



TTCAA Advisory CIRCULAR

Subject: GUIDANCE ON DEVELOPMENT OF AN OPERATIONS MANUAL FOR AIR NAVIGATION SERVICES

TTCAA Advisory Circular TAC-ANS001

Date: 07/11/22

PURPOSE

1. The purpose of this TTCAA Advisory Circular (TAC) is to provide guidance on the development of an operations manual and other aviation documents used by an air navigation services provider in the provision of air navigation services.

OVERVIEW OF MANUAL REQUIREMENTS

2. (1) Trinidad and Tobago Civil Aviation Regulations (TTCARs) require operators to prepare and keep current various manuals and checklists for the direction and guidance of flight and ground personnel involved in air transportation operations. The Air Navigation Services Division of the TTCAA has the responsibility for ensuring that air navigation services are provided in accordance with the applicable standards of TTCAR No.15.

DISTRIBUTION AND AVAILABILITY OF MANUALS

General

3. Each operator is required to maintain a complete manual (or set of manuals) at his principal base of operations and to furnish a complete manual (or set of manuals) to the TTCAA Executive Manager Safety Regulations (EMSR) for approval or acceptance. In addition, each operator must make available or furnish applicable parts of the manual (user manuals) to personnel who conduct or support flight operations. The manual may be in conventional paper format or in another form that is convenient for the user and acceptable to the Authority. Each employee to whom the manual or a user manual is furnished must keep it current. Each employee must have access to appropriate manuals or parts of manuals when performing assigned duties.

OPERATIONS MANUAL FOR AIR NAVIGATION SERVICES

4. (1) TTCAR No.15 contains the standards for ANS. The ANS Division has the responsibility within the TTCAA for the provision of Air Navigation Services. Operations Manuals should be developed within the ANS Division to guide personnel in the conduct of their duties for each section of functional area within the Division. There should be proper coordination between functional areas in the development of the manuals to ensure standardization. The following are typical manuals that might be developed for the ANS Division to perform its functions:

- (a) Air Traffic Operations Manual;
- (b) Aeronautical Information Services Operations Manual;
- (c) Telecommunications and Electronics Operations Manual.

(2) ANS operations manuals must adequately and appropriately address the mandatory requirements of the International Standards as expressed in TTCAR No.15.

FORM AND STRUCTURE OF THE MANUAL

5. (1) An operations manual should-
- (a) Include instructions and information necessary for personnel to perform their duties and responsibilities with a high degree of safety;
 - (b) Be easy to revise and contain a system which allows personnel to determine current revision status;
 - (c) Have the date of the last revision on each page concerned;
 - (e) Not be contrary to any applicable law or requirements of the TTCARs;
 - (f) Include a reference where applicable, to the appropriate TTCAR.
- (2) In addition, the manuals may be produced –
- (a) In a series of parts
 - (b) As a series of volumes; or
 - (c) As a single document.

ORGANIZATIONAL STRUCTURE AND FUNCTIONS

Organizational Chart

6. The administrative section of the manual should include an organizational chart of the department or functional section within the ANS Division showing –

- (a) How the department or section is inter-related with other departments or sections within the division and how the Division is related within the Organization;
- (b) The names and relevant qualifications, experience and positions of the key positions and supervisors within the Organization;
- (c) A statement of the duties and responsibilities of the supervisory position within the organizational structure; and
- (d) A statement showing how the Division determines the number of operational staff required, including the number of operational supervisory staff.

FORMAT AND STYLE OF MANUALS

7. (1) Each page of a manual must include the most recent revision date. In general, manuals and checklists should be easy to use and understand, and in a format that can be easily revised.

(2) The manual will be subject to amendment in order to ensure that it is maintained up to date with current and accurate information. The manual must therefore –

- (a) Be in a form that is easy to revise;
 - (b) Contain a system which allows users to determine the current revision status;
 - (c) Have orderly and systematic numbering of pages and paragraphs to facilitate ease of reference;
 - (d) Show the date of the last revision on each page.
- (3) The following is a guide concerning format and style:
- (a) **Form.** All or part of a manual may be prepared and maintained in conventional paper format (book form) or in other forms, such as computer based storage with electronic image;
 - (b) **Foreword Page.** The first page of a user manual should be a foreword or preface page containing a brief statement of the manual's purpose and intended user. The foreword page should also contain a statement which emphasizes that the procedures and policies in the user manual are expected to be used by personnel for whom the manual was designed;
 - (c) **Revision Control.** Each manual should be easy to revise. Also, each manual should contain a revision control page or section from which the user can readily determine whether the manual is current. This page or section should preferably follow the foreword page but it can be organized in any logical manner. The control date of the most recent revision of each individual page must appear on each page. The manual should be supported by a bulletin system to bring temporary information or changes that should not be delayed by a formal revision process, to the attention of the user. The bulletin system should have a means of control that includes giving bulletins a limited life and systematically incorporating them into appropriate manuals in a timely manner. Users should be able to easily determine whether they possess all current bulletins;
 - (d) **Table of Contents.** Each manual should have a table of contents containing lists of major topics with their respective page numbers;
 - (e) **References.** Manuals must include references to specific regulations when appropriate. A reference to regulations or other manual material is appropriate when it is necessary to clarify the intent of the text or when it is useful to the user for looking up specific subject matter. References should not be made to advisory circulars and to preambles of TTCARs, as these sources are advisory and not binding in nature. Service providers should use caution when adapting the text of advisory documents into their manuals. Advisory text may not translate into a directive context;
 - (f) **Definitions.** Significant terms used in manuals should be defined. Any acronym or abbreviation not in common use should also be defined;
 - (g) **Elements of Style.** Manuals and checklists should be composed in the style of general technical writing. This style should be clear, concise, and easy to understand. When evaluating manuals, Inspectors should be knowledgeable of the following suggestions for accomplishing clarity in technical writing:
 - (i) Whenever possible, short, common words should be used. Examples of this include: using the words "keep" or "hold" instead of "maintain"; using the word "start" instead of "establish"; and using the word "stop" instead of "terminate;"

- (ii) When a word has more than one meaning, the most common meaning should be used. For example, the word "observe" should be used to mean "see and take notice of" rather than "obey and comply;"
- (iii) Service providers should standardize terminology whenever practical. Once a particular term has been used in a specific sense it should not be used again in another sense grade;
- (iv) Terms which command actions should be clearly defined, such as "checked," "set," and "as required." Auxiliary verbs such as "may" and "should" are ambiguous and can create room for doubt; they indicate that discretion can be used when performing an act. They should therefore not be used when a definite action is commanded. Instead, verbs such as "shall" and "must" are preferable when an action is commanded, because they indicate a mandatory requirement;
- (vi) To provide appropriate degrees of emphasis on specific points in the text, "cautions," "warnings," and "notes" should be in the service provider's manuals and checklists;
- (ix) Long sentences should be avoided.

ADEQUACY OF PROCEDURES

8. The following represents general guidance when formulating procedures for an operations manual:

- (a) **Objective.** The objective of a procedure must be stated clearly unless it is so commonly understood that a statement of the objective is not necessary;
- (b) **Logical Sequence.** Procedures should flow in a logical step by step sequence. The most effective procedures are usually simple and contain only the information necessary for accomplishing a particular procedure. Preferably procedures should be described in a sequential step by step format rather than a narrative format;
- (c) **General Considerations:**
 - (i) A procedure must be an acceptable method for accomplishing an intended objective;
 - (ii) The individual or unit responsible for each step of a procedure must be clearly identified;
 - (iii) The acceptable standards of performance for a procedure must be stated if those standards are not commonly understood or clearly obvious;
 - (iv) Since a variety of personnel with differing degrees of expertise are involved in procedures, adequate information concerning the accomplishment of a procedure must be provided for the least experienced individual. A procedure may be described very briefly and concisely when the user is capable of achieving the objective without extensive direction or detail. When the user has limited training or experience, however, a procedure must be described in enough detail for the user to correctly accomplish it. When the user has limited access to other sources of information and guidance while performing a procedure, enough detail should be provided to make the user independent of other sources of information;
 - (v) When the use of a form or checklist is necessary to accomplish a procedure, the location of that item must be indicated in the procedure;
 - (vi) When the use of a tool is necessary to accomplish a procedure, the location of that tool must be indicated in the procedure accompanied by directives and safety procedures associated with its use;

- (vii) When the use of specific equipment is necessary to accomplish a procedure (for example, use of binoculars in the tower, etc), the manual must contain directives and safety procedures associated with its use;
- (vi) Enough time should be available under normal circumstances for the user to accomplish a procedure. If sufficient time is not available to the user for accomplishing a procedure, either the procedure itself or the user's duties must be revised.

REVISING THE OPERATIONS MANUAL

9. The Operations Manual must be a controlled document and, therefore, the amendment process must similarly be controlled.

Ramesh Lutchmedial
Director General of Civil Aviation

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APPENDIX

GENERAL CONTENTS OF AIR NAVIGATION SERVICE PROVIDER'S OPERATIONS MANUAL

AIR TRAFFIC SERVICES

General Contents

1. An Operations Manual shows how and where an ATS provider provides, or proposes to provide, air traffic services. The Operations Manual must include:

- (a) A statement setting out the Air Traffic Services, and the related functions, that the ANS Division is required to perform under TTCAR No.15;
- (b) A table of contents based on the items in the manual, indicating the page number on which each item begins;
- (c) A description of the provider's organizational structure and a statement setting out the functions that the provider performs, or proposes to perform under TTCAR No.15;
- (d) The airspace within which each service is to be provided;
- (e) The specific location from which each service is to be provided;
- (f) A description of the chain of command established, or proposed to be established, by the provider and a statement of the duties and responsibilities of any supervisory positions within the organizational structure;
- (g) A statement showing how the provider determines the number of operational staff required including the number of operational supervisory staff;
- (h) A list of the air traffic services that the provider provides, or proposes to provide;
- (i) A statement for each air traffic service, showing the hours of operation of the service;
- (j) A statement, for each air traffic service, that identifies the particular airspace within which the service is provided, or proposed to be provided;
- (k) A statement, for each air traffic service, that identifies the location from where the service is provided, or proposed to be provided;
- (l) If the provider provides, or proposes to provide, an air traffic service for a controlled aerodrome:
 - (i) A description of the manoeuvring area of the aerodrome; and
 - (ii) Copy of the parts of the aerodrome emergency plan, set out in the aerodrome operator's aerodrome manual that are relevant to the provision of the service; and
 - (iii) A copy of the procedures set out in the aerodrome operator's aerodrome manual for preventing the unauthorized entry of persons or things onto the manoeuvring area of the aerodrome; and
 - (iv) A copy of the procedures set out in the aerodrome operator's aerodrome manual for the control of surface vehicles operating on or in the vicinity of the manoeuvring area;
- (m) A statement of the responsibilities and functions for each operating position;

- (n) A description of the arrangements made or proposed to be made by the provider to ensure that it has, and will continue to receive, on a daily basis, the information necessary for providing the service;
- (o) A description of the arrangements made or proposed to be made by the provider to ensure that it has, and will continue to be able to provide, information in connection with its air traffic services to another person whose functions reasonably require that information (includes SAR alerting);
- (p) A description of the provider's document and record keeping system;
- (q) A copy of any agreement entered into by the provider in relation to the provision of any of the air traffic services;
- (r) A copy of the document that sets out the provider's safety management system;
- (s) A copy of the provider's contingency plan;
- (t) A copy of the provider's security programme;
- (u) A description of the processes and documentation used to present to staff the relevant standards, rules and procedures contained in ICAO Annexes 10, TTCAR No.15, ICAO PANS-ATM, ICAO Regional Supplementary Procedures, and any of the provider's sites specific instructions for the provision of air traffic services;
- (v) A description of the processes and documentation used to provide operational instructions to staff;
- (w) 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;
- (x) A description of the provider's training and checking program;
- (y) A description of the procedures to be used in commissioning new facilities, equipment and services;
- (z) The procedures to be followed for revising the operations manual.
- (aa) A description of the safety management including the following elements:
 - (i) The ATS provider's safety policy and objectives;
 - (ii) The organizational and staff responsibilities for safety matters;
 - (iii) The establishment of the levels of safety that apply to the services, and the monitoring of the levels of safety achieved;
 - (iv) The process for internal safety reviews;
 - (v) The process for the internal reporting and management of safety concerns and incidents;
 - (vi) The process for the identification, assessment, control and mitigation of existing and potential safety hazards in service provision;
 - (vii) The definition of the interface arrangements, for safety management and related responsibilities and procedures, with internal functional groups and with aerodrome operators and support service providers;
 - (viii) The processes for the management of changes to existing services.

Note: Guidelines for the development of a safety management system are provided in TAC-044.

INFORMATION NECESSARY FOR SERVICE PROVISION

Input Data

2. (1) The Operations Manual should include a description of the arrangements made or proposed to be made to ensure that the Division will continue to receive the information necessary for providing each service including:

- (a) Information that is both internally and externally sourced;
- (b) The information requirement, its use in service provision, its source, and the means which it is transferred, received and displayed;
- (c) The integrity levels of the data consistent with its operational critically.

(2) Data that is sourced from another State or service provider, or is in electronic form from a service provider who is in compliance with the relevant ICAO annexes and guidance manuals may be considered adequate.

Examples Of Data Sources

3. Examples of data sources normally required are:

- (a) AIS;
- (b) AFTN;
- (c) NOTAM;
- (d) Flight notification;
- (e) Meteorological information;
- (f) Meteorological warning service;
- (g) Voice coordination with adjacent ATS providers;
- (h) Information on aerodrome condition and the operational status of facilities and navigation aids;
- (i) Aerodrome works and administration coordination;
- (j) ARFFS coordination;
- (k) Local and remote radar data;
- (l) Information on unmanned free balloons;
- (m) Information concerning volcanic activity;
- (n) Information concerning radioactive material and toxic chemical clouds.

Output Data

4. The Operations Manual should include a description of the arrangements made or proposed to be made to ensure that the Division can, and will continue to be able to provide the information in relation to its air traffic services to other organizations whose functions reasonably require that information (e.g. other ATS units and centres).

- (a) The description should nominate the information requirement and recipient, and the means of its transfer;

- (b) The integrity levels of the data should also be defined, and be consistent with the Division's operational criticality;
- (c) Examples of data recipients could normally be:
 - (i) AIS;
 - (ii) Adjacent ATS providers;
 - (iii) Aerodrome administration;
 - (iv) ARFFS;
 - (v) Other Government Agencies, MET, SAR, etc.

Record Keeping System

5. (1) The Operations Manual must include the requirement for a record keeping system that covers identification, collection, indexing, storage, security, maintenance, access and disposal of records necessary for the provision of air traffic services.

(2) The records systems must 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.

(3) The type of records to be kept, and the time of retention, is specified in TTCAR No. 15.

(4) Inspectors should ensure that the applicant has a system in place that will cover all the record types required, including operational voice records.

Agreements With Other Organizations/Agencies

6. An Operations Manual must contain a copy of any agreement with other bodies entered into by the ANS Division or a TTCAA in relation to the provision of any of the air traffic services. The following agreements will normally be required:

- (a) An agreement with a Chart provider for the provision of ICAO charts;
- (b) An agreement with the meteorological services provider;
- (b) An agreement with an aerodrome operator in the situation where the ATS is providing an air traffic service at a controlled aerodrome. The ANS Division must have an agreement with the aerodrome operator covering the arrangements for controlling aircraft, vehicles, and people on the maneuvering 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 ATS provider should also be covered by the agreement;
- (d) An agreement with the PANS-OPS provider for checking and calibration of nav aids under the jurisdiction of the ANS Division.

Safety Management System

7. (1) The Safety Management System (SMS) described in the operations manual must comply with all the standards encompassed in TTCAR No. 15:4 and 5 and Schedule 1, Part A.

(2) The SMS is an important component of an ATS operation. It defines the policies, procedures and practices for managing the safety in the provision of ATS, and managing any changes in the provision.

(3) The SMS should include the processes proposed for management review of its SMS, and the implementation of corrective action as necessary.

(4) Inspectors should take into account the type of service that is provided in considering the adequacy of the SMS.

Security Programme

8. (1) An operations manual must include details in its security programme aimed at minimizing the risk of unauthorized access, entry by animals or malicious damage to a service or facilities. The security programme is to be in accordance with the standards in TTCAR No. 8 and TTCAR No. 12.

(2) Where an aerodrome owner controls the security of an ATS facility, the Operations Manual should include that as an element of the security programme

Disseminating Information To Staff

9. The Operations Manual must contain a description of the procedures and documentation to be adopted and used by the ANS Division to provide AIS personnel with information on:

- (a) The relevant standards for service provision, including the ICAO standards in TTCAR No. 15 Schedule 1;
- (b) Operational instructions to staff; and
- (c) Operational changes that are to be conveyed to AIS personnel.

Training And Checking Programme

10. (1) The Operations Manual must detail a training and checking programme and provide assurance that any individual performing any functions in air traffic services is competent to perform that function.

(2) It is important that the proposed training and checking programme covers all elements and requirements of TTCAR No. 1 Part VI pertinent to Air Traffic Control Certification.