

AERONAUTICAL CIRCULAR CIVIL AVIATION AUTHORITY – MACAO, CHINA

SUBJECT: *Air Traffic Service Manual Requirements*

EFFECTIVE DATE:

01 January 2025

CANCELLATION:

AC/ATS/004R02

GENERAL:

The President of Civil Aviation Authority – Macao, China, in exercise of his power under Paragraph 89 of the Air Navigation Regulation of Macao (ANRM) and Article 35 of the Statutes of Civil Aviation Authority, approved by the Decree-Law 10/91/M, established this Aeronautical Circular.

1 Introduction

- i. In accordance with paragraph 64 (1) of the ANRM, the air traffic services shall be provided in accordance with the standards and procedures specified in an Air Traffic Services (ATS) manual in respect of that aerodrome.
- ii. The air traffic services provider shall ensure that the contents of the ATS manual, including all amendments or revisions, do not contravene any applicable regulations and are acceptable to, or, where applicable, approved by the AACM.
- iii. The air traffic services provider must ensure that the contents of the ATS manual are presented in a form in which they can be used without difficulty.
- iv. The air traffic services provider shall supply the AACM with any intended amendments and revisions in advance of the effective date for acceptance, or approval, where applicable, before the amendment becomes effective. When immediate amendments or revisions are required in the interest of safety, they may be published and applied immediately, provided that any approval required has been applied for.
- v. Each holder of an ATS manual, or appropriate parts of it, shall keep it up to date with the

amendments or revisions supplied by the air traffic services provider.

- vi. The air traffic services provider shall incorporate all amendments and revisions required by the AACM.
- vii. It is most important for air traffic services provider to appreciate that it is its responsibility to provide adequate instructions and accurate information to its operating staff to enable them to perform their duties. AACM will check manuals lodged with the AACM and will suggest amendments, where they appear to be necessary. The primary purpose of these checks will be to verify the adequacy of the air traffic services provider's systems and procedures for keeping instructions and information under review and for issuing timely amendments, as necessary.

2 ATS Manual Requirements

The primary purpose of this AC is to establish those parts of the ATS manual that shall be developed by the air traffic service provider. The required contents of the manual are laid down in the Appendix to this AC.

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1. Introduction

- 1.1 The Air Navigation Regulation of Macao (ANRM) requires that the air traffic services shall be provided in accordance with the standards and procedures specified in an air traffic service manual in respect of that aerodrome.
- 1.2 The manual shows how and where an ATS provider provides air traffic services. It may comprise a number of separate volumes and may well include individual forms.
- 1.3 The requirement to include particular information in an ATS provider's manual may be satisfied by making reference in the manual to that information in another document held by the ATS provider.
- 1.4 The numbering of pages, sections, paragraphs etc. should be orderly and systematic to facilitate immediate identification of any part of the subject matter. The standard of printing, duplication, binding, section dividers, indexing of sections etc. should be sufficient to enable the document to be read without difficulty and to ensure that it remains intact and legible during normal use.
- 1.5 The amendment of a manual in manuscript will not be acceptable. Changes or additions, however slight, must be incorporated by the issue of a fresh or additional page on which the amendment material is clearly indicated.
- 1.6 The manual must be supplemented by a systematic procedure for bringing urgent or purely temporary information to the notice of operating staff. This can be achieved by a numbered series of instructions or notices issued by or under the direct authority of a senior operations official.
- 1.7 The manual is an important document and shall be issued under the authority of the ATS provider. The ATS provider shall control the distribution of the manual and ensure that it is amended whenever necessary to maintain the accuracy of the information in the manual and to keep its contents up to date.

2. Content of the ATS Manual

The procedures to be applied by the ATS provider in providing the various air traffic services shall be in compliance with AC/ATS/003 – ATS Requirements and AC/ATS/006 – Manual of Standards-Air Traffic Management. An ATS manual shall contain at the least the following:

2.1 General

- The title of the person or department responsible for the issue of the manual.
- At the front of the manual, or each volume of the manual as appropriate, there should be an amendment page to indicate amendment number, date of incorporation, signature or initials of the person amending. The amended pages should be dated and there should be a checklist of effective pages.
- A table of contents based on the items in the manual, indicating the page number on which each item begins.
- The procedures for the preparation, authorization and issue of amendments to the manual.

2.2 Organizational structure and functions of the ATS provider

- A description of the ATS provider's organizational structure and a statement setting out the functions that the provider performs.
- A description of the chain of command established by the provider and a statement of the qualifications, duties and responsibilities of any supervisory and operating positions within the organizational structure.
- A statement showing how the provider determines the number of operating staff required, including the number of operating supervisory staff.

2.3 Scope of the services provided

- A statement setting out the air traffic services, the related functions, and the hours of operation of the services provided.
- A statement identifying the location from where the services are provided.

2.4 Document and record keeping system

- A description of the document control system which covers the authorization,

standardization, publication, distribution and amendment of all documentation issued by the ATS provider, or required by the ATS provider for the provision of air traffic services.

- A description of record keeping system which covers identification, collection, indexing, storage, security, maintenance, access and disposal of records necessary for the provision of air traffic services. The record systems shall provide an accurate chronicle of ATS activities for the purpose of reconstruction of events for air safety investigation or for system safety analysis within the Safety Management System

2.5 *Agreements with other organizations*

- A copy of any agreement with other bodies entered into by the provider in relation to the provision of any of the air traffic services. The following agreements will normally be required:
 - An agreement with the organization that provides the aeronautical telecommunication facilities required for ATS provision. This will not be applicable in the situation where the ATS provider is also the organization provides such supporting service.
 - If an air traffic service is provided at a controlled aerodrome, the ATS provider must have an agreement with the aerodrome operator covering the arrangements for controlling aircraft, vehicles, and people on the manoeuvring area of the aerodrome. Where the facilities necessary for ATS provision, such as a control tower, are the property of the aerodrome, the use of the facilities by the applicant should also be covered by the agreement.

2.6 *Detailed procedures for aerodrome control service*

The aerodrome control procedures normally include, inter alia, the following with respect to the provision of air traffic service:

- Control of Macau International Airport traffic
- Control of aircraft other than Macau International Airport traffic within Macau ATZ

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- Control of Macau International Airport surface traffic
 - Selection of runway-in-use
 - Communication and coordination procedures
 - Low visibility operation procedures and operations
 - Adverse weather operations
 - Flight information service
 - Alerting service
 - Flight Progress Strips handling procedures

Note: The content of ATC Letter of Agreement(s) among adjacent ATC units shall be reflected in the related procedures.

2.7 *Technical procedures*

- Technical procedures contain information relating to the essential equipment used to carry out the functions for the provision of air traffic services. The aim of this part of the manual is to provide a brief overview and instructions to assist staff in understanding and utilizing the equipment.

2.8 *ATS safety management system*

- The documentation that sets out the ATS provider's safety management system (SMS) in accordance with AC/GEN/005 – Safety Management System Requirements.

2.9 *Procedures related to contingency and emergency*

- The ATS provider's contingency plan shall describe in detail the actions that operational staff are to follow to maintain safety in the event of the failure or non-availability of staff, facilities or equipment which affects the provision of air traffic services. The plan must also cover procedures for the safe and orderly transition back to full service provision.
- The ATS provider's emergency plan shall outline the procedures under various emergency situations as general guide to air traffic services personnel.

2.10 *Training and checking program*

- ATC training means the entirety of theoretical courses, practical exercises,

including simulation, and on-the-job training required in order to acquire and maintain the skills to deliver safe, high quality air traffic control services. Controller competency is maintained by adequate and appropriate continuation training. The requirements of continuation training are laid down in Attachment A.

- The training and checking programs shall provide assurance that any individual performing any functions in air traffic services is competent to perform that function. They shall comply with the requirements laid down in Part IX and the 4th Schedule of the ANRM, AC/ATS/005 – Air Traffic Control Approval Requirements and AC/PEL/011 – Recurrent Competence Requirements of Air Traffic Controller License.
- These programs shall be approved by the AACM. The simulator utilized for the training will be evaluated by AACM as part of the training program approval and surveillance process. The guidance for the use of simulators in ATC training is laid down in Attachment B.

2.11 Air traffic controllers fatigue avoidance program

- The documentation that sets out the provider's scheme for the control of the working hours of air traffic controllers in accordance with AC/ATS/001 – Scheme of Working Hours of Air Traffic Controllers. The scheme shall be approved by the AACM.

2.12 Disseminating information to staff

- A description of the processes and documentation used to present to staff the relevant standards, requirements, urgent or temporary procedures and operational instructions to staff.
- A description of the procedures to be followed to ensure all operational staff are familiar with any operational changes that have been issued since they last performed operational duties.

2.13 Commissioning new facilities, equipment and services

- A description of the processes for the installation, commissioning and

transition into service phases of new facilities, equipment and services, and provide evidence, arguments and assumptions for acceptance of the operational performance and the safety of the facility, equipment, procedure or service.

Attachment A Continuation training requirements for air traffic controllers

1. Continuation training is training to maintain the skills of air traffic controllers. It consists of refresher courses and emergency training. The training topic may be identified and transmitted by the AACM.
2. During continuation training air traffic controllers shall be sufficiently trained in safety and crisis management.
3. Continuation training shall consist of theoretical and practical training, together with simulation. The air traffic service provider shall establish unit competence schemes detailing the processes, manning and timing necessary to provide for the appropriate continuation training and to demonstrate competence. These schemes shall be reviewed at least every two years. The duration of the continuation training shall be decided in accordance with the functional needs of the air traffic controllers, in particular in the light of changes or planned changes in procedures or equipment, or in the light of the overall safety management requirements.
4. Air traffic controllers are required to successfully complete the continuation training and the training requirements are detailed as follows:
 - a) Theoretical training: at least 4 hours every 12 months; and
 - b) Practical training:
 - Until 31 December 2025: at least 4 hours every 12 months
 - As of 1 January 2026: at least 12 hours every 12 months
5. Continuation training given to air traffic controllers includes refresher and emergency training:
 - Refresher Training is designed to review, reinforce or upgrade existing knowledge and skills (including team skills).
 - Emergency training is designed to impart knowledge, skills and behavior in case of an emergency, unusual or degraded situation.

a) Emergency situation is a serious, unexpected and often dangerous situation requiring immediate actions.

b) Unusual situation is a set of circumstances which are neither habitually nor commonly experienced for which an air traffic controller has not developed an automatic know-how.

The essential difference with an emergency situation is that the element of danger or serious risk is not necessarily present in an unusual situation.

c) Degraded situation is a situation that is the result of a technical system failure or malfunction or a set of circumstances arising from human error or violation of rules affecting the quality of the service provided.

5.1 Emergency training shall include practical training element to complement air traffic controllers' theoretical knowledge. The training may identify broad categories of unusual circumstances or aircraft emergency which may occur within Macau ATZ. Examples of topics that should be addressed in the emergency training, inter alia, include:

- Aircraft emergencies
- Incident/conflict resolution
- ATC facility evacuation
- Partial/total staff incapacitation
- Failure of equipment
- Unusual operating configurations e.g. reduced runway length operations, operations in adverse weather conditions.

5.2 Emergency training must be reviewed periodically to ensure that it still adequately meets the objectives. Lessons learned from an actual unusual event or aircraft emergency should be reviewed and the training amended if considered necessary.

6. The use of simulators to provide practical experience of unusual traffic situations or aircraft emergencies is required. Sufficient time shall be allocated for each simulation exercise to meet its objectives as defined.

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7. The simulator training includes a variety of exercises from which a selection is undertaken by air traffic controllers. Records should clearly indicate which exercises have been completed. Where possible, future exercises should be selected to avoid repetition of the same or similar exercises to the exclusion of others and to ensure exposure to the broadest possible range of training scenarios.

 8. Irrespective of the method of training that may be used, the air traffic service provider must maintain an accurate record of the training that is conducted in accordance with the training program. The method used to record the training that has been conducted and successfully completed by each air traffic controller should be described. It is often useful for the training records to include the comments of both the trainer and controller to aid the feedback process.

Attachment B Guidance for the Use of Simulators in ATC Training

- 1 All training programs are required to indicate the amount of training, if any, that will be conducted on a simulator. The simulator will be evaluated by AACM as part of the training program approval process, and oversight activity will also be conducted. The training organization is required to demonstrate how the simulator and the associated exercises will provide adequate support for the particular training program.
- 2 The evaluation of the use of a simulator and the part of the particular training program for which the training organization proposes to use it will be based on an assessment against the guidance listed below. The extent to which the simulator achieves this guidance will be used to determine the adequacy of the simulator for the proposed use. As a general principle, the greater the degree of replication of the operational position being represented, the greater the use that will be possible in any particular training plan. The guidance for the use of simulators are:
 - a) the general environment, which should provide an environment in which simulator exercises may be run without undue interference from unrelated activities;
 - b) the simulator layout;
 - c) the equipment provided;
 - d) the display presentation, functionality, and updating of operational information;
 - e) data displays, including strip displays, where appropriate;
 - f) co-ordination facilities;
 - g) aircraft performance characteristics, including the availability of manoeuvres, e.g. holding or ILS operation, required for a particular simulation;
 - h) the availability of real-time changes during an exercise;
 - i) the ability of the simulated environment to enable students to meet the stated objectives of the practical training exercises;
 - j) the ability of the simulator and its exercises to enable the performance objectives to be assessed to the level determined in the training program;

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- k) the processes by which the training organization can be assured that staff associated with the conduct of the simulation are competent;
 - l) the degree of realism of any voice recognition system associated with the simulator; if applicable;
 - m) where a simulator is an integral part of an operational ATC system, the processes by which the training organization is assured that interference between the simulated and operational environments is prevented.

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