PERATURAN DIREKTUR JENDERAL PERHUBUNGAN UDARA
NOMOR: SKEP/98 / II /2009

TENTANG

PETUNJUK DAN TATA CARA PEMENUHAN PERSYARATAN DAN STANDAR
PERATURAN KESELAMATAN PENERBANGAN SIPIL, BAGIAN 171-1 (ADVISORY
CIRCULAR PART 171-1, GUIDELINES FOR COMPLYING WITH CIVIL AVIATION
SAFETY REGULATION PART 171 REQUIREMENT AND STANDARDS )

DENGAN RAHMAT TUHAN YANG MAHA ESA

DIREKTUR JENDERAL PERHUBUNGAN UDARA,

Menimbang : a. bahwa Undang-Undang Nomor 1 Tahun 2009 tentang
Penerbangan, telah mengatur tentang Telekomunikasi Aeronautika
(Aeronautical Telecommunication) dan Pelayanan Radio Navigasi
(Radio Navigation Services);

b. bahwa untuk melaksanakan ketentuan sebagaimana dimaksud
pada huruf a, perlu diatur Petunjuk Dan Tata Cara Pemenuhan
Persyaratan Dan Standar Peraturan Keselamatan Penerbangan
Sipil, Bagian 171-1 (Advisory Circular Part 171-1, Guidelines For
Complying With Civil Aviation Safety Regulation Part 171
Requirement And Standards);

Mengingat : 1. Undang-undang Nomor 1 Tahun 2009 tentang Penerbangan
(Lembaran Negara Tahun 2009 Nomor 1, Tambahan Lembaran
Negara Nomor 4956);

2. Peraturan Pemerintah Nomor 3 Tahun 2001 tentang Keamanan
dan Keselamatan Penerbangan (Lembaran Negara Tahun 2001
Nomor 9, Tambahan Lembaran Negara Nomor 4075);

3. Peraturan Presiden Nomor 9 Tahun 2005 tentang Kedudukan,
Tugas, Fungsi, Kewenangan, Susunan Organisasi dan Tata Kerja
Kementerian Negara Republik Indonesia sebagaimana telah diubah
terakhir dengan Peraturan Presiden Nomor 94 Tahun 2006;
4. Peraturan Presiden Nomor 10 Tahun 2005 tentang Unit Organisasi dan Tugas Eselon I Kementerian Negara Republik Indonesia sebagaimana telah diubah terakhir dengan Peraturan Presiden Nomor 17 Tahun 2007;


MEMUTUSKAN:

Menetapkan: PETUNJUK DAN TATA CARA PEMENUHAN PERSYARATAN DAN STANDAR PERATURAN KESELAMATAN PENERBANGAN SIPIL, BAGIAN 171-1 (ADVISORY CIRCULAR PART 171-1, GUIDELINES FOR COMPLYING WITH CIVIL AVIATION SAFETY REGULATION PART 171 REQUIREMENT AND STANDARDS).

Pasal 1


Pasal 2


Pasal 3

Direktur Navigasi Penerbangan mengawasi pelaksanaan Peraturan ini.
Pasal 4

Peraturan ini mulai berlaku pada tanggal ditetapkan.

Ditetapkan di : Jakarta
Pada tanggal : 25 Pebruari 2009

DIREKTUR JENDERAL PERHUBUNGAN UDARA

BUDHI M. SUYITNO

SALINAN Peraturan ini disampaikan kepada :

1. Sekretaris Jenderal Departemen Perhubungan;
2. Inspektur Jenderal Departemen Perhubungan;
3. Sekretaris Direktorat Jenderal Perhubungan Udara;
4. Para Direktur di lingkungan Ditjen Perhubungan Udara.
Pasal 4

Peraturan ini mulai berlaku pada tanggal ditetapkan.

Ditetapkan di : Jakarta
Pada tanggal : 25 Pebruari 2009

DIREKTUR JENDERAL PERHUBUNGAN UDARA

ttd

BUDHI M. SUYITNO

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3. Sekretaris Direktorat Jenderal Perhubungan Udara;
4. Para Direktur di lingkungan Ditjen Perhubungan Udara.

Salinan Sesuai dengan aslinya

Kepala Bagian Hukum
Setditjen Hubud

RUDI RICHARDO
ADVISORY CIRCULAR PART 171

(AC 171)

AERONAUTICAL TELECOMMUNICATION
SERVICE AND RADIONAVIGATION SERVICE PROVIDERS

GUIDELINES FOR COMPLYING WITH CASR PART 171
REQUIREMENTS AND STANDARDS
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1. REFERENCES

(a) CASR Part 171 – Aeronautical Telecommunication and
   Radionavigation Service Providers

(b) DGCA Manual of Standards – MOS Part 171

(c) ICAO Annex 10 Volumes I to V

(d) ICAO Annex 11

(e) ICAO Annex 14

(f) ICAO Doc 8071

2. PURPOSE OF THIS AC

This AC provides explanation of DGCA requirements and where
necessary, methods acceptable to DGCA for prospective and approved
service providers to comply with the requirements of CASR Part 171 for
the provision, operation and maintenance of aeronautical
telecommunication and radionavigation (ATEL/ANAV) services that
support air traffic services (ATS) or aircraft navigation.

In this AC, each reference to a CASR Part 171 regulation number, or a
Chapter number of the DGCA Manual of Standards for Part 171 (MOS-
Part 171), is the cross-reference to the relevant Part 171 regulation or
Chapter in the MOS Part 171.

3. STATUS OF THIS AC

This is the first issue of AC 171-01.

Advisory circular are intended to provide advice and guidance to illustrate
a means, but not necessarily the only means, of complying with the
regulations, or to explain certain regulatory requirements by providing
informative, interpretative, and explanatory material.
Where an AC is referred to in a ‘note’ below the regulation, the AC
remains as guidance material.
AC should always be read in conjunction with referenced regulations.

4. CASR SUBPART 171.A — INTRODUCTORY

Subpart A of CASR Part 171 contains an introductory section, Contents,
Applicability, Interpretation (definition of terms), and, in 171.015, the basic
regulatory requirement that restricts the provision of aeronautical
telecommunication or radionavigation services to persons approved by
DGCA.
4.1 Regulation 171.005 — Applicability

4.1.1 Part 171 applies to any person (including a corporation) seeking approval as a provider of one or more ground-based aeronautical telecommunication or radionavigation services that support ATS or IFR flight. In determining what constitutes 'provision of an aeronautical telecommunication or radionavigation service' (ATEL/ANAV service), the Part 171 requirements relate to persons that undertake the operation and maintenance of the facilities that provide the defined services. Applicability does not extend to persons that manufacture, market and install ATEL/ANAV facilities and equipments, unless the manufacturers also intend to provide the in-service operation and maintenance of those facilities or equipment. The term ‘operation and maintenance’ in the context of Part 171 means:

(a) placing a facility into operational service; or

(b) removing a facility from operational service; or

(c) undertaking any functions which affect the operability of a facility while the facility remains in operational service; or

(d) undertaking periodic performance inspections, or any maintenance on a facility while the facility remains in operational service; or

(e) undertaking any flight tests on a facility for the purpose of compliance with Part 171.

4.1.2 Aeronautical Telecommunication Services. Those services that are designated to be aeronautical telecommunication services and radionavigation services, and thus whose provision (i.e., their operation and maintenance) are subject to Part 171, are defined in ICAO Annex 10 Volume II. They are also listed in Chapter 2 of the MOS Part 171. The services are as follows:

(a) aeronautical telecommunication services: These are the ground-based stations of those services defined hereunder that support an Air Traffic Service provided under Part 172; airborne stations are not included:

(i) Aeronautical Broadcasting Service. A broadcasting service intended for the transmission of information relating to air navigation;

(ii) Aeronautical Fixed Service. A telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services;

(iii) Aeronautical Fixed Telecommunication Network Service. A worldwide system of aeronautical fixed circuits provided, as part
4.23 It should be noted that the term 'facilities' is used to define the item or

used in Annex 10 to the Convention on International Civil Aviation.

4.22 The definitions in Part 71 are generally consistent with those definitions

CASR. The definitions can be found in the dictionary to the Parts of CASR.

meaning in relation to Part 71. Other generally used definitions in the

This section contains the definitions of terminology that have a specific

4.21 Regulation 170.10 — Interpretation

those functions, as subject to the Part 71 requirements.

maintenance, including the procedures and the personnel involved in

the MOS are components of AT:LANTA and services, their operation and

the interconnected equipment. As the facility's types specified in Chapter 2 of

Facilities may consist of one item of equipment, or several items of

AT:LANA facilities are listed at Chapter 2 of the MOS Part 71.

provide the electronic capability for the delivery of the described

reconfiguration facilities, for the selection of AT:LANA and

Secondary radar service supporting AT: S functions.

include radiolocation aids for IFR flight, and any primary or

(a) Radiocommunication services for the safe navigation of aircraft at

Electronic briefing and flight plan logement service used

By pilots:

(III)

Part 172:

air traffic control data for use by an AT: S provider under CASR

Any telecommunications service which processes or displays

ATS purposes:

does not include ground stations that are provided for other than

service on distress and emergency frequencies. This service

reference model:

For Standardization (ISO) Open Systems Interconnection (OSI)

the same or compatible communication characteristics.

and/or digital data between aerodrome or aerodrome service, for the exchange of messages

of the aerodrome or service, for the exchange of messages

(ii)

(iii)

(iv)

(v)

(vi)

(vii)

(viii)

(ix)

(x)

(xi)

(xii)

items of equipment that make up any of the defined services.

4.3 Regulation 171.015 — Person not to provide service without approval

4.3.1 This regulation disallows the provision of any service defined as an aeronautical telecommunication or radionavigation service if the person is not approved by DGCA as a service provider in accordance with the requirements of Part 171. A penalty is associated with any violation of this legal requirement, because of the potential impact on aviation safety of uncontrolled transmissions on aeronautical frequencies or the operation and maintenance of services not in accordance with international and DGCA standards.

4.4 CASR Subpart 171.B — Approval of Service Providers

Subpart B of CASR Part 171 establishes the administrative provisions in relation to application for approval as an ATEL/ANAV service provider.

Note: Subpart E also contains additional provisions in respect to the application process, and should also be referred to.

4.5 Regulations 171.020 and 171.025 — Application

4.5.1 Who may apply?

The only bodies presently eligible to apply for approval as a provider of an ATEL and/or ANAV service are a person or corporate under the provisions of Regulation 171.020 or 171.025. The applicant must make a written application to DGCA. Use of the Application Form at Appendix A to this AC will facilitate the processing of applications. Applications must include the following information:

(a) The applicant’s name and address. In the case that the applicant is a corporation, the applicant’s registered address, and the names and addresses of its officers is also required.

(b) A copy of the applicant’s operations manual, prepared as if the applicant were a service provider.

(c) A list of each of the aeronautical telecommunication and/or radionavigation services for which the application is made, with the intended location and/or coverage of each service. (Note: “coverage” means the volume of airspace in which a radiated service is nominally provided, or for non-radiated services, the location at, or the locations between which, the service is nominally to be provided). Applications may be made for a national network of services, for services covering a regional area, for services supporting an ATS facility such as an air traffic control tower, or for one or more nav aids at an aerodrome.
Standards. For each service for which application is made, the applicant must identify any of the SARPs (Standards and Recommended Practices) included in ICAO Annexes 10, 11 and 14, or any standard in the MOS Part 171, that would not be complied with by the service as proposed by the applicant. For each of the non-compliances identified, the reasons for, and the consequences of, the non-compliance are to be described in detail. Most of the standards pertaining to ATEL and ANAV service provision appear in ICAO Annex 10, “Aeronautical Telecommunications”. Annex 10 consists of five volumes containing operational standards and technical specifications for the ATEL/ANAV services and facilities. The titles of the volumes are:

(a) Volume 1: Radio Navigation Aids

(b) Volume 2: Communication Procedures including those with PANS status

(c) Volume 3: Communication Systems

(d) Volume 4: Surveillance Radar and Collision Avoidance Systems


It is important that Part 171 providers acquaint themselves with all the SARPs in ICAO Annex 10, as relevant to the services proposed, and make sure that the services proposed are in compliance with the SARPs. As all differences in Indonesian practice have to be notified to ICAO, DGCA will not normally accept any non-compliance with Annexes unless there are extenuating reasons and it can be unequivocally demonstrated that the safety and standardisation of air navigation will be minimally and insignificantly affected.

Annex 11 “Air Traffic Services” mainly specifies procedures used in the provision of ATS. It defines the requirements for the recording of ATS voice communications and data, which will affect Part 171 providers. *(Refer to Appendix C to this AC for guidelines on recording of ATS voice and data.)*

ICAO Annex 14 “Aerodromes”. Most of the material in this Annex is not relevant to Part 171 providers, however, particular attention should be paid by Part 171 providers to the standards in Chapter 8.7 pertaining to the siting and construction of facilities and installations on operational areas of aerodromes. Similar requirements are also included in the DGCA Manual of Standards (MOS) Part 139. Part 171 providers must comply with the site clearance requirements in these standards.

4.5.2 In making an application, it is recommended that the applicant should also provide the following information:
(a) whether the proposed services, and the facilities to provide the services, are actually installed at the sites/locations;

(b) whether all support facilities, including spares for the facilities and equipment, test equipment, have been provisioned and are on-site;

(c) whether the key personnel, technicians and other staff members have been engaged; and

(d) whether it is practically possible to demonstrate the proposed services.

4.5.3 If DGCA approves an applicant as a Part 171 provider a certificate will be issued to the applicant by DGCA. Certificates will normally be issued for a five-year period of validity, but DGCA may suspend or cancel an approval at any time, if there are grounds for that action.

Note: See also section 5 of this AC for further information on the administration of applications and approvals.

5. CASR SUBPART 171.C — OBLIGATIONS AND PRIVILEGES OF SERVICE PROVIDER

Subpart C of Part 171 sets out the technical requirements and standards in relation to the services and the personnel of approved ATEL/ANAV service providers.

5.1 Regulation 171.030 — Service by provider

5.1.1 This regulation requires an approved service provider to provide its ATEL/ANAV services in accordance with the provider's approved operations manual and any conditions included in its certificate issued by DGCA. Exceptions are made for test transmissions that are necessary to test a service or facility (providing that any transmission has been the subject of prior notification or a NOTAM), or for services provided as a contingency in an emergency where the continued safety of air navigation is paramount.

5.1.2 Assigned frequencies. Those services that radiate electromagnetic signals-inspace must operate on an assigned aeronautical frequency in the relevant aeronautical frequency band. Frequencies are to be assigned by DGCA. (There is a monetary cost for the frequency assignment and licensing service.)

5.1.3 Identification codes and call-signs to be allocated by DGCA. Aeronautical communication and radionavigation services have specific identification codes or call-signs. Approved providers of services/facilities that transmit identification codes or call-signs as part of the radiated signal-in-space must apply to, and use, the identification codes or call-signs allocated by DGCA. It is the responsibility of approved providers to
arrange for their frequency and identification/call-sign allocations before making any transmissions.

5.2 Regulations 171.035 and 171.040 — Changes by service provider to services.

5.2.1 Regulation 171.035 applies if a service provider proposes to introduce a new ATEL/ANAV service, or make a change to an existing service the effect of which would be that the service would no longer be in accordance with the certificate issued to the service provider under regulation 171.250 or is a change that requires prior notification to DGCA because of a requirement to do so in the service provider's safety management system (SMS).

5.2.2 Service providers may make changes to their facilities or to the procedures for the provision of services if such changes do not change the service for which they have received approval in the certificate issued by DGCA under Regulation 171.250; and the change or modification is undertaken in accordance with the relevant change procedure in the provider's operations manual established in accordance with regulation 171.115 a.4.

5.2.3 Proposed changes to an approved service that require prior DGCA approval will be processed by DGCA as a variation to the certificate issued to a service provider. Should approval be given, it will be authorised by re-issue of the schedule to the certificate with the amended or additional entries covering the change to the service or the new service. It may be necessary in such cases for the service provider to enclose any supporting documentation with the proposed amendment.

5.2.4 Proposed changes and modifications that do not change the approved services delivered to users and do not require any amendment to the schedule to the certificate, for example replacement of, or modifications to, hardware or software to improve reliability or to provide improved functionality, frequency changes, or changes of call-signs, etc. may be implemented without reference to DGCA, provided that the service provider's operations manual is amended to reflect the change, and DGCA is provided with a copy of the amendment within a reasonable time.

5.3 Reserved

5.4 Regulation 171.050 — Technicians

5.4.1 Regulation 171.050, together with the standards in the MOS Part 171, establish the personnel qualifications and the specialised training required for technicians engaged by a service provider to operate and/or
carry out the maintenance of facilities providing aeronautical telecommunication or radionavigation services.

5.4.2 Technician is a defined term under Part 171. It means a person who is engaged by a service provider to operate or maintain any facility, or to conduct measurements of the performance of, and/or calibration of, a facility during a flight inspection. It does not include a trainee technician, or a technician undertaking on-the-job training under the direct supervision of a supervising technician.

5.4.3 Technician Qualifications. The basic minimum qualifications required for technicians are prescribed in the MOS Part 171. The minimum academic qualification for technicians performing operation and maintenance functions associated with ATEL/ANAV is a diploma of technology in one of the following:

(a) Radio engineering;
(b) Communications engineering;
(c) Electrical engineering;
(d) Electronic engineering;
(e) Computer science;
(f) Information technology; or
(g) Qualifications equivalent to the above qualifications.

For those technicians that carry out or supervise electrical, mechanical, or lines work only, the minimum qualification is an electrical or mechanical or lines trade qualification, as relevant.

Where a service provider considers, and DGCA agrees, that the operation and maintenance of a particular type of facility is not technically complex, lesser qualifications may be acceptable for those technicians who operate and maintain that type of facility.

5.4.4 Technician Certification. It is important that service providers have a system in place for assessing the competency of its technicians, whether they are employed by the service provider or they are contract technicians. Service providers must have an internal certification scheme for its technicians that establish the technical authorisations granted to each technician. The certification must be in the form of a controlled document provided to each technician that identifies the technician and the types of ATEL/ANAV facilities for which the technician has been granted authorisation, the operation and maintenance functions authorised in relation to each facility, the date on which each authorisation was granted, and the date on which the authorisation
expires or the date on which revalidation or reassessment is due.

5.4.5 Workplace Assessors. The qualification standards for Workplace Competency Assessors undertaking competency assessments for technician certification are set out in the MOS 171 at Chapter 5.2.1.2. The primary requirements are that the assessor (or assessors where one or more persons work together) has been trained, and holds formal recognition of competency in the unit being assessed. The latter requirement to hold formal recognition of competency will normally be satisfied if the assessor holds internal certification for the particular facility/equipment of the service provider's technician certification scheme. However, in the particular situation where a new ATEL/ANAV facility/equipment is to be commissioned by a service provider, there may not be any persons within the service provider that hold such technical certification. In such cases, the requirement to hold formal recognition of competency would be satisfied if the assessor has successfully completed a competency based course of instruction on the facility/equipment that is provided by the equipment manufacturer, or a course that has been developed in-house by the service provider.

5.4.6 Technician Training. Technicians who carry out functions associated with the operation and maintenance of facilities must be given appropriate, specialised training on the facility type, followed up by an on-the-job evaluation of their competence.

5.4.7 Ongoing Competency Checks. It is also necessary to have a procedure for ongoing competency checking, recency checking and refresher training to ensure retention of competence. As a guide, where technicians have not been involved in particular maintenance work on a particular facility for periods in excess of 2 years, refresher training is to be provided and re-authorisation of the technician's personal certification is to be undertaken. The competency assessments must be carried out by a person holding the qualifications for assessors prescribed in the MOS Part 171, and the assessment process must ensure that each technician:

(a) has received a course of training or instruction in the operation and maintenance of each facility for which he/she has responsibility; and

(b) has been assessed as competent to operate and maintain those facilities without supervision.

5.4.8 Contract Technicians. Where a service provider engages a third party organisation to provide technicians to operate or maintain a facility covered by the certificate, the certificate holder remains responsible for compliance with the requirements of Part 171, including the requirements in relation to technician qualifications and certification.
5.4.9 Functions which can only be carried out by Technicians holding a personal certification. In amplification of the above requirements relating to the certification of technicians, the term "operate or maintain a facility" in the context of Part 171 means any actions undertaken on the facility which can affect its operability and/or performance while it is in operational service. This includes:

(a) placing a facility into operational service; including the associated parameter checks and measurements of the performance of the facility taken immediately prior to its placement into service, to ensure its accuracy and integrity;

(b) removing a facility from operational service;

(c) monitoring the performance of a facility and undertaking executive or operational functions on the facility, including reconfiguration of the facility, while the facility remains in operational service, (this does not necessarily include basic go/no-go monitoring of the status of the facility derived from built-in test equipment or supervisory systems);

(d) undertaking periodic performance inspections and measurements and adjustments in accordance with the Maintenance Plan while the facility is in operational service;

(e) undertaking periodic maintenance while the facility remains in service;

(f) undertaking flight testing, measurement or flight calibration functions; and

(g) direct supervision of trainee technicians undergoing training on operational facilities;

but does not include:

(h) basic go/no-go monitoring or over-sighting the on-going operational performance of any facility, while it is on-line;

(i) testing, engineering trials, maintenance, modification, or repair of any facility that has been taken out of operational service;

(j) maintenance on a facility that has been taken out of service;

(k) engineering trials on a facility that has been taken out of service; and

(l) repair of modules or components of a facility at a remote agency.

5.4.10 Although not a regulatory requirement, functions (h) to (l) above should be undertaken by persons holding qualifications equivalent to that required for technicians, but not necessarily holding a personal certificate of authorisation relevant to the operation and maintenance of the
particular facility. Those functions at (h) to (l) may also be undertaken by technicians employed by other organisations not holding a Part 171 approval.

5.4.11 Guidelines on technician training courses. ICAO has issued guidelines on technician training in the ICAO Training Manual (ICAO Doc 7192). The guidelines are based on the International Federation of Air Traffic Safety Electronic Association's (IFATSEA) Training Manual for Air Traffic Safety Electronic Personnel. This material provides general guidance material on training courses for technical staff operating in Part 171 service providers.

5.5 Regulation 171.055 — Test Transmissions

5.5.1 This regulation is self-explanatory. The provisions of this regulation are to enable approved providers to undertake engineering and operational trials on facilities or equipment prior to or after commissioning, or to prove equipment after maintenance, modification, etc. Service providers may radiate transmissions on aeronautical band frequencies if such is necessary for the testing of services or facilities or equipment. This permission is subject to prior notice having been provided by an appropriate identifying electromagnetic transmission or voice announcement on that frequency, and/or passed to the AIS for the issuing of NOTAM advice, or otherwise if the transmission includes clear information that it is a test transmission not to be used for operational purposes, or radiates on an unused frequency, etc. If a provider is in doubt as to whether a test transmission meets this requirement, DGCA should be contacted before the transmission is made.

5.6 Reserved

5.7 Regulation 171.065 — Interruption to Service

5.7.1 This regulation is self-explanatory. It requires service providers to advise AIS (for the purpose of issue of a NOTAM) and other users (e.g. ATS) of planned or unplanned interruptions to any service. At least 24 hours notice to AIS is necessary before any planned withdrawal of service.

5.8 Regulation 171.070 — Test Equipment

5.8.1 Service providers must have available the necessary test and measuring equipment for the operation, performance inspection, and maintenance, of all of its facilities. The facility operation and maintenance plan (and/or the operating and maintenance instructions for each facility) should specify the test equipment requirements for all levels of operation and maintenance undertaken by the service provider.
5.8.2 Many types of ground navigation aids used for safe air navigation are analogue equipment that must be set to defined performance parameters and tolerances for each particular location. The validity of these settings, and therefore the accuracy and the integrity of the nav aids, depends on the calibration and accuracy of the test equipment, including the flight test equipment, used for facility calibration and maintenance.

5.8.3 The standards for the control, calibration and maintenance of test equipment are in Chapter 6 of the MOS Part 171, and are repeated below:

(a) A service provider has available the necessary test facilities for use in the operation and maintenance of services and facilities.

(b) Service providers use documented procedures to control, calibrate and maintain test equipment.

(c) Calibrated test equipment is used in the maintenance of a service or facility.

(d) Calibration is carried out at prescribed intervals for each type of test equipment and the calibration is traceable to national measurement standards.

(e) Records of the calibration status of each item of test equipment are retained.

(f) Each item of test equipment carries a visual identification of its calibration status, the date that the equipment was last calibrated, and the prescribed calibration periodicity.

(g) The validity of previous results is assessed when any item of test equipment is found to be out of calibration.

5.9 Regulation 171.075 — Documents to be maintained

5.9.1 Service providers must hold and keep amended those documents that are necessary as basic references for their services and functions. As a minimum, the documentation that will be required is:

(a) the service provider's operations manual, and all documents referenced within the manual. This will include:

(i) the functional and technical specifications of services and facilities;

(ii) the configuration of services and facilities;

(iii) facility operation and maintenance plans;

(iv) interface agreements with other organisations;
(v) local instructions and technical procedures;
(vi) Safety Cases produced in relation to services/facilities.

(b) ICAO Annex 10 Volumes I to V, (those volumes actually held will depend upon the services provided);
(c) ICAO Annex 11 (if the services are in support of ATS);
(d) ICAO Doc 8071 (if the services are radionavigation services);
(e) CASR Part 171 and MOS Part 171;
(f) manufacturer's equipment handbooks, in particular those volumes that contain the Operation and Maintenance Instructions, the logistics support and spare parts listings, as relevant to each facility, and for each associated item of test equipment used for maintenance.

5.9.2 These documents must be available to technicians at their workplace.

5.9.3 A process for the authorisation and amendment of documents is required and should be in accordance with ISO 9000 quality system standards. All initial issues and subsequent amendments of documents generated by the service provider are to be authorised by one of the service provider's key personnel or an appropriate delegate. Where the amendment involves a change to the design of a facility, the amendment must be authorised by a person who is qualified and competent to do so (i.e. the design authority for the facility or equipment).

The mandatory requirements in the MOS Part 171, and include:

(a) document and data control processes to control the authorisation, publication, distribution, and amendment of all documentation issued, or required by, the service provider;
(b) the currency of the documentation can be readily determined;
(c) documents are available at locations where needed by staff;
(d) only current versions of documents are available;
(e) a master copy of all documentation is securely held;
(f) the processes ensure that all documents, which are referenced in the operations manual, are included in an index to the operations manual.

5.9.4 All documentation may be held as computer based records provided that there is a system of control in place that will ensure any paper copies of computer based documents are subject to the controls required under this regulation.
5.10 Regulation 171.080 — Records

5.10.1 Adequate and accurate records are a necessary element of a safety management system. Under this regulation, a service provider is required to have a records system to identify, collect, index, store and maintain records necessary to provide a traceable history over the complete life cycle of services and facilities. Records kept are to include at least the following:

(a) records of design, manufacturing, procurement, installation, testing, commissioning, maintenance, routine operation, modification, and decommissioning;

(b) records of the designated authorities for the design, operation and maintenance for each system;

(c) records of hazard analysis and risk assessments;

(d) records of facility performance and facility maintenance history including performance parameter values, test facilities utilised, identity of authorised technicians conducting operation and maintenance, changes to maintenance procedures;

(e) records of facility failures and faults; and

(f) records of defect reports and associated defect investigations;

(g) records of each technician’s competencies, including details of the technician’s qualifications, experience, specialised training, competency assessments and facility authorisations.

5.10.2 Records should be under the control of the relevant key personnel or their delegates. Access to the records system needs to be controlled to retain appropriate security. DGCA will require applicants and approved providers to give it access to the records system for the purpose of entry certification or for safety audits.

5.10.3 Site Logs. Site logs are to be kept for all facilities used to provide an aeronautical telecommunication service or a radionavigation service. The site log must have entries to record all occurrences and actions relating to the operation, maintenance, modification, failure, faults, removal from, and restoration to, service. Entries in site logs include the date/time of the entry and the occurrence and are to be signed by the technician or other person making the entry. Site log records are to be retained for at least five years.

5.11 Regulation 171.085 — Security Program

5.11.1 The security program established by a service provider should be based on a risk assessment of the possibility of intrusion by unauthorised persons and animals, or damage by natural events.
5.11.2 Service providers must establish appropriate physical security measures for all facilities that provide an aeronautical telecommunication or radionavigation service. The level of security afforded to each facility will be to minimize the risk of destruction, unauthorised access, entry by animals, and malicious damage or tampering, to each facility. It will generally be necessary to have, as a minimum, a system of personnel control that positively limits access to facilities to personnel approved by the service provider.

5.11.3 The physical security measures adopted for site security should:

(a) control entry access at all times to all entry points;

(b) protect personnel on duty;

(c) establish procedures in respect to bomb or other threats; and

(d) establish monitoring facilities that detect unauthorised access to critical radionavigation or radiocommunication facilities.

5.11.4 Other than for facilities located airside on an aerodrome having perimeter fencing, security fences around any facility will be necessary. OHS requirements should also be taken into account in establishing security fencing, particularly for high power transmitters.

5.11.5 The required site clearances to limit interference or distortion of radiated signals around various types of airways facilities on aerodromes are in the Manual of Standards, MOS Part 139.

5.12 Regulation 171.086 — Safety Management System

5.12.1 The requirement for an SMS is a DGCA standard applicable to service providers in the aviation industry. An SMS adopted by a Part 171 service provider must comply with the standards in Chapter 3 of the MOS Part 171. These standards permit a service provider to establish an SMS that is best suited to its business practices while providing for safety assurance. Depending upon the service(s) provided, not all elements of the SMS may be applicable to all service providers.

5.12.2 An SMS defines the policies, procedures and practices for managing the safety of the provision of services, and for managing any changes to their provision. To be effective, the SMS should be integrated within the operating procedures and practices of a service provider, rather than being stand-alone.

5.12.3 The necessary features of an SMS for a Part 171 service provider are:

(a) The service provider's safety policy and objectives;

(b) The organisational and staff responsibilities for safety matters;
(c) The establishment of the levels of safety that apply to the services; and the monitoring of the levels of safety achieved;

(d) The process for internal safety reviews;

(e) The process for the internal reporting and management of safety concerns and incidents;

(f) The process for the identification, assessment, control and mitigation, of existing and potential safety hazards in service provision;

(g) The definition of the interface arrangements for safety management and the relative associated responsibilities and procedures with internal functional groups and with aerodrome operators and support service providers; and

(h) The processes for the management of changes to existing services (including the de-commissioning of a service).

5.12.4 Requirement for Safety Cases. The Safety Case is essentially a method for safety risk management. Safety Cases provide documented evidence and argument that a service or facility, or a proposed change to the design of a service or facility, meet safety objectives or levels for the service or facility.

5.12.5 Risk management is an iterative process consisting of defined, sequential steps that support better decision-making by contributing to a greater insight into risks and their impacts. It incorporates several elements, from the initial identification of safety hazards and the analysis of their risk, to the evaluation of its tolerability and the determination of possible risk reduction options, through to the selection, implementation and monitoring of appropriate control and reduction measures.

5.12.6 Reference for risk management:

..................................................(reserved)

5.12.7 Reference for the preparation of Safety Cases:

Guidelines for the preparation of safety cases have been published by DGCA in AC 171-2(0).

5.12.8 Safety cases submitted to DGCA:

Safety cases should be submitted to DGCA to support new services, and any changes to existing services that would result in a change to the certificate issued to a service provider under Regulation 171.250, or otherwise requires prior notification to DGCA in accordance with an arrangement or change definition that is set out in the service provider's
SMS. Changes which should be covered under the provision relevant to SMS inclusions are those which are significant reductions in service coverage, navaid types and locations, introduction of new nav aids, changes in frequency spacing allocations, etc.

5.12.9 Interface arrangements with ATS providers. The ATS provider interface arrangements identify staff responsibilities and arrangements in relation to normal service provision and abnormal contingency provisions.

5.12.10 Interface Arrangements with Organisations Providing Support Services.

These are interface arrangements with other organisations providing (sub-contracting) a support service, facility, or data, which interconnects or interfaces with an aeronautical telecommunication or radionavigation service. Support services include terrestrial or satellite bearers carrying voice or data communications, radar data provided by another organisation's radar surveillance systems, and other electronic data sources of operational information. The interface arrangements should include:

(a) a functional specification for the support service; and

(b) the values or characteristics of availability, reliability, accuracy, integrity, and recovery time, as relevant, of the support service; and

(c) the monitoring and reporting of the operational status of the support service, facility, or data, provided by the other organisation; and

(d) interface arrangements and management processes which will support the services provided.

Support service interface arrangements are not required if the service provider can demonstrate or provide evidence that it has suitable interruption recovery contingency arrangements in place, which will provide continued safe operation of a service during any interruption to, or failure of, any support service.

5.12.11 Aerodrome Operator Interface Arrangements. The Aerodrome Operator interface arrangements set out the respective responsibilities of the aerodrome operator and the service provider for aerodrome infrastructure and aerodrome works that are associated with, or may affect, any Part 171 service. In this regard, the interface arrangements should cover, as relevant:

(a) provision of mains and stand-by electrical power;

(b) the management of aerodrome cabling that connects with Part 171 services;
The operations manual must include a chart of the service provider's organizational and management of service operations manual and the procedures to be followed. Any documentation required and the documentation in a form that may be updated in electronic form. Any documentation required may be updated and submitted in electronic form. Any documentation required may be updated and submitted in electronic form.

6.1.2 When the operations manual may be submitted by the applicant, the operations manual should be a detailed statement of the information in another instance held by the applicant.

6.1.1 The operations manual should be a detailed statement of the information to be submitted by the applicant.

6.1.0.75 requires the operations manual to be submitted by an applicant or on-going operation and maintenance to be a detailed statement of the information in another instance held by the applicant.

6.1.0.90 — Operations Manual

Support D of Part 714.

The operations manual complies with the requirements of the regulations applicable to the provision of services and the standards and procedures under which a service is established.

Support D of CAA Part 714. Provides a detailed description of the requirements in relation to a service provider's operations manual. Provisions are included to support an applicant to DCA.
experience, and positions of the chief executive of the service provider, and of the key personnel. The responsibilities of these persons should also be included or appended.

6.2.2 Management Structure.

The chief executive is the person who is nominated as having overall responsibility for the proposed services, and the key personnel are those persons (or person) who have the responsibility within the service provider for the management of the operation, maintenance, and the safe provision, of its services. These persons plus any other persons at management level that represent the management structure of the service provider should be suitably qualified and/or experienced for the position held.

6.2.3 Depending upon the size and complexity of the service provider's organisation, the extent of the services it proposes to provide, and whether it intends to undertake system engineering, installation and commissioning functions, the following are the activities and functions for which these key management personnel should be responsible, and capable of managing:

(a) the establishment of internal standards, practices and procedures that comply with the Part 171 requirements and standards;

(b) system engineering, specification, procurement, installation and commissioning of facilities;

(c) establishment and review of the internal safety management system and its review;

(d) establishment, review and on-going responsibility for the facility maintenance regime, including logistics support of facilities and the procedures required under Part 171 in relation to the maintenance functions;

(e) the resourcing of qualified, competent technicians in sufficient numbers, at appropriate locations, to carry out the operation and maintenance functions of the service provider; and

(f) Where a service provider has a number of manned bases, it is expected that an appropriate supervisory structure will be established at each base such that there is a senior officer in charge, plus sufficient supervisory personnel to oversee the technical functions.

6.2.4 In assessing applications, DGCA will give close attention to the management structure, and the capabilities of the managers of the applicant. Where DGCA considers that the proposed management structure does not satisfactorily support the proposed services, approval will not be granted.
6.2.5 The applicant needs to have sufficient personnel to undertake all its proposed functions. The number of personnel required will depend on many factors, but mainly the types and extent of the facilities, their geographic locations, and the geographic locations of the maintenance bases. Only personnel associated with those operations and maintenance functions undertaken by the service provider itself should be included in the organisation chart. For example, where the facility operation and maintenance plan specifies that the repair of modules or equipment components of facilities will be carried out externally by a contract agency such as the facility manufacturer or an authorised repair agency, the organisation chart need not include details of that part of the maintenance function. Again, in assessing applications, DGCA will give close attention to the proposed structure and the disposition of the key personnel, supervisors and technicians; if it is considered that the structure does not satisfactorily support the proposed functions, approval will be withheld.

6.3 Regulation 171.100 — Way in which standards are met

6.3.1 Under this regulation, the operations manual must contain a listing of the technical standards relating to design, installation, commissioning and testing, and operation and maintenance, that are applicable to each service, and to each facility, which makes up each service. In the context of this regulation, the term standards means a relevant ICAO standard or recommend practice, any requirement in the Manual of Standards Part 171, or any other relevant international or domestic standard or requirement which has been called up anywhere in the service provider's operations manual, or in documentation referenced in that manual, as applying to the service or facility. It also includes any standards specified by the facility manufacturer in equipment specifications or handbooks. For each of the standards listed or referenced, the operations manual must include a statement as to whether and how compliance with the standards has been achieved. Where compliance with a relevant standard is not achieved, this is to be clearly indicated, and a statement of the reason for non-compliance and its impact on the service provided in terms of the performance of the service, and aviation safety, is to be included.

6.3.2 Where the standards applicable to services and facilities are those established by the equipment manufacturer and are included in the manuals, handbooks, or specifications, provided by the manufacturer it remains the responsibility of the applicant to satisfy DGCA that those standards have actually been achieved in each particular facility installation. This will normally require site acceptance testing.

6.4 Regulation 171.105 — Functional specification and performance values of services

6.4.1 This regulation requires the inclusion in the operations manual of a
the system as there is no in-service knowledge of its actual
operational experience is not viable. As may not be available for
Where a service comprises a completely new design, and
period that the service is required to be available.
In the case of a fault, remote monitoring and maintenance capability
is essential to a fault, remote monitoring and maintenance capability
where A = Operational Availability T = is the total time that the
where Au = Availability, T is the total time that the

availability is measurable when required by users, and T is the total time
service is available when required by users, and T is the total time
availability is measurable when required by users. The service will be
availability is measurable as a result of both unscheduled
failure and unscheduled maintenance.
where T is the period of an average year of normal, and T is the period of the
system to users, the total

operational availability of the system. Reliability and availability are
the measures of reliability and availability. Reliability is a measure
of the requirement of the necessary levels of operational availability, in many

cases, achievement of the necessary levels of operational availability, in many

services must provide high levels of operational availability, and operational

(4) Availabiliity All operational communication and radiocommunication

services.

each service:

6.4.3 Availability and Reliability. Values for each of the following basic

parameters, as relevant to each service type, are to be included for

6HF airborne service in accordance with ICAO Annex 10 Vol II

VHF airborne service in accordance with ICAO Annex 10 Vol II

or for an aeromedical mobile service used for the purpose of ATC

01.1 ICAO Category 1 in accordance with the standards of ICAO Annex 10

Precision approaches to landing navigation and providing pilots with

Precision approaches to landing navigation and providing pilots with

6.4.2 Functional specification.

The functional specification (synonymous with the operational

performance of the service, in terms of their suitability for evaluation use.

Such information is to enable DCA to assess the

service performance descriptors (functional specification)
performance. In this case, the Inherent Availability $A_i$ should be stated in lieu of $A_0$. (Manufacturer's technical specifications or equipment manuals often include $A_i$.)

$$A_i = \frac{T_t - T_d}{T_t}$$

where $T_t$ is total time, $T_d$ is down time due to failure.

Where a service has duplicated or redundant facilities (including standby power supply) with automatic changeover or automatic or remote reconfiguration, or main/standby capability, an additional parameter termed 'continuity' should also be quoted in the operations manual for the applicable services. 'Continuity' is a measure of the time that the service takes to changeover from the main to the standby facility, or to reconfigure itself following a fault, including a power supply fault or failure. Services for which continuity is an applicable parameter include precision nav aids, radar display services for ATC, A/V communication channels for ATC, point-to-point data and communication links.

A major factor in achieving required levels of $A_0$ is the provision of standby power systems. Standby power systems may take the form of Diesel No-Break Generating Sets, Diesel Standby Generating Sets, floating battery supply across a mains charger, or Uninterruptible Power Supplies with battery backup to mains supply. For remotely located facilities having relatively low power requirements, solar power supplies used in conjunction with floating batteries may be a satisfactory solution.

The provision of standby power is necessary for many ATEL/ANAV services and facilities where continuity of service is a critical requirement. ICAO Annexes 10 and 14 provide guidance in regard to the requirements for standby power for particular facility types. Critical ATEL/ANAV facilities that should have no-break standby power supply systems to ensure continuity are those in the following classes:

(i) all control tower facilities;

(ii) all terminal area radar surveillance systems;

(iii) all terminal area precision and non precision approach navaids;

(iv) all terminal area air/ground VHF communication systems;

(v) all radio bearers/networks and stations servicing any CNS system(s) used for terminal area control;

(vi) all enroute communication systems; including all satellite communication ground stations used for ATS voice and data; and
(vii) all enroute radar facilities.

(b) Reliability. This is measured in terms of long-term mean time between failure (MTBF) of the complete service, taking account of all possible failure modes.

\[ MTBF = \frac{\text{total time period}}{\text{number of failures during time period}} \]

(c) Accuracy. This is a measure of the degree to which the actually displayed or presented value complies with the true value of any parameter provided by the system to operational users. The measure is mainly applicable to radionavigation services, including radar data and display services. It is not applicable to communication or broadcast services. Accuracy figures should take account of all sources of error of the provided service other than user interpretation errors. Since accuracy is a statistical measure of performance, in the case of a radionavigation system, the statement of the accuracy is not meaningful unless it is qualified by the probability that the accuracy is achieved, or the uncertainty in position which applies.

(d) Integrity. This is a measure of the ability of the service to provide a warning to users when the service should not be used, or when an error has occurred in data transfer or computation. Integrity may be computed and presented in a variety of ways, e.g., as a Go/NoGo warning based on internally measured parameters that utilise built-in test equipment or self-monitoring systems. Integrity values for radionavigation services are often stated as a probability of the loss of integrity over a number of events.

6.4.4 For newly procured facilities, the above parameters will normally be included in the technical specifications and/or will be specified by the facility manufacturers. For existing facilities, providers will have to calculate overall values for complete services based on the configuration of the facilities (including power supply systems and support services provided by telcos) that comprise or support each service, and knowledge of the history of the performance of the facilities.

6.4.5 ICAO Guidance Material.

ICAO Attachment F to Annex 10 Volume 1 provides guidance material concerning the levels of reliability and availability for radiocommunication services and radionavigation aids, which should be considered by service providers as minimum standards. The ICAO information is shown in Appendix B to this AC.

6.4.6 The following table provides, for guideline purposes only, values of the performance parameters for a number of service types. These values do not necessarily represent those that DGCA would require or approve for any specific service; such requirements will depend upon each individual service and its specific application.
<table>
<thead>
<tr>
<th>Service</th>
<th>Ao</th>
<th>MTBF (hours)</th>
<th>Accuracy</th>
<th>Integrity</th>
<th>Continuity (changeover and standby power)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aeronautical broadcasting service</td>
<td>&gt;.99</td>
<td>&gt;1000 hours</td>
<td>N/A</td>
<td>N/A</td>
<td>15 seconds</td>
</tr>
<tr>
<td>Aeronautical mobile service (ATC A/G comms)</td>
<td>&gt;.9999</td>
<td>&gt;10000 hours</td>
<td>N/A</td>
<td>Direct, rapid, continuous, static free</td>
<td>Immediate</td>
</tr>
<tr>
<td>Radar Data Display for ATC</td>
<td>&gt;.9999</td>
<td>&gt;10000 hours</td>
<td>TBA</td>
<td>Not specified</td>
<td>Immediate</td>
</tr>
<tr>
<td>ILS Localiser and Glide Path</td>
<td>&gt;.999</td>
<td>&gt;1000 hours</td>
<td>ICAO Annex 10 Vol 1 Ch 3 and Table</td>
<td>ICAO Annex 10 Vol 1 Ch3 and Table C2 Attachment C</td>
<td>Immediate</td>
</tr>
<tr>
<td>DME</td>
<td>&gt;.99</td>
<td>&gt;1000 hours</td>
<td>ICAO Annex 10 Vol 1 Ch 3 section</td>
<td>Not specified</td>
<td>Immediate</td>
</tr>
<tr>
<td>VOR</td>
<td>&gt;.99</td>
<td>&gt;1000 hours</td>
<td>Not specified</td>
<td>Not specified</td>
<td>Immediate</td>
</tr>
<tr>
<td>NDB</td>
<td>&gt;.99</td>
<td>&gt;1000 hours</td>
<td>N/A</td>
<td>ICAO Annex 10 Vol 1 Ch3 section</td>
<td>Immediate</td>
</tr>
</tbody>
</table>

6.5 Regulation 171.110 — Technical Description

6.5.1 Under this regulation, the following information concerning the specification and interconnection of facilities must be included for each service:

(a) the kind and the location of each facility making up the service;

(b) the technical specification of each type of facility;

(c) the interconnection of each facility making up the service, or to any
other service to be provided under the operations manual; and

(d) the monitoring system relevant to each facility.

6.5.2 Kind and location of facilities. The type of facility should be described from the listing at Chapter 2 of the MOS Part 171. The location of the facility is the geographic name of the place at which the facility is installed.

6.5.3 Technical specification of each kind of facility. The technical specification of a facility should include, in technical terms, all inputs and outputs to the facility, and the specifications and standards to which the facility has been designed. The technical specification must cover both the hardware and software of the facility. This information is normally provided by the equipment designer/manufacturer. (If that is the case, reference to the relevant content in the manufacturer's documentation is all that is necessary in the operations manual.)

6.5.4 Facility interconnection.

This should be in the form of a block diagram, each facility representing one of the blocks should be identified and the major signal or data inputs and outputs between facilities or to or from other services shown.

6.5.5 Facility monitoring. The monitoring system for each facility, or group of facilities, should also be included in block diagram form, conveying the method of monitoring, parameters monitored, monitoring outputs and the location at which the outputs are presented. The monitoring requirements for nav aids are presented in the following paragraph.

6.5.6 Nav aid status monitoring and reporting.

ICAO Annex 10, Volume 1, paragraph 2.8.1 'Provision of information on the operational status of radionavigation aids' states:

'Aerodrome control towers and units providing approach control service shall be provided without delay with information on the operational status of radionavigation aids essential for approach, landing and takeoff at the aerodrome(s) with which they are concerned.'

Based on this requirement the following standards have been adopted by DGCA for the monitoring of navigation aids used for civil aviation within Australian airspace:

6.5.7 Terminology.

(a) immediate reporting: The serviceability of the navigation aid is monitored continuously and the status is provided to the associated, responsible ATS unit. Any change in the status of the navigation aid will be provided within 10 seconds.
6.6.7. This regulation requires the service provider to document in its operation manual the in-house technical and operational procedures under which the service provider intends to carry out its service provision functions. The procedures required are:

Provide standard reporting. DGCA in situations where it is technically impracticable and costly to use of pilot reporting. The use of pilot reporting may be authorized by DGCA has given approval for the small and standard reporting to the relevant Part 171 Provider. These small and standard reporting procedures are not ATS Required. These small and standard reporting procedures are not ATS Required. These are for flight management and are usually gathered in and on or near airports.

6.5.8. Remote Stabilization

ATS Required: These are used by ATS for traffic

Approach Alids: Any required used for precision or non-precision

These are the relevant Part 171 Provider.

These small and standard reporting procedures are not ATS Required. These small and standard reporting procedures are not ATS Required. These are for flight management and are usually gathered in and on or near airports.

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are required to establish and apply configuration management processes to all ATEL/ANAV facilities, throughout the life cycle of the facilities. The life cycle commences from the time operational requirements are determined, to technical specification, through the project acquisition phase where baselines are established and the system is commissioned, through normal operation and maintenance, to decommissioning. Configuration management is a discipline applying technical and administrative direction and surveillance to a facility or equipment. The component elements of configuration management are:

(i) Baseline identification, which is the process for defining and documenting the characteristics of the items that make up a Part 171 service. This is normally undertaken by the unique identification and description of each circuit component, module, sub-assembly and equipment.

(ii) Configuration control, which is the process by which proposed changes to the baseline are evaluated, designed, co-ordinated, approved or disapproved and, if approved, implemented in a controlled manner.

(iii) Status accounting, which is the process for recording changes made to the system, and amending the baseline identification to reflect the changes.

(iv) System audits, which is the process by which the systems are reviewed to ensure that they meet stated needs and performance specifications.

These processes are to ensure that the current physical configuration of hardware, software and operational processes relevant to each service/facility are recorded and kept under control. A person or persons should be established by the service provider as the 'configuration control authority' to define and carry out in-house configuration control processes and maintain the associated records.

(b) Design control. This is the process for the control of the design of new services or facilities or the modification of services or facilities. The process should cover design and development planning, organisational and technical interfaces between different groups including the user groups, design input and output requirements, design review processes, design verification and validation processes and major modification processes. This need not be included if a service provider does not intend to undertake in-house design and development of new systems or the major modification of existing systems.

The procedure should establish the system design authority for the design, changes to the design, and/or the modification, of services or facilities, and its procedures, equipments, software and components.
The system design authority is a person (or group of persons), not necessarily within the service provider, qualified, competent and knowledgeable, in the technology of a service/facility. Unless a service provider retains in-house engineering expertise, the design authority will normally be the equipment manufacturer or agent and in that case any design changes should be subject to its design approval. In undertaking design authorisation, the design authority should ensure that the system design meets its functional and technical specifications.

(c) Commissioning of new services or facilities. This is the procedure under which the commissioning of any new service or facility is undertaken. The commissioning procedure must ensure that system performance has been validated by engineering tests and flight tests as necessary, and that the appropriate design, operation and maintenance authorities have accepted that the service operates in accordance with its operational requirements, safety objectives and requirements, and applicable ICAO and MOS standards. For services, which support ATS, the relevant Part 172 service provider for which the service is intended should be included as a signatory in the commissioning authorisation process. For major systems, commissioning should also be subject to the production of a safety case that establishes that all predicted aviation safety hazards have been considered and the risks have been managed within safety objectives. (Guidelines for the preparation of safety cases covering airways systems are published in AC 171-2(0).)

(d) Performance Analysis and Recording. This is a procedure that maintains a record of the operational performance of each service over its life cycle. The procedure should establish a history of service/facility failures and fault occurrences, and the corresponding system or facility downtimes. It should also support analytical summaries to establish the achieved values of Ao, MTBF, and system recovery times. These actually achieved values can then be compared with the engineering and operational specifications for services and facilities as a means of monitoring their on-going performance.

(e) Fault Reporting. This is a procedure by which the service provider internally communicates the reporting of service and facility failures and faults to responsible supervisors and technicians for the management of their rectification. The procedure should establish the objectives for service recovery times and cover the reporting and technician call-out processes necessary to return services to operation within the defined recovery times. The procedure must cover failure/fault occurrences outside normal working hours as well as those during working hours.

(f) Defect Reporting. A defect reporting system by which the service provider identifies, reports, investigates and rectifies any facility design deficiencies which are beyond the scope of the normal
next performance inspection.
also that the facility is likely to continue to do so until least the time of the
next inspection. There is no established performance specifications, and
requirement of each facility to perform service, and the
inspection procedures are included in the performance must be met. The facility
must be designed in accordance with the established plan that is

6.2.1 Many existing facilities, in particular existing radio communication

6.7.2 The operation and maintenance of facilities, in particular existing radio communication

Regulation 7.1.120 — Facility Operation and Maintenance Plan

(3) The process for software changes, including the processes to test

(2) The process for design changes (see also Design Control above).

should apply here).

4) A similar process for the nomination of a design authority, etc.

5) The operating procedures for the operation manual. This procedure

should cover:

6) Modification Procedure. A facility modification process must be

7) Effective procedures for the preparation of the plan for operation and

8) Correct configuration identification, drawings, or operation and

9) Unavailability or unsuitability of spare and test equipment.

bugs;

10) Continuing faults on equipment or software, including software

11) Specification of standard operating parameters;

12) Continuing inability of services and facilities to perform within

Reporting system should at least cover:

- continual activity to manage and correct of any procedural

- continual activity to manage and correct of any procedural
6.7.3 **Flight inspections.** For nav aids systems in particular, periodic inspections not only entail ground tests on site but also flight inspections at defined time intervals. The time intervals, procedures, standards and equipment used for flight inspections are to provide the final assurance that the signal-in-space accuracy, integrity, and coverage of the facilities are within tolerances defined in the operational specifications.

6.7.4 The facility operation and maintenance plan for each service/facility should include:

(a) the procedures for scheduled and unscheduled maintenance; including reporting and call-out processes, removal and return to service of operational facilities, recording of the maintenance activities to provide a traceable history of events, etc.;

(b) a description of the maintenance scheduling system. The scheduling system should specify and record the scheduled maintenance intervals, the maintenance standards that apply to the facility, a record of the last maintenance activities and the next scheduled maintenance;

(c) the interval of time between scheduled maintenance and/or routine performance inspections, and the basis of the establishment of that time interval;

(d) the operation and maintenance instructions for each facility;

(e) a workload analysis of the technicians involved in facility operation and maintenance. The objective of this requirement is to show that the service provider has, or will have, sufficient numbers of technicians to carry out the operation and maintenance plan;

(f) details of planned facility flight inspections. This must include details of the standards and procedures to be used for flight inspections, the time interval between flight inspections, and the identity of the flight inspection organisation that will be contracted to carry out the flight inspections;

(g) the disposition of support spares and test equipment; and

(h) the plan for repair of facility modules and equipment components. External repair specialist agencies may be used, in which case the identification of the repair agency should be included in the plan.

6.7.5 **Necessity for Flight Inspections.** The necessity for a flight inspection of a radionavigation aid will arise in the following situations:

(a) at the time of installation, as part of the pre-commissioning tests;

(b) for routine confirmation of facility performance and integrity at predetermined intervals. These intervals are to be based on the ICAO guidelines in Doc 8071;
(c) where investigation of the performance of a navaid is necessary resulting from pilot reports, incident/accident investigations, or engineering developments; and

(d) in addition, the necessity for flight-testing is to be assessed following nonscheduled maintenance or modification. A flight-test will be required unless it can be absolutely determined from ground based performance inspection that the radiated signal has not been affected. If it cannot be absolutely ascertained that no unsafe variation in performance has resulted from maintenance or modification action, the aid is to be removed from service pending a flight inspection.

6.7.6 Maintenance activities not requiring a confirming flight check.
Some examples of the typical maintenance activities that can be performed without necessitating a confirmation flight check/inspection are:

NDB including locator beacons: All maintenance can be carried out without necessity for a flight inspection, provided the antenna current is restored to the value at the last flight inspection. The antenna may be replaced, on the same earth mat, with one which is an identical type, provided the antenna current is restored to the value at the last test flight.

DME and VOR: All maintenance procedures and modifications can be carried out on the transmitting and monitoring equipment circuitry provided that the aerial system conditions, as determined by field measurement or monitor indications, can be restored to the condition that existed at commissioning or during the last flight inspection. Maintenance of fixed field detectors may be undertaken providing no change is made to the physical location of the monitor aerials.

ILS Localiser and Glide Path: All maintenance procedures and modifications may be undertaken on duplicated transmission assemblies. Maintenance on monitor modules may be undertaken. Maintenance on unduplicated circuits that are not phase or amplitude sensitive may be carried out. Maintenance on surface finishes and obstacle warning systems may be undertaken provided there is no physical damage or displacement of antenna assembly.

ILS Marker Beacon: All maintenance procedures and modifications may be carried out provided that power output and modulation percentages are returned to at least the Low Performance Level and no adjustments that affect the phase relationship of the currents in the various antenna elements are made and the antenna position remains unchanged.

6.7.7 Maintenance activities requiring routine confirming flight check:
building, earthworks, fences, roadworks, power lines, vegetation, etc.

Environmental changes: Any significant environmental changes, e.g.,

the phasing and thereby distress the radiated field pattern.

ILS Marker Beacon: A high check will be required following
obtaining maximum DDM at the glide slope monitor.

carrier phase, a variation of ±20 degrees is allowed in its setting to
indication of the carrier phase, and within 20 feet of the monitor.

For the ILS Glide Path only, after

transmission line of critical length, antenna array or area of the

transmission line, the interference or alignment of a major nature is caused only on any

corrective maintenance of a similar nature is required, on any

continuous position, sensitivity or decrease by monitoring. Whenever

compliance with the IRIS Localizer and Glide Path: Following the replacement of

DME: Following any change in the height of type of antenna.

VOR: Following replacement of the antenna, after repositioning of the

NDB: Following any change in antenna current, for the purpose of

Typical maintenance functions that require the performance of a

6.7.8 Maintenance activities and environmental changes requiring
are outside the tolerances specified in the DGCA Manual of Standards Part 139, or cause changes in standard operating conditions as determined by ground inspections.

6.7.9 Standards for the Maintenance of Navaids.

The standard for the routine maintenance of navaids is ICAO Doc 8071 Volume 1 Manual on Testing of Radio Navigation Aids. The maintenance periodicities specified in ICAO Doc 8071 Vol 1 for Ground Test Requirements and Flight Test requirements should be adopted by service providers for the ground maintenance and flight-inspection/testing of navigation aids. The periodicities specified in ICAO Doc 8071 are repeated in the table below and these must not be extended unless other periodicities have been specifically approved by DGCA by an entry in the service provider's operations manual. Where actual operational data provides a firm knowledge of the long-term performance stability and integrity of any particular type of navigation aid, approved service providers may make submissions to DGCA for approval for variation to the periodicities. Such requests are to include supporting data.

Note: The periodicities specified relate to the most frequently recurring maintenance item of the specified ground or flight inspection schedule. Not all scheduled maintenance items are required to be undertaken at every ground or flight inspection. Refer to ICAO Doc 8071 for details.

<table>
<thead>
<tr>
<th>Navaid facility type</th>
<th>Maintenance standard</th>
<th>Maximum Periodicity - Ground Performance Inspections</th>
<th>Maximum Periodicity – Flight Inspections</th>
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</thead>
<tbody>
<tr>
<td>NDB</td>
<td>ICAO Doc8071 Vol 1</td>
<td>6 months</td>
<td>12 months</td>
</tr>
<tr>
<td>DME</td>
<td>ICAO Doc8071 Vol 1</td>
<td>6 months</td>
<td>12 months</td>
</tr>
<tr>
<td>CVOR</td>
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<td>12 months</td>
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<tr>
<td>DVOR</td>
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<td>ILS</td>
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<td>Localiser: 3 months Glide path: 3 months Markers: 3</td>
<td>Localiser: 6 months Glide path: 6 months Markers: 6</td>
</tr>
</tbody>
</table>

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6.8 Regulation 171.125 — Safety Management System

6.8.1 This regulation simply requires that the operations manual of the service provider includes information about the safety management system that is set out in regulation 171.086.

6.9 Reserved

6.10 Reserved

6.11 Regulation 171.140 — Test equipment

6.11.1 The operations manual must describe the standards and procedures for the calibration and maintenance of test equipment used for the maintenance of any ATEL/ANAV facilities.

6.11.2 Regulation 171.145 — Interruption to service

6.11.3 The operations manual must include the following requirements, which are amplified in the following paragraphs:

(a) the procedure to be used if an ATEL/ANAV service is interrupted;

(b) a specification of the acceptable recovery time for each service;

(c) the procedure to be used if the acceptable recovery time of a service is exceeded; and

(d) a description of any method to provide an alternative service if an ATEL/ANAV service is interrupted (unless the alternative service is to be provided by another approved service provider, e.g., another Part 171 or Part 172 provider, in which case that should be stated in the operations manual).

6.11.4 Procedure to be used if an ATEL/ANAV service is interrupted.

DGCA takes the term interrupted in the context of this regulation to mean that, during its scheduled hours of operation, an ATEL/ANAV service:

(a) has failed and is not available to users; or

(b) has been withdrawn from service for the purpose of either scheduled or unscheduled maintenance at a time that the service is required by
(c) is operating outside its performance parameters (i.e., a fault has occurred which affects its technical performance or integrity such that the service has to be withdrawn at a time that the service is required by users;

(d) but, does not include facility faults that have not resulted in the ATEL/ANAV service being inoperable or unusable. Examples are a fault that results in a changeover to a standby or duplicated facility, or a fault in a redundant element, where the service continues to be delivered in accordance with specification. While such faults obviously need to be attended to, they may not require the same level of response as a complete service failure, and are not classified as interruptions.

6.11.5 The objective of the procedure for responding to a complete failure of service should be to re-establish the service as quickly as is possible, consistent with properly restoring its operability. Factors important in attaining this objective are:

(a) quick response by maintenance technicians;

(b) the location of the technicians in relation to the location of the facilities;

(c) equipment designs that provide good maintainability;

(d) efficient logistics support, particularly the availability of spares and test equipment; and

(e) the establishment of contingency plans for the provision of replacement or alternate services, facilities, equipment, and/or procedures by the users.

6.11.6 Specification of recovery time.

The regulation requires service providers to determine a time period, termed the recovery time, which will define the planned level of response for the restoration of each service. While the recovery time will be the primary factor establishing the logistics support plan for a service, it should be based essentially on the operational requirement for the service, not on the capability of the logistics support system. In specifying recovery times that will satisfy aviation safety dictates and be acceptable to DGCA, service providers should consider the following:

(a) the requirements of the service users;

(b) the type of service. As a guide, all facilities for terminal communications and radar surveillance, and all terminal precision
and non-precision approach aids are to be allocated the shortest possible response times. (Recovery times for these services should be in the order of 30 to 60 minutes maximum);

(c) if the service is used by ATS, are there alternate back-up services available to ATS and/or are there fall back contingency procedures, until the service can be restored; and

(d) the availability of alternate services.

6.11.7 Procedure if the acceptable recovery time of a service is exceeded.

The provider is required to establish and document a contingency plan that defines the planned actions to be taken by the provider in the event that the specified recovery time is not achieved in practice. The contingency plan may take various forms depending on each particular situation. In many instances it will not be feasible to provide alternate or backup ATEL/ANAV services, in which case the most appropriate contingency response will have to be based on particular operational procedures such as reversion to procedural control, or reduction of aircraft movements, etc. For this reason, the plan should be established in conjunction with the associated ATS provider, and may take into account the following aspects:

(a) the likely outage time. Extended periods of outages resulting from major failures and facility breakdowns should be taken into account;

(b) the type of service involved and the feasibility of providing a reduced service, or the availability of alternate or backup services;

(c) the possibility of diversion of aircraft to other aerodromes, the handover of ATS functions to another sector/unit, or the reduction of aircraft movement rates to a predetermined level, etc.; and

(d) the possibility of a service being remotely provided by, or rerouted through, another Part 171 provider.

6.12 Regulation 171.150 — Document control

6.12.1 The operations manual must describe the service provider’s document control.

6.13 Regulation 171.155 — Security program

6.13.1 The operations manual must describe the service provider’s security program.
6.13.2 Regulation 171.160 — Changes to procedures

6.13.3 The operations manual must include the means by which changes are to be made to the procedures established under the facility operation and maintenance Plan. The change procedures should establish an appropriate authority within the service provider (e.g. the key person(s) responsible for operation and maintenance functions) to assess and authorise any changes to operation and maintenance procedures; the procedures for removal and return of facilities to operational service; the logistics support of services; and the amendment of relevant documentation including the operations manual.

7. CASR Subpart 171.E — Administration

7.1 Regulation 171.165 — Joint applications not permitted

7.1.1 Any person or corporation that has the necessary capabilities, qualified personnel and facilities, may apply for approval as a Part 171 provider.

7.1.2 An application made by a partnership, or by 2 or more persons jointly, is not a valid application.

7.2 Regulation 171.170 — DGCA may ask for demonstration of service

7.2.1 When considering an application for approval, DGCA may, in writing, request the applicant to demonstrate its ATEL or ANAV service.

7.2.2 It will be the normal procedure for DGCA to request such a demonstration before an approval is finally given. An exception will be considered where the actual facilities for service delivery are not in existence at the time of application, and the applicant does not wish to procure and install the necessary facilities unless and until an approval to operate is granted. In this situation, a condition of the approval will be that the service is satisfactorily demonstrated at commencement.

7.3 Regulation 171.175 — DGCA may ask applicant to provide more information

7.3.1 If DGCA considers that it reasonably needs more information than has been provided in an application to complete assessment of the application, including any further information to be included in the operations manual before it can be approved, the applicant will be requested to provide the additional information or further documentation. In this situation, DGCA will advise the applicant accordingly in writing, clearly stating the information that is required.
7.4 Regulation 171.180 — Matters that DGCA may or must take into account

7.4.1 In assessing and making a decision on any application, DGCA may take into account:

(a) anything in the application and the applicant's operations manual;

(b) anything in any other document submitted or referenced by the applicant;

(c) the results of any demonstration of a service; and

(d) anything that DGCA has in its records about the applicant.

7.4.2 However, before taking into account anything that DGCA has in its records about an applicant, DGCA must inform the applicant in writing of the substance of the information, and invite the applicant to make a written submission about such matter, within a specified, reasonable, time. DGCA must take into account any such submissions.

7.5 Regulation 171.185 — When DGCA must grant an approval

7.5.1 If a person has applied for a certificate as an ATEL/ANAV service provider, and the applicant has demonstrated compliance with the requirements for the grant of the approval, DGCA will grant an approval if DGCA considers that the approval would not be likely to have an adverse effect on the safety of air navigation. This consideration would normally only be made where an ATEL or ANAV service that has previously been approved by DGCA is already operating in the same airspace, and is providing the same service as that service which the applicant proposes to provide. An example of this possibility is the provision of two similar navigation aids providing the same service in the same or overlapping airspace, where mutual interference may be a problem.

7.5.2 DGCA does not intend to provide certification to applicants who cannot establish a valid reason to provide a service. This will be the case if the application is purported to be for the provision of a Part 171 service to support an ATS provided by a Part 172 provider, but there is no statement of an agreement with that Part 172 provider included in the application.

7.6 Regulation 171.190 — When decision must be made; and 171.195 — Decision making period may be extended

7.6.1 DGCA must make a decision about an application within 90 days after receiving it. If a decision is not taken in 90 days, regulation 171.190 provides that DGCA is taken to have refused the application.
7.6.2 It should be noted that the 90 day assessment period may be extended if DGCA has made a request under 171.175 for the applicant to provide further information or has invited submissions under 171.180 b 2. The time between when DGCA makes the request or invitation and when the applicant responds does not count in the 90 day period.

7.6.3 Should DGCA complete its assessment of the application before the 90 days has expired, it will inform the applicant of the result in writing at that time.

7.7 Regulation 171.205 — Approvals; and 171.215 — DGCA’s power to vary condition of approval

7.7.1 Regulation 171.215 provides that DGCA may approve an application only if it approves the applicant’s draft operations manual. Approval of the operations manual will be contingent on its content satisfactorily addressing all the requirements set out in Part 171 and the MOS Part 171.

7.7.2 In approving an application, DGCA may impose conditions that restrict the kind of service to be provided, the way in which a service is provided, the coverage of the service, the time during which a service is provided, the requirement to satisfactorily demonstrate a service prior to commissioning, etc.

7.7.3 At the time of issuing an approval, or subsequently, DGCA may, if necessary in the interests of safety, impose further conditions or vary a condition. In this situation, DGCA is required to give the service provider written notice of the proposed imposition or variation, and must specify a reasonable period within which the approval holder may make a submission in relation to the imposition or variation of the condition. A condition will not be finally imposed before any submission is considered by DGCA.

7.7.4 Certificates issued under regulation 171.250 will have an expiry date included. In addition, a date for the review of the conditions placed on the certificate may be included on the certificate. That date will be dependant on the type and extent of the conditions that are initially placed on the certificate, but will not normally be in excess of three years after the date of original issue of the certificate.

7.7.5 If it is necessary to vary anything on a certificate, a replacement certificate will be issued. This will be the case where:

(a) there is a change in the service(s) provided by an approved provider, and DGCA has approved the change; and

(b) it is necessary to change or add to any of the conditions on a certificate.
7.8 Regulation 171.220 — Suspension and cancellation of approvals; and 171.225 — Notice to approval holder to show cause

7.8.1 Before taking action to cancel an approval, DGCA may give an approval holder a show cause notice to inform the approval holder of facts and circumstances that justify the cancellation of the approval, and invite the provider to state why its approval should not be cancelled. A show cause notice will provide at least seven days for the approval holder to respond.

7.9 Regulation 171.230 — Grounds for cancellation of approval

7.9.1 The grounds for DGCA to cancel an approval are that the approved provider has:

(a) breached a condition of approval;

(b) contravened the Civil Aviation regulation; or

(c) has been guilty of conduct that renders the service provider's continued holding of an approval likely to adversely affect safety.

7.10 Regulation 171.235 — Cancellation of approval after show cause notice

7.10.1 This regulation sets out the provisions and procedural requirements under which DGCA may cancel an approval. DGCA may only cancel an approval if:

(a) there exist facts or circumstances that amount to grounds for cancellation; and

(b) DGCA has given the holder a show cause notice; and

(c) DGCA has taken into account any written representations made by or on behalf of the holder, within the period of time stated in the show cause notice; and

(d) not cancelling the approval would be likely to have an adverse impact on the safety of air navigation. Sub-paragraph (a) above does not apply if DGCA is obliged to cancel an approval – see regulations 171.240.
7.11 Regulation 171.240 — Cancellation at request of service provider

7.11.1 This regulation provides that service providers have the right to request the cancellation of an approval at any time. DGCA must accept such a request and will immediately action such requests, consistent with its obligation to inform users of the impending cessation of the relevant services.

7.12 Regulation 171.250 — Certificate

7.12.1 This regulation provides that DGCA will issue a certificate to ATEL/ANAV service providers.

7.12.2 An ATEL/ANAV certificate issued to a service provider will include the following content:

(a) the identity of the service provider (name and address);

(b) a list of those ATEL/ANAV services approved under the certificate, together with details of their location and coverage, and basic facility type identification;

(c) the date the Certificate comes into effect, and the date it will end; and

(d) any conditions on the Certificate. DGCA will issue a replacement certificate if anything set out on the certificate is no longer correct.

7.13 Regulation 171.255 — Return of certificate if approval ceases

7.13.1 This regulation provides that an service provider must return its Certificate of Approval if DGCA’s approval ceases.

7.14 Safety Inspections and Audits

7.14.1 DGCA provides for authorised DGCA officers to have access to any place necessary for the purpose of carrying out DGCA’s functions. This access is required for carrying out safety inspections and audits of approved providers.
7.14.2 A safety audit program will normally be established by agreement between DGCA and the provider at the time of initial issue of the certificate. Non-scheduled inspections may also be carried out by DGCA as necessary or if there are grounds to believe that the approval holder is not complying with Part 171.

DIRECTOR GENERAL OF CIVIL AVIATION

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