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GOVERNMENT OF INDIA
CIVIL AVIATION DEPARTMENT
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION

AD AC NO. 1 of 2006
14th Sept.2006

AERODROME ADVISORY CIRCULAR

SUBJECT: GUIDELINES FOR PREPARATION & MAINTENANCE OF AERODROME MANUAL

A. INTRODUCTION

An aerodrome manual, in the form as specified under rule 81 of Aircraft rules 1937 shall be maintained by the aerodrome licensee. Though sub rule (2) of rule 81 specifies the particulars and information to be contained in the Aerodrome Manual, this circular provides details of the contents to be incorporated into the aerodrome manual and provide guidelines to be followed by the aerodrome operator while preparing the aerodrome manual and maintenance. The Manual should be comprehensive and contain detailed operations policies, procedures of the aerodrome operator, stipulations of the mandatory requirement contained in Civil Aviation Requirements and other instructions issued by DGCA from time to time. Notwithstanding the guidelines of this circular, the aerodrome operator may include in the aerodrome manual additional procedures to be adopted by them to enhance surveillance and safety of operations.

B. PURPOSE AND SCOPE OF THE AERODROME MANUAL.

1 The information presented in the aerodrome manual shall demonstrate that the aerodrome conforms to the laid down standards and practices and that there are no apparent shortcomings, which would adversely affect the safety of aircraft operations.

2 The manual is a reference document and provides a checklist of aerodrome licencing standards to be maintained and the level of airside services at the aerodrome.

3 It shall contain all the pertinent information concerning the aerodrome site, facilities, services, and equipment, operating procedures, organization and management including the safety management system.

4 Information provided in the aerodrome manual will enable the DGCA to assess the suitability of the aerodrome for the aircraft operations proposed and to judge an applicant's fitness to hold an Aerodrome Licence.

C. PREPARATION OF AERODROME MANUAL:

Every owner or operator responsible for operation of an aerodrome shall prepare an aerodrome manual in respect of such aerodrome and submit a physical and a soft copy each of the Aerodrome Manual along with the application for issue of aerodrome license.

Subsequently aerodrome manual shall be submitted at the time of renewal of aerodrome license clearly highlighting all the amendments that have been accepted by DGCA and incorporated in Aerodrome Manual.

An aerodrome Manual shall:

1. be typewritten or printed
2. be signed by the Airport Director/ person in-charge for day to day operation of aerodrome.
3. be in a form that is easy to revise:
4. have the statement of acceptance by DGCA.

D. PARTICULARS TO BE INCLUDED IN AN AERODROME MANUAL :

The aerodrome manual shall include at least the following elements:

INTRODUCTION

- Front Title page containing Aerodrome name, address and month & year of issue
- Preface shall include the objective, policy and commitment of aerodrome operator and shall be signed by the Airport Director/ person incharge for day-to-day operation of aerodrome.
- Record of Amendments
- Table of Contents
- Distribution List of the Manual.
- Procedures for amendment to the Manual
- Glossary of Terms relevant to the Aerodrome manual.

PART 1 - GENERAL

General information, including the following:

a) purpose and scope of the manual;
b) legal requirements for all aerodrome licenceing and the manual as prescribed in the national regulations;
c) Conditions for use of the aerodrome - a statement to indicate that the category under which the aerodrome shall be used i.e. Public use or Private use as defined in the Aircraft Rules.
d) the system of aeronautical information available and the procedure for their promulgation;
e) the system for recording aircraft movement; and
f) obligations of the Aerodrome Operator.

PART 2 - PARTICULARS OF THE AERODROME SITE

General information including the following:

a) plan of the aerodrome showing the main aerodrome facilities for the operation of the aerodrome including, the location of each wind direction indicator;
b) plan of the aerodrome showing the aerodrome boundaries;

c) plan showing the distance of the aerodrome from the nearest city, town or other populous area, and the location of any aerodrome facilities and equipment outside the boundaries of the aerodrome; and
d) particulars of the title of

i) the aerodrome site or

ii) if the boundaries of the aerodrome are not defined in the documents of the title particulars of title to the property on which the aerodrome is located and a plan showing the boundaries and position of the aerodrome.

PART 3 - PARTICULARS OF THE AERODROME REQUIRED TO BE REPORTED TO AERONAUTICAL INFORMATION SERVICE (AIS)

3.1 GENERAL INFORMATION

a) the name of the aerodrome;
b) the location of the aerodrome;
c) the geographical co-ordinates of the Aerodrome Reference Point determined in terms of World Geodetic System - 1984 (WGS - 84) reference datum;
d) aerodrome elevation;
e) the elevation of each threshold, the elevation of the runway end and any significant high and low points along the runway, and the highest elevation of the touchdown zone of a precision approach runway;
f) aerodrome reference temperature;
g) details of the aerodrome beacon; and
h) name of the aerodrome operator and the address and telephone numbers at which the aerodrome operator may be contacted at all times.
i) List of exemptions granted in respect of aerodrome facilities detailing exemption number, detail of facility /procedure & the period of validity.

Note:- The exemption number for a facility shall be indicated against the facility in the following paragraph.

3.2 AERODROME DIMENSIONS AND RELATED INFORMATION

Information, including the following:

a) runway - true bearing, designation number, length, width, displaced threshold location, slope, surface type, type of runway, and for a precision approach runway, the existence of an obstacle free zone;
b) length, width & surface type of strip, runway end safety areas, stopways ;
c) length, width and surface type of taxiways;
d) apron surface type and aircraft stands;
e) clearway length and ground profile;
f) visual aids for approach procedures viz. approach lighting type and visual approach slope indicator system (PAPI/APAPI and T-VASIS/AT-VASIS); marking and lighting of runways, taxiways, and aprons; other visual guidance

and control aids on taxiways (including runway holding positions, intermediate holding positions and stop bars) and aprons, location and type of visual docking guidance system; availability of standby power of lighting;

g) location and radio frequency of VOR aerodrome check-point;
h) location and designation of standard taxi -routes;
i) the geographical coordinates of each threshold.
j) the geographical coordinates of appropriate taxiway center line points;
k) the geographical coordinates of each aircraft stand;
l) the geographical coordinates and the top elevation of significant obstacles in the approach and take-off areas, in the circling area and in the vicinity of the aerodrome. (This information may best be shown in the form of charts such as those required for the preparation of aeronautical information publications as specified in Civil Aviation Requirements);
m) pavement surface type and bearing strength using Aircraft Classification Number - Pavement Classification Number (ACN- PCN) method;
n) one or more pre-flight altimeter check locations established on an apron and their elevation;
o) declared distances; take-off run available (TORA); take-off distance available (TODA); accelerate-stop distance available (ASDA); landing distance available (LDA);
p) disabled aircraft removal plan: the telephone/telex/facsimile numbers; e-mail address of the aerodrome coordinator for the removal of an aircraft disabled on or adjacent to the movement area; information on the capability to remove a disabled aircraft - expressed in terms of the aircraft which the aerodrome is equipped to remove; and
q) rescue and fire fighting: level of protection provided, expressed terms of the category of the rescue and fire fighting services which should be in accordance with the longest aeroplane normally using the aerodrome and the type and amounts of extinguishing agents normally available at the aerodrome.

Note. - Accuracy of the information in Part 3 is critical to aircraft safety. Information requiring engineering survey and assessment should be gathered or verified by qualified technical persons.

PART 4 - PARTICULARS OF THE AERODROME OPERATING PROCEDURES AND SAFETY MEASURES

4.1 AERODROME REPORTING

Particulars of the Procedures for reporting any changes to the aerodrome information set out in AIP and procedures for requesting the issue of NOTAMs, including the following;

a) arrangements for reporting any changes to the DGCA, and recording the reporting of changes, during and outside the normal hours of aerodrome operations;
b) names and roles of persons responsible for notifying their telephone number during and outside the normal hours of aerodrome operations and the location and telephone numbers, as provided by the DGCA, of the place at which changes are to be reported to the DGCA.

4.2 ACCESS TO AERODROME MOVEMENT AREA

Particulars of the procedure developed and to be followed in coordination with the agency responsible to prevent unlawful interference in civil aviation at the

aerodrome, for prevention of unauthorized entry of persons, vehicles, equipment, animals or other things, into the *movement area* including the following:

a) the role of aerodrome operator, aircraft operator, aerodrome fixed-base operators, BCAS/aerodrome security entity, the DGCA and other government departments, as applicable; and

b) where provided, availability of surface movement guidance and control system (SMGCS) to prevent inadvertent incursions of aircraft and vehicles onto an active runway or taxiway, and collisions on any part of the movement area

c) the names and role of the personnel responsible for controlling access to the aerodrome and the telephone number for contacting those personnel during and after working hours.

4.3 AERODROME EMERGENCY PLAN

Particulars: of the aerodrome emergency plan, including the following:

a) plans for dealing with emergencies occurring at the aerodrome or in its vicinity, including malfunction of aircraft in flight, structural fires, sabotage including bomb threat (aircraft or structure), unlawful seizure of aircraft and incidents on the airport covering "during the emergency" and "after the emergency" considerations;
b) details of tests for aerodrome facilities and equipment to be used in emergencies, including the frequency of these tests;
c) details of exercises to test emergency plans, including the frequency of those exercises;
d) arrangements for reviewing the frequency of those exercises;
e) list of organizations, agencies and persons of authority both on- and off-airport for site roles; their telephone numbers, fax and e-mail address directory, SITA code directory and radio frequencies of offices;
f) establishment of an aerodrome emergency committee preparations for dealing with emergencies; and
g) appointment of an on-scene commander of an overall emergency operation.
h) emergency plans should include specialist rescue services for aerodromes close to water, swampy areas or difficult terrain.
i) emergency plans, must include human factors principles

4.4 RESCUE AND FIRE FIGHTING

i. Particulars of the facilities, equipment, personnel and procedures for meeting the rescue and fire fighting requirements,
ii. including the names and roles of the persons responsible for dealing with the rescue and fire fighting services at the aerodrome.
iii. Description of rescue and fire fighting (RFF) services at all aerodromes, which takes into account the aerodrome location and the surrounding terrain.

Note. - This subject should also be covered in appropriate detail in the Aerodrome Emergency Plan.

4.5 INSPECTION OF AERODROME MOVEMENT AREA AND OBSTACLE LIMITATION SURFACE BY AERODROME OPERATOR

Particulars of the procedures for the inspection of the aerodrome movement area and obstacle limitation surfaces, including the following:

a) arrangement for carrying out inspections, including runway friction and water depth measurement on runways and taxiways, during and outside the normal hours of aerodrome operations
b) procedure for reporting to AIS of water on runway or slippery nature of runway
c) inspection before initiation of, during and after the termination of LVP.
d) arrangement and means of communicating with the Air Traffic Control during an inspection;
e) arrangement for keeping an inspection logbook and the location of the logbook;
f) details of inspection intervals and times;
g) inspection checklist;
g) arrangement for reporting the results of the inspection and for taking prompt follow-up actions to ensure correction of unsafe conditions; and
h) the names and roles of persons responsible for carrying out inspections and their telephone numbers during and after working hours.

4.6 VISUAL AIDS AND AERODROME ELECTRICAL SYSTEM

Particulars of the visual aids and electrical systems provided at the aerodrome and their lay out plan. Procedures for the inspection and maintenance of the aeronautical lights (including obstacle lighting), signs, markings and aerodrome electrical system etc. shall be prepared separately for each type of facility.

Where applicable, the electrical system design for visual aid components where runway is used when RVR is less than 550m and their inspection and maintenance procedures in order to ensure that pilots is not presented with inadequate visual guidance or misleading information. It should include interlocking of runway lights when a portion of it forms the standard taxi route, stop bars, procedures for light intensity of aeronautical ground lights and its control by ATS etc.

The procedures developed for each facility shall also define maintenance performance level objectives for that visual aids by the aerodrome operator in their maintenance programme.

Each procedure shall include;

a) arrangement for carrying out inspections during and outside the normal hours of aerodrome operation and the checklist for inspections;
b) arrangement for recording the result of inspection and for taking follow-up action to correct deficiencies;
c) notification of such deficiencies to ATS and AIS along with duration of such deficiency.
d) arrangement for carrying out routine maintenance and emergency maintenances;
e) arrangement for secondary power supplies, if any, and if applicable, particulars of any other method of dealing with partial or total system failure;
f) arrangement for identification, extinguishing, screening and modification of non-aeronautical lights posing hazard to aircraft safety.

g) the names and roles of the persons responsible for inspection and maintenance of the lighting and the telephone numbers for contacting those persons during and after working hours.

Note - If any such procedure is voluminous, it may be prepared and bound separately, however a reference shall be made available in the Aerodrome Manual.

4.7 MOVEMENT AREA MAINTENANCE

The aerodrome operator should develop an aerodrome maintenance programme with complete assessment of all parts of the airport, all machinery, technical and mechanical inventory, including vehicles. Each task should be assigned to team or expert responsible for one special task have specific systematic work programme. The programme should include human factor principles related to maintenance activities and programme should be reviewed at least once in a year.

Particulars of the facilities and procedures for the maintenance of movement area, including:

a) Procedures for carrying out periodic/ daily inspections of runway, taxiway, shoulders and apron and sweeping/cleaning of surfaces and precautions to be taken in regard to the surface of shoulders to control the FOD and a system to assess runway surface irregularities should be included in the Manual.

b) arrangement for maintaining the paved areas;

c) arrangement for maintaining the runways and taxiway strips; and
d) arrangement for maintaining the of aerodrome drainage.
e) Arrangements for returning runway and taxiway to operational status.

4.8 AERODROME WORKS - SAFETY

Particulars of the procedures for planning and carrying out works safely (including works which may have to be carried out at short notice) on or In the vicinity of the movement area that may extend above an obstacle limitation surface including the following:

a) arrangement for communicating with Air Traffic Control during the progress of such works;

b) arrangement for marking and lighting of vehicle and plant during work and procedures to mark permanent and temporary movement area closures and meet location and characteristic specifications as given in CAR Section 4 Series B Part I Chapter 7.
c) in case of permanent or long duration closure of a runway or taxiway, arrangement for obliterating runway and taxiway markings and the removal of lighting to prevent aircraft from entering such area.
d) names, telephone numbers and roles of the persons and organizations responsible for planning and carrying out the works and the arrangement for contacting those persons and organizations at all times;
e) names of the aerodrome fixed-base operators and aircraft operators who are to be notified of the work, and their telephone numbers during and after working hours; and
f) distribution list for work plans, if required.

4.9 APRON MANAGEMENT

Particulars of the apron management procedures,

a) Arrangement between air traffic control and the apron management unit;
b) Arrangement for allocating aircraft parking positions and monitoring clearance distance during aircraft parking.
c) Arrangement for initiating engine start and ensuring clearance of aircraft push-back;
d) Marshalling service; and
e) Follow-Me service.
f) Where applicable, arrangement for restriction personnel and vehicle on Apron during LVP

4.10 APRON SAFETY MANAGEMENT

Procedures to ensure apron safety, including:

a) protection from jet blasts;
b) arrangement for compliance of fire extinguishing equipment and trained personnel during ground servicing of aircraft
c) enforcement of safety precautions during aircraft refueling operations;
d) apron sweeping;
e) apron cleaning;
f) arrangements for reporting incidents/accidents on an apron; and
g) arrangements for auditing the safety compliance by all personnel working on the apron.

4.11 AIRSIDE VEHICLE CONTROL

Particulars of the procedure for the control of surface vehicles operating on, or in the vicinity of, the movement area, including the following:

a) details of the applicable traffic rules, right of the way, requirement of communication procedures with ATC, visual marking signs and signals, aerodrome layout, critical/ sensitive and restricted area, marking and lighting of vehicles including speed limits.
b) the method of issuing driving permits for operating vehicles in the movement area including trainings and recurrent trainings.
c) the means of enforcement of the rules and enforcement actions;

4.12 WILDLIFE HAZARD MANAGEMENT

Particulars of the procedure to deal with danger to aircraft operations caused by the presence of birds or mammals in the aerodrome flight pattern or movement area, including the following;

a) arrangement for assessing any wildlife hazard;
b) arrangement for implementing wildlife control programmes; and
c) Arrangement with local civil authorities for resolving conflicting issues between land –use and aircraft safety.
d) names and roles of the persons responsible for dealing with wildlife hazards, and their telephone numbers during and after working hour.

4.13 OBSTACLE CONTROL

Particulars setting out the procedures for:

a) monitoring the obstacle limitation surface and Type A Chart take-off surface for obstacles:
b) controlling obstacles within the authority of the operator;
c) monitoring buildings or structure development in relation to their height within the boundaries of the obstacle limitation surface;

d) the control of new developments in the vicinity of aerodromes; and
e) notifying the DGCA of the nature and location of obstacles and any subsequent addition or removal of obstacle for necessary including amendment of the AIS publications.

4.14 DISABLED AIRCRAFT REMOVAL PLAN AND PROCEDURE

Particulars of procedure for removing an aircraft which disabled on or adjacent to the movement area including the following:

a) roles of the aerodrome operator and the holder of the aircraft of registration;
b) arrangement for notifying the holder of the certificate of registration;
c) arrangement for liaising with the air traffic control;
d) arrangement for obtaining equipment and persons to remove the disabled aircraft; and
e) arrangements for notification to DGCA, AAIB, AIS and the protection of evidence, custody and the removal of aircraft.
f) names and roles of persons responsible for arrangement of the removal of disabled aircraft and their telephone numbers.

4.15 HANDLING OF HAZARDOUS MATERIAL

Particulars of the procedures for die safe handling and storage of hazardous material on the aerodrome, including the following:

a) the arrangement for special areas on the aerodrome to be set-up for the storage of inflammable liquids (including aviation fuels) and any other hazardous materials and
b) the method to be followed for the delivery, storage, dispensing and handling of hazardous materials.

Note.- Hazardous materials include inflammable liquids and solid, corrosive liquids, compressed gases and magnetized or radioactive materials. The arrangement to deal with an accidental spillage of hazardous material should be included in the aerodrome emergency plan.

4.16 LOW VISIBILITY OPERATIONS

Particulars of procedures to be introduced for low visibility operations, including the measurement and reporting of runway visual range, as and when required, and name and telephone numbers during and after working hours of the persons responsible for measuring the runway visual range.

It should also include restriction on construction or maintenance activities in the proximity of aerodrome electrical systems, suitable guidance, equipment and/or procedures for rescue and fire fighting services during LVO, restriction on persons and vehicles operating on an apron, etc.

4.17 PROTECTION OF SITES FOR RADAR AND NAVIGATIONAL AIDS:

Particulars of the procedure for the protection of radar and radio navigational aids located on the aerodrome to ensure that their performance will not be degraded, including the following:

a) the arrangement for the control of activities in the vicinity of radar and Nav Aids installations;
b) the arrangement for ground maintenance in the vicinity of these installations; and
c) its the supply and installations of signs warning of hazardous microwave radiation.

Note I. - In writing the procedure on each category clear and precise information should be include on:

- *when, or in what circumstances, is an operating procedure to be activated;*
- *how is an operating procedure activated;*
- *actions to be taken;*
- *the person(s) to carry out the actions; and*
- *equipment, and access to such equipment, necessary for carrying out the actions.*

Note 2. - If any of the procedures specific above is not relevant or applicable, the reason should be given.

PART 5 - AERODROME ADMINISTRATION AND SAFETY MANAGEMENT SYSTEM

Particulars of the aerodrome administration, including the following:-

a) Aerodrome organization structure chart showing the names and positions of key personnel, including their responsibilities;
b) the name, position and telephone numbers of the person who has overall responsibilities; aerodrome safety; and
c) Airport committees.

E. SAFETY MANAGEMENT SYSTEM (SMS)

A safety management system established for ensuring compliance with all safety requirements and achieving continuous improvement in safety performance, the essential features being:

a) safety policy, insofar as applicable, on the process of safety management and its relation to the operational and maintenance process;
b) structure or organization of the SMS including staffing and assignment of individual and group responsibilities safety issues;
c) SMS strategy and planning such as setting safety performance targets, allocating priority for implementing safety initiatives and providing a framework for controlling the risks to a level as low as reasonably practicable keeping always in view the requirements of the Standard and Recommended Practices in Annex 14, Volume I to the Convention on International Civil Aviation and the national regulations, standards, rules or orders;

d) SMS implementation including facilities, methods and procedures for the effective communication of safety messages and enforcement of safety requirements;
e) system for the implementation of, and action on, critical safety areas which require a higher level of, safety management integrity (Safety Measures Programme);
f) measures for safety promotion, accident prevention and system for risk control involving analysis and handling of accident, incidents, complaints, defects, faults, discrepancies and failures, and continuing safety monitoring;
g) internal safety audit and review system detailing the systems and programmes for quality control on safety;

h) system for the documentation of all safety related airport facilities as well as airport operational and maintenance records including information on the design and construction of aircraft pavements and aerodrome lighting, The system should enable easy retrieval of records including charts;
i) staff training and competency including review and evaluation of the adequacy of training provided to staff on safety related duties and of the certification system for testing their competency; and
j) incorporation of safety related clauses in the contracts for work at the aerodrome and enforcement, thereof

Note . - If required the SMS may be prepared and bound in a separate folder. However reference for same may be made available wherever needed.

F. MAINTENANCE OF AERODROME MANUAL:

The aerodrome owner/operator shall :

1. Keep the aerodrome manual current at all times;
2. Maintain at least one complete and updated current copy of its approved aerodrome manual at the aerodrome;
3. Provide copy of the approved aerodrome manual all the concerned units.
4. the numbering of the pages and paragraphs should be systematic and in order to facilitate reference.
5. The standard of printing, binding and duplication should be such that the aerodrome manual remain in tact and legible during normal use and amendments can be inserted easily.
6 For the purpose of uniformity and to facilitate examination and review of the structure and the contents of an aerodrome manual. The guidelines stated in Para 5 above shall be strictly adhered to.
7. The aerodrome operator shall be responsible for accuracy and updating of the information contained in the aerodrome manual
8. For small aerodrome the aerodrome manual can be simple and brief as long as it covers procedure and responsibilities essential for satisfactory day to day operations, however the manual should include all contents /paras, in case of non-applicability, intentionally left blank shall be type written
9. At large aerodrome if the aerodrome owner/operator finds that size and complexity of operations and related procedure is huge and it cannot be easily included in a single document, in such circumstances it will be acceptable if the aerodrome owner/operator identify and give reference within the Aerodrome Manual of the procedures which are not included within it and have been kept separately.

10. The information contained in an aerodrome manual shall demonstrate that the aerodrome conforms to the standards and practices necessary for ensuring safety of aircraft operations.
11. The aerodrome manual information will enable the DGCA in assessing the suitability of the aerodrome for permitting a particular level of aircraft operation there at. This information shall also be the basic reference for safety inspections. During the inspection by the officer of DGCA a copy of the aerodrome manual shall be made available to the inspection/audit team.

G. NOTIFICATION OF AMENDMENT AND CHANGES TO THE AERODROME MANUAL:

The owner /operator of the licensed aerodrome shall:

1. alter or amend the aerodrome manual, whenever necessary, in order to maintain the accuracy of the information in the manual.
2. review and submit amended manual at the time of renewal of aerodrome.
3. ensure that each copy of the manual is numbered and a list of holders is maintained by person responsible for the issue of amendments. An amendment page is made available for recording the amendments numbers, date of incorporation, signature of persons amending and affecting the changes, in the front of each volume
4. make changes or addition by additional or replacement pages on which the amended material is clearly identified.
5. submit the proposed amendments in the Aerodrome Manual to DGCA for its acceptance at least 30 days prior to the effective date.
6. after acceptation from DGCA, distribute the final copies of Aerodrome Manual as per the distribution list and also submit a copy of the same to DGCA Hqrs. and its relevant Regional office.

Sd/-
(J S Rawat)
Joint Director General of Civil Aviation