CIVIL AVIATION ADVISORY PUBLICATION

CAAP 25

AIR NAVIGATION FACILITIES AND SERVICES APPROVALS

GUIDANCE AND INFORMATION FOR
PROVIDERS OF AIR NAVIGATION SERVICES

1   PURPOSE

This Civil Aviation Advisory Publication (CAAP) provides guidance material and operational considerations for air navigation service providers, when establishing or replacing air navigation facilities, and/or services.

2   STATUS OF THIS CAAP

This is Revision 02 of CAAP 25. It will remain current until withdrawn or superseded.
Changes made in this revision are marked with revision bars.

3   APPLICABILITY

This CAAP is applicable to all air navigation service providers in the UAE.

4   CONTENTS

5 INTRODUCTION

5.1 General

The General Civil Aviation Authority (GCAA), as the UAE Competent Authority responsible for aviation safety, has the primary objective to protect the UAE population and travelling public. Whilst the GCAA conducts its safety oversight functions to the highest standard there are peripheral areas, which need to be coordinated with the appropriate Department of Civil Aviation (DCA) and other participants in the UAE aviation system.

5.2 Planning

5.2.1 Careful consideration and planning is required when installing a new facility, equipment or system, replacing an existing facility or instigating a new or improved air navigational service. Planning involves assessing operational objectives and requirements, determining facility, equipment or system functionality requirements, identifying operational readiness imperatives and conducting overall operational readiness time scheduling and monitoring of milestones. A lapse in planning in any one of these areas can lead to a service breakdown in safety critical areas particularly in the area of air navigation service provision. It is therefore critical that a structured approach to operational readiness is taken when changes are being proposed and implemented to:

    (a)   Aerodrome Control Tower facilities;

    (b)   Approach and Area Control facilities;

    (c)   Communication systems including data/voice recording/playback;

    (d)   Electronic navigation aids;

    (e)   Surveillance systems including data recording/playback;

    (f)   DATA management Systems i.e. Flight Data Processing Systems, On-line Data Interchange (OLDI) and Surveillance Data Processing Systems;

    (g)   Any associated operational procedures concerning any of the above.

5.3 Legislation

5.3.1 Civil Aviation Law, Articles 7(4), 15(1), 20(1) and 23 (2,3 & 4) underpins this requirement.

5.3.2 Civil Aviation Regulations Part VIII Subpart 1 Para 13 and Subpart 5 Para 19 requires Air Navigation Service Providers to obtain an Operational Approval from the Authority prior to entry into operational service.

5.4   Approvals

5.4.1 An Air Navigation Service Provider shall prior to undertaking:

   a) Installation of new or replacement Communications, Navigation, Surveillance and Aeronautical Information Resource Systems relating to aviation safety; and

   b) Construction /Refurbishment of Air Traffic Control facilities,

obtain a Letter of No Objection (LONO) from the Authority through the GCAA eservices prior to issuing a Request for Proposal or Tender document for the said facility, equipment or system. The following documentation will normally be required for such a purpose, but not limited to:

a) A statement of operational objective;

b) A statement of functional requirements;

c) Technical specifications of the equipment;

d) Proposed time scale for implementation (Gantt chart);

5.4.2 An Air Navigation Service Provider requiring new or changes to existing facilities, equipment or systems shall obtain a Technical Approval through the GCAA eservices. If there is an operational impact the ANSP shall also obtain an Operational Approval.

5.4.3 If there are no new or changes to existing facilities, equipment or systems an Air Navigation Service Provider not requiring a Technical Approval shall obtain an Operational Approval through the GCAA e-Service.

5.4.4 An Air Navigation Service Provider shall determine whether to obtain a) a Technical Approval or b) an Operational Approval or c) both a Technical and Operational Approval from the Authority prior to entry into operational service of new or changes to facilities, equipment or systems.

5.4.5 The Authority will normally nominate the necessary resources to conduct an inspection and/or verification visit(s) to the ANSP to assess that necessary action, e.g. training etc., is being conducted as indicated in the safety assessment. During major changes the Authority may allocate inspectors to be on-site during the initial implementation.

5.4.6 Technical Approval

5.4.6.1   The following additional documentation will normally be required for the purposes of gaining a Technical Approval but not limited to:

a) Compliance statement against relevant ICAO and Standards and Recommended Practices as well as guidance material, and with UAE Civil Aviation Regulations.

b) Evidence of successful factory acceptance tests.

c) Evidence that the installation is in accordance with the manufacturer's requirements and in compliance with applicable ICAO Standards and Recommended Practices as well as guidance material.

d) Evidence of successful site acceptance tests. This should record that the equipment has passed established criteria for the testing of the equipment; i.e. it meets the functional requirements.

e) Evidence of availability of manufacturer recommended tools and test equipment.

f) Evidence of stores held on site of manufacturer recommended spares.

g) Availability of maintenance documentation (O & M Manuals).

h) Availability of as built documentation relating to hardware and software installation.

i) Evidence of maintenance procedures and schedules.

j) Evidence of sufficient trained and competent personnel to maintain the equipment.

k) List of required changes to regulatory manuals.

l) Results of calibration flights if required

m) Safety assessment including an impact assessment.

Note1: Refer CAR Part VIII, Subpart 5, 5.28 (b) Safety Management System (SMS) Requirements.
Note2: Any amendments to an already submitted safety assessment approved or not, shall be forwarded to the Authority for approval/acceptance.

The Authority may request any additional documentation as specified at the time of reviewing the application.

5.4.7 Operational Approval

5.4.7.1The following additional documentation will normally be required for the purposes of gaining an Operational Approval but not limited to:

a) Evidence that operational procedures have been developed.

b) A plan for transition.

c) A training and validation programme to ensure operational proficiency of ATC staff to operate the equipment/procedures.

d) List of required changes to operational procedure / regulatory manuals.

e) User consultation where applicable.

f) Safety assessment including an impact assessment.

Note1: Refer CAR Part VIII, Subpart 4, 4.41 (d), (e) and (f) Safety Management System (SMS) Requirements.
Note2: Any amendments to an already submitted safety assessment approved or not, shall be forwarded to the Authority for approval/acceptance.

5.4.8 The Authority may request any additional documentation as specified at the time of reviewing the application.

5.4.9 All enquiries should be addressed to Director Air Navigation and Aerodromes at ana.approvals@gcaa.gov.ae

6   OPERATIONAL READINESS PLANNING

6.1   General

Planning involves assessing operational objectives and requirements, determining facility or system functionality requirements, identifying operational readiness imperatives and conducting operational readiness time scheduling and monitoring of project milestones.

6.2   Operational objectives

6.2.1 The first stage in planning for a new or changes to air navigation facility or service is to identify the operational objectives of the facility or service, i.e. what outcome is desired and for what purpose. The operational objectives may be set in relation to:

(a)   complying with international standards, agreements or Regulations,

(b)   medium to long term operational forecasts e.g. total aircraft movements, change in aircraft mix or performance type, or

(c)   the establishment of a new operational service e.g. CAT IIIA operations, or the continuance of an existing service e.g. replacement of a nav-aid approaching the end of its lifespan e.g. ILS or VOR.

6.2.2 There are a number of other influencing factors such as risk assessment and safety requirements as well as the operational objectives of the users. The use of ICAO documentation relevant to the topic area is useful in assisting to determine purposeful objectives, e.g. Doc 9839 A- SMGCS Manual in respect to CAT III operations. The establishment of operational objectives is the key step to determining the necessary operational requirements.

6.3   Operational requirements

Once the operational objectives have been set the next step is to determine the operational requirements in terms of infrastructure, systems, human resources and documentation. A structured approach to assessing the operational requirements is to view the facility or service in terms of the function being conducted. The operational requirements will fall into four general categories. These are

  (a)   Facilities

  (b)   Systems

  (c)   Human Resources

  (d)   Documentation

For each function being performed, the operational requirements should be assessed by examining each of the four key categories. For example;

  (a)   What facilities or physical infrastructure is required to perform the function?

  (b)   What systems are required?

  (c)   What level of system integration is required?

  (d)   What data outputs are necessary?

  (e)   How many staff are required for operations and to maintain the facility or system?

  (f)   What qualifications are needed?

  (g)   What training is necessary?

  (h)   What procedures are necessary?

  (i)   Are O & M manuals available?

  (j)   Have training modules been developed?

  (k)   Does the Airport Manual or Airport Security Programme require amendment and prior approval of the Authority?

Table 1 outlines some of the key considerations for each key category

6.4 Functional requirements

The next step is to address what functionality the operational components require. This is the basis for providing a technical specification document. This can subsequently be used for the development of a request for proposal document for acquisition purposes, and against which the solution provided by the manufacturer can be assessed for operational conformance. Attention should also be given to system integration, and compatibility with existing infrastructure. Maintenance aspects should also be addressed and included e.g. can the equipment or system be easily maintained on site, and, are spares readily available?

6.5 Time Scheduling for Operational Readiness.

As with any management of a project, a key component in managing operational readiness is time scheduling. This is particularly important to establish realistic target dates for operational implementation of new air navigation infrastructure or services. Key items leading to operational readiness should be identified and indicative time frames plotted linking all the prerequisite actions including financial considerations. Key milestones in terms of availability should be set, against which management reporting can be made and progress of operational readiness tracked and measured. It is important to identify the projects critical path and monitor progress in relation to the Operational Readiness Time Schedule.

Construction or system development project milestones and operational commissioning should be included in the Operational Readiness Time Schedule. A period of parallel operations with an existing facility or system may also be required while verifying operational acceptance and resolving any deficiencies prior to full operational status. Additionally the Operational Readiness Time Schedule should include:

(a) Time for the preparation of all documentation requirements, e.g. development of new procedures, development of O & M manuals, development of training material, approvals by the appropriate Authority, and

(b) Time for the recruitment, training and familiarisation of all relevant staff, both operational and maintenance related as well as third party, and

(c) Time for operational readiness verification (see 6.8).

6.6 Operational Readiness Stages

Implementing an operational readiness programme for air navigation infrastructure or services is essentially a three stage process. These three stages are

(a) Operational assessment and planning.

(b) Operational verification and

(c) Transition

6.7 Operational Assessment and Planning

The Operational Assessment and Planning stage includes:

(a) The review of the facility, equipment or system to ensure that it meets the operational objectives and requirements previously outlined.

(b) Assessing that the new infrastructure meets the agreed technical specifications as part of the acceptance testing process.

(c) The development or review of all documentation requirements for the new operation.

(d) The monitoring and progress measurement of the Operational Readiness Time Schedule and milestones to assess the impact upon the target operational implementation date.

(e) The recruitment, training and familiarisation of all relevant staff including third parties.

(f) Obtaining all necessary regulatory approvals

(g) Planning for the operational verification (trials) and transition stages (logistical planning).

6.7.1 Acceptance of Equipment or Systems

The process of acceptance for new equipment should follow generic contractual guidelines for the delivery of new specialised equipment.

Equipment should undergo Factory Acceptance Testing prior to site delivery. Factory Testing should follow the agreed contractors test procedures and record in a Factory Test Document whether the equipment pass or fails the specified technical requirements. A Factory Test Completion Certificate should only be signed on successful completion of the Factory Tests.

Contractors should complete on site commissioning of equipment in order to verify the correct equipment functionality in preparation for Site Acceptance Testing. Site Acceptance Tests should not be conducted until such times as commissioning tests have indicated that the equipment is fully functional.

Site Acceptance Testing should follow an agreed predefined schedule. Certification of the equipment should only be provided once all aspects of the equipment and its operation have passed established criteria for the testing of the equipment i.e. its meets the *functional requirements* as previously determined.

Contractors should provide specialised tooling where necessary for the ongoing upkeep and serviceability of equipment.

6.7.2 Documentation

Contractors should provide O & M documentation for the operation and maintenance of all new equipment or systems. This documentation should include all procedures and checklists for the operation and on going maintenance of the equipment or system, preventative maintenance schedules and also list minimum spares requirements that should be held on site prior to operations. As built drawings and diagrams should also be provided as part of the O & M documentation.

The operator should establish O & M Quality Performance Standards, and must ensure that Standard Operational Procedures and Operational Contingency Procedures for the equipment or system are integrated into their own Operations Manuals. Training materials should also be available for the training and familiarisation of staff and third parties.

6.7.3 Staffing and Training

Operators must ensure that there are adequate trained and competent personnel to operate and maintain the equipment or system.

Operators must determine how many staff are required to meet operational requirements. Cognisance should be taken of human factor principles and regulatory requirements when developing staffing rosters. Personnel competency requirements shall be established for each operational or maintenance position and recruitment and training schedules implemented accordingly.

Training should encompass not only those employed to operate and maintain the equipment or system, but also to familiarise third parties who have an input into the operational process or whose own operational processes are dependant upon the output of the new equipment or system.

6.7.4 Time Schedule Monitoring

Operational Readiness Progress Monitoring should be implemented by establishing project time schedules for each functional aspect. Inter-dependencies should be determined and linked so that a project critical path can be determined as well as to ensure that changes in project duration in one area, result in time schedule amendments to related functional aspects, e.g. a delay in recruitment will potentially impact upon the training schedule, but not impact upon development of documentation. A delay in developing documentation will delay training schedules. A delay in commissioning of equipment may potentially delay training, but not necessarily recruitment or development of documentation etc.

Time scheduling with set milestones permits management to track true operational readiness of any facility, system or service. Construction or contractor commissioning of facilities, equipment and systems only forms one aspect of the time scheduling for an overall Operational Readiness programme, e.g. the Verification Phase of an Operational Readiness Programme can only commence once contractor commissioning and Site Acceptance Tests

have been completed. Only upon successful completion of the Verification Phase and Regulatory Approvals obtained can a date for operations be confirmed.

6.7.5 Transition Planning

Transition planning may require specialist logistical expertise for the transfer of equipment from one facility to another with the objective or obtaining a seamless operational transfer of service from one facility or system to another. Transition may be phased or conducted in one move.

Advance planning is required to ensure that advice to industry and users is provided in a timely manner. Cognisance should be given to the notification of relevant information to the AIS so that safety information can be promulgated appropriately and in a timely manner.

6.8   Operational Verification

The Operational Verification stage is where all the operational components are tested as one integrated service entity, i.e. the infrastructure, staff and procedures are verified as being acceptable and meeting the previously defined operational objectives in a controlled environment without compromising aircraft safety.

This can be achieved through the implementation of operational trials where operational scenarios are "acted out" so that every opportunity is made available to identify any deficiencies in infrastructure, staff training and familiarisation, or procedural aspects before they are operationally implemented.

Examples are;

(a)   The introduction of low visibility operations using all infrastructure and procedures but using vehicles in lieu of aircraft on the ground for testing purposes.

(b)   Running a radar system parallel with an existing facility, or flight-testing and calibration of a navigation aid to ensure that it is operating correctly.

Safety and reliability are paramount. It is therefore important that operational contingency procedures are tested also where system or equipment failures could potentially occur. The verification of procedures in response to emergency situations, component failures or power outages should be trialled and assessed as being operationally acceptable. This additional level of safety testing provides some reassurance that contingency procedures are adequate for continued safe operations. Any deficiencies found during the operational verification phase should be rectified and tested again. Alternatively contingencies for operation can be developed and implemented once verified that the operational objectives could still be met. Only upon successful completion of the operational verification phase, should a date for full operational implementation be confirmed.

6.9   Transition

Once all operational functions are verified as being safe and acceptable, the previously planned transition phase to full operational status can be confirmed and implemented.

Table 1 - Operational Readiness Considerations – by category

Facilities	Is the facility or equipment installed and operationally commissioned?
	Is the facility or equipment available for use?
	Does the facility or equipment meet functional requirements?
	Does the facility or equipment meet the supplier's technical specifications?
	Is there a minimum equipment/spare parts list and if so are all items available or held in store?
	Does equipment require to be calibrated?
	Does the facility or equipment require to be approved by the Authority?
Systems	Is the system and its hardware installed and operationally commissioned?
	Is the system available for use?
	Does the system meet functional requirements?
	Does the system meet technical specifications including system integration and calibration?
	Is there a minimum equipment/spare parts list and if so are all items available or held in store?
	Does the system require to be approved by the appropriate regulatory authorities?
Human Resources	Are there enough staff to operate the system to meet operational requirements?
	Are there staff to maintain the facility, system or equipment?
	What is the lead-time required for recruitment and training?
	What qualifications/ licenses are required to operate or maintain the facility, equipment or system?
	Are the staff appropriately qualified?
	Are the staff trained and familiarised on the facility, equipment or system to be operated and maintained?
	Is ongoing competency checks or training required and if so has this schedule been established?
Documentation	Are changes required to the operational manuals and do they require prior approval from the Authority before implementation?
	Are standard operating, operational contingency, and O & M procedures available?
	Has appropriate information been disseminated to all relevant parties?
	Are changes required to be notified to the AIS and if so by when?
	Is training documentation and material available?
	Are other regulatory approvals and permits necessary?

Table 2

OPERATIONAL AND REGULATORY CONSIDERATIONS FOR NEW AIR NAVIGATION FACILITIES or SERVICES

Traffic Forecasts,Customers ,Strategic and National Requirements Etc.

GCAA Regulatory Requirements

Determine operational objective

Determine operational requirement

Determine functional requirement

Prepare Technical specifications → Request LONO From the Authority Through eservices

Acquisition process ← Receive LONO From the Authority ← Issue LONO → Documents required: See 5.4.1.

IMPLEMENT Operational Readiness Programme → Operational Readiness Assessment and Planning Phase

Inform Authority of Acquisition → Entry Into equipment Database

Operational Readiness Verification Phase

Request Technical Approval From the Authority Through eservices

Rectify deficiency or implement contingency measures

Issue Technical Approval → Documents required: See section 5.4.2.

Deficiency found? — Yes / No

Request Operational Approval From the Authority Through eservices

Operational Readiness Transition Phase

Issue Operational Approval → Documents required: See section 5.4.3.

Facility/ System/Service Put in operation ← Re issue Approval if Any Changes

Post Implementation Assessment → Operational Assessment and Approval Review