based on the results of the evaluation, the Authority will determine whether to grant or deny final approval of a training curriculum.


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For/Civil Aviation Authority of Botswana



Date: 07/02/2014

End of Circular

APPENDIX 1: TABLE OF EMPLOYEES COMPETENCIES ASSESSMENT

	MANAGERS	PLANNERS	SUPERVISOR	CERTIFYING STAFF AND SUPPORT STAFF	MECHANIC	SPECIALISED SERVICE STAFF	QUALITY AUDIT STAFF
Knowledge of applicable officially recognized standards						X	X
Knowledge of auditing techniques: Planning, conducting and reporting							X
Knowledge of human factors, human performance and limitations	X	X	X	X	X	X	X
Knowledge of logistics process	X	X	X				
Knowledge of organization's capabilities, privileges and limitations	X	X	X	X		X	X
Knowledge of Continuing Airworthiness, AMOs, and any other relevant regulations	X	X	X	X			X
Knowledge of relevant parts of the maintenance organization's MPM/Exposition and procedures.	X	X	X	X	X	X	X
Knowledge of occurrence reporting system and understanding of the importance of reporting occurrences, incorrect maintenance data and existing maintenance data and existing or potential defects Knowledge of occurrence reporting system and understanding of the importance of reporting occurrences, incorrect maintenance data and existing maintenance data and existing or potential defects		X	X	X	X	X	
Knowledge of safety risks linked to the working environment	X	X	X	X	X	X	X
Knowledge on CDCCL when relevant	X	X	X	X	X	X	X
Knowledge on EWIS when relevant	X	X	X	X	X	X	X
Understanding of professional integrity, behaviour and attitude towards safety	X	X	X	X	X	X	X
Understanding of conditions for ensuring continuing airworthiness of aircraft and components			X			X	
Understanding of his/her own human performance and limitations	X	X	X	X	X	X	X
Understanding of personnel authorizations and limitations	X	X	X	X	X	X	X
Understanding critical task		X	X	X	X		X
Ability to compile and control completed work cards			X	X	X		
Ability to determine required qualifications for task performance			X	X	X	X	X
Ability to identify and rectify existing and potential unsafe conditions		X	X				
Ability to confirm proper accomplishment of maintenance tasks			X	X	X	X	

Ability to identify and properly plan performance of critical task		X	X	X			
Ability to prioritize tasks and report discrepancies		X	X	X	X		
Ability to process the work requested by the operator		X	X	X			
Ability to promote the safety and quality policy	X		X				
Ability to properly process removed uninstalled and rejected parts			X	X	X	X	
Ability to properly record and sign for work accomplished			X	X	X	X	
Ability to recognize the acceptability of parts to be installed prior to fitment				X	X		
Ability to split complex maintenance tasks into clear stages		X					
Ability to understand work orders, work cards and refer to and use applicable maintenance data		X	X	X	X	X	X
Ability to use, control and be familiar with required tooling and/or equipment			X	X	X	X	X
Adequate communication and literacy skills	X	X	X	X	X	X	X
Analytical and proven auditing skills (for example, or equipment			X	X	X	X	
Adequate communication and literacy skills	X	X	X	X	X	X	X
Analytical and proven auditing skills (for example, objectivity, fairness, open-mindedness, determination,...)							X
Maintenance error investigation skills							X
Resources management and production planning skills	X	X	X				
Teamwork, decision-making and leadership skills	X		X				