PART 2

AERODROME CERTIFICATION PROCEDURES

CHAPTER 1.

ISSUANCE OF AERODROME CERTIFICATE

1.1 INTRODUCTORY NOTE:

This chapter describes the regulations and procedures used by DASS Aerodrome Safety Inspectors to process applications for the issue or surrender of aerodrome certificates. It is designed to ensure that the required standards are applied when an aerodrome certificate is issued or surrender.

This procedure:

A. Defines the regulations that govern aerodrome certification

B. Clearly sets out the

(1) Responsibilities of DASS staff

(2) Standards and procedures DASS staff must follow when processing applications for the issue or surrender of aerodrome certificates

(3) Requirements for compliance and enforcement.

C. Adherence to the standards and procedures will ensure that:

(1) Aerodrome certificates are issued or surrendered in an effective, efficient and consistent manner nationally

(2) Aerodrome certificates are issued in a common legal format

(3) Effective and consistent compliance and enforcement action is taken.

1.2 Certificate Issuing Process

Purpose To ensure that aerodrome certificates are correctly and consistently issued using a common legal format nationally by describing the:

- Process for issuing aerodrome certificates
- Process for surrender aerodrome certificates
- Staff responsibilities.
- Forms and letters used.

A. The certification process is in five phases:

(1) Dealing with expression of interest by an intending applicant for an aerodrome certificate;

(2) Assessing the formal application;

(3) Assessing the aerodrome facilities and equipment;

(4) Issuing or refusing an aerodrome certificate; and

(5) Promulgating the certified status of the aerodrome and the required details in the AIP

B. Phase 1-Dealing with Expression of Interest

(1) CEO receives an expression of interest letter and forwards to DASS for processing;

(2) DASS Manager Assigns an inspector as an Audit Team Leader, who holds a Team to a particular licensing task. (The Manager may nominate himself)

(3) The Audit Team Leader opens a file;

(4) The Audit Team carries out initial site assessment to ensure that the operation of an aerodrome at the location specified in the application will not endanger the safety of aircraft operations. Assistance from flight operations or other relevant authority may be required;

(5) The Audit Team leader forwards the assessment result to DASS manager;

(6) If the assessment result is negative, the CEO, through DASS advises the applicant accordingly by invoking **(JCAR Part 139 Paragraph 139.107);**

(7) If the assessment is successful, DASS informs the applicant to consult the relevant entities in Jordan to obtain other required approval e.g. on environmental impact, land use, security etc. **(JCAR Part 139 Paragraph 139.101)**

(8) If the applicant satisfies the requirement of phase 1, Audit Team holds a certification meeting with the applicant's representatives in order to familiarize the applicant with the rest of the process. All certification documents are made available to the applicant and these include **(JCAR Part 139)** and other guidance materials. The applicant is advised to obtain other relevant publications issued by ICAO as necessary.

C. Phase II-Assessing the Formal Application

(1) Upon payment of required certification fee, the Audit Team leader issues the standard application form (See Appendix A1);

(2) The completed application form and the aerodrome manual are then received from the applicant for processing by the Audit Team;

(3) If the applicant seeks a deviation from a standard, an application for exemption is to be included in the submission made in paragraph (2) above. The application for exemption shall be processed in line with the procedures discussed in Part 2 Chapter 5;

(4) The Audit Team assesses the aerodrome manual and ensure that the manual complies with the requirement of the regulation and the safety management system indicates that the applicant will

be able to operate and maintain the aerodrome properly before moving to the next phase. All verifications that can be completed or initiated in the office should be carried out.

D. Phase III-Assessing the Aerodrome Facilities and Equipment

(1) The Audit Team undertakes a site visit for the purpose of assessing the aerodrome facilities, services and equipment to verify and ensure that they comply with the specified standards and practices. The assessment shall include the following areas:

(a) Verification of aerodrome data to be reported to the aeronautical information service.

(b) The checking of aerodrome facilities and equipment, which should include:

(i) Dimensions and surface conditions of runway(s), runway shoulders, runway strip(s), runway end safety areas, stopway(s) and clearways, taxiway(s), taxiway shoulder(s), taxiway strips, aprons, runway turn pads;

(ii) The presence of obstacles in obstacle limitation surfaces at and in the vicinity of the aerodrome;

(iii) The following aeronautical ground lights, including their flight check records: Runway and taxiway lighting, Approach lights, PAPI/APAPI or T-VASIS/AT-VASIS, Apron floodlighting, Obstacle lighting, Pilot-activated lighting, if applicable and Visual docking guidance systems, Standby power;

(iv) Other facilities such as wind direction indicators, Illumination of the wind direction indicator(s), aerodrome markings and markers, signs in the movement areas, tie-down points for aircraft, ground earthen points, rescue and fire-fighting equipment and installations, aerodrome maintenance equipment, particularly for the airside facilities maintenance including runway surface friction measurement, runway sweepers, disabled aircraft removal equipment, wildlife management procedures and equipment, two-way radios installed in vehicles for use by the aerodrome operator in the movement area, the presence of lights that may endanger the safety of aircraft; and Fuelling facilities.

(v) Part 3 Chapter 2 provides methods to be used for the evaluation of aerodrome facilities, equipment and personnel

(2) After the field verification, the audit team shall document and communicate deficiencies identified during the audit to the applicant in writing as per format provided in Appendix B15 and also request a corrective action plan from the applicant. The audit team shall monitor and ensure satisfactory implementation of the corrective action plan.

E. Phase IV- Issuing or Refusing an Aerodrome Certificate

(1) If after being advised of the additional steps that must be taken to rectify the deficiencies in the corrective action plan , the applicant is still not able to satisfy the requirements of the regulations, CARC may refuse to grant a certificate.

(2) If the corrective action plan is satisfactorily implemented by the applicant, the Audit Team will forward its report and recommendation for the issuance of an aerodrome certificate to CEO thru DASS Director for approval.

(3) After CEO approval, the audit team will prepare the aerodrome certificate, assign a certificate number and endorse the conditions for the type of use of the aerodrome on the certificate.

(4) The audit team leader updates the aerodrome certificate register file and issues the aerodrome certificate after signature by CEO

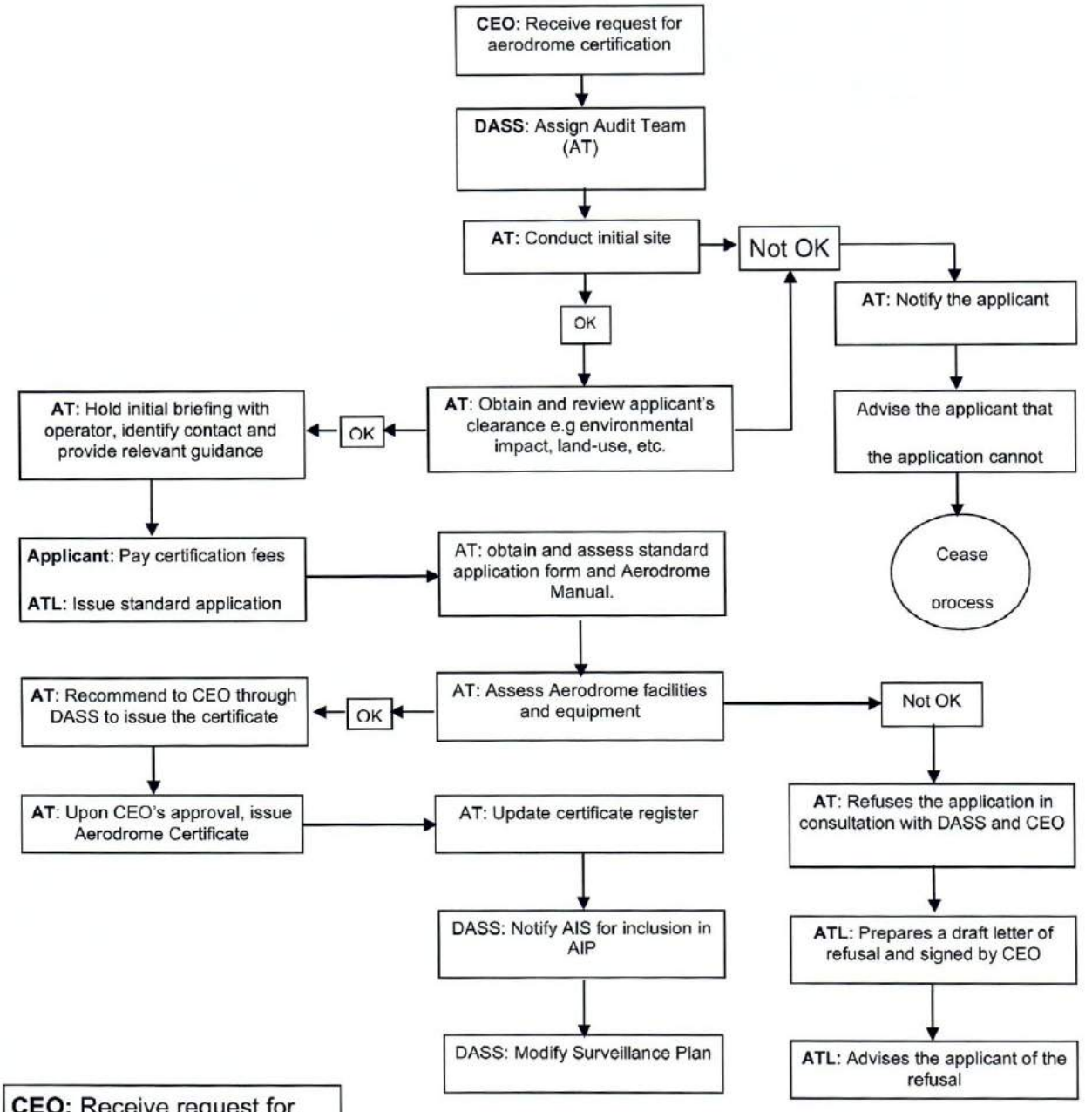
F. Phase V- Promulgation in the AIP

(1) Director of DASS informs the AIS to publish all required information on the aerodrome in the AIP.

(2) DASS places the aerodrome on the schedule for continuing surveillance activity

Note: The certification process checklist is to be used by the Audit Team Leader in tracking the progress made during the certification process and the items indicated in the checklist are to be checked immediately after they are completed. A copy of the checklist is in Appendix C

AERODROME CERTIFICATION PROCESS FLOWCHART



CEO: Receive request for aerodrome certification

DASS: Director, Aerodrome Standards and Safety

ATL: Audit Team Leader

AT: Audit Team

CHAPTER 2.

SURRENDER OF AN AERODROME CERTIFICATE

2.1 PROCESSING SURRENDER OF AN AERODROME CERTIFICATE

This section provides for the cancellation of an aerodrome certificate at the request of an aerodrome operator as part (**JCAR Part 139 Paragraph 139.119**)

A. Key Functions

(1) DASS is responsible for initiating the process for the cancellation of the airport certificate on the request of the Aerodrome Operators.

(2) The application for the cancellation of the airport certificate submitted to CEO shall be forwarded to the assigned aerodrome inspector through **DASS Director** for necessary action. The workflow process shall be coordinated through DASS Directorate who will track the progress of the application.

B. Procedure

(1) On receipt of the application, the **DASS Director** will notify the **Aerodrome Inspector** for action. On receipt of the application, the assigned aerodrome inspector shall:

(a) Establish the credentials of the aerodrome operator requesting the cancellation as the certificate holder.

(b) On the notification of the intention to surrender the airport certificate, check that the aerodrome operator has:

(i) Clearly stated making a request for the cancellation of certificate.

(ii) Specified when cancellation should become effective. If no date is specified, the certificate cancellation date is the date **(30 days)** from the date of notification.

(c) If the aerodrome operator has not supplied the required information for a proper notification of intention to surrender the certificate, contact the operator and advise them to supply the necessary details in writing.

(d) Determine whether the aerodrome is to continue to operate as an un- certificated aerodrome.

C. Aerodrome Certificate Surrender Checklist

(1) The *assigned aerodrome inspector* must complete the Airport Certificate Surrender Checklist as shown below, to ensure that each step of the aerodrome cancellation procedure is completed.

(2) Tick each box to indicate the satisfactory completion of the task. Note the date against each box.

(3) Sign and date this form and file it in the aerodrome file when the process is complete.

(4) Using the Aerodrome Certificate Surrender Checklist:

(a) Check that the aerodrome operator has given at least (10 working days) notice.

(b) Check that the operator has provided the following information:

(i) Are there Regular Public Transport (RPT) operations at the aerodrome?

(ii) Are there any changes to reporting officer details?

(iii) If the aerodrome is to be closed to all aircraft, have sufficient safety measures been taken? For example:

- Will the windsock and boundary markers be removed?

- Will un-serviceability markers be displayed for a period?

(5) If the request is properly made, prepare a letter to the aerodrome operator:

(a) Notifying the cancellation of the certificate.

(b) Directing aerodrome operator to return the original certificate document to the Authority to enable cancellation of the certificate.

(c) Advising aerodrome operator to carry out any actions necessary in the interests of aviation safety.

(6) Prepare and forward the letter for ***CEO*** signature through DASS Director and place a copy in the appropriate aerodrome file.

(7) Send the letter of notification to the aerodrome operator before the nominated surrender date (if specified).

(8) When you have the original certificate:

(a) Mark it as cancelled by completing the following actions using ink:

(i) Draw a line through the certificate.

(ii) Write "**Cancelled**" and the date of the cancellation on the certificate.

(iii) Sign the certificate.

(b) Place the original cancelled certificate in the appropriate aerodrome file or a copy of the cancelled certificate.

(9) Notify the Aeronautical Information Service (AIS) through DASS Director to issue a NOTAM cancelling the certified status of the aerodrome and amend the AIP.

(10) Update the Airport Certificate Register.

(11) Amend the Aerodrome file and surveillance records.

2.3 AERODROME CERTIFICATE SURRENDER CHECKLIST

A. The aerodrome operator must provide the Authority with written notification of the request to surrender the aerodrome certificate. The *Aerodrome Safety Inspector* who assesses the request may be required to investigate the application further to establish the relevant information.

(1) The cancellation date specified by the aerodrome operator.

(2) The Authority verified that, the notification is from the certificate holder and signed.

(3) Are air transport operations being conducted at the aerodrome?

(4) Is the aerodrome to be closed?

(5) Is it necessary for the Authority to recommend any action to be taken by the aerodrome operator to ensure safety of future aircraft operations?

B. The written notification is accepted by the Authority and the certificate is cancelled.

(1) Confirm that the details specified in section 1 of this checklist have been addressed.

(2) Endorse the original certificate document or a copy attached in the aerodrome file as "**Cancelled**".

(3) Sign the endorsed original certificate document or a copy.

(4) Place endorsed original certificate document or copy on the appropriate aerodrome file.

C. Advise the following of the details of the cancellation

(1) Aerodrome Operator in writing the date of cancellation.

(2) AIS for issuing NOTAM and any changes to the details of the reporting officer.

(3) AIS for amendment to publications.

(4) Technical Library and Safety Data Officer amend of the aerodrome certificate register

D. Surveillance Update

(1) Aerodrome Certificate Register update

(2) Surveillance Plan amendment

..../ .... / ....

(Assigned Aerodrome Inspector) **Date**

CHAPTER 3.

AMENDING AN AERODROME CERTIFICATE

3.1 PROCESSING AMENDMENTS

(JCAR Part 139 paragraph 139.117) permits an aerodrome certificate to be amended by the Authority, if the following circumstances occur:

- Change in the ownership or management of the aerodrome;
- Change in the use or operation of the aerodrome;
- Change in the boundary of the aerodrome; or
- The holder of the aerodrome certificate requests an amendment.

A. Key Functions

(1) DASS Directorate is responsible for initiating the process for the amendment of the aerodrome certificate on the request of the Aerodrome Operators.

(2) The application for the amendment of the aerodrome certificate submitted to CARC CEO shall be forwarded to the Assigned Aerodrome Safety Inspector (AASI) through **DASS** for necessary action. The workflow process shall be coordinated through **DASS** who will track the progress of the application.

B. Procedure

(1) The assigned inspector in consultation with DASS Director shall:

(a) **Check whether the request for amendment of aerodrome certificate is made by the aerodrome operator**. The aerodrome operator must make requests in writing for the Authority's consent to amend an aerodrome certificate prior to (90 days) of expiry of the aerodrome certificate.

(2) **Check reasons for an amendment of an Aerodrome Certificate.**

(a) An aerodrome operator may request Authority's consent to amend the certificate when:

(i) There is a change in the ownership or management of the aerodrome;

(ii) There is a change in the use or operation of the aerodrome;

(iii) There is a change in the boundary of the aerodrome; or

(iv) The holder of the aerodrome certificate requests an amendment.

(3) **Check criteria for an amendment of an Aerodrome Certificate.**

(a) Consent to an amendment may be given **only** if the Authority is satisfied with the reasons submitted by the aerodrome operator.

(b) An amendment is appropriate when no significant variation will occur in the day-to-day operations of the aerodrome — that is, when:

(i) Aerodrome Manual procedures remain substantially unaltered (minor amendments — such as contact phone numbers etc — are acceptable);

(ii) Aerodrome facilities remain substantially unaltered;

(iii) Key aerodrome operational personnel — such as Reporting Officers, Safety Officers and the like — remain in their positions or are replaced with staff of equivalent qualification, experience or skill levels.

(4) Check criteria for non-consent to amend an Aerodrome Certificate

(a) Consent to amendment **must** be refused if the Authority is not satisfied with the reasons submitted by the aerodrome operator.

(b) Generally, the Authority's policy is that consent to amendment should be refused when significant changes to operational aspects of the aerodrome will be made — for example:

(i) If the certificate document is conditionally endorsed or the amendment would require conditions to be endorsed on the certificate document;

(ii) Reduction of runway, taxiway or apron facilities;

(iii) If the ***assigned aerodrome inspector*** believes that:

- a significant revision to the Aerodrome Manual will be necessary as a result of the amendment.

- the proposed staffing arrangements are not adequate or appropriate.

Note: *If consent is not granted, the* ***assigned aerodrome inspector*** *should take steps to confirm that the aerodrome operator can meet the obligations of the certificate. It is possible that an amendment of the certificate should be followed up by the Authority's surveillance.*

(5) Check for any reviewable decision

(a) A refusal to consent to an amendment may be reviewable

(b) The Authority's Legal Section should review any statement of reasons contained in a notice to the applicant before the notice is sent to the applicant.

(c) After completion of the amendment of the aerodrome certificate, the assigned aerodrome inspector shall:

(i) Put copies of the documentation relating to the amendment of the Aerodrome Certificate in the Aerodrome File;

(ii) Through DASS Director, notify AIS for issuing NOTAM and any changes to the details of the reporting officer and for amendment to publications;

(iii) Update the Aerodrome Certificate Register; and

(iv) Amend the Surveillance Plan

(d) Assigned Aerodrome Inspector shall use the Aerodrome Certificate Amendment Checklist to monitor and record all actions to process amendment of the Aerodrome Certificate.

3.2 AERODROME CERTIFICATE AMENDMENT CHECKLIST

(1) The aerodrome operator must provide the Authority with written notification of the request to amend the aerodrome certificate. The AASI who assesses the request may be required to investigate the application further to establish the relevant information.

(a) Amendment date specified by the aerodrome operator.

(b) Authority verified — that is, the notification is from the certificate holder and signed.

(c) Are air transport operations being conducted at the aerodrome?

(d) Is the aerodrome to be closed?

(e) Is it necessary for the Authority to recommend any action to be taken by the aerodrome operator to ensure safety of future aircraft operations?

(2) **The written notification is accepted by the Authority and the consent of the Authority to amend the certificate is not granted**

(a) Confirm that the details specified in section 1 of this checklist have been addressed.

(b) Reasons for not granting consent to amend the aerodrome certificate are enclosed.

(c) The Authority's confirmation not to amend the aerodrome certificate issued.

(3) **The written notification is accepted by the Authority and the Authority's consent to amend the certificate is granted**

(a) Confirm that the details specified in section 1 of this checklist have been addressed.

(b) The Authority's confirmation to amend the aerodrome certificate issued.

(c) Endorse the original certificate document or a copy attached in the aerodrome file as "**Amended".**

(d) Sign the amended certificate document.

(e) Place the copy of the amended certificate document in the appropriate aerodrome file.

(4) **Advise the following details of the amendment of aerodrome certificate**

(a) Aerodrome Operator in writing the date of amendment of aerodrome certificate.
(b) AIS for issuing NOTAM and any changes to the details of the reporting officer.
(c) AIS for amendment to publications.
(d) AASI, an amendment of the aerodrome certificate register.

(5) **Surveillance Update**

(a) Aerodrome Profile Sheet update

(b) Surveillance Plan amendment

..../ .... / ....

(Assigned Aerodrome Inspector) **Date**

CHAPTER 4.
EXEMPTIONS, DEVIATIONS AND AERONAUTICAL SAFETY STUDIES

Note: for exemptions and deviations refer to JCAR 11 "General Rule Making" and CEO Order No. 1-2013 "General Rule Making Procedure".

AERONAUTICAL SAFETY STUDIES

4.1 PURPOSE

An aeronautical study is conducted to assess the impact of exemptions, deviations, limitations and specific conditions operation from the aerodrome standards specified in JCAR 139, 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.

4.2 APPLICABILITY

An aeronautical study shall be carried out when aerodrome standards cannot be met as a result of development. Such a study is most frequently undertaken during the planning of a new airport or during the certification of an existing aerodrome.

Note.— Aeronautical studies may not be conducted in cases of deviations from the standards, if not specifically recommended in JCAR 139.

4.3 DEFINITION

An aeronautical study is a study of an aeronautical problem to identify possible solutions and select a solution that is acceptable without degrading safety.

4.4 TECHNICAL ANALYSIS

Technical analysis will provide justification for a deviation 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 but where the unsafe effects of the problem can be overcome by some procedural means which offers both practical and reasonable solutions.

In conducting a technical analysis, inspectors will draw upon their practical experience and specialized knowledge. They may also consult other specialists in relevant areas.

When considering alternative procedures in the deviation approval process, it is essential to bear in mind the safety objective of the aerodrome certification regulations and the applicable standards so that the intent of the regulations is not circumvented.

4.5 APPROVAL OF DEVIATIONS

In some instances, the only reasonable means of providing an equivalent level of safety is to adopt suitable procedures and to require, as a condition of certification, that cautionary advice be published in the appropriate AIS publications.

The determination to require caution will be primarily dependent on two considerations:

a) pilot's need to be made aware of potentially hazardous conditions; and

b) the responsibility of CARC to publish deviations from standards that would otherwise be assumed under certificate status.

4.6 METHODOLOGY

4.6.1 Origin and Background

TYPES OF NON-COMPLIANCES

A. Non-compliances related to Operating Procedures

Lack of procedures, insufficient maintenance programs or defects in the assigning of responsibilities, etc.

B. Non-conformities or deviations related to the Designing of Aerodromes

(1) Penetration of obstacle limitation surfaces, RESA and insufficient strips, distance between runways, taxiways and insufficient objects, defects in the visual aids, etc.

(2) This type may include those requirements that are not complied with and those for which in accordance with regulations, a safety study is sufficient to guarantee an acceptable level of safety.

4.6.2 Contents of an Aeronautical Study

A. Stage 1: SYSTEM DESCRIPTION/CHARACTERIZATION OF THE SCENE

The characterization of the scenario is carried out through an analysis that is extended to the airport and the surrounding environment, the technical and operational resources that are employed as well as the special characteristics of the demand (current and future).

The intent is for this characterization to be carried out in accordance with the scope of the aeronautical study; in other words, that it is not so much focused on the general definition of the airport and its environment but on how this scenario may affect the safety aspects considered in the study, and this conclusion shall be expressed at the end of each evaluated part.

(1) Airport

Special attention shall be given to describing the configuration of the movement area and its components (runway and taxiways system, and apron). It is not only necessary to know the physical data of the airfields, but also the manner in which their components are used. Consequently, the operation of the airport shall be taken into account, defining the airport's reference code and that of each of its taxiways, the operating limitations and conditions of use, according to the type of aircraft, the taxiways and taxi lanes as related to the aforementioned reference codes, strategy for using the runways, defined normal arrival and departure operating procedures, and rest of airport procedures and capabilities.

(2) Physical scenario

Physical scenario is defined as the set of impacts introduced by the aerodrome's environment, which can be relevant from a safety point of view relative to the object of the aeronautical safety study. The terrain, weather, restrictions of an environmental nature and the Master Plan or Airport Development Plan are elements to be studied. Up-to-date data shall be considered.

(3) CNS/ATM scenario

The set of technical and operational resources used to provide service to aircraft constitutes an important part of the scenario, requiring a description of the current state and predictable evolution of the Air Navigation System at the aerodrome. Logically, the level of detail required will vary depending on the scope of the study, where in most cases a description of the air traffic services (ATC and/or AFIS and/or the absence of these including their hours of operation) will suffice along with a description of the surrounding air space and its categorization and the listing of the types of radio navigation aids and procedures (instruments and/or visual aids) available for arrivals as well as departures.

(4) Demand

The characteristics of the traffic that is serviced by an airport constitutes one of the elements with the greatest influence on safety. For this reason, if justified by the study, a description of the demand shall be provided, expressed in terms of the type of traffic (visual / instrument, commercial / recreational, etc.), volume and distribution of the operations (nº of movements, peak hours, etc.) and composition of the fleet (turboprops / jets, heavy / medium / light, etc.). In other cases the classification of the traffic will be established according to the needs, justifications and reasons required to be included in the study.

B. Stage 2: ANALYSIS/PRELIMINARY IDENTIFICATION: ASSUMPTIONS, HAZARDS, THREATS, FACTORS AND RISKS

(1) Initial assumptions and hypotheses

Established by the authors of the Study, it allows for the simplification of certain analysis; however, it shall be determined that said assumptions are well founded.

A detailed description shall be provided of the initial assumptions specified in the study, which may have an impact on the conclusions thereof.

(2) Hazard Identification

(a) A preliminary identification of hazards shall be carried out using similar situations that have occurred at other airports as a reference, as well as information originating from organizations such as ICAO, EASA, FAA and Eurocontrol, and information and statistics on incidents or accidents that have occurred at the aerodrome. In the Safety Studies that are drafted to justify deviations from Standards, precisely the nature of the existing non-compliances will constitute the hazards used as a basis to develop the risk assessment diagram.

(b) Data sources:

(i) Checklists generated by the airport's SMS

(ii) Safety Committees

(iii) Expert working session (or meetings)

(iv) Safety Communications (from CARC, airport users, employees, etc)

(v) Other SMS procedures

(3) Identification of contributing factors, threats and defenses.

Once a complete description of the operational scenario associated with the object of the study has been completed, and once a preliminary classification of the hazards has been conducted, we are in a position to identify in our system the contributing factors, threats and defenses that will help us to better evaluate the defined risks.

(4) Contributing factors: They represent all those aspects relative to infrastructures, facilities, operating procedures, prevailing weather conditions, traffic types and density, etc., described in the characterization of the scenario section, which may be related to the identified hazards and their consequences. The

contributing factors identified may be classified as: threats, defenses, or simply factors whose contribution, in favor or not of the considered hazards, will be evaluated during the work session with experts.

(5) Preliminary identification of risks

Once the hazards have been detected all the risks associated with each of them shall be identified. All the hazards shall have an associated risk, the probability and severity analysis will determine their tolerability; a priori, no risk associated with the identified hazards shall be ruled out.

On occasions it may not be easy to define the final risks based on the hazards; in other cases, defining some potential risks is required, which will be a tool used to facilitate the identification and evaluation of said final risks.

<table>
<tr><th>HAZARDS</th><th>DEFENSES</th><th>FACTORS</th><th>POTENTIAL RISKS</th><th>FINAL RISKS</th></tr>
<tr><td>Inadequate design of the stopbar lights electrical system, allowing all the lights to fail simultaneously</td><td rowspan="2">Horizontal signaling maintenance system.
Taxiway centerline lighting system.
ATC tower support.
Publication of airfield information in AIP.
Monitoring of the stopbar lights' electrical circuit.
LVP with taxiing "in blocks/ partitions"
A preliminary lights check is conducted and one every hour in LVC.</td><td rowspan="2">Low visibility

Night operations

Traffic density</td><td rowspan="2">Runway incursion</td><td>Collision of an aircraft operating on the runway with another aircraft</td></tr>
<tr><td>No signs at runway holding points</td><td>Slight increase in ATC workload</td></tr>
</table>

C. Stage 3: WORKING SESSION WITH GROUP OF EXPERTS

(1) The analysis conducted and the documentation drafted by the authors of the Study, and which have allowed them to obtain a complete characterization of the studied scenario and an initial identification of the hazards, contributing factors, threats and defenses of the analyzed system, could have to be transferred to a working session featuring the participation by experts of a multidisciplinary nature.

(2) The technical and operational knowledge of the experts may play an essential role in identifying and evaluating hazardous situations and the factors involved, which require a thorough understanding of the system and the specific operating scenario.

(3) This session is mandatory when the safety assessment is for an aeronautical safety study. In other cases, the authors 'opinion and criteria could be enough.

(4) The tasks that must be carried out by the group of experts in the different meetings must be determined. Which are the following :

(a) Validation of the initial hypothesis.

(b) Evaluation of the identified hazards and the factors, threats and defenses associated with them.

(c) Additional identification of the hazards and their effects on the operation of the aircraft, tailored to the specific operational environment and the object of the study.

(d) Initial validation of the preliminary identified risks and additional identification.

(e) Validation of the probability of occurrence of each one of the identified risks in the case that qualitative methods are used.

(f) Validation of the severity associated with each one of the identified risks.

(g) Validation of the mitigating measures proposed.

(5) In order to certify that the aforementioned tasks are properly carried out and documented by a sufficiently broad multidisciplinary group, the following documents shall be provided:

(a) Signed list of attendees. Regarding the personnel to convene, all relevant personnel from the airport manager's office shall be considered, as well as safety, operational and SMS experts, and other involved personnel such as the supplier of air navigation services and air carriers. The names of the attendees will be included as well as the organization they belong to, the position they hold in the organization, and a brief description of each professional profile as it relates to the object of the study.

(b) Final and approved meeting minutes, which must serve to prove that the specified tasks have been carried out.

(c) Preliminary documentation related to the study (presentation of the object of the study, assumptions, defenses, preliminary identification of the hazards and risks, preliminary analysis, mitigating measures, etc.) that the organizer provides to the experts along with the invitation to the meeting so that they can analyze this documentation prior to the meeting in order to better prepare and carry out the tasks expected of them during the meeting.

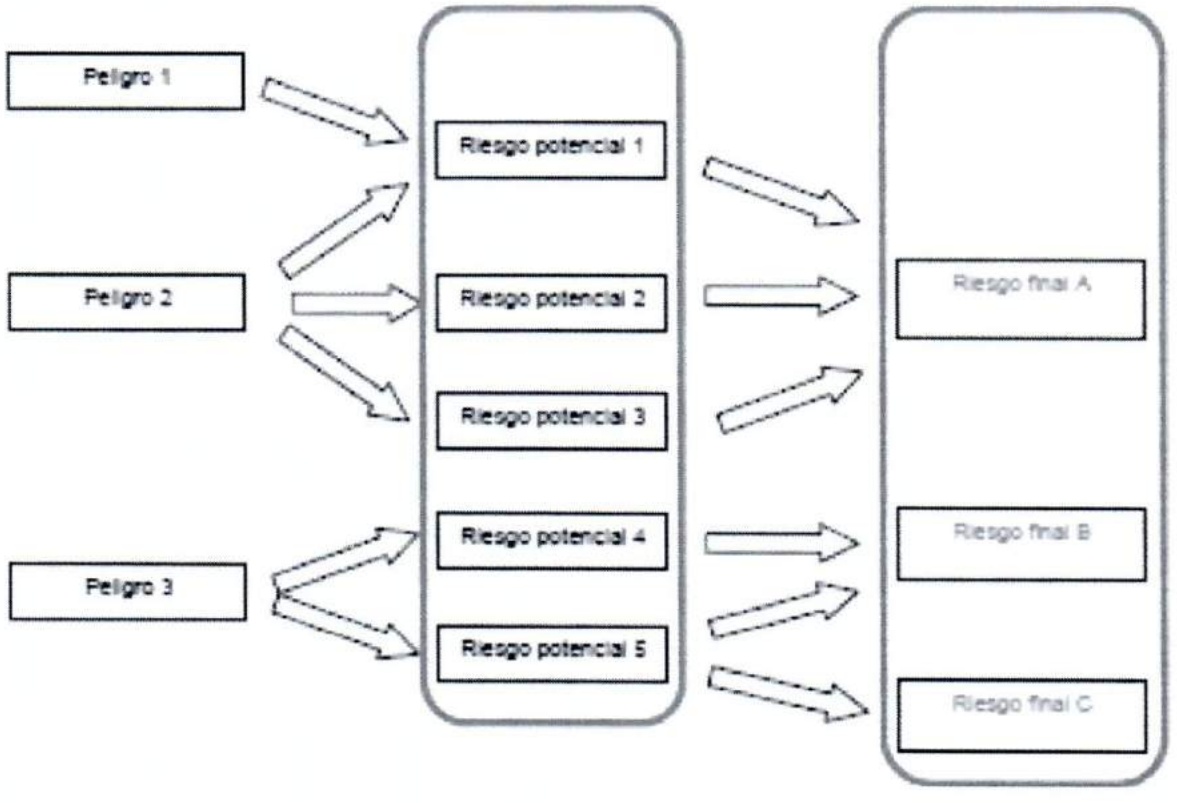
The documentation associated with the expert session may be included as a section of the safety study, listing the decisions adopted during the meeting, or as an annex of the study itself. In any case this

documentation must make it possible to trace and evaluate the reasoning and conclusions reached at the expert session, which must be included in the study.

D. Stage 4: RISK ANALYSIS: CLASSIFICATION, PROBABILITY, SEVERITY AND TOLERABILITY

(1) Classification and Grouping of Risks

Prior to the assessment/evaluation of the risks, a classification and/or grouping shall be carried out to facilitate the subsequent treatment of these risks. For the purpose of providing a better foundation to the categorization and classification of said defined risks, it is recommended that Fault Tree Analysis (FTA) or similar techniques be used whenever possible.



In order to be able to evaluate the probability of occurrence of the final risks it is necessary to expressly indicate in this section whether or not the potential risks that contribute to said probability are independent from each other or if in turn they are dependent; in other words, they may occur simultaneously during the same operation. Depending on the type, adding the probabilities, conducting

weighted sums, selecting the most critical, etc., may be required. The method used for grouping the risks shall be expressly indicated in this section.

(2) Risk probability assessment

For each of the identified risks, an evaluation of its probability or frequency of occurrence shall be conducted according to a probability of occurrence classification diagram that has been established as a reference by international references such as ICAO or other internationally renowned aeronautical organizations. Qualitative and Quantitative methods can be used (or mixed, taken some quantitative information modified by qualitative criteria). Information about previous accidents, incidents and events has to be considered.

Likelihood	*Meaning*	*Value*
Frequent	Likely to occur many times (has occurred frequently)	5
Occasional	Likely to occur sometimes (has occurred infrequently)	4
Remote	Unlikely to occur, but possible (has occurred rarely)	3
Improbable	Very unlikely to occur (not known to have occurred)	2
Extremely improbable	Almost inconceivable that the event will occur	1

Frequencies per year are numbers which correspond to experience and they are easier to estimate and validate than extremely small frequencies per movement. If necessary, probability per year can easily be transformed into frequencies per movement and vice versa. The following transformation rules must be considered:

(a) Transformation of frequencies per year to frequencies per movement: The estimated frequency per year shall be divided by the number of movements related to the respective hazard.

(b) Transformation of frequencies per movement to frequencies per year (e.g. if generally known accident rates shall be used for the estimation of a frequency per year):

(i) The known frequency per movement (= rate) shall be multiplied with the related number of movements.

(ii) Example: The failure rate to pass a stop bar on a defined airport is assumed to be 10–4 per passage. If 10'000 aircraft will annually pass that stop bar, the frequency will be one stop bar violation per year.

(3) Risk severity assessment

For each one of the effects of the identified risks an evaluation of the severity of each risk will be carried out, which will indicate the seriousness of the occurrence of said evaluated risk. In the assigning of severity for risk of collisions, the available information shall take into account dimensions, frangibility, materials,…etc. of the obstacles involved.

Severity	*Meaning*	*Value*
Catastrophic	— Equipment destroyed — Multiple deaths	A
Hazardous	— A large reduction in safety margins, physical distress or a workload such that the operators cannot be relied upon to perform their tasks accurately or completely — Serious injury — Major equipment damage	B
Major	— A significant reduction in safety margins, a reduction in the ability of the operators to cope with adverse operating conditions as a result of an increase in workload or as a result of conditions impairing their efficiency — Serious incident — Injury to persons	C
Minor	— Nuisance — Operating limitations — Use of emergency procedures — Minor incident	D
Negligible	— Few consequences	E

(4) Risk evaluation matrix

Risk probability	Risk severity				
	Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
Frequent 5	**5A**	**5B**	**5C**	5D	5E
Occasional 4	**4A**	**4B**	4C	4D	4E
Remote 3	**3A**	3B	3C	3D	**3E**
Improbable 2	2A	2B	2C	**2D**	**2E**
Extremely improbable 1	**1A**	**1B**	**1C**	**1D**	**1E**

Risk index range	Description	Recommended action
5A, 5B, 5C, 4A, 4B, 3A	High risk	Cease or cut back operation promptly if necessary. Perform priority risk mitigation to ensure that additional or enhanced preventive controls are put in place to bring down the risk index to the moderate or low range.
5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C, 1A	Moderate risk	Schedule performance of a safety assessment to bring down the risk index to the low range if viable.
3E, 2D, 2E, 1B, 1C, 1D, 1E	Low risk	Acceptable as is. No further risk mitigation required.

E. Stage 5: RISK MITIGATION

A detailed description of the proposed mitigating measures shall be carried out, including the deadlines established for implementing them. During the experts working session an explicit validation of each one of these measures shall be carried out, which shall be included in the documents used to record the result of this session. Likewise, the effects that the proposed measures will have on airport operations shall be explained. Specifically, and as a minimum, it must describe the manner in which compliance with the measures is going to be guaranteed: Responsible personnel from within the organization; procedures, notifications; information in the AIP; inclusion in the Airport Manual and in the Safety Management System.

(1) Mitigation measure objective can be:

(a) Eliminate the hazard

(b) Reduce the probability that an accident takes place

(c) Reduce the effects or consequences of an accident

(2) Types of measure:

(a) About airport's infrastructure and installations

(b) About airport's operational procedures

(c) Others: Training, organizational structure, etc.

(3) After mitigation measures has been implemented, their effectiveness has to be checked.

(a) If the hazard has been eliminated, there is nothing else to do with it.

(b) If they don't eliminate the hazard, a new risk assessment is required.

(c) Mitigation measures can result in new hazards. They have to be analyzed.