CIVIL AVIATION AUTHORITY OF BOTSWANA

GENERAL ADVISORY CIRCULAR

CAAB Document GAC-009

ESTABLISHMENT OF A QUALITY SYSTEM

Intentionally left blank

TABLE OF CONTENTS

Intentionally left blank

1. PURPOSE

This General Advisory Circular (GAC) provides information and guidance and serves as an acceptable means of compliance for complying with the requirements for a Quality System acceptable to the CAAB.

2. STATUS OF THIS ADVISORY CIRCULAR

This General Advisory Circular (GAC) is an original issuance.

3. EFFECTIVE DATE

This GAC becomes effective immediately.

4. APPLICABILITY

This guidance is applicable to approved maintenance organizations (AMO), Air Operator Certificate (AOC) holders, and Approved Training Organizations.

5. RELATED REGULATIONS

- Civil Aviation (Approved Maintenance Organizations) Regulations - Regulation 14
- Civil Aviation (Air Operator Certification and Administration) Regulations, 2013 – Regulation 16
- Civil Aviation (Approved Training Organizations) Regulations, 2012 – Regulation 14

6. RELATED PUBLICATIONS

Copies may be obtained from the Government Printer.

For further information on this subject, operators are advised to review the following ICAO publications -

Copies may be obtained from Document Sales Unit, ICAO, 999 University Street, Montreal, Quebec, Canada H3C 5H7.

- ICAO Annex 6, Part IV
- ICAO Doc 9760

7. DEFINITIONS AND ACRONYMS

7.1 The following definitions are used in this advisory circular:

Certificate holder. An organization to which an AMO, AOC, or ATO certificate has been issued by the Authority.

Evidence. A documented statement of fact, prepared by a certificate holder, that may be quantitative or qualitative and is based on observations, measurements, or tests that can be verified. For the purpose of compliance monitoring, evidence should generally be in the form of written documentation or reports that support the programme's analysis and review. These data are necessary to substantiate findings or concerns and to enable management or evaluators to determine the root causes of any reported findings. Objective evidence generally comes from the following four elements:

(1) Documents or manuals reviewed.
(2) Equipment examined.
(3) Activities observed.
(4) Interview data.

Controls. Controls are the key procedures, responsibilities, and decision-making positions within an organization, department, division, or functional area. As part of a quality evaluation, the controls of the area being evaluated should be verified and tested. In some instances, personnel performing the quality evaluation may have to first determine the features of a control.

Finding. A finding is a conclusion by the certificate holder's personnel that demonstrates non-compliance with a specific standard.

Concern. A concern is a conclusion by the certificate holder's personnel, supported by objective evidence, that does not demonstrate a finding, but rather a condition that may become a finding.

Inspection. An inspection is the act of observing a particular event or action to ensure that correct procedures and requirements are followed during the accomplishment of that event or action. The primary purpose of an inspection is to verify that established standards are followed during an observed event or action.

Note: *The term inspection is defined in this AC within the context of quality auditing principles. It does not address or define CAAB inspections.*

Audit.

(1) An audit is a methodical, planned review used to determine how business is being conducted and compares results with how business should have been conducted in accordance with established procedures. The various techniques that comprise an effective audit are as follows:

(a) Interview personnel.
(b) Review documents.
(c) Observe operations.
(d) Select samples.
(e) Inspect activities.
(f) Document results.

(2) As the above techniques show, an audit builds on the principles of inspection. The results of inspections assist in the audit objective of determining whether business is being conducted in accordance with established policies and procedures. During an audit, qualified personnel look for the existence of a systemic problem, but do not estimate the size of a problem. The results (findings and concerns) of an audit should be documented and presented to management. Management then decides how to address audit results

Evaluation

(1) An evaluation is an independent review of company policies, procedures, and systems. An evaluation should be a comprehensive and continual process that considers the following:

(a) Results of audits.
(b) Overall effectiveness of the management organisation in achieving stated objectives.
(c) Ability of management to respond to new technologies, market strategies, and social or environmental conditions.

(2) The evaluation process builds on the concepts of audit and inspection. An evaluation is an anticipatory process, and is designed to identify and correct potential findings before they occur. Conclusions and recommendations made as a result of an evaluation should be submitted in writing to company management for appropriate action.

7.2 The following acronyms are used in this circular

AC Advisory Circular

AMO Approved Maintenance Organisation

AOC Air Operator Certificate

ATO Approved Training Organization

CARs (Botswana) Civil Aviation Regulations

CAAB Civil Aviation Authority of Botswana

GAC General Advisory Circular

ICAO International Civil Aviation Organization

NDI Non Destructive Inspection

8. BACKGROUND

8.1 Establishment of a Quality System is required by the following regulations:

(a) Regulation 14 of the Civil Aviation (Approved Maintenance Organizations) Regulations, 2012;

(b) Regulation 16 of the Civil Aviation (Air Operator Certification and Administration) Regulations, 2013; and,

(c) Regulation 14 of the Civil Aviation (Approved Training Organizations) Regulations, 2012.

8.2 The development and implementation of a Quality System Programme will benefit both the certificate holder and the flying public.

8.3 Definitions of terms and a description of the basic elements of Quality System are included in the AC. These definitions and programme elements are consistent with recognized quality auditing principles. Where appropriate, these terms have been tailored to conform to aviation standards and practices. Suggested procedures for documenting Quality System Programme procedures are also included in this guidance material.

(d) The standards described herein are intended to help certificate holders develop their own Quality System Programme. The CAAB shall continue to encourage certificate holders to develop a Quality System Programme as a tool for continuously monitoring and evaluating practices and procedures. Public safety is enhanced if deficiencies are identified and immediately corrected when the certificate holder discovers them rather than when the CAAB discovers them.

(e) Through surveillance and oversight, the CAAB verifies that certificate holders are upholding their responsibilities. CAAB inspectors are charged with the duty of advising and cooperating with each certificate holder in the inspection and maintenance of aircraft. The Quality System Programme is intended to facilitate the inspector's advisory and cooperative capacity by providing a procedure for identifying and resolving safety related issues. The Quality System Programme will also help certificate holders develop formal compliance monitoring programmes.

9. QUALITY SYSTEM PROGRAMME

The Quality System Programme is based on the premise that certificate holders are primarily responsible for continuously monitoring and ensuring that their operations are safe and in compliance with the Civil Aviation Regulations. The CAAB encourages certificate holders to establish and conduct quality evaluations that embrace the following four (4) principles:

(a) A continual process that incorporates the techniques of inspections, audits, and evaluations to assess the adequacy of managerial controls in key programmes and systems.

(b) A review that extends beyond regulatory compliance to determine the causes of deficiencies and detect needed enhancements to company operating practices before deficiencies occur.

(c) An ongoing process that identifies deficiencies, develops corrective action plans to correct these deficiencies, and performs follow-up evaluations.

(d) An independent process that organizationally has straight-line reporting responsibility tom top management.

(e) The Quality System Programme stresses self-audit responsibilities of individual employees as well as the evaluation responsibility of top management to ensure that company policies and procedures provide for safety compliance and allow individuals to perform work properly.

10. PROGRAMME DESCRIPTION

10.1 Certificate holders should include the following essential elements in their programme:

(a) Independent/defined responsibility.
(b) Top management review.
(c) Continual process.
(d) Internal evaluation schedule.
(e) Corrective action plans.
(f) Records.

10.2 These elements are further described in the following paragraphs. It is also suggested that certificate holders developing a Quality System Programme should consider preparing a programme plan that documents the programme's procedures and functional responsibilities.

11. INDEPENDENT/DEFINED RESPONSIBILITY

11.1 A certificate holder's Quality System Programme should identify the person and/or group within the organisation who has the responsibility and authority to:

(a) Perform evaluations, audits, and inspections as a part of an ongoing Quality System.
(b) Identify and record any findings or concerns, and the evidence necessary to substantiate findings or concerns.
(c) Initiate, recommend, or provide solutions to findings or concerns through designated reporting channels.
(d) Verify the implementation of solutions within a specific time.
(e) Communicate and coordinate activities with CAAB personnel on a regular basis.

11.2 A top management representative should be given the responsibility to ensure that a Quality System Programme is properly established, implemented, and maintained. This management position should be above the level that directly supervises work accomplishment or procedural development, and should have direct contact with the responsible manager.

11.3 As part of identifying quality evaluation responsibility and independence, a certificate holder should identify resources and personnel dedicated to the Quality System Programme and should describe their organisational independence within the company in light of their internal monitoring functions. Individuals conducting quality evaluations should not be responsible for managing work in the areas being evaluated or the tasks being reviewed.

11.4 For some certificate holders, operating size may justify the costs associated with the necessity of having full time, dedicated resources and personnel in a separate Quality System Department or group.

11.5 For very small certificate holders, an appropriate Quality System Programme might consist of developing checklists and a schedule (monthly, quarterly, semi-annual, or annual) for accomplishing checklist items. Even in such cases, the review should include a written statement acknowledging the completion of the checklist items and the signature of a top management official. Under these conditions, occasional independent oversight of checklist item development and accomplishment should be considered.

11.6 Certificate holders using outside resources in support of, or in fulfilment of, a Quality System Programme, should show that use of those outside resources is co-ordinated through a chain of command that reflects independence and contact with top management.

12. TOP MANAGEMENT REVIEW

12.1 As a part of a Quality System Programme, top management should review quality evaluation results to verify that satisfactory corrective actions have been implemented. For the purposes of this programme, the term "top management" means a certificate holder's responsible manager, or a person in an equivalent position who has the authority to resolve issues and take action. Top management should be aware of the plans, results (findings and concerns), and follow-up actions undertaken in its Quality System Programme.

12.2 The review of quality evaluation information by top management should be documented in reports or other appropriate records generated by the internal Quality System Programme. The certificate holder should decide the frequency, format, and structure for informing top management of quality evaluation plans, results, and follow-up actions. The programme should include a diagram that depicts the independence of personnel who perform or supervise internal evaluation functions, including some form of straight-line reporting authority to top management. The reporting structure should be documented by the certificate holder and become a part of its programme plan.

13. CONTINUAL PROCESS

13.1 In order to effectively anticipate potential problem areas and correct them before actual findings occur, a Quality System Programme should be a continual programme, not merely spot check inspections of operating practices. Stand-alone spot check inspections will do little more than identify symptoms of potential problems.

13.2 A continual process is needed to verify whether findings are isolated instances, or actual symptoms of policy, procedural, or managerial problems. A certificate holder's programme should continuously monitor policies, procedures, and managerial systems to ensure a continued safe and efficient operation. A continual programme should include scheduled evaluations, follow-up evaluations as necessary and special evaluations when trends are identified.

14. QUALITY EVALUATION SCHEDULE

14.1 To be properly organised, a continual process should be a structured activity. For this reason, it is essential for a certificate holder's Quality System Programme to include a defined schedule of activities. This planned schedule will serve to verify that the quality evaluation process is:

(a) Complete and thorough.
(b) Directed.
(c) Credible.
(d) Recognised by top management.

14.2 A proper quality evaluation schedule should include a planned periodic review cycle for specific areas covered by the certificate holder's Quality System Programme. However, the scheduling process should also be dynamic and allow for special evaluations when trends are identified. In addition, follow-up evaluations should be scheduled as necessary to verify that corrective action commitments were met and that they were effective in eliminating any reported findings or concerns. Planned, special, and follow-up evaluations, all of which comprise an effective monitoring and evaluation schedule are further defined below.

14.3 Planned Cycle.

(a) Establish a schedule of events that will be performed during a set calendar period under the Quality System Programme.
(b) Divide the complete schedule into phases.
(c) Schedule evaluations within each phase to allow enough flexibility for resources to be committed as needed to special evaluations or follow-up evaluations.

14.4 Special Evaluations.

(a) Conduct special evaluations based on concerns or priorities identified by top management.
(b) Schedule special evaluations based on a review of industry trends, CAAB concerns, or identified internal trends.

14.5 Follow-up Evaluations.

(d) Schedule follow-up evaluations to ensure corrective action commitments were met.
(e) Conduct follow-up evaluations to verify that corrective actions eliminated the reported finding or concern.
(f) Perform follow-up evaluations in response to CAAB surveillance findings.

15. CORRECTIVE ACTION PLANS

15.1 A Quality System Programme should include procedures to ensure that corrective action plans are developed in response to findings or concerns, and for monitoring corrective action plans to verify their timely and effective implementation and completion. As an option, evaluation personnel may participate in the development of corrective action plans or make suggestions that contribute to the development

of corrective action plans. However, organisational responsibility and accountability for the development of corrective action plans should reside with the technical departments cited in the finding or concern.

15.2 A proper corrective action plan should include the following elements:

(a) Identification of the finding or concern.
(b) Analysis of objective evidence to determine the root cause(s) of the finding or concern.
(c) Identification of planned corrective steps to take to ensure that the apparent violation or concern does not recur.
(d) Implementation schedule, including a time frame for putting corrective steps in place.
(e) Individuals or departments responsible for implementing the corrective steps.

15.3 The individuals responsible for managing a Quality System Programme should facilitate the corrective action process by performing the following functions:

(a) Ensuring corrective action plans are developed in response to findings or concerns.
(b) Verifying corrective action plans include the elements outlined above.
(c) Monitoring implementation and completion of corrective action plans.
(d) Providing top management with an independent assessment of corrective action plan development, implementation, and completion.
(e) Initiating scheduled and/or unannounced follow-up evaluations to ensure the effectiveness of corrective steps specified in corrective action plans.

16. RECORDS

16.1 The certificate holder should maintain records documenting the performance and results of its Quality System Programme. Records are considered to be the principal form of evidence. Documented evidence is essential in analysing and determining the root causes of findings or concerns so that the certificate holder can identify potential areas of noncompliance. It is important to maintain accurate, complete, and reliable records that document the activities and results of a quality evaluation.

16.2 The CAAB suggests that Quality System Programme files include the following data:

(a) Scheduled evaluation reports.
(b) Special evaluation reports, including the trends or other reasons associated with scheduling a special evaluation.
(c) Follow-up evaluation reports.
(d) Responses to findings or concerns contained in reports.
(e) Corrective action plans submitted in response to findings.

16.3 Recognizing that much of the information contained in Quality System Programme records could be proprietary in nature, a certificate holder should maintain and secure these records on its premises. All records should be made available to the CAAB for review. Proprietary information will be protected in accordance with applicable laws and regulations.

17. PROGRAMME PLAN OUTLINE

17.1 Quality System Programme procedures and responsibilities should be documented in a programme plan. This paragraph provides suggestions for preparing and structuring a programme plan.

17.2 Preparing a Programme Plan.

(a) Preparing a programme plan is a recommended practice. Certificate holders should review the size and complexity of their operation to determine how to structure an appropriate programme plan.

(b) A programme plan should describe the duties, responsibilities, procedures, and organisation of a certificate holder's Quality System Programme. Terms and elements defined in programme plans should be consistent with those outlined in paragraphs 7.1, 8 through 16.

(c) Copies of the programme plan should be distributed to appropriate company personnel, so they are aware of and are familiar with the Quality System Programme System procedures. In addition, revisions should be made as necessary to ensure that the programme plan continues to reflect the certificate holder's current quality evaluation procedures and organisation.

(d) Documenting the procedures and responsibilities associated with any programme is considered a required practice. When certificate holders prepare a programme plan, the CAAB will be available to provide assistance if requested.

17.3 Structuring a Programme Plan. A sample outline of a programme plan using the programme elements discussed in this Advisory Circular is provided in Appendix 1. The outline provided in Appendix 1 should be viewed as a checklist of items that warrant consideration when a certificate holder is designing a Quality System Programme. The number of items addressed and how they are documented will ultimately depend on the complexity of each certificate holder's operation.

18. DOCUMENTATION OF A QUALITY SYSTEM PROGRAMME

18.1 Approved Maintenance Organizations

In order to show compliance with Regulation 14 of the Civil Aviation (Approved Maintenance Organizations) Regulations, 2012 an AMO certificate holder should establish its Quality System Programme in accordance with Appendix 2 of this Advisory Circular.

Where the AMO is part of an AOC holder, the AOC holder’s Quality System may be combined with the requirements of an AMO. An example of a combined Quality System is shown in the Fourth Schedule of the Civil Aviation (Air Operator Certification and Administration) Regulations, 2013.

18.2 AOC Holders

In order to show compliance with Regulation 16 of the Civil Aviation (Air Operator Certification and Administration) Regulations, 2013 an AOC holder should establish its Quality System Programme in accordance with the Fourth Schedule of those Regulations.

18.3 Approved Training Organizations

A Quality System Programme for an Approved Training Organisation should meet the requirements set out in Schedule 2 of the Civil Aviation (Approved Training Organizations) Regulations, 2012.

19. PROGRAMME ACCEPTANCE

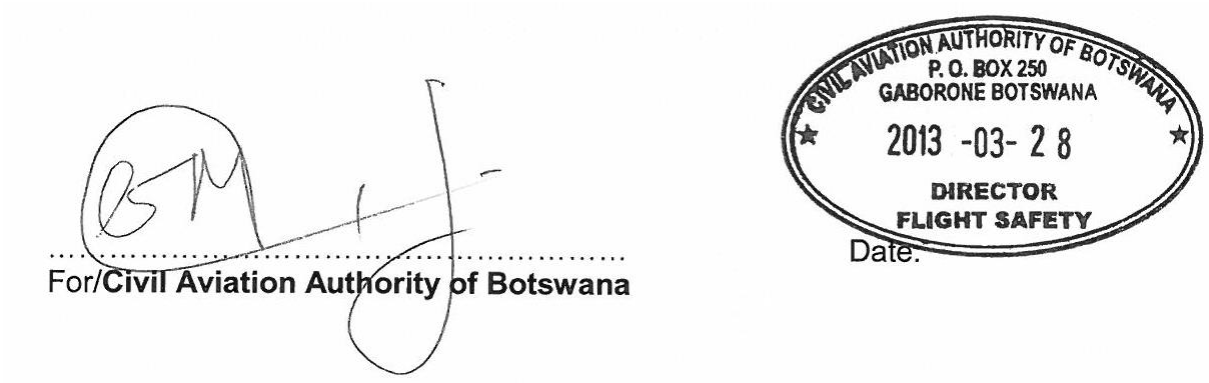
The Civil Aviation Regulations require a Quality System Programme to be acceptable to the CAAB. Certificate holders developing a Quality System Programme may ask for assistance from their certificate holding CAAB office. Preparing a programme plan, as discussed in paragraph 17, will provide the CAAB with an opportunity to review the proposed duties, responsibilities, procedures, and organisation of the certificate holder's Quality System Programme. In all cases that involve Quality System Programme development, the CAAB will be available to provide advice, assistance, or direction to the certificate holders.

20. DISCLOSURE TO THE CAAB

The CAAB encourages certificate holders to openly share the results of their internal evaluation programme with their CAAB certificate holding office or CAAB Inspector.

21. CONCLUSION

Development of a Quality System Programme, as discussed in this Advisory Circular, should ensure that company policies and procedures are responsive to growth and change and that certificate holders continually comply with appropriate safety requirements. Furthermore, the CAAB strongly certificate holders to make the Quality System Programme an integral part of their everyday management process. Programmes that allow certificate holders to identify and correct their own instances of non-compliance and invest more resources in efforts to preclude their recurrence best serve aviation safety.



.....

For/**Civil Aviation Authority of Botswana**

Date:

End of Advisory Circular

Intentionally left blank

APPENDIX 1

PROGRAMME PLAN SAMPLE OUTLINE

Objective and Policy:

The objective should be a statement that clearly defines the purpose and structure of the AMO holder's Quality System Programme. Policy statements following the objective should indicate that quality evaluation is independent, that it actively involves top management, and that it is an on-going process designed to identify potential problem areas.

Definition of Terms:

Terms that will be used consistently in the Quality System Programme should be defined. For example, a certificate holder should have a procedure for categorising results (that is, a finding or concern). These categories, as well as other terms applicable to the quality evaluation function, should be clearly defined and documented so that company personnel can understand and properly interpret them. Definitions should be similar to those specified in paragraph 7.1.

Duties and Responsibilities:

The duties and responsibilities of quality evaluation personnel should be documented. The certificate holder should specify which personnel are responsible for performing the following tasks:

(1) Supervise the quality evaluation function.
(2) Perform evaluations, audits, and inspections as a part of quality evaluation.
(3) Identify and record any findings or concerns.
(4) Collect the objective evidence necessary to substantiate findings or concerns.
(5) Initiate, recommend, or provide solutions to findings or concerns through designated reporting channels.
(6) Monitor the development and implementation of corrective action plans.
(7) Maintain and update quality evaluation files.
(8) Verify the implementation of solutions.
(9) Communicate and co-ordinate Quality System Programme activities with CAAB personnel on a regular basis.

This section of the programme plan should show personnel responsible for the tasks listed above are not responsible for the accomplishment or management of work in the areas being evaluated or the tasks being revised. The manager or supervisor of the internal evaluation function should either be a top management representative or have straight-line reporting authority to top management.

When full time dedicated resources and personnel are not practical, developed procedures should show that persons having direct responsibility for the areas to be evaluated are not involved in the selection or supervision of the internal evaluation team. In addition, identified personnel should be exempt from their other duties and completely dedicated to the Quality System Programme while they participate on an evaluation team.

Organisation Chart:

An organisation chart that clearly shows the position of the Quality System Programme in the certificate holder's organisation should be prepared. This position should reflect the programme's independence within the corporate structure and straight-line reporting to top management.

Reporting Procedures:

Reporting procedures should include company requirements that top management reviews quality evaluation information. Top management should be informed, through straight-line reporting channels, about the schedules, plans, results, and follow-up corrective actions of the Quality System Programme. The procedures outlined in this section of the programme plan should specify the frequency, format, and structure for reporting information to top management. A procedure explaining how the review by top management will be documented should also be developed.

Specified Areas Covered:

A certificate holder should specify the areas within the scope of review under the Quality Assurance System. The CAAB believes that the most effective Quality System Programme will encompass a complete review of the certificate holder's operation.

Schedule Process:

The scheduling process should be comprised of the following three elements:

(1) Scheduled evaluations over a predetermined calendar period.

(2) Special evaluations when trends are identified or priorities are set by top management.

(3) Follow-up evaluations to verify the effectiveness of corrective action plans.

The programme plan should include procedures for planning, developing, and co-ordinating the quality evaluation schedule. The responsibility for planning and developing schedule activities should also be defined.

Records:

The Quality System Programme should have a defined recordkeeping process. Procedures should specify how records are filed and maintained. Standard forms or formats for filing reports also should be specified. The CAAB suggests that Quality System Programme records be comprised of the following:

(1) Scheduled evaluation reports.
(2) Special evaluation reports.
(3) Follow-up evaluation reports.
(4) Responses to findings or concerns contained in reports.
(5) Corrective action plans submitted in response to findings.
(6) Reports concerning the completed corrective action.

Training:

If feasible, the certificate holder should specify that evaluators have some type of training in recognised quality auditing, and evaluation principles and techniques. This training could be any one or combination of the following:

(1) In-house prepared courses.
(2) College courses.
(3) Home study course materials.
(4) Industry available seminars and workshops.
(5) Selected CAA courses.

APPENDIX 2

AMO QUALITY SYSTEM

In order to show compliance with Regulation 14 of the Civil Aviation (Approved Maintenance Organizations) Regulations, 2012 an AMO should establish its quality system in accordance with the instruction and information contained in the following paragraphs.

1.0. General.

1.1 Terminology.

(a) The terms used in the context of the requirement for an AMO's quality system have the following meaning:

(1) *Accountable Manager*. The person acceptable to the Authority who has corporate authority for ensuring that all maintenance activities can be financed and carried out to the standard required by the Authority, and any additional requirements defined by the AMO.

(2) *Quality assurance*. Quality assurance, as distinguished from quality control, involves activities in the business, systems, and technical audit areas. A set of predetermined, systemic actions which are required to provide adequate confidence that a product or service satisfies quality requirements.

1.2 Quality Policy.

1.2.1 An AMO shall establish a formal, written quality policy statement that is a commitment by the Accountable Manager as to what the quality system is intended to achieve. The quality policy should reflect the achievement and continued compliance with the Civil Aviation Regulations together with any additional standards specified by the AMO.

1.2.2 The Accountable Manager is an essential part of the AMO management organisation. The term "Accountable Manager" is intended to mean the Chief Executive/President/Managing Director/ General Manager, etc. of the AMO, who by virtue of his or her position has overall responsibility (including financial) for managing the organisation.

1.2.3 The Accountable Manager will have overall responsibility for the AMO's quality system, including the frequency, format and structure of the internal management evaluation activities as prescribed in paragraph 3.9 below.

1.3 Purpose of the Quality System.

1.3.1 The quality system should enable the AMO to monitor compliance with these Regulations, the AMO's manual system, and any other standards specified by the AMO, or the Authority, to ensure safe operations and airworthy aircraft.

1.4 Quality Manager.

1.4.1 The function of the Quality Manager to monitor compliance with, and the adequacy of, procedures required to ensure safe operational practices and airworthy aircraft as required by these Regulations may be carried out by more than one person by means of different, but complementary, quality assurance programs.

1.4.2 The primary role of the Quality Manager is to verify, by monitoring activity in the field of, maintenance, that the standards required by the Authority, and any additional requirements defined by the AMO, are being carried out under the supervision of the relevant required management personnel.

1.4.3 The Quality Manager should be responsible for ensuring that the quality assurance programme is properly established, implemented and maintained.

1.4.4 The Quality Manager should:

(a) Report to the Accountable Manager;

(b) Not be one of the required management personnel; and

(c) Have access to all parts of the AMO, and as necessary, any sub-contractor's organisation.

1.4.5 In the case of small/very small AMO's, the posts of the Accountable Manager and Quality Manager may be combined.

2.0 Quality System.

2.1 Introduction.

2.1.1 The AMO's quality system should ensure compliance with and adequacy of operational and maintenance activities requirements, standards, and procedures.

2.1.2 The AMO should specify the basic structure of the quality system applicable to the operation.

2.1.3 The quality system should be structured according to the size and complexity of the organisation to be monitored.

2.2 Scope.

2.2.1 As a minimum, the quality system should address the following:

(a) The provisions of these Civil Aviation Regulations;

(b) The AMO's additional standards and operating practices;

(c) The AMO's quality policy;

(d) The AMO's organisational structure;

(e) Responsibility for the development, establishment and management of the quality system;

(f) Documentation, including manuals, reports and records;

(g) Quality procedures;

(h) Quality assurance program;

(i) The required financial, material and human resources;

(j) Training requirements.

The quality system should include a feedback system to the Accountable Manager to ensure that corrective actions are both identified and promptly addressed. The feedback system should also specify who is required to rectify discrepancies and non-compliance in each particular case, and the procedure to be followed if corrective action is not completed within an appropriate timescale.

2.3 Relevant Documentation.

2.3.1 Relevant documentation includes the relevant part of the operator's manual system.

2.3.2 In addition, relevant document should include the following:

(a) Quality policy;

(b) Terminology;

(c) Specified maintenance standards;

(d) A description of the organisation;

(e) The allocation of duties and responsibilities;

(f) Operational procedures to ensure regulatory compliance;

(g) Accident prevention and flight safety programme;

(h) The quality assurance programme, reflecting:

(1) Schedule of the monitoring process;

(2) Audit procedures;

(3) Reporting procedures;

(4) Follow-up and corrective action procedures;

(5) Recording system;

(6) The training syllabus; and

(7) Document control

3.0 Quality assurance programme.

3.1 Introduction.

3.1.1 The quality assurance programme should include all planned and systematic actions necessary to provide confidence that all maintenance is conducted in accordance with all applicable requirements, standards and procedures.

3.1.2 When establishing a quality assurance programme, consideration should be given to at least the following:

(a) Quality inspection;

(b) Audit;

(c) Auditors;

(d) Auditor's independence

(e) Audit scope;

(f) Audit scheduling;

(g) Monitoring and corrective action;

(h) Management evaluation.

3.2 Quality Inspection.

3.2.1 The primary purpose of a quality inspection is to observe a particular event/action/document, etc. in order to verify whether established procedures and requirements are followed during the accomplishment of that event and whether the required standard is achieved.

3.2.2 Typical subject areas for quality inspections are:

(1) Facilities size and segregation;

(2) Office accommodation

(3) Work environment

(4) Storage

(5) Management changes

(6) Staff numbers and man-hour plan

(7) Competence process

(8) Qualifying certifying staff;

(9) Records of certifying staff;

(10) Issue of authorizations

(11) Adequate equipment;

(12) Equipment control and calibration;

(13) Approved data held;

(14) Modified maintenance data;

(15) Data availability;

(16) Data up to date;

(17) Aircraft release;

(18) Release document contents;

(19) Release control

(20) Details on work documents;

(21) Operator's copy of release;

(22) Record retention;

(23) Reporting unairworthy findings;

(24) Clear work orders;

(25) Procedures per Maintenance Procedures Manual;

(26) Suppliers and subcontractors;

(27) Acceptance of parts;

(28) Parts control in stores;

(29) Use of tools;

(30) Cleanliness standards;

(31) Control of repairs;

(32) Aircraft Maintenance Programme completion;

(33) Airworthiness directive control;

(34) Control of modifications;

(35) Control of working documents;

(36) Base maintenance defects;

(37) Defective parts to stores;

(38) Parts to outside contractors;

(39) Computer maintenance systems;

(40) Engine running;

(41) Aircraft procedures;

(42) Line maintenance control parts;

(43) Line servicing control;

(44) Line defect control;

(45) Aircraft Technical Log – Maintenance Records section completion;

(46) Pool and loan parts;

(47) Return defective parts to base;

(48) Product maintenance exemption control;

(49) Procedures deviation control;

(50) Special services control (NDI);

(51) Contractors working teams;

(52) Product audit;

(53) Privileges and locations control;

(54) Limitation control;

(55) Control of changes.

3.2.3 Typical methods for quality inspections for maintenance include:

(a) Product sampling - the part inspection of a representative sample of the aircraft fleet;

(b) Defect sampling - the monitoring of defect rectification performance;

(c) Concession sampling - the monitoring of any concession to not carry out maintenance on time;

3.3 Audit.

3.3.1 An audit is a systematic and independent comparison of the way in which an operation is being conducted against the way in which the published operational procedures say it should be conducted.

3.3.2 Audits should include at least the following quality procedures and processes:

(a) A statement explaining the scope of the audit;

(b) Planning and preparation;

(c) Gathering and recording evidence; and

(d) Analysis of the evidence.

3.3.3 Techniques that contribute to an effective audit are:

(a) Interviews or discussions with personnel;

(b) A review of published documents;

(c) The examination of an adequate sample of records;

(d) The witnessing of the activities that make up the operation; and

(e) The preservation of documents and the recording of observations.

3.4 Auditors.

3.4.1 An AMO should decide, depending upon the complexity of the organisation, whether to make use of a dedicated audit team or a single auditor. In any event, the auditor or audit team should have relevant maintenance experience.

3.4.2 The responsibilities of the auditors should be clearly defined in the relevant documentation.

3.5 Auditor's Independence.

3.5.1 Auditors should not have any day-to-day involvement in the area of the maintenance activity that is to be audited. An AMO may, in addition to using the services of full-time dedicated personnel belonging to a separate quality department, undertake the monitoring of specific areas or activities by the use of part-time auditors. An AMO whose structure and size does not justify the establishment of full-time auditors, may undertake the audit function by the use of part-time personnel from within its own organisation or from an external source

under the terms of an agreement acceptable to the Authority. In all cases the AMO should develop suitable procedures to ensure that persons directly responsible for the activities to be audited are not selected as part of the auditing team. Where external auditors are used, it is essential that any external specialist is familiar with the type of operation and/or maintenance conducted by the operator.

3.5.2 The AMO's quality assurance programme should identify the persons within the company who have the experience, responsibility and authority to:

(a) Perform quality inspections and audits as part of ongoing quality assurance;

(b) Identify and record any concerns or findings, and the evidence necessary to substantiate such concerns or findings;

(c) Initiate or recommend solutions to concerns or findings through designated reporting channels;

(d) Verify the implementation of solutions within specific timescales;

(e) Report directly to the Quality Manager.

3.6 Audit Scope.

3.6.1 AMO's are required to monitor compliance with the operational and maintenance procedures they have designed to ensure safe operations, airworthy aircraft and the serviceability of both operational and safety equipment. In doing so they should as a minimum, and where appropriate, monitor:

(a) Organisation;

(b) Plans and company objectives;

(c) AMO certification (AMO/Operations specifications)

(d) Supervision;

(e) Manuals, logs, and records;

(f) Duty time limitations, rest requirements, and scheduling;

(g) Maintenance programmes and continued airworthiness;

(h) Airworthiness directives management;

(i) Maintenance accomplishment;

(j) Defect deferral;

(k) Dangerous goods;

(l) Security;

(m) Training.

3.7 Audit Scheduling.

3.7.1 A quality assurance program should include a defined audit schedule and a periodic review cycle area by area. The schedule should be flexible, and allow unscheduled audits when trends are identified. Follow-up audits should be scheduled when necessary to verify that corrective action was carried out and that it was effective.

3.7.2 An AMO should establish a schedule of audits to be completed during a specified calendar period. All aspects of the operation should be reviewed within every 12 month period in accordance with the programme unless an extension to the audit period is accepted as explained below. An AMO may increase the frequency of audits at its discretion but should not decrease the frequency without the agreement of the Authority. Audit frequency should not be decreased beyond a 24 month period interval.

3.7.3 When an AMO defines the audit schedule, significant changes to the management, organisation, operation, or technologies should be considered as well as changes to the regulatory requirements.

3.8 Monitoring and Corrective Action.

3.8.1 The aim of monitoring within the quality system is primarily to investigate and judge its effectiveness and thereby to ensure that defined policy and maintenance standards are continuously complied with. Monitoring activity is based upon quality inspections, audits, corrective action and follow-up. The AMO should establish and publish a quality procedure to monitor regulatory compliance on a continuing basis. This monitoring activity should be aimed at eliminating the causes of unsatisfactory performance.

3.8.2 Any non-compliance identified as a result of monitoring should be communicated to the manager responsible for taking corrective action or, if appropriate, the Accountable Manager. Such non-compliance should be recorded, for the purpose of further investigation, in order to determine the cause and to enable the recommendation of appropriate corrective action.

3.8.3 The quality assurance programme should include procedures to ensure that corrective actions are taken in response to findings. These quality procedures should monitor such actions to verify their effectiveness and that they have been completed. Organisational responsibility and accountability for the implementation of corrective action resides with the department cited in the report identifying the finding. The Accountable Manager will have the ultimate responsibility for resourcing the corrective active action and ensuring, through the Quality Manager, that the corrective action has re-established compliance with the standard required by the Authority, and any additional requirements defined by the operator.

3.8.4 Corrective action. Subsequent to the quality inspection/audit, the AMO should establish:

(a) The seriousness of any findings and any need for immediate corrective action;

(b) The origin of the finding;

(c) What corrective actions are required to ensure that the non-compliance does not recur;

(d) A schedule for corrective action;

(e) The identification of individuals or departments responsible for implementing corrective action;

(f) Allocation of resources by the Accountable Manager, where appropriate.

3.8.5 The Quality Manager should:

(a) Verify that corrective action is taken by the manager responsible in response to any finding of non-compliance;

(b) Verify the corrective action includes the elements outlined in paragraph 3.8.4 above;

(c) Monitor the implementation and completion of corrective action;

(d) Provide management with an independent assessment of corrective action; implementation and completion;

(e) Evaluate the effectiveness of corrective action through follow-up process.

3.9 Management Evaluation.

3.9.1 A management evaluation is a comprehensive, systematic, documented review by the management of the quality system, policies and procedures, and should consider:

(a) The results of quality inspections, audits and any other indicators;

(b) The overall effectiveness of the management organisation in achieving stated objectives.

3.9.2 A management evaluation should identify and correct trends, and prevent, where possible, future non-conformities. Conclusions and recommendations made as a result of an evaluation should be submitted in writing to the responsible manager for action. The responsible manager should be an individual who has the authority to resolve issues and take action.

3.9.3 The Accountable Manager should decide upon the frequency, format and structure of internal management evaluation activities.

3.10 Recording.

3.10.1 Accurate, complete and readily accessible records documenting the results of the quality assurance programme should be maintained by the AMO. Records are essential data to enable an operator to analyse and determine the root causes of non-conformity, so that areas of non-compliance can be identified and addressed.

3.10.2 The following records should be retained for a period of 5 years:

(a) Audit schedules;

(b) Quality inspection and audit reports;

(c) Responses to findings;

(d) Corrective action reports;

(e) Follow-up and closure reports; and

(f) Management evaluation reports.

4.0 Quality Assurance Responsibility for Sub-Contractors.

4.1 Sub-Contractors.

4.1.1 AMOs may decide to sub-contract out certain activities to external agencies for the provision of services related to areas such as:

(a) Maintenance;

(b) Training;

(c) Manual preparation.

4.1.2 The ultimate responsibility for the product or service provided by the sub-contractor always remains with the AMO. A written agreement should exist between the AMO and the sub-contractor clearly defining the safety related services and quality to be provided. The sub-contractor's safety related activities relevant to the agreement should be included in the AMO's quality assurance programme.

4.1.3 The AMO should ensure that the sub-contractor has the necessary authorisation/approval when required and commands the resources and competence to undertake the task.

4.2 Monitoring and Corrective Action.

4.2.1 The aim of monitoring within the quality system is primarily to investigate and judge its effectiveness and thereby to ensure that defined policy and maintenance standards are continuously complied with. Monitoring activity is based upon quality inspections, audits, corrective action and follow-up. The AMO should establish and publish a quality procedure to monitor regulatory compliance on a continuing basis. This monitoring activity should be aimed at eliminating the causes of unsatisfactory performance.

4.2.2 Any non-compliance identified as a result of monitoring should be communicated to the manager responsible for taking corrective action or, if appropriate, the Accountable Manager. Such non-compliance should be recorded, for the purpose of further investigation, in order to determine the cause and to enable the recommendation of appropriate corrective action.

4.2.3 The quality assurance programme should include procedures to ensure that corrective actions are taken in response to findings. These quality procedures should monitor such actions to verify their effectiveness and that they have been completed. Organisational responsibility and accountability for the implementation of corrective action resides with the department cited in the report identifying the finding. The Accountable Manager will have the ultimate responsibility for resourcing the corrective active action and ensuring, through the Quality Manager, that the corrective action has re-established compliance with the standard required by the Authority, and any additional requirements defined by the operator.

4.2.4 Corrective action. Subsequent to the quality inspection/audit, the AMO should establish:

(a) The seriousness of any findings and any need for immediate corrective action;

(b) The origin of the finding;

(c) What corrective actions are required to ensure that the non-compliance does not recur;

(d) A schedule for corrective action;

(e) The identification of individuals or departments responsible for implementing corrective action;

(f) Allocation of resources by the Accountable Manager, where appropriate.

4.2.5 The Quality Manager should:

(a) Verify that corrective action is taken by the manager responsible in response to any finding of non-compliance;

(b) Verify the corrective action includes the elements outlined in paragraph 3.8.4 above;

(c) Monitor the implementation and completion of corrective action;

(d) Provide management with an independent assessment of corrective action; implementation and completion;

(e) Evaluate the effectiveness of corrective action through follow-up process.

4.3 Management Evaluation.

4.3.1 A management evaluation is a comprehensive, systematic, documented review by the management of the quality system, policies and procedures, and should consider:

(a) The results of quality inspections, audits and any other indicators;

(b) The overall effectiveness of the management organisation in achieving stated objectives.

4.3.2 A management should identify and correct trends, and prevent, where possible, future non-conformities. Conclusions and recommendations made as a result of an evaluation should be submitted in writing to the responsible manager for action. The responsible manager should be an individual who has the authority to resolve issues and take action.

4.3.3 The Accountable Manager should decide upon the frequency, format and structure of internal management evaluation activities.

4.4 Recording.

4.4.1 Accurate, complete and readily accessible records documenting the results of the quality assurance programme should be maintained by the AMO. Records are essential data to enable an operator to analyse and determine the root causes of non-conformity, so that areas of non-compliance can be identified and addressed.

4.4.2 The following records should be retained for a period of 5 years:

(g) Audit schedules;

(h) Quality inspection and audit reports;

(i) Responses to findings;

(j) Corrective action reports;

(k) Follow-up and closure reports; and

(l) Management evaluation reports.

5.0 Quality System Training

5.1 General

5.1.1 An AMO should establish effective, well planned and resourced quality related briefing for all personnel.

5.1.2 Those responsible for managing the quality system should receive training covering:

(a) An introduction to the concept of the quality system;
(b) Quality management;
(c) The concept of quality assurance;
(d) Quality manuals;
(e) Audit techniques;
(f) Reporting and recording; and
(g) The way in which the quality system will function in the company

5.1.3 Time should be provided to train every individual involved in quality management and for briefing the remainder of the employees. The allocation of time and resources should be governed by the size and complexity of the AMO.

5.2 Sources of Training.

5.2.1 Quality management courses are available from the various [National] or International Standards Institutions, and an AMO should consider whether to offer such courses to those likely to be involved in the management of quality systems. AMO's with sufficient appropriately qualified staff should consider whether to carry out in-house training.

6.0 Organisations with 20 or Less Full-Time Employees.

6.1 Introduction.

6.1.1 The requirement to establish and document a quality system and to employ a quality manager applies to all AMOs. References to large and small operators elsewhere in the Civil Aviation Regulations are governed by aircraft capacity (i.e. more or less than 20 seats) and by mass (i.e. greater or less than 10 tonnes maximum take-off mass). Such terminology is not relevant when considering the scale of an operation and the quality system required. In the context of quality systems therefore, operators should be categorised according to the number of full time staff employees.

6.2 Scale of Operation.

6.2.1 AMOs who employ 5 or less full time staff are considered to be "very small" while those employing between 6 and 20 full time employees are regarded as "small" operators as far as quality systems are concerned. Full-time in this context means employed for not less than 35 hours per week excluding vacation periods.

6.2.2 Complex quality systems could be inappropriate for small or very small operators and the clerical effort required to draw up manuals and quality procedures for a complex system may stretch their resources. It is therefore accepted that such operators should tailor their quality systems to suit the size and complexity of their operation and allocate resources accordingly.

6.3 Quality System for Small/Very Small AMOs.

6.3.1 For small and very small AMOs it may be appropriate to develop a quality assurance programme that employs a checklist. The checklist should have a supporting schedule that requires completion of all checklist items within a specified timescale, together with a statement acknowledging completion of a periodic review by top management. An occasional

independent overview of the checklist content and achievement of the quality assurance should be undertaken.

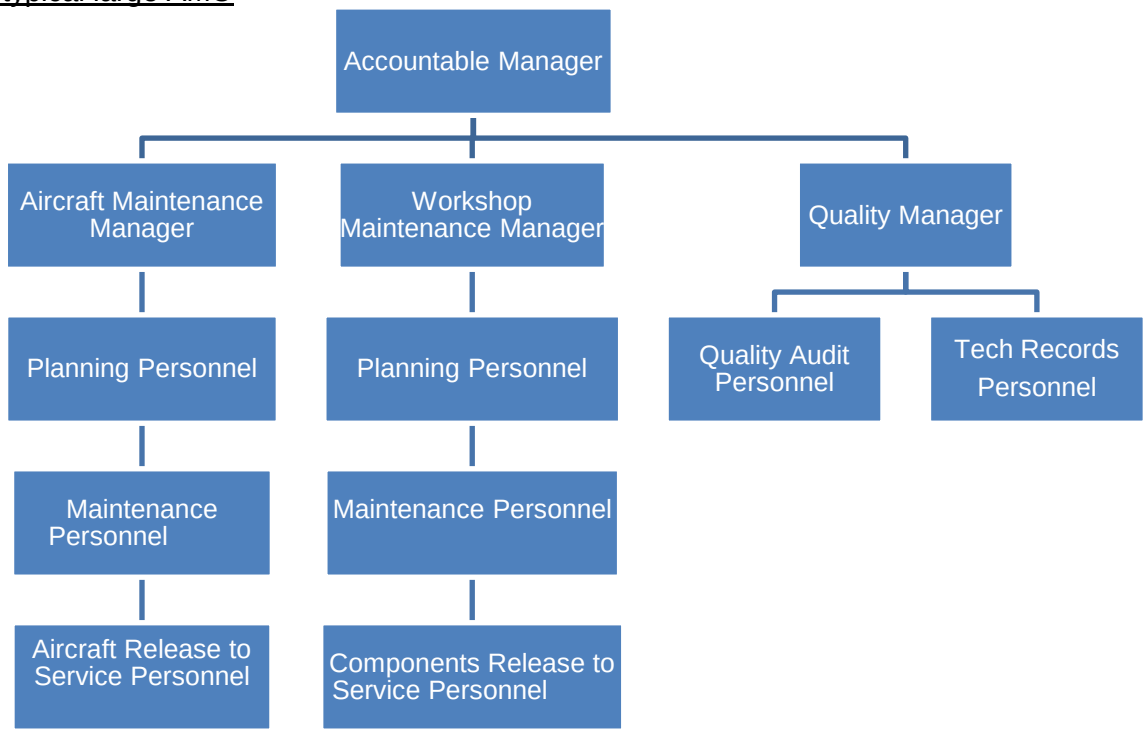
6.3.2 The "small" AMO may decide to use internal or external auditors or a combination of the two. In these circumstances it would be acceptable for external specialists and or qualified organisations to perform the quality audits on behalf of the Quality Manager.

6.3.3 If the independent quality audit function is being conducted by external auditors, the audit schedule should be shown in the relevant documentation.

6.3.4 Whatever arrangements are made, the operator retains the ultimate responsibility for the quality system and especially the completion and follow-up of corrective actions.

QUALITY SYSTEM – ORGANIZATION EXAMPLES

(1) A typical large AMO



(2) A typical small AMO