Aerodrome
Advisory Circular

AC(AD) No-01
Aeronautical Studies

Civil Aviation Authority, Bangladesh
10 January 2010

1. PURPOSE

An aeronautical study is conducted to assess the impact of deviations from the aerodrome standards specified in Manual of Aerodrome Standards ANO AD (A1) and the national regulations, to present alternative means of ensuring the safety of aircraft operations, to estimate the effectiveness of each alternative and to recommend procedures to compensate for the deviation. An aeronautical study is one means available to CAAB for resolving safety issues.

2. SCOPE AND APPLICABILITY

An aeronautical study may be conducted when aerodrome safety standards cannot be met despite the best efforts of the aerodrome operator or proponent to comply with mandatory requirements. An aeronautical study may be prepared by an aerodrome operator or by the CAAB, but the procedures contained in this document are to be used as the basis for the study.

The outcomes of an aeronautical study are to develop and present alternative means to ensure the safety of aircraft operations, to identify the effectiveness of alternative options identified, and to establish procedures or conditions to compensate for non-compliance with statutory requirements.

An aeronautical study will deal with matters beyond mere compliance with published standards. An aeronautical study must assess the impact of deviations from regulatory requirements and safety policy and present alternative effective safety related options. An aeronautical study is usually required where the cost of correcting a violation of a standard, either at design stage or to cater for operational changes, is excessive but the non-conformance aspects of the problem may be overcome by additional, alternative or procedural means that offer both practicable and reasonable solutions.

A technical analysis is generally the mechanism used to justify a deviation on the grounds that an equivalent level of safety can be attained by other means. In conducting or reviewing a technical analysis, inspectors will be required to draw on their practical experience and specialized knowledge, and to consult other specialists in relevant areas when necessary. When considering alternatives, it is essential to bear in mind the safety objective of the regulatory requirements so that the intent of a regulation, standard or policy directed initially to providing for public safety is not circumvented.

3. DEFEINITION

An aeronautical study is the study of an aeronautical problem to identify possible solutions and select a solution that is acceptable for a given aero plane at a given location without compromising safety. Such a study includes a systematic identification and analysis of safety hazards and an assessment of risks and possible mitigation resources.

4. TECHNICAL ANALYSIS

Technical analysis provides justification for a deviation, where permitted, on the grounds that an equivalent level of safety can be attained by other means. It is generally applicable in situations where the cost of correcting a problem that violates a standard is excessive and where the unsafe effects of the problem can be overcome by some procedural means which offers both practical and reasonable solutions.

4.1 DEFINING THE SCOPE OF THE AERONAUTICAL STUDY

The first step consists of identifying the scope of the study, considering the relevant ICAO and other guidance material and should include:

a) The level of compliance with ICAO SARPs;
b) The identification of all other items to be included in the study;
c) The identification of those areas of interest relevant to the items to be addressed;
d) The assumptions on which the aeronautical study will be based and a list of the specific characteristics of an NLA) that may have an impact on the issues at stake for the different items;
e) International specifications, national or local regulations, and any other requirements; and
f) Any additional criteria and a definition of the method of assessment that is needed to clarify and demonstrate conformance to particular requirements.

4.2 STUDY PLAN

The following steps may provide a framework for a uniform structured process:

a) Develop a background statement to the requirement;
b) Specify roles, responsibilities and competence;
c) Identify the sources of the requirements;
d) Specify the manner in which the study is to be conducted;
e) Clearly define the study objectives, together with any specific control and approval mechanisms;
f) Identify the process for fault identification, change management and issue resolution;
g) Define the validation methodology, including the approval process;
h) Specify measures to archive results and data; and
i) Specify the resources to be used and the scheduling plan.

As stated previously, this comprehensive structure should be considered only as a guideline and not as a mandatory requirement.

4.2.1 To facilitate the aeronautical study, a State or organization may elect to draw on existing studies or guidance material. In doing so, it will be necessary to:

a) Define particular local requirements and consider how these may impact the study plan and the conclusions;
b) Consult only relevant sources of information;
c) Consult the authority responsible for the previous study and obtain appropriate details or permissions;
d) Evaluate the information; and
e) Develop and validate the study tasks using relevant information.

4.3 Conflict Resolution for Aeronautical Studies.

CAAB shall coordinate with internal and external agencies to resolve all conflicts that occur during the aeronautical studies for final resolution. Furthermore, all entities shall use the SMS process when conducting conflict resolution, as directed in CAAB national guidance for SMS.

4.4 RECOMMENDATIONS AND CONCLUSIONS

The result of the aeronautical study should demonstrate that the objectives outlined in 4.1have been fully met and should contain a recommendation for the acceptance or rejection of the study. The report structure may consist of:

a) An executive summary;
b) An introduction and overview;
c) The sources of the requirements;
d) An overview of the aeronautical study plan;
e) Summary reports of the aeronautical study tasks;
f) Compliance with the requirements;
g) Other outstanding information or issues; and
h) Conclusions.

4.5 AERONAUTICAL INFORMATION SERVICE (AIS)

States are reminded of their obligation to take the appropriate action with regard to the dissemination, via the AIS, of information concerning alternative measures, operational procedures and operating restrictions implemented at a particular aerodrome and, in the context of this circular, to accommodate a specific NLA.

States are further reminded of the obligation imposed under Article 38 of the Convention by which Contracting States are required to notify ICAO of any differences between their national regulations and practices and the International Standards contained in Annex 14

5. ICAO SPECIFICATIONS AND GUIDANCE MATERIAL

Annex 14, Volume I, specifically provides for aeronautical studies to be conducted in respect of:

a) Taxiway minimum separation distances: paragraph 3.9.7 and notes thereto;
b) Obstacle limitation requirements: paragraphs 4.2.4, 4.2.5, 4.2.11, 4.2.12, 4.2.20, 4.2.21, 4.2.27, 4.3.1, 4.4.
c) Visual aids for air navigation: footnote c to Table 5-2, and paragraphs 5.3.5.44, 5.3.5.45; and
d) Visual aids for obstacles: paragraphs 6.1.1 d), 6.1.4 d), 6.1.10, 6.3.8.

5.1 Additional guidance material can be found in the Aerodrome Design Manual (Doc 9157), Part 2 —

Taxiways, Aprons and Holding Bays. Depending on the items, domains, alternative measures, operational procedures and operating restrictions to be addressed by the study, the following may also provide guidance:

a) Doc 8126 — Aeronautical Information Services Manual;
b) Doc 8168 — Procedures for Air Navigation Services — Aircraft Operations;
c) Doc 9137 — Airport Services Manual;
d) Doc 9157 — Aerodrome Design Manual;
e) Doc 9184 — Airport Planning Manual;
f) Doc 9365 — Manual of All-Weather Operations;
g) Doc 9426 — Air Traffic Services Planning Manual; and
h) Doc 9476 — Manual of Surface Movement Guidance and Control Systems (SMGCS).

6. APPROVAL OF AN AERONAUTICAL STUDY

When establishing the scope of the aeronautical study, to identify the sources of those requirements and hence the competent authority responsible for approving the aeronautical study. The authority may apply various procedures for validation or acceptance of the items that are submitted. Though in the most cases the final aeronautical study Approval process is based on the approval of the appropriate validation case, some interim review may be needed. It is therefore essential to accurately define the objectives and processes to be followed and to document them as appropriate in the study plan.

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