*International Civil Aviation Organization*
NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN OFFICE
**Twenty-Seventh Eastern Caribbean Informal Working Group Meeting (27TH E/CAR IWG)**
St. John's, Antigua and Barbuda, 21 to 25 July 2003

**Agenda Item 3: Specific Air Navigation Activities and Developments**
**3.2 Aeronautical Information Services (AIS)**

# PRESENTATION OF THE AIS/MAP QUALITY SYSTEM MANUALS

(Presented by the Secretariat)

**SUMMARY**

This Working Paper presents for the consideration of the Meeting the AIS/MAP Quality System Guides, pursuant to Conclusion 12/1 of the CAR/SAM/3 RAN Meeting and ICAO Annex 15.

**References**:

- CAR/SAM/3 RAN Meeting (Buenos Aires, Argentina, October 1999)
- APANPIRG/12 Meeting (Bangkok, Thailand, August 2001)
- ICAO Annex 15
- Doc 9750 Global CNS/ATM Air Navigation Plan
- AIS/MAP/SG/8 Meeting draft Report

## 1. Introduction

1.1 In view of the implementation of the CNS/ATM systems worldwide, some E/CAR States have begun working on the development of an AIS/MAP Quality System Implementation Plan, based on the requirements of Annex 15. Nevertheless, there is no guidance information for achieving a satisfactory level of implementation of said system in the field of Aeronautical Information Services.

## 2. Discussion

2.1 The meeting will recognize the role and importance of the Quality System for aeronautical information/data with the implementation of the required navigation performance (RNP), the GNSS (RNAV) airborne computerised navigation systems, and, in general, the CNS/ATM systems.

2.2 On the other hand, AIS experts know very well that when aeronautical information/data are altered or have errors, air navigation safety is jeopardised. Therefore, there is a greater need for precision, resolution and integrity when providing aeronautical information, especially when such information is supplied in electronic format. Before publishing essential and critical data (see Ch. 3 par. 3.2.8 and Appendix 7 to Annex 15), States should make sure that aeronautical data have maintained their integrity throughout all the phases of the process, from the originator to the user, and that the data to be published is highly reliable. Consequently, the requirement for an AIS Quality System based on the 9000 series of standards of the International Standardisation Organisation (ISO) was introduced in Annex 15 in order to provide a basic framework for the implementation of an AIS/MAP Quality System Programme.

2.3 In general, E/CAR States seem to face considerable difficulties for the implementation of a Quality System and a Quality Management Programme, despite the availability of ISO 9000 standards and their direct usefulness for the implementation of the AIS/MAP Quality System Programme. Consequently, ICAO, by developing the appropriate guidance material, providing training, and through its technical cooperation programme, could help States in expediting the implementation of a Quality System within the AIS/MAP services. As a result, the CAR/SAM/3 RAN Meeting formulated the following conclusion:

***"Conclusion 12/1 — Quality system implementation***

*That:*

*a) States take the appropriate measures for the implementation and maintenance of a quality system for information and aeronautical chart services; and*

*b) ICAO assist States in the application of the quality system in their AIS/MAP services, through the development of guidance material, training programmes, theoretical and hands-on seminars, missions and technical assistance/cooperation."*

2.4 With respect to paragraph b) of the above Conclusion, and specifically to the need for guidelines on the Quality System, it was felt that such guidelines should be developed as a matter of urgency. Taking into account the progress on this matter reported to the APANPIRG/12 Meeting by the ICAO Asia/Pacific Region during the last part of 2001, which included the drafting of guides to enable States to implement a (draft) Quality System Programme, and since those documents were based on ISO 9000 standards, the AIS/MAP Subgroup Secretariat has deemed it advisable to present, for the meeting's review and discussion, the package of documents that form part of the "AIS Quality System Guides", so that the respective manuals for the CAR and SAM Regions can be developed without having to prepare all over again the information required for the implementation of an AIS/MAP Quality System Programme.

2.5 Regarding the package of documents that form part of the "AIS Quality System Guides", mention should be made of its contents:

**Part 1: AIS Quality System**

- Guidance Material – A Quality System for the AIS
- Sample Quality Manual
- Quality Assurance Implementation Planning Template (*Ver. 1.1*)

**Part 2: Guidelines for the selection and training of AIS personnel**

**Part 3: Procedures for the common operation of AIS automated systems (*under development, not available*)**

**Part 4: Using the INTERNET to transfer information (*under development, not available*)**

2.5.1 Part 1 "AIS Quality Systems" consists of three documents, which are contained in **Appendix A** to this working paper. Part 2 "Guidelines for the selection and training of AIS personnel" is contained in Part IV to this Appendix.

2.6 In addition to the aforementioned, the Meeting should note that each State must implement its own AIS/MAP Quality System, based on the provisions established by ICAO.

3. **Suggested action**

3.1 The Meeting is invited to adopt the following Decision:

**DRAFT**
**DECISION 27/XX** **AIS COMMITTEE REVIEW OF THE GUIDES FOR THE IMPLEMENTATION OF AN AIS/MAP QUALITY SYSTEM**

That, the task of reviewing and coordinating the comments, and proposing modifications to the documents that form part of the **Guides for the Implementation of an AIS/MAP Quality System** be carried out by the AIS Committee and sent to the "AIS/MAP Quality Management Task Force Group", through ICAO NACC Regional Office, no later than 28 November 2003.

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# GUIDANCE MANUAL FOR AERONAUTICAL INFORMATION SERVICES

**in the**

# ASIA/PACIFIC REGIONS

**First Edition - 2001**

**Authorised by the ATS/AIS/SAR Sub-Group of APANPIRG**

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

## RECORD OF AMENDMENTS

| Amendments | | | |
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| **No.** | **Date of Issue** | **Date entered** | **Entered by** |
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States may wish to suggest changes to any of the documents that are associated with this Manual. Suggested changes should be forwarded to the ICAO Asia & Pacific Regional Office, Bangkok, Thailand.

# Introduction

***Role of the AIS and the Globalizaztion of CNS/ATM***

Clearly the role of the AIS is one of the foundation building blocks for the successful transition to a global ATM system. At the core of this building block lies the Quality System that will provide quality and timely aeronautical data and information to the aviation community.

"Annex 15 notes at 3.2 that:

> *Note.- International Organization for Standardization (ISO) 9000 series of quality assurance standards provide a basic framework for the development of a quality assurance programme. The details of a successful programme are to be formulated by each State and in most cases are unique to the State organization."*

In addition to the requirements described in Annex 15 for Quality Systems, Chapter 9 of the Global Air Navigation Plan for CNS/ATM Systems (Doc. 9750-AN/963 makes the following comments:

> "9.4 The role and importance of aeronautical information/data has changed significantly with the implementation of RNAV, RNP and airborne computer-based navigation systems. These systems are all data-dependent, and in that respect aeronautical data have become the crucial and critical components of the system. Consequently, corrupt or erroneous aeronautical information/data can potentially affect the safety of air navigation. In this respect, as of 1 January 1998, each Contracting State must take necessary measures to introduce a properly organized quality system containing procedures, processes and resources necessary to implement quality management at each functional stage of the data process. Established quality systems must provide users with the necessary assurance and confidence that distributed aeronautical information/data satisfy established requirements for data quality (accuracy, resolution and integrity) and timeliness."

The Guidance Materials that follow in this Manual have been developed to provide assistance to States for the development and implementation of Quality Systems for Aeronautical Information Services in the Asia/Pacific Region.

The Guidance Material will provide key stepping stones to assist States with an understanding of the requirements for a Quality System, and provide a foundation for distributed aeronautical data and information to satisfy the established requirements for timeliness and accuracy in compliance with the requirements of ICAO Annex 15 and other relevant standards.

# GUIDANCE MANUAL FOR AERONAUTICAL INFORMATION SERVICES

**in the**

# ASIA/PACIFIC REGIONS

# PART 1

## AIS QUALITY SYSTEMS

**Guidance Material – A Quality System for AIS**

**Sample Quality Manual**

**QA Implementation Planning Template**

# GUIDANCE MATERIAL

*A QUALITY SYSTEM*

*for*

*AERONAUTICAL INFORMATION SERVICES*

August 2000

# Guidance Material

# A Quality System

# for

# Aeronautical Information Services

**Document Control**

| Version | Status | Date |
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| 1.001 | Initial Draft | 20 July 2000 |
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**Guidance Material**

**A Quality System**

**for**

**Aeronautical Information Services**

***Table of Contents***

# GUIDANCE MATERIAL

# A QUALITY SYSTEM

# for

# AERONAUTICAL INFORMATION SERVICES

## Introduction

This Guidance Material has been constructed to provide information for States about the implementation of a quality system for their aeronautical information service, and should be read in conjunction with the appropriate ICAO and International Standards Organisation (ISO) references.

ICAO Annex 15 – Aeronautical Information Services shows the need for States to "…take all necessary measures to introduce a properly organised quality system containing procedures, processes and resources necessary to implement quality management at each function stage as outlined…." In this context, the function stages relate to the functions of an AIS "to:

- receive and/or originate
- collate or assemble
- edit
- format
- publish/store
- distribute

aeronautical information/data concerning the entire territory of the State as well as areas in which the State is responsible for air traffic services outside its territory."

ICAO notes that the International Organisation for Standardisation (ISO) 9000 series of quality assurance standards provides a basic framework for the development of a quality assurance program.

These International Standards specify the requirements for a quality management system where an organisation needs:

(a) to demonstrate its ability to consistently provide products that meet customer and applicable regulatory requirements, and

(b) to address customer satisfaction through the effective application of the system, including processes for continual improvement and the prevention of non-conformity.

The ICAO references and the International Standards provide clear directions towards the needs and requirements for a Quality System within a State's AIS

to meet customer needs and expectations, and where continuous improvement is a pattern of organisational behaviour.

## What is in these Guidelines?

These guidelines contain information about a number and variety of topics designed to assist States with the implementation of a Quality System. The Guidelines have been formulated around the relevant ISO Standards to provide this assistance, and to provide easy-to-read material as a starting point for the development and maintenance of a Quality System for an AIS.

The Guidelines are not intended to replace ISO documentation and should be read in conjunction with the appropriate Standards.

## The Way Ahead

In addition to these Guidelines, you will find that there are a number of other sources on information that will be able to provide you with advice about the introduction or enhancement of your Quality System. Some of these sources might be:

- Government Departments
- Standards Associations bodies
- Certification or Registration groups
- Internet web sites
- Industry and professional associations
- Other businesses putting in a Quality Management System

After reading through the Guidelines and deciding what needs to be done to introduce a Quality System, the next important decision is “How are we going to do it?” The answer to this might be extra staff or other resources, or external assistance. In any case you will need to formulate a plan to determine exactly what is required, and what the steps forward are.

In some instances these might be small, carefully planned incremental steps leading to a fully functional Quality System. Depending on your resources, you may wish to implement one or two parts at a time before moving on.

The 9 Steps leading to the implementation of a Quality System are shown in Section xx.

If you decide that the best way forward is to engage a consultant to progress the implementation of your Quality System, an important step will be to clearly establish the outcomes and what will be provided at the end of the project.

An effective Quality System is one that is written and organised around the way your AIS operates. Treat “ready-made” solutions with some degree of caution.

When your AIS staff are involved in the development and implementation of a Quality System, they will develop a sense of “ownership” and provide an easier path to making the Quality System work. Often it is difficult to inspire ownership of a Quality System when it has been developed in isolation.

There is no short cut to the development and documentation of a robust Quality System. It takes time and effort, but at the end is a worthy prize.

### *Certification and Registration*

Certification is generally regarded as the formal recognition by others of your Quality Management System. In some States, certified Quality Management Systems are considered to be registered and the term “registration” is used instead of certification.

Certification or Registration is not a mandatory requirement to implement the ISO 9000 series of Standards, but may be required by some of your customers. A decision to seek Certification or Registration may equally be influenced by regulatory or statutory requirements.

If you choose to have your AIS Certified or Registered, the first step should be to contact Certification or Registration agencies to determine what is offered by these groups and what the likely costs will be for the initial Certification or Registration, and any ongoing costs that might apply to re-assessments of your Quality System. Section yy provides some additional information about the Certification and Registration process.

## A Quality System

### *The Need for a Quality System*

The importance of aeronautical data and information to the world’s aviation community cannot be overstated. Aeronautical data and information provides one of the essential elements and the backbone to enable aircraft operations to take place safely and efficiently throughout the world.

ICAO Annex 15 points to the need for a Quality System as being:

“The established quality system shall provide users with the necessary assurance and confidence that distributed aeronautical information/data satisfy stated requirements for data quality (accuracy, resolution and integrity) and for data traceability by the use of appropriate procedures in every stage of data production or data modification process. The system shall also provide assurance of the applicability period of intended use of aeronautical data as well as that the agreed distribution dates will be met.”

This means that the worldwide aviation community is looking to the AIS's so that they can have a confidence that they are being provided with accurate data and information that meets the required resolution and retains its integrity throughout its life cycle. While this is the principal reason for having a quality system, a Quality System also provides opportunities for:

- Meeting regulatory requirements;
- Performance, coordination and productivity improvements;
- Increased focus on your business objectives and customer expectations;
- Achievement and maintenance of the quality of your products and services to meet your customers stated or implied needs;
- Increased customer awareness and satisfaction;
- Confidence that your intended quality is being achieved and maintained;
- Being able to demonstrate your organisation's capabilities to customers and potential customers;
- Expanded market opportunities.

By itself, introduction of a Quality System won't lead to automatic improvements in product or service quality, or an improvement in work practices and processes. What it will do however, is provide the tools and guidance for those working in the AIS field to use a defined and systematic approach to their work and business.

***What is a Quality System?***

A quality management system for an AIS might best be described as the way the organisation carries out its business activities for the provision of aeronautical information services and, relates to:

- an organisational structure; together with the
- documentation
- processes, and
- resources.

necessary for the AIS to achieve its quality objectives and to meet customer's requirements.

A Quality System means that everything must fit together, to form one cohesive and effective system. This means that an organisation with a Quality System will have:

- A Quality Manual that outlines the quality system;
- Procedures for all activities within that system, and
- Planning activities to ensure resources are available for the effective conduct of the quality system.

One of the most important things that must be in place for a Quality System to work is commitment from all of those affected to ensure that the documented procedures, processes and practices are not only in place, but are vigorously applied.

A Quality System will strive for excellence, always looking for ways to do the work better through a program of continuous improvement.

***Permissible Exclusions***

In some AIS' there may be processes that are not performed, for example Procedures Design work. Part 7, and only in Part 7, of the ISO Standards makes allowances for some aspects to be excluded from a Quality Management System if they are not being carried out. These are known as Permissible Exclusions, and could arise due to the:

- Nature of the product range or services provided by a particular AIS;
- Customer requirements;
- Regulatory requirements.

However, you cannot simply claim a Permissible Exclusion just because you do not want to do it. If you question a requirement in this Part of the ISO Standard, then you should ask yourself:

- What is the idea or principle behind this requirement?
- What kind of problem could be prevented by meeting this requirement?
- Why would meeting the requirement give confidence to the customer?

Within Part 7 of the ISO Standard, the following processes are most likely to be considered for Permissible Exclusions:

- Design and Development

- Identification and Traceability
- Customer property
- Control of measuring and monitoring devices

Importantly, if you decide to proceed with Permissible Exclusions you will need to justify this in the Quality Manual and, if you are seeking Certification or Registration, with these bodies as well.

### *What is ISO 9000 About?*

In very simple terms, the requirements of the ISO International Standards for a Quality System can be summarised as being three straightforward tasks:

- Say what you do;
- Do what you say, and
- Show that you did it.

**Say what you do**

This task requires an AIS to document how it undertakes its activities.

**Do what you say**

This task requires an AIS to undertake its activities as recorded in the documented procedures.

**Show how you did it**

This task requires an AIS to maintain records that prove that it undertakes its activities as documented and has done so for a recognised period of time.

### *Products*

One of the many terms used within the Quality System is “product”. In the context of the International Standards, and the diagrams that follow, a product is defined by the standards as:

**Product:** Result of activities or a process.

The Standards note that there are four generic product categories:

- Hardware
- Software
- Services
- Processed materials

Products may be combinations of the four generic product categories.

### *The Process Model*

Activities that receive inputs and convert them to outputs can be considered to be a process. In many cases, an output from one process will form the input to the next process, for example data is received from an aerodrome operator, entered into the AIS database, and when combined with other data, is provided as an output for charting or a document.

To function effectively within a quality system, an AIS must identify and manage numerous linked processes. Systematic identification and management of these many processes and the interactions between these processes that are used within an AIS are often referred to as a "process approach".

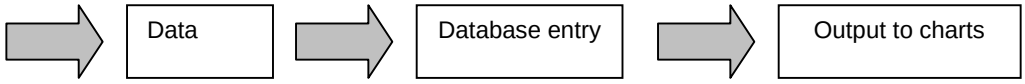



*Fig. 1 – A simplistic process*

A more sophisticated conceptual process model recognises the role that the customer plays in the definition of requirements as inputs. By monitoring customer satisfaction, or in some cases dissatisfaction, we are able to monitor and evaluate whether or not defined customer requirements have been met.

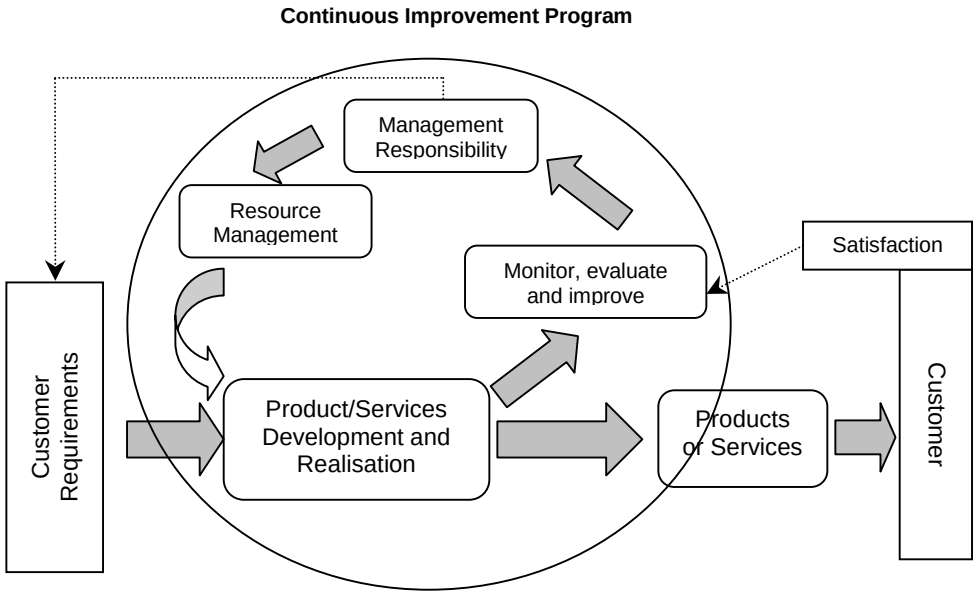



*Fig.2 – Conceptual model of the "Process Approach"*

Fig. 2 demonstrates that the process approach model and the Quality System starts and finishes with the customer. In the first instance there is the customer requirement on the left hand side of the diagram, on the right hand side there is the degree of customer satisfaction with the product or service

that has been provided as a result of a number of inputs. Customer satisfaction is measurable against the initial requirements and specifications.

Perhaps the most important feature of the model is the need to obtain information about customer satisfaction, this feeds back into the monitoring and evaluation phase, which are in turn a measure of overall performance.

The loop into management responsibility is there to show that management has an important role to review customer feedback to ensure that the appropriate policies, objectives and strategies are in place, along with the necessary resources, to meet the quality challenges.

Resources are a key component of the Quality System. Resources are the equipment, materials and people that make the overall system work. Human resources need to be properly trained and competent to achieve the desired outcomes.

As noted earlier, a Quality System will strive for excellence, always looking for ways to do the work better through a program of continuous improvement. A Quality System will continue to challenge the outputs against the customer requirements and specifications to ensure that customer's expectations are met and exceeded. This is why all of the elements in the Continuous Improvement Program are so important. Outputs must be monitored and evaluated, management must consider the evaluations and apply the planning and resources to achieve the desired outcomes.

## General Requirements

The General Requirements for the implementation of a Quality Management System are to:

(a) identify the processes needed for the quality management system;

(b) determine the sequence and interaction of these processes;

(c) determine criteria and methods required to ensure the effective operation and control of these processes;

(d) ensure the availability of information necessary to support the operation and monitoring of these processes;

(e) measure, monitor and analyse these processes, and implement action necessary to achieve planned results and continual improvement.

### *General Documentation Requirements*

Documentation for a Quality Management System must include:

(a) documented procedures (see the section that follows for a description of Documented Procedures); and

(b) documents required by the organisation to ensure the effective operation and control of its processes.

The extent of the Quality Management System is however, dependent on the following, and may be in any form or type of medium:

(a) size and type of the organisation;

(b) complexity and interaction of the processes;

(c) competence of personnel.

***Documented Procedures***

ISO requirements for a Quality System call for six quality management system procedures to be in place. These are mandatory written procedures that describe how your organisation performs the activities described in each of the six quality management system procedures described below:

1. Control of Documents;

2. Control of Quality Records;

3. Internal Audit;

4. Control of Non-conformity;

5. Corrective Action; and

6. Preventative Action.

Documented Procedures should indicate who does what, where and when they do it, why they do it, and how. It is up to the organisation itself to decide the level of detail that is included in the Documented Procedures. Largely, this will depend on:

(a) methods used;

(b) skills needed;

(c) training;

(d) extent of supervision required.

Documented Procedures should not contain what you would like to happen in the organisation, but rather an accurate description of what really happens.

A robust Quality Management System will involve staff, to the extent that they can contribute, in the writing of Documented Procedures. The earlier and the more staff that are involved will lead to greater staff involvement, understanding and "buy-in" to the procedures and practices.

## Management Responsibility

AIS Managers have a number of demonstrable responsibilities within the Quality System. These responsibilities relate to:

(a) Quality policy;

(b) Commitment to quality;

(c) Customer focus;

(d) Planning;

(e) Management Representation;

(f) Management Review

Each of these responsibilities is addressed in further detail below.

A quality system is dependent on all those involved in its provision being quite clear about their responsibilities and authorities. The development and use of accurate position descriptions for all staff in an AIS that address both the responsibilities and authorities of each position can accomplish this.

### *Quality Policy*

The International Standards require management to have a Quality Policy in place that is in writing and is visible to staff. The quality policy forms the an important element for the work of the AIS, and establishes:

- a commitment to quality;
- what the quality objectives or the organisation are; and
- how the objectives relate to customers expectations.

The Quality Policy must address these issues and ensure that it:

- is appropriate for the needs of the organisation;
- includes commitment to meeting requirements and continual improvement;
- provides a framework for establishing and reviewing quality objectives;

- is communicated, understood and implemented throughout the organisation;

- is reviewed for continuing suitability.

A Quality Policy includes AIS's definition of quality and how management and staff will demonstrate their commitment to the policy, and provides an identifiable focus for all staff in their daily activities.

One of the best techniques to develop a Quality Policy is a facilitated meeting of all staff at which individual definitions of "quality" can be consolidated to provide a definition and statement that encapsulates all staff's beliefs and understandings.

### *Commitment to Quality*

AIS Managers must take an active responsibility in the establishment and maintenance of a Quality System. This role includes:

- Definition and implementation of quality policy;

- Communicating the quality policy within the organisation, including the importance of meeting customer, regulatory and legal requirements;

- Setting objectives, strategies and targets derived from the policy;

- Position descriptions that describe the role, responsibilities and authorities for all staff;

- Ensuring that resources are adequate;

- Appointment and support of a management representative; and

- Regular reviews of the effectiveness of the system.

### *Customer Focus*

Meeting customer and regulatory requirements is our primary business. To ensure that these requirements are met, and that customer confidence is maintained, an AIS must have a clear understanding and defined specifications in the form of user requirements. Measurement and analysis of outcomes will be difficult, if not impossible without this specification.

### *Planning*

The step that follows the publication of the Quality Policy is the setting of objectives, strategies and targets that will show how the organisation expects to implement the quality policy. Targets need to be realistic, relate to the

customer's statement of requirements and measurable. The plan must include details of the continual improvement program.

Thorough planning sets the scene for other important aspects of the organisation's operations:

- staff performance measurements;
- budgets;
- overall business performance measurements;
- asset and facility purchases;
- staff competencies and training requirements;
- other resource requirements;
- the continuing improvement program.

In some cases, planning may be conducted as a matter of routine, for example on an annual basis, whereas in others, specific project planning may be required for new or substantially altered products or services.

Planning enables an organisation to exercise control over routine business and changes to ensure that the Quality Management System is effective during the routine activities and after change.

## Administration

### Responsibility and Authority

A Quality System requires responsibilities and authorities for all staff members to be defined and communicated. This means that everyone in the organisation knows what they are responsible for, what the level of their authority is and what the reporting arrangements are. Responsibilities and authorities can be identified, recorded and communicated through published job descriptions. An organisational chart should supplement job descriptions.

### Management Representative

Quality Systems are required to have a Management Representative who looks after the Quality System, and who has the responsibility and authority that includes:

- ensuring that processes for the quality management system are established and maintained
- reporting to senior management on the performance of the quality management system, including needs for improvements; and

- promoting awareness of customer requirements throughout the organisation.

**Internal Communications**

Internal communications is all about keeping everybody in the team informed about what is going on and to keep abreast of the processes, changes and outcomes. This includes the good news and the bad news.

Effective internal communications will provide the ability to:

- receive information quickly and act on it;
- build trust among the staff;
- identify business opportunities;
- identify opportunities for improvement.

**Quality Manual**

A Quality Manual is a controlled document that is perhaps the most important part of the Quality System. This is where it begins and includes the details of:

- the scope of the quality management system;
- the documented procedures or a suitable reference;
- a description of the sequence and interaction of the processes included in the quality management system.

The Quality Manual is the “map” for the organisation, and where the following items would be found:

- the quality policy;
- the activities of the business;
- how the documentation works and where people might look to find information about how to do things;
- a definition of any terms having a unique meaning to your business;
- statements of responsibility and authority.

If these items are not specifically included in the Quality Manual, the manual should contain a reference to where they can be found.

AS/NZS ISO 10013 *"Guidelines for developing quality manuals"* provides advice about writing a quality manual.

**Control of Documents**

All documents required in a quality management system must be controlled. Procedures must be documented to:

- review documents for adequacy and then approve them before use;
- review, update as necessary and re-approve documents;
- identify the current revision status of documents;
- ensure that relevant versions of applicable documents are available at points where they will be used;
- ensure that documents remain legible, readily identifiable and retrievable;
- ensure that documents of external origin are identified and their distribution is controlled;
- identify changes in the document;
- prevent the unintended use of obsolete documents, and to apply suitable identification to them if they are retained for any purpose.

Documents defined as Quality Records must also be controlled.

Document control is about making sure that the document in use is the "right" document. A controlled document will be the latest approved and applicable version for the work to be done. This is particularly important if staff are to have the information they need to do the job correctly.

The simplest way to control documents is to make them available on the computing network, preferably without any paper copies. A number of computing software packages make document control relatively simple. For example the "save date" can be saved in a footer or header of every page. A statement can be added to the effect that any paper copy is uncontrolled and that it is up to the reader to ensure that the copy being used is the latest version by checking on the network.
There is no limit to the number of documents that can be controlled in a Quality System, but the additional overhead in controlling the document must be balanced against any potential problems caused by using an inaccurate or obsolete version.

## Document Master Copy

Each controlled document has one master copy. This is the copy to which all changes are initially made and from which further copies are made and issued as required. The location of the master copy is recorded on the Document Master List.

## Document Owner

Each controlled document has an owner. This is the person or persons authorised to review and approve changes requested to the document. The document owner is also recorded on the Document Master List.

## Controlled and Uncontrolled Copies

Documents may be issued as controlled or uncontrolled copies. Controlled copies are those issued to particular persons with a record of who has which copy. This record is kept with the document master copy. For controlled copies the document owner is responsible for ensuring that the registered holder of the copy is given an updated copy when the document is modified.

Uncontrolled copies are issued with no record of who has a copy. For uncontrolled copies the document holder is responsible for ensuring that the copy they have is up-to-date.

## Control of Quality Records

Records exist in all organisations. Quality Records are required to provide evidence of conformance with requirements and of effective operation of the quality management system. Procedures must be documented for the identification, storage, retrieval, protection, retention time and disposition of quality records.

A Quality Record is a record produced following a procedure in a Quality System document. This record provides a reference when reviewing progress and/or performance, and is often a form.

Each Quality System document must include definitions of the Quality Records to be produced and kept.

Quality records will provide an AIS with information to help manage the business better. This is the part that enables you to “show how you did it”.

In some instances, retention periods will be dictated by legal or regulatory requirements, financial requirements or customer’s specifications. Details about specific retention periods should be recorded in the documented procedures.

Examples of Quality Records include:

- customer orders, specifications and requirements;

- meeting notes (e.g. Management review)
- audit reports;
- non-conformance records (service failure reports, customer complaints);
- corrective action records;
- files on suppliers (e.g. evaluation of suppliers and their performance history);
- process control records;
- inspection and testing reports;
- training records;
- records of goods received and delivered.

Records, indexing and filing can be in any appropriate form; hard copy, or electronic. Storage needs to be appropriate to the circumstances and the medium and should be such that the risk of deterioration, damage or loss is minimised.

The International Standards also call for the organisation to identify and document who has access to the quality records.

To help in deciding what quality records need to be kept, it is useful to consider that all quality records can be considered under three different categories:

(a) What is received before a procedure starts;

(b) What is produced to show intermediary steps have been completed; and

(c) What is produced to show a procedure has been completed.

Quality records are usually produced internally however, they may also be produced outside the AIS, for example a customer's order, or an external auditor's report.

For each quality record identified, the following aspects need to be defined:

(a) What the record is;

(b) Who is responsible for its filing;

(c) How long the record is required to be kept;

(d) Where the record will be kept; and

(e) Who is responsible for the record's disposal.

A tabular layout may be useful to present the information required.

| Record | Responsibility | Minimum Retention Period | Location |
|---|---|---|---|
| What the record is | Who is responsible for its filing.<br><br>Who is responsible for its eventual disposition. | The minimum time the record must be retained for. | Where the record is kept |

In some ways, by default, the person deemed responsible for the record's filing is also responsible for and authorised to dispose of the record. In this case, one position can be listed as responsible for the record, and for the filing and disposition.

A minimum period is specified to supply an audit trail for accountability purposes. The audit trail may be required for official inquiries or litigation.

Specification of a minimum retention period allows us to keep records longer if required. Records are often kept on hand for as long as there is space to accommodate them.

In summary, the records management process ensures that all quality records are identified and controlled, in order to provide a ready reference to the effectiveness of our Quality System documents.

The records management process occurs over an extended period and interleaves with other processes, particularly with those for document development and control.

An example of how the records management process might be managed follows in the table below.

| Stage | Description | Explanation |
|---|---|---|
| 1. | The need for a record is identified. | |
| 2. | The record definition is produced and documented. | |
| 3. | The record is produced. | |
| 4. | The record is indexed. | Uniquely identifying individual records assists in filing and retrieval. Records with no un1que identifier can be marked by allocating A specific location for storage. Whatever approach is taken |

| | | |
|---|---|---|
| | | should be recorded as part of the record definition. |
| 5. | The record is filed in the location specified in the record definition. | The location should be chosen to ensure that the record is not damaged for the period it is to be retained. |
| 6. | The record is stored for the period specified in the record definition. | Depending on the retention period, it may be necessary to regularly review the storage to ensure that the records are not being damaged. |
| 7. | The record is disposed of. | The person responsible for its storage (as provided for in the record definition) is authorised to dispose of the record. |

**Management Review**

Quality management systems must be reviewed on a regular basis to ensure that they remain appropriate and relevant. Where changes are planned or being implemented, more frequent review periods may be warranted.

To ensure that the entire quality management system is covered, a consistent approach should be followed to ensure that the review addresses:

- the relevance of quality policy and objectives to current needs;
- how the quality management system is working and whether the objectives are being met;
- any quality problems and actions taken;
- any customer complaints;
- quality audit reports (both internal and external);
- areas for improvement/changes needed;
- any outstanding actions from previous reviews;
- training needs;
- equipment, working environment and maintenance.

## Resource Management

### *Provision of Resources*

Organisations are required under the International Standards to determine and provide in a timely manner, the resources needed to:

- implement and improve the processes of the quality management system; and
- address customer satisfaction.

In this context, the term resource applies to personnel, facilities and equipment.

### *Human Resources*

Staff who are assigned responsibilities defined in the Quality Management System must be competent on the basis of applicable education, training, skills and experience.

People assigned to carry out quality activities are required to be competent to do them, otherwise a quality product or service is less likely to result. The standards require competence to be based on appropriate or applicable education and training and also on skill and experience that the people possess. There is however, no requirement to have all four, only those applicable to the particular task.

Appropriately qualified and experienced staff in sufficient numbers are pre-requisites for an AIS organisation to provide safe and timely aeronautical information.

The most obvious users of aeronautical information are pilots. Other users of the information represent those engaged in airline operational control and those involved in the provision of Air Traffic Services. The AIS must be technically oriented in the nature of the services being provided. Given the relevance of aeronautical information to global air traffic, it is important to promote the correct level of technical proficiency within the AIS and that the AIS has an appropriate status in the parent civil or military organisation.

This part of the Quality System requires an AIS to have procedures in place for assessing the competence of personnel required by the organisation to check, edit and publish aeronautical information. These procedures should include the levels of training, qualification and experience necessary to achieve expeditious publication of information.

Equally, staff responsible for the collection, collation, checking, coordination and edition information published in the Integrated AIP Package must have a thorough understanding of the content, standards, format and other user requirements related to the material being published.

Ideally, staff responsible for checking, coordinating and editing aeronautical information should have an extensive background as a pilot or within air traffic services, or have received specialist training in AIS.

For example, staff responsible for the operation of the NOTAM office would be:

- conversant with the standard format, codes and abbreviations for NOTAM;
- conversant with the operational requirement for air traffic services, flight operations personnel, flight crews and the services responsible for pre-flight information to be kept informed of operationally significant information that may affect the safety of air navigation;
- competent in the operation of the AFTN.

***Training, Awareness and Competency***

This part of the standard requires an organisation to:

- determine competency needs for personnel performing activities affecting quality;
- provide training to satisfy those needs;
- evaluate the effectiveness of the training provided;
- ensure that its employees are aware of the relevance and importance of their activities and how they contribute to the achievement of quality objectives;
- maintain appropriate records of education, experience, training and qualifications.

***Checking Competence and Training***

An AIS needs to regularly review the competence, experience, qualifications, capabilities and abilities of its staff to ensure that any skills and qualifications needed by the AIS are available for the tasks to be completed.

Training is required when deficiencies are noted, or when new employees start work. Any training that is required may be carried out in stages, and may be in the workplace, in-house or at an external location.

The scope of the training and checking is largely a matter for the organisation to determine, but generally, training for AIS would include the following topics:

- Principles of the Aeronautical Information Service
- Organisation of AIS
- Responsibilities and Functions of AIS
    - ICAO Documents
    - AIS Products
    - Responsibilities and Limitations
- The Integrated AIP Package
- Relationships with External Agencies
- Change Management
    - Applicable Policies and Procedures
    - Standard Operating Procedures
    - Quality Processes
    - Coordination Requirements
    - Collation and Processing
    - Data Entry and Verification
    - Data Structures
    - Formats to be used
    - Checking Procedures and Processes
    - File Management
    - Record Keeping
    - Publication and Production
    - Distribution
- AIS Automation

Records should be maintained to show what competences staff possess, and to show what training has been carried out, and the results of that training. Records that demonstrate successful completion (i.e. effectiveness) of a training program and the competence of staff can and should be kept simple.

At their simplest, records may consist of a “sign-off” to confirm that staff can carry out specific processes or follow certain procedures. These records should include a clear statement when a person is deemed to be competent to do the task for which they have been trained.

***Facilities and the Work Environment***

In addition to adequate numbers of suitably experienced and competent personnel, an AIS also requires appropriate accommodation and adequate facilities to get the work done and so provide quality services.

This part of the ISO Standards call for an AIS to determine, provide and maintain the facilities it needs to achieve product conformity, including:

- Workspace;
- Equipment, hardware and software;
- Supporting services

In simple terms, this means that an AIS needs to identify, provide and maintain adequate space, suitable equipment, tools and systems to enable staff to do their job.

ICAO Document 8126 provides guidance on facilities and equipment for aeronautical information services.

At the most basic level, facilities for an AIS should include:

- Suitable furniture for staff to work comfortably, efficiently and ergonomically;
- Sufficient space between work-stations to avoid disruption to other staff;
- Noisy equipment isolated away from staff or sound-proofed;
- Adequate overhead or specialist lighting to be able to easily read source document;
- A quiet area for proof-reading;
- Suitable computing equipment for word-processing and data capture.

AIS organisations are moving more and more towards automated systems to improve the efficiency, accuracy and cost effectiveness of their businesses. AIS' need to ensure that any systems automation and services are designed with the intent of avoiding incompatibilities, divergences and unnecessary duplication of effort and importantly that there is an overall systems integration management plan in place. Standardisation of procedures, products and services is essential for the successful automation of aeronautical information services.

## Product Development and Realisation

### *Product Realisation*

Product realisation is the sequence of processes and sub-processes required achieving the delivery of a product. Planning of the realisation processes must be consistent with the other requirements of the organisation's quality

management system and documented in a form suitable for the organisation's method of operation.

During the planning of the processes to bring a product to fruition, an AIS would consider the following matters:

(a) objectives for the product, project or contract;

(b) the need to establish processes and documentation, and provide resources and facilities specific to the product;

(c) verification and validation activities, and the criteria for acceptability;

(d) the records that are necessary to provide confidence of conformity of the processes and resulting product.

All this planning information should be documented. For regular product and/or service, this planning activity only needs to be carried out at the initial stage and revised when there is a change in process or resources that will affect the delivery of the service or manufacture of the product.

For project work and “one-off items”, you may have to carry out the planning process for each project and item.

Note: Documentation that describes how the processes of the quality management system are applied for a specific product, project or contract may be referred to as a quality plan.

***Identification of Customer Requirements***

As with any business, an AIS needs to determine its customer requirements. These requirements include:

(a) product requirements specified by the customer, including the requirements for availability, delivery and support;

(b) product requirements not specified by the customer but necessary for intended or specified use;

(c) obligations related to product, including regulatory and legal requirements.

The following definitions have been adopted for this Guidance Material:

**Customer** The eventual (individual) user of the AIS products or services

**Author Area** An identifiable group or organisation that has ownership of the information provided by an AIS.

Note: For the purposes of these Guidelines and the ISO requirements, the Author Areas can be considered to be a special type of customer since they have a vital role in determining if the information provided to and by AIS is correct and appropriate.

***Who are the customers?***

An AIS provides a range of aeronautical information and data for pilots, aircraft operators, air traffic services personnel, flight planning companies and data vendors. Each of these can be considered to be customers of an AIS.

***Review of Product Requirements***

An AIS with an established Quality System, or in the process of establishing such a system would review the identified customer's requirements, together with any additional requirements that might be necessary.

This review must be conducted prior to the commitment to supply a product to the customer (e.g. submission of a tender, acceptance of a contract or order) and to ensure that:

(a) product requirements are defined;

(b) where the customer provides no documented statement of requirement, the customer requirements are confirmed before acceptance;

(c) contract or order requirements differing from those previously expressed (e.g. in a tender or quotation) are resolved;

(d) the organisation has the ability to meet defined requirements.

The results of the review and subsequent follow up actions must be recorded and form part of the quality records.

When product requirements are changed, the AIS must ensure that any associated documentation; procedures, processes etc are also amended to reflect the changes, and that the staff are kept aware of the changed requirements.

An example of a customer requirement might relate to the supply of aeronautical data or information in a specific electronic format to meet customer needs and specifications.

***Customer Communication***

Effective communications with our customers are an important part of the work of an AIS. This part of the standard requires the organisation to identify

and put arrangements into place for this communication to take place. The communications plan must include information about:

(a) product information;

(b) enquiries, contracts or order handling, including amendments;

(c) customer feedback, including customer complaints.

***Understanding and meeting your customer's requirements.***

All parts of the customer's order or contract need to be reviewed to ensure that you can meet your commitments.

The manner in which the customer provides the order may vary in form and may be a:

(a) written order;

(b) verbal agreement; or

(c) telephone order.

Often problems can arise because of a misunderstanding about what was ordered. This makes good communications with your customer an essential part of good business and is essential to resolve any misunderstandings. This might mean that an AIS will make someone specifically responsible for communications with your customers.

Written orders, such as those received by mail or facsimile, provide a permanent record of the order details.

When telephone and direct computer link orders are received, special provisions need to be made to record and confirm the order. Methods of handling these could be as follows:

One approach to telephone orders is to provide a pad (these could even be pre-printed forms) for the order receiver to record the details of the order and read it back to the, customer, asking for confirmation. Alternatively, the details may be faxed or mailed back to the customer.

Where electronic media are involved, two options exist: either save permanently on disk or print out the details.

At the time the order is received you need to determine if there are any design requirements in the order and to see if the commitment to the customer can be met.

The record of the review can be as simple as a notation on the order that it can be fulfilled with the signature of the reviewer and the date. Where a more complex review is called for, how the review is recorded is at your discretion.

## Design and/or Development Planning

Many AIS' provide a Procedures Design function. This means that the AIS is required to plan and control design and/or development of the instrument procedures.

Design and/or development planning is required under this part of the Standard to determine:

(a) stages of design and/or development processes;

(b) review, verification and validation activities appropriate to each design and/or development stage;

(c) responsibilities and authorities for design and/or development activities.

Interfaces and internal communications between different groups involved in design and/or development must be managed to ensure effective communication and clarity of responsibilities.

### *A Disciplined Approach to Design and/or Development*

It is important to understand that this part of the ISO Standard is intended to provide controls for the design and/or development process and in no way attempts to restrict the creativity of the designer.

The design controls should generally cover the following to establish:

(a) the design aims, planning how the design is to proceed, and who is to carry out the design;

(b) what is needed to be known for the design to proceed;

(c) the form of the output from the design;

and to:

(d) review, on completion of the design, whether it has achieved what was wanted (flight validation);

(e) modify the design to include changes, which may occur at any stage of the process and for any reason.

### *Who is going to do what?*

You need to plan what is to be done and who is going to do it in relation to the design. Responsibilities for design should be clearly assigned and the methods for the development and updating of the design plans should be established.

Design plans do not have to be complex. They can be as simple as a flowchart, showing the steps to be taken and who is to do them.

As part of the requirements, the AIS should also plan how the design review, verification and validation activities are to be carried out.

### *Design and/or Development Inputs*

Inputs relating to product requirements must be defined and documented, and include:

(a) functional and performance requirements;

(b) applicable regulatory and legal requirements;

(c) applicable information derived from previous similar designs, and

(d) any other requirements essential for design and/or development.

These inputs must be reviewed for adequacy and any incomplete, ambiguous or conflicting requirements resolved.

### *Have we got it right?*

Verification is checking that the results at the end of the design process meet the requirements identified as necessary at the beginning of the design process. For larger projects, the design process is often broken into stages and design verification may be carried out on a stage-by-stage basis.

The design plan should identify the verification method to be used, including who is to carry it out, how it is to be performed and what records are to be kept. There are many ways to verify the design, such as:

(a) performing alternative calculations;

(b) comparing the new design with a similar proven design (if available);

(c) undertaking tests and demonstrations e.g. flight validations;

(d) reviewing the design stage documents before release.

You should determine which are appropriate and effective. Sometimes, regulatory agencies will describe the means required to verify the design.

Customers may need to be involved in the verification process.

***Does it work?***

Validation is the process of checking that the final product and/or service will be capable of meeting or does meet the customer's needs in use.

This may include marketing trials or operational testing. It is the final stage in the design process and is an important opportunity to prevent serious financial loss by failure to supply acceptable product and/or service. The results of the verification and validation processes can be fed back into each stage of the design process, leading to modifications and improvements or even the next design revision or product and/or service generation.

For many products and/or services, validation is a relatively simple process. An example could be a new design of a visual chart, which could be validated by testing of the prototype, followed by test marketing.

For other types of product and/or service, the validation of the total performance range cannot be achieved until the actual conditions occur.

It is also acceptable for the customer to perform the validation and to provide feedback of the results to the designer. Many software projects are validated in this way.

***Control of Design and/or Development Changes***

Design and/or development changes must be identified, documented and controlled. This includes evaluation of the effect of the changes on constituent parts and delivered products. The changes shall be verified and validated, as appropriate, and approved before implementation.

The results of the review of changes and subsequent follow up actions must be documented.

Note: See ISO 10007 for guidance.

***Controlling Changes***

For an AIS, change is a way of life. Changes occurring due to the customer, market, design review, verification or validation activities must be recorded, reviewed and approved. The extent to which the design needs to be to be modified as a result of the changes needs to be considered.

The quality management system has formal requirements for document and change control that must be followed.

Design changes may also require you to reconsider reviewing with your customer what is actually required.

The design change control process may need to be no more complicated than the system described earlier to control other documents. In other situations, the controls may need to be more complex, e.g. those involved in software design may have to be involved in configuration management. Further advice on this aspect is available in ISO 10007, *Quality management –Guidelines for Configuration Management.*

### *Product Identification and Traceability*

An AIS must identify,

(a) the product by suitable means throughout production and service operations when appropriate;

(b) the status of the product with respect to measurement and monitoring requirements; and

(c) record the unique identification of the product, when traceability is a requirement.

Examples of this might be the use of amendment numbering or specific page identification

### *Keeping track of what you're doing*

*Identification* is knowing what the product and/or service resulting from a particular process is, even an intermediate process. When you need to identify a product and/or service, the methods used and the records to be kept need to be defined. The recording of part numbers, job numbers, bar codes, the name of the person who carried out the service, colour codes or the revision status and version number of a software package being developed are just some examples of identification.

*Traceability* is knowing where the product and/or service came from, where it is now and in the case of services, what stage it is at. Most businesses, irrespective of size, will have a need in some stage of their operations to keep track of what goes where, what's been done and what still is to be completed. When traceability is a requirement, typical methods used include:

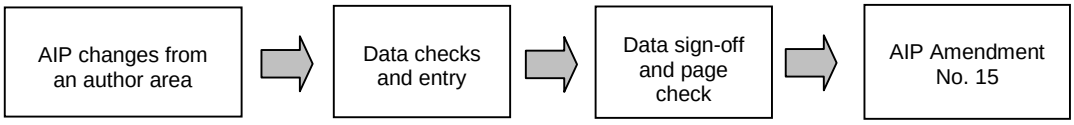
(a) Job card entries.

(b) Data checked and confirmed, data entry complete

(c) Service records, e.g. signing-off a particular work aspect

(d) Tagging

(e) Computer tracking.




When servicing a car, the status of each operation on the service checklist is changed from “to be done” to “done” by ticking off each operation on completion.

In a phone answering service, the status of messages taken is initially 'message received'. On passing the message on to the client, the status changes to 'message delivered'. The phone answering service would have some suitable means of identifying the status.

Some of the above techniques may be also used for identification. You need to be aware that the requirements for traceability may result in additional paperwork and costs, so you have to be aware of the balance between really needing to know and superfluous information.

An example of a checklist

| **Action** | | **Status** | |
|---|---|---|---|
| | **Reg No.** | **Completed** | **Yet to be done** |
| Change details registered | WP16/00 | ✓ (DS) | |
| Data checked and verified | | ✓ (DS) | |
| Data Entry | | ✓ (CS) | |
| Entered on Charts | | ✓ (CH) | |
| Airspace Handbook | | | x |
| AIP Book | | | x |
| Document checks complete | | | x |
| Chart checks complete | | | x |
| Publications to printer | | | x |
| Publications to dispatch | | | x |

You need to establish what your internal requirements are and document them.

In AIS, identification and traceability are specified requirements. If the need for a product recall arises, an effective identification and traceability system will make the task a lot easier. An effective identification and traceability system will make it much easier to replace the poor quality service and initiate steps to avoid recurrence such as retraining or a review of process operations.

Records that provide the traceability (including the change requirements) should be retained as part of the Quality Records.

The method(s) you adopt as being most suited to your business should be described (e.g. in your work instructions) so that everybody knows how it works.

### *Customer Property*

An AIS must exercise care with customer property while it is under the organisation's control or being used by the organisation. The organisation must identify, verify, protect and maintain customer property provided for use or incorporation into the product. Occurrence of any customer property that is lost, damaged or otherwise found to be unsuitable for use shall be recorded and reported to the customer.

Note: Customer property may include intellectual property

### *Looking after what the customer gives you*

Occasions may arise where the customer gives you material or equipment to be used in producing the items or delivering the service. Examples could include:

(a) instruments provided by the customer for measurement purposes;

(b) training room provided by the customer;

(c) special hardware or software;

(d) special paper for specific products.

Whilst a documented procedures is not required for this aspect, the organisation is responsible for ensuring that the control of customer property is sufficiently documented to describe how it is identified and cared for. The document could simply reference in-house processes that are in use.

### *Looking after the Product and/or Service*

An AIS must preserve conformity of product with customer requirements during internal processing and final delivery to the intended destination. This includes identification, handling, packaging, storage and protection, and also applies to the constituent parts of a product.

This part of the Standard means that none of these activities are allowed to affect the quality of the product and/or service being provided. It is up to you to determine how you will ensure that this is the case.

Depending on the nature of your business, some or all of the requirements of this part of the Standard may apply. When they do apply the arrangements for handling, storage, packaging, preservation and delivery should be recorded in your process documentation.

There are a number of areas where handling, storage and preservation, packaging and delivery problems can affect the quality of the product and/or service. Some examples are found in the following areas:

**Handling:** This might be the use of computers and/or a filing system, job-cards, or work-packages to control work in progress.

**Storage/Preservation:** Use of computer systems to store work in progress, and off-site or other back-up arrangements.

**Packaging/Delivery:** Use of mailing tubes or electronic transfer of data to deliver charting products to a printer for reproduction.

You will need to examine your own procedures to determine the extent special handling procedures are needed and to document them.

Packaging should be appropriate for the materials. In many cases, little or no packaging will be required. Bulk materials, such as sand, coal, wheat etc are examples where packing consists simply of filling the carrying container. Even for such bulk transport, there needs to be a check that the container is suitable and does not contaminate the product. Large fabricated components may be simply loaded onto a truck and strapped down.

Packaging should be appropriate for the product, the intended transport and end use. You should make sure that where packaging and marking materials are used, that they are compatible with the products being packaged or marked. Marking materials can cause corrosion or otherwise damage products and should be selected with care.

Additionally, you should be aware if any regulations exist regarding packaging. These could require “use-by-dates”, handling instructions or specific information regarding the contents to be displayed on the package.

Examples of this might be the packaging required for chart negatives to be dispatched to the printer. Packaging needs to be robust to ensure that the film is not damaged in transit, and may require some marking to ensure that the contents are not bent or folded.

### *Stock Control*

Most businesses will probably already have a stock control system. During stocktaking it is usually possible to check the condition of products. You need to identify the storage requirements for your products and assign appropriate storage areas. Each product does not necessarily require a separate storage area.

A periodic check of the condition of the product in stock is necessary if it is likely to deteriorate or become contaminated. The frequency is dependent on the nature of the product, with robust types requiring a less frequent check than perishable or fragile products. There may be regulatory and legislative

requirements or the preservation system may be specified in the customer's order.

The protection of the quality of the product after final inspection and test now extends to include delivery to destination. If this is to be subcontracted out then you will have to ensure that appropriate procedures or instructions are given in order that final delivery does not prevent or affect the product and/or service from meeting customer requirements. You may need to carry out a supplier evaluation.

This may involve you in taking responsibility for the transport. In such cases, you would need to be aware of any legislation or regulations that might apply.

***Control of measuring and monitoring devices***

When necessary, an AIS must identify the measurements to be made and the measuring and monitoring devices required to assure conformity of product to specified requirements.

This part of the standard is only applicable to those AIS' where measuring or testing equipment (including test software) is used to check that what you are providing meets your customer's requirements for example the supply of data electronically to a data vendor, for example the use of cyclic redundancy checks (CRC). If however, for example, your inspection method is visual inspection such as that use for some maps and charts, you may not need to have any measuring equipment or instruments and this part of the Standard does not apply.

Measuring and monitoring devices must be used and controlled to ensure that measurement capability is consistent with the measurement requirements.

When applicable, measuring and monitoring devices must:

(a) be calibrated and adjusted periodically or prior to use, against devices traceable to international or national standards; where no such standards exist, the basis used for calibration must be recorded;

(b) be safeguarded from adjustments that would invalidate the calibration;

(c) be protected from damage and deterioration during handling, maintenance and storage;

(d) have the results of their calibration recorded;

(e) have the validity of previous results re-assessed if they are subsequently found to be out of calibration, and corrective action taken.

Note: See ISO 10012 for additional guidance

Software used for measuring and monitoring of specified requirements must be validated prior to use.

**Having confidence in the equipment used to check your work**

If use is made of measuring and testing equipment for checking compliance with your customer's requirements, you will need to consider how it is controlled, stored, used and its accuracy maintained at the level needed.

It should be emphasised that the requirement applies only to equipment that can affect quality. If you are using measuring and testing equipment for indication purposes only, it does not necessarily have to be calibrated. The key message here is do not automatically calibrate everything.

Calibration is the process of periodically comparing your equipment against a reference standard to determine how accurate it is and whether or not it is still capable of meeting the accuracy required for the measurements made with it.

“Periodically” can mean on a time basis (monthly, annually) or a usage basis (before each use or after a number of times used).

The reference standard may have been provided with the equipment. For example, a paint thickness meter is normally supplied with a set of thickness standards. In other instances, you may have to have access to a suitable reference standard by buying one or using a supplier.

For a reference standard to have validity, it needs to be traceable back to an appropriate recognised accurate source. This will normally be a national or international standard. There are cases where a national standard does not exist. In these cases, the sources or frame of reference needs to be described.

You also need to take into account just how accurate the measurements need to be. How accurate your equipment needs to be will depend upon how much tolerance is permissible in what you are measuring. A measuring device usually has to be capable of measuring to a much closer tolerance than the tolerance specified for the item being measured. However, there is no point in having measuring devices calibrated to unnecessarily high precision if you do not need that precision for your operations. Allied with these factors is how skilled the personnel need to be to use the equipment.

To make sure the measuring equipment operates effectively and gives reliable results, you need to:

(a) Make sure it is looked after, regularly calibrated and adjusted as needed.

(b) Describe how this will be done so that records are available which show calibration is traceable to national standards.

(c) Make sure it is possible to identify which equipment has been calibrated and that it is suitable for use (e.g. label the equipment).

If equipment is found to be faulty, you need to find out at what stage it went wrong. You need to decide whether you need to do anything about product you have passed using that equipment. The results of any review may indicate that no action is required or that a product recall is required.

Test software needs to be subject to some form of validation to make sure that it can perform the required measurements. One way is to ensure that this software can accurately and reliably identify product with a known set of faults and deficiencies. The details of how the test software is validated should be documented.

Unlike hardware test equipment, test software does not experience 'drift' or ageing, so periodic revalidation may not appear to be necessary. However, software can be subject to unintended errors. Therefore the purpose of revalidating test software is to ensure its continuing ability to perform the required measurements.

Some type of secure write protection should be used, in the same manner as seals are used on hardware calibration adjustments, to minimise inadvertent adjustments.

If you decide to carry out your own calibrations, you will need to have procedures for calibrating each type of equipment you use.

If you decide to use a supplier, some additional points you will need to consider are:

(a) Ideally, the organisation should be endorsed as a calibrating service by a suitable certifying body.

(b) The organisation should issue a certificate of calibration, which states the uncertainty of measurement. (This is another way of stating how accurately the instrument can measure).

(c) The certificate should indicate that the organisation can trace your calibration back to a national or international standard.

You are free to use an organisation that has not been endorsed as described above to carry out your own calibration if this is practical, e.g. original equipment manufacturer or neighbouring company. However, the resulting records must confirm that the reference standards used for calibration are of known accuracy, normally traceable to a national or international standard.

It may be possible, if you have several measuring instruments of a similar type, for the most accurate of these to be calibrated by a supplier then used as the basis for calibration of the others. For example, an accurately calibrated digital thermometer may be suitable as a reference standard for other less accurate temperature measuring equipment.

Calibration is an expensive operation. For an AIS, the costs of calibration can be considerable. You should ensure, therefore, that you know the difference between checking that process control equipment is fit for purpose and calibrating equipment that is required to give confidence in your inspection and test measurements.

You need to make sure that the calibration frequency, and standards of accuracy specified are appropriate to the actual equipment usage and not excessive. Once having determined the initial calibration procedure it does not have to remain fixed forever; it can be adjusted in light of experience.

In addition to calibrating equipment, records need to be kept to show:

(a) when the equipment was last calibrated, who did it, the calibration procedure, the acceptance criteria, what the result was, its acceptability and how this affects the equipment suitability (calibration status); and

(b) when the next calibration is due-the period is dependent on the type of equipment, its usage and how critical the measurements are to the process.

(c) Measuring equipment needs to be suitably stored when not in use, to protect it from damage or deterioration. It should also be suitable for use in the proposed operating environment. These precautions apply even more so to any 'master' measuring equipment or reference standards used for calibration purposes.

### *Measurement and Monitoring of Products*

An AIS must measure and monitor the characteristics of the product to verify that requirements for the product are met, and must be carried out at appropriate stages of the product realisation process.

Evidence of conformity with the acceptance criteria must be documented, and records must indicate the authority responsible for release of product.

Product release and service delivery must not proceed until all the specified activities have been satisfactorily completed, unless otherwise approved by the customer.

### *Checking Things are Right*

This part of the Standards requires that you establish how you intend to check and monitor both your processes and your product and/or service. Frequently

there will be considerable overlap between the two and in many cases the same monitoring processes will be adequate for both purposes.

Some examples of measurement and monitoring include:

(a) measuring dimensions;

(b) proof-reading publications;

(c) matching colours; and

(d) looking at things and deciding if they are what were asked for.

You need to decide what your measurement and monitoring requirements are and how they are to be carried out. People who carry out measurement and monitoring may need to be trained for what they are doing.

You also need to decide and record who has the authority to say a job is finished and the product and/or service can be delivered.

Individuals may check their own work, without secondary checking by another person. Such flexibility is sometimes necessary in an AIS where excessive duplication of effort should be avoided.

Verification, i.e. examining something to see if it meets requirements, is also a measurement and monitoring operation. In some industries, such as publishing industry, visual verification may be the main form of measurement and monitoring carried out.

Somebody has to be responsible for the actual measurement and monitoring. The person does not have to have a staff or managerial status. For example, in a small AIS with only a few employees, it may be necessary for cartographers to inspect their own work before passing it on to the printing and dispatch area. A job card may follow the work, and the operator signs off the work performed on the job card. This works well because the work of the next operator down the line is affected if the incoming work is not correct.

The final approval phase includes not only checking the finished product and/or service, but that all the inspections and tests that ought to have been done, have in fact been done and that if any paperwork is to go with the product and/or service, that it has been prepared and is satisfactory. In other words, if you were the customer, these are all the things you would want to know have happened before you took delivery of the product and/or service.

The measurement and monitoring to be carried out may be listed in a number of ways, such as:

(a) a quality plan;

(b) a sampling plan;

(c) an inspection and test plan;

(d) a procedure;

(e) an instruction;

(f) the customer's order.

There needs to be a consistent method of recording that the measurement and monitoring has been carried out. In an AIS, the supervisor could sign off a checklist to show all the inspections have taken place.

Your quality management system should be capable of identifying the job and include a procedure to recall the job if the item subsequently proves defective.

You need to have a system for keeping the necessary testing and inspection records or have other means of showing that the inspections have taken place.

Your records should indicate whether any failures occurred and the proposed action.

Inspection and test failures are handled by the activities described for non-conforming products.

Inspection and test failures should not be confused with normal processing activities to bring the product and/or service within specification before it is released to the next stage of operations.

A typical example might be a publishing company that measures, adjusts and readjusts colour densities on a chart until the required levels are achieved. Such an iterative approach does not constitute an inspection failure.

However, if the printer signs the system off as meeting specification, and it is subsequently found to be outside specification, this is a non-conformance.

***Control of Non-conformity***

An AIS must ensure that products that do not conform to requirements are identified and controlled to prevent unintended use or delivery. These activities shall be defined in a documented procedure.

Non-conforming products must be corrected and subject to re-verification after correction to demonstrate conformity.

When non-conforming products are detected after delivery or use has started, the organisation shall take appropriate action regarding the consequences of the nonconformity.

Some customers may require notification of any non-conforming product and/or service and approve what steps should be taken. If this is the case, it will be necessary to notify the customer following detection of the non-conforming product and/or service. You may wish to include the steps you propose taking along with the notification.

Records will need to be kept of any decision made, approval given by the customer, any rework or repair procedure, and the results on the inspection and testing on any rework or repair.

If, for example, a publishing company discovers that it has inadvertently used inks that are beyond their "use by-date" (or shelf life) in the printing of maps and charts. A number of actions might be required to fix the problem:

(a) investigation to find out the extent of the problem;

(b) segregation and quarantine of the remaining ink supply from that consignment;

(c) segregation and quarantine of affected maps and charts awaiting delivery;

(d) recall of those maps and charts likely to be similarly affected, and that could affect safety.

Depending on the potential risks, there may be a need to involve the applicable regulatory authorities and to make the public aware of the problem.

***Analysis of data***

This part of the Standard requires an AIS to collect and analyse appropriate data to determine the suitability and effectiveness of the quality management system and to identify improvements that can be made. This includes data generated by measuring and monitoring activities and other relevant sources.

In this regard, the AIS must analyse data to provide information on:

(a) customer satisfaction and/or dissatisfaction;

(b) conformance to customer requirements;

(c) characteristics of processes, product and their trends;

(d) suppliers.

***Do the measurements reveal any trends?***

As a result of your measuring and monitoring activities, you probably will have collected significant amounts of data, which can be analysed to indicate any trends. Any trends that you may find could suggest where there are problems

in your quality management system, which indicates areas where improvement is needed.

You may also find activities that, although effective as they are now performed, could be improved further.

You may find that statistical techniques are useful tools for the analysis process.

The Standard identifies four areas where analysis is to be applied but you can extend data analysis to whatever areas provide you with useful information.

### *Planning For Continual Improvement*

Understandably, an AIS must plan and manage the processes necessary for the continual improvement of the quality management system to facilitate the continual improvement of the quality management system through the use of the quality policy, objectives, audit results, analysis of data, corrective and preventive action and management review.

### *What improvements do you plan to make?*

Continual improvement of the quality management system is now a mandatory requirement. It is important to understand that continual improvement doesn't mean that it occurs without a break or without ceasing. Instead, improvement should be interpreted as a repeated activity to be implemented as each opportunity is identified and there is justification for proceeding.

The standard lists a number of tools and inputs that you can use to both plan and actually implement improvement.

### *Corrective Action*

An AIS must take corrective action to eliminate the cause of non-conformities in order to prevent recurrence. Corrective action must be appropriate to the impact of the problems encountered.

The documented procedure for corrective action must define requirements for:

(a) identifying non-conformities (including customer complaints);

(b) determining the causes of nonconformity;

(c) evaluating the need for actions to ensure that non-conformities do not recur;

(d) determining and implementing the corrective action needed;

(e) recording results of action taken and reviewing of corrective action taken.

### *Preventive Action*

An AIS must identify preventive action to eliminate the causes of potential non-conformities to prevent occurrence. Preventive actions taken shall be appropriate to the impact of the potential problems.

The documented procedure for preventive action must define requirements for

(a) identifying potential non-conformities and their causes;

(b) determining and ensuring the implementation of

preventive action needed;

(c) Recording results of action taken;

(d) Reviewing of preventive action taken.

### *Fixing the Causes of Problems*

Both corrective and preventive action can be seen as steps in a quality improvement cycle. The need for corrective action can arise when an internal nonconformity (product and/or service or quality management system) occurs, or from external sources such as a customer complaint or warranty claim, or problems encountered with a supplier.

Corrective action involves finding the cause of the particular problem and then putting in place the necessary actions to prevent the problem recurring.

Preventive action starts with considering and analysing the data from all the incidences of non-conformities, all the customer complaints, all the warranty claims, all the problems with suppliers as well as any other sources of problems to find out if any trend is occurring.

Where this analysis shows that the potential for problems exists, preventive action then involves putting in place the necessary steps to eliminate these potential causes.

The documented procedures for both corrective and preventive actions should define the responsibilities and authorities for these activities.

### *Fixing the cause of known problems*

There is a difference between carrying out corrective action and fixing a non-conformity. Fixing a non-conformity is about making good the problem either by reworking, replacing or any of the other activities described in the guidance material. A corrective action is concerned with finding out why the nonconformity occurred and making sure that the problem does not occur again.

The need for corrective action could be indicated by a number of factors, some of which could be:

(a) customer complaints;

(b) non-conformances;

(c) rework or repairs;

(d) audit reports.

Analysis of the causes may suggest some solutions such as retraining employees or amending a process control practice.

The size of the problem and the associated risks to your business will determine the actions that you need to take.

When corrective action is taken, it should be recorded and followed up within a reasonable period to find out whether it has worked. It may be necessary to change the quality manual, documented procedures, instructions and any other relevant documentation. Changes should be made in accordance with the provisions shown for the Control of documents.

***Fixing the cause of potential problems***

You should use your records to see if any trends exist which show a potential problem could arise. Typical examples of where information might be found and used for such analysis are from such sources as:

(a) difficulties with suppliers;

(b) in-process problems, rework rates, wastage levels;

(c) final inspection failures;

(d) customer complaints and customer surveys.

Other sources might include market surveys, audit reports and quality records. Where a potential problem is identified, a course of action may need to be developed and put in place to reduce or eliminate the risk of the problem.

If preventive action is found to be necessary, it should be recorded and followed up within a reasonable period to find out whether it has worked. As a result of preventive action, the quality manual, documented procedures, instructions and any other relevant documentation may need to be changed.

Examples of where preventive action may be applied include:

(a) identifying possible situations where product damage may occur and implementing practices to prevent it from happening;

(b) feedback from personnel may indicate a more efficient process; and

(c) re-assessment of suppliers to overcome potential supply problems.

In an AIS, there is little justification in separating management review arrangements from long-term corrective and preventive action. Where there are few personnel and the same people are involved in both activities, an artificial separation may result in duplication of effort. If this approach is taken, it should be included in the quality manual.

## Purchasing

### *Purchasing Control*

Controlling provision/production is of little consequence if the raw materials brought into an AIS are unsatisfactory. Complying with the part of the Standard therefore requires:

(a) Documented procedures for ensuring purchased products meet requirements;

(b) The evaluation, selection and reviewing of contractors;

(c) Clear definitions of requirements of contractors; and

(d) Procedures for verifying and allowing customer verification of contractor operation at the contractor's premises.

As with any other business an AIS needs to, and the ISO Standards require that its purchasing processes are controlled to ensure that the purchased product conforms to requirements. The type and extent of control shall be dependent upon the effect on subsequent realisation processes and their output.

Examples of products or services that an AIS might purchase are:

(a) Hardware

(b) Software

(c) Aeronautical data

(d) Cartographic services

The organisation must evaluate and select suppliers based on their ability to supply products in accordance with an AIS' requirements. Criteria for selection and periodic evaluation need to be defined and recorded

***Stating Purchasing Requirements***

**Who do we get it from?**

You will need to identify those materials and services that you buy which can affect the quality of your product and/or service. You will then need to select from suppliers who can supply these materials and services, those you intend to use. Remember that sub-contracted services such as design, transport and delivery, calibration services etc. may affect quality and may need to be considered.

Most AIS' usually have a number of reasons why they deal with a particular supplier. You can continue to use existing suppliers when developing your quality management system. The standard simply requires that selection be carried out in a controlled manner.

When you decide why a particular supplier is to be used, you should write down the criteria and basis for the selection. Questions you may wish to ask in selecting suppliers may include one or more of the following:

(a) how reliable are they?

(b) can they supply what you want?

(c) do they have the necessary resources e.g. equipment and personnel?

(d) is the quoted delivery time and price acceptable?

(e) do they have a quality management system?

(f) have you used them before successfully?

(g) have they a good business reputation?

Where a proprietary or brand name product is to be purchased, an obvious source may be a wholesale or retail outlet offering an off-the-shelf or self-selection service. A wide range of products are available from such sources, such as cartographic and stationery resources, hardware and some software supplies.

In these circumstances, the criteria for supplier selection and the associated records may be minimal.

You may wish to consider buying for a trial period, with a review at the end of the period to establish the acceptability of the supplied product and/or service or the supplier.

As well as maintaining records of approved suppliers and basis of approval, you should also regularly monitor the performance of those suppliers to ensure that they still meet the selection criteria. However, as a somewhat small business, you need to be aware that your purchasing power is limited, and threats to remove suppliers from your supplier approval system may be ineffectual. This is particularly true where you are obtaining product and/or service from very large national or international organisations. Your quality manual needs to reflect the real life situation.

The extent to which you monitor supplier's performance depends on how critical the product and/or service being supplied is to the quality of your product and/or service.

For example, the paper quality could be critical in an external business that provides printing services to an AIS. Other businesses might use normal, commercial stationery, which would not need any quality related purchasing controls, but in the case of some AIS products, paper thickness and longevity, colour matching or ink bleeding through can create a number of problems for the delivery of quality products.

The printing business may monitor the performance of its paper suppliers very closely to ensure the quality of its printed product and/or service remains at the expected level.

***Purchasing Documentation***

Purchasing documents must contain information describing the product to be purchased, including where appropriate:

(a) Requirements for approval or qualification of

- product,
- procedures,
- processes,
- equipment and
- personnel.

(b) Quality management system requirements.

When making a purchase, an AIS must ensure the adequacy of specified requirements contained in the purchasing documents prior to their release.

### *Stating Purchasing Requirements*

**What do we need?**

In order to get what you need, the purchase instructions should leave no doubt of what it is you want. Instructions are preferably given as a written order. As discussed before, remember that phone instructions are open to misunderstanding by your supplier and you may need to take additional precautions to ensure that your instructions are understood. Irrespective of whether the order is written or verbal, you will need to keep a record of what was ordered so you can confirm you got what you asked for.

This part of the purchasing requirement deals with the details that you should include, as appropriate, in advising your purchase requirements. The extent to which the details listed in Items (a) and (b) apply depends on the extent that the goods and services being ordered affect the main business and the quality of your product and/or service.

it is essential that all relevant details of the items or services wanted are clearly stated at the time of ordering. These may include drawing, catalogue or model numbers and required delivery date and place. In some cases, a catalogue number, or a part number may cover the complete description. While it is essential to fully describe what you want, unnecessary detail can lead to misunderstanding and incorrect delivery.

### *Verification of purchased products*

The organisation must identify and implement the activities necessary for verification of purchased product.

Where the organisation or its customer proposes to perform verification activities at the supplier's premises, for example factory acceptance testing of hardware or software on a Test and Evaluation Platform before introduction onto an operational platform, the organisation must specify the intended verification arrangements e.g. a test plan and method of product release in the purchasing information.

### *Did you get what you ordered?*

Most businesses have some form of incoming measurement and monitoring, even if it is simply an employee checking the delivery docket and signing it to confirm that goods were delivered. A further check is that goods are what was ordered and have been received in good order. However, you need to decide whether the goods and services you receive should be inspected, by whom and how.

When a supplier has a quality management system in place, it may be possible to reduce the extent of measurement and monitoring.

The extent of measurement and monitoring also depends on the nature of the goods being received; e.g. the inspection of office supplies may be simply a verification that the quantity ordered was delivered. The delivery docket, signed by the employee, may be all the documentation required.

If you order goods or services, or both, from a supplier, and wish to inspect the goods or services, or both, at the supplier's premises, the arrangements for such an inspection need to be agreed and included in your order. Some examples of this requirement are:

(a) Factory acceptance testing of software of hardware before taking delivery;

(b) monitoring employees being trained at a training organisation.

If your customer wants to visit your supplier's premises to check the product and/or service, this needs to be stated in both the customer's order to you and in your order to the supplier.

Whether or not the customer actually does this, you are still responsible for ensuring that all the products and/or services obtained from suppliers meet the requirement of the customer's order.

### *Production and Service Operations*

### Operations Control

The organisation must control production and service operations through the:

(a) availability of information that specifies the characteristics of the products;

(b) availability of work instructions when necessary;

(c) use and maintenance of suitable equipment for production and service operations.

(d) availability and use of measuring and monitoring devices;

(e) implementation of monitoring activities;

(f) implementation of defined processes for release, delivery and applicable post-delivery activities.

### *Controlling what you do*

Perhaps a more easily understood title for this part of the standard might be Process Management. Remember that this applies equally to services as well as "hardware" type products.

How your processes, which are necessary to produce the required product and/or service, interact with each other and the order in which they occur has to planned and then put into practice.

Note that a documented procedure is not required, but may prove beneficial to an AIS for staff to understand all of the processes and relationships.

You need to understand how each of these processes impacts on the final product and/or service and to ensure that appropriate controls are in place to be able to meet whatever customer requirements have been specified. In many companies, the control is exercised through internal orders, drawings, production schedules, service specifications, operator instructions, etc.

You need clearly understandable work specifications or work instructions when they are necessary to ensure the product and/or service conforms to the specified or customer requirements. One of the key issues here is that it is not necessary to write a document with all the details that a competent operator would be expected to know.

For example, there should be no need to describe to a trained cartographer how to operate CAD equipment. If the cartographer cannot operate the equipment, the answer is not written instructions but training. However, the procedure might refer to ICAO standards for depictions or routine file maintenance and record keeping.

When product quality is dependent on avoiding any deterioration of the condition of process equipment, you need to establish arrangements for maintenance of that equipment, e.g. plotters or printers may only continue to produce quality output if there is periodic maintenance of ink cartridges or toner.

Control of operations will require you to ensure your equipment is fit for purpose and that there are no problems due to the work area.

Many of the requirements for equipment control and working environment may be specified by your customer or by regulation such as Occupational Health and Safety and will need to be reflected in your own process controls.

Process controls should also include how the process condition or the product itself is to be monitored, e.g. the printer may monitor the colour values of the charts or the operation of the printing equipment. To assist there may be proof charts or photographs available to indicate the required colours for the charting output and the folding required. Another example might be the use of data integrity checks to ensure that the output is that required.

Many goods and services are sold with a commitment to provide post delivery maintenance and support e.g. hardware and software as part of the overall contract. Remember that commitments made as part of a warranty also form part of the contract and this part is relevant.

In dealing with post delivery activities, your process will need to address the following aspects:

(a) general provisions of a servicing programme;

(b) planning the servicing activities;

(c) personnel needed and any training requirements;

(d) spare parts management;

(e) preparation of servicing instructions;

(f) records of servicing activities.

When providing servicing, it is important to remember that any product and/or service non-conformances should be fed into the corrective action system so that the reason for the failure can be identified. Remember, if warranty repairs were required, the product did not perform as intended and this is a form of non-conformance.

As always, records that show what you did to measure how your process was under control should be kept.

***Contract Review***

All agreements with the customer base must first be defined as requirements and then controlled to ensure that:

(a) All requirements are adequately defined;

(b) Any differences between the end product and the requirements are resolved; and

(c) The terms of the agreement can be met.

To ensure this occurs; the following steps are necessary:

(a) A documented procedure for reviewing and approving agreements;

(b) A documented process for managing changes to agreements; and

(c) The keeping of records of the agreements and their review and/or approval.

## Customer Satisfaction

The Standards require an AIS to monitor information on customer satisfaction and/or dissatisfaction as one of the measurements of the performance of the quality management system. The methodologies for obtaining and using this information must be determined.

### *How satisfied are your customers?*

This is an important new aspect to the 2000 version of ISO 9001. You are required to monitor your performance as a supplier to your customers. More specifically, you are required to monitor information on satisfaction or dissatisfaction. To do this you will need to find out how satisfied your customers are.

### *More that one type of customer*

Firstly it is important to remember that you may have more than one type of customer. For example, if you are a map or chart manufacturer, you may sell to wholesalers who then sell to retailers who then sell to the general public. In this case you have three types of customer and they all have different requirements. You may be satisfying one group and upsetting another. For your product and/or service to sell successfully you will need to satisfy them all.

### *Satisfaction and dissatisfaction*

Another important point is to understand that satisfaction is not the opposite of dissatisfaction. Your customers are entitled to be satisfied and may take good quality of products and/or services for granted. On the other hand, if they are dissatisfied, they may react quite badly or strongly. So satisfaction may produce a neutral response whereas dissatisfaction may produce a strong negative response. There is a third possibility, which is a strong *positive* response. This is sometimes referred to as 'delight', something beyond the normal level of satisfaction.

### *Monitoring satisfaction*

There are many ways of finding out what your customers think of you. Amongst the most widely used are:

(a) telephone calls made periodically or after delivery of product and/or service;

(b) questionnaires and surveys,

(c) using a market research company;

(d) focus groups.

All of these have merits and disadvantages. For a small AIS organisation, it recommended that you start with simple methods such as calling your customers. You may gain a useful insight by calling someone who is senior to the one that you normally deal with. Such a person is likely to know how you perform and is likely to tell you, good or bad.

Surveys and questionnaires are being extensively used. For example, how many do you receive in a year? You may get some good ideas from the ones sent to you. You can give your customers the option of giving their name or staying anonymous. You may get more negative responses from anonymous people, because some people do not like being the bearer of bad news. If they can hide their identity they may tell you something they would not otherwise do. Remember criticism is vital information, which will help grow your business.

Questionnaires and surveys have their disadvantages because they are time consuming. If you use a questionnaire, keep it simple. Choose your questions very carefully. Ensure that they are clear. Why not test it out on a trusted friend before you send it out?

If you really want to know what your customers think, it is probably best left to the professional market research companies. Their independence enables them to gather an objective perspective of you performance and your customers' satisfaction.

Customer focus groups are a powerful tool for finding out the reasons behind the measure of satisfaction. A group of customers is brought together in a small meeting where they discuss the merits of your product and/or service. This needs facilitation, which is best left to a professional.

***Satisfaction as a measure of your system performance***

The new version of the Standard makes it clear, that you are to use customer satisfaction as a measure of the performance of your quality management system.

At its simplest, this could be the percentage of dissatisfied, satisfied and delighted customers. In reality it tends to be more complicated than that!

One customer may be both satisfied and dissatisfied. He or she may be satisfied with the product and/or service but dissatisfied with your delivery performance, for example. So you need to think it through and come up with a practical measure. Perhaps you could ask your customers to rate your performance on a scale from 1 to 10. Or perhaps it would be worthwhile measuring several aspects of your business, for example, appearance, delivery performance, packaging, functionality, and value for money.

CAA's must conduct periodic internal audits to determine whether the quality management system:

(a) conforms to the requirements of the International Standard;

(b) has been effectively implemented and maintained.

CAA's must plan the audit program taking into consideration the status and importance of the activities and areas to be audited as well as the results of previous audits. The audit scope, frequency and methodologies must be defined. Audits must be conducted by personnel other than those who performed the activity being audited.

A documented procedure must include the responsibilities and requirements for conducting audits, ensuring their independence, recording results and reporting to management.

AIS Management must take timely corrective action on deficiencies found during the audit.

Follow-up actions shall include the verification of implementation of corrective action and the reporting of verification results.

Note: See ISO 10011 for guidance.

***Are you doing what you said you would do and does it work?***

Audits are about getting information, in a planned way, from a variety of sources and comparing it all to confirm that things are being done properly. The steps of gathering this information should include:

(a) reading the documented procedures;

(b) reading relevant process control documents;

(c) observing processes being carried out;

(d) talking to the people carrying out the processes; and

(e) looking at the records.

All these need to tell the same story; i.e. that you are doing things right, the way you said you would.

For a well organised and run AIS, where familiarity with the day-to-day activities is the norm, a properly conducted audit can be beneficial. You should use audits to stand back and look at your business objectively to confirm that the quality management system is helping you do what you want to do and what you need to do.

You need to find some form of evidence, documented or otherwise, which can confirm that the quality management system is performing in the way it was intended. It is not sufficient to simply do an overview and conclude without

any proper basis or supporting evidence that the quality management system is operating satisfactorily. This requirement is reinforced to require you to develop some means for measuring how the quality management system is performing.

Seeking out areas for improvement is now particularly important as it is this information that is required to be added to the data to be analysed.

The information from internal audits should also be used as part of your management review. The better your audit, the more useful your management review will be.

When an internal quality audit shows up non-conformances and inconsistencies, you need to develop the necessary corrective actions and then put them in place.

These may be as simple as:

(a) writing or revising a documented procedure or a process control document;

(b) redesigning a form to incorporate more information; and

(c) arranging for employee retraining.

Audits should be scheduled to cover all the quality-related activities you undertake and all the requirements of the standard. In deciding how to manage the audit schedule and how often any particular aspect should be audited, the following factors may be considered:

(a) Are there any complex procedures or processes that would justify individual audits?

(b) Are there any aspects or areas that have a history of problems?

(c) Does your 'hands-on' approach indicate a need for less frequent audits?

A report or summary of each audit should be made out, listing the findings and what action if any is to be taken. The record need not necessarily be complex. For example a simple entry in a daybook may be sufficient. If the previous audit recommended or required action to be taken, the current audit should check how effective the change was and this should be recorded.

There is a requirement in the Standards that “audits shall be conducted by personnel other than those who performed the activity being audited”. For example, it is acceptable for the office personnel to audit the production/service activities and vice-versa. This can provide benefits in developing an understanding of each other's problems.

In a small AIS where there may be only one or two people in the entire management structure, this requirement may not be achievable. It is suggested that in such cases, the manager, carrying out the duties of an auditor tries to step back from direct involvement in the business operations and be very objective about the audit.

Another approach would be to seek the cooperation of another work area and each provides the internal quality audit facility for the other. This may prove attractive if there are good relations between the two businesses.

Effective use of internal quality audits is an area that you may use to minimize the ongoing costs of certification/ registration. If the auditor from the certification/registration body can see that internal quality audits are being used to effectively monitor and control the quality management system, the auditor does not need to spend as much time verifying the quality management system operation. Again it must be emphasized that what the auditor will be seeking is objective evidence with respect to internal quality audits.

## Steps towards Implementation a Quality System

There are many ways an organisation can go about implementing a quality management system. This part of the Guidance Material is intended to provide an example of implementation into an AIS.

Note: This example is intended as guidance only and should not be regarded as the only method of implementation, nor necessarily the best or only method of implementation.

The approach in this example consists of three stages:

(a) Considering what happens in an AIS;

(b) Implementing a quality management system;

(c) Improving the quality management system.

| | | |
|---|---|---|
| ***(a) Considering what happens in an AIS*** | Step 1 | Consider the business of an AIS, i.e. the different flows of work through the organisation and list them. |
| | Step 2 | With this list in mind, decide if there are any "permissible exclusions" (refer to Standards Guidelines for details) that apply to the AIS. Remember that any exclusions will need to be justified in the Quality Manual. |
| ***(b) Implementing a Quality Management System*** | Step 3 | Get people involved in writing down what their jobs cover. |
| | Step 4 | Collate this in sequences relevant to the list of main business activities collected in Step 1. |
| | Step 5 | Identify where the standards and this list of your main business activities link together. |
| | Step 6 | Apply the standard and the quality management system. |
| | Step 7 | Keep the quality management system simple and functional, i.e. relevant to the business operations. |
| **(c) *Improving the Quality Management System*** | Step 8 | Consider the feedback of information from the quality management system to lead to improvements in ideas and activities |
| | Step 9 | Monitor and measure the changes so that everybody is aware of the gains made by the system. |

Now that you have determined that you would like to analyse the business and would like to work in a more efficient manner, where do you start?

The stages and their associated steps have been outlined above, the next section provides an amplification of the details.

| | |
|---|---|
| **Step 1** | **Consider what your main business activities are and list them.**<br><br>Those elements described in Annex 15 form the main business activities of an AIS.<br><br>• receive and/or originate<br>• collate or assemble<br>• edit<br>• format<br>• publish/store<br>• distribute<br><br>Aeronautical information/data |
| **Step 2** | **With this list of main business activities, determine if any of the activities require you to do design work**.<br><br>Design means taking raw ideas or concepts and either though design drawing, computer design or academic thought process developing a product and/or service design or project plan to suit the needs of your customer. Generally for an AIS, design work will manifest itself through the design of instrument procedures.<br><br>If you determine that you don't design, and the products and/or services are done against tried and previously developed standards or specifications, you may be able to claim a "permissible exclusion".<br><br>To achieve the next step, you need to keep the list of main business activities firmly in mind. It may help at this stage to produce these activities in the form of a flow chart to assist in the development of a quality management system.<br><br>The purpose of setting activities out in this way is to:<br><br>• identify the different components of the AIS and decide if they all fit together, or if changes are required to make the whole process work better; and<br><br>• identify where and if the elements of the standard are covered. |

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| **Step 3** | **GET PEOPLE INVOLVED BY WRITING DOWN WHAT THEIR JOBS COVER**<br><br>Now is the time to get everyone concerned involved in writing down how they carry out the parts of the AIS activities they are responsible for, stating:<br><br>• who is responsible for performing and checking activities;<br><br>• where the activity takes place;<br><br>• when it will happen; and<br><br>• what happens, that is, how the activity is performed.<br><br>*Some important points you will need to think about are:*<br><br>(a) As the job is being carried out by a specialist, you will only need to reference the type of person and the qualifications.<br><br>(b) If, the work is done by non-specialist staff, or there are specific in-house requirements, more detail may be required.<br><br>(c) The sequence of the activities may still need to be defined, for example:<br><br>• How a job is initiated.<br>• How does the work get started?<br>• Who monitors the progress?<br>• How is the work processed and inspected?<br>• Who decides when the work is finished?<br>• How is delivery made?<br>• What follow up action is needed and who does it?<br>• What records are kept and who keeps them?<br><br>If your organisation already has its details written down as operating or work instructions, your job is already half done. Don't rewrite what is already documented, make a note of the name and title of the document so it can be controlled and if necessary referenced in other quality management system documentation at a later date.<br><br>(d) Most important ... Keep written documentation Simple! |

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| **Step 4** | **COLLATE THIS IN SEQUENCES RELEVANT TO THE LIST OF BUSINESS ACTIVITIES (STEP 1)**<br><br>Once everyone has written down (or collected previously written) work instructions relevant to their part of the activity or particular job responsibilities, you as manager should take time out with someone else from the business to look at:<br><br>• What has been written;<br><br>• Satisfy yourself that it all fits together; and<br><br>• Deal with any gaps or inconsistencies.<br><br>By appointing someone to assist you, you have basically appointed a management representative or if you are doing most of this yourself as manager, you have assumed the role of management representative. You have now addressed one of the first requirements of the standard.<br><br>By collating all these documents, you now have a procedures manual (which is another requirement of the standard). You should adopt a consistent style for these documents which you and your people are comfortable with. This may provide an opportunity to review and improve the procedures themselves. |
| **Step 5** | **IDENTIFY WHERE THE STANDARDS AND THIS LIST OF YOUR BUSINESS ACTIVITIES LINK TOGETHER**<br><br>You or your management representative need to go through the documents you have written with a copy of the standard beside you and determine if you have met:<br><br>• the requirements of the standard; and<br><br>• your process control requirements.<br><br>If you identify an area of the standard you have not addressed you will need to consider how you will cover that particular requirement. You may need to add some detail to one of the existing procedures to ensure the requirement is met. It may require some additional documentation, but be careful, make sure it is relevant to the work of the AIS.<br><br>You may have to use external documents in your business activities. Some examples are dealers' manuals, maintenance manuals and installation manuals. It is not necessary to rewrite these to include them in your quality management system. All that is needed is to make an appropriate reference to the process control document in your manual. |

| Step 6 | **APPLY THE STANDARD AND THE QUALITY MANAGEMENT SYSTEM**<br><br>If you continue to involve others in your organisation, they are more likely to grow with the quality management system and have input. The quality management system will then reflect reality rather than become irrelevant paperwork. The following points should be noted:<br><br>• Do not create unnecessary paperwork, forms, and the like. Look at what is currently done and write your procedures to show how the job is done, not how you wish it was done or should be done.<br><br>• Only create a form if it is going to capture a critical activity or is going to help someone. A signature on or an extension to an existing form may suffice.<br><br>• Remember, keep a record when:<br><br>➢ a problem arises;<br><br>➢ a good suggestion is raised; or<br><br>➢ a customer or employee expresses a need for action.<br><br>• To implement the quality management system, everybody needs to be have access to the documentation that relates to their activities. They need to be given some insight into how the quality management system works and why, for example, document control ensures that they have the latest copies of information relevant to their jobs and can rely on making decisions based on up-to-date information.<br><br>• Everybody needs to be trained to understand how to keep the quality management system up-to-date themselves, if changes take place in areas they are responsible for. Everybody needs to know how to make changes to the quality management system as well as noting problems and putting forward ideas for improvement. Remember that you need to approve any changes before they are put in place. |
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| **Step 7** | **KEEP THE QUALITY MANAGEMENT SYSTEM SIMPLE, FUNCTIONAL AND RELEVANT TO THE BUSINESS OPERATIONS**<br><br>The following points are worth noting:<br><br>• The purpose of implementing a quality management system is to ensure that the business activities of the AIS are operating in a controlled manner and the people responsible for the various activities know and understand their roles and responsibilities.<br><br>• Quality management system documentation should be a ready reference point to identify how, when, where and sometimes why a job should be done, or an activity managed. For that reason, the wording should be simple and in the language used in the workplace on a daily basis.<br><br>• Documentation should be in a format that is easily used in the organisation. For example:<br><br>➢ if computers are available, it may be easier to have a computerised system, rather than a paper system;<br><br>➢ where there may be language or other differences in the workforce, it may be necessary to use pictures or several translations of the documents.<br><br>• Documentation should reflect what is currently happening in the business. During the audit process, questions will be asked and objective evidence sought, to show that personnel are using and understanding the quality management system. The objective evidence is provided by the documentation. |

## IMPROVING THE QUALITY MANAGEMENT SYSTEM

An effective quality management system uses feedback loops to improve how you go about doing things, which in turn should lead to an improvement in product and/or service quality.

| | |
|---|---|
| **Step 8** | **CONSIDER THE FEEDBACK OF INFORMATION FROM THE QUALITY MANAGEMENT SYSTEM TO LEAD TO IMPROVEMENT IN IDEAS AND ACTIVITIES**<br><br>By noting areas of concern from corrective action activities (Step 6), you will gather data, or note trends that you can look at and consider for improvement.<br><br>Improvements may be simple and easily achieved in the initial stages but may become more challenging once the obvious opportunities for improvement have been taken. It is worthwhile persevering with a systematic approach to quality improvement, since the benefits can be considerable.<br><br>Normally, improvements are adopted over a period of time as money and resources become available. A realistic approach and steady progress will build confidence and maintain enthusiasm. |
| **Step 9** | **MONITOR AND MEASURE THE CHANGES SO YOU KNOW WHAT YOU HAVE GAINED**<br><br>It is important to remember to measure your progress. One-way of doing this is to monitor mistakes and their cost. This gives you the opportunity to identify areas where cost savings may be made.<br><br>Noting how long or how many resources are spent on an activity or service delivery may also obtain measurements. This should always be recorded on any activity that has been chosen for improvement, prior to commencement and compared again at the end, even though the activity may be small and simple. |

**CONCLUSION** **Remember:** small steady changes leading to improvements, well thought through and effective, are going to have long term advantages.

These nine steps can help you take advantage of the quality management system approach and allow it to contribute to the growth of your business.

## What does Certification and Registration Mean

### *Starting Out*

Certification/registration of quality management system is not mandatory but the following provides a brief outline for those wishing to follow this path.

Before the actual certification/registration can take place, it is essential to have all aspects of the quality management system in place and running for several months. You can then see the quality management system in operation and have the opportunity to improve it. Any improvements you can achieve at this stage can simplify the certification/ registration process. This can save you time and money.

Certification/registration bodies do not operate on the principle of "what is going to happen". They want to see what has happened. You will need sufficient records to demonstrate that your quality management system has become established and effective.

### *Who does the certification/ registration?*

There are two types of certification/registration; one is carried out by your customer(s) and the other by an independent party. The outline below is based on that typically adopted by independent third party certification/ registration bodies.

### *Brief Outline*

The process generally takes the form of the following steps: You make a formal application to the certification/registration body. The application normally includes a description of your business activities, the product and/or service range, and any other information requested. The certification/ registration body may ask for a questionnaire to be filled out.

Next, the certification/registration body will review your quality manual. What it will be looking for is how well the quality manual describes what you say happens against what the standard says should happen.

When there are deficiencies, the certification/registration body will indicate where the problems are. Amendments to the quality manual will usually overcome most problems, but you may also have to develop additional procedures.

A further review of any changes is carried out and is often combined with one of the subsequent stages. The certification/registration body may then hold a pre-assessment check or go straight to the certification/registration audit.

In the certification/registration audit, the auditor (and there may be more than one) will use the quality manual and any procedures as a guide to how your business operates. The auditor's operative words will be 'Show me'. The

auditor will be looking for records, documents, or other objective evidence to see that you are doing what your quality manual/procedures say you do.

Where inconsistencies (nonconformities) are found, the auditor's actions depend on how serious these are. For major nonconformities, the certification/registration could be withheld pending rectification. For minor nonconformities, a qualified certification/registration might be issued, pending rectification by the next compliance audit.

Once certification/registration is granted, the certification/ registration body will carry out compliance audits of the quality management system over the period for which the certification/ registration is valid. These audits are not as comprehensive, in that the full quality management system is not necessarily assessed at each compliance audit.

If nonconformities are found during a compliance audit and not rectified within specified times, certification/registration may be withdrawn. Minor non-conformances will be required to be rectified by the next compliance audit, which under these circumstances may seem to come round very quickly.

***Terms and Definitions***

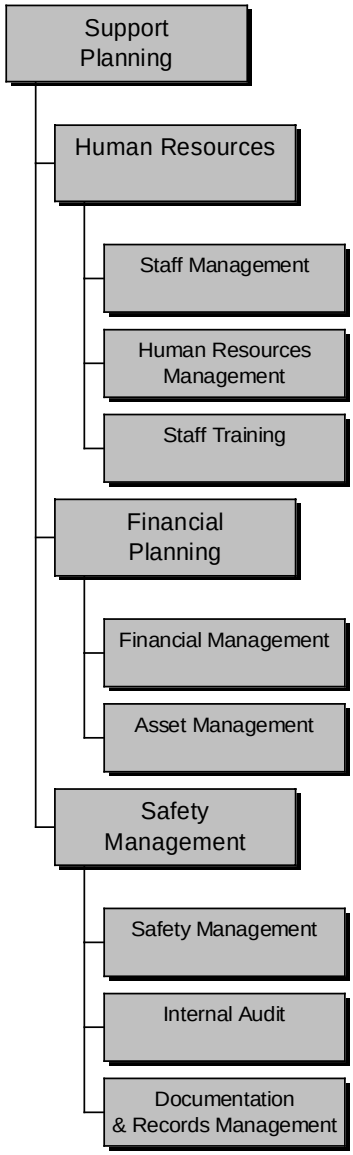
Bibliography

ISO 9000

HB66(Int) 2000

AS/NZS ISO 9001:1994 – Quality Systems. Model for quality assurance in design, development, production, installation and servicing.

## Support Planning



# (State)

# Aeronautical Information Service

# Quality Management System

# Quality Manual



**WARNING**

**CONTROLLED COPY No:**

If the number is:

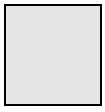
RED Then this is a Controlled copy

BLACK Then this is NOT a Controlled copy

# <Insert the name of the AIS Unit>

# Quality System Manual

**CONTROLLED COPY NUMBER**



## Table of Contents

## Introduction

This Quality Manual relates to the operation of <insert the AIS Unit> and provides guidance on the policies and procedures applicable for the provision of an aeronautical information service by the State of <insert State name>.

The policies and procedures within this manual have been implemented to ensure that the requirements for a quality system for the AIS of <insert State> are documented and so ensure compliance with the requirements of ICAO Annex 15 and other relevant standards.

The <insert> AIS Unit forms part of <insert the organisational arrangements eg Air Traffic Services Division> within the <insert parent body eg Civil Aviation Administration of …>

This AIS Unit is located at:

<insert address>

| | |
|---|---|
| **Tel:** | <insert contact number> |
| **Fax:** | <Insert contact number> |
| **Email:** | <insert contact details> |
| **AFTN:** | <Insert contact details> |
| **Web Site:** | <Insert contact details eg www.> |

The contents of this Manual are reviewed on an as required basis, but not less than annually. <Insert who is responsible for coordinating changes to the Manual eg the Administration Manager, Aeronautical Information Service> is responsible for coordinating requests for changes and amendments to the Manual.

The approving officer and issuing authority for this Manual and subsequent amendments is <insert title or position of authority>.

<Insert who is responsible for the Manual eg the Administration Manager, Aeronautical Information Service> is responsible for the maintenance and distribution of this Manual.

**Issuing Authority:**

Signed: _____ Name: _____

Date: _____

## Scope and Field of Application

The Scope of this Manual is to define <insert the scope of the Manual>

The provision of an AIS for the State of < state name >.

***Note:*** *If this manual only covers part of the AIS, eg: NOTAM, this needs to be specified.*

Document the Scope, including the:

(a) boundaries within which the AIS operates

(b) deliverables of the AIS eg product range

(c) exclusions (see below)

(d) related work areas and interdependencies with other areas

(e) constraints – ensure that any constraints in terms of time, money or other factors are clearly identified

(f) assumptions – specify any assumptions that have been necessary when describing the scope

### Exclusions

<List any exclusions to the Standards or other areas that are not covered by this Manual. This is to ensure that there is no ambiguity about what is within the Scope of the AIS and what is outside>

## References and Associated Documents

*List applicable State Civil Aviation documents, regulations, orders and rules.*

- ICAO Doc. 8126 Aeronautical Information Services Manual
- ICAO Doc. 8697 Aeronautical Charts Manual
- DOC 8400/3 ICAO Abbreviations and Codes
- DOC 8585 Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services
- DOC 8643 Aircraft Type Designators
- ICAO Annex 4 Aeronautical Charts
- ICAO Annex 5 Units of Measurement
- ICAO Annex 15 Aeronautical Information Services
- <insert other relevant documents eg Business Plans etc>

# Document Control Information

## Document Control Sheet

This document is a controlled document and is identified as such when the controlled copy number is shown in <insert colour, usually red>. All other copies are uncontrolled.

The Manager Aeronautical Information Service <insert if someone else is responsible>:

- maintains a distribution list and the master control copy of the AIS Quality Manual;
- is responsible for keeping a register of controlled copies; and
- ensures that each copyholder verifies receipt of all controlled documents and subsequent amendments.

Uncontrolled copies may be issued with no record of who has the copy. For uncontrolled copies the document holder is responsible for ensuring that the copy they have is up-to-date.

The control information for this manual is detailed in the table below:

| | |
|---|---|
| **Title:** | AIS Quality Manual |
| **Owner:** | <insert> |
| **Location of master copy:** | Aeronautical Information Service |
| **Date last updated:** | <insert date> |
| **Holders of controlled copies:** | A register of holders of controlled copies is shown on <insert page> of this manual. |

## Controlled Copies of This Document

| Copy No: | Holder |
|---|---|
| 1.<br>2.<br>3.<br>4.<br>5.<br>6.<br>7.<br>8. | <**insert as appropriate**> |

*This manual must be made available to all AIS staff. It may also be advantageous to distribute the manual to those organisations that make substantial contributions to the AIP. eg: ATS, Various methods of distribution can be considered, eg paper and electronic formats*

## Amendments and Amendment List Record Sheet

### Change Summary

Changes made to this document are summarised in the following table.

| Date | Pages | Description |
|---|---|---|
| <insert> | All | Initial Draft |
| | | |
| | | |
| | | |

### Amendments

Amendments to this manual must be by page replacement, addition, and deletion or by complete re-issue.

Staff carrying out an amendment to this Manual must complete the Amendment Record sheet below.

| Amendment Number | Amendment Date | Amended by | Date |
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## Check List of Effective Pages

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## Quality Policies

*The following statement should clearly and simply state principle policy or policies relevant to the provision of AIS.*

<insert the parent organisation name> mission is to provide a safe, efficient and effective air traffic system. <insert the organisation name> recognises that high quality aeronautical information services are essential to achieving this mission.

The <insert name> AIS Unit is committed to providing high quality aeronautical information services to meet the needs and requirements of its customers and to seek continuous improvement in the provision of those services through a quality framework.

Quality will be an integral part of all AIS activities.

The quality framework will be based on the ISO 9000 series of International Standards and will draw as appropriate, on ICAO Standards and requirements and other International and <insert the name of the State> Standards.

AIS will be provided in a manner consistent with the standards and recommended practices contained in the applicable ICAO Annexes, in particular Annexes 4 and 15.

*A statement similar to the following can be used in circumstances where the AIS provider also has commercial objectives:*

The AIS will be provided in a manner that is consistent with the commercial objectives of both the < name of government department or agency responsible for the provision of AIS > and customers.

*The following statement should be included in all cases.*

The policies and procedures detailed in this manual are binding on all AIS staff.

## Quality Objectives

*These objectives should reflect the principles of the Quality policy.*

The Quality Objectives of <insert> State are (eg):

(a) To provide quality information and data services to meet the demands and requirements of our internal and external customers

(b) To ensure that products are constructed, produced and distributed in such a way as to enable users to operate safely and efficiently

(c) To ensure the quality and timely promulgation of products for which AIS is responsible

(d) To ensure that products comply with applicable standards and regulations.

(e) To ensure as far as practicable that the information published is accurate and up to date.

(f) To provide the end user with value-added, defect-free products, that are timely and competitively priced

(g) To institute a program of continuous learning within the AIS

(h) To foster an environment where quality is the accepted way of doing business

(i) To foster the participation of our staff in the work and decision making processes of the AIS

(j) To pursue commercial business opportunities within the areas of expertise of the AIS

## Communicating the Quality Policy and Quality Objectives

Each staff member in the <insert> AIS has access to this Manual and consequently to the Quality Policy and Quality Objectives.

The <insert who is responsible eg Manager, AIS and/or Management Representative> is/are responsible for making staff aware of the Quality Policy and Quality Objective, for the implementation of quality practices to achieve these Objectives, and to monitor their application.

Staff members are kept informed of these matters through staff meetings, performance agreements, appraisals and competency checks.

# Organisation

*Provide here a summary of how the AIS is organised, where it is located, how it is staffed and the relationship of the AIS to other departments of the Civil Aviation administration.*

*DOC 8126, Chapter 2 provides guidance on the establishment of a sound organisational base and management structures. An organisation chart such as the example shown in Fig 1. Below is a useful way of showing the how the AIS is organised and its relationship to other departments and workareas*

***Organisational Arrangements - <Insert> AIS***

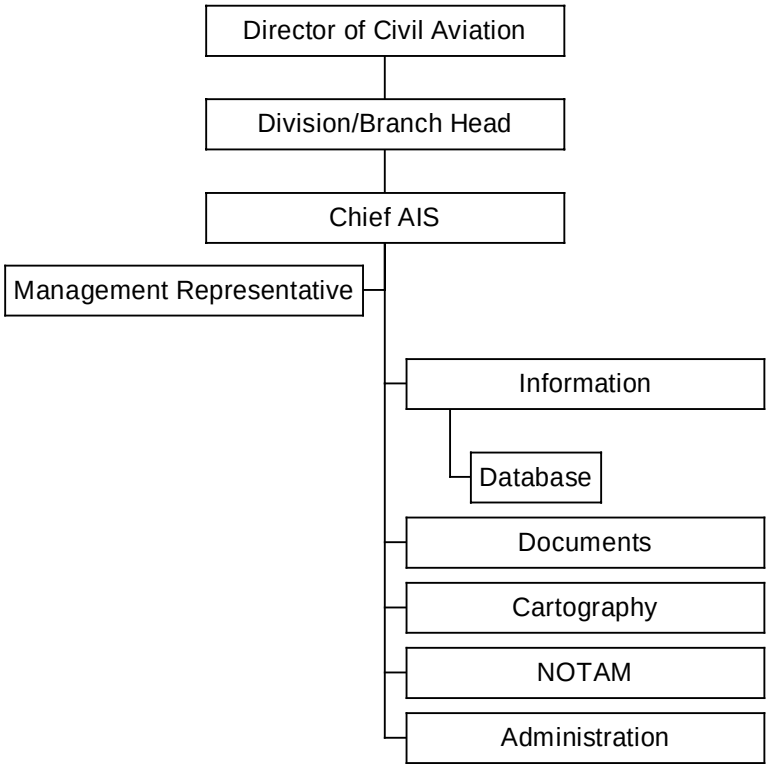



***Fig. 1***

## Management Representative

*It is important to identify one person who has overall responsibility for the implementation and monitoring of the quality policies and procedures described in this manual.*

Responsibility and authority for all quality processes and functions described in this manual and associated aspects of the AIS are held by the < specify title or position of manager with overall responsibility for the AIS quality system >.

< specify title or position of manager with overall responsibility for the AIS quality system > has the responsibility and authority for:

(a) ensuring that processes for the quality management system are established and maintained

(b) reporting to senior management on the performance of the quality management system, including improvements

(c) promoting awareness of customer requirements throughout the organisation

*As shown in the above organisation chart, it may be useful to structure the AIS as function teams, where each team of one or more staff could be responsible for certain aspects of the AIS. These could include an Information Team, Cartographic Team, Publishing Team, NOTAM Team and an Administration Team. Suggestions on the responsibilities of each of these are shown below.*

**Information Team**

The Information Team includes a Coordinator and < number > assistants. This team has primary responsibility for the collection and verification of information for publication in the AIP, and for database entry.

**Documents Team**

The Documents Team includes a Coordinator and < number > assistants. This team has primary responsibility for the processing of changes provided by the Information and Cartographic Teams to create AIP amendments and other document changes for printing and distribution.

**Cartography Team**

The Cartographic Team includes a Coordinator and < number > assistants. This team has primary responsibility for the processing of amendments to charts.

**NOTAM Team**

The NOTAM Team includes a Coordinator and < number > NOTAM Officers. This team has primary responsibility for operation of the International NOTAM Office and the provision of Pre-flight Information.

**Administration Team**

The Administration Team includes a Coordinator and < number > assistants. This team provides administration support to the AIS.

# Responsibility and Authority

## Position Descriptions

The responsibilities and authorities of each staff member are detailed in individual Position Descriptions, copies of which are held by each staff member and on file <insert the file name and reference>

*Position Descriptions are important - they should clearly specify the responsibilities of each individual staff member.*

*Position Descriptions should be held on file and not included within this manual. This enables changes in staff to be made without the need to amend this manual. A suggested position description for an AIS team member is shown in Appendix 1.*

Written contracts are held by both the AIS and various Sub-contractors for the provision of those services listed below. These contracts detail the responsibilities and authorities relevant to the services provided.

| Sub-Contractor | Service Provided | Location of Contract |
|---|---|---|
| <insert details> | <insert details> | <insert details> |
| | | |
| | | |

# Document Control

***Note:*** *These procedures relate to the amendment and control of this and any other manuals that document the policies, processes and procedures for the Quality System. The Document Control measures in place in the AIS should be specified in this part. Parts of the text shown below may be suitable for inclusion in this quality manual.*

Document control procedures are developed for all documents that are part of the Quality System to ensure that:

(a) pertinent issues of appropriate documents only are available at all locations where operations essential to the effective functioning of the quality system are performed

(b) obsolete documents are promptly removed from all points of issue or use

(c) documents are regularly reviewed for applicability

(d) all documents clearly show traceability to source

All documentation that is part of the Quality System should be reviewed in conjunction with Management. When the procedures or standards detailed in this manual are derived from other references (such as ICAO Annexes), amendments to such references should be reviewed upon receipt, and where necessary, the relevant procedures or standards amended to reflect the requirements of such references.

All amendments to Quality System documents must be brought to the attention of the appropriate staff.

## Controlled Documents (Example text)

A controlled document is a document for which the release, status, storage, distribution, revision and disposal are managed according to documented procedures. The documents in a quality system, and any other important reference, must be controlled to keep them accurate and up-to-date.

**Example:**

- AIS Quality Manual
- Standard Operating Procedures – AIS Charting
- <insert other examples as appropriate>

### Controlled and Uncontrolled Copies

A controlled document is an individually numbered document assigned to a specific registered copyholder. Controlled copies are identified by the <insert the colour eg red> colouring of the controlled copy number on the front page.

All controlled documents must have a copy number entered in red ink in the space provided on the cover sheet by the officer responsible for issue of the document.

### Roles and Responsibilities

A full description of procedures relating to the control of Documents is shown in Section <insert> of this Manual. The responsibilities shown below only address the responsibilities of persons holding controlled and uncontrolled copies of this document.

### Holders of Controlled Copies

Holders of controlled copies are responsible for ensuring the copy is current before it is used and for disposing of the controlled copy once it is superseded.

### Holders of Uncontrolled Copies

Holders of uncontrolled copies are responsible for ensuring the copy is current before it is used and for disposing of the uncontrolled copy once it is superseded.

## Document Identification (Example text)

All controlled documents must show the following identification elements:

(a) title

(b) effective date

(c) page number

This is to be achieved by using appropriate titles on drawings and headers and footers on documents.

*Where a document consists of several pages and is permanently bound, only the front page needs to show the full identification of the document. All other pages should be identified by document title and page number.*

## Document Format (Example text)

### Overview

Amendments to this document must conform to the formats described in this part.

| Element | Style |
|---|---|
| Page size | <insert eg A4> |
| Font | <insert eg Arial 12 pt> |
| Margins | <insert> |
| Etc | <insert> |

**Text Conventions**

The word “must” is to be standard in the “shall/must” situation and means that conformance with the procedure or instruction is compulsory.

The term “should” implies that all users are encouraged to conform to the applicable procedure.

Abbreviations must be avoided when not in common usage, or when the document’s intended recipients are not specialists familiar with the terms.

If an abbreviation is not in common use, the first instance must be shown in full with the abbreviations in brackets, eg Office of Legal Counsel (OoLC). Thereafter the abbreviation may be used exclusively.

When in doubt, the word or term must be spelt in full throughout the document.

**Layout**

Change bars must be shown to indicate any additions or deletions or alterations to text.

A bold **“D”** must be shown next to the change-bar to highlight areas of text that have been deleted.

Paragraph numbering is not required.

Footers must contain:

(a) Document title
(b) Issue date
(c) Authorisation
(d) Page numbers

## Document Amendment (Example text)

For convenience, and to coordinate with changes in both reference documents and products, where possible, amendments should be issued to become effective on the ICAO determined AIRAC dates.

Amendments to documents should be indicated < detail how amendments are identified >. Changes to charts and diagrams should be indicated by a note along the inside margin.

Hand amendments to hard copy documents should only be used for minor typographical amendments. Amendments to policies, procedures and associated forms should only be by the issue of replacement documents, pages or forms. All hand amendments should be initialled and the authority indicated.

Documents should be reissued after a practical number of changes have been implemented.

## Document Issue

The <insert the person responsible for the issuance of controlled documents eg Administration Coordinator> maintains a master document list which records:

(a) document title, file reference (both software and hard copies)

(b) the author

(c) the authorities for all documents

(d) the version

(e) documents received by recall

(f) follow up action

(g) distribution lists and copy numbers

(h) receipt of document

The <insert the person responsible eg Administration Coordinator > is responsible for ensuring that all documents issued are signed as authorised copies. The <insert the person responsible> should record the details of the received documents and arrange distribution as per the distribution list and recall of the obsolete documents.

All amendments to documents must include a Record of Receipt. The Record of Receipt is to be completed by the recipient and returned to the Administration Coordinator along with obsolete documents.

If, within 10 working days of document distribution, the obsolete documents are not received, reminder notices should be despatched.

One copy of all document versions must be archived to show the amendment traceability. All archived documents should be annotated as “Cancelled”. All other obsolete copies should be destroyed.

### External Documents

A range of external documents is held by the AIS for reference purposes. These include legislation standards, recommended practices and AIP documents from other states.

If information from an external document is used in the preparation of a new product, the document must be checked to ensure the status and currency of information.

A register of ICAO documents is be maintained by the <insert the person responsible eg Administration Coordinator>.

## AIS Responsibilities

*This section should clearly define the responsibilities of the AIS with respect to the collection, publication and promulgation information. In particular, it is recommended that a clear understanding exists between information originators and the AIS as to where the responsibility for the accuracy of source data vs editorial accuracy lie.*

### Collection of Information

AIS receive aeronautical data and information for publication in the AIP and NOTAM from, but not limited to the following organisations that provide services in support of the air navigation system:

(a) aerodrome operators

(b) telecommunication service organisations

(c) Air Traffic Service organisations

(d) air navigation service organisations

(e) meteorological organisations

(f) other AIS organisations

(g) Customs, Immigrations, Conservation and Health Authorities

(h) defence organisations

(i) other government departments and ministries

(j) other States

Information for inclusion in the AIP or NOTAM is sent direct to the AIS. This material is authenticated as described in “Authorisation of Original Material”.

### Data and Information from other States

Aeronautical data and information is received from other States:

| Information | State | Source |
|---|---|---|
| <insert> | <insert> | <insert eg AIP, NOTAM, bi-lateral agreement etc> |
| | | |
| | | |

### Editorial Responsibilities

<insert> AIS has the following editorial responsibilities:

(a) ensuring that the data and information collected is published in the appropriate format, in accordance with the applicable standards and distributed according to the operational significance of the information.

(b) ensuring that the information received is accurately promulgated

(c) ensuring that aerodromes published in the AIP are shown on the applicable aeronautical charts

(d) ensuring the preparation, accuracy and distribution of all aeronautical charts

(e) monitoring the data and information to ensure that it is reviewed by the originating organisation on a regular basis

(f) ensuring the timely provision of aeronautical information to the aeronautical information services of other states. This should normally be by the provision of the AIP and NOTAM, except where other arrangements are documented (by letter of agreement).

The responsibilities of the AIS for ensuring the accuracy of information relates to ensuring conformance with applicable standards and that information provided is "reasonable" when compared with other available information. The responsibility for the accuracy, completeness and timeliness of original data and information rests with the originator. Those responsible for ensuring accuracy and conformity within AIS are shown in the section "Production of the Integrated AIP Package".

## Original Material Identification and Traceability

*All original material must be able to be identified and traced to source. A good way of doing this is to have a register and allocate each item of original material a unique number from the register. This register number can be used on every record associated with that item. A sample register is shown below.*

### Original Material

Original and source material for publication and associated drawings, drafts and proofs are <insert the method of identification eg held on file> as follows:

| Record | Location | Responsibility | Minimum Retention Period |
|---|---|---|---|
| <Insert eg proposed amendments to (doc)> | <insert eg held on specifically numbered amendment No. file> | <insert who is responsible for creating and filing the record> | <insert the minimum retention period> |

## Authorisation of Original Information

Original data and information received is checked for proper authorisation against <insert the method eg the Originator Database, or if received on Company Letterhead paper etc>.

*To ensure the authenticity of information presented for publication, particularly from external originators, the AIS should maintains a register of details for all authorised originators on the Originator Database. This register should include the following details for each originating organisation:*

- *organisation name*
- *contact details*
- *the date that the above details were last reviewed and updated*
- *the expiry date for current information which should be on the first anniversary of the receipt of the most recent details*

*The names and signatures of all persons responsible for the authorisation of amendments on behalf of each organisation should be held on file.*

*Originators should be requested to review details at least annually.*

*An alternative is to have data and information coming into the AIS on Company Letterhead paper where this is possible.*

## Database Amendments

*Procedures should be established and included in the Manual to ensure that amendments are actioned in the database. As with published information, amendments to database information should be subject to procedures that ensure amendments to the database are authorised and processed. A sample checklist is shown below.*

| Step | Action | Responsibility |
|---|---|---|
| 1. | Change details registered | <insert> |
| 2. | Change authorised | <insert> |
| 3. | Data checked and verified | <insert> |
| 4. | Data entry | <insert> |
| 5. | Entered on <insert eg charts> | <insert> |

## AIP Production Schedule

*To efficiently manage the AIP amendment process, it is recommended that a production schedule be developed and promulgated to all organisations originating material for the AIP or involved in production. This schedule should be based on the AIRAC dates as listed in DOC 8126. For each effective date, critical dates within the publishing and distribution process should be established. These need to take into account factors such as and the time to complete publishing processes, the time required to print, postage or delivery times and ICAO recommendation of 28 or 56 days prior notification. An example of a AIP Production Schedule can be found in Appendix 2.*

The <insert State> Integrated AIP Package is produced in accordance with the AIP Production Schedule which is published on a <insert cycle eg 12 months>. An example of a Publication Schedule is shown in Appendix <insert>.

## Scheduling and Coordination of Amendments

*There should be a procedure in place to ensure that amendments to the AIP are scheduled and coordinated. This could be achieved by convening regular meetings of major originating organisations with AIS staff. Significant improvements can be introduced into the AIP publishing process with thorough forward planning.*

*Originating organisations should be encouraged to provide the AIS with an indication of AIP publishing requirements as far in advance as possible, taking user needs into consideration eg how many amendments are required per year and are they economically viable.*

The <insert State> AIS convenes regular meetings with the following originators of amendments to the AIP:

< list originators >

At these meetings, originators will be invited to submit the following details on proposed amendments including:

(a) Effective date of amendment

(b) Scope of amendment

(c) Affected AIP documents

(d) Charting requirements

(e) Consequential impact on other information

The purpose of these meetings is to schedule and coordinate requests for amendments to the AIP. Agendas and minutes are kept by <insert>for all meetings.

## Format and Standards

Standards as specified in the following ICAO Annexes and documents are applied by AIS:

(a) Annex 15

(b) DOC 8126

(c) Annex 4

(d) DOC

(e) < list other Annexes and documents that are used as references >

***Note:*** *Where a State includes within the AIP information for which no ICAO Standard or Recommended Practice is available or where there are a number of differences to the ICAO Standards and Recommended Practices, the standards that are being applied need to be documented. This can either as part of this manual or as a separate "Standards or Style Manual". If a "Standards or Style Manual" is used, this should be reflected in the hierarchy of documents.*

## Coordination of AIP Amendments, NOTAM and Other Bulletins

*NOTAM are monitored by the Information Team to ensure any permanent changes that are initiated by NOTAM are identified, and if not already initiated by the originator, follow-up action for an AIP amendment occurs. This could be addressed by the procedure shown below.*

NOTAM originated by <insert eg to these the domestic and international NOTAM, information bulletins from third party providers such as Jeppesen are reviewed daily by <insert who is responsible>. Those relating to published AIP information are checked to determine whether the information promulgated will be of a permanent or long-term nature and if so, whether an amendment to the AIP has been initiated by the originator.

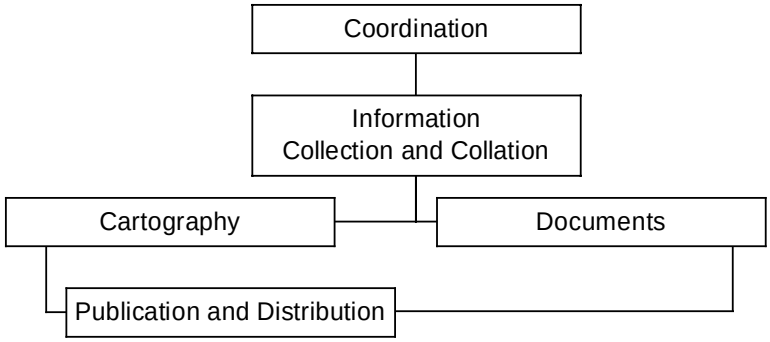
If no permanent amendment has been initiated by the originator, the <insert> will contact the originator and advise of the action required.

Responsibility for initiation of a formal change to the Integrated AIP Package is the responsibility of the NOTAM originator, or other designated person when required.

## Production of the Integrated AIP Package

*To more effectively manage the AIP publishing process, it could be useful to break the process into a number of phases. These phases could be defined by the primary work undertaken during each, or by the functional team that is responsible for carrying out the work. A suggested workflow is shown below.*

**Typical Workflow**




## Collection and Collation of Aeronautical Information

During the coordination phase, all requests for amendment are reviewed as follows to determine:

| Step | Action | Responsibility |
|---|---|---|
| 1. | Requested effective date | <insert> |
| 2. | AIP documents affected | <insert> |
| 3. | Cartographic and publishing resources required | <insert> |
| 4. | Conformance of submitted material with required standards | <insert> |
| 5. | Amendment requests are correctly authorised and all necessary coordination has been completed | <insert> |
| 6. | The amendment is complete | <insert> |
| 7. | The requested amendment corresponds to other known information. For instance, a request to increase a runway length should be compared to currently published runway information | <insert> |
| 8. | All consequential amendment action required is understood and identified | <insert> |

## Amendment Process

| Step | Timing | Responsibility | Description |
|---|---|---|---|
| 1. | Continuous | Author areas | Prepare proposed amendments/additions and submit them to AIS |
| 2. | Approximately 1 month before printing date | <insert> | Review and collate all proposed amendments/additions and submit them to <insert> |
| 3. | On receipt of amendments | <insert> | Review the submitted amendments for suitability, accuracy and completeness<br><br>Make appropriate records<br><br>Mark unsuitable amendments as “Non Conforming” as per the procedures described in <insert> |
| 4. | After records have been made | <insert> | Amend the AIP |
| 5. | During the amendment process | <insert> | Check all the amendments made against the hard copies to ensure that the changes you have just made are correct. |
| 6. | 2 weeks before printing date | <insert> | Check the final proof and sign it as being approved for publication. |
| 7. | 1 week before printing date | <insert> | Prepare the final proof for publication. |
| 8. | Before printing date | <insert> | Dispatch for publication |

The introduction of any new material is normally not permitted once Step 6 has been reached and is not permitted once the hard copy has been printed. Any amendments received after this must be placed in the amendment file by <insert> ready for the next amendment package.

### Records

The following table describes the records kept of this process.

| Record | Location | Responsibility | Minimum Retention Period |
|---|---|---|---|
| Hard copy of all amendments | <insert> | <insert> | Archive (or as determined by State legislation) |

| Record | Location | Responsibility | Minimum Retention Period |
|---|---|---|---|
| Signed off final proof | <insert> | <insert> | Archive (or as determined by State legislation) |
| Historical record of amendments made | <insert> | <insert> | Indefinitely on file. |
| Dispatch details | <insert> | <insert> | Until the amendment is printed. |

## Printing and Distribution

*Procedures should specify the manner in which material is prepared and delivered for printing and the distribution of the AIP.*

*This phase should include sufficient time to ensure AIP amendments are available to end users as specified by Annex 15 (eg: minimum 28 days)*

## Inspection and Checks

*A good quality system requires that there are checks at appropriate stages of processes and that there are records of these checks being completed.*

| Step | Action | Responsibility |
|---|---|---|
| 1. | Complete the Proof-Read Chart form by listing all affected pages connected with the particular amendment issue | <insert> |
| 2. | Proof read the hard copy together with at least 1 (preferably 2) representative(s) from <insert> | <insert> |
| 3. | Correct any anomalies at the conclusion of the proof read | <insert> |
| 4. | Print a final proof and stamp this ready for approval.<br>***Note:*** *Purpose built rubber stamps are held by <insert>* | <insert> |
| 5. | Approve for publication | <insert> |
| 6. | Update the Collation Schedule with all the information required by the publisher <insert> | <insert> |
| 7. | Dispatch for publication to arrive by the print date defined in planning schedule | <insert> |
| 8. | Printers first proof checked prior to distribution | <insert> |
| 9. | Distribution | <insert> |
| 10. | Publisher returns <insert the number> of amended copies of the Integrated AIP Package to <insert> | <insert> |
| 11. | Amend the master copies of the Integrated AIP Package on receipt | <insert> |

## Checklist for Products

| Product | Produced by | Checked By | Authorised for Publication by |
|---|---|---|---|
| <insert> | <insert> | <insert> | <insert> |
| | | | |

## Control of Non-Conforming Product

*There should be a procedure for dealing with data and information that does not conform to the required standards. This could be done by having a method of identifying such information – eg: stamped "Non Conforming". The purpose of this is to ensure that such information cannot inadvertently be used in the published AIP.*

Data or information presented to AIS for publication in the Integrated AIP Package that does not conform to the specified requirements for a particular AIP product must be marked as Non Conforming by <insert who is responsible for the marking and how the material is marked eg stamped, hand endorsed>.

<Insert> is responsible for advising the originator that the material submitted does not conform.

| Step | Action | Responsibility |
|---|---|---|
| 1. | Record non conformities | <insert> |
| 2. | Determine the causes of non conformity | <insert> |
| 3. | Determine actions required to prevent re-occurrences of non conformities | <insert> |
| 4. | Advise originator | <insert> |
| 5. | Implement corrective action | <insert> |
| 6. | Filing records created after corrective action taken | <insert> |

## Correction of Errors in Published Information

If an error is determined to be hazardous or have the potential to be hazardous, remedial action appropriate to the operational significance of the error will be initiated by <insert who is responsible>. The operational significance of the error should be determined in consultation with the originator.

Appropriate action may include:

(a) issue of NOTAM. If a NOTAM is issued, the error should be scheduled for correction in the next scheduled amendment. If the next scheduled amendment will not be within 90 days, the information should be published by AIP Supplement at the next available issue.

(b) issue of AIP Supplement. Errors should only be corrected by AIP Supplement when the page or chart is not scheduled for reissue at the next AIP amendment

(c) issue of an AIP amendment at next available amendment

(d) correct at next scheduled issue of page or chart

*To ensure continuous quality improvement, procedures need to be in place to record and analyse errors and implement both corrective action and preventative action.*

For the purposes of recording and analysis, an error is defined as follows:

(a) any instance where information is incorrectly or inaccurately published

(b) any instance where the accuracy, structure or format of published information does not conform with required standards

*Attention should be given to whether or not an occurrence has actually created or had the potential to create a hazard. In the event that it can not be determined whether an error could or could not have been hazardous, the error should be recorded. For instance, there is probably little to gain from recording and analysing minor typographical errors.*

## Error Tracking Process

This instruction describes the procedures to be used when an error is detected in a component of the Integrated Aeronautical Information Publication (AIP) package. An example of an Error Tracking Form (ETF) is shown in Appendix 3; and example of an Error Tracking Register is shown in Appendix 4.

| Step | Action | Responsibility |
|---|---|---|
| 1. | Confirm the error and raise an ETF | <insert> |
| 2. | Register the ETF | <insert> |
| 3. | Analyse the safety aspects associated with the error and determine if NOTAM or other action is appropriate | <insert> |
| 4. | Initiate corrective action as a NOTAM or AIP SUP and process through the NOTAM officer/NOF | <insert> |
| 5. | Attach a copy of the NOTAM request/Draft AIP SUP to this form | <insert> |
| 6. | Analyse the cause of the error | <insert> |
| 7. | Discuss the error with the officer responsible | <insert> |
| 8. | Determine remedial action; | <insert> |
| 9. | Brief AIS Manager as necessary | <insert> |
| 10. | Initiate change action when required | |
| 11. | Amend or establish procedures as required to strengthen processes | <insert> |
| 12. | Sign-off the ETF when completed | <insert> |
| 13. | Forward the completed form to <insert> for filing | <insert> |

## Error Analysis

*To assist with the analysis of errors, it could be useful to establish a system of categorising errors as shown below.*

The following guidelines are used to determine the categorisation of errors:

**Critical**

Any instance where the published information directly compromises the safety of air navigation:

(a) where the published information could compromise aircraft clearance from terrain. eg: incorrect instrument approach minima

(b) where there is an error in navigational or route information. eg: incorrect track

(c) any error in the depiction or publication of airspace information. eg: incorrect vertical limits

**Major**

Any instance where the published information intended for communications or air navigation purposes is missing, ambiguous or difficult to interpret. eg: incorrect ATS frequency.

**Minor**

Any instance of typographical, grammatical, printing or formatting deficiencies which do not directly cause operational difficulties, but do not meet expected standards such as:

(a) any “typographical” error, where the information published is correct in context and content but could contain spelling or grammatical errors

(b) errors where there are no operational impacts

## Preventative Action

| |
|---|
| *Good error analysis should identify where necessary the preventative action required to ensure the error does not re-occur.* |

| Step | Action | Responsibility |
|---|---|---|
| 1. | Collate information relating to non conformities, error tracking forms and customer complaints/suggestions | <insert> |
| 2. | Determine causes of non conformity | <insert> |
| 3. | Determine what action is necessary to prevent non conformities re-occurring | <insert> |
| 4. | Determine and implement corrective action | <insert> |
| 5. | Record and file results of action taken | <insert> |

## Change Procedures

Staff are encouraged to suggest changes that will improve the quality system.

To facilitate this process, suggestions should be made in the following format:

| **AIS Quality System - Staff Suggestion** | | |
|---|---|---|
| ***No.*** | **To:** <Insert who the suggestions are directed to eg Manager AIS> | **From:** |
| ***Details:*** | | |
| Action taken: | Originator Advised: | Date: |

Each suggestion is recorded with an individual number, details entered of the action taken and advice to the originator.

| Step | Action | Responsibility |
|---|---|---|
| 1. | Register the suggestion | <insert> |
| 2. | Determine course of action to be taken | <insert> |
| 3. | Advice provided to the originator | <insert> |
| 4. | Record filed | <insert> |

## Security and Records

Records are required for data and information provided to AIS. The following table describes the record management procedures for the <insert> AIS Unit. The purpose of these is to enable traceability of all published information, including the origin, date of receipt and check procedures.

*A minimum retention period for records should be specified. This could be different for records associated with NOTAM and AIP.*

*There should be details of security procedures for the protection of information and data. These could include computer log-on and identification procedures.*

| Description of Record | Location where the record is held | Responsibility for filing | Retention Period |
|---|---|---|---|
| <insert> | <insert> | <insert> | <insert> |
| | | | |

## Contract Review

All contracts between AIS and suppliers, clients or consumers should be reviewed before final contract signature and on a regular basis after signature.

A review clause should be written into all contracts to allow for this provision. The aim of the review is to ensure that:

(a) the contract requirements are clear and unambiguous
(b) every requirement that is different from that tendered is resolved
(c) the supplier has the capability to meet the requirements of the contract
(d) written minutes of all contract review meetings should be recorded with resolution of
(e) all points actioned at the meeting being clearly indicated.
(f) Agreement that the review has taken place and is acceptable should be by contract signature and/or the exchange of letters.

<Insert> is responsible for reviewing contracts held by AIS.

## Purchasing

### General

The < position/title > is responsible for ensuring that all purchased products conforms to the specified requirements.

### Assessment of Sub-Contractors

All Sub-contractors who could provide products or services that can directly affect product quality are evaluated and approved by the < position/title >.

Approval of Sub-contractors is based on, but not limited to evaluation of the following criteria:

(a) previous Sub-contractor history

(b) Sub-contractor certification to approved Quality Standards

The type and extent of the evaluation depends on the nature of the goods or services to be provided and the degree of previous experience with the Sub-contractor.

All agreements with Sub-contractors should allow for the audit of Sub-contractor management systems by AIS (or their designated representative).

*If the AIS does not have the resources and skills to carry out Sub-contractor audits, arrangements should be made with a suitably qualified organisation to carry out these audits.*

Sub-contractor history should be established by maintaining a history of quality performance.

Sub-contractors who regularly fail to achieve required quality performance criteria should not be used the AIS.

## Purchasing Authority

*Specify here which staff members have authority for purchasing. These should also be included in individual position descriptions.*

| Product or Service | Authority for Purchase |
|---|---|
| <insert> | <insert position or title> |
| | |

All orders should specify or include the following where appropriate:

(a) the title of the product or service

(b) relevant associated drawings

(c) means of identification

(d) inspection instructions

(e) approval requirements

(f) Quality Standard to be applied

Where the services or products are ordered under the terms of a service contract, only those specifications not detailed in the service contract need to be included in the order. Where the services or products are ordered under the terms of a service contract, the service contract should specify the purchasing documents to be used. A Sub-contractor supplied purchasing document could be used.

Where the Sub-contractor does not supply purchasing documentation, an AIS Order should be used.

Copies of purchasing documentation should be retained.

# Internal Quality Audits

### Audit Policy

Audits of the activities used by <insert> AIS will be carried out from time-to-time to confirm that the procedures and processes used comply with quality system requirements.

### Scope of Quality Audits

Audits of the AIS will cover the quality system being used, processes and products.

### Responsibility

<insert> is responsible for ensuring that quality audits of the AIS are carried out in accordance with the procedures shown below

### Audit Process

The following steps will constitute the audit process. The Lead Auditor is responsible for ensuring all the steps take place:

(a) advice to the AIS Manager of the proposed audit, including the audit program

(b) development of audit checklist

(c) entry meeting

(d) verbal debrief to AIS Manager and other staff (where appropriate) on audit findings

(e) completion of the audit proper

(f) compilation of the audit report and any corrective actions

(g) obtaining the AIS Manager's signature as having accepted report, agreeing to corrective actions and establishment of appropriate close-out dates

(h) dispatch of reports and corrective actions to the appropriate senior personnel.

### Audit Records

One copy of the audit report, including comments and information from follow up meetings will be filed for <insert the period>.

***Note:*** *In a small AIS, there could be insufficient staff available to provide internal audit capability. In this case, arrangements could be made with other suitably qualified staff within the Civil Aviation administration, with another organisation or with a neighbouring State.*

## Management Reviews

*Regular Management Reviews are important to provide the opportunity to assess the overall effectiveness of the Quality System. To assist with this, it is helpful if someone independent of the AIS is facilitates the Management Review. This could be a representative from the Quality Assurance department or similar.*

### Management Review

Management Review meetings will be convened and chaired by < position or title > and usually involve < names of attendees >. An agenda and minutes will be prepared and kept for all such meetings. These meetings will be held at six monthly intervals.

## Overview – Training

The competencies required for each position are detailed in the relevant Position Descriptions. From these competencies, and initial and regular assessments of performance, training requirements for individual staff are identified.

### Newly Appointed Staff

The training requirements for newly appointed staff are identified in consultation with the staff member and implemented as a Training Plan. The Training Plan will identify all relevant items for which training is required, a time-frame for the completion of each item (either due date or period) and when appropriate, any required achievement level.

As training items are completed, completion is recorded on the Training Plan.

### Current Staff

Details of training programs for on-going training to keep current with practices applicable to the position and to ensure all incumbents are trained to the specifications, are developed and maintained by the Manager AIS in consultation with individual staff members.

This is carried out as part of the annual Performance Assessment with any identified training requirements recorded in the Personal Development Plan. Details of the completion of training for all staff (newly appointed and current) is made in the staff members file.

## Competency

*This section should describe the procedures used to ensure that staff employed in the AIS have the skills and knowledge appropriate to their responsibilities.*

| Position | Qualifications and/or Core Competencies |
|---|---|
| | |
| | |

### Newly Appointed Staff

New appointees to any position are required to demonstrate experience and competency appropriate to the position being filled. Initially, this will be determined through the recruiting process.

(a) A training plan for all newly appointed staff is shown at <insert the reference>.

The performance of newly appointed staff members will be reviewed within 3 months of appointment. This requirement will normally be met by reviewing the results of day-to-day work and the completion of Training Plan items.

If at the completion of all Training Plan items, or the completion of the first 3 months of employment (whichever is the latter), the staff member has demonstrated an appropriate level of competency, they will be considered to be current staff and from that time, be required to meet the competency requirements for current staff.

### Current Staff

To remain competent, staff are required to carry out their specified responsibilities at least once every three months. Because of the on-going and regular nature of their work, staff will normally satisfy this requirement through their day-to-day work.

Where a current staff member is absent for a period exceeding 3 months, their performance will be reviewed during the month of recommencement of work, or until such time as they have demonstrated an appropriate level of competency. The performance attributes to be reviewed will depend upon the position held, the length of their absence and the nature of work currently in progress. These should be determined by mutual agreement with the staff member concerned.

### Competency Records

Details of competency reviews are held on individual staff member's files.

## Sub-Contractor Competency

Where processes relating to the production are subcontracted, the Sub-contractor should have demonstrable competence appropriate to the work being undertaken. This is usually measured through historical performance.

*It is recommended that a file be maintained to record Sub-contractor performance, and in particular, any problems and corrective and preventative actions that could result.*

Sub-contractors should be required to demonstrate adequate and ongoing competency in the services provided. This should be assessed by the results of the services or products provided by the Sub-contractor concerned and by regular audits of the Sub-contractor.

## Performance Assessments

*As well as staff training, it is recommended that a program be put in place to regularly review the performance of individual staff. This would normally be annually. For new staff, a performance review at the completion of training could be appropriate. This performance review could provide the opportunity to agree on any further training required.*

Annual Performance Assessments are completed for all staff. Performance reviews should include:

(a) The establishment of performance objectives for the next period (year)

(b) A review of the staff members performance against objectives for the review period

(c) Identification and agreement of any training required.

Details of Performance Agreements and Performance Appraisals are held on individual staff member's files.

## General Definitions

*The following definitions are provided for guidance. These could nee to be amended to suit specific State policies etc.*

| | |
|---|---|
| **Quality** | The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs. |
| **Quality Management** | That aspect of the overall management function that determines and implements the Quality policy. |
| **Quality Assurance** | All those planned and systematic actions necessary to provide adequate confidence that a product or service should satisfy given requirements for quality. |
| **Quality Control** | The operational techniques and activities that are used to fulfil requirements for quality. |
| **Quality System** | The organisational structure, responsibilities, procedures, processes and resources for implementing Quality Management. |
| **Document** | Any manual or page thereof used to implement the Quality System.<br><br>*Note: This should not be confused with the AIP documents, which could be products of this quality system. Where an AIP document is referred to within this manual, it should be specified by name.* |
| **Originator** | Any organisation that provides data or information for publishing in the AIP either as an amendment, Supplement or as a NOTAM. |
| **Sub-Contractor** | Any organisation or person contracted to provide products or services directly related to the production processes of this Quality System. |

## Technical Definitions

*The following list is provided for guidance and may need to be amended to suit the needs of the individual state and knowledge of staff employed by the AIS.*

The following technical abbreviations and terms are used within this manual.

| | |
|---|---|
| **AFTN** | Aeronautical Fixed Telecommunications Network. |
| **AIC** | Aeronautical Information Circular Notice containing information that does not qualify for the origination of a NOTAM or for inclusion in the AIP, but which relates to flight safety, air navigation, technical, administrative or legislative matters. |
| **AIP** | Aeronautical Information Publication |
| **AIRAC** | An acronym (aeronautical information regulation and control) for advance notification of information based on common effective dates which are established by ICAO. |
| **AIS** | Aeronautical Information Service |
| **ATS** | Air Traffic Services |
| **ERC** | Enroute Chart |
| **FIR** | Flight Information Region |
| **ICAO** | International Civil Aviation Organisation |
| **IFR** | Instrument Flight Rules |
| **NOTAM** | A notice containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to staff concerned with flight operations. NOTAM are distributed on a telecommunications network. |
| **Time System** | Specify the time system/s applicable within the FIRs covered by this manual.<br><br>The day begins at 0001 hours and ending at 2400 hours using the 24-hour clock. Date and time is expressed as a six-figure group of day, hour and minute; eg, 4 April 1993, 1635 UTC is expressed as 041635. |

# Appendix 1 - Example Position Description

| | |
|---|---|
| Job Title: | Aeronautical Charts Officer |
| Level: | Airways Operations Officer |
| Location: | |
| Reports To: | Operations Manager, Aeronautical Information Service |
| Subordinates: | Nil |

**Primary Job Purpose**

The primary purpose of this position is to collect, coordinate, validate, and prepare amendment to a range of aeronautical charts in accordance with the specifications described in ICAO Annexes 4 and 15.

**Key Responsibilities or Duties:**

(a) Collecting, coordinating and validating proposals for amendments to a range of aeronautical charts

(b) Preparing and making changes to aeronautical charts

(c) Detailed checking of interim chart plots and proofs

(d) Checking “first rushes” from the print run

(e) Assist with the cross-checking of chart amendment data with that contained in other aeronautical documentation

(f) Maintaining quality records relating to amendments, including an audit trail of amendment data, source documents, plot, proofs and correction data for each chart

(g) Assist with the development of new or revised charting products to meet specified needs

(h) Maintain Standard Operating Procedures and Checklists

**Key Relationships and Interactions**

The occupant of this position is required to develop and maintain close working and business relationships with originators or amendment proposals, data custodians and other staff in the AIS.

**Qualifications and Experience**

(a) Hold or have held and ATS Licence or have other relevant aviation experience

(b) Possess and demonstrate a good working knowledge of the AIP, Civil Aviation Regulations, Civil Aviation Orders and Civil Aviation Advisory Publications

(c) Demonstrate a good working knowledge of ICAO documentation, particularly Standards and Recommended Practices relating to the provision of charting products

# Appendix 2 – Example Time Line Planning Chart

## AIS Production Schedules - April 2001 to November 2002

| AERONAUTICAL INFORMATION PUBLICATION (AIP) | |
|---|---|
| | **Start Date** |
| **AIP A/L 31** | |
| **AIS Cut-off** | **16-May-01** |
| Printing | 15-Jun-01 |
| Distribution | 29-Jun-01 |
| 28 Days AIRAC Notice | 13-Jul-01 |
| **Effective Date** | **9-Aug-01** |
| | |
| **AIP A/L 32** | |
| **AIS Cut-off** | **29-Aug-01** |
| Printing | 27-Sep-01 |
| Distribution | 12-Oct-01 |
| 28 Days AIRAC Notice | 2-Nov-01 |
| **Effective Date** | **29-Nov-01** |
| | |
| **AIP A/L 33** | |
| **AIS Cut-off** | **21-Jan-02** |
| Printing | 19-Feb-02 |
| Distribution | 5-Mar-02 |
| 28 Days AIRAC Notice | 20-Mar-02 |
| **Effective Date** | **18-Apr-02** |
| | |
| **AIP A/L 34** | |
| **AIS Cut-off** | **15-May-02** |
| Printing | 14-Jun-02 |
| Distribution | 28-Jun-02 |
| 28 Days AIRAC Notice | 12-Jul-02 |
| **Effective Date** | **8-Aug-02** |
| | |
| | |
| **AIP A/L 35** | |
| **AIS Cut-off** | **28-Aug-02** |
| Printing | 26-Sep-02 |
| Distribution | 11-Oct-02 |
| 28 Days AIRAC Notice | 1-Nov-02 |
| **Effective Date** | **28-Nov-02** |

# Appendix 3 – Example Error Tracking Form (ETF)

**No.000/01**

This form is to be completed for each NOTAM or AIP SUPP issued to correct errors in AIP package.

| | |
|---|---|
| Description of error: | |
| Affected documents(s): | |
| Notified by: | |
| Cause & analysis: | |
| Corrective action taken: | |
| Comments: | |

Notes for completion:

The <insert the position responsible> will:

(a) Confirm the error; raise, number and register an error tracking form;
(b) Analyse the safety aspects associated with the error and determine if NOTAM or other action is appropriate;
(c) Initiate a NOTAM/AIP SUPP correction action, and process through NOTAM officer/NOF; *(attach a copy of the NOTAM request to this tracking form)*
(d) Analyse the cause of the error;
(e) Discuss the error with the officer responsible for the document;
(f) Determine remedial action;
(g) Brief Manager, AIS as necessary;
(h) Initiate required change action required;
(i) Amend or establish procedures as required to strengthen processes
(j) Sign-off this form as completed;
(k) File the completed form.

The <insert> officer will assist the <insert from above the position responsible> to determine appropriate action, analyse the cause of the error and propose changes to procedures. Tasks involved may include:

(a) Establishing the audit trail for the data;
(b) Analysing the safety aspects associated with the error and determine if NOTAM or other action is appropriate;
(c) Investigating the cause of the error;
(d) Proposing changes to Standard Operating Procedures.

## Appendix 4 – Example Error Tracking Form Register

## AIS Register of Error Tracking Forms (ETF) - 2001

| Reg. No | Description of Error | Document(s) Affected | Corrective Action taken | Date |
|---|---|---|---|---|
| 001/01 | | | | |
| 002/01 | | | | |
| 003/01 | | | | |
| 004/01 | | | | |
| 005/01 | | | | |
| 006/01 | | | | |
| 007/01 | | | | |
| 008/01 | | | | |
| 009/01 | | | | |
| 010/01 | | | | |
| 011/01 | | | | |
| 012/01 | | | | |
| 013/01 | | | | |
| 014/01 | | | | |
| 015/01 | | | | |
| 016/01 | | | | |

# QA IMPLEMENTATION PLANNING TEMPLATE

(*Version 1.1)*

**CONTENTS**

## Introduction

This document presents an outline of issues that should be considered in the preparation of a plan to implement a Quality Assurance system within an AIS unit, the aim being to register for compliance against the ISO 9002 standard.

## Document Structure:

| Content | Purpose |
|---|---|
| **Overview of the planning approach** | Provides an initial checklist of principal issues to be addressed in chronological order |
| **Implementation Plan Checklists** | Checklist of items consistent with the generic project plan |
| **Implementation Plan Proposal template** | A template of a high level proposal to initiate a project to implement QA within an AIS department. |
| **Useful Tools** | Example forms providing support to appropriate elements of the implementation plan. e.g. process analysis form |
| **Sample Quality System Elements** | Example document contents |

## How to use this document

1. By following the document in sequential order the essential elements of the implementation process will be addressed.

2. The approach overview serves two purposes:-

1) provides a breakdown of the main tasks
2) can be used as a primary checklist

3. For the preparation phase, a template has been provided to create a high level proposal that, can be used to initiate the programme (by submitting to senior management for commitment to the project)

4. The template is followed by a series of checklists that are consistent with the generic project plan provided in the USEFUL TOOLS section. These checklists identify the tasks to be undertaken during the implementation programme and can be useful in monitoring project progress.

5. The generic project plan is one of the Useful Tools and is available as an electronic MS Project file for the user to adapt according to local requirements.

6. The final section contains a number of example documents from Quality Management Systems. Again these items can be modified by the user by using the accompanying electronic files.

## ELECTRONIC VERSION OF THIS DOCUMENT

This document is also provided in electronic form on the accompanying diskette.

File name: **Planning Outline for QA Implementation.doc**

File name: **Generic AIS QA Project.mpp**

### Hidden Text

***The text highlighted in blue italics within the electronic document is "hidden" text.*** **Be aware that the visibility of the hidden text will be dependent on the TOOLS menu default setting in the configuration of MS WORD on the machine being used to read the file.**

***There are 2 options :-***

*1. To see hidden text on the screen use the following MS WORD menu selection:-*

***TOOLS***
***OPTIONS***
***VIEW***
*tick the appropriate box*

*2. To include hidden text in the printed document:- use the following MS WORD menu selection:-*

***TOOLS***
***OPTIONS***
***PRINT***
*tick the appropriate box*

Guidance and further explanatory comments have been added to many of the points in the planning document. These comments have been formatted as "hidden text " so that the document can be printed as a template of checklists without the explanatory material, if necessary.

### Document navigation

External links within the document provide additional functionality in accessing the supporting project plan file which the user can tailor to the requirement. These links and other internal navigation links are identified by ***red italics*** and have also been formatted as hidden text.

**NOTE:** In order to preserve embedded external links within this document when copying the "Planning outline for QA implementation" file to another directory, ensure that the following files are also copied to the same location:-

**Generic AIS QA Project.mpp** ..... Project plan Gantt chart requires **MS PROJECT 98.**

### Inventory State Procedures.doc

## Approach OVERVIEW

| INITIAL PLANNING CHECKLIST | | | |
|---|---|---|---|
| **PHASE** | | **Check Item** | **Sections** |
| **PREPARATION** | Establish project team, target dates and resources | | 0 |
| | Produce a high level proposal for management support. | | 0 |
| | Management decision to implement ISO 9002 | | |
| **PLANNING** | Review current processes and evaluate against requirement of standard | | 0 |
| | From the assessment develop a plan and schedule for development and implementation for each of the elements of the quality system. | | |
| **DESIGN** | High level design followed by the development and documentation of the unit processes. | | 0 |
| **TEST** | Deployment of processes with associated training and briefing sessions | | 0 |
| | Preliminary audit programme to validate effectiveness of the quality system against the Standard | | 0 |
| **REGISTRATION** | Operation and fine tuning of the quality system and registration assessment. | | 0 |
| **POST REGISTRATION** | Once the quality system is implemented and operational, continue to identify and establish suitable aspects within the working quality system that can be used as measures to monitor the system performance and assist with identifying improvement. | | |

The shaded area above refers to those phases described on the accompanying generic project plan Gantt chart. *Generic AIS QA Project.mpp*

## PREPARATION

A basic plan is needed which provides a first appraisal of the current organisation requirement, resources available and other resources needed.

**Use the following checklist to research information and then complete the proposal template in section** 0.

| Item | PROGRAMME INITIATION | Check Item |
|---|---|---|
| 1 | **Management Support.**<br>*Who? It is recommended that the highest level of support be looked for.* | |
| 2 | **Internal resources and budget.**<br>*The introduction of a quality system should not create new employment posts to be filled but may increase work responsibilities. Support for external consultancy will however be needed and budgetary provision required.* | |
| 3 | **External support / effort needed?**<br>*Recommended in order to assist with correct interpretation and to ensure the internal team is kept on track for compliance. Consider the initial quality and internal auditor training.* | |
| 4 | **Target date to be met for registration**<br>*Defines a timescale for planning purposes, provides goals in the form of milestones for the project team and can also assist in continuing interest and support from senior management* | |
| 5 | **Scope**<br>**1. Activity**<br>*Complexities of seeking registration with some operations may not be apparent until analysis of the full requirement is made.*<br><br>**2. Location**<br>*In deciding the scope of the implementation, consideration must be given to those aspects of the operation that are not confined to the one location.* | |
| 6 | **Project Leader and team**<br>*Careful consideration needs to be given to the responsibility for coordination of the implementation. Define skills required including motivation for the programme and ability for good communication and relationship with all levels. Note that the project team assigned at this stage need not imply a fixed decision on responsibilities within the quality system. These roles have yet to be defined e.g. the quality management representative at this stage may not necessarily continue with the role once the QS has been implemented.* | |
| 7 | **Resources**<br>*Estimates of the time required by existing personnel should be made before estimating effort and costs of external support.* | |
| 8 | **Contact with registration organisations**<br>*It is not necessary at this stage to make a formal agreement regarding registration however information re costs and schedules for the registration assessment is needed for planning purposes.* | |
| 9 | **Complete and submit QA Implementation Proposal**<br>*Ref: Template 0* | |
| 10 | **Programme launch** | |

## PLANNING - QA REQUIREMENT PHASE

### Determine department organisation structure, roles and responsibilities

| | MANAGEMENT ORGANISATION STRUCTURE<br>4.1 | |
|---|---|---|
| Item | | Check Item |
| 1 | **Prepare organisational perspective**<br>*Although the quality system may only be confined to one unit or department of a larger organisation, the relationship of the unit to the whole is of benefit to understanding certain processes and identifying responsibilities which may lie outside of the unit.* | |
| 2 | **Unit structure**<br>*Specific working / business groups probably already exist but need to be clearly defined in their roles and responsibilities. Identify inputs and outputs. Note that areas of responsibility may be more clearly defined by considering* ***what is not*** *the responsibility of a group in a particular functional area.* | |
| 3 | **Personnel responsibilities**<br>*Allocation of individual responsibilities in a working group including the value of all levels communicating non conformances and or potential improvements* | |

### Determine documentation requirements and control processes

*Ref: Documentation planning tool 0*

| | QUALITY SYSTEM DOCUMENTATION<br>4.2 | |
|---|---|---|
| Item | | Check Item |
| 1 | **Quality Policy** | |
| 2 | **Management Organisation** | |
| 3 | **Quality Manual**<br>*Decide on D.M.S.* | |
| 4 | **Training Records**<br>*Quality training and skills training as relevant to the department services* | |
| 5 | **Forms.**<br>*Complaint forms, check sheets, corrective actions* | |
| 6 | **Document control process**<br>*Ref: Example 0* | |

## Identify Procedures

(*Requires preparation and assessment of the current operation to measure compliance of existing methods*)

| | **IDENTIFY PROCEDURES 4.9** | |
|---|---|---|
| **Item** | | **Check Item** |
| 1 | **Process mapping**<br>*Project team understanding. Identify current practices in each functional area and map their relationships;- (a) with each other, (b) to other organisational units and (c) to the Standard. It is useful to use flowcharts to demonstrate relationships.* | |
| 2 | **Gap assessment**<br>*Perform a comparative analysis to understand how current practice differs from the requirements to meet the Standard or to improve practice.* | |
| 3 | **Procedures list**<br>*From analysis list those procedures needed to meet requirements of the Standard and operation .Ref Example form 0*<br>*For a model production process refer to SDP procedures. A list is given in .*<br>*Ref Inventory State Procedures.doc - Toc483045353* | |
| 4 | **Compare proposed procedures with training requirements**<br>*Check for duplication of procedures with existing training instructions which cover the same function.* | |
| 5 | **Prepare procedure development plan**<br>*Identify those procedures on the list to be derived and documented from existing records and those that need to be developed as new.* | |

*Example Process form 0*

## System awareness programme

| | **QUALITY AWARENESS TRAINING 4.18** | |
|---|---|---|
| Item | | Check Item |
| 1 | **Generating quality awareness**<br>*Whole department briefing on basic quality. Consideration should be given to the size of the group. It may be advisable to conduct separate courses.* | |
| 2 | **System deployment briefing**<br>*Once the quality system has been designed and documented it needs to be explained to the working units. This is best effected in small groups concentrating on those aspects relevant to their functional area.* | |
| 3 | **Reviews and repeats**<br>*Consider the need to repeat the briefings at appropriate times to reinforce or clarify aspects of the deployment of the Quality System. Opportunity can also be given to present reviews of the system that have taken place.* | |

## DESIGN PHASE

### Develop procedures

| | PROCESS PROCEDURE DEVELOPMENT<br>4.9 | |
|---|---|---|
| Item | | Check Item |
| 1 | **Procedure structure**<br>*Consistency is needed in the approach to detailing each procedure.*<br>*Example structure 0* | |
| 2 | **Amend existing procedures**<br>*Modify existing procedures according to analysis in 0* | |
| 3 | **Develop new procedures**<br>*Documented procedures needed were identified in the gap assessment in 0.* | |
| 4 | **Identify quality measures**<br>*Establish suitable aspects within the working quality system that can be used as measures to monitor the system performance and assist with identifying improvement. E.g. response times to information requests.* | |

### Training Plan

| | TRAINING PLAN<br>4.18 | |
|---|---|---|
| Item | | Check Item |
| 1 | **Develop procedures for identifying training**<br>*Evaluate experience of staff e.g. such as for prerequisite qualification for specialised tasks.*<br>*Identify the individual training needs of staff at defined intervals e.g. by job appraisal or performance reviews.* | |
| 2 | **Develop procedures for providing training**<br>*Consider internal or external training as appropriate to fulfill current job requirements*<br>*Consider training or briefings required for suppliers.* | |
| 3 | **Develop procedures for keeping training records**<br>*Establish and maintain training plans and records.* | |
| 4 | **Create a training record form or template** | |
| 5 | **Establish a training plan for each job profile** | |
| 6 | **Quality training plan**<br>*Ref: Elements identified in 0* | |

## Internal auditing

| INTERNAL AUDITS<br>4.17 | | |
|---|---|---|
| Item | | Check Item |
| 1 | **Develop procedures** | |
| 2 | **Selection of internal auditors**<br>*Consider working relationship in order to ensure cooperation.* | |
| 3 | **Internal auditor training** | |
| 4 | **Create documentation**<br>*Checklist, non conformity report templates, audit history* | |
| 5 | **Internal audit plan**<br><br>*Consider the timing and frequency of internal audits. In the initial stages higher frequency may be necessary in order to fine tune the system and to provide on the job training for the internal auditors. Take into account the timing of external registration audits .* | |
| 6 | **Establish reviews**<br>*At management and work group level.*<br>*Ref: Example Management review agenda 0* | |

## Corrective and preventive action

| CORRECTIVE and PREVENTIVE ACTION<br>4.14 | | |
|---|---|---|
| Item | | Check Item |
| 1 | **Develop procedures**<br>*1.Integrate with non conformance reports and management review results*<br>*2.Analyse reports, determining action required and implementing corrective action.*<br>*3.Verification of effective action by internal audit.* | |
| 2 | **Create forms required**<br>*e.g. change request for corrective and preventive actions or changes to the Quality System.* | |
| 3 | **Create log to monitor status of actions**<br>*Note status of non conformances and appropriate actions is an agenda item on the management review. .* | |

**Document control**

| CONTROL OF QUALITY RECORDS<br>4.16 | | |
|---|---|---|
| Item | | Check Item |
| 1 | **Develop procedures**<br>*Issues of formatting, review, approval, implementation, and change processes*<br>*Ref: Example document management requirements 0* | |
| 2 | **Create document change request form**<br>*Establish consistency through use of agreed style for documents.* | |
| 3 | **Establish controlled documents master list.**<br>*List all documents within the Quality System including quality records* | |
| 4 | **Document control awareness**<br>*Monitor effective document control through the internal audit process.*<br>*Educate and inform users through briefing sessions or information updates* | |

## TEST PHASE

| QS DEPLOYMENT and VALIDATION | | |
|---|---|---|
| Item | | Check Item |
| 1 | **Brief staff and inform of start date** | |
| 2 | **Issue and implement procedures** | |
| 3 | **Conduct internal audits to plan** | |
| 4 | **Establish corrective and preventative action reporting** | |
| 5 | **Develop service level agreements**<br>*Provides a method of defining and controlling relationships between internal organisations.*<br>*Ref: Example criteria 0* | |
| 6 | **Conduct internal audit of management system** | |
| 7 | **Registration ISO audit process** | |

## REGISTRATION PHASE

| ISO AUDIT PROCESS | | |
|---|---|---|
| Item | | Check Item |
| 1 | **Operate and fine tune the declared management system.** | |
| 2 | **Pre-assessment** | |
| 3 | **Corrective action arising from pre assessment** | |
| 4 | **Registration ISO assessment** | |
| 5 | **Post assessment corrective action plan** | |

## PROPOSAL TEMPLATE

*The proposal template will allow the creation of a documented proposal which can be used for submission to management to secure support, define policy, assign responsibility and allocate resources.*

**PROJECT PROPOSAL**

# QUALITY ASSURANCE IMPLEMENTATION

**State Administration:**

Document reference: .

Date:

**CONTENTS**

## 1 INTRODUCTION

The inclusion of the following requirements for Quality Assurance systems in ICAO Annex 15 (Aeronautical Information Services), Edition 10, and the establishment of an associated CIP Objective, has identified the requirement for the implementation of ISO 9000 Quality Assurance (QA) activities in the National Aeronautical Information Services.

> 3.1.7 An aeronautical information service shall receive and/or originate, collate or assemble, edit, format, publish/store and distribute aeronautical information/data concerning the entire territory of the State…
>
> 3.2 **Quality System**
>
> 3.2.1 Each Contracting State shall take all necessary measures to introduce a properly organized quality system containing procedures, processes, and resources necessary to implement quality management at each function stage as outlined in 3.1.7 above. The execution of such quality management shall be made demonstrable for each function state, when required.
>
> 3.2.2 **Recommendation** – The quality system established in accordance with 3.2.1 should be in conformity with the International Organization for Standardization (ISO) 9000 series of quality assurance standards, and certified *by an approved organization.*
>
> *Note.-- International Organization for Standardization (ISO) 9000 series of quality assurance standards provide a basic framework for the development of a quality assurance programme. The details of a successful programme are to be formulated by each State and in most cases are unique to the State organization.*

## 2 OBJECTIVE

In order to meet the AIS CIP Objective which calls for States to achieve registration to the ISO 9000 Series of QA Standards by 2003 the following proposal outlines the plan to implement a quality management system within the *enter State name* AIS and complete the registration to ISO 9002 by the stated target date. ISO 9002 has been identified as the ISO standard most appropriate for AIS.

## 3 SCOPE

The programme described will implement Quality Assurance for the following AIS activities within the administration:

*1) e.g. AIP production*
*2) e.g. NOTAM operations*

The implementation will extend to the operation of these activities at…*name the location/s…*

*In deciding the scope of the implementation consideration must be given to those aspects of the operation that are not confined to the one location e.g. briefing offices.*

## 4 BENEFITS

The implementation and operation of quality measures in the form of a quality management system will bring improvements in efficiency and reliability with subsequent enhancements to productivity, safety and service levels.

## 5 PROGRAMME DESCRIPTION

The programme tasks can be broken down into four principal phases:-

1) Planning - QA requirement in the specified AIS areas.
2) Design of the quality system.
3) Deployment and test of the quality system.
4) Final adjustment and audit for ISO registration.

### 5.1 Planning - QA requirement

The objective of this phase is to establish for each of the operational AIS processes being involved :-

(a) the associated roles and responsibilities;
(b) the necessary procedures to effect the processes identified;
(c) the necessary documentation.

A key feature of this phase will be the gap assessment to identify where there is a need to develop and extend procedures to meet the requirements of the ISO 9002 standard. It will also be necessary to initiate an awareness programme in order to gain support for the initiative at all levels.

### 5.2 Design

In this phase it is necessary to identify where new procedures are required and ensure consistency with existing ones. To develop training plans, system audit planning and establish the management review process. Key to this phase will be the documenting and creation of the necessary forms to fulfil the quality record requirement.

### 5.3 Deployment

As the quality system develops the procedures need to be issued and the system implemented such that the process can be tested and checked for correct function. Discrepancies will be dealt with through the corrective action and follow-up action procedures, the aim being to validate the system in preparation for the formal, external audit process necessary for registration.

### 5.4 Registration

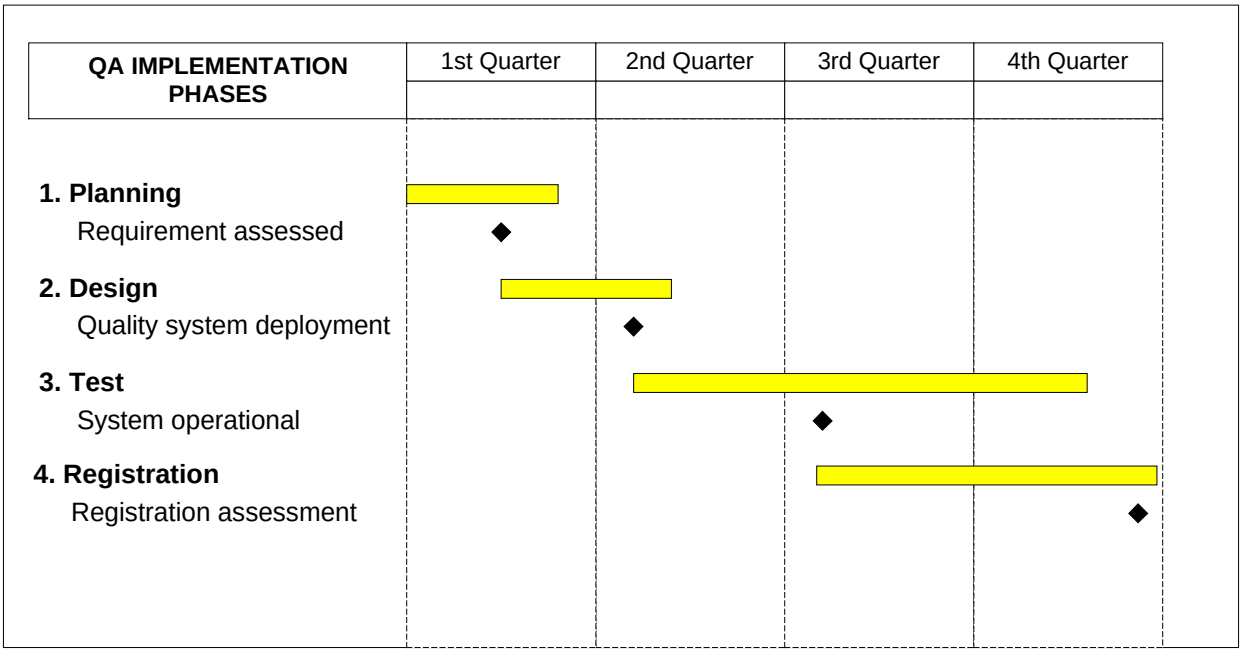
The final phase represents the on-going working quality system which will be operated for a period before the registration assessment. This provides an opportunity for the fine tuning of quality system elements. Note that the timescale for this phase extends beyond the assessment date in order to accommodate any corrective action issues that may arise from the registration audit.

**Target date to be met for registration**
*Defines a timescale for planning purposes, provides goals in the form of milestones for the project team and can also assist in continuing interest and support from senior management*

## 6 PROJECT PLAN

The following is a high level schedule of the programme showing a proposed total implementation timescale of *enter proposed time* months.

*Note that the plan below can be substituted by the detailed MS project plan provided with the implementation template This plan has used a 12 month timescale. This will need to be adjusted according to the local plan. Generic AIS QA Project.mpp*




*Note: Gantt chart normalised to 12 months*

## 7 PROJECT TEAM

The following personnel are proposed to comprise the implementation project team. An assessment of effort required is included.

| PROJECT TEAM | | | |
|---|---|---|---|
| **Name** | **Role** | **Skills / department represented** | **Estimated effort required** |
| | *QA Project leader* | | |
| | *QA committee* | | |
| | *QA committee* | | |
| | | | |

*Careful consideration needs to be given to the responsibility for coordination of the implementation. Define skills required including motivation for the programme and ability for good communication and relationship with all levels. Note that the project team assigned at this stage need not imply a fixed decision on responsibilities within the quality system. These roles have yet to be defined e.g. the quality management representative at this stage may not necessarily continue with the role once the QS has been implemented.*

## 8 RESOURCES

The introduction of a quality system should not create new employment posts but is expected to increase work responsibilities, particularly during the development of the system. The following is an estimate of the effort required for the specified tasks, the majority of which can be provided internally for the development of the necessary documentation.

The cost of external support has to be considered against the saving in internal effort by correctly interpreting the requirement in the earlier stages of the programme, and providing assistance with the assessment of the quality system once operating prior to registration audit. Budget allocation will need to be considered for support from external consultancy.

*Note: Check with National agencies to see if subsidised support is available.*

**Internal :**

*Ref: The planning matrix 0 gives a more detailed breakdown for assessing time required for documentation development.*

| INTERNAL EFFORT | |
|---|---|
| **Task** | **Estimated effort (man days)** |
| Process analysis | |
| Procedures development | |
| Documentation control | |
| QA training | |
| Internal auditor training | |

## 2. External

*Some external support is recommended in order to assist with correct interpretation and ensure the internal team is kept on track for compliance. Consider also initial quality and internal auditor training.*

| EXTERNAL EFFORT | | |
|---|---|---|
| **Task** | **Estimated effort (man days)** | **Cost** |
| Interpretation of requirement against standard ISO 9002 | | |
| QA awareness training | | |
| Internal Auditor training | | |
| Pre registration audit | | |

| OTHER SUPPORT COSTS | | |
|---|---|---|
| **Item** | **Purpose** | **Cost** |
| *e.g. software* | *document control* | |
| ISO Registration fee | Professional registration organisation | |
| | | |

## 9 DELIVERABLES

The project objective is to establish a quality system that meets the requirements of the ISO 9002 standard. The following are considered to be essential elements of this process.

- ❑ Quality policy
- ❑ Documented procedures
- ❑ Training plan
- ❑ Audit plan
- ❑ Management review plan
- ❑ ISO 9002 registration

## 10 REFERENCES

1. Annex 15 to the Convention on International Civil Aviation (section 3.2 Quality System)
2. An Introduction to ISO 9000 Quality Management Systems for Aeronautical information Systems (QA Workshop IANS - 1999)

## USEFUL TOOLS

### Planning Matrix

*Estimate the times involved for each of the phases in preparing the following documentation :-*

| Document Type | Analysis | Definition of Process | Implementation | Review | Total *(days)* |
|---|---|---|---|---|---|
| Quality Policy | | | | | |
| Quality Manual | | | | | |
| Procedures | | | | | |
| Instructions | | | | | |
| Document Templates | | | | | |
| Checklists | | | | | |
| Forms | | | | | |

**Process Documentation planning Requirements.**

*Example of a planning table to establish the type of documentation required to support key elements of the quality system.*

| Process | Document Name | Document Type | Author |
|---|---|---|---|
| **Planning audits** | Planning an Internal audit<br><br>Annual audit schedule | Procedure<br><br>Form | |
| **Conducting audits** | Conducting an internal audit<br><br>Audit checklist<br><br>Audit trail<br><br>Non conformity report | Procedure<br><br>Checklist<br><br>Form<br><br>Form | |
| **Management Review** | Meeting agenda<br><br>Meeting minutes<br><br>Action list | Form | |

**Example Process Description Form**

| | |
|---|---|
| **Unit :** | |
| **Developer Name:** | *Who has developed and documented the process and is responsible for any changes.* |
| **Date :** | |

| | |
|---|---|
| **PROCESS:** | |
| **Application Area:** | *Is the activity performed unit wide or concerns a specific section?* |

**Process description**
*What activities are performed and in which order*

**Name:**
*Who performs the process*

**Forms**
*Forms support the process and provided the quality records.*

**Work instructions**
*Associated with the process for providing specific detail.*

| | |
|---|---|
| **Process inputs**<br>*What are the inputs to the process, information, materials etc?* | **Process entry criteria**<br>*When does the process begin?* |
| **Process outputs**<br>*What are the outputs - information, products etc?* | **Process exit criteria**<br>*When is the process considered complete?* |

**Procedures List**

| Procedure name / identifier | ISO 9002 : 1994 Reference | | Check Item |
|---|---|---|---|
| | **Contract review** | 4.3 | |
| | **Document and Data Control** | 4.5 | |
| | **Purchasing** | 4.6 | |
| | **Customer supplied product** | 4.7 | |
| | **Identification and traceability** | 4.8 | |
| | **Process Control** | 4.9 | |
| | **Inspection and Testing** | 4.10 | |
| | **Inspection and Test Status** | 4.12 | |
| | **Control of Non conforming product** | 4.13 | |
| | **Corrective and preventive action** | 4.14 | |
| | **Handling, storage, packing and delivery** | 4.15 | |
| | **Control of quality records** | 4.16 | |
| | **Internal quality audits** | 4.17 | |
| | **Training** | 4.18 | |
| | **Servicing** | 4.19 | |
| | **Statistical techniques** | 4.20 | |

Note: This form will be updated on introduction of ISO 9001:2000

**Service Level Agreements**

**Requirement**

A service level agreement is typically needed where processes span two or more internal organisations or where the absence of such a defined operational interface may adversely affect the quality of the product or service provided.

**Criteria guideline**

An agreement that defines the following aspects of the interface

| | |
|---|---|
| Organisational relationship | Include the charters of both customer and supplier. |
| Scope | Reference services to be provided by the supplier in the agreement. If there are service areas that fall outside the agreement these should be identified within the scope. |
| Responsibilities | Both customer and supplier personnel responsible for the review and approval of the agreement. |
| Point of contact | Clearly identified point of contact from each member of the agreement. |
| Expectations | Detail and list service and product expectations e.g.<br>▪ timeliness of service<br>▪ quality of deliverables |
| Process | Reference to those procedures and work instructions relevant to the relationship defined in the agreement. |
| Constraints | Define any constraints on the members of the agreement that may affect the performance. |
| Deliverables | Clearly defined deliverables between members of the agreement, including any necessary approval controls or assessment criteria. |
| Special cases / complaints | Suitable procedures should be in place to address issues that fall outside of the agreed specification of the relationship. |
| Performance monitor | Reviews conducted by supplier and customer - type and frequency to be agreed. |
| Charges | |

## SAMPLE QUALITY SYSTEM ELEMENTS

The following pages provide guidance on specific elements identified in the implementation plan template that will assist the user in defining or developing those aspects relevant to the users operation.

**Document management system requirements**

The document management system must be able to provide the following feature capabilities. Those identified with an asterisk indicate that this is an essential requirement. All others, while not essential, are considered beneficial / desirable.

- ❑ *Unique identification of all documentation / data.
- ❑ *Issue and version status of the document / data.
- ❑ Source / origin, author / owner of the document / data.
- ❑ *Impact Assessment source / responsibility (where applicable).
- ❑ *Number of copies held.
- ❑ *Distribution – location / holder of each document / data copy held.
- ❑ *Identification of any extracted data & where held / located.
- ❑ *Recording the processing of Change Request and the updating of procedures.
- ❑ *Recording the processing of Problem reporting and the closure / progress of corrective actions.
- ❑ Ability to highlight (flag) overdue actions.
- ❑ Tracking of customer feedback / satisfaction performance reporting.
- ❑ Provision of routine trend analysis reports.
- ❑ Management of the management system audit plan.
- ❑ Management Reviews – action progressing and closure of actions.

**Procedure structure**

The Procedures contained within the documented management system, should be as consistent as possible. A suggested outline of the procedure structure content is provided below:

**Process / procedure title***;*
This being the subject / topic covered by the procedure.

**Procedure 'Owner'**;
This being the individual or function with responsibility for the process.

**Objective;**
This should briefly describe what the process / procedure is trying to achieve.

**Scope;**
The scope should define what is applicable and the limitation (if any of the procedure).

**Responsibilities;**
This section should briefly define the responsibilities of the key functions involved in the procedure.

**Introduction;**
Optional. A procedure may benefit from a brief introduction, but this is not essential.

**Contents List;**
Optional. This being a list of contents of the document .

**Process Overview;**
This section should provide a high level end to end overview of the key activities / steps contained within the process lifecycle.

**Detailed Process;**
This section should define the detail of the process activities, to the extent that the absence of these could be potentially detrimental to the completion of the activity being performed.
It should identify; the key activities /steps within the process, the requirements that must be met, responsibility for achieving these and supporting guidance notes, to the degree necessary to ensure that the activity can be performed.

**Document control elements;**
This information supports the identification of the procedure including the document number, issue number, approval and amendment records.

**Related Documents;**
This section should list should list the related documents, forms, etc., referred to within the content of the procedure and which are necessary to complete the process being described by the procedure.

**Definitions;**
Technical terms, abbreviations and acronyms used in the document.

**Appendices;**
These would typically contain supporting information necessary to complete the process.

**Note:** References to departments, sections, functions etc., should be used wherever possible and the use of personal names and telephone numbers within the content of the procedure should be avoided. Should the latter change it will require an amendment update to the procedure.

**Typical management system review agenda**

The management system review should consider, but not be limited only to the following topics:

- ❑ Outstanding actions from previous review meetings;
- ❑ Overall service/product delivery performance and customer feedback;
- ❑ Management system audit observations.
- ❑ Follow-up closure/escalation action of any outstanding observations.
- ❑ Outstanding non-conformance's i.e. Problem Reports, Change Request etc.;
- ❑ Performance to Service Level / Interface Agreements – both internal and external.
- ❑ Adequacy of support Contracts with suppliers / contractors (where applicable);
- ❑ Regulatory and Statutory issues, *(i.e. issues / changes impacting on the Administration, e.g. ICAO).*
- ❑ Staff Training and skills development – *(with respect to the training plan);*
- ❑ Resources.
- ❑ Proposed business process improvement activities.

# GUIDANCE MANUAL FOR AERONAUTICAL INFORMATION SERVICES

**in the**

# ASIA/PACIFIC REGIONS

# PART 2

## SELECTION AND TRAINING GUIDELINES

**for the**

## AIS

# GUIDELINES

# SELECTION AND TRAINING

# for the

# AERONAUTICAL INFORMATION SERVICE

# Table of Contents

# Selection and Training Guidelines

## Introduction

This part of the Guidance Manual for Aeronautical Information Services (AIS) in the Asia/Pacific Regions has been developed to provide States with guidance material for the selection and training of staff in the AIS.

The guidance material is not intended to be prescriptive and may be used as a guide when States are developing their own individual selection and training material.

## Selection Principles

Recruitment and selection of staff for the AIS should be made based on merit and relative efficiency, the requirements of the position, in fair and open competition to ensure that the best qualified applicant gets the job.

In assessing the relative efficiency of candidates consideration should be given to the abilities, qualifications, experience, standard of work performance and personal qualities of each applicant, to the extent that those matters are relevant to the efficient performance or potential to efficiently perform the duties.

## The First Step

A number of documents must be in place before the Selection Process can commence to clearly identify the work to be done. Normally these would consist of:

- Position Description;
- Duty Statement; and the
- Selection Criteria against which applicants will be assessed.

The Position Description and the Duty Statement set the scene about what the position is required to do, what the reporting arrangements are, and how the position fits in with the other work areas.

The Selection Criteria is the part that sets out how the applicants will be measured for the job of work to be done.

## The Selection Process

A Selection Committee will usually be established with a minimum of two people to determine the most suitable applicant.

When necessary, a shortlist of applicants most suitable for further consideration may be made by the committee based on claims against the selection criteria and/or on referee comment.

When there is only one applicant for the position the applicant may be recommended for direct promotion or employment without the establishment of a Selection Committee.

The Selection Committee should decide the procedures to be followed and the sources of information to be used in assessing applicants against the selection criteria. Sources of information may include:

- Application
- Interview
- Referee Reports
- Work Samples and/or
- Performance tests

The Selection Committee is responsible to ensure that the field of applicants is of sufficient calibre for assessment to proceed. The procedures that the Selection Committee follows will enable a thorough investigation of the claims and merits of the applicants to be assessed against the selection criteria.

The selection report will provide an accurate account of the Committee's assessment of applicants and enough information for the decision-maker to make a decision. The report will be used as the basis for counselling unsuccessful employees and for review requests arising from the selection decision.

An appropriate delegate will usually formally approve the Selection Committee's recommendation.

All unsuccessful applicants interviewed for the job should be notified in writing of the outcome and should be given the opportunity to obtain verbal feedback on their performance if they so desire. Applicants not listed for interview should be advised accordingly.

## Training and Training Courses

Following a selection process, AIS training is separated into a number of distinct stages.

Stage 1 deals with "core skills" and the focus is on the new entrant becoming familiar with the purpose, role and responsibilities of an AIS.

Stages 2 and 4 are assessments that follow the Core Training and On-the-Job Training.

The third stage covers topics related to on-the-job training.

The fifth stage covers more advanced training and is applicable to staff who have been working in the AIS for more than a few months.

The training process is depicted in the following table.

| Stage | Description |
|---|---|
| | New Entrant Selection |
| **1.** | Core Training |
| **2.** | Training Assessment |
| **3.** | Area assignment - Task specific on-the-job training |
| **4.** | Performance Assessment |
| **5.** | Career Development |

A flow chart showing the various stages in the Selection and Training Process is shown in Appendix 1.

Base entry-level positions in some AIS may be as cartographic and / or Air Traffic Services Operations Officers, who may be responsible for matters such as NOTAM, documents, static aeronautical data and information, or operational aspects of aeronautical charts. It is unlikely that an applicant will present with a complete range of these technical skills. The normal process is therefore to advertise for, and select an applicant with the skill set most needed at the time.

## Stage 1 - Core Training

New entrants will be placed in an appropriate work area, and assigned to an experienced staff member who will supervise and guide the new entrant through the more formal generic training.

This initial training requires the student to research basic reference documents and then undergo an assessment to confirm that the required levels of knowledge have been acquired.

The assessment is designed to ensure that the student has strong understanding of the role, functions, products and structure of AIS.

A demonstrated level of competency in an assessment of “AIS Core Knowledge” will enable the new entrant to commence working with non-continuous supervision.
Each AIS should specify a time period within which the Core Training will be completed as part of the overall training plan.

## AIS Core Knowledge

A list of AIS Core Knowledge and the associated reference documents is shown in the following table.

| Topic | Reference Document |
|---|---|
| Legislation and legal charter | National legislation, DOC 8126, Annex 15 |
| Responsibilities, status, functions, scope, and purpose of an AIS | DOC 8126, DOC 7192, Annex 15, AIP |
| Quality systems | Annex 15, Annex 11, ISO 9000 series |
| Origin of aeronautical information and collection of information | DOC 8126, AIP |
| AIS organisation | Internal Organisation Chart, DOC 8126, AIP |
| AIS relationships with internal and external stakeholders, clients and author areas | AIS Quality Manual, AIS Business Plan |
| AIRAC | DOC 8126, Annex 15, AIP |
| AIP/AIP SUP/AIC | DOC 8126, Annex 15, AIP |
| NOTAM | DOC 8126, Annex 15, AIP |
| Codes | DOC 8126, 7910, 8585, 8400, 7383, 8643, Annex 15,AIP. |
| WAC and aeronautical charts | DOC 8697,Annex 15, Annex 4, AIP |
| The integrated AIP | DOC 8126, AIP |
| Integrated Automated AIS Systems | DOC 8126 |
| Windows NT (or other operating system) - file management and file transfer | Users Manual |
| Word processing | Users Manual |
| Database | Users Manual |
| Spreadsheet | Users Manual |

## Stage 3 - Task Specific Training

On-the-job training supports new entrant training Stage 2 and any training provided to staff moving to a new work group.

A more experienced officer from within the work group provides on-the-job training. This training is informal and seeks to assist the new member to adjust and become familiar with standard operating procedures, work processes, job norms and data structures as they relate to a particular job function within AIS.

An exception to this practice is for those staff members who, in the course of their duties, will issue NOTAM. When required, new entrants may undertake NOTAM office specific training at an International or other NOTAM office.

The topics listed below represent some of the subject matter that will be covered in on-the-job training. Not all topics need to be covered for each new entrant.

## On-the Job Training Topics

- ICAO documents
- AIS Products
- Change Management
- Standard Operating Procedures
- Quality Processes
- Checking procedures
- Branch Policies & Procedures
- Network configuration of DTP
- File Management within DTP
- File Management within CAD
- Record Keeping
- AIP Data Structures
- Relationships with external agencies
- Responsibilities and limitations
- NOTAM Management and Policies
- Codes Management and Policies
- Publication and production
- Distribution

Assessment of this phase of training is continuous and forms part of the performance appraisal process.

## Training and Competency

### Training

The competencies required for each position are detailed in the relevant Position Descriptions held for each of the functional areas of the AIS. From these competencies, and initial and regular assessments of performance, training requirements for individual staff are identified.

#### *Newly Appointed Staff*

The training requirements for newly appointed staff are identified in consultation with the staff member and implemented as a Training Plan. The Training Plan will identify all relevant items for which training is required, a time-frame for the completion of each item (either due date or period) and when appropriate, any required achievement level.

As training items are completed, completion is recorded on the Training Plan. A copy of a sample checklist is shown at Appendix 2.

### *Current Staff*

Training programs should be developed by the Manager, AIS for on-going training to keep staff current with practices applicable to the position and to ensure all incumbents are trained to meet the requirements shown in the Position Description and Duty Statement.

This may be carried out as part of the annual Performance Assessment with any identified training requirements recorded in the Personal Development Plan. Details of the completion of training for all staff; both newly appointed and current, should be made in the staff members file.

## Competency

### *Newly Appointed Staff*

New appointees to any position are required to demonstrate experience and competency appropriate to the position being filled. Initially, this will be determined through the recruiting process.

The performance of newly appointed staff members should be reviewed within 3 months of appointment. This requirement will normally be met by reviewing the results of day-to-day work and the completion of Training Plan items and mentor reports.

If at the completion of all Training Plan items, or the completion of the first 3 months of employment (whichever is the latter), the staff member has demonstrated an appropriate level of competency, they will be considered to be current staff. From that time, they will be required to meet the competency requirements for current staff.

### *Current Staff*

To remain competent, staff members should carry out their specified responsibilities at least once every three months or other suitable interval, depending on the nature of the work being performed. Because of the on-going and regular nature of their work, staff will normally satisfy this requirement through their day-to-day work.

Where a current staff member is absent for a period exceeding 3 months, their performance should be reviewed during the month of recommencement of work, or until such time as they have demonstrated an appropriate level of competency. The performance attributes to be reviewed will depend upon the position held, the length of their absence and the nature of work currently in progress. These should be determined by mutual agreement with the staff member concerned.

### *Competency Records*

Details of competency reviews should be held on individual staff member's files.

**Performance Assessments**

Regular Performance Assessments should be completed for all staff. Performance reviews should include:

(a) The establishment of performance objectives for the next period (year)

(b) A review of the staff members performance against objectives for the review period

(c) Identification and agreement of any training required.

Details of Performance Agreements and Performance Appraisals should be held on individual staff member's files.

A sample Performance Appraisal form is shown at Appendix 5.

## Stage 5 - Career Development

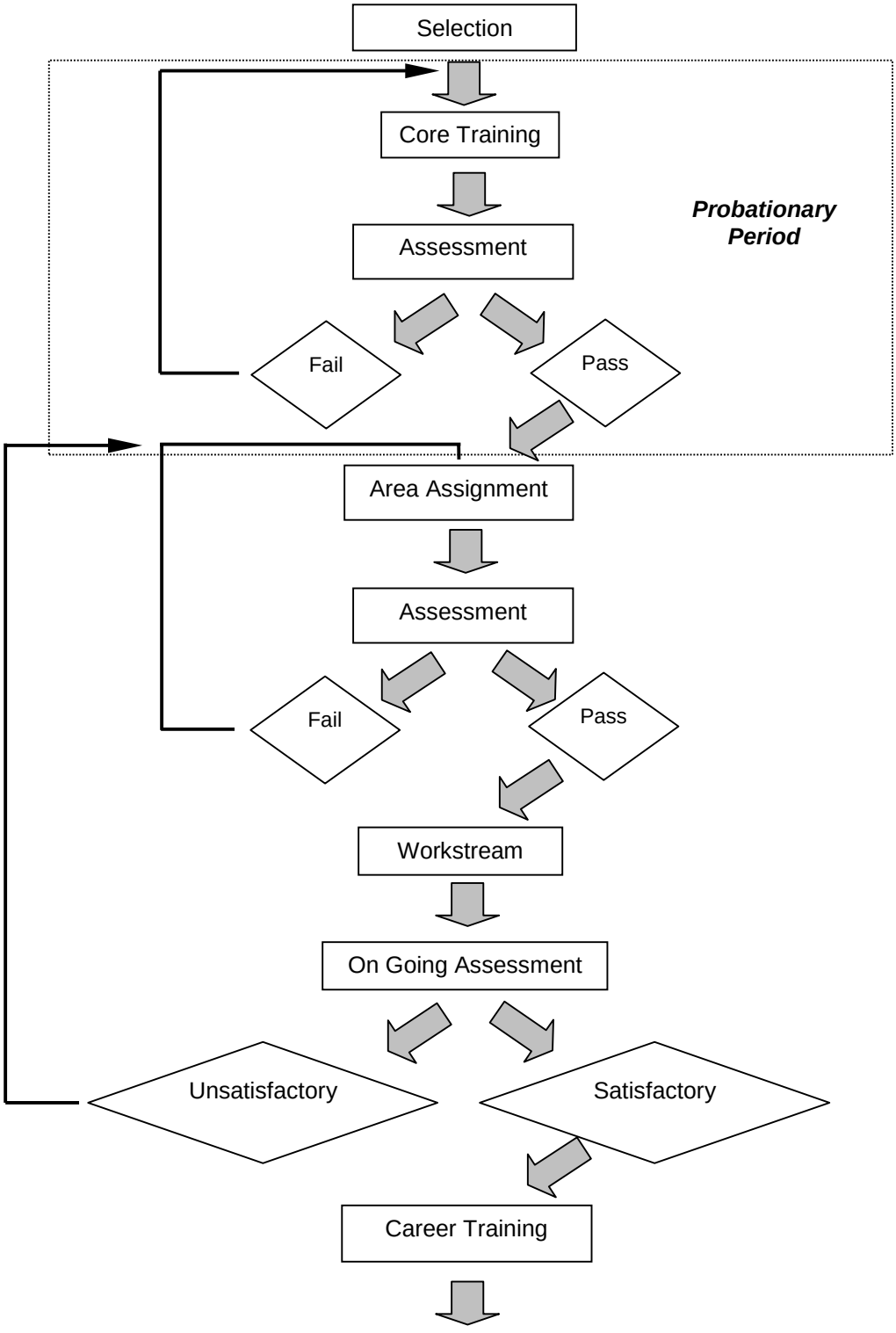
There is no specific course designed for this segment of AIS training.

Computer hardware and software applications training is provided as needs are identified.

This policy is followed throughout the career of an AIS staff member, in terms of providing refresher and advanced applications training. Such courses are not limited to computer applications. By necessity, they include training in both general and quality management techniques and philosophies.

These courses may sourced from firms' external to the parent organisation on an as required basis. Staff should be encouraged and supported in their endeavours to obtain skill enhancements in their own time. This may include acquisition of tertiary or technical skills.

# Appendix 1 - Sample Selection and Training Program



# Appendix 2 - Sample Training Checklists

## Computer Operation Checklist

| Topics | Competent (Yes) | Date | On the Job Training Instructor Initials | Individual Undertaking Training's Initials |
|---|---|---|---|---|
| Log On/Password | | | | |
| Read Message | | | | |
| Print Message | | | | |
| Refile Message | | | | |
| Create Message | | | | |
| Answer sender/all | | | | |

## Fault Reporting Checklist

| Topics | Competent (Yes) | Date | On the Job Training Instructor Initials | Individual Undertaking Training's Initials |
|---|---|---|---|---|
| Fault Reporting – Team Leader on duty | | | | |
| Fault Reporting - Outside Team Leader hours | | | | |

## Local Arrangements Checklist

| Topics | Competent (Yes) | Date | On the Job Training Instructor Initials | Individual Undertaking Training's Initials |
|---|---|---|---|---|
| Temporary Local Instructions(TLI) record | | | | |
| Workstation Information Book | | | | |
| Database Change Procedures | | | | |
| Personal Recency Record | | | | |
| Military Flight Information Service | | | | |
| Airspace and Location Geography | | | | |
| Military Prohibited, Restricted and Danger Airspace Groups | | | | |
| Location for International Issue of NOTAM | | | | |

## Disaster, Contingency and Evacuation Checklist

| Topics | Competent (Yes) | Date | On the Job Training Instructor Initials | Individual Undertaking Training's Initials |
|---|---|---|---|---|
| Warning Message | | | | |
| Evacuation Message | | | | |
| Evacuation Actions | | | | |
| Assembly area | | | | |
| Disaster Recovery Plans Plan Documentation & Checklists | | | | |
| Disaster Recovery Plans Actions | | | | |

# Appendix 3 - Competency Areas : Sample Grading Criteria

## Introduction

This covers the Competency Areas, and offers suggested guidelines for grading performance when using the “Assessment Debrief Form”.

Competency Areas have been divided into separate areas as shown below.

- Pre-flight Briefing and Flight Plan Acceptance
- Flight Plan Processing and Message Handling
- Phraseologies and Communications
- Equipment Handling
- Airspace/Geographical Knowledge
- Documents and Local Procedures
- Coordination
- Workload Management

## Competency Areas : Sample Grading Criteria

| Competency Area | Grading Criteria |
|---|---|
| **Pre-flight Briefing and Flight Plan Acceptance** | The officer must demonstrate a thorough understanding of all-briefing material and flight planning requirements. The officer must obtain a clear understanding of the pilot’s requirements, correctly handle data errors and omissions and demonstrate awareness of technical elaboration responsibilities. |
| **Grading** | 1 Lack of basic knowledge and understanding of pre-flight briefing and flight plan acceptance responsibilities results in unsatisfactory performance.<br><br>3 Demonstrated sufficient knowledge and understanding of pre-flight briefing and flight plan acceptance.<br><br>5 Demonstrated a complete knowledge and understanding of all aspects of pre-flight briefing and flight plan acceptance. |

| Competency Area | Grading Criteria |
|---|---|
| **Flight Plan Processing and Message Handling** | The officer must process all flight plans and messages quickly and without error, using correct procedures, message addressing and endorsement of processed messages. The officer must demonstrate correct use of PDAIs, military addressing and ZP procedures. |
| **Grading** | 1 Fails to correctly process flight plans and messages without assistance and guidance.<br><br>3 Demonstrates satisfactory ability to process flight plans and messages.<br><br>5 Flight plans and messages processed quickly and correctly at all times using correct procedures, addressing and endorsements. |

| Competency Area | Grading Criteria |
|---|---|
| **Phraseology & Communication** | The officer must use standard phrases as applicable and be able to efficiently use non-standard phrases in unusual situations with no ambiguity. The officer must be able to use clear and correct speech without long pauses, inappropriate inflections or emphasis, or clipped transmissions. |
| **Grading** | 1 Poor or incorrect use of standard phraseology, resulting in indistinct and hesitant delivery. Unable to adlib without being ambiguous.<br><br>3 Standard phraseology used effectively. A basic ability was demonstrated with non-standard phraseology. Delivery was usually clear and concise.<br><br>5 Use of standard phraseology was automatic and non-standard phraseology was effectively used, resulting in clear, unambiguous delivery at all times. |

| Competency Area | Grading Criteria |
|---|---|
| **Equipment Handling** | The officer must be able to competently manipulate the equipment applicable to the operating position. The officer must be able to use backup systems in the event of equipment failure and carry out correct fault reporting procedures. |
| **Grading** | 1 Unable to use essential equipment effectively.<br><br>3 Demonstrated ability to use essential equipment effectively.<br><br>5 Sound understanding and demonstrated optimum use of all equipment at all times. |

| Competency Area | Grading Criteria |
|---|---|
| **Airspace and Geographical Knowledge** | The officer must be able to demonstrate a complete knowledge of the various classes of airspace, prohibited, restricted and danger areas, and areas of responsibility. The officer must be able to demonstrate a geographical knowledge applicable to the operating position. |
| **Grading** | 1 Lack of knowledge does not allow effective performance of functions.<br><br>3 Sufficient knowledge to perform job functions satisfactorily.<br><br>5 Demonstrates a thorough knowledge of all aspects of airspace layout and requirements and geographical knowledge |

| Competency Area | Grading Criteria |
|---|---|
| **Documents and Local Procedures** | The officer must demonstrate a thorough knowledge of and compliance with all briefing documents, maps and charts, and local instructions and procedures. |
| **Grading** | 1 Inadequate knowledge of or fails to comply with requirements of documents and local procedures.<br><br>3 Adequate knowledge and |

| Competency Area | Grading Criteria |
|---|---|
| | sufficient compliance with requirements of documents and local procedures.<br><br>5 Demonstrated a thorough knowledge of and full compliance with requirements of all briefing documents and local procedures |

| Competency Area | Grading Criteria |
|---|---|
| **Coordination** | The officer must perform applicable coordination functions correctly in a timely manner. The officer must be able to communicate effectively with other units and agencies. |
| **Grading** | 1 Coordination not completed in appropriate time, resulting in poor communications with other units and agencies.<br><br>3 Correct coordination completed in sufficient time.<br><br>5 Demonstrated complete, effective and timely coordination at all times with other units and agencies. |

| Competency Area | Grading Criteria |
|---|---|
| **Workload management** | The officer must demonstrate the application of a logical work plan, based on current workload, so that tasks are prioritised and completed with sufficient speed and accuracy. |
| **Grading** | 1 Unable to prioritise tasks effectively to cope with normal workload. Makes frequent errors. Work rate was too slow and little ability to adjust to increasing work rate was evident.<br><br>3 Ability to process information correctly with sufficient priority, speed and accuracy to cope with average workload demands.<br><br>5 Able to prioritise tasks, maintain accuracy and adjust work rate to cope with all workload demands with ease and confidence. |

# Appendix 4 - Sample Trainee Assessment Debrief Form

**Week:**

| Trainee : | Instructor / Training Officer : | Position : | Date : |
|---|---|---|---|
| | | | |

## Pre-flight Briefing and Flight Plan Acceptance

1 2 3 4 5

Understanding of briefing material
Understanding of Flight planning requirements (Domestic/International)
Clear understanding of pilots requirements
Aware of technical elaboration responsibilities
Correctly handles data errors and omissions
Application of standard briefings

## Flight Plan Processing and Message Handling

1 2 3 4 5

Correct endorsement of processed messages
Correct message addressing
Standard flight plans
Uses correct procedures
Timely and accurate message distribution
Efficient use of PDAIs
Military addressing
ZP procedures

## Phraseologies and Communications

1 2 3 4 5

Uses standard phraseologies
Clear concise delivery
Adjusts briefing style to suit recipient
Confident delivery, adlibs as required

## Equipment Handling

1 2 3 4 5

Briefing system Phone/PABX Fax
Fault reporting Frequency management

## Airspace / Geographical Knowledge

1 2 3 4 5

Classes of airspace
Areas of responsibility
Prohibited, Restricted and Danger areas
Locations

## Documents and Local Procedures

1 2 3 4 5

Knowledge of briefing documents
Maps and Charts
Local instructions
Disaster recovery

## Coordination

1 2 3 4 5

Coordination
Off normal situations
Handover/takeover
Keeps Supervisor informed
Other agencies

## Workload Management

1 2 3 4 5

Prioritises tasks
Speed and accuracy
Keep Supervisor informed

## Teamwork

Co-operation & teamwork

## Customer Service

Public relations Politeness Enthusiasm

## Trainee Comments

## Training Officer Comments

## Areas identified as requiring more work

## Action plan for remedial training

Trainee's Signature & Date Training Officer's Signature & Date

This signifies agreement with the remedial program by both parties

# Training Evaluation Feedback Form

**Instructions for using this form:**

- This form is to be filled out:

– at the end of each week of training

***For Weekly Assessments*:**

- A grading of 3 – 5 shall be considered as satisfactory.
- A grading of 1 or 2 shall be considered as unsatisfactory and a remedial action plan shall be implemented.

***For Milestone Assessments*:**

- A grading of 3 – 5 shall be considered a pass
- During a Rating assessment, a non-pass grading (i.e.: 1 or 2) shall indicate that a formal remedial plan may be required (subject to managerial approval). After the remedial action and following a second assessment, failure may result in recommendation for termination.

# Appendix 5 - Sample Performance Appraisal Form

| | |
|---|---|
| **EMPLOYEE NAME**: | **POSITION TITLE:** |
| **BRANCH:** | **LOCATION:** |
| **POSITION REPORTS TO:** | **DATE OF APPOINTMENT:** |

**APPRAISAL PERIOD:** **FROM:** ..... **TO:** .....

## INSTRUCTIONS

Performance is to be formally assessed at least once per year with a review of performance occurring at least halfway through the assessment period.

Performance should be evaluated against both annual objectives set by agreement between the staff member and manager/supervisor at the beginning of the assessment period and/or the Key Result Areas contained in the staff member's job description.

The staff member and manager/supervisor should separately complete their own assessment of performance, training and development requirements prior to the interview.

Once the appraisal comments are completed and the appraisal formally reviewed, a copy of the completed form should be forwarded for filing in the staff member's personal file.

Only two copies of the completed form are to be made. One is held by the staff member and the other on the staff member's personal file. Access is on a strict need-to-know basis. Forms are to be destroyed TWO years after the date of appraisal.

## PERFORMANCE RATINGS

| | | |
|---|---|---|
| 1. | Outstanding | Performance objectives consistently met at outstanding level. |
| 2. | Superior | Performance objectives consistently met, frequently exceeds competent level. |
| 3. | Satisfactory | Fully competent and performance objectives met to acceptable level. |
| 4. | Adequate | For performance which does not always meet the required standards.<br>*Persons promoted to the level within the last six months and who may be regarded as novices in the role should be rated at this level.* |
| 5. | Unsatisfactory | Performance regularly falls below minimum acceptable level. Performance objectives frequently not met. Persons should be participating in discipline counselling process. |

# PERFORMANCE APPRAISAL

## *PERFORMANCE RESULTS*

These are the objectives and/or key result areas which are agreed at the beginning of the assessment period. These are to be transferred from the individual performance agreement worksheet which should be attached to this document.

| OBJECTIVES/KEY RESULT AREAS<br>1. | COMMENTS/PERFORMANCE INDICATOR | **RATING** |
|---|---|---|
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |
| 6. | | |

## *PERSONAL ATTRIBUTES*

These are factors which need to be considered for individual performance and/or career development reasons - transfer development action to Page 3.

| |
|---|
| 1) List those characteristics which will enhance the appraisee's successes |
| 2) List those characteristics which require further development or strengthening |

# DEVELOPMENT ASSESSMENT

***NAME*** *……* ***LOCATION*** *……*

## *TRAINING AND DEVELOPMENT*

| | |
|---|---|
| **PERSONAL DEVELOPMENT**<br>What training or development activities have been undertaken during the year? (Nominate specific programs or activities.) | |
| **CAREER ASPIRATIONS AND PLANNING**<br>Please identify position(s) that you would see as career goal(s) and how soon you would see yourself reaching this goal. | |
| **TRAINING NEEDS**<br>What training and development do you believe is required for you in the next 12 months? | |

## *ORGANISATION IMPROVEMENT*

| | |
|---|---|
| 1) What changes or improvements do you see or suggest in your work area or responsibilities over the next three years? | |
| 2) How will this affect your job and/or those of your subordinates? | |
| 3) What action would you recommend or what steps are you taking to facilitate these changes? | |

## *AGREED TRAINING AND DEVELOPMENT OBJECTIVES FOR (period)*

As a result of discussion, detail the development objectives agreed.

| TYPE | TYPE/LOCATION | DATE | PRIORITY |
|---|---|---|---|
| | | | |

## PERFORMANCE SUMMARY

***OVERALL PERFORMANCE RATING:***

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| | | | | |

Refer to detailed definitions of Performance Ratings on page 1.

***SUPERVISOR/MANAGER COMMENTS***

Comments must be related to the evaluation of performance and interview discussion.

MANAGER/SUPERVISOR Name ..... Title .....

Signature ..... Date .....

***EMPLOYEE COMMENTS***

EMPLOYEE Name ..... Title .....

Signature ..... Date .....

***REVIEWER COMMENTS***

REVIEWER Name ..... Title .....

Signature ..... Date .....



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