		YES	NO
5.13	**Obstacles**		
a)	Arrangements for monitoring the height of buildings or structures within the boundaries of the obstacle limitation surfaces (OLS).		
b)	Arrangements for controlling new developments in the vicinity of aerodromes.		
c)	The reporting procedure and actions to be taken in the event of the appearance of unauthorized obstacles.		
d)	Arrangements for removal of an obstacle.		
5.14	**The removal of a disabled aeroplane**		
a)	Details of the capability for removal of a disabled aeroplane.		
b)	Arrangements for removing a disabled aeroplane, including the reporting and notifying procedures and liaison with ATC.		
5.15	**Dangerous goods**		
	Arrangements for special areas on the aerodrome to be set up for the storage of dangerous goods.		
5.16	**Low visibility operations**		
a)	Obtaining and disseminating meteorological information, including runway visual range (RVR) and surface visibility.		
b)	Protection of runways during LVP if such operations are permitted.		
c)	The arrangement and rules before, during and after low visibility operations, including applicable rules for vehicles and personnel operating in the movement area.		
5.17	**Protection of sites for radar, navigation aids and meteorological equipment**		
a)	Description of the areas to be protected and procedures for their protection.		
6.	**Safety management system (SMS)**		
a)	Safety policy.		
b)	Operator's structure and responsibility. This should include:		
	1) the name, status and responsibilities of the accountable executive;		
	2) the name, status and responsibilities of the safety manager;		

	YES	NO
3) the name, status and responsibilities of other senior operating staff;		
4) the name, status and responsibilities of the official in charge of day-to-day operations;		
5) instructions as to the order and circumstances in which the above-named staff may act as the official in charge or accountable executive;		
6) an organizational chart supporting the commitment to the safe operation of the aerodrome as well as one simply showing the hierarchy of responsibility for safety management.		
c) Training.		
d) Complying with regulatory requirements relating to accidents, incidents and mandatory occurrence reporting.		
e) Hazard analysis and risk assessment.		
f) The management of change.		
g) Safety criteria and indicators.		
h) Safety audits.		
i) Documentation.		
j) Safety-related committees.		
k) Safety promotion.		
l) Responsibility for monitoring the contractors and third parties operating on the aerodrome.		

Chapter 3

SAFETY ASSESSMENTS FOR AERODROMES

Note 1.— The objective of a safety assessment, as part of the risk management process of an SMS, is described in 3.3.1.

Note 2.— Where alternative measures, operational procedures and operating restrictions have been developed arising from safety assessments, these should be reviewed periodically to assess their continued validity. The procedures in this chapter do not substitute or circumvent the provisions contained in Annex 14, Volume I. It is expected that infrastructure on an existing aerodrome or a new aerodrome will fully comply with the requirements in the Annex.

3.1 INTRODUCTION

3.1.1 A certified aerodrome operator implements an SMS acceptable to the State that, as a minimum.

a) identifies safety hazards;

b) ensures that remedial action necessary to maintain safety is implemented;

c) provides for continuous monitoring and regular assessment of the achieved safety; and

d) aims to make continuous improvement to the overall safety of the aerodrome.

Note 1.— Annex 19 — Safety Management *contains the framework for the implementation and maintenance of an SMS by a certified aerodrome. Annex 19, Appendix 2, contains a description of the four components comprising the framework, i.e. safety policy and objectives, safety risk management, safety assurance and safety promotion.*

Note 2.— Further guidance on SMS is available in Doc 9859, Safety Management Manual (SMM).

3.1.2 This chapter describes how a safety assessment can be undertaken as part of the aerodrome's SMS. By applying the methodology and procedures described here, the aerodrome operator can demonstrate compliance with the minimum requirements described in 3.1.1.

3.2 SCOPE AND APPLICABILITY

3.2.1 The following sections present, inter alia, a general methodology to conduct safety assessments on an aerodrome. Additional tools and particularly appropriate checklists, such as those found in Chapter 4, can help identify hazards, assess safety risks and eliminate or mitigate those risks when necessary. The suitability of the mitigation proposed and the need for alternative measures, operational procedures or operating restrictions for the specific operations concerned should be comprehensively evaluated. Section 3.4 details how the State will validate the conclusion of the safety assessment, when appropriate, to ensure safety is not compromised. Section 3.5 describes

procedures on the approval or acceptance of a safety assessment. Section 3.6 specifies how to promulgate appropriate information for use by the various aerodrome stakeholders and particularly by the pilots and aircraft operators.

3.2.2 The safety assessment process addresses the impact of a safety concern, including a change or deviation, on the safety of operations at the aerodrome and takes into consideration the aerodrome's capacity and the efficiency of operations, as necessary.

3.3 BASIC CONSIDERATIONS

3.3.1 A safety assessment is an element of the risk management process of an SMS that is used to assess safety concerns arising from, inter alia, deviations from standards and applicable regulations, identified changes at an aerodrome specified in 2.4.4, or when any other safety concerns arise.

Note.— Changes on an aerodrome can include changes to procedures, equipment, infrastructures, safety works, special operations, regulations, organization, etc.

3.3.2 When a safety concern, change or a deviation has an impact on several aerodrome stakeholders, consideration shall be given to the involvement of all stakeholders affected in the safety assessment process. In some cases, the stakeholders impacted by the change will need to conduct a separate safety assessment themselves in order to fulfil the requirements of their SMSs and coordinate with other relevant stakeholders. When a change has an impact on multiple stakeholders, a collaborative safety assessment should be conducted to ensure compatibility of the final solutions.

3.3.3 A safety assessment considers the impact of the safety concern on all relevant factors determined to be safety-significant. The list below provides a number of items that may need to be considered when conducting a safety assessment. The items in this list are not exhaustive and in no particular order:

a) aerodrome layout, including runway configurations; runway length; taxiway, taxilane and apron configurations; gates; jet bridges; visual aids; and the RFF services infrastructure and capabilities;

b) types of aircraft, and their dimensions and performance characteristics, intended to operate at the aerodrome;

c) traffic density and distribution;

d) aerodrome ground services;

e) air-ground communications and time parameters for voice and data link communications;

f) type and capabilities of surveillance systems and the availability of systems providing controller support and alert functions;

g) flight instrument procedures and related aerodrome equipment;

h) complex operational procedures, such as collaborative decision-making (CDM);

i) aerodrome technical installations, such as advanced surface movement guidance and control systems (A-SMGCS) or other air navigation aids;

j) obstacles or hazardous activities at or in the vicinity of the aerodrome;

k) planned construction or maintenance works at or in the vicinity of the aerodrome;

l) any local or regional hazardous meteorological conditions (such as wind shear); and

m) airspace complexity, ATS route structure and classification of the airspace, which may change the pattern of operations or the capacity of the same airspace.

Note.— Chapter 4 outlines the methodology and procedures to assess the adequacy between aeroplane operations and aerodrome infrastructure and operations.

3.3.4 Subsequent to the completion of the safety assessment, the aerodrome operator is responsible for implementing and periodically monitoring the effectiveness of the identified mitigation measures.

3.3.5 The State reviews the safety assessment provided by the aerodrome operator and its identified mitigation measures, operational procedures and operating restrictions, as required in section 3.4, and is responsible for the subsequent regulatory oversight of their application.

Note.— A list of references to existing studies that may assist aerodrome operators in developing their safety assessments is available in Appendix B to Circular 305 — Operation of New Larger Aeroplanes at Existing Aerodromes*. New and updated references will be included in other appropriate documents as they become available. However, it is to be noted that each study is specific to a particular deviation or change; hence, caution should be exercised in considering applicability to other situations and locations. Inclusion of these references does not imply ICAO endorsement or recognition of the outcome of the studies, which remains the ultimate responsibility of the State in accordance with the Convention on International Civil Aviation.*

3.4 SAFETY ASSESSMENT PROCESS

3.4.1 Introduction

Note.— Guidance on continuous improvement of the SMS as part of the safety assurance component of the SMS framework is available in Doc 9859.

3.4.1.1 The primary objective of a safety assessment is to assess the impact of a safety concern such as a design change or deviation in operational procedures at an existing aerodrome.

3.4.1.2 Such a safety concern can often impact multiple stakeholders; therefore, safety assessments often need to be carried out in a cross-organizational manner, involving experts from all the involved stakeholders. Prior to the assessment, a preliminary identification of the required tasks and the organizations to be involved in the process is conducted.

3.4.1.3 A safety assessment is initially composed of four basic steps:

a) definition of a safety concern and identification of the regulatory compliance;

b) hazard identification and analysis;

c) risk assessment and development of mitigation measures; and

d) development of an implementation plan for the mitigation measures and conclusion of the assessment.

Note 1.— A safety assessment process flow chart applicable for aerodrome operations is provided in Attachment A to this chapter; a generic safety risk management process can be found in Doc 9859.

Note 2.— Certain safety assessments may involve other stakeholders such as ground handlers, aeroplane operators, air navigation service providers (ANSPs), flight procedure designers and providers of radio navigation signals, including signals from satellites.

3.4.2 Definition of a safety concern and identification of the regulatory compliance

3.4.2.1 Any perceived safety concerns are to be described in detail, including timescales, projected phases, location, stakeholders involved or affected as well as their potential influence on specific processes, procedures, systems and operations.

3.4.2.2 The perceived safety concern is first analysed to determine whether it is retained or rejected. If rejected, the justification for rejecting the safety concern is to be provided and documented.

3.4.2.3 An initial evaluation of compliance with the appropriate provisions in the regulations applicable to the aerodrome is conducted and documented.

3.4.2.4 The corresponding areas of concern are identified before proceeding with the remaining steps of the safety assessment, with all relevant stakeholders.

Note.— It may be useful to review the historical background of some regulatory provisions to gain a better understanding of the safety objective of those provisions.

3.4.2.5 If a safety assessment was conducted previously for similar cases in the same context at an aerodrome where similar characteristics and procedures exist, the aerodrome operator may use some elements from that assessment as a basis for the assessment to be conducted. Nevertheless, as each assessment is specific to a particular safety concern at a given aerodrome the suitability for reusing specific elements of an existing assessment is to be carefully evaluated.

3.4.3 Hazard identification

3.4.3.1 Hazards related to infrastructure, systems or operational procedures are initially identified using methods such as brain-storming sessions, expert opinions, industry knowledge, experience and operational judgement. The identification of hazards is conducted by considering:

a) accident causal factors and critical events based on a simple causal analysis of available accident and incident databases;

b) events that may have occurred in similar circumstances or that are subsequent to the resolution of a similar safety concern; and

c) potential new hazards that may emerge during or after implementation of the planned changes.

3.4.3.2 Following the previous steps, all potential outcomes or consequences for each identified hazard are identified.

Note.— Further guidance on the definition of risk can be found in Doc 9859.

3.4.3.3 The appropriate safety objective for each type of hazard should be defined and detailed. This can be done through:

a) reference to recognized standards and/or codes of practices;

b) reference to the safety performance of the existing system;

c) reference to the acceptance of a similar system elsewhere; and

d) application of explicit safety risk levels.

3.4.3.4 Safety objectives are specified in either quantitative terms (e.g. identification of a numerical probability) or qualitative terms (e.g. comparison with an existing situation). The selection of the safety objective is made according to the aerodrome operator's policy with respect to safety improvement and is justified for the specific hazard.

3.4.4 Risk assessment and development of mitigation measures

3.4.4.1 The level of risk of each identified potential consequence is estimated by conducting a risk assessment. This risk assessment will determine the severity of a consequence (effect on the safety of the considered operations) and the probability of the consequence occurring and will be based on experience as well as on any available data (e.g. accident database, occurrence reports).

3.4.4.2 Understanding the risks is the basis for the development of mitigation measures, operational procedures and operating restrictions that might be needed to ensure safe aerodrome operations.

3.4.4.3 The method for risk evaluation is strongly dependent on the nature of the hazards. The risk itself is evaluated by combining the two values for severity of its consequences and probability of occurrence.

Note.— A risk categorization tool in the form of a safety risk (index) assessment matrix is available in Doc 9859.

3.4.4.4 Once each hazard has been identified and analysed in terms of causes, and assessed for severity and probability of its occurrence, it must be ascertained that all associated risks are appropriately managed. An initial identification of existing mitigation measures must be conducted prior to the development of any additional measures.

3.4.4.5 All risk mitigation measures, whether currently being applied or still under development, are evaluated for the effectiveness of their risk management capabilities.

Note.— The exposure to a given risk (e.g. duration of a change, time before implementation of corrective actions, traffic density) is taken into account in order to decide on its acceptability.

3.4.4.6 In some cases, a quantitative approach may be possible, and numerical safety objectives can be used. In other instances such as changes to the operational environment or procedures, a qualitative analysis may be more relevant.

Note 1.— An example of a qualitative approach is the objective of providing at least the same protection as the one offered by the infrastructure corresponding to the appropriate reference code for a specific aeroplane.

Note 2.— Chapter 4 provides a list of typical challenges related to each part of the aerodrome infrastructure and the potential solutions proposed.

3.4.4.7 States should provide suitable guidance on risk assessment models for aerodrome operators.

Note 1.— Risk assessment models are commonly built on the principle that there should be an inverse relationship between the severity of an incident and its probability.

Note 2.— Methodologies for risk management can be found in Attachment B.

3.4.4.8 In some cases, the result of the risk assessment may be that the safety objectives will be met without any additional specific mitigation measures.

3.4.5 Development of an implementation plan and conclusion of the assessment

3.4.5.1 The last phase of the safety assessment process is the development of a plan for the implementation of the identified mitigation measures.

3.4.5.2 The implementation plan includes time frames, responsibilities for mitigation measures as well as control measures that may be defined and implemented to monitor the effectiveness of the mitigation measures.

3.5 APPROVAL OR ACCEPTANCE OF A SAFETY ASSESSMENT

Note.— The safety assessment conducted by the aerodrome operator is a core SMS function. Management approval and implementation of the safety assessment, including future updates and maintenance, are the responsibility of the aerodrome operator. The State may, for specific reasons, require the submission of the specific safety assessment for approval/acceptance.

3.5.1 The State establishes the type of safety assessments that are subject to approval or acceptance and determines the process used for that approval/acceptance.

3.5.2 Where required in 3.5.1, a safety assessment subject to approval or acceptance by the State shall be submitted by the aerodrome operator prior to implementation.

3.5.3 The State analyses the safety assessment and verifies that:

a) appropriate coordination has been performed between the concerned stakeholders;

b) the risks have been properly identified and assessed, based on documented arguments (e.g. physical or Human Factors studies, analysis of previous accidents and incidents);

c) the proposed mitigation measures adequately address the risk; and

d) the time frames for planned implementation are acceptable.

Note.— It is preferable to work with a team of the State's operational experts in the areas considered in the safety assessment.

3.5.4 On completion of the analysis of the safety assessment, the State:

a) either gives formal approval or acceptance of the safety assessment to the aerodrome operator as required in 3.5.1; or

b) if some risks have been underestimated or have not been identified, coordinates with the aerodrome operator to reach an agreement on safety acceptance; or

c) if no agreement can be reached, rejects the proposal for possible resubmission by the aerodrome operator; or

d) may choose to impose conditional measures to ensure safety.

3.5.5 The State should ensure that the mitigation or conditional measures are properly implemented and that they fulfil their purpose.

3.6 PROMULGATION OF SAFETY INFORMATION

3.6.1 The aerodrome operator determines the most appropriate method for communicating safety information to the stakeholders and ensures that all safety-relevant conclusions of the safety assessment are adequately communicated.

3.6.2 In order to ensure adequate dissemination of information to interested parties, information that affects the current integrated aeronautical information package (IAIP) or other relevant safety information is:

a) promulgated in the relevant section of the IAIP or automatic terminal information service (ATIS); and

b) published in the relevant aerodrome information communications through appropriate means.