AERODROME INSPECTOR'S HANDBOOK

MANUAL

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OFFICE OF PRIME INTEREST	**:**	**Aerodrome Standards Branch (Directorate of Airspace & Aerodrome Regulations)**

	NAME	DESIGNATION	SIGNATURE
PREPARED BY	MUHAMMAD NADEEM IQBAL KHAN	Sr. Joint Director Aerodrome Standards & Certification Branch	
REVIEWED BY	LIAQUAT ALI SHAHZAD	Sr. Add. Director Aerodrome Standards	
	MUHAMMAD SALEEM ATHAR	Director Airspace & Aerodrome Regulations	
	MANZAR JAMAL	Principal Director (Regulatory)	
VERIFIED BY	NADIR SHAFI DAAR	D. SQMS / Management Representative (MR)	
APPROVED BY	Air Marshal (Retd.) MUHAMMAD YOUSAF	Director General, Civil Aviation Authority	
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TABLE OF CONTENTS

FOREWORD

Pakistan is a Contracting State to the Convention on International Civil Aviation. Safety Oversight of Aerodromes is an obligation to the International community to ensure that Civil Aviation activities under its jurisdiction are carried out in compliance with the Standards & Recommended Practices contained in Annex-14 Vol-1 to the Convention on International Civil Aviation in order to maintain the required aviation standards.

As per the standards of the Aerodrome Standards Manual Pakistan (ASMP) i.e. Annex-14 to the Convention, Aerodromes used for International and Domestic Operations are required to be certified by the CAA. In addition as per Pakistan Civil Aviation Authority, Rule 60-A of CARs 1994 and ANO-001-DRAS-2.0, aerodrome certificate must be obtained;

i) By the operator for the airport that may be used for public purpose (International and Domestic) as per the national need.

ii) To operate International/Domestic public Air Transport service at any aerodrome of Pakistan.

Issuance of an Aerodrome Certificate by the Director General of Pakistan Civil Aviation Authority to an aerodrome operator seeking such certificate is a requirement as per Rule 60-A of CARs 1994 and ANO-001-DRAS-2.0, if the aerodrome operation satisfies the rules specified in those Regulations. Hence, the certification of an aerodrome plays a vital role in Regulatory System.

This manual outlines the functions and responsibilities for the Aerodrome Inspectors of Directorate of Airspace and Aerodrome Regulations with respect to Aerodrome Safety Oversight Audit. It also provides the guideline for standard auditing/inspection procedures. The safety oversight functions and responsibilities of Aerodrome Inspectors with respect to Aerodrome Service Providers are in accordance with the guidelines in Doc 9743 Part A – The Establishment and Management of a State's Safety oversight System.

In order to issue an Aerodrome Certificate, the Pakistan Civil Aviation Authority has to conduct an in depth safety oversight audit to assess whether the Aerodrome is maintained in accordance with the required standards and the competency of aerodrome operator to maintain the aerodrome, staff, equipment and procedures as per the Regulatory Rules. In exercise of powers conferred upon him under Rule 5 of Civil Aviation Rules 1994, the Director General has delegated powers to the Aerodrome Inspectors of Civil Aviation Authority to conduct safety oversight audit of Aerodrome Service Providers and their associated elements/facilities.

The Aerodrome Inspectors shall conduct certification/surveillance and continuous safety oversight audit of aerodromes to monitor the compliance of National Aviation Legislation, Rules / Regulations, Standards and Recommended Practices, Directives of the Federal Government and Director General and prescribed procedures so as to meet the national obligations towards International Conventions, Annexes to the convention and subsequent amendments thereto. The Inspectors shall use the checklists judiciously and can make additional checklists to meet the requirements/standards.

This handbook contains guidance material intended to assist Aerodrome Inspectors of Directorate of Airspace and Aerodrome Regulations, Pakistan Civil Aviation Authority, in carrying out their regulatory responsibilities for the certification/surveillance safety oversight audit of International and Domestic Airports.

This Authority may without any prior notice, can change the contents of this manual as appropriate, to suit the administrative rules followed by dissemination of such changes to the holder of the handbook.

(MUHAMMAD YOUSAF)
Air Marshal (Retd.)
Director General
Pakistan Civil Aviation Authority

Dated: - 28 January 2015

GLOSSARY OF TERMS, ABBREVIATIONS & ACRONYMS

ACRONYMS AND ABBREVIATIONS:

AC	AERODROME CERTIFICATION
ACPP	AERODROME CERTIFICATION PROCEDURES PAKISTAN
AI	AERODROME INSPECTOR
AIHB	AERODROME INSPECTOR'S HAND BOOK
AIS	AERONAUTICAL INFORMATION SERVICE
AM	AERODROME MANUAL
ANNEX 14	AERODROME DESIGN AND OPERATIONS (VOL-I) TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION
ANO	AIR NAVIGATION ORDER
APM	AIRPORT MANAGER
AS	AERODROME STANDARD
ASM	AERODROME SAFETY MANAGER
ASMP	AERODROME STANDARDS MANUAL PAKISTAN
CAA	CIVIL AVIATION AUTHORITY
CAR	CIVIL AVIATION RULES
Sr. JD	SENIOR JOINT DIRECTOR
DAAR	DIRECTOR AIRSPACE AND AERODROME REGULATIONS
FSD	FLIGHT STANDARD DIRECTORATE
Sr. AD AS	SENIOR ADDITIONAL DIRECTOR AERODROME STANDARDS
NACP	NATIONAL AIRFIELD CLEARANCE POLICY
NOF	NOTAM OFFICE
NOTAM	NOTICE TO AIRMAN – A NOTICE ISSUED BY THE NOTAM OFFICE AND CONTAINING INFORMATION OR INSTRUCTION CONCERNING THE ESTABLISHMENT, CONDITION OR CHANGE IN ANY AERONAUTICAL FACILITY, SERVICE, PROCEDURE OR HAZARD.
OLS	OBSTACLE LIMITATION SURFACE
PD	PRINCIPAL DIRECTOR
TL	TEAM LEADER

REFERENCE DOCUMENTS:

Ordinance XXXII of 1960	Civil Aviation Ordinance 1960
Ordinance XXXII of 1982	Pakistan Civil Aviation Authority Ordinance 1982
CARs 1994	Civil Aviation Rules 1994
Annex-14	Aerodromes Vol - I Aerodrome Design and Operations
ANO-001-DRAS-2.0	Requirement for issuance And / Or renewal of Aerodrome Certificate
ASMP	Aerodrome Standards Manual Pakistan
Doc 9774	Manual of Certification of Aerodromes
Doc 9743	Safety Oversight Manual (Part-A)
Doc 9859	SMS Manual

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Chapter 1

DEFINITIONS

1.1 Following terms when used in this Manual, have the meanings assigned to them respectively. Any term used in this manual but not defined, shall have the same meaning as given in Civil Aviation Ordinances 1960 & 1982, CARs, 1994 and relevant ANOs/Standards Manuals.

1.1.1 **Adequate:** Fulfilling minimal requirements; satisfactory; acceptable; sufficient.

1.1.2 **Aerodrome:** A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

1.1.3 **Aerodrome Certificate:** A certificate issued by CAA under Rule 60-A of CARs 1994 for the operation of an aerodrome.

1.1.4 **Aerodrome Facilities and Equipment:** Facilities and equipment inside or outside the boundaries of an aerodrome that is constructed or installed and maintained for the arrival, departure and surface movement of aircraft.

1.1.5 **Aerodrome Inspection:** Inspection of aerodrome carried out by the Aerodrome Inspection Team of DAAR – HQCAA, to check the status of aerodrome manual, aerodrome site, equipment, facilities, services, operating procedures, organization & management including aerodrome safety management system in accordance with the checklists provided in Aerodrome Certification Procedures Pakistan (ACPP) and Aerodrome Inspector's Hand Book (AIHB).

1.1.6 **Aerodrome Inspector:** A designated and trained officer from Aerodrome Ops., Civil Works, Electrical, Mechanical, Fire & Safety Services and Airfield Clearances of regulatory division, entrusted/authorize with the responsibility of certification/safety oversight audit/inspection of aerodrome for respective area of activity.

1.1.7 **Aerodrome Inspectors Team:** A team of officers comprised by Inspectors from Aerodrome Ops., Civil Works, Electrical, Mechanical, Fire & Safety Services and Airfield Clearances of DAAR – HQCAA designated as Aerodrome Inspectors Team.

1.1.8 **Aerodrome Inspector/Audit Team Leader:** Any officer from Aerodrome Standards Branch of Directorate of Airspace and Aerodrome Regulations (Regulatory) designated by the Director General or Director, to be responsible for the conduct of certification or specific safety oversight audit/inspection, or a series of audits/inspections, including the consolidation and completion of the interim/final safety oversight audit/inspection report.

1.1.9 **Aerodrome Manual:** A manual that forms part of the application for Aerodrome Certificate pursuant to this manual, and includes any amendments accepted/approved by the CAA.

1.1.10 **Aerodrome Operator:** In relation to Certificated Aerodrome, the Aerodrome Certificate holder.

1.1.11 **Aerodrome Safety Manager:** An ATS officer (SMS qualified) deployed as officer-in- charge of Aerodrome Safety Management System.

1.1.12 **Aeronautical Study:** A study of an aeronautical problem to identify possible solutions and select a solution that is acceptable without degrading safety.

1.1.13 **Air Navigation Orders:** Orders issued by the Director General under the Civil Aviation Rules 1994.

1.1.14 **Assessment:** An evaluation based on engineering, operational judgment and/or analysis methods or an appraisal of procedures or operations based largely on experience and professional judgment.

1.1.15 **Audit/inspection activities:** Those activities and procedures by which information obtained in order to verify that the audited unit/organization is in conformance with, or adherence to, applicable Standards and Recommended Practices (SARPs), procedures and good aviation safety practices. Such activities may include, but are not limited to, interviews, observations, inspections, and the review of files and documents.

1.1.16 **Audit/inspection finding:** The determination with respect to the compliance with the provisions of the Chicago Convention or National Regulations, conformance with or adherence to Standards and Recommended Practices (SARPs), procedures and good aviation safety practices, including the effective implementation of the critical elements of a safety oversight system.

1.1.17 **Authorized person:** A person authorized by the Federal Government/ Authority/ Director General or by the Manager for the purpose of Rule 5 and 91 of Civil Aviation Rules 1994.

1.1.18 **Audit/inspection Manager:** An officer designated by the Director general or DAAR to be responsible for the management of a specific audit or a series of audits.

1.1.19 **Audit/inspection report:** A standardized means of reporting the audit/inspection findings to the designated authorities.

1.1.20 **Authority:** The Civil Aviation Authority established under section 3 of the Pakistan Civil Aviation Authority Ordinance, 1982.

1.1.21 **Certified Aerodrome:** An aerodrome which has been granted an aerodrome certificate.

1.1.22 **Closing meeting:** A meeting of the audit/inspection team and the representatives of the audited service provider at the end of the audit, the purpose of which is to provide the service provider authorities with preliminary information on audit/inspection findings and proposed recommendations to enable the service provider to start working on its corrective action plan.

1.1.23 **Comprehensive systems approach:** The implementation of structured process and methodology for the planning, preparation, conduct, reporting, follow-up and evaluation of safety oversight audits/inspections.

1.1.24 **Conformance:** The state for meeting the requirements of a Standard.

1.1.25 **Corrective action:** Action to eliminate the cause of a detected non-conformity or non-compliance or other undesirable situation.

Note:- Corrective action does not mean the action taken to restore a non-conforming situation to a conforming situation. This is known as remedial action. If the root cause of non-conformity is not addressed then it is very likely that similar non-conformities will recur.

1.1.26 **Corrective action plan:** An action plan submitted to CAA by an audited/inspected Service Provider, detailing the proposed action the service provider to resolve identified deficiencies (safety concerns), on the basis of recommendations made by an audit/inspection team. Implementation of the corrective action plan should bring the

service provider into full compliance with the provisions of the National Rules/Regulations, conformance with or adherence to prescribed Standards and Recommended Practices (SARPs), procedures and good aviation safety practices.

1.1.27 **Cause(s):** Events that result in a hazard or failure. Causes can occur by themselves or in combinations.

1.1.28 **Certification:** The process of determining competence, qualification or quality on which an aviation document is based.

1.1.29 **Director General:** Director General of the Authority.

1.1.30 **Event:** Any incident that occurs or a situation arises at a particular place during a particular interval of time.

1.1.31 **Hazard:** Conditions, or an object with the potential of causing injuries to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function.

1.1.32 **Hazard Identification:** The process of determining what can happen, why and how.

1.1.33 **Inspection:** The basic activity of an audit, which involves examination of the specific characteristics of the safety oversight programme/function.

1.1.34 **Non-compliance:** A deficiency in characteristic, documentation or procedure with respect to provisions of the Chicago Convention or a national regulation.

1.1.35 **Non-conformance:** A deficiency in characteristic, documentation or procedure with respect to an ICAO Standard.

1.1.36 **Opening meeting:** A meeting of the audit/inspection team and the representatives of the Service provider to be audited/inspected before the commencement of the audit/inspection, the purpose of which is to provide the Authorities with information on the audit/inspection process and the scope of the audit/inspection.

1.1.37 **Operator:** A person, organization, or enterprise engaged in, or offering to engage in an aircraft operation. (Operator is also defined as a person, organization, or enterprise engaged in, or offering to engage in the operation of an aircraft, aerodrome or associated aviation activity.)

1.1.38 **Recommended Practices:** Any specification for physical characteristics, material, performance, personnel or procedures, the uniform application of which is recognized as desirable in the interest of safety, regularity or efficiency of international air navigation, and to which Contracting States will endeavour to conform in accordance with the Convention.

1.1.39 **Risk:** The assessment, expressed in terms of predicted probability and severity of the consequence (s) of a hazard taking as reference the worst foreseeable situation. There are three types of risks;

1.1.40 **Initial Risk:** The severity and likelihood of a hazard when it is first identified and assessed.

Note:- *It is used to describe the severity and likelihood of a hazard in the beginning or very preliminary stages of a decision, program, or analysis. Initial risk is determined by considering both verified controls and assumptions made about system state. When assumptions are made, they shall be documented as recommended controls. Once the initial risk is established, it is not changed.*

1.1.41 **Current Risk:** The predicted severity and likelihood of a hazard at the current time.

Note:- *When determining current risk, both validated controls and verified controls may be used in the risk assessment. Current risk may change based on the actions taken by the decision maker that relate to the validation and/or verification of the controls associated with a hazard.*

1.1.42 **Residual Risk:** The remaining risk that exists after all control techniques have been implemented or exhausted and all controls have been verified.

Note:- *Only verified controls should be used for the assessment of residual risk.*

1.1.43 **Risk Analysis:** A systematic use of available information to determine how often specified events may occur and the magnitude of their consequences. A mechanism, part of a Safety management System, used to assess the risk (combination of event or hazard severity and probability of occurrence) posed by a particular set of circumstances. It is used to compare the outcome of such an analysis against the intended outcome of a particular Standard, Recommended Practice or National requirement so that a solution can be selected that will not degrade safety below that which is intended.

1.1.44 **Risk Assessment:** Assessment to establish that achieved or perceived risk is acceptable or tolerable. The risk assessment is an overall process of risk analysis and risk evaluation.

1.1.45 **Risk Evaluation:** The process used to determine risk management priorities by comparing the level of risk against predetermined standards, target risk levels or other criteria.

1.1.46 **Risk Level:** The level of risk calculated as a function of likelihood and its consequences.

1.1.47 **Risk Management:** The identification, analysis and elimination (and/or mitigation to an acceptable or tolerable level) of those hazards, as well as the subsequent risks, that threaten the viability of an organization.

1.1.48 **Risk Mitigation or Mitigation:** The steps / measures taken to either control / prevent a hazard from causing harm/damage which reduce the risk to an acceptable or tolerable level.

1.1.49 **Runway Incursion:** Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft.

1.1.50 **Safety:** Safety is the state in which the risk of harm to persons or of property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management. Safety may also be defined: as a condition in which the risk of harm or damage is limited to an acceptable level.

1.1.51 **Safety Directive (SD):** A mandate from the Authority/DGCAA (Regulator) to Service Provider(s)/Operator(s) to take immediate corrective action to address a non-compliance/non-conformance issue that creates a significant unsafe condition.

1.1.52 **Safety Management System (SMS):** A systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures.

1.1.53 **Safety Oversight:** A function by means of which states ensure effective implementation of safety related Standards and Recommended Practices (SARPs) and

associated procedures contained in the Annexes to the Convention on International Civil Aviation and related ICAO documents.

1.1.54 **Safety Oversight Audit/Inspection Process:** A prescribed three-phase process that consists of the pre-audit/inspection, audit/inspection and post-audit/inspection activities.

1.1.55 **Safety Oversight Audit/Inspection activities:** Audit/Inspection related activities commencing with the opening meeting of the Inspection/Audit Team with authorities of the service provider and concluding with the closing meeting, including the provision of the draft findings and recommendations.

1.1.56 **Safety Performance Indicator:** A measure (or matrix) used to express the level of safety performance achieved in a system.

1.1.57 **Safety Performance Target:** The required level of safety performance of a system, a safety performance target comprises of one or more safety performance indicators, together with desired outcomes expressed in terms of those indicators.

1.1.58 **Safety Policy:** Policy statement of an organization, regarding the fundamental principles/actions required to achieve and maintain an acceptable or tolerable level of safety.

1.1.59 **Safety Programme:** An integrated set of regulations and activities aimed at improving safety.

1.1.60 **Safety Regulatory Audit/Inspection:** Safety regulatory audit/inspection means a systematic and independent examination conducted by, or on behalf of, a national supervisory authority to determine whether complete safety related arrangements or elements thereof, related to processes and their results, products or services, comply with required safety-related arrangements and whether they are implemented effectively and are suitable to achieve expected results.

1.1.61 **Safety Record:** Information about events or series of events required to be maintained as a basis for providing safety assurance and demonstrating the effective operation of the safety management system.

1.1.62 **Safety Survey:** A systematic review of an operational unit or a particular area of operations, to recommend improvements where needed, to provide assurance of the safety of current activities and to confirm conformance with applicable parts of the safety management system;

1.1.63 **SMS Documentation:** The set of documents containing safety rules/ regulations, SMS manuals, procedures, hazard reports and risk mitigation processes including organizational structures/ responsibilities required to achieve safety objective.

1.1.64 **Standards and Recommended Practices:** Any reference in the regulations to aerodrome standards and practices is a reference to the Standards and Recommended Practices (SARPs) in the latest version of Volume-I to Annex-14 to the Convention on International Civil Aviation, and the national regulations and practices as amended from time to time..

1.1.65 **Warning Notice:** A notice that brings to Service provider/Operator's attention that immediate action is required to correct a significant unsafe condition. It warns that, if the issue is not corrected, a Safety Directive (SD) mandating specified action will be issued. In emergencies, where time does not permit the issuance of a warning notice, a safety directive may be issued without a warning notice.

1.2 REGULATORY BASIS

1.2.1 CARs, 1994 Part VIII Aerodromes, Rule 60A and ANO-001-DRAS-2.0 specifies the requirements to be complied with by aerodrome operators seeking a certificate.

Chapter 2

GENERAL

2.1 PURPOSE:

2.1.1 The purpose of this hand book is to provide guidance to CAA Aerodrome Inspectors on the procedures to be followed for the assessment and issuance of certificates as per Rule 60-A of CARs, 1994 and ANO-001-DRAS-2.0.

2.1.2 Provides guidance for answering queries related to the requirements of certification process.

2.1.3 This handbook defines the applicable regulations and clearly sets out the:

2.1.3.1 Responsibilities of CAA Aerodrome Inspectors and Team Leader in completion of Aerodrome Certification process; and

2.1.3.2 Standards and procedures, Aerodrome Inspector must follow when processing an application and onsite inspection/audit of applicant's aerodrome.

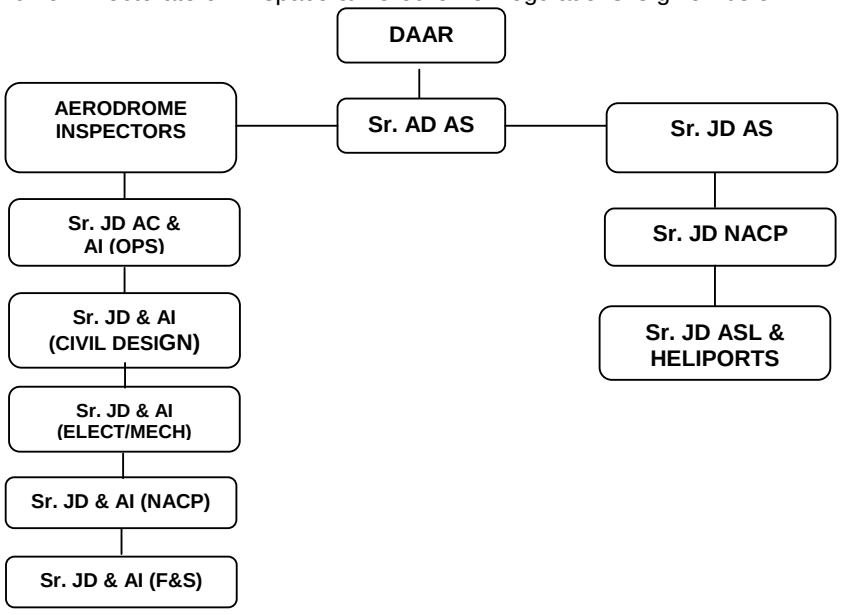
2.1.4 Adherence to the standards and procedures ensures that:

2.1.4.1 Applications for aerodrome certificate are dealt within an effective, efficient and consistent manner; and

2.1.4.2 Aerodrome certificates are issued in a common legal format.

2.2 SCOPE:

2.2.1 This manual is a part of the CAA documents. It includes processes, flowcharts, letters, checklists and support documentation to help Aerodrome Inspectors when conducting entry control actions related to aerodrome certification matters such as assessing applications from aerodrome owners or operators, and carrying out on site inspection/audit of applicant's aerodrome. The organogram of Aerodrome Standards Branch of Directorate of Airspace & Aerodrome Regulations is given below:-



2.3 STATUTORY AUTHORITY:

2.3.1.1 It is authorized by the DG CAA that Aerodrome Inspectors shall carry out all required safety oversight functions in the field of Aerodrome Operations. DG CAA has authorized the Aerodrome Inspectors to:-

2.3.1.1 Enter any place to which access is required for the purpose of exercising his/her powers under the rule 4(2) (a) and (5) of Civil Aviation Rules 1994.

2.3.1.2 Access any part of aerodrome or any aerodrome facilities, services and equipment as per existing Regulations.

2.3.1.3 Inspect/ audit the aerodrome facilities, services, equipment, documents, records SMS of the aerodrome operators, as per existing Regulations.

2.4 RESOURCES:

2.4.1 HUMAN REQUIREMENT:

2.4.1.1 The Authority and the Director General shall make available appropriately qualified, trained and sufficient number of Inspectors to meet the safety oversight obligations.

2.4.2 FINANCIAL AND EQUIPMENT:

2.4.2.1 Authority and the Director General shall make available necessary financial and equipment resources to meet the safety oversight obligations.

2.5 VALIDITY:

2.5.1 The inspector's handbook shall be:

2.5.1.1 Reviewed after every three years

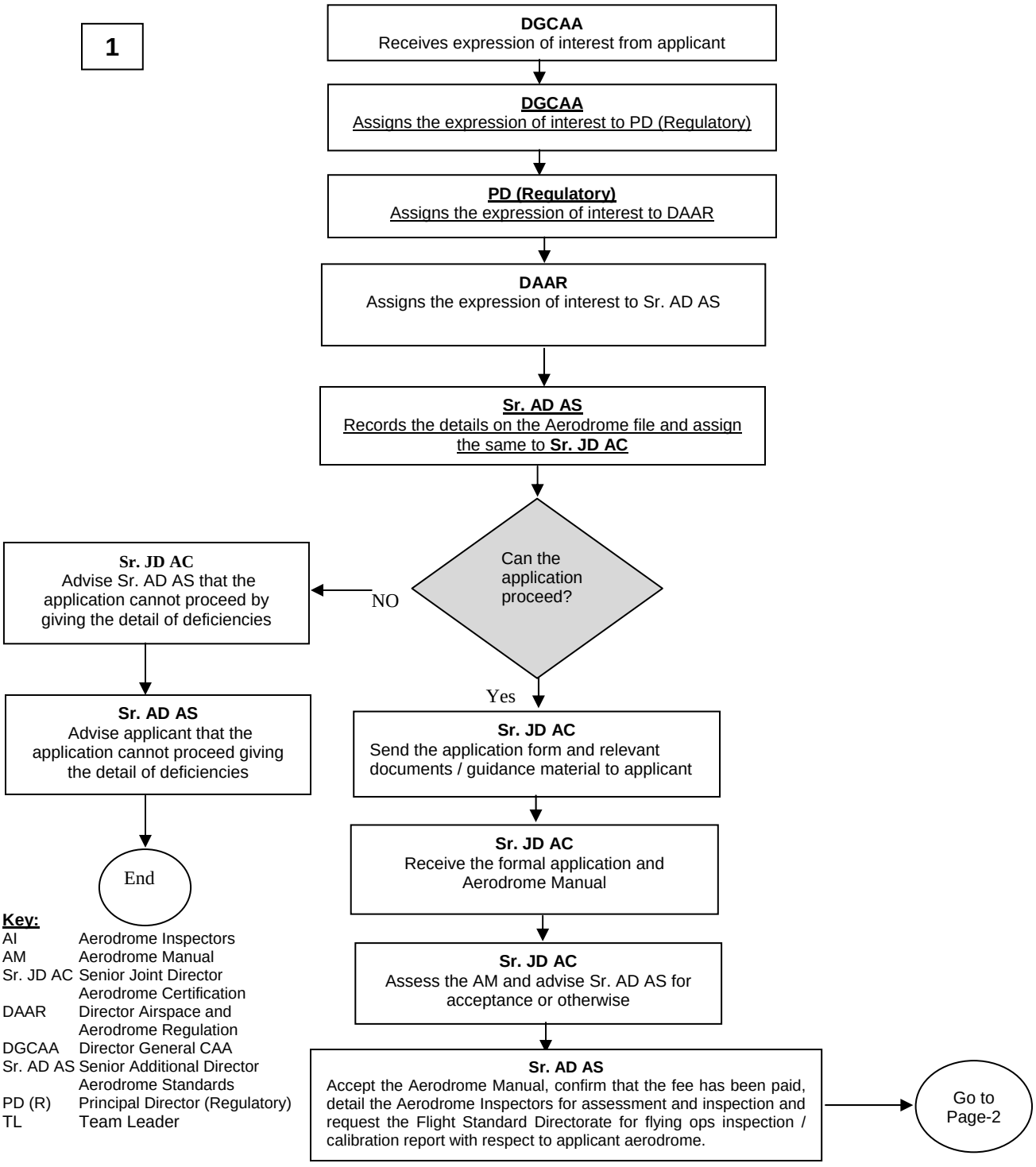
2.5.1.2 Amended as and when required.

Chapter 3

APPROVAL PROCEDURES

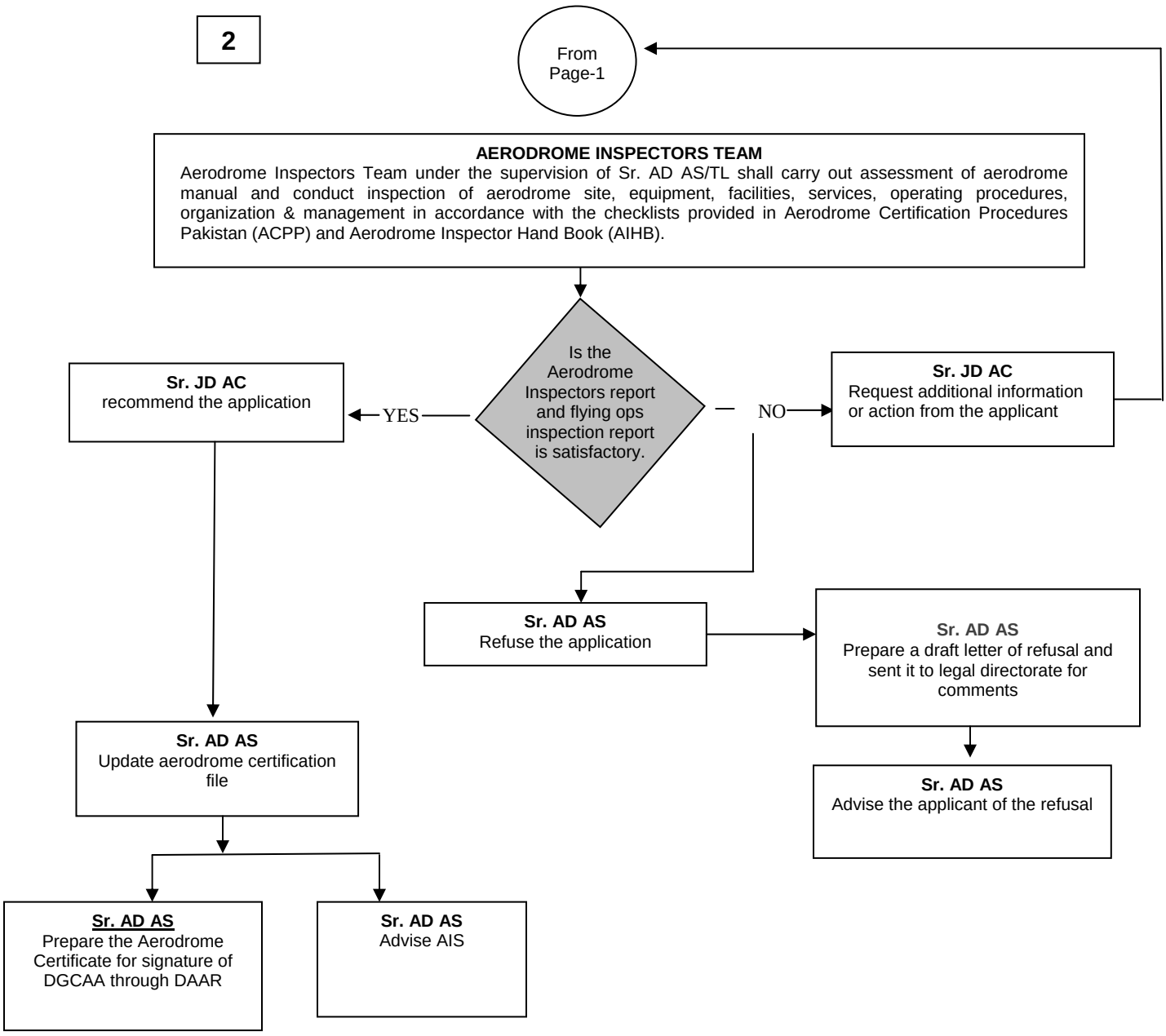
3.1 AERODROME ENTRY CONTROL:

3.1.1 CERTIFICATE ISSUING PROCESS FLOWCHART FORM:



Key:

AI	Aerodrome Inspectors
AM	Aerodrome Manual
Sr. JD AC	Senior Joint Director Aerodrome Certification
DAAR	Director Airspace and Aerodrome Regulation
DGCAA	Director General CAA
Sr. AD AS	Senior Additional Director Aerodrome Standards
PD (R)	Principal Director (Regulatory)
TL	Team Leader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From Page-1
AERODROME INSPECTORS TEAM
Aerodrome Inspectors Team under the supervision of Sr. AD AS/TL shall carry out assessment of aerodrome manual and conduct inspection of aerodrome site, equipment, facilities, services, operating procedures, organization & management in accordance with the checklists provided in Aerodrome Certification Procedures Pakistan (ACPP) and Aerodrome Inspector Hand Book (AIHB).
Is the Aerodrome Inspectors report and flying ops inspection report is satisfactory.
YES
Sr. JD AC
recommend the application
NO
Sr. JD AC
Request additional information or action from the applicant
Sr. AD AS
Refuse the application
Sr. AD AS
Prepare a draft letter of refusal and sent it to legal directorate for comments
Sr. AD AS
Advise the applicant of the refusal
Sr. AD AS
Update aerodrome certification file
Sr. AD AS
Prepare the Aerodrome Certificate for signature of DGCAA through DAAR
Sr. AD AS
Advise AIS

3.2 CERTIFICATION PROCESS:

3.2.1 KEY FUNCTIONS:

3.2.1.1 The Sr. AD AS is responsible for identifying aerodromes that are required to be certified under the provisions of CAR-1994.

3.2.1.2 Early advice by way of a standard letter, outlining the responsibilities of the aerodrome operator, will need to be provided by the Sr. AD AS at the commencement of the implementation phase of the certification process.

3.2.1.3 Sr. AD AS shall be the initial contact point for an aerodrome operator seeking a certificate for an aerodrome. The workflow process shall be coordinated through Director Airspace & Aerodrome Regulations (DAAR) and Sr. Additional Director Aerodrome Standards (Sr. AD AS) HQCAA, who will track the progress of the application. All applications must be made on the approved form (Application form for issuance of an Aerodrome Certificate).

3.2.1.4 The Sr. AD AS will process the application for issuance of aerodrome certificate by utilizing the Aerodrome Inspectors and Aerodrome Inspectors Team Leader (AITL). The Functions /responsibilities and profile for the Director Airspace & Aerodrome Regulations, Sr. AD AS and Aerodrome Inspectors (with respect to certification of aerodromes) are given in Appendix "A & B" respectively, to this Aerodrome Inspector's Handbook.

3.2.2 PROCEDURE:

3.2.2.1 On receipt of the application package, Sr. AD AS will forward the same to Sr. JD AC and will supervise the actions of Sr. JD AC during all phases of the process.

3.2.2.2 Upon receiving the application package, the Sr. JD AC shall:

3.2.2.2.1 Open a file and reference the application and Aerodrome Manual.

3.2.2.2.2 Determine the quotation fee based on the complexity of the application and advise the aerodrome operator. Input from Flight Standard Dte. should be sought for an operational assessment.

3.2.2.2.3 Proceed with the assessment upon receipt of the application fee.

3.2.2.2.4 Confirm that the applicant is the owner of the land or has the permission of the landowner to operate the site as an aerodrome as per application form.

3.2.2.2.5 Make an assessment of the aerodrome operator's documentation:

3.2.2.2.6 ensuring that two copies of the Aerodrome Manual have been received, and

3.2.2.2.7 That the Aerodrome Manual is on the approved form as per ANO-001-DRAS-2.0

3.2.2.2.8 Liaise with Flight Standard Dte. for flying Ops. after inspection of the applicant's aerodrome.

3.2.2.2.9 Conduct the onsite inspection of applicant's aerodrome alongwith Aerodrome Inspectors Team for Aerodrome Site, Facilities, Services, Equipment, Operating Procedure, Organization and Management.

3.2.2.2.10 Furnish the compliance checklists as per Aerodrome Standards Manual Pakistan for above mentioned areas duly filled in by the Aerodrome Inspectors of Aerodrome Ops., Civil Works, Electrical, Mechanical, Fire & Safety Services and Airfield Clearances.

3.2.2.2.11 Submit the post visit report containing observations and recommendations in these areas for the perusal & approval of DG CAA through PD (Regulatory), DAAR and Sr. AD AS alongwith recommendations for issuance of Aerodrome Certificate or refusal of the application as applicable.

3.2.2.2.12 If the application is approved, inform AIS Branch for issuance of NOTAM advising all particulars to be included in AIP, and forward a copy of the NOTAM to the aerodrome operator.

3.2.2.2.13 Place the aerodrome on the schedule for continuing annual safety oversight audit/surveillance and surprise visits activity.

3.2.3 ACTION BY THE DIRECTOR AIRSPACE AND AERODROME REGULATIONS:

3.2.3.1 Director Airspace and Aerodrome Regulations, if consider that the observations do not affect the Aerodrome Operation as per Standards specified in ASMP, then Director Airspace and Aerodrome Regulations will allow the aerodrome operator to continue / start aerodrome operation and will recommend for issuance of aerodrome certificate by the DGCAA. Nevertheless, the Director Airspace and Aerodrome Regulations/ Sr. AD AS will forward visit report to Aerodrome Operator for removal of observations in the light of recommendations by a specific date and will ensure the compliance of the same.

3.2.3.2 Certificates are granted in perpetuity in accordance with CARs, 1994, Rule 60-A.

NOTE-1: *Conditions may be placed on an aerodrome certificate under ANO-001-DRAS-2.0. If conditions are being considered, the Sr. JD AC should consult with the Sr. AD AS. Such consultation is to occur before a decision is made to issue a conditional certificate, so that any requirement for additional activities not covered in this handbook e.g. a safety case analysis or a risk assessment, can be considered.*

3.3 CHECKLISTS:

3.3.1 To ensure the Aerodrome Certification Procedures is completed, Aerodrome Inspectors must complete the Checklist (given below) pertaining to their respective area of activity.

Parts	Checklists	Inspecting Sections
3.3.2 (Part-1)	**Checklist Aerodrome Operations / SMS**	OPS
3.3.3 (Part-2)	**Checklist Civil Works**	Civil Works
3.3.4 (Part-3)	**Checklist Airfield Lighting System**	Electrical
3.3.5 (Part-4)	**Checklist Electric Power Supply**	Electrical
3.3.6 (Part-5)	**Checklist Fire & Safety Services (F&S) / Mech.**	F&S / MECH.
3.3.7 (Part-6)	**Checklist Obstacle Restriction and Removal**	NACP

3.3.2 CHECKLIST AERODROME OPS:

Location: _____ **Date: From** _____ **to** _____

S. No.	Doc. Ref.	Description	Yes	No	Remarks
		Chapter 1. General			
1.	1.4.4	As part of the certification process, does the aerodrome operator prepare / review an aerodrome manual which will include all pertinent information on the aerodrome site, facilities, services, equipment, operating procedures, organization and management including a Safety Management System, is submitted by the applicant for approval / acceptance prior to granting the aerodrome certificate.			
		Chapter 2. (ASMP) Aerodrome Data			
	2.1	Aeronautical Data			
2.	2.1.1	Are the determination and reporting of Aerodrome related aeronautical data are in accordance with the accuracy and integrity requirements set forth in Tables A5-1 and A5-5 of Appendix 5 of ASMP while taking into account the established quality system procedures?			
3.	2.1.6	Is the protection of electronic aeronautical data while stored or in transit be totally monitored by Cyclic Redundancy Check (CRC)? Is a 32 or 24 bit CRC logarithm is applied to achieve protection of the integrated level of critical and essential aeronautical data classified in 2.1.2 of ASMP?			
4.	2.1.7	**Recommendation.—** *To achieve protection of the integrity level of routine aeronautical data as classified in 2.1.2, a 16-bit CRC algorithm should apply.*			
5.	2.1.8	Is the Geographical coordinates indicating latitude and longitude given in Aerodrome Manual are determined and reported to AIS in terms of World Geodetic System 1984 (WGS-84) geodetic reference datum?			
6.	2.1.9	Is the order of accuracy of the field work is such that the resulting operational navigation data for the phases of flight are within the maximum deviations, with respect to an appropriate reference frame, as indicated in the tables contained in Appendix 5 of ASMP?			
7.	2.1.10	In addition the elevation (referenced to mean sea level) of the specific surveyed ground positions at aerodromes, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions as indicated in Appendix 5 of ASMP are determined and reported to the aeronautical information services authority?			
	2.2	Aerodrome Reference Point			
8.	2.2.1	Is the aerodrome reference point established for an aerodrome?			
9.	2.2.2	Is the aerodrome reference point located near the initial or planned geometric centre of the aerodrome and is normally remain where first established?			
10.	2.2.3	Is the position of the aerodrome reference point measured and reported to the aeronautical information services authority in degrees, minutes and seconds?			
	2.3	Aerodrome and runway elevations			
11.	2.3.1	Is the aerodrome elevation and geoid undulation at the aerodrome elevation position measured to the accuracy of one-half metre or foot and reported to the aeronautical information			

S. No.	Doc. Ref.	Description	Yes	No	Remarks
		services authority?			
12.	2.3.2	For an aerodrome used by international civil aviation for non-precision approaches, are the elevation and geoid undulation of each threshold, the elevation of the runway end and any significant high and low intermediate points along the runway measured to the accuracy of one-half metre or foot and reported to the aeronautical information services authority?			
13.	2.3.3	For the precision approach runway, are the elevation and geoid undulation of the threshold, the elevation of the runway end and the highest elevation of the touchdown zone measured to the accuracy of one-quarter metre or foot and reported to the aeronautical information services authority?			
	2.4	Aerodrome reference temperature			
14.	2.4.1	Is the aerodrome reference temperature determined for an aerodrome in degrees Celsius?			
15.	2.4.2	Recommendation.— *The aerodrome reference temperature should be the monthly mean of the daily maximum temperatures for the hottest month of the year (the hottest month being that which has the highest monthly mean temperature). This temperature should be averaged over a period of years.*			
	2.5	Aerodrome dimensions and related information			
16.	2.5.1	Are the following data measured or described, as appropriate, for each facility provided on an aerodrome given in Aerodrome Manual? **Runway** a) true bearing to one-hundredth of a degree b) designation number, c) length, width d) displaced threshold location to the nearest metre or foot, e) slope, f) surface type, g) type of runway and, for a precision approach runway category I, h) the existence of an obstacle free zone when provided;			
		Strip a) runway end safety area length, width to the nearest metre or foot b) stopway c) surface type			
		taxiway — designation, width, surface type;			
		apron — surface type, aircraft stands;			
		the boundaries of the air traffic control service;			
		clearway — length to the nearest metre or foot, ground profile;			
		a) visual aids for approach procedures, b) marking and lighting of runways, taxiways and aprons, c) other visual guidance and control aids on taxiways and aprons, including taxi-holding positions and stopbars, and d) location and type of visual docking guidance systems;			
		location and radio frequency of any VOR aerodrome checkpoint;			
		location and designation of standard taxi-routes; and			

S. No.	Doc. Ref.	Description	Yes	No	Remarks
		distances to the nearest metre or foot of localizer and glide path elements comprising an instrument landing system (ILS) or azimuth and elevation antenna of a microwave landing system (MLS) in relation to the associated runway extremities.			
17.	2.5.2	Are the geographical coordinates of **each threshold** measured and reported to the aeronautical information services authority **in degrees, minutes, seconds and hundredths of seconds**?			
18.	2.5.3	Are the geographical coordinates of **appropriate taxiway centre line** points measured and reported to the aeronautical information services authority **in degrees, minutes, seconds and hundredths of seconds**?			
19.	2.5.4	Are the geographical coordinates of **each aircraft stand** measured and reported to the aeronautical information services authority **in degrees, minutes, seconds and hundredths of seconds**?			
	2.6	Strength of pavement			
20.	2.6.1	Is the bearing strength of pavement is determined and specified in Aerodrome Manual of location.			
21.	2.6.2	Is the bearing strength of pavement intended for aircraft of apron (ramp) mass greater than 5700 kg made available using the aircraft classification number — pavement classification number (ACN-PCN) method by reporting all the following information and published in Aerodrome Manual: a) the pavement classification number (PCN); b) pavement type for ACN-PCN determination; c) subgrade strength category; d) maximum allowable tire pressure category or maximum allowable tire pressure value; and e) evaluation method.			
	2.7	Pre-flight altimeter check location			
22.	2.7.1	Is one or more pre-flight altimeter check locations established for an aerodrome?			
	2.7.2	Recommendation.— *A pre-flight check location should be located on an apron.* **Note 1.—** Locating a pre-flight altimeter check location on an apron enables an altimeter check to be made prior to obtaining taxi clearance and eliminates the need for stopping for that purpose after leaving the apron. **Note 2.—** Normally an entire apron can serve as a satisfactory altimeter check location.			
	2.7.3	Is the elevation of a pre-flight altimeter check location given as the average elevation, rounded to the nearest metre or foot, of the area on which it is located? The elevation of any portion of a pre-flight altimeter check location shall be within 3 m / 10 ft of the average elevation for that location			
	2.8	Declared distances			
23.	2.8	Are the declared distances (TORA, TODA, ASDA & LDA) given in Aerodrome Manual calculated to the nearest metre or foot for a runway intended for use by international commercial air transport?			

S. No.	Doc. Ref.	Description	Yes	No	Remarks
		Note.— Guidance on calculation of declared distances is given in Attachment A, Section 3 of ASMP.			
	2.9	Condition of the movement area and related facilities			
24.	2.9.1	Is the location has established a procedure of provisioning the Information on the condition of the movement area and the operational status of related facilities (mentioned in Para-2.9.2 below) to AIS units, and similar information of operational significance to the air traffic services unit, to enable those units to provide the necessary information to arriving and departing aircraft? Are the information kept upto date and changes in conditions reported without delay?			
	2.9.2	The condition of the movement area and the operational status of related facilities shall be monitored and reports on matters of operational significance affecting aircraft and aerodrome operations shall be provided in order to take appropriate action, particularly in respect of the following: a) construction or maintenance work; b) rough or broken surfaces on a runway, a taxiway or an apron; c) snow, slush, ice, or frost on a runway, a taxiway or an apron; d) water on a runway, a taxiway or an apron; e) snow banks or drifts adjacent to a runway, a taxiway or an apron; f) anti-icing or de-icing liquid chemicals or other contaminants on a runway, taxiway or apron; g) other temporary hazards, including parked aircraft; h) failure or irregular operation of part or all of the aerodrome visual aids; and i) failure of the normal or secondary power supply.			
	2.9.3	To facilitate compliance with 2.9.1 and 2.9.2, are the inspections of the movement area each day at least once where the code number is 1 or 2 and at least twice where the code number is 3 or 4? Note.— Guidance on carrying out daily inspections of the movement area is given in the Airport Services Manual (Doc 9137), Part 8 and in the Manual of Surface Movement Guidance and Control Systems (SMGCS) (Doc 9476).			
	2.9.4	**Recommendation.—** *Personnel assessing and reporting runway surface conditions required in 2.9.2 and 2.9.7 should be trained and competent to meet criteria set by the CAA.*			
	2.9.5	**Recommendation.—** *Whenever water is present on a runway, a description of the runway surface conditions should be made available using the following terms:* *DAMP — the surface shows a change of colour due to moisture.* *WET — the surface is soaked but there is no standing water.* *STANDING WATER — for aeroplane performance*			

S. No.	Doc. Ref.	Description	Yes	No	Remarks
		purposes, a runway where more than 25 per cent of the runway surface area (whether in isolated areas or not) within the required length and width being used is covered by water more than 3 mm deep.			
	2.9.6	Information that a runway or portion thereof may be slippery when wet shall be made available.			
	2.9.7	Notification shall be given to aerodrome users when the friction level of a paved runway or portion thereof is less than that specified by the CAA in accordance with 10.2.3.			
	2.9.8	Whenever an operational runway is contaminated by snow, slush, ice or frost, the runway surface condition shall be assessed, and reported.			
	2.10	Disabled aircraft removal			
25.	2.10.1	Recommendation.— *Is the telephone / telex number(s) of the office of the aerodrome coordinator of operations of the removal of an aircraft disabled on or adjacent to the movement area, made available (or mentioned in aerodrome manual) by aerodrome operator, on request, to aircraft operators?*			
	2.10.2	Is the information concerning the capability to remove an aircraft disabled on or adjacent to the movement area made available by aerodrome operator? Note.— The capability to remove a disabled aircraft may be expressed in terms of the largest type of aircraft which the aerodrome is equipped to remove.			
	2.11	Rescue and fire fighting			
26.	2.11.1	Are the informations concerning the level of protection provided at an aerodrome for aircraft rescue and fire fighting made available and specified in Aerodrome Manual?			
	2.11.2	Recommendation.— *In Aerodrome Manual, does the Aerodrome operator has specify the level of protection available at an aerodrome in terms of category of the rescue and fire fighting services as described in Para 9.2 of ASMP and in accordance with the types and amounts of extinguishing agents normally available at the aerodrome?*			
	2.11.3	Does the Aerodrome operator has any procedure to notify the appropriate ATS units and AIS regarding the changes in the level of protection normally available at an aerodrome for rescue and fire fighting. When such a change has been corrected, the above units shall be advised accordingly?			
	2.12	Visual approach slope indicator systems			
27.		Is the detailed information on Visual Approach Slope Indicator System (AT-VASIs, PAPI & APAPI) installed at Aerodrome specified in Aerodrome Manual?			
	2.13	Coordination between aeronautical information services and aerodrome authorities			
28.	2.13.1	Is the aerodrome operator has the arrangement for reporting any change that may affect the aircraft operation, to AIS and Local Air Traffic Services which may include: a) information on the status of certification of aerodromes and aerodrome conditions (ref. 1.4, 2.9, 2.10, 2.11 and 2.12 of ASMP);			

S. No.	Doc. Ref.	Description	Yes	No	Remarks
		b) the operational status of associated facilities, services and navigation aids within their area of responsibility;			
		c) any other information considered to be of operational significance.			
Chapter 3. (ASMP) Physical Characteristics					
	3.1.5	*Location of threshold* Recommendation.— Is the *threshold of runway located at the extremity of the runway?*			
29.	3.1.6	Recommendation.— *On operational consideration when it is necessary to display a threshold, either permanently or temporarily from its normal location, does the aerodrome operator has established clear and graded area of at least 60 meter in length between the un- serviceable area and the displaced threshold?*			
30.	3.1.10	Recommendation.— *The width of a runway should be not less than the appropriate dimension specified in the following tabulation*: Code letter Code number / A / B / C / D / E / F 1[a] / 18 m / 18 m / 23 m / – / – / – 2[a] / 23 m / 23 m / 30 m / – / – / – 3 / 30 m / 30 m / 30 m / 45 m / – / – 4 / – / – / 45 m / 45 m / 45 m / 60 m a) *The width of a precision approach runway should be not less than 30 m where the code number is 1 or 2.*			
31.	3.9.5	Recommendation.— *Are the straight portion of taxiways at aerodrome having the width not less than that given by the following tabulation:* **Code letter — Taxiway width** A — 7.5 m B — 10.5 m C — 15 m if the taxiway is intended to be used by aeroplanes with a wheel base less than 18 m; 18 m if the taxiway is intended to be used by aeroplanes with a wheel base equal to or greater than 18 m. D — 18 m if the taxiway is intended to be used by aeroplanes with an outer main gear wheel span of less than 9 m; 23 m if the taxiway is intended to be used by aeroplanes with an outer main gear wheel span equal to or greater than 9 m. E — 23 m F — 25 m *Note.— Guidance on width of taxiways is given in the* Aerodrome Design Manual *(Doc 9157), Part 2.*			
	3.8	Radio altimeter operating area			
32.	3.8.1to 3.8.4	**Recommendation.—** *A radio altimeter operating area should be established in the pre-threshold area of a precision approach runway. before the threshold.* *Length = at least 300m before the threshold* *Width = 60m on each side of the extended centre line (30m if*			

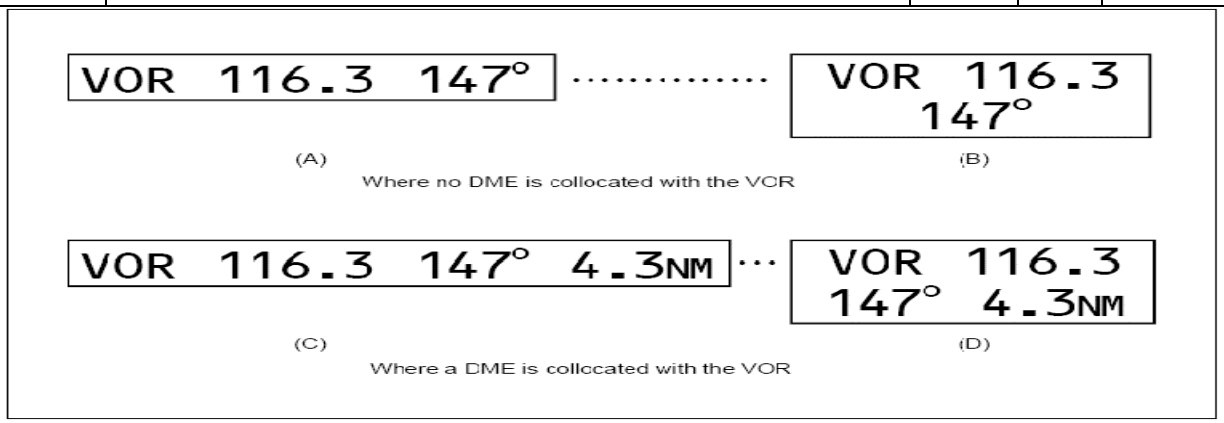
<table>
<tr><th>S. No.</th><th>Doc. Ref.</th><th>Description</th><th>Yes</th><th>No</th><th>Remarks</th></tr>
<tr><td></td><td></td><td>aeronautical study permit)
Longitudinal slope changes = abrupt changes or sudden reversals of slopes avoided. The rate of change between two consecutive slopes should not exceed 2 per cent per 30 m.</td><td></td><td></td><td></td></tr>
<tr><td></td><td>3.12</td><td colspan="4">Holding bays, runway-holding positions, intermediate holding positions and road-holding positions</td></tr>
<tr><td rowspan="7">33.</td><td>3.12.1</td><td>General
Recommendation.— Holding bay(s) should be provided when the traffic density is medium or heavy.</td><td></td><td></td><td></td></tr>
<tr><td>3.12.2</td><td>A runway-holding position or positions shall be established:
a) on the taxiway, at the intersection of a taxiway and a runway; and
b) at an intersection of a runway with another runway when the former runway is part of a standard taxi-route.</td><td></td><td></td><td></td></tr>
<tr><td>3.12.3</td><td>A runway-holding position shall be established on a taxiway if the location or alignment of the taxiway is such that a taxiing aircraft or vehicle can infringe an obstacle limitation surface or interfere with the operation of radio navigation aids.</td><td></td><td></td><td></td></tr>
<tr><td>3.12.4</td><td>Recommendation.— An intermediate holding position should be established on a taxiway at any point other than a runway-holding position where it is desirable to define a specific holding limit.</td><td></td><td></td><td></td></tr>
<tr><td>3.12.5</td><td>A road-holding position shall be established at an intersection of a road with a runway.</td><td></td><td></td><td></td></tr>
<tr><td>3.12.6</td><td>Location
The distance between a holding bay, runway-holding position established at a taxiway/runway intersection or road-holding position and the centre line of a runway shall be in accordance with Table 3-2 of ASMP and, in the case of a precision approach runway, such that a holding aircraft or vehicle will not interfere with the operation of radio navigation aids.</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">Table 3-2. Minimum distance from the runway centre line to a holding bay, runway-holding position or road-holding position

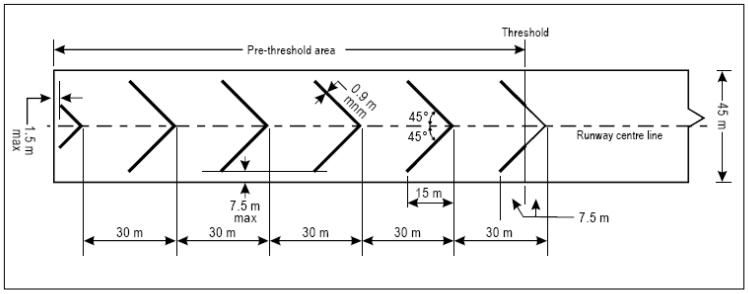
<table>
<tr><th rowspan="2">Type of runway</th><th colspan="4">Code number</th></tr>
<tr><th>1</th><th>2</th><th>3</th><th>4</th></tr>
<tr><td>Non-instrument</td><td>30 m</td><td>40 m</td><td>75 m</td><td>75 m</td></tr>
<tr><td>Non-precision approach</td><td>40 m</td><td>40 m</td><td>75 m</td><td>75 m</td></tr>
<tr><td>Precision approach category I</td><td>60 m[b]</td><td>60 m[b]</td><td>90 m[a,b]</td><td>90 m[a,b,c]</td></tr>
<tr><td>Precision approach categories II and III</td><td>—</td><td>—</td><td>90 m[a,b]</td><td>90 m[a,b,c]</td></tr>
<tr><td>Take-off runway</td><td>30 m</td><td>40 m</td><td>75 m</td><td>75 m</td></tr>
</table></td></tr>
</table>

S. No.	Doc. Ref.	Description	Yes	No	Remarks
		a) If a holding bay, runway-holding position or road-holding position is at a lower elevation compared to the threshold, the distance may be decreased 5 m for every metre the bay or holding position is lower than the threshold, contingent upon not infringing the inner transitional surface. b) This distance may need to be increased to avoid interference with radio navigation aids, particularly the glide path and localizer facilities. Information on critical and sensitive areas of ILS and MLS is contained in ANO-002-DRTS-1.0, Attachments C and G, respectively (see also 3.12.6 of ASMP). ***Note 1.—*** *The distance of 90 m for code number 3 or 4 is based on an aircraft with a tail height of 20 m, a distance from the nose to the highest part of the tail of 52.7 m and a nose height of 10 m holding at an angle of 45° or more with respect to the runway centre line, being clear of the obstacle free zone and not accountable for the calculation of OCA/H.* ***Note 2.—*** *The distance of 60 m for code number 2 is based on an aircraft with a tail height of 8 m, a distance from the nose to the highest part of the tail of 24.6 m and a nose height of 5.2 m holding at an angle of 45° or more with respect to the runway centre line, being clear of the obstacle free zone.* c) Where the code letter is F, this distance should be 107.5 m. ***Note.—*** *The distance of 107.5 m for code number 4 where the code letter is F is based on an aircraft with a tail height of 24 m, a distance from the nose to the highest part of the tail of 62.2 m and a nose height of 10 m holding at an angle of 45° or more with respect to the runway centre line, being clear of the obstacle free zone.*			
	3.12.9	The location of a runway-holding position established in accordance with 3.12.3 of ASMP shall be such that a holding aircraft or vehicle will not infringe the obstacle free zone, approach surface, take-off climb surface or ILS/MLS critical/ sensitive area or interfere with the operation of radio navigation aids.			
	3.14	Isolated aircraft parking position			
34.	3.14.1	Is an isolated aircraft parking position be designated or the aerodrome control tower be advised of an area or areas suitable for the parking of an aircraft which is known or believed to be the subject of unlawful interference, or which for other reasons needs isolation from normal aerodrome activities.			
	3.14.2	Recommendation.— *The isolated aircraft parking position should be located at the maximum distance practicable and in any case never less than 100 m from other parking positions, buildings or public areas, etc. Care should be taken to ensure that the position is not located over underground utilities such as gas and aviation fuel and, to the extent feasible, electrical or communication cables. Does the Aerodrome Operator follow this procedure?*			
		Chapter 5. (ASMP) Visual Aids for Navigation			
	5.1	Indicators and signalling devices			
	5.1.1	**Wind direction indicator**			
35.	5.1.1.1	Is the aerodrome equipped with at least one Wind direction indicator (wind sock) (give the number of WDI installed)?			
	5.1.1.5	Recommendation.— *Is the aerodrome operator has made the provision for illuminating at least one wind direction indicator at*			

S. No.	Doc. Ref.	Description	Yes	No	Remarks
		the aerodrome for use at night?			
	5.1.2	**Landing direction indicator**			
36.	5.1.2.1	Is the aerodrome operator has made the provision of a Landing Direction Indicator (LDI) located in a conspicuous place on the aerodrome?			
	5.1.2.3	Is the LDI (landing "T") where required for use at night either be illuminated or outlined by white lights.			
	5.1.3	**Signalling lamp**			
37.	5.1.3.1	At a controlled aerodrome, is the aerodrome operator has provided a signalling lamp in aerodrome control tower?			
	5.3.3	Lights (**Aeronautical beacons)**			
38.	5.3.3.1	Where operationally necessary an aerodrome beacon or an identification beacon shall be provided at each aerodrome intended for use at night. Does the aerodrome operator have provided the same?			
	5.3.3	Lights (**identification beacon)**			
39.	5.3.3.8	An identification beacon shall be provided at an aerodrome which is intended for use at night and cannot be easily identified from the air by other means. Does the aerodrome operator have installed identification beacon to encounter the aerodrome identification problem at night?			
	5.4	Signs			
40.	5.4.2.1 & 5.4.2.2	Do the aerodrome operator has taken into account that, "a **mandatory instruction sign** be provided to identify a location beyond which an aircraft taxiing or vehicle shall not proceed unless authorized by the aerodrome control tower"? (runway designation signs, category I, II or III holding position signs, runway-holding position signs, road-holding position signs and NO ENTRY signs)			
	5.4.2.8	Location A runway designation sign at a taxiway/runway intersection or a runway/runway intersection shall be located on each side of the runway-holding position marking facing the direction of approach to the runway. Does the aerodrome operator have followed the same procedure?			
	5.4.2.9	A category I, II or III holding position sign shall be located on each side of the runway-holding position marking facing the direction of the approach to the critical area. Does the aerodrome operator have observed the same standard?			
	5.4.2.10	A NO ENTRY sign shall be located at the beginning of the area to which entrance is prohibited on each side of the taxiway as viewed by the pilot. Does the aerodrome operator have observed the same standard?			
	5.4.2.11	A runway-holding position sign shall be located on each side of the runway-holding position established in accordance with 3.12.3 of ASMP, facing the approach to the obstacle limitation surface or ILS/MLS critical/sensitive area, as appropriate. Does the aerodrome operator have observed the same standard?			

S. No.	Doc. Ref.	Description	Yes	No	Remarks
	5.4.2.12	A mandatory instruction sign shall consist of an inscription in white on a red background. Does the aerodrome operator have observed the same standard?			
	5.4.3	**Information signs** **Note**.— See Figure 5-30 of ASMP for pictorial representations of information signs.			
41.	5.4.3.1& 5.4.3.2	An information sign shall be provided where there is an operational need to identify by a sign, a specific location, or routing (direction or destination) information. (Information signs shall include: direction signs, location signs, destination signs, runway exit signs, runway vacated signs and intersection take-off signs.) Does the aerodrome operator have observed the same standard?			
	5.4.3.4	A runway vacated sign shall be provided where the exit taxiway is not provided with taxiway centre line lights and there is a need to indicate to a pilot leaving a runway the perimeter of the ILS/MLS critical/sensitive area or the lower edge of the inner transitional surface, whichever is farther from the runway centre line. Does the aerodrome operator have observed the same standard? **Note**.— See 5.3.16 of ASMP for specifications on colour coding taxiway centre line lights.			
	5.4.3.8	A direction sign shall be provided when there is an operational need to identify the designation and direction of taxiways at an intersection. Does the aerodrome operator have observed the same standard?			
	5.4.4	**VOR aerodrome checkpoint sign**			
42.	5.4.4.1	Is VOR aerodrome checkpoint is established and indicated by a VOR aerodrome checkpoint marking and sign in a manner shown in fig 5-32 of ASMP?			
	5.4.4.2	Location Is VOR aerodrome checkpoint sign shall be located as near as possible to the checkpoint and so that the inscriptions are visible from the cockpit of an aircraft properly positioned on the VOR aerodrome checkpoint marking.			
	5.4.4.3	Characteristic Is the **VOR aerodrome checkpoint** sign consist on inscription in black on a yellow background.			
	5.4.4.4	*Recommendation.— The inscriptions on a VOR checkpoint sign should be in accordance with one of the alternatives shown in Figure 5-32 of ASMP.*			

S. No.	Doc. Ref.	Description	Yes	No	Remarks
		 **Figure 5-32. VOR aerodrome checkpoint sign**			
	5.4.5	**Aerodrome identification sign**			
43.	5.4.5.1	*Application* *Recommendation.— Did an aerodrome identification sign is provided at an aerodrome where there is insufficient alternative means of visual identification?*			
	5.4.6	***Aircraft stand identification signs***			
44.	5.4.6.1	*Recommendation.— In addition to an aircraft stand identification marking, has the aerodrome operator made the provision of* ***aircraft stand identification sign****?*			
	5.4.6.2	*Recommendation.— Is the* aircraft stand identification sign *located so as to be clearly visible from the cockpit of an aircraft prior to entering the aircraft stand?*			
	5.4.6.3	*Recommendation.—* Is an ***aircraft stand identification signs*** *consist of an inscription in black on a yellow background?*			
	5.4.7	**Road-holding position sign**			
45.	5.4.7.1	Is the aerodrome operator has provided road holding position sign at all roads entrance (if any) to a runway?			
Chapter 7. (ASMP) Visual aids for denoting Restricted use areas					
	7.1	Closed runways and taxiways, or parts thereof			
46.	7.1.1	A closed marking shall be displayed on a runway or taxiway or portion thereof which is permanently closed to the use of all aircraft. *Does the aerodrome operator follow the same standard?*			
	7.2	Non-load-bearing surfaces			
47.	7.2.1	Shoulders for taxiways, runway turn pads, holding bays and aprons and other non-load-bearing surfaces which cannot readily be distinguished from load-bearing surfaces and which, if used by aircraft, might result in damage to the aircraft shall have the boundary between such areas and the load-bearing surface marked by a taxi side stripe marking. *(Note.— The marking of runway sides is specified in 5.2.7)* *Is this standard is followed by the aerodrome operator?*			
	7.3	Pre-threshold area			
48.	7.3.1	*Application* Recommendation.— *When the surface before a threshold is paved and exceeds 60 m in length and is not suitable for normal use by aircraft, the entire length before the threshold should be*			

S. No.	Doc. Ref.	Description	Yes	No	Remarks
		marked with a chevron marking. *Is this recommendation is followed by the aerodrome operator?*			
	7.3.2	Recommendation.— *A chevron marking should point in the direction of the runway and be placed as shown in Figure 7-2.* *Is this recommendation is followed by the aerodrome operator?*			
		 Figure 7-2. Pre-threshold marking			
	7.3.3	Recommendation.— *A chevron marking should be of conspicuous colour and contrast with the colour used for the runway markings; it should preferably be yellow. It should have an overall width of at least 0.9 m.* *Is this recommendation is followed by the aerodrome operator?*			
	7.4	Unserviceable areas			
49.	7.4.1	***Application*** Unserviceability markers shall be displayed wherever any portion of a taxiway, apron or holding bay is unfit for the movement of aircraft but it is still possible for aircraft to bypass the area safely. On a movement area used at night, unserviceability lights shall be used. (marked with light, cone or flag)			
Chapter 9. (ASMP) Aerodrome operational services, equipment and installation					
	9.3	Disabled Aircraft Removal			
50.	9.3.1	Recommendation.— *Is the plan for the removal of an aircraft disabled on, or adjacent to, the movement area be established for an aerodrome, and a coordinator designated to implement the plan, when necessary?*			
	9.3.2	Recommendation.— *Does the disabled aircraft removal plan is based on the characteristics of the aircraft that may normally be expected to operate at the aerodrome, and include among other things:* *a) a list of equipment and personnel on, or in the vicinity of, the aerodrome which would be available for such purpose; and*			
		b) Arrangements for the rapid receipt of aircraft recovery equipment kits available from other aerodromes. Note.—The presence of wildlife (birds and animals) on and in the aerodrome vicinity poses a serious threat to aircraft operational safety.			
	9.4	Wildlife strike hazard reduction			
51.	9.4.1	Is the wildlife strike hazard on, or in the vicinity of, an aerodrome assessed through: a) the establishment of a national procedure for recording and reporting wildlife strikes to aircraft;			
		b) the collection of information from aircraft operators, aerodrome personnel and other sources on the presence of			

S. No.	Doc. Ref.	Description	Yes	No	Remarks
		wildlife on or around the aerodrome constituting a potential hazard to aircraft operations; and			
		c) an ongoing evaluation of the wildlife hazard by competent personnel.			
	9.4.2	Wildlife strike reports shall be collected and forwarded to ICAO for inclusion in the ICAO Bird Strike Information System (IBIS) database. Does the aerodrome operator sending the Wildlife strike reports (or nil report) to Sr. AD Aerodrome Standards on monthly bases?			
	9.4.3	After reported collision between wild life and aircraft, did the aerodrome operator has taken appropriate action to decrease the risk to aircraft operation by adopting measures to minimize the likelihood of collisions between wildlife and aircraft?			
	9.4.4	Is the aerodrome operator take action to eliminate or to prevent the establishment of garbage disposal dumps or any other source which may attract wildlife to the aerodrome, or its vicinity, unless an appropriate wildlife assessment indicates that they are unlikely to create conditions conducive to a wildlife hazard problem?			
		Where the elimination of existing sites is not possible, is the aerodrome operator ensure that any risk to aircraft posed by these sites is assessed and reduced to as low as reasonably practicable?			
	9.5	Apron management service			
52.	9.5.1	*Recommendation.— When warranted by the volume of traffic and operating conditions, an appropriate apron management service should be provided on an apron by an aerodrome ATS unit, by another aerodrome operating authority, or by a cooperative combination of these, in order to:* *a) regulate movement with the objective of preventing collisions between aircraft, and between aircraft and obstacles;* *b) regulate entry of aircraft into, and coordinate exit of aircraft from, the apron with the aerodrome control tower; and* *c) ensure safe and expeditious movement of vehicles and appropriate regulation of other activities.* *Does the aerodrome operator follow this recommendation as and when required?*			
	9.5.3	Did the apron management service is provided with radiotelephony communications facilities?			
	9.5.4	Where low visibility procedures are in effect, persons and vehicles operating on an apron shall be restricted to the essential minimum.			
	9.5.5	An emergency vehicle responding to an emergency shall be given priority over all other surface movement traffic.			
	9.5.6	A vehicle operating on an apron shall: a) give way to an emergency vehicle; an aircraft taxiing, about to taxi, or being pushed or towed; and b) give way to other vehicles in accordance with local regulations.			
	9.5.7	Is the aerodrome operator has made the provision that "an aircraft stand shall be visually monitored to ensure that the recommended clearance distances are provided to an aircraft using the stand"?			

S. No.	Doc. Ref.	Description	Yes	No	Remarks
	9.7	Aerodrome vehicle operations			
53.	9.7.1	A vehicle shall be operated: a) on a manoeuvring area only as authorized by the aerodrome control tower; and b) on an apron only as authorized by the appropriate designated authority.			
	9.7.2	The driver of a vehicle on the movement area shall comply with all mandatory instructions conveyed by markings and signs unless otherwise authorized by: a) the aerodrome control tower when on the manoeuvring area; or b) the appropriate designated authority when on the apron.			
	9.7.3	The driver of a vehicle on the movement area shall comply with all mandatory instructions conveyed by lights.			
	9.7.4	The driver of a vehicle on the movement area shall be appropriately trained for the tasks to be performed and shall comply with the instructions issued by: a) the aerodrome control tower, when on the manoeuvring area; and b) the appropriate designated authority, when on the apron.			
	9.7.5	The driver of a radio-equipped vehicle shall establish satisfactory two-way radio communication with the aerodrome control tower before entering the manoeuvring area and with the appropriate designated authority before entering the apron. The driver shall maintain a continuous listening watch on the assigned frequency when on the movement area.			
	9.8	Surface movement guidance and control systems			
54.	9.8.1	Application Is the aerodrome operator has provided a surface movement guidance and control system at the aerodrome?			
	9.8.3	Recommendation.— Are *the visual aid components of a surface movement guidance and control system, i.e. markings, lights and signs, are designed to conform with the relevant specifications mentioned in 5.2, 5.3 and 5.4 of ASMP respectively?*			
	9.8.4	Recommendation.— *Is the surface movement guidance and control system of aerodrome is designed to assist in the prevention of inadvertent incursions of aircraft and vehicles onto an active runway?*			
	9.8.5	Recommendation.— *Is the system is so designed, to assist in the prevention of collisions between aircraft, and between aircraft and vehicles or objects, on any part of the movement area?*			
	9.8.6	Where a surface movement guidance and control system is provided by selective switching of stop bars and taxiway centre line lights, does the system meet the following requirements: a) taxiway routes which are indicated by illuminated taxiway centre line lights shall be capable of being terminated by an illuminated stop bar;			
		b) the control circuits shall be so arranged that when a stop bar located ahead of an aircraft is illuminated, the appropriate section of taxiway centre line lights beyond it is suppressed; and			
		c) the taxiway centre line lights are activated ahead of an aircraft when the stop bar is suppressed.			

S. No.	Doc. Ref.	Description	Yes	No	Remarks
	9.8.7	Recommendation.— *Does the aerodrome operator has made the provision of surface movement radar for the manoeuvring area at an aerodrome intended for use in runway visual range conditions less than a value of 350 m?*			
		b) 45 m of the extended centre line where the code number is 1 or 2; of a precision approach runway category I, II or III. Does the Aerodrome Operator follow this standard?			
Chapter 10. Aerodrome maintenance					
55.	10.2.3	A paved runway shall be maintained in a condition so as to provide surface friction characteristics at or above the minimum friction level specified by the CAA. Note.— The Airport Services Manual (Doc 9137), Part 2, contains further information on this subject, on improving surface friction characteristics of runways.			

Signature:- _____

Name:- _____

Designation:- _____

3.3.2.2 CHECKLIST OF SMS:

Location: _____ **Date: From** _____ **to** _____

		SMS Aerodromes	Yes	No	Remarks
1.	Part 5 of D4 of ANO-001-DRAS-2.0	Has the service provider included the part of Aerodrome Safety Management System in Aerodrome Manual?			
2.	D7.4 of ANO-001-DRAS-2.0 and SMS Element 1.3 Ch-5 of Doc-9859	Is the service provider appoint a Safety Manager at the aerodrome who is responsible for implementation and maintenance of effective SMS.			
3.	D7.1 & D7.5 of ANO-001-DRAS-2.0	Is the aerodrome have "Aerodrome Safety Management System (ASMS)" in operation.			
4.	D2.27.3 of ANO-002-DRAN-1.0 D7.1 of ANO-002-DRAS-1.1	Do the Airport Management established hazard reporting system to identify the safety hazards at location and: a) Takes remedial action against hazard reporting? b) Monitor its safety performance?			
5.	D5.1.9.1.6 & D7.1 of ANO-002-DRAS-1.1	Does the Aerodrome Operator conduct periodic safety audits to confirm the compliance with safety requirement and principle of safety management system and implement safety recommendations made after the safety audits and hazard mitigation?			
6.	D2.27 of ANO-002-DRAN-1.0	Are acceptable level of safety maintained rather exceeded in respect of aerodrome operation?			
7.	D6.1 of ANO-002-DRAS-1.1	Has the service provider constituted a **runway safety team** and the team is performing their job as contained in ANO-002-DRAS-1.1.			

Signature:- _____

Name:- _____

Designation:- _____

3.3.3 CHECKLIST OF CIVIL WORKS:

Location: _____ **Date: From** _____ **to** _____

S. No.	Doc Ref. (ASMP)	Description Chapter 2. (ASMP) Aerodrome Data	Status				Remarks
			SAT	U/SAT	S/A	U/S	
	2.6	Strength of payments (PCN Values)					
1.	2.6.2 (N.C)	Is the bearing strength of a pavement intended for aircraft of apron (ramp) mass greater than 5700 kg made available using the aircraft classification number — pavement classification number (ACN-PCN) method?					
2.	2.6.3 (N.C)	The pavement classification number (PCN) reported shall indicate that an aircraft with an aircraft classification number (ACN) equal to or less than the reported PCN can operate on the pavement subject to any limitation on the tire pressure, or aircraft all-up mass for specified aircraft type(s). During the year any aircraft had operated having ACN greater than PCN value of pavement?					
Chapter 3. (ASMP) Physical Characteristics							
	3.1	Runways					
3.	3.1.7 (OBS)	**Actual length of runways** **Primary runway** Is the actual length 0f runway is provided to meet the operational requirements of the aeroplanes for which the runway is intended?					
4.	3.1.13 (OBS)	**Slopes on runways (Longitudinal slopes)** Is the slope computed by dividing the difference between the maximum and minimum elevation along the runway centre line by the runway length exceed *as per the criteria* given below? — 1 per cent where the code number is 3 or 4; and — 2 per cent where the code number is 1 or 2.					
5.	3.1.15 (OBS)	**Slopes on runways (Longitudinal slope changes)** Where slope changes cannot be avoided, is a slope change between two consecutive slopes exceed as per the criteria given below? — 1.5 per cent where the code number is 3 or 4; and — 2 per cent where the code number is 1 or 2.					
6.	3.1.19 (OBS)	**Slopes on runways (Transverse slopes)** Is the transverse slope of runway greater than the criteria given below? — 1.5 per cent where the code letter is C, D, E or F; and — 2 per cent where the code letter is A or B; but in any event should not exceed 1.5 per cent or 2 per cent, as applicable, nor be less than 1 per cent except at runway or taxiway intersections where flatter slopes may be necessary.					

S. No.	Doc Ref. (ASMP)	Description Chapter 2. (ASMP) Aerodrome Data	Status				Remarks
			SAT	U/SAT	S/A	U/S	
7.	3.1.21 (OBS)	**Strength of runways** Is the runway capable of withstanding the traffic of aeroplanes the runway is intended to serve?					
8.	3.1.22 (N.C)	**Surface of runways** Is the surface of a runway constructed without irregularities that would result in loss in friction characteristics or otherwise adversely affect the take-off or landing of an aeroplane?					
9.	3.1.23 (N.C)	Is the surface of a paved runway so constructed as to provide good friction characteristics when the runway is wet?					
10.	3.1.24 (OBS)	Is the measurement of the friction characteristics of a new or resurfaced runway as with a continuous friction measuring device?					
	3.2	Runway shoulders					
11.	3.2.1 (OBS)	Are the runway shoulders provided for a runway where the code letter is D or E, and the runway width is less than 60 m?					
12.	3.2.2 (OBS)	Is the runway shoulder provided for a runway where the code letter is F?					
13.	3.2.3 (OBS)	**Width of runway shoulders** Is the overall width of the runway and its shoulders is equal or greater than? — 60 m where the code letter is D or E; and — 75 m where the code letter is F.					
14.	3.2.4 (OBS)	**Slopes on runway shoulders** Does the surface of the shoulder that abuts the runway is flush with the runway surface and having the transverse slope not exceeded by 2.5 per cent?					
15.	3.2.5 (OBS)	**Strength of runway shoulders** Is the runway shoulder prepared or constructed so as to be capable, in the event of an aeroplane running off the runway, of supporting the aeroplane without inducing structural damage to the aeroplane and of supporting ground vehicles which may operate on the shoulder?					
	3.3	Runway turn pads					
16.	3.3.1 (N.C)	Are the turn pads provided as per standards? Where the end of a runway is not served by a taxiway or a taxiway turnaround and where the code letter is D, E or F, a runway turn pad shall be provided to facilitate a 180-degree turn of aeroplanes.					
17.	3.3.1 (OBS)	Are the turn pads provided as per standards? Where the end of a runway is not served by a taxiway or a taxiway turnaround and where the code letter is A, B or C, a runway turn pad shall be provided to facilitate a 180-degree					

S. No.	Doc Ref. (ASMP)	Description Chapter 2. (ASMP) Aerodrome Data	Status				Remarks
			SAT	U/SAT	S/A	U/S	
		turn of aeroplanes.					
18.	3.3.6 (N.C)	On runway turn pad, is the clearance distance between any wheel of taxing aeroplane landing gear and the edge of turn pad is less than: a) code letter A -1.5m b) code letter B -2.25m c) code letter C-3 m if the turn pad is intended to be used by aeroplanes with a wheel base less than 18 m; 4.5 m if the turn pad is intended to be used by aeroplanes with a wheel base equal to or greater than 18 m. d) code letter D,E & F – 4.5m?					
19.	3.3.7 (OBS)	Where severe weather conditions and resultant lowering of surface friction characteristics prevail, a larger wheel-to-edge clearance of 6 m is provided for the code letter is E or F?					
20.	3.3.9 (OBS)	Is the strength of a runway turn pad at least equal to that of the adjoining runway which it serves?					
21.	3.3.10 (N.C)	Is the surface of a runway turn pad irregularities that may cause damage to an aeroplane using the turn pad?					
22.	3.3.11 (OBS)	Is the surface of a runway turn pad so constructed or resurfaced as to provide surface friction characteristics at least equal to that of the adjoining runway?					
23.	3.3.12 (OBS)	Are the runway turn pads provided with shoulders of such width as is necessary to prevent surface erosion by the jet blast of the most demanding aeroplane for which the turn pad is intended?					
	3.4	Runway strips					
24.	3.4.2 (N.C)	Is the length of runway strip meets the following standards? A strip shall extend before the threshold and beyond the end of the runway or stopway for a distance of at least: — 60 m where the code number is 2, 3 or 4; — 60 m where the code number is 1 and the runway is an instrument one; and — 30 m where the code number is 1 and the runway is a non-instrument one.					
25.	3.4.3 (N.C)	Is the width of runway strip meets the following standards? A strip including a precision approach runway shall, wherever practicable, extend laterally to a distance of at least: — 150 m where the code number is 3 or 4; and — 75 m where the code number is 1 or 2; on each side of the centre line of the runway					

S. No.	Doc Ref. (ASMP)	Description Chapter 2. (ASMP) Aerodrome Data	Status				Remarks
			SAT	U/SAT	S/A	U/S	
		and its extended centre line throughout the length of the strip.					
26.	3.4.4 (OBS)	Is the width of runway strip including a **non-precision approach runway** extend laterally to a distance of at least: — 150 m where the code number is 3 or 4; and — 75 m where the code number is 1 or 2; on each side of the centre line of the runway and its extended centre line throughout the length of the strip.					
27.	3.4.5 (OBS)	Is the width of runway strip including a **non-instrument runway** should extend on each side of the centre line of the runway and its extended centre line throughout the length of the strip, to a distance of at least: — 75 m where the code number is 3 or 4; — 40 m where the code number is 2; and — 30 m where the code number is 1					
28.	3.4.8 (OBS)	Is the portion of runway strip of an instrument runway within a distance of at least: — 75 m where the code number is 3 or 4; and — 40 m where the code number is 1 or 2; from the centre line of the runway and its extended centre line is provided with a graded area for aeroplanes which the runway is intended to serve in the event of an aeroplane running off the runway.					
29.	3.4.9 (OBS)	Is the portion of runway strip of a non-instrument runway within a distance of at least: — 75 m where the code number is 3 or 4; — 40 m where the code number is 2; and — 30 m where the code number is 1; from the centre line of the runway and its extended centre line is provide with a graded area for aeroplanes which the runway is intended to serve in the event of an aeroplane running off the runway.					
30.	3.4.10 (N.C)	Is the surface of that portion of a strip that abuts a runway, shoulder or stopway shall be flush with the surface of the runway, shoulder or stopway?					
		Slopes on runway strips					
31.	3.4.12 (OBS)	Is the **longitudinal slope** along that portion of a strip to be graded is exceed: — 1.5 per cent where the code number is 4; — 1.75 per cent where the code number is 3; and — 2 per cent where the code number is 1 or 2.					

S. No.	Doc Ref. (ASMP)	Description Chapter 2. (ASMP) Aerodrome Data	Status				Remarks
			SAT	U/SAT	S/A	U/S	
32.	3.4.15 (OBS)	Is the transverse slopes on that portion of a strip to be graded should be adequate to prevent the accumulation of water on the surface but should not exceed: — 2.5 per cent where the code number is 3 or 4; and 3 per cent where the code number is 1 or 2?					
		Strength of runway strips					
33.	3.4.17 (OBS)	That portion of a strip of an **instrument runway** within a distance of at least: 75 m where the code number is 3 or 4; and 40 m where the code number is 1 or 2; from the centre line of the runway and its extended centre line should be so prepared or constructed as to minimize hazards arising from differences in load-bearing capacity to aeroplanes which the runway is intended to serve in the event of an aeroplane running off the runway. Does the aerodrome operator follow the same recommendation mentioned above?					
34.	3.4.18 (OBS)	That portion of a strip containing a **non-instrument runway** within a distance of at least: 75 m where the code number is 3 or 4; 40 m where the code number is 2; and — 30 m where the code number is 1; from the centre line of the runway and its extended centre line should be so prepared or constructed as to minimize hazards arising from differences in load-bearing capacity to aeroplanes which the runway is intended to serve in the event of an aeroplane running off the runway. Does the aerodrome operator follow the same recommendation mentioned above?					
	3.5	Runway End Safety Areas (RESA)					
35.	3.5.1 (N.C)	Is the (RESA) established as per the required standards? A runway end safety area shall be provided at each end of a runway strip where: — the code number is 3 or 4; and — the code number is 1 or 2 and the runway is an instrument one.					
36.	3.5.2 (OBS)	For **non-instrument runway** code number 1 or 2, did the RESA is provided on its each end of a runway strip?					
37.	3.5.3 (N.C)	A runway end safety area shall extend from the end of a runway strip to a distance of at least 90 m where; - the code number is 3 or 4; and - the code number is 1 or 2 and the runway is an instrument one.					

S. No.	Doc Ref. (ASMP)	Description Chapter 2. (ASMP) Aerodrome Data	Status				Remarks
			SAT	U/SAT	S/A	U/S	
		If an arresting system is installed, the above length may be reduced, based on the design specification of the system, subject to acceptance by the CAA. Does the aerodrome operator follow the same Standard mentioned above?					
38.	3.5.5 (N.C)	The width of a runway end safety area shall be at least twice that of the associated runway. Does the aerodrome operator follow the same Standard mentioned above?					
39.	3.5.8 (OBS)	Is the runway end safety area provide with a cleared and graded area for aeroplanes which the runway is intended to serve in the event of an aeroplane undershooting or overrunning the runway?					
40.	3.5.10 (OBS)	The **longitudinal slopes** of a runway end safety area should not exceed a downward slope of 5 per cent. Does the aerodrome operator follow the same recommendation mentioned above?					
41.	3.5.11 (OBS)	The **transverse slopes** of a runway end safety area should not exceed an upward or downward slope of 5 per cent. Transitions between differing slopes should be as gradual as practicable. Does the aerodrome operator follow the same recommendation mentioned above?					
42.	3.5.11 (OBS)	A runway end safety area should be so prepared or constructed as to reduce the risk of damage to an aeroplane undershooting or overrunning the runway, enhance aeroplane deceleration and facilitate the movement of rescue and fire fighting vehicles as required in 9.2.34 to 9.2.36 (See part 1 of Doc 9157 for guidance). Does the aerodrome operator follow the same recommendation mentioned above?					
	3.9	Taxiways					
43.	3.9.13 (OBS)	The strength of a taxiway should be at least equal to that of the runway it serves, due consideration being given to the fact that a taxiway will be subjected to a greater density of traffic and, as a result of slow moving and stationary aeroplanes, to higher stresses than the runway it serves. Does the aerodrome operator follow the same recommendation mentioned above?					
44.	3.9.14 (OBS)	The surface of a taxiway should not have irregularities that cause damage to aeroplane structures. Does the aerodrome operator follow the same					

S. No.	Doc Ref. (ASMP)	Description Chapter 2. (ASMP) Aerodrome Data	Status				Remarks
			SAT	U/SAT	S/A	U/S	
		recommendation mentioned above?					
45.	3.9.15 (OBS)	The surface of a paved taxiway should be so constructed or resurfaced as to provide suitable surface friction characteristics. Does the aerodrome operator follow the same recommendation mentioned above?					
	3.10	Taxiway shoulders					
46.	3.10.1 (OBS)	Straight portions of a taxiway where the code letter is C, D, E or F should be provided with shoulders which extend symmetrically on each side of the taxiway so that the overall width of the taxiway and its shoulders on straight portions is not less than: 60 m where the code letter is F; 44 m where the code letter is E; 38 m where the code letter is D; and 25 m where the code letter is C. On taxiway curves and on junctions or intersections where increased pavement is provided, the shoulder width should be not less than that on the adjacent straight portions of the taxiway. Does the aerodrome operator follow the same recommendation mentioned above?					
	3.11	Taxiway strips					
47.	3.11.2 (OBS)	A taxiway strip should extend symmetrically on each side of the centre line of the taxiway throughout the length of the taxiway to at least the distance from the centre line given in For code letter A, B,C,D,E & F the taxiway minimum separation distances of taxiway other than aircraft stand taxilane, center line to object are 16.25, 21.5, 26, 40.5, 47.5 and 57.5 in metres respectively (Column 11 of Table 3-1 ASMP) Does the aerodrome operator follow the same recommendation mentioned above?					
48.	3.11.4 (OBS)	The centre portion of a taxiway strip should provide a **graded area** to a distance from the centre line of the taxiway of at least: 11 m where the code letter is A; 12.5 m where the code letter is B or C; 19 m where the code letter is D; 22 m where the code letter is E; and 30 m where the code letter is F. Does the aerodrome operator follow the same recommendation mentioned above?					
49.	3.11.5 (OBS)	The surface of the strip should be flush at the edge of the taxiway or shoulder, if provided, and the graded portion should not have an upward transverse slope exceeding: 2.5 per cent for strips where the code letter is C, D, E or F; and					

S. No.	Doc Ref. (ASMP)	Description Chapter 2. (ASMP) Aerodrome Data	Status				Remarks
			SAT	U/SAT	S/A	U/S	
		3 per cent for strips of taxiways where the code letter is A or B; Does the aerodrome operator follow the same recommendation mentioned above?					
	3.13	Aprons					
50.	3.13.3 (OBS)	Each part of an apron should be capable of withstanding the traffic of the aircraft it is intended to serve, due consideration being given to the fact that some portions of the apron will be subjected to a higher density of traffic and, as a result of slow moving or stationary aircraft, to higher stresses than a runway. Does the aerodrome operator constructed the apron on considering the above recommendations?					
51.	3.13.4 (OBS)	Did slopes on an apron, including those on an aircraft stand taxilane, are sufficient to prevent accumulation of water on the surface of the apron? (slopes should be kept as level as drainage requirements permit.)					
52.	3.13.5 (OBS)	On an aircraft stand did the maximum slope should not exceed 1 per cent. Does the aerodrome operator follow the same recommendation?					
53.	3.13.6 (OBS)	An aircraft stand should provide the following minimum clearances between an aircraft using the stand and any adjacent building, aircraft on another stand and other objects: Code letter — Clearance *A* — *3 m* *B* — *3 m* *C* — *4.5 m* *D* — *7.5 m* *E* — *7.5 m* *F* — *7.5 m* Does the aerodrome operator follow the same recommendation?					
Chapter 5. (ASMP) Visual Aids for Navigation							
	5.2	**Markings**					
54.	5.2.1.4 (N.C)	Is the colour of Runway markings is white?					
55.	5.2.1.5 (N.C)	Do the colour of taxiway markings, runway turn pad markings and aircraft stand markings are yellow?					
56.	5.2.1.6 (N.C)	Apron safety lines shall be of a conspicuous colour which shall contrast with that used for aircraft stand markings. Does the aerodrome operator follow the same standards?					

S. No.	Doc Ref. (ASMP)	Description Chapter 2. (ASMP) Aerodrome Data	Status				Remarks
			SAT	U/SAT	S/A	U/S	
57.	5.2.2 (N.C)	Does the aerodrome operator follow the standards for **runway designation marking** given in ASMP?					
58.	5.2.3 (N.C)	Does the aerodrome operator follow the standards for **runway centerline marking** given in ASMP?					
59.	5.2.4 (N.C)	Does the aerodrome operator follow the same standards and recommended practices for **threshold marking** given in ASMP?					
60.	5.2.5 (N.C)	Does the aerodrome operator follow the same standards and recommended practices for **aiming point marking** given in ASMP?					
61.	5.2.6 (N.C)	Does the aerodrome operator follow the same standards and recommended practices for **touchdown zone marking** given in ASMP?					
62.	5.2.7.1 (N.C)	Is a runway side stripe marking provided between the runway edges and the shoulders of runway?					
63.	5.2.7.5 (OBS)	For runway 30m or more in width, is the width of runway side stripe is equal or greater than 0.9 m and at least 0.45 m on narrower runways?					
64.	5.2.8 (N.C)	On airside do the **taxiway centerline marking** are marked as per the guidance given in ASMP?					
65.	5.2.9 (N.C)	On airside do the **runway turn pad marking** are marked as per the guidance given in ASMP?					
66.	5.2.10 (N.C)	On airside do the **runway holding position marking** are marked as per the guidance given in ASMP?					
67.	5.2.11 (N.C)	On airside do the **intermediate holding position marking** are marked as per the guidance given in ASMP?					
Chapter 9. (ASMP) Aerodrome Operational Services, equipment and installations							
	9.10	Fencing					
68.	9.10 (N.C)	Is the security fence provided as per required standards mentioned in ASMP?					
Chapter 10. (ASMP) AERODROME MAINTENANCE							
	10.1	General					
69.	10.1.1 (N.C)	Is a maintenance programme, including preventive maintenance where appropriate, is established at an aerodrome to maintain facilities in a condition which does not impair the safety, regularity or efficiency of air navigation?					
70.	10.1.2 (OBS)	Do the aerodrome operator observed Human Factors principles in design and application of the maintenance programme.					
71.	10.2.1 (N.C)	The surfaces of all movement areas including pavements (runways, taxiways and aprons) and adjacent areas shall be inspected and					

S. No.	Doc Ref. (ASMP)	Description Chapter 2. (ASMP) Aerodrome Data	Status				Remarks
			SAT	U/SAT	S/A	U/S	
		their conditions monitored regularly as part of an aerodrome preventive and corrective maintenance programme with the objective of avoiding and eliminating any loose objects/debris that might cause damage to aircraft or impair the operation of aircraft systems. Does the aerodrome operator follow the same standards for flight safety?					
72.	10.2.2 (N.C)	Do the surface of a runway(s) is maintained in a condition such as to prevent formation of harmful irregularities?					
73.	10.2.4 (N.C)	Runway surface friction characteristics for maintenance purpose shall be periodically measured with a continuous friction measuring device using self-wetting features and documented. The frequency of these measurements shall be sufficient to determine the trend of the surface friction characteristics of the runway. Does the aerodrome operator follow the same standards?					
74.	10.2.5 (N.C)	Is the corrective maintenance action be taken by the aerodrome operator to prevent the runway surface friction characteristics for either the entire runway or a portion thereof from falling below a minimum friction level specified by the CAA?					
75.	10.3.1 (N.C)	Do the aerodrome operator removed Snow, slush, ice, standing water, mud, dust, sand, oil, rubber deposits and other contaminants from the surface of runways in use completely as possible to minimize accumulation?					

Signature:- _____

Name:- _____

Designation:- _____

3.3.4 CHECKLIST OF AIRFIELD LIGHTING SYSTEM

Location: _____ **Date: From** _____ **to** _____

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		Visual Aids for Navigation						
	5.3	Lights (5.3 of ASMP)						
1.	ASMP A. Serv. Manual 9 & T.O APS manual -VIII	— The maintenance and serviceability standards and recommendations at 10.4 ASMP shall be followed. — Details of preventive maintenance/inspections as explained in 3.3 Airport Service Manual part 9 and, Technical orders 6.6 Appendix A shall be followed. — The operational checking of lights is normally carried out by the Movement Area Safety Unit but rectification is the responsibility of Airport Maintenance. At some smaller airports the checking may be delegated to Airport Maintenance. — Faults in the lighting systems will be detected by monitoring. — It is essential to maintain a listening watch on the appropriate R/T channel during any runway lighting inspection.						
2.	5.3.1.1	*Lights which may endanger the safety of aircraft* A non-aeronautical ground light near an aerodrome which might endanger the safety of aircraft shall be extinguished, screened or otherwise modified so as to eliminate the source of danger.						
3.	5.3.1.2 ASMP	*Laser emissions which may endanger the safety of aircraft* **Recommendation.—To** *protect the safety of aircraft against the hazardous effects of laser emitters, the following protected zones should be established around aerodromes:* *— a laser-beam free flight zone (LFFZ)* *— a laser-beam critical flight zone (LCFZ* *— a laser-beam sensitive flight zone (LSFZ).* * Pl see notes under the section in ASMP. Further guidance on how to protect flight operations from the hazardous effects of laser emitters is contained in the Manual on Laser Emitters and Flight Safety (Doc 9815). See also Annex 11 — Air Traffic Services, Chapter 2.						
4.	5.3.1.3 ASMP	***Lights which may cause confusion*** **Recommendation.—** *A non-aeronautical ground light which, by reason of its intensity, configuration or colour, might prevent, or cause confusion in, the clear interpretation of aeronautical ground lights should be extinguished, screened or otherwise modified so as to eliminate such a possibility. In particular, attention should be directed to a non-aeronautical ground light visible from the air within the areas described hereunder:* *a) Instrument runway — code number 4:* *within the areas before the threshold and beyond the end of the runway extending at least 4 500 m in*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		length from the threshold and runway end and 750 m either side of the extended runway centre line in width.						
		b) Instrument runway — code number 2 or 3: as in a), except that the length should be at least 3 000 m.						
		c) Instrument runway — code number 1;and non-instrument runway: within the approach area.						
5.	ASMP	*Light fixtures and supporting structures* *All light fixtures and supporting structures are made in accordance with the provisions of Sec 9.9 ASMP and the* Aerodrome Design Manual, *Part 6 (in preparation).*						
6.	5.3.1.4 ASMP	*Elevated approach lights* Elevated approach lights and their supporting structures shall be frangible except that, in that portion of the approach lighting system beyond 300 m from the threshold: a) where the height of a supporting structure exceeds 12 m, the frangibility requirement shall apply to the top 12 m only; and						
		b) where a supporting structure is surrounded by non-frangible objects, only that part of the structure that extends above the surrounding objects shall be frangible.						
7.	5.3.1.5 ASMP	When an approach light fixture or supporting structure is not in itself sufficiently conspicuous, it shall be suitably marked.						
8.	5.3.1.6 ASMP	*Elevated lights* Elevated runway, stopway and taxiway lights shall be frangible. Their height shall be sufficiently low to preserve clearance for propellers and for the engine pods of jet aircraft.						
		Surface lights						
9.	5.3.1.7 ASMP	Light fixtures inset in the surface of runways, stopways, taxiways and aprons shall be so designed and fitted as to withstand being run over by the wheels of an aircraft without damage either to the aircraft or to the lights themselves.						
10.	5.3.1.8 ASMP	**Recommendation.—** *The temperature produced by conduction or radiation at the interface between an installed inset light and an aircraft tire should not exceed 160°C during a 10-minute period of exposure.* *Note.— Guidance on measuring the temperature of inset lights is given in the* Aerodrome Design Manual, *Part 4.*						
11.		*Light intensity and control* *Note.— In dusk or poor visibility conditions by day, lighting can be more effective than marking. For lights to be effective in such conditions or in poor visibility by night, they must be of adequate intensity. To obtain the required intensity, it will usually be necessary to make the light directional, in which case the arcs over which*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		the light shows will have to be adequate and so orientated as to meet the operational requirements. The runway lighting system will have to be considered as a whole, to ensure that the relative light intensities are suitably matched to the same end. (See Attachment A, Section 16, and the Aerodrome Design Manual (Doc 9157), Part 4).						
12.	5.3.1.9 ASMP	The intensity of runway lighting shall be adequate for the minimum conditions of visibility and ambient light in which use of the runway is intended, and compatible with that of the nearest section of the approach lighting system when provided. *Note.— While the lights of an approach lighting system may be of higher intensity than the runway lighting, it is good practice to avoid abrupt changes in intensity as these could give a pilot a false impression that the visibility is changing during approach.*						
13.	5.3.1.10 ASMP	Where a high-intensity lighting system is provided, a suitable intensity control shall be incorporated to allow for adjustment of the light intensity to meet the prevailing conditions. Separate intensity controls or other suitable methods shall be provided to ensure that the following systems, when installed, can be operated at compatible intensities: — approach lighting system; — runway edge lights; — runway threshold lights; — runway end lights; — runway centre line lights; — runway touchdown zone lights; and — taxiway centre line lights.						
14.	5.3.1.11 ASMP	On the perimeter of and within the ellipse defining the main beam in Appendix 2, Figures A2-1 to A2-10, the maximum light intensity value shall not be greater than three times the minimum light intensity value measured in accordance with Appendix 2, collective notes for Figures A2-1 to A2-11, Note 2.						
15.	5.3.1.12 ASMP	On the perimeter of and within the rectangle defining the main beam in Appendix 2, Figures A2-12 to A2-20, the maximum light intensity value shall not be greater than three times the minimum light intensity value measured in accordance with Appendix 2, collective notes for Figures A2-12 to A2-21, Note 2.						
16.	5.3.2 ASMP	Proper verification shall be made by Airport Management as weather **emergency lighting** system for Apron, Runway or Taxiway are required at the airfield (in case if secondary power supply does not exist, or separate circuits/cables does not exists so as to ensure a partial serviceability of lighting system). In case an emergency lighting system is required, it shall meet the requirements of Sec 5.3.2 of ASMP.						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
17.	5.3.3 ASMP	Proper verification shall be made by Airport Management as weather an **Aeronautical beacon** is required at the location or not. In case if it is required then the beacon shall be in accordance with the provisions of Sec 5.3.3 ASMP.						
	5.3.4	Approach lighting systems						
18.	5.3.4.1 ASMP APS manual -VIII	A.— **Non-instrument runway** **Recommendation.—** *Where physically practicable, a simple approach lighting system as specified in 5.3.4.2 to 5.3.4.9 should be provided to serve a non-instrument runway where the code number is 3 or 4 and intended for use at night, except when the runway is used only in conditions of good visibility, and sufficient guidance is provided by other visual aids.* *Note.— A simple approach lighting system can also provide visual guidance by day.*						
		B.— Non-precision approach runway Where physically practicable, a simple approach lighting system as specified in 5.3.4.2 to 5.3.4.9 shall be provided to serve a non-precision approach runway, except when the runway is used only in conditions of good visibility or sufficient guidance is provided by other visual aids. *Note.— It is advisable to give consideration to the installation of a precision approach category I lighting system or to the addition of a runway lead-in lighting system.*						
		C.— Precision approach runway category I Where physically practicable, a precision approach category I lighting system as specified in 5.3.4.10 to 5.3.4.21 shall be provided to serve a precision approach runway category I. Approach lighting systems should be inspected every 24 hours.						
		D.— Precision approach runway categories II and III A precision approach category II and III lighting system as specified in 5.3.4.22 to 5.3.4.39 shall be provided to serve a precision approach runway category II or III. Approach lighting systems should be inspected every 24 hours.						
19.	5.3.4.2 ASMP	A simple approach lighting system shall consist of a row of lights on the extended centre line of the runway extending, whenever possible, over a distance of not less than 420 m from the threshold with a row of lights forming a crossbar 18 m or 30 m in length at a distance of 300 m from the threshold.						
20.	5.3.4.3 ASMP	The lights forming the crossbar shall be as nearly as practicable in a horizontal straight line at right angles to, and bisected by, the line of the centre line lights. The lights of the crossbar shall be spaced so as to produce a linear effect, except that, when a crossbar of 30 m is used, gaps may be left on each side of the centre line. These gaps shall be kept to a minimum to meet local						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		requirements and each shall not exceed 6 m. *Note 1.— Spacings for the crossbar lights between 1 m and 4 m are in use. Gaps on each side of the centre line may improve directional guidance when approaches are made with a lateral error, and facilitate the movement of rescue and fire fighting vehicles.* *Note 2.— See Attachment A, Section 12 ASMP for guidance on installation tolerances.*						
21.	5.3.4.4 ASMP	The lights forming the **centre line** shall be placed at longitudinal intervals of 60 m, except that, when it is desired to improve the guidance, an interval of 30 m may be used. The innermost light shall be located either 60 m or 30 m from the threshold, depending on the longitudinal interval selected for the centre line lights.						
22.	5.3.4.5 ASMP	**Recommendation.—** *If it is not physically possible to provide a centre line extending for a distance of 420 m from the threshold, it should be extended to 300 m so as to include the crossbar. If this is not possible, the centre line lights should be extended as far as practicable, and each centre line light should then consist of a barrette at least 3 m in length. Subject to the approach system having a crossbar at 300 m from the threshold, an additional crossbar may be provided at 150 m from the threshold.*						
23.	5.3.4.6 ASMP	The system shall lie as nearly as practicable in the horizontal plane passing through the threshold, provided that: a) no object other than an ILS or MLS azimuth antenna shall protrude through the plane of the approach lights within a distance of 60 m from the centre line of the system; and						
		b) no light other than a light located within the central part of a crossbar or a centre line barrette (not their extremities) shall be screened from an approaching aircraft. Any ILS or MLS azimuth antenna protruding through the plane of the lights shall be treated as an obstacle and marked and lighted accordingly						
24.	5.3.4.7 ASMP	The lights of a simple approach lighting system shall be fixed lights and the colour of the lights shall be such as to ensure that the system is readily distinguishable from other aeronautical ground lights, and from extraneous lighting if present. Each centre line light shall consist of either: a) a single source; or b) a barrette at least 3 m in length. *Note 1.— When the barrette as in b) is composed of lights approximating to point sources, a spacing of 1.5 m between adjacent lights in the barrette has been found satisfactory.* *Note 2.— It may be advisable to use barrettes 4 m in length if it is anticipated that the simple approach lighting system will be developed into a precision approach*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		lighting system. *Note 3.— At locations where identification of the simple approach lighting system is difficult at night due to surrounding lights, sequence flashing lights installed in the outer portion of the system may resolve this problem.*						
25.	5.3.4.8 ASMP	**Recommendation.—** *Where provided for a non--instrument runway, the lights should show at all angles in azimuth necessary to a pilot on base leg and final approach. The intensity of the lights should be adequate for all conditions of visibility and ambient light for which the system has been provided.*						
26.	5.3.4.9 ASMP	**Recommendation.—** *Where provided for a non-precision approach runway, the lights should show at all angles in azimuth necessary to the pilot of an aircraft which on final approach does not deviate by an abnormal amount from the path defined by the non-visual aid. The lights should be designed to provide guidance during both day and night in the most adverse conditions of visibility and ambient light for which it is intended that the system should remain usable.*						
27.	5.3.4.10 ASMP	A precision approach category I lighting system shall consist of a row of lights on the extended centre line of the runway extending, wherever possible, over a distance of 900 m from the runway threshold with a row of lights forming a crossbar 30 m in length at a distance of 300 m from the runway threshold. *Note.— The installation of an approach lighting system of less than 900 m in length may result in operational limitations on the use of the runway. See Attachment A, Section 12 ASMP.*						
28.	5.3.4.11 ASMP	The lights forming the crossbar shall be as nearly as practicable in a horizontal straight line at right angles to, and bisected by, the line of the centre line lights. The lights of the crossbar shall be spaced so as to produce a linear effect, except that gaps may be left on each side of the centre line. These gaps shall be kept to a minimum to meet local requirements and each shall not exceed 6 m. *Note 1.— Spacings for the crossbar lights between 1 m and 4 m are in use. Gaps on each side of the centre line may improve directional guidance when approaches are made with a lateral error, and facilitate the movement of rescue and fire fighting vehicles.* *Note 2.— See Attachment A, Section 12 ASMP for guidance on installation tolerances.*						
29.	5.3.4.12 ASMP	The lights forming the centre line shall be placed at longitudinal intervals of 30 m with the innermost light located 30 m from the threshold.						
30.	5.3.4.13 ASMP	The system shall lie as nearly as practicable in the horizontal plane passing through the threshold, provided that: a) no object other than an ILS or MLS azimuth antenna shall protrude through the plane of the approach lights within a distance of 60 m from the centre line						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		of the system; and						
		b) no light other than a light located within the central part of a crossbar or a centre line barrette (not their extremities) shall be screened from an approaching aircraft. Any ILS or MLS azimuth antenna protruding through the plane of the lights shall be treated as an obstacle and marked and lighted accordingly.						
31.	5.3.4.14 ASMP	The centre line and crossbar lights of a precision approach category I lighting system shall be fixed lights showing variable white. Each centre line light position shall consist of either: a) a single light source in the innermost 300 m of the centre line, two light sources in the central 300 m of the centre line and three light sources in the outer 300 m of the centre line to provide distance information; or						
		b) a barrette.						
32.	5.3.4.15 ASMP	Where the serviceability level of the approach lights specified as a maintenance objective in 10.4.10 can be demonstrated, each centre line light position may consist of either: a) a single light source; or b) a barrette.						
33.	5.3.4.16 ASMP	The barrettes shall be at least 4 m in length. When barrettes are composed of lights approximating to point sources, the lights shall be uniformly spaced at intervals of not more than 1.5 m.						
34.	5.3.4.17 ASMP	**Recommendation.—** If *the centre line consists of barrettes as described in 5.3.4.14 b) or 5.3.4.15 b), each barrette should be supplemented by a capacitor discharge light, except where such lighting is considered unnecessary taking into account the characteristics of the system and the nature of the meteorological conditions.*						
35.	5.3.4.18 ASMP	Each capacitor discharge light as described in 5.3.4.17 shall be flashed twice a second in sequence, beginning with the outermost light and progressing toward the threshold to the innermost light of the system. The design of the electrical circuit shall be such that these lights can be operated independently of the other lights of the approach lighting system.						
36.	5.3.4.19ASMP	If the centre line consists of lights as described in 5.3.4.14 a) or 5.3.4.15 a), additional crossbars of lights to the crossbar provided at 300 m from the threshold shall be provided at 150 m, 450 m, 600 m and 750 m from the threshold. The lights forming each crossbar shall be as nearly as practicable in a horizontal straight line at right angles to, and bisected by, the line of the centre line						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		lights. The lights shall be spaced so as to produce a linear effect, except that gaps may be left on each side of the centre line. These gaps shall be kept to a minimum to meet local requirements and each shall not exceed 6 m. *Note.— See Attachment A, Section 12 ASMP for detailed configuration.*						
37.	5.3.4.20 ASMP	Where the additional crossbars described in 5.3.4.19 are incorporated in the system, the outer ends of the crossbars shall lie on two straight lines that either are parallel to the line of the centre line lights or converge to meet the runway centre line 300 m from threshold.						
38.	5.3.4.21 ASMP	The lights shall be in accordance with the specifications of Appendix 2, Figure A2-1 ASMP. *Note.— The flight path envelopes used in the design of these lights are given in Attachment A, Figure A-6 ASMP.*						
		Precision approach category II and III lighting system						
39.	5.3.4.22 ASMP	The approach lighting system shall consist of a row of lights on the extended centre line of the runway, extending, wherever possible, over a distance of 900 m from the runway threshold. In addition, the system shall have two side rows of lights, extending 270 m from the threshold, and two crossbars, one at 150 m and one at 300 m from the threshold, all as shown in Figure 5-13. Where the serviceability level of the approach lights specified as maintenance objectives in 10.4.7 can be demonstrated, the system may have two side rows of lights, extending 240 m from the threshold, and two crossbars, one at 150 m and one at 300 m from the threshold, all as shown in Figure 5-15. *Note.— The length of 900 m is based on providing guidance for operations under category I, II and III conditions. Reduced lengths may support category II and III operations but may impose limitations on category I operations. See Attachment A, Section 12 ASMP.*						
40.	5.3.4.23 ASMP	The lights forming the centre line shall be placed at longitudinal intervals of 30 m with the innermost lights located 30 m from the threshold.						
41.	5.3.4.24 ASMP	The lights forming the side rows shall be placed on each side of the centre line, at a longitudinal spacing equal to that of the centre line lights and with the first light located 30 m from the threshold. Where the serviceability level of the approach lights specified as maintenance objectives in 10.4.7 can be demonstrated, lights forming the side rows may be placed on each side of the centre line, at a longitudinal spacing of 60 m with the first light located 60 m from the threshold. The lateral spacing (or gauge) between the innermost lights of the side rows shall be not less than 18 m nor more than 22.5 m, and preferably 18 m, but in any event shall be equal to that of the touchdown zone lights.						
42.	5.3.4.25	The crossbar provided at 150 m from the threshold shall fill in the gaps between the centre line and side row						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
	ASMP	lights.						
43.	5.3.4.26 ASMP	The crossbar provided at 300 m from the threshold shall extend on both sides of the centre line lights to a distance of 15 m from the centre line.						
44.	5.3.4.27 ASMP	If the centre line beyond a distance of 300 m from the threshold consists of lights as described in 5.3.4.31 b) or 5.3.4.32 b), additional crossbars of lights shall be provided at 450 m, 600 m and 750 m from the threshold.						
45.	5.3.4.28 ASMP	Where the additional crossbars described in 5.3.4.27 are incorporated in the system, the outer ends of these crossbars shall lie on two straight lines that either are parallel to the centre line or converge to meet the runway centre line 300 m from the threshold.						
46.	5.3.4.29 ASMP	The system shall lie as nearly as practicable in the horizontal plane passing through the threshold, provided that: a) no object other than an ILS or MLS azimuth antenna shall protrude through the plane of the approach lights within a distance of 60 m from the centre line of the system; and						
		b) no light other than a light located within the central part of a crossbar or a centre line barrette (not their extremities) shall be screened from an approaching aircraft. Any ILS or MLS azimuth antenna protruding through the plane of the lights shall be treated as an obstacle and marked and lighted accordingly.						
47.	5.3.4.30 ASMP	The centre line of a precision approach category II and III lighting system for the first 300 m from the threshold shall consist of barrettes showing variable white, except that, where the threshold is displaced 300 m or more, the centre line may consist of single light sources showing variable white. Where the serviceability level of the approach lights specified as maintenance objectives in 10.4.7 can be demonstrated, the centre line of a precision approach category II and III lighting system for the first 300 m from the threshold may consist of either: a) barrettes, where the centre line beyond 300 m from the threshold consists of barrettes as described in 5.3.4.32 a); or						
		b) alternate single light sources and barrettes, where the centre line beyond 300 m from the threshold consists of single light sources as described in 5.3.4.32 b), with the innermost single light source located 30 m and the innermost barrette located 60 m from the threshold; or						
		c) single light sources where the threshold is displaced 300 m or more; all of which shall show variable white.						
48.	5.3.4.31	Beyond 300 m from the threshold each centre a) a barrette as used on the inner 300 m; or						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
	ASMP	b) two light sources in the central 300 m of the centre line and three light sources in the outer 300 m of the centre line; all of which shall show variable white.						
49.	5.3.4.32 ASMP	Where the serviceability level of the approach lights specified as maintenance objectives in 10.4.7 can be demonstrated, beyond 300 m from the threshold each centre line light position may consist of either: a) a barrette; or						
		b) a single light source; all of which shall show variable white.						
50.	5.3.4.33 ASMP	The barrettes shall be at least 4 m in length. When barrettes are composed of lights approximating to point sources, the lights shall be uniformly spaced at intervals of not more than 1.5 m.						
51.	5.3.4.34 ASMP	**Recommendation.—** *If the centre line beyond 300 m from the threshold consists of barrettes as described in 5.3.4.31 a) or 5.3.4.32 a), each barrette beyond 300 m should be supplemented by a capacitor discharge light, except where such lighting is considered unnecessary taking into account the characteristics of the system and the nature of the meteorological conditions.*						
52.	5.3.4.35 ASMP	Each capacitor discharge light shall be flashed twice a second in sequence, beginning with the outermost light and progressing toward the threshold to the innermost light of the system. The design of the electrical circuit shall be such that these lights can be operated independently of the other lights of the approach lighting system.						
53.	5.3.4.36 ASMP	The side row shall consist of barrettes showing red. The length of a side row barrette and the spacing of its lights shall be equal to those of the touchdown zone light barrettes.						
54.	5.3.4.37 ASMP	The lights forming the crossbars shall be fixed lights showing variable white. The lights shall be uniformly spaced at intervals of not more than 2.7 m.						
55.	5.3.4.38 ASMP	The intensity of the red lights shall be compatible with the intensity of the white lights.						
56.	5.3.4.39 ASMP	The lights shall be in accordance with the specifications of Appendix 2, Figures A2-1 and A2-2 ASMP. *Note.— The flight path envelopes used in the design of these lights are given in Attachment A, Figure A-6 ASMP.*						
	5.3.5	Visual approach slope indicator systems						
57.	5.3.5.1 ASMP	A visual approach slope indicator system shall be provided to serve the approach to a runway whether or not the runway is served by other visual approach aids or by non-visual aids, where one or more of the following conditions exist: a) the runway is used by turbojet or other aeroplanes with similar approach guidance requirements;						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		b) the pilot of any type of aeroplane may have difficulty in judging the approach due to: 1) inadequate visual guidance such as is experienced during an approach over water or featureless terrain by day or in the absence of sufficient extraneous lights in the approach area by night, or 2) misleading information such as is produced by deceptive surrounding terrain or runway slopes;						
		c) the presence of objects in the approach area may involve serious hazard if an aeroplane descends below the normal approach path, particularly if there are no non-visual or other visual aids to give warning of such objects;						
		d) physical conditions at either end of the runway present a serious hazard in the event of an aeroplane undershooting or overrunning the runway; and						
		e) terrain or prevalent meteorological conditions are such that the aeroplane may be subjected to unusual turbulence during approach. *Note.— Guidance on the priority of installation of visual approach slope indicator systems is contained in Attachment A, Section 13 ASMP.*						
58.	5.3.5.2 ASMP	The standard visual approach slope indicator systems shall consist of the following: PAPI and APAPI systems conforming to the specifications contained in 5.3.5.23 to 5.3.5.40 inclusive; as shown in Figure 5-16.						
59.	5.3.5.3 ASMP	PAPI, shall be provided where the code number is 3 or 4 when one or more of the conditions specified in 5.3.5.1 exist.						
60.	5.3.5.4 ASMP	PAPI or APAPI shall be provided where the code number is 1 or 2 when one or more of the conditions specified in 5.3.5.1 exist.						
61.	5.3.5.5 ASMP	**Recommendation.—** *Where a runway threshold is temporarily displaced from the normal position and one or more of the conditions specified in 5.3.5.1 exist, a PAPI should be provided except that where the code number is 1 or 2 an APAPI may be provided.*						
		PAPI and APAPI (Description)						
62.	5.3.5.23 ASMP	The PAPI system shall consist of a wing bar of 4 sharp transition multi-lamp (or paired single lamp) units equally spaced. The system shall be located on the left side of the runway unless it is physically impracticable to do so. *Note.— Where a runway is used by aircraft requiring visual roll guidance which is not provided by other external means, then a second wing bar may be provided on the opposite side of the runway.*						
63.	ASMP Airport Service	The PAPI lights shall be calibrated as per the details given in 5.3.5.25, 30 & 31 of ASMP and current calibration certificate shall be available at the airport Failure of more than one lamp in each unit-UNIT						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
	Manual Part-8	UNSERVICEABLE Failure of any one unit –SYSTEM UNSERVICEABLE. If PAPI is provided on both sides of the runway, failure of a light unit in a symmetrical PAPI system may be tolerated by switching off completely the failed side, leaving PAPI operating only on the serviceable side of the runway.						
64.	5.3.5.27 ASMP	***Siting*** The light units shall be located as in the basic configuration illustrated in Figure 5-19 ASMP, subject to the installation tolerances given therein. The units forming a wing bar shall be mounted so as to appear to the pilot of an approaching aeroplane to be substantially in a horizontal line. The light units shall be mounted as low as possible and shall be frangible.						
		Characteristics of the light units						
65.	5.3.5.28 ASMP	The system shall be suitable for both day and night operations.						
66.	5.3.5.29 ASMP	The colour transition from red to white in the vertical plane shall be such as to appear to an observer, at a distance of not less than 300 m, to occur within a vertical angle of not more than 3'.						
67.	5.3.5.32 ASMP	Suitable intensity control shall be provided so as to allow adjustment to meet the prevailing conditions and to avoid dazzling the pilot during approach and landing.						
68.	5.3.5.33 ASMP	Each light unit shall be capable of adjustment in elevation so that the lower limit of the white part of the beam may be fixed at any desired angle of elevation between 1°30' and at least 4°30' above the horizontal.						
69.	5.3.5.34 ASMP	The light units shall be so designed that deposits of condensation, snow, ice, dirt, etc., on optically transmitting or reflecting surfaces shall interfere to the least possible extent with the light signals and shall not affect the contrast between the red and white signals and the elevation of the transition sector.						
		Approach slope and elevation setting of light units						
70.	5.3.5.35 ASMP	The approach slope as defined in Figure 5-20 ASMP shall be appropriate for use by the aeroplanes using the approach.						
71.	5.3.5.36 ASMP	When the runway is equipped with an ILS and/or MLS, the siting and the angle of elevation of the light units shall be such that the visual approach slope conforms as closely as possible with the glide path of the ILS and/or the minimum glide path of the MLS, as appropriate.						
72.	5.3.5.37 ASMP	The angle of elevation settings of the light units in a PAPI wing bar shall be such that, during an approach, the pilot of an aeroplane observing a signal of one white and three reds will clear all objects in the approach area by a safe margin (see Table 5-2 ASMP).						
73.	5.3.5.39 ASMP	The **azimuth spread** of the light beam shall be suitably restricted where an object located outside the obstacle protection surface of the PAPI or APAPI system, but						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		within the lateral limits of its light beam, is found to extend above the plane of the obstacle protection surface and an aeronautical study indicates that the object could adversely affect the safety of operations. The extent of the restriction shall be such that the object remains outside the confines of the light beam. *Note.— See 5.3.5.41 to 5.3.5.45 concerning the related obstacle protection surface.*						
74.		***Obstacle protection surface*** *Note.— The following specifications apply to PAPI and APAPI.*						
75.	5.3.5.41 ASMP	An obstacle protection surface shall be established when it is intended to provide a visual approach slope indicator system (PAPI or APAPI).						
76.	5.3.5.42 ASMP	The characteristics of the obstacle protection surface, i.e. origin, divergence, length and slope shall correspond to those specified in the relevant column of Table 5-3 and in Figure 5-21 ASMP.						
77.	5.3.5.43 ASMP	New objects or extensions of existing objects shall not be permitted above an obstacle protection surface except when, in the opinion of the appropriate authority, the new object or extension would be shielded by an existing immovable object. *Note.— Circumstances in which the shielding principle may reasonably be applied are described in the* Airport Services Manual, *Part 6.*						
78.	5.3.5.44 ASMP	Existing objects above an obstacle protection surface shall be removed except when, in the opinion of the appropriate authority, the object is shielded by an existing immovable object, or after aeronautical study it is determined that the object would not adversely affect the safety of operations of aeroplanes.						
79.	5.3.5.45 ASMP	Where an aeronautical study indicates that an existing object extending above an obstacle protection surface could adversely affect the safety of operations of aeroplanes one or more of the following measures shall be taken: a) suitably raise the approach slope of the system;						
		b) reduce the azimuth spread of the system so that the object is outside the confines of the beam;						
		c) displace the axis of the system and its associated obstacle protection surface by no more than 5°;						
		d) suitably displace the threshold; and						
		e) where d) is found to be impracticable, suitably displace the system upwind of the threshold to provide an increase in threshold crossing height equal to the height of the object penetration. *Note.— Guidance on this issue is contained in the Aerodrome Design Manual, Part 4.*						
80.	5.3.6 ASMP	**Recommendation**- *If circling guidance lights are provided at the aerodrome, it shall meet the requirements of 5.3.6.1 to 5.3.6.5 of ASMP.*						
	5.3.7	*Runway Lead-In Lighting System*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
81.	5.3.7.1 to 5.3.7.6 ASMP	**Recommendation**-*If runway lead-in lighting system are provided at the aerodrome, it shall meet the requirements of 5.3.7.1 to 5.3.7.6 of ASMP.*						
	5.3.8	Runway threshold identification lights						
82.	5.3.8.1 ASMP	**Recommendation**.— Runway threshold identification lights should be installed: *a) at the threshold of a non-precision approach runway when additional threshold conspicuity is necessary or where it is not practicable to provide other approach lighting aids; and*						
		b) where a runway threshold is permanently displaced from the runway extremity or temporarily displaced from the normal position and additional threshold conspicuity is necessary.						
83.	5.3.8.2 ASMP	Runway threshold identification lights shall be located symmetrically about the runway centre line, in line with the threshold and approximately 10 m outside each line of runway edge lights.						
84.	5.3.8.3 ASMP	**Recommendation.—** *Runway threshold identification lights should be flashing white lights with a flash frequency between 60 and 120 per minute.*						
85.	5.3.8.4 ASMP	The lights shall be visible only in the direction of approach to the runway						
	5.3.9	Runway edge lights						
86.	5.3.9.1 ASMP	Runway edge lights shall be provided for a runway intended for use at night or for a precision approach runway intended for use by day or night.						
87.	5.3.9.2 ASMP	**Recommendation.—** *Runway edge lights should be provided on a runway intended for take-off with an operating minimum below an RVR of the order of 800 m by day.*						
		Location						
88.	5.3.9.3 ASMP	Runway edge lights shall be placed along the full length of the runway and shall be in two parallel rows equidistant from the centre line.						
89.	5.3.9.4 ASMP	Runway edge lights shall be placed along the edges of the area declared for use as the runway or outside the edges of the area at a distance of not more than 3 m.						
90.	5.3.9.5 ASMP	**Recommendation.—** *Where the width of the area which could be declared as runway exceeds 60 m, the distance between the rows of lights should be determined taking into account the nature of the operations, the light distribution characteristics of the runway edge lights, and other visual aids serving the runway.*						
91.	5.3.9.6 ASMP	The lights shall be uniformly spaced in rows at intervals of not more than 60 m for an instrument runway, and at intervals of not more than 100 m for a non-instrument runway. The lights on opposite sides of the runway axis						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		shall be on lines at right angles to that axis. At intersections of runways, lights may be spaced irregularly or omitted, provided that adequate guidance remains available to the pilot.						
92.	5.3.9.7 ASMP	Runway edge lights shall be fixed lights showing variable white, except that: a) in the case of a displaced threshold, the lights between the beginning of the runway and the displaced threshold shall show red in the approach direction; and b) a section of the lights 600 m or one-third of the runway length, whichever is the less, at the remote end of the runway from the end at which the take-off run is started, may show yellow.						
93.	5.3.9.8 ASMP	The runway edge lights shall show at all angles in azimuth necessary to provide guidance to a pilot landing or taking off in either direction. When the runway edge lights are intended to provide circling guidance, they shall show at all angles in azimuth (see 5.3.6.1).						
94.	5.3.9.9 ASMP	In all angles of azimuth required in 5.3.9.8, runway edge lights shall show at angles up to 15° above the horizontal with an intensity adequate for the conditions of visibility and ambient light in which use of the runway for take-off or landing is intended. In any case, the intensity shall be at least 50 cd except that at an aerodrome without extraneous lighting the intensity of the lights may be reduced to not less than 25 cd to avoid dazzling the pilot.						
95.	5.3.9.10 ASMP	Runway edge lights on a precision approach runway shall be in accordance with the specifications of Appendix 2, Figure A2-9 or A2-10.						
	5.3.10	Runway threshold and wing bar lights (see Figure 5-22)						
96.	5.3.10.1 ASMP	Runway threshold lights shall be provided for a runway equipped with runway edge lights except on a noninstrument or non-precision approach runway where the threshold is displaced and wing bar lights are provided.						
97.	5.3.10.2 ASMP	When a threshold is at the extremity of a runway, the threshold lights shall be placed in a row at right angles to the runway axis as near to the extremity of the runway as possible and, in any case, not more than 3 m outside the extremity.						
98.	5.3.10.3 ASMP	When a threshold is displaced from the extremity of a runway, threshold lights shall be placed in a row at right angles to the runway axis at the displaced threshold.						
99.	5.3.10.4 ASMP	Threshold lighting shall consist of: a) on a non-instrument or non-precision approach runway, at least six lights; b) on a precision approach runway category I, at least the number of lights that would be required if the lights were uniformly spaced at intervals of 3 m between the rows of runway edge lights; and c) on a precision approach runway category II or III, lights uniformly spaced between the rows of runway						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		edge lights at intervals of not more than 3 m.						
100.	5.3.10.5 ASMP	**Recommendation.—** *The lights prescribed in 5.3.10.4 a) and b) should be either:* *a)equally spaced between the rows of runway edge lights, or* *b) symmetrically disposed about the runway centre line in two groups, with the lights uniformly spaced in each group and with a gap between the groups equal to the gauge of the touchdown zone marking or lighting, where such is provided, or otherwise not more than half the distance between the rows of runway edge lights:*						
101.	5.3.10.6 ASMP	**Recommendation.—** *Wing bar lights should be provided on a precision approach runway when additional conspicuity is considered desirable.*						
102.	5.3.10.7 ASMP	Wing bar lights shall be provided on a non instrument or non-precision approach runway where the threshold is displaced and runway threshold lights are required, but are not provided.						
103.	5.3.10.8 ASMP	Wing bar lights shall be symmetrically disposed about the runway centre line at the threshold in two groups, i.e. wing bars. Each wing bar shall be formed by at least five lights extending at least 10 m outward from, and at right angles to, the line of the runway edge lights, with the innermost light of each wing bar in the line of the runway edge lights.						
104.	5.3.10.9 ASMP	Runway threshold and wing bar lights shall be fixed unidirectional lights showing green in the direction of approach to the runway. The intensity and beam spread of the lights shall be adequate for the conditions of visibility and ambient light in which use of the runway is intended.						
105.	5.3.10.10 ASMP	Runway threshold lights on a precision approach runway shall be in accordance with the specifications of Appendix 2, Figure A2-3 ASMP.						
106.	5.3.10.11 ASMP	Threshold wing bar lights on a precision approach runway shall be in accordance with the specifications of Appendix 2, Figure A2-4 ASMP.						
	5.3.11	Runway end lights (see Figure 5-22)						
107.	5.3.11.1 ASMP	*Application* Runway end lights shall be provided for a runway equipped with runway edge lights. *Note.— When the threshold is at the runway extremity, fittings serving as threshold lights may be used as runway end lights.*						
108.	5.3.11.2 ASMP	Runway end lights shall be placed on a line at right angles to the runway axis as near to the end of the runway as possible and, in any case, not more than 3 m outside the end.						
109.	5.3.11.3 ASMP	**Recommendation.—** *Runway end lighting should consist of at least six lights. The lights should be either:* *a) equally spaced between the rows of runway edge lights, or*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		b) symmetrically disposed about the runway centre line in two groups with the lights uniformly spaced in each group and with a gap between the groups of not more than half the distance between the rows of runway edge lights. *For a precision approach runway category III, the spacing between runway end lights, except between the two innermost lights if a gap is used, should not exceed 6 m.*						
110.	5.3.11.4 ASMP	Runway end lights shall be fixed unidirectional lights showing red in the direction of the runway. The intensity and beam spread of the lights shall be adequate for the conditions of visibility and ambient light in which use of the runway is intended.						
111.	5.3.11.5 ASMP	Runway end lights on a precision approach runway shall be in accordance with the specifications of Appendix 2, Figure A2-8 ASMP.						
	5.3.12	Runway centre line lights						
112.	5.3.12.1 ASMP	**Runway centre line lights** shall be provided on a precision approach runway category II or III.						
113.	5.3.12.2 ASMP	**Recommendation.—** *Runway centre line lights should be provided on a precision approach runway category I, particularly when the runway is used by aircraft with high landing speeds or where the width between the runway edge lights is greater than 50 m.*						
114.	5.3.12.3 ASMP	Runway centre line lights shall be provided on a runway intended to be used for take-off with an operating minimum below an RVR of the order of 400 m.						
115.	5.3.12.4 ASMP	**Recommendation.—** *Runway centre line lights should be provided on a runway intended to be used for take-off with an operating minimum of an RVR of the order of 400 m or higher when used by aeroplanes with a very high take-off speed, particularly where the width between the runway edge lights is greater than 50 m.*						
116.	5.3.12.5 ASMP	Runway centre line lights shall be located along the centre line of the runway, except that the lights may be uniformly offset to the same side of the runway centre line by not more than 60 cm where it is not practicable to locate them along the centre line. The lights shall be located from the threshold to the end at longitudinal spacing of approximately 15 m. Where the serviceability level of the runway centre line lights specified as maintenance objectives in 10.5.7 or 10.5.11, as appropriate, can be demonstrated and the runway is intended for use in runway visual range conditions of 350 m or greater, the longitudinal spacing may be approximately 30 m. *Note.— Existing centre line lighting where lights are spaced at 7.5 m need not be replaced.*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
	5.3.12.6 ASMP	**Recommendation.—** *Centre line guidance for take-off from the beginning of a runway to a displaced threshold should be provided by:* *a) an approach lighting system if its characteristics and intensity settings afford the guidance required during take-off and it does not dazzle the pilot of an aircraft taking off; or*						
		b) runway centre line lights; or						
117.		*c) barrettes of at least 3 m length and spaced at uniform intervals of 30 m, as shown in Figure 5-23 ASMP, designed so that their photometric characteristics and intensity setting afford the guidance required during take-off without dazzling the pilot of an aircraft taking off.* *Where necessary, provision should be made to extinguish those centre line lights specified in b) or reset the intensity of the approach lighting system or barrettes when the runway is being used for landing. In no case should only the single source runway centre line lights show from the beginning of the runway to a displaced threshold when the runway is being used for landing.*						
118.	5.3.12.7 ASMP	Runway centre line lights shall be fixed lights showing variable white from the threshold to the point 900 m from the runway end; alternate red and variable white from 900 m to 300 m from the runway end; and red from 300 m to the runway end, except that for runways less than 1 800 m in length, the alternate red and variable white lights shall extend from the mid-point of the runway usable for landing to 300 m from the runway end. *Note.— Care is required in the design of the electrical system to ensure that failure of part of the electrical system will not result in a false indication of the runway distance remaining.*						
119.	5.3.12.8 ASMP	Runway centre line lights shall be in accordance with the specifications of Appendix 2, Figure A2-6 or A2-7 ASMP.						
	5.3.13	Runway Touchdown zone lights						
120.	5.3.13.1 ASMP	Touchdown zone lights shall be provided in the touchdown zone of a precision approach runway category II or III.						
121.	5.3.13.2 ASMP	Touchdown zone lights shall extend from the threshold for a longitudinal distance of 900 m, except that, on runways less than 1 800 m in length, the system shall be shortened so that it does not extend beyond the midpoint of the runway. The pattern shall be formed by pairs of barrettes symmetrically located about the runway centre line. The lateral spacing between the innermost lights of a pair of barrettes shall be equal to the lateral spacing selected for the touchdown zone marking. The longitudinal spacing between pairs of barrettes shall be either 30 m or 60 m. *Note.— To allow for operations at lower visibility minima,*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		it may be advisable to use a 30 m longitudinal spacing between barrettes.						
122.	5.3.13.3 ASMP	A barrette shall be composed of at least three lights with a spacing between the lights of not more than 1.5 m.						
123.	5.3.13.4 ASMP	**Recommendation.—** A *barrette should be not less than 3 m nor more than 4.5 m in length.*						
124.	5.3.13.5 ASMP	Touchdown zone lights shall be fixed unidirectional lights showing variable white.						
125.	5.3.13.6 ASMP	Touchdown zone lights shall be in accordance with the specifications of Appendix 2, Figure A2-5 ASMP.						
126.	5.3.14	Simple Touchdown Zone Lights						
127.		***Note**.— The purpose of Simple Touchdown Zone Lights is to provide pilots with enhanced situational awareness in all visibility conditions and to help enable pilots to decide whether to commence a go around if the aircraft has not landed by a certain point on the runway. It is essential that pilots operating at aerodromes with Simple Touchdown Zone Lights be familiar with the purpose of these lights*						
128.	5.3.14.1	***Recommendation**.- Except where TDZ lights are provided in accordance with paragraph 5.3.13, at an aerodrome where the approach angle is greater than 3.5 degrees and/or the Landing Distance Available combined with other factors increases the risk of an overrun, Simple Touchdown Zone Lights should be provided*						
129.	5.3.14.2	Simple Touchdown Zone Lights shall be a pair of lights located on each side of the runway centreline 0.3 metres beyond the upwind edge of the final Touchdown Zone Marking. The lateral spacing between the inner lights of the two pairs of lights shall be equal to the lateral spacing selected for the Touchdown Zone Marking. The spacing between the lights of the same pair shall not be more than 1.5 m or half the width of the touchdown zone marking, whichever is greater. (see Figure 5-24)						
130.	5.3.14.3	**Recommendation.-** *Where provided on a runway without TDZ markings, Simple Touchdown Zone lights should be installed in such a position that provides the equivalent TDZ information*						
131.	5.3.14.4	Simple Touchdown Zone Lights shall be fixed unidirectional lights showing variable white, aligned so as to be visible to the pilot of a landing aeroplane in the direction of approach to the runway						
132.	5.3.14.5	Simple Touchdown Zone Lights shall be in accordance with the specifications in Appendix 2, Figure A2-5 ASMP. *Note.— As a good operating practice, Simple Touchdown Zone Lights are supplied with power on a separate circuit to other runway lighting so that they may be used when other lighting is switched off.*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
	5.3.15	Rapid exit taxiway indicator lights						
133.	ASMP	*Note.— The purpose of rapid exit taxiway indicator lights (RETILs) is to provide pilots with distance-to-go information to the nearest rapid exit taxiway on the runway, to enhance situational awareness in low visibility conditions and enable pilots to apply braking action for more efficient roll-out and runway exit speeds. It is essential that pilots operating at aerodromes with runway(s) displaying rapid exit taxiway indicator lights be familiar with the purpose of these lights.*						
134.	5.3.15.1 ASMP	**Recommendation.—** *Rapid exit taxiway indicator lights should be provided on a runway intended for use in runway visual range conditions less than a value of 350 m and/or where the traffic density is heavy.* *Note.— See Attachment A, Section 15 ASMP.*						
135.	5.3.15.2 ASMP	Rapid exit taxiway indicator lights shall not be displayed in the event of any lamp failure or other failure that prevents the display of the light pattern depicted in Figure 5-25 ASMP, in full.						
136.	5.3.15.3 ASMP	A set of rapid exit taxiway indicator lights shall be **located** on the runway on the same side of the runway centre line as the associated rapid exit taxiway, in the configuration shown in Figure 5-25 ASMP. In each set, the lights shall be located 2 m apart and the light nearest to the runway centre line shall be displaced 2 m from the runway centre line.						
137.	5.3.15.4 ASMP	Where more than one rapid exit taxiway exists on a runway, the set of rapid exit taxiway indicator lights for each exit shall not overlap when displayed.						
138.	5.3.15.5 ASMP	Rapid exit taxiway indicator lights shall be fixed unidirectional yellow lights, aligned so as to be visible to the pilot of a landing aeroplane in the direction of approach to the runway.						
139.	5.3.15.6 ASMP	Rapid exit taxiway indicator lights shall be in accordance with the specifications in Appendix 2, Figure A2-6 or Figure A2-7 ASMP, as appropriate.						
140.	5.3.15.7 ASMP	**Recommendation.—** *Rapid exit taxiway indicator lights should be supplied with power on a separate circuit to other runway lighting so that they may be used when other lighting is switched off.*						
	5.3.16	Stopway lights						
141.	5.3.16.1 ASMP	Stopway lights shall be provided for a stopway intended for use at night.						
142.	5.3.16.2 ASMP	Stopway lights shall be placed along the full length of the stopway and shall be in two parallel rows that are equidistant from the centre line and coincident with the rows of the runway edge lights. Stopway lights shall also be provided across the end of a stopway on a line at right angles to the stopway axis as near to the end of the stopway as possible and, in any case, not more than 3 m outside the end.						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
143.	5.3.16.3 ASMP	Stopway lights shall be fixed unidirectional lights showing red in the direction of the runway.						
	5.3.17	Taxiway centre line lights						
144.	5.3.17.1 ASMP	Taxiway centre line lights shall be provided on an exit taxiway, taxiway, de-icing/anti-icing facility and apron intended for use in runway visual range conditions less than a value of 350 m in such a manner as to provide continuous guidance between the runway centre line and aircraft stands, except that these lights need not be provided where the traffic density is light and taxiway edge lights and centre line marking provide adequate guidance.						
145.	5.3.17.2 ASMP	**Recommendation.—** *Taxiway centre line lights should be provided on a taxiway intended for use at night in runway visual range conditions of 350 m or greater, and particularly on complex taxiway intersections and exit taxiways, except that these lights need not be provided where the traffic density is light and taxiway edge lights and centre line marking provide adequate guidance.* *Note.— Where there may be a need to delineate the edges of a taxiway, e.g. on a rapid exit taxiway, narrow taxiway or in snow conditions, this may be done with taxiway edge lights or markers.*						
146.	5.3.17.3 ASMP	**Recommendation.—** *Taxiway centre line lights should be provided on an exit taxiway, taxiway, de-icing/antiicing facility and apron in all visibility conditions where specified as components of an advanced surface movement guidance and control system in such a manner as to provide continuous guidance between the runway centre line and aircraft stands.*						
147.	5.3.17.4 ASMP	Taxiway centre line lights shall be provided on a runway forming part of a standard taxi-route and intended for taxiing in runway visual range conditions less than a value of 350 m, except that these lights need not be provided where the traffic density is light and taxiway edge lights and centre line marking provide adequate guidance. *Note.— See 8.2.3ASMP for provisions concerning the interlocking of runway and taxiway lighting systems.*						
148.	5.3.17.5 ASMP	**Recommendation.—** *Taxiway centre line lights should be provided in all visibility conditions on a runway forming part of a standard taxi-route where specified as components of an advanced surface movement guidance and control system.*						
149.	5.3.17.6 ASMP	Except as provided for in 5.3.17.8, taxiway centre line lights on a taxiway other than an exit taxiway and on a runway forming part of a standard taxi-route shall be fixed lights showing green with beam dimensions such that the light is visible only from aeroplanes on or in the vicinity of the taxiway.						
150.	5.3.17.7	Taxiway centre line lights on an exit taxiway shall be fixed lights. Alternate taxiway centre line lights shall show						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
	ASMP	green and yellow from their beginning near the runway centre line to the perimeter of the ILS/MLS critical/sensitive area or the lower edge of the inner transitional surface, whichever is farthest from the runway; and thereafter all lights shall show green (Figure 5-24). The light nearest to the perimeter shall always show yellow. Where aircraft may follow the same centre line in both directions, all the centre line lights shall show green to aircraft approaching the runway. *Note 1.— Care is necessary to limit the light distribution of green lights on or near a runway so as to avoid possible confusion with threshold lights.* *Note 2.— For yellow filter characteristics see Appendix 1, 2.2ASMP .* *Note 3.— The size of the ILS/MLS critical/sensitive area depends on the characteristics of the associated ILS/MLS and other factors. Guidance is provided in Annex 10, Volume I, Attachments C and G.* *Note 4.— See 5.4.3 ASMP for specifications on runway vacated signs.*						
151.	5.3.17.8	**Recommendation.—** *Where it is necessary to denote the proximity to a runway, taxiway centre line lights should be fixed lights showing alternating green and yellow from the perimeter of the ILS/MLS critical/sensitive area or the lower edge of the inner transitional surface, whichever is farthest from the runway, to the runway and continue alternating green and yellow until:* *a)their end point near the runway centre line; or* *b)in the case of the taxiway centre line lights crossing the runway, to the opposite perimeter of the ILS/MLS critical/sensitive area or the lower edge of the inner transitional surface, whichever is farthest from the runway.* ***Note 1**.— Care is necessary to limit the light distribution of green lights on or near a runway so as to avoid possible confusion with threshold lights.* ***Note 2**.— The provisions of 5.3.17.8 can form part of effective runway incursion prevention measures.*						
152.	5.3.17.9 ASMP	Taxiway centre line lights shall be in accordance with the specifications of: a) Appendix 2, Figure A2-12, A2-13, or A2-14 ASMP for taxiways intended for use in runway visual range conditions of less than a value of 350 m; and						
		b) Appendix 2, Figure A2-15 or A2-16 ASMP for other taxiways.						
153.	5.3.17.10 ASMP	**Recommendation.—** *Where higher intensities are required, from an operational point of view, taxiway centre line lights on rapid exit taxiways intended for use in runway visual range conditions less than a value of*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		350 m should be in accordance with the specifications of Appendix 2, Figure A2-12 ASMP. The number of levels of brilliancy settings for these lights should be the same as that for the runway centre line lights.						
154.	5.3.17.11	**Recommendation.—** *Where taxiway centre line lights are specified as components of an advanced surface movement guidance and control system and where, from an operational point of view, higher intensities are required to maintain ground movements at a certain speed in very low visibilities or in bright daytime conditions, taxiway centre line lights should be in accordance with the specifications of Appendix 2, Figure A2-17, A2-18 or A2-19 ASMP* ***Note.—*** *High-intensity centre line lights should only be used in case of an absolute necessity and following a specific study*						
155.	5.3.17.12 ASMP	**Recommendation.—** *Taxiway centre line lights should normally be **located** on the taxiway centre line marking, except that they may be offset by not more than 30 cm where it is not practicable to locate them on the marking.*						
156.	5.3.17.13 ASMP	**Recommendation.—** *Taxiway centre line lights on a straight section of a taxiway should be spaced at longitudinal intervals of not more than 30 m, except that:* *a) larger intervals not exceeding 60 m may be used where, because of the prevailing meteorological conditions, adequate guidance is provided by such spacing;*						
		b) intervals less than 30 m should be provided on short straight sections; and						
		c) on a taxiway intended for use in RVR conditions of less than a value of 350 m, the longitudinal spacing should not exceed 15 m.						
157.	5.3.17.14 ASMP	**Recommendation.—** *Taxiway centre line lights on a taxiway curve should continue from the straight portion of the taxiway at a constant distance from the outside edge of the taxiway curve. The lights should be spaced at intervals such that a clear indication of the curve is provided.*						
158.	5.3.17.15 ASMP	**Recommendation.—** *On a taxiway intended for use in RVR conditions of less than a value of 350 m, the lights on a curve should not exceed a spacing of 15 m and on a curve of less than 400 m radius the lights should be spaced at intervals of not greater than 7.5 m. This spacing should extend for 60 m before and after the curve.* *Note 1.— Spacings on curves that have been found suitable for a taxiway intended for use in RVR conditions of 350 m or greater are:* Curve radius — Light spacing *up to 400 m — 7.5 m* *401 m to 899 m — 15 m* *900 m or greater — 30 m* *Note 2.— See 3.9.6 and Figure 3-2 ASMP.*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
159.	5.3.17.16 ASMP	**Recommendation.—** *Taxiway centre line lights on a rapid exit taxiway should commence at a point at least 60 m before the beginning of the taxiway centre line curve and continue beyond the end of the curve to a point on the centre line of the taxiway where an aeroplane can be expected to reach normal taxiing speed. The lights on that portion parallel to the runway centre line should always be at least 60 cm from any row of runway centre line lights, as shown in Figure 5-27 ASMP.*						
160.	5.3.17.17 ASMP	**Recommendation.—** *The lights should be spaced at longitudinal intervals of not more than 15 m, except that, where runway centre line lights are not provided, a greater interval not exceeding 30 m may be used.*						
161.	5.3.17.18 ASMP	**Recommendation.—** *Taxiway centre line lights on exit* ***taxiways*** *other than rapid exit taxiways should commence at the point where the taxiway centre line marking begins to curve from the runway centre line, and follow the curved taxiway centre line marking at least to the point where the marking leaves the runway. The first light should be at least 60 cm from any row of runway centre line lights, as shown in Figure 5-27 ASMP.*						
162.	5.3.17.19 ASMP	**Recommendation.—** *The lights should be spaced at longitudinal intervals of not more than 7.5 m****.***						
163.	5.3.17.20 ASMP	**Recommendation.—** ***Taxiway centre line lights on a runway*** *forming part of a standard taxi-route and intended for taxiing in runway visual range conditions less than a value of 350 m should be spaced at longitudinal intervals not exceeding 15 m.*						
	5.3.18	Taxiway edge lights						
164.	5.3.18.1 ASMP	Taxiway edge lights shall be provided at the edges of a runway turn pad, holding bay, de-icing/anti-icing facility, apron, etc. intended for use at night and on a taxiway not provided with taxiway centre line lights and intended for use at night, except that taxiway edge lights need not be provided where, considering the nature of the operations, adequate guidance can be achieved by surface illumination or other means. *Note.— See 5.5.5 ASMP for taxiway edge markers.*						
165.	5.3.18.2 ASMP	Taxiway edge lights shall be provided on a runway forming part of a standard taxi-route and intended for taxiing at night where the runway is not provided with taxiway centre line lights. *Note.— See 8.2.3 ASMP for provisions concerning the inter-locking of runway and taxiway lighting systems.*						
166.	5.3.18.3 ASMP	**Recommendation.—** *Taxiway edge lights on a straight section of a taxiway and on a runway forming part of a standard taxi-route should be spaced at uniform longitudinal intervals of not more than 60 m. The lights on a curve should be spaced at intervals less than 60 m so that a clear indication of the curve is provided.* *Note.— Guidance on the spacing of taxiway edge lights on curves is given in the* Aerodrome Design Manual, *Part*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
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167.	5.3.18.4 ASMP	**Recommendation.—** *Taxiway edge lights on a holding bay, de-icing/anti-icing facility, apron, etc. should be spaced at uniform longitudinal intervals of not more than 60 m.*						
168.	5.3.18.5 ASMP	**Recommendation.—** *Taxiway edge lights on a runway turn pad should be spaced at uniform longitudinal intervals of not more than 30 m.*						
169.	5.3.18.6 ASMP	**Recommendation.—** *The lights should be located as near as practicable to the edges of the taxiway, runway turn pad, holding bay, de-icing/anti-icing facility, apron or runway, etc. or outside the edges at a distance of not more than 3 m.*						
170.	5.3.18.7 ASMP	Taxiway edge lights shall be fixed lights showing blue. The lights shall show up to at least 30° above the horizontal and at all angles in azimuth necessary to provide guidance to a pilot taxiing in either direction. At an intersection, exit or curve the lights shall be shielded as far as practicable so that they cannot be seen in angles of azimuth in which they may be confused with other lights.						
171.	5.3.18.8	The intensity of taxiway edge lights shall be at least 2 cd from 0° to 6° vertical, and 0.2 cd at any vertical angles between 6° and 75						
	5.3.19	Runway turn pad lights						
172.	5.3.19.1 ASMP	Runway turn pad lights shall be provided for continuous guidance on a runway turn pad intended for use in runway visual range conditions less than a value of 350 m, to enable an aeroplane to complete a 180-degree turn and align with the runway centre line.						
173.	5.3.19.2 ASMP	**Recommendation.—** *Runway turn pad lights should be provided on a runway turn pad intended for use at night.*						
174.	5.3.19.3 ASMP	**Recommendation.—** *Runway turn pad lights should normally be **located** on the runway turn pad marking, except that they may be offset by not more than 30 cm where it is not practicable to locate them on the marking.*						
175.	5.3.19.4 ASMP	**Recommendation.—** *Runway turn pad lights on a straight section of the runway turn pad marking should be spaced at longitudinal intervals of not more than 15 m.*						
176.	5.3.19.5 ASMP	**Recommendation.—** *Runway turn pad lights on a curved section of the runway turn pad marking should not exceed a spacing of 7.5 m.*						
177.	5.3.19.6 ASMP	Runway turn pad lights shall be unidirectional fixed lights showing green with beam dimensions such that the light is visible only from aeroplanes on or approaching the runway turn pad.						
178.	5.3.19.7 ASMP	Runway turn pad lights shall be in accordance with the specifications of Appendix 2, Figure A2-13, A2-14 or A2-15 ASMP, as appropriate.						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
	5.3.20	Stop Bars						
		***Note 1**.— A stop bar intended to be controlled either manually or automatically by air traffic services.* **Note 2**.— Runway incursions may take place in all visibility or weather conditions. The provision of stop bars at runway-holding positions and their use at night and in visibility conditions greater than 550 m runway visual range can form part of effective runway incursion prevention measures						
179.	5.3.20.1 ASMP	A stop bar shall be provided at every runway-holding position serving a runway when it is intended that the runway will be used in runway visual range conditions less than a value of 350 m, except where: a) appropriate aids and procedures are available to assist in preventing inadvertent incursions of aircraft and vehicles onto the runway; or						
		b) operational procedures exist to limit, in runway visual range conditions less than a value of 550 m, the number of: 1) aircraft on the manoeuvring area to one at a time; and 2) vehicles on the manoeuvring area to the essential minimum.						
180.	5.3.20.2 ASMP	A stop bar shall be provided at every runway holding position, serving a runway when it is intended that the runway will be used in runway visual range conditions of values between 350 m and 550 m, except where: a) appropriate aids and procedures are available to assist in preventing inadvertent incursions of aircraft and vehicles onto the runway; or						
		b) operational procedures exist to limit, in runway visual range conditions less than a value of 550 m, the number of: 1) aircraft on the manoeuvring area to one at a time; and 2) vehicles on the manoeuvring area to the essential minimum.						
181.	5.3.20.3 ASMP	Where there is more than one stop bar associated with a taxiway/runway intersection, only one shall be illuminated at any given time						
182.	5.3.20.4 ASMP	**Recommendation.—** *A stop bar should be provided at an intermediate holding position when it is desired to supplement markings with lights and to provide traffic control by visual means.*						
183.	5.3.20.5 ASMP	Stop bars shall be located across the taxiway at the point where it is desired that traffic stop. Where the additional lights specified in 5.3.19.4 are provided, these lights shall be located not less than 3 m from the taxiway edge.						
184.	5.3.20.6 ASMP	Stop bars shall consist of lights spaced at intervals of 3 m across the taxiway, showing red in the intended direction(s) of approach to the intersection or runway-						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		holding position. ***Note*** *- Where necessary to enhance conspicuity of an existing stop bar, extra lights are installed uniformly*						
185.	5.3.20.7 ASMP	**Recommendation**.— A pair of elevated lights should be added to each end of the stop bar where the in-pavement stop bar lights might be obscured from a pilot's view, for example, by snow or rain, or where a pilot may be required to stop the aircraft in a position so close to the lights that they are blocked from view by the structure of the aircraft						
186.	5.3.20.8 ASMP	Stop bars installed at a runway-holding position shall be unidirectional and shall show red in the direction of approach to the runway.						
187.	5.3.20.9 ASMP	Where the additional lights specified in 5.3.20.7 are provided, these lights shall have the same characteristics as the lights in the stop bar, but shall be visible to approaching aircraft up to the stop bar position.						
188.	5.3.20.10 ASMP	The intensity in red light and beam spreads of stop bar lights shall be in accordance with the specifications in Appendix 2, Figures A2-12 through A2-16 ASMP, as appropriate.						
189.	5.3.20.11 ASMP	**Recommendation.—** *Where stop bars are specified as components of an advanced surface movement guidance and control system and where, from an operational point of view, higher intensities are required to maintain ground movements at a certain speed in very low visibilities or in bright daytime conditions, the intensity in red light and beam spreads of stop bar lights should be in accordance with the specifications of Appendix 2, Figure A2-17, A2-18 or A2-19ASMP.* *Note.— High-intensity stop bars should only be used in case of an absolute necessity and following a specific study.*						
190.	5.3.20.12 ASMP	**Recommendation.—** *Where a wide beam fixture is required, the intensity in red light and beam spreads of stop bar lights should be in accordance with the specifications of Appendix 2, Figure A2-17 or A2-19ASMP.*						
191.	5.3.20.13 ASMP	The lighting circuit shall be designed so that: a) stop bars located across entrance taxiways are selectively switchable;						
		b) stop bars located across taxiways intended to be used only as exit taxiways are switchable selectively or in groups;						
		c) when a stop bar is illuminated, any taxiway centre line lights installed beyond the stop bar shall be extinguished for a distance of at least 90 m; and						
		d) stop bars shall be interlocked with the taxiway centre line lights so that when the centre line lights beyond the stop bar are illuminated the stop bar is extinguished and vice versa.						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		Note.— Care is required in the design of the electrical system to ensure that all of the lights of a stop bar will not fail at the same time. Guidance on this issue is given in the Aerodrome Design Manual, *Part 5.*						
	5.3.21	Intermediate holding position lights						
192.	ASMP	*Note.— See 5.2.11 for specifications on intermediate holding position marking.*						
193.	5.3.21.1 ASMP	Except where a stop bar has been installed, intermediate holding position lights shall be provided at an intermediate holding position intended for use in runway visual range conditions less than a value of 350 m.						
194.	5.3.21.2 ASMP	**Recommendation.—** *Intermediate holding position lights should be provided at an intermediate holding position where there is no need for stop-and-go signals as provided by a stop bar.*						
195.	5.3.21.3 ASMP	Intermediate holding position lights shall be **located** along the intermediate holding position marking at a distance of 0.3 m prior to the marking.						
196.	5.3.21.4 ASMP	Intermediate holding position lights shall consist of three fixed unidirectional lights showing yellow in the direction of approach to the intermediate holding position with a light distribution similar to taxiway centre line lights if provided. The lights shall be disposed symmetrically about and at right angle to the taxiway centre line, with individual lights spaced 1.5 m apart.						
	5.3.22	De-icing/anti-icing facility exit lights						
197.	5.3.22.1 ASMP	**Recommendation.—** *De-icing/anti-icing facility exit lights should be provided at the exit boundary of a remote de-icing/anti-icing facility adjoining a taxiway.*						
198.	5.3.22.2 ASMP	De-icing/anti-icing facility exit lights shall be located 0.3 m inward of the intermediate holding position marking displayed at the exit boundary of a remote de-icing/anti-icing facility.						
199.	5.3.22.3 ASMP	De-icing/anti-icing facility exit lights shall consist of in-pavement fixed unidirectional lights spaced at intervals of 6 m showing yellow in the direction of the approach to the exit boundary with a light distribution similar to taxiway centre line lights (see Figure 5-28 ASMP).						
	5.3.23	Runway guard lights						
200.	ASMP	*Note.— The purpose of runway guard lights is to warn pilots, and drivers of vehicles when they are operating on taxiways, that they are about to enter an active runway. There are two standard configurations of runway guard lights as illustrated in Figure 5-29 ASMP.*						
201.	5.3.23.1 ASMP	Runway guard lights, Configuration A, shall be provided at each taxiway/runway intersection associated with a runway intended for use in: a) runway visual range conditions less than a value of 550 m where a stop bar is not installed; and b) runway visual range conditions of values between 550 m and 1 200 m where the traffic density is heavy.						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
202.	5.3.23.2 ASMP	**Recommendation.—** *As part of runway incursion prevention* measures, *runway guard lights, Configuration A or B, should be provided at each taxiway/runway intersection where runway incursion hot spots have been identified, and used under all weather conditions during day and night.*						
203.	5.3.22.3 ASMP	**Recommendation.—** *Configuration B runway guard lights should not be collocated with a stop bar*						
204.	5.3.23.4 ASMP	Runway guard lights, Configuration A, shall be located at each side of the taxiway at a distance from the runway centre line not less than that specified for a take-off runway in Table 3-2.						
205.	5.3.23.5 ASMP	Runway guard lights, Configuration B, shall be located across the taxiway at a distance from the runway centre line not less than that specified for a take-off runway in Table 3-2.						
206.	5.3.23.6 ASMP	Runway guard lights, Configuration A, shall consist of two pairs of yellow lights.						
207.	5.3.23.7 ASMP	**Recommendation.—** *Where there is a need to enhance the contrast between the on and off state of runway guard lights, Configuration A, intended for use during the day, a visor of sufficient size to prevent sunlight from entering the lens without interfering with the function of the fixture should be located above each lamp*. ***Note**.— Some other device or design, e.g. specially designed optics, may be used in lieu of the visor.*						
208.	5.3.23.8 ASMP	Runway guard lights, Configuration B, shall consist of yellow lights spaced at intervals of 3 m across the taxiway.						
209.	5.3.23.9 ASMP	The light beam shall be unidirectional and aligned so as to be visible to the pilot of an aeroplane taxiing to the holding position.						
210.	5.3.23.10 ASMP	**Recommendation.—** *The intensity in yellow light and beam spreads of lights of Configuration A should be in accordance with the specifications in Appendix 2, Figure A2-24 ASMP.*						
211.	5.3.23.11 ASMP	**Recommendation.—** *Where runway guard lights are intended for use during the day, the intensity in yellow light and beam spreads of lights of Configuration A should be in accordance with the specifications in Appendix 2, Figure A2-25 ASMP.*						
212.	5.3.23.12 ASMP	**Recommendation.—** *Where runway guard lights are specified as components of an advanced surface movement guidance and control system where higher light intensities are required, the intensity in yellow light and beam spreads of lights of Configuration A should be in accordance with the specifications in Appendix 2, Figure A2-25 ASMP.* ***Note**.— Higher light intensities may be required to maintain ground movement at a certain speed in low*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		visibilities.						
213.	5.3.23.13 ASMP	**Recommendation.—** *The intensity in yellow light and beam spreads of lights of Configuration B should be in accordance with the specifications in Appendix 2, Figure A2-12 ASMP.*						
214.	5.3.23.14 ASMP	**Recommendation.—** *Where runway guard lights are intended for use during the day, the intensity in yellow light and beam spreads of lights of Configuration B should be in accordance with the specifications in Appendix 2, Figure A2-20 ASMP.*						
215.	5.3.23.15 ASMP	**Recommendation.—** *Where runway guard lights are specified as components of an advanced surface movement guidance and control system where higher light intensities are required, the intensity in yellow light and beam spreads of lights of Configuration B should be in accordance with the specifications in Appendix 2, Figure A2-20 ASMP.*						
216.	5.3.23.16 ASMP	The lights in each unit of Configuration A shall be illuminated alternately.						
217.	5.3.23.17 ASMP	For Configuration B, adjacent lights shall be alternately illuminated and alternative lights shall be illuminated in unison.						
218.	5.3.23.18 ASMP	The lights shall be illuminated between 30 and 60 cycles per minute and the light suppression and illumination periods shall be equal and opposite in each light. ***Note**.— The optimum flash rate is dependent on the rise and fall times of the lamps used. Runway guard lights, Configuration A, installed on 6.6 ampere series circuits have been found to look best when operated at 45 to 50 flashes per minute per lamp. Runway guard lights, Configuration B, installed on 6.6 ampere series circuits have been found to look best when operated at 30 to 32 flashes per minute per lamp.*						
	5.3.24	*Apron floodlighting (see also 5.3.16.1 and 5.3.17.1)*						
219.	5.3.24.1 ASMP	**Recommendation.— *Apron floodlighting*** *should be provided on an apron, on a de-icing/anti-icing facility and on a designated isolated aircraft parking position intended to be used at night.* *Note 1.— Where a de-icing/anti-icing facility is located in close proximity to the runway and permanent floodlighting could be confusing to pilots, other means of illumination of the facility may be required.* *Note 2.— The designation of an isolated aircraft parking position is specified in 3.14.* *Note 3.— Guidance on apron floodlighting is given in the* Aerodrome Design Manual, *Part 4.*						
220.	5.3.24.2 ASMP	**Recommendation.—** *Apron floodlights should be located so as to provide adequate illumination on all apron service areas, with a minimum of glare to pilots of aircraft in flight and on the ground, aerodrome and apron*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		controllers, and personnel on the apron. The arrangement and aiming of floodlights should be such that an aircraft stand receives light from two or more directions to minimize shadows.						
221.	5.3.24.3 ASMP	The spectral distribution of apron floodlights shall be such that the colours used for aircraft marking connected with routine servicing, and for surface and obstacle marking, can be correctly identified.						
222.	5.3.24.4 ASMP	**Recommendation.—** *The average illuminance should be at least the following:* *Aircraft stand:* *— horizontal illuminance — 20 lux with a uniformity ratio (average to minimum) of not more than 4 to 1; and* *— vertical illuminance — 20 lux at a height of 2 m above the apron in relevant directions.* *Other apron areas:* *— horizontal illuminance — 50 per cent of the average illuminance on the aircraft stands with a uniformity ratio (average to minimum) of not more than 4 to 1.*						
	5.3.25	Visual Docking Guidance System						
223.	5.3.25.1 ASMP	A visual docking guidance system shall be provided when it is intended to indicate, by a visual aid, the precise positioning of an aircraft on an aircraft stand and other alternative means, such as marshallers, are not practicable. *Note.— The factors to be considered in evaluating the need for a visual docking guidance system are in particular: the number and type(s) of aircraft using the aircraft stand, weather conditions, space available on the apron and the precision required for manoeuvring into the parking position due to aircraft servicing installation, passenger loading bridges, etc. See the* Aerodrome Design Manual, *Part 4 —* Visual Aids *for guidance on the selection of suitable systems.*						
224.	5.3.25.2 ASMP	The system shall provide both azimuth and stopping guidance.						
225.	5.3.25.3 ASMP	The azimuth guidance unit and the stopping position indicator shall be adequate for use in all weather, visibility, background lighting and pavement conditions for which the system is intended both by day and night, but shall not dazzle the pilot. *Note.— Care is required in both the design and on-site installation of the system to ensure that reflection of sunlight, or other light in the vicinity, does not degrade the clarity and conspicuity of the visual cues provided by the system.*						
226.	5.3.25.4 ASMP	The azimuth guidance unit and the stopping position indicator shall be of a design such that: a) a clear indication of malfunction of either or both is available to the pilot; and						
		b) they can be turned off.						
227.	5.3.25.	The azimuth guidance unit and the stopping position						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
	5 ASMP	indicator shall be located in such a way that there is continuity of guidance between the aircraft stand markings, the aircraft stand manoeuvring guidance lights, if present, and the visual docking guidance system.						
228.	5.3.25.6 ASMP	The accuracy of the system shall be adequate for the type of loading bridge and fixed aircraft servicing installations with which it is to be used.						
229.	5.3.25.7 ASMP	**Recommendation.—** *The system should be usable by all types of aircraft for which the aircraft stand is intended, preferably without selective operation.*						
230.	5.3.25.8 ASMP	If selective operation is required to prepare the system for use by a particular type of aircraft, then the system shall provide an identification of the selected aircraft type to both the pilot and the system operator as a means of ensuring that the system has been set properly.						
231.	5.3.25.9 ASMP	The azimuth guidance unit shall be located on or close to the extension of the stand centre line ahead of the aircraft so that its signals are visible from the cockpit of an aircraft throughout the docking manoeuvre and aligned for use at least by the pilot occupying the left seat.						
232.	5.3.25.10 ASMP	**Recommendation.—** *The azimuth guidance unit should be aligned for use by the pilots occupying both the left and right seats.*						
233.	5.3.25.11 ASMP	The azimuth guidance unit shall provide unambiguous left/right guidance which enables the pilot to acquire and maintain the lead-in line without over controlling.						
234.	5.3.25.12 ASMP	When azimuth guidance is indicated by colour change, green shall be used to identify the centre line and red for deviations from the centre line.						
235.	5.3.25.13 ASMP	The stopping position indicator shall be located in conjunction with, or sufficiently close to, the azimuth guidance unit so that a pilot can observe both the azimuth and stop signals without turning the head.						
236.	5.3.25.14 ASMP	The stopping position indicator shall be usable at least by the pilot occupying the left seat.						
237.	5.3.25.15 ASMP	**Recommendation.—** *The stopping position indicator should be usable by the pilots occupying both the left and right seats.*						
238.	5.3.25.16 ASMP	The stopping position information provided by the indicator for a particular aircraft type shall account for the anticipated range of variations in pilot eye height and/or viewing angle.						
239.	5.3.25.17 ASMP	The stopping position indicator shall show the stopping position for the aircraft for which guidance is being provided, and shall provide closing rate information to enable the pilot to gradually decelerate the aircraft to a full stop at the intended stopping position.						
240.	5.3.25.18 ASMP	**Recommendation.—** *The stopping position indicator should provide closing rate information over a distance of at least 10 m.*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
241.	5.3.25. 19 ASMP	When stopping guidance is indicated by colour change, green shall be used to show that the aircraft can proceed and red to show that the stop point has been reached except that for a short distance prior to the stop point a third colour may be used to warn that the stopping point is close.						
	5.3.26	Advance Visual Docking Guidance System						
242.		*Note 1.— Advanced visual docking guidance systems (A-VDGS) include those systems that, in addition to basic and passive azimuth and stop position information, provide pilots with active (usually sensor-based) guidance information, such as aircraft type indication (in accordance with Doc 8643 — Aircraft Type Designators), distance-to-go information and closing speed. Docking guidance information is usually provided on a single display unit.* *Note 2.— An A-VDGS may provide docking guidance information in three stages: the acquisition of the aircraft by the system, the azimuth alignment of the aircraft, and the stopping position information.*						
243.	5.3.26. 1 ASMP	**Recommendation.—** *An A-VDGS should be provided where it is operationally desirable to confirm the correct aircraft type for which guidance is being provided and/or to indicate the stand centre line in use, where more than one is provided for.*						
244.	5.3.26. 2 ASMP	The A-VDGS shall be suitable for use by all types of aircraft for which the aircraft stand is intended.						
245.	5.3.26. 3 ASMP	The A-VDGS shall be used only in conditions in which its operational performance is specified. *Note 1.— The use of the A-VDGS in conditions such as weather, visibility and background lighting, both by day and night, would need to be specified.* *Note 2.— Care is required in both the design and on-site installation of the system to ensure that glare, reflection of sunlight, or other light in the vicinity, does not degrade the clarity and conspicuity of the visual cues provided by the system.*						
246.	5.3.26. 4 ASMP	The docking guidance information provided by an A-VDGS shall not conflict with that provided by a conventional visual docking guidance system on an aircraft stand if both types are provided and are in operational use. A method of indicating that the A-VDGS is not in operational use or is unserviceable shall be provided.						
247.	5.3.26. 5 ASMP	The A-VDGS shall be located such that unobstructed and unambiguous guidance is provided to the person responsible for, and persons assisting, the docking of the aircraft throughout the docking manoeuvre. *Note.— Usually the pilot-in-command is responsible for the docking of the aircraft. However, in some circumstances, another person could be responsible and this person may be the driver of a vehicle that is towing*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		the aircraft.						
248.	5.3.26.6 ASMP	The A-VDGS shall provide, at minimum, the following guidance information at the appropriate stage of the docking manoeuvre: a) an emergency stop indication; b) the aircraft type and model for which the guidance is provided; c) an indication of the lateral displacement of the aircraft relative to the stand centre line; d) the direction of azimuth correction needed to correct a displacement from the stand centre line; e) an indication of the distance to the stop position; f) an indication when the aircraft has reached the correct stopping position; and g) a warning indication if the aircraft goes beyond the appropriate stop position.						
249.	5.3.26.7 ASMP	The A-VDGS shall be capable of providing docking guidance information for all aircraft taxi speeds encountered during the docking manoeuvre. ***Note**.— See the Aerodrome Design Manual (Doc 9157), Part 4, for an indication of the maximum aircraft speeds relative to distance to the stopping position.*						
250.	5.3.26.8 ASMP	The time taken from the determination of the lateral displacement to its display shall not result in a deviation of the aircraft, when operated in normal conditions, from the stand centre line greater than 1 m.						
251.	5.3.26.9 ASMP	**Recommendation.—** *The information on displacement of the aircraft relative to the stand centre line and distance to the stopping position, when displayed, should be provided with the accuracy specified in Table 5-4 ASMP.*						
252.	5.3.26.10 ASMP	Symbols and graphics used to depict guidance information shall be intuitively representative of the type of information provided. ***Note**.— The use of colour would need to be appropriate and need to follow signal convention, i.e. red, yellow and green mean hazard, caution and normal/correct conditions, respectively. The effects of colour contrasts would also need to be considered.*						
253.	5.3.26.11 ASMP	Information on the lateral displacement of the aircraft relative to the stand centre line shall be provided at least 25 m prior to the stop position. ***Note**.— The indication of the distance of the aircraft from the stop position may be colour-coded and presented at a rate and distance proportional to the actual closure rate and distance of the aircraft approaching the stop point.*						
254.	5.3.26.12 ASMP	Continuous closure distance and closure rate shall be provided from at least 15 m prior to the stop position.						
255.	5.3.26.13 ASMP	**Recommendation.—** *Where provided, closure distance displayed in numerals should be provided in metre integers to the stop position and displayed to 1 decimal place at least 3 m prior to the stop position.*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
256.	5.3.26.14 ASMP	Throughout the docking manoeuvre, an appropriate means shall be provided on the A-VDGS to indicate the need to bring the aircraft to an immediate halt. In such an event, which includes a failure of the A-VDGS, no other information shall be displayed.						
257.	5.3.26.15 ASMP	Provision to initiate an immediate halt to the docking procedure shall be made available to personnel responsible for the operational safety of the stand.						
258.	5.3.26.16 ASMP	**Recommendation.—** *The word "stop" in red characters should be displayed when an immediate cessation of the docking manoeuvre is required.*						
	5.3.27	Aircraft Stand Manoeuvring Guidance Lights						
259.	5.3.27.1 ASMP	**Recommendation.—** ***Aircraft stand manoeuvring guidance lights*** *should be provided to facilitate the positioning of an aircraft on an aircraft stand on a paved apron or on a de-icing/anti-icing facility intended for use in poor visibility conditions, unless adequate guidance is provided by other means.*						
260.	5.3.27.2 ASMP	Aircraft stand manoeuvring guidance lights shall be **collocated** with the aircraft stand markings.						
261.	5.3.27.3 ASMP	Aircraft stand manoeuvring guidance lights, other than those indicating a stop position, shall be fixed yellow lights, visible throughout the segments within which they are intended to provide guidance.						
262.	5.3.27.4 ASMP	**Recommendation.—** *The lights used to delineate lead-in, turning and lead-out lines should be spaced at intervals of not more than 7.5 m on curves and 15 m on straight sections.*						
263.	5.3.27.5 ASMP	The lights indicating a stop position shall be fixed, unidirectional lights, showing red.						
264.	5.3.27.6 ASMP	**Recommendation.—** *The intensity of the lights should be adequate for the condition of visibility and ambient light in which the use of the aircraft stand is intended.*						
265.	5.3.27.7 ASMP	**Recommendation.—** *The lighting circuit should be designed so that the lights may be switched on to indicate that an aircraft stand is to be used and switched off to indicate that it is not to be used.*						
	5.3.28	Road-holding position light						
266.	5.3.28.1 ASMP	A Road-holding position light shall be provided at each road-holding position serving a runway when it is intended that the runway will be used in runway visual range conditions less than a value of 350 m.						
267.	5.3.28.2 ASMP	**Recommendation.—** *A road-holding position light should be provided at each road-holding position serving a runway when it is intended that the runway will be used in runway visual range conditions of values between 350 m and 550 m.*						
268.	5.3.28.3 ASMP	A road-holding position light shall be located adjacent to the holding position marking 1.5 m (± 0.5 m) from one edge of the road, i.e. left or right as appropriate to the local traffic regulations.						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		Note.— See 9.9 for the mass and height limitations and frangibility requirements of navigation aids located on runway strips.						
269.	5.3.28.4 ASMP	The road-holding position light shall comprise: a) a controllable red (stop)/green (go) traffic light; or						
		b) a flashing-red light. *Note.— It is intended that the lights specified in sub-paragraph a) be controlled by the air traffic services.*						
270.	5.3.28.5 ASMP	The road-holding position light beam shall be unidirectional and aligned so as to be visible to the driver of a vehicle approaching the holding position.						
271.	5.3.28.6 ASMP	The intensity of the light beam shall be adequate for the conditions of visibility and ambient light in which the use of the holding position is intended, but shall not dazzle the driver. *Note.— The commonly used traffic lights are likely to meet the requirements in 5.3.26.5 and 5.3.26.6.*						
272.	5.3.28.7 ASMP	The flash frequency of the flashing-red light shall be between 30 and 60 per minute.						
273.	5.3.29	No-entry bar						
274.		***Note 1.**— A no-entry bar is intended to be controlled manually by air traffic services.* ***Note 2**.— Runway incursions may take place in all visibility or weather conditions. The provision of no- entry bars at taxiway/runway intersections and their use at night and in all visibility conditions can form part of effective runway incursion prevention measures*						
275.	5.3.29.1 ASMP	***Recommendation**.—A no-entry bar should be provided across a taxiway which is intended to be used as an exit only taxiway to assist in preventing inadvertent access of traffic to that taxiway*						
276.	5.3.29.2ASMP	**Recommendation**.*—A no-entry bar should be located across the taxiway at the end of an exit only taxiway where it is desired to prevent traffic from entering the taxiway in the wrong direction*						
277.	5.3.29.3ASMP	**Recommendation**.*- A no-entry bar should consist of unidirectional lights spaced at uniform intervals of no more than 3 m showing red in the intended direction(s) of approach to the runway* ***Note**.- Where necessary to enhance conspicuity, extra lights are installed uniformly*						
278.	5.3.29.4ASMP	**Recommendation**.*— A pair of elevated lights should be added to each end of the no-entry bar where the in-pavement no entry bar lights might be obscured from a pilot's view, for example, by snow or rain, or where a pilot may be required to stop the aircraft in a position so close to the lights that they are blocked from view by the structure of the aircraft*						
279.	5.3.29.5ASMP	The intensity in red light and beam spreads of no-entry bar lights shall be in accordance with the specifications in Appendix 2, Figures A2-12 through A2-16, as appropriate						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
				S/A	U/S	SAT	U/SAT	
280.	5.3.29. 6ASM P	**Recommendation**.— *Where no-entry bars are specified as components of an advanced surface movement guidance and control system and where, from an operational point of view, higher intensities are required to maintain ground movements at a certain speed in very low visibilities or in bright daytime conditions, the intensity in red light and beam spreads of no-entry bar lights should be in accordance with the specifications of Appendix 2, Figure A2-17, A2-18 or A2-19* ***Note.-** high intensity no entry bars are typically only used incase of an absolute necessity and following a specified study.*						
281.	5.3.29. 7ASM P	***Recommendation**.— Where a wide beam fixture is required, the intensity in red light and beam spreads of no-entry bar lights should be in accordance with the specifications of Appendix 2, Figure A2-17 or A2-19.*						
282.	5.3.29. 8ASM P	The lighting circuit shall be designed so that: a)no-entry bars are switchable selectively or in groups; b)when a no-entry bar is illuminated, any taxiway centre line lights installed beyond the no-entry bar, when viewed towards the runway, shall be extinguished for a distance of at least 90 m; and c)when a no-entry bar is illuminated, any stop bar installed between the no-entry bar and the runway shall be extinguished.						
283.	9.8. ASMP	Surface Movement Guidance and control System						
284.	9.8.6	Where an SMGCS is provided by selective switching of stop bars and taxiway centre line lights, the following requirements shall be met: a) taxiway routes which are indicated by illuminated taxiway centre line lights shall be capable of being terminated by an illuminated stop bar; b) the control circuits shall be so arranged that when a stop bar located ahead of an aircraft is illuminated, the appropriate section of taxiway centre line lights beyond it is suppressed; and c) the taxiway centre line lights are activated ahead of an aircraft when the stop bar is suppressed. *Note 1.— See Sections 5.3.17 and 5.3.20 for specifications on taxiway centre line lights and stop bars, respectively.* *Note 2.— Guidance on installation of stop bars and taxiway centre line lights in SMGCSs is given in the* Aerodrome Design Manual *(Doc 9157), Part 4.*						
285.	9.8.7	**Recommendation.—** *Surface movement radar for the manoeuvring area should be provided at an aerodrome intended for use in runway visual range conditions less than a value of 350 m.*						
286.	9.8.8	**Recommendation.—** *Surface movement radar for the manoeuvring area should be provided at an aerodrome*						

S. No.	Doc. Ref.	Description	Y/N	Status				RMKS
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		other than that in 9.8.7 when traffic density and operating conditions are such that regularity of traffic flow cannot be maintained by alternative procedures and facilities. Note.— Guidance on the use of surface movement radar is given in the Manual of Surface Movement Guidance and Control Systems (SMGCS) *(Doc 9476) and in the* Air Traffic Services Planning Manual *(Doc 9426).*						

Signature:- _____

Name:- _____

Designation:- _____

3.3.5 CHECKLIST OF ELECTRICAL POWER SUPPLY

LOCATION: _____ **DATE: From** _____ **TO** _____

S. No.	Doc Ref	Description	Yes/ No	Status				RMKS
				S/A	U/S	SAT	U/SAT	
Chapter 8. (ASMP) Electrical System								
	8.1	Electrical power supply systems for air navigation facilities						
1.	8.1.1 ASMP A.D Design Manual P4	Adequate primary power supply shall be available at aerodromes for the safe functioning of air navigation facilities. 2.1.2.1 Two independent incoming power sources are desirable for major aerodromes, instead of a single primary power source. They should come from widely separated sections of the electricity network beyond the aerodrome with each supplying separate circuits that would provide integrity of facilities if one failed. Preferably, these sources will have separate feeders from separate substations and will also be from different generators. Other supply arrangements may be used depending on the security, reliability, statistics, or economics applicable to a particular situation,						
2.	8.1.2 ASMP	The design and provision of electrical power systems for aerodrome visual and radio navigation aids shall be such that an equipment failure will not leave the pilot with inadequate visual and non-visual guidance or misleading information. *Note.— The design and installation of the electrical systems need to take into consideration factors that can lead to malfunction, such as electromagnetic disturbances, line losses, power quality, etc. Additional*						

S. No.	Doc Ref	Description	Yes/ No	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		guidance is given in the Aerodrome Design Manual, *Part 5.*						
3.	8.1.3 ASMP AD .Design Manual P4 A.S. Manu. P-9 & T. O	**Recommendation.—** *Electric power supply connections to those facilities for which secondary power is required should be so arranged that the facilities are automatically connected to the secondary power supply on failure of the primary source of power.* *2.1.3.6 Stand-by power sources. Secondary power sources may be engine-generator sets, or turbine generators and which can be automatically connected to the facilities requiring secondary power. The maximum load which can be connected should be within the capacity of the stand-by units. The secondary power source should be capable of supplying power for a time period that exceeds the maximum time needed to restore power from the primary source. Engine-generator sets are often expected to operate for 24 to 72 hours without refuelling.* **Maintenance of generator should be done as per 3.3.8 Airport Service Manual part 9. And Tech order 6.5 Appendix A*						
4.	8.1.4 ASMP	**Recommendation.—** *The time interval between failure of the primary source of power and the complete restoration of the services required by 8.1.10 should be as short as practicable, except that for visual aids associated with non-precision, precision approach or take-off runways the requirements of Table 8-1 for maximum switch-over times should apply.* *Note.— A definition of switch-over time is given in Chapter 1 ASMP*						
		Visual aids						
5.	8.1.6 ASMP	For a precision approach runway, a secondary power supply capable of meeting the requirements of Table 8-1 for the appropriate category of precision approach runway shall be provided. Electric power supply connections to those facilities for which secondary power is required shall be so arranged that the facilities are automatically connected to the secondary power supply on failure of the primary source of power.						
6.	8.1.7 ASMP	For a runway meant for take-off in runway visual range conditions less than a value of 800 m, a secondary power supply capable of meeting the relevant requirements of Table 8-1 shall be provided.						

S. No.	Doc Ref	Description	Yes/ No	Status				RMKS
				S/A	U/S	SAT	U/SAT	
	8.1.8 ASMP	**Recommendation.—** *At an aerodrome where the primary runway is a non-precision approach runway, a secondary power supply capable of meeting the requirements of Table 8-1 should be provided except that a secondary power supply for visual aids need not be provided for more than one non-precision approach runway.*						
7.	8.1.9 ASMP	**Recommendation.—** *At an aerodrome where the primary runway is a non-instrument runway, a secondary power supply capable of meeting the requirements of 8.1.4 should be provided, except that a secondary power supply for visual aids need not be provided when an emergency lighting system in accordance with the specification of 5.3.2 is provided and capable of being deployed in 15 minutes.*						
8.	8.1.10 ASMP	Recommendation.— *The following aerodrome facilities should be provided with a secondary power supply capable of supplying power when there is a failure of the primary power supply:* *a) the signalling lamp and the minimum lighting necessary to enable air traffic services personnel to carry out their duties;* *Note.— The requirement for minimum lighting may be met by other than electrical means.* *b) all obstacle lights which, in the opinion of the appropriate authority, are essential to ensure the safe operation of aircraft;* *c) approach, runway and taxiway lighting as specified in 8.1.6 to 8.1.9;* *d) meteorological equipment;* *e) essential security lighting, if provided in accordance with 9.11;* *f) essential equipment and facilities for the aerodrome responding emergency agencies;* *g) floodlighting on a designated isolated aircraft parking position if provided in accordance with 5.3.23.1; and* *h) illumination of apron areas over which passengers may walk.* *Note.— Specifications for secondary power supply for radio navigation aids and ground elements of communications systems are given in ANO-002-DRTS-1.0, Chapter 2.*						
9.	8.1.11 ASMP	**Recommendation.—** *Requirements for a secondary power supply should be met by either of the following:* — *independent public power, which is a source of power supplying the aerodrome service from a substation other than the normal substation through a transmission line following a route different from the normal power supply route and*						

S. No.	Doc Ref	Description	Yes/ No	Status				RMKS
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		such that the possibility of a simultaneous failure of the normal and independent public power supplies is extremely remote; or — *standby power unit(s), which are engine generators, batteries, etc., from which electric power can be obtained.* *Note.— Guidance on electrical systems is included in the* Aerodrome Design Manual, *Part 5.*						
	8.2	System design						
10.	8.2.1 ASMP	For a runway meant for use in runway visual range conditions less than a value of 550 m, the electrical systems for the power supply, lighting and control of the lighting systems included in Table 8-1 shall be so designed that an equipment failure will not leave the pilot with inadequate visual guidance or misleading information. *Note.— Guidance on means of providing this protection is given in the* Aerodrome Design Manual *(Doc 9157), Part 5.*						
11.	8.2.2 ASMP	Where the secondary power supply of an aerodrome is provided by the use of duplicate feeders, such supplies shall be physically and electrically separate so as to ensure the required level of availability and independence.						
12.	8.2.3 ASMP	Where a runway forming part of a standard taxi-route is provided with runway lighting and taxiway lighting, the lighting systems shall be interlocked to preclude the possibility of simultaneous operation of both forms of lighting.						
	8.3	Monitoring						
13.	ASM P	*Note.— Guidance on this subject is given in the* Aerodrome Design Manual, *Part 5.*						
14.	8.3.1 ASMP	**Recommendation.—** *A system of monitoring should be employed to indicate the operational status of the lighting systems.*						
15.	8.3.2 ASMP	Where lighting systems are used for aircraft control purposes, such systems shall be monitored automatically so as to provide an indication of any fault which may affect the control functions. This information shall be automatically relayed to the air traffic service unit.						
16.	8.3.3 ASMP	**Recommendation.—** *Where a change in the operational status of lights has occurred, an indication should be provided within two seconds for a stop bar at a runway holding position and within five seconds for all other types of visual aids.*						
17.	8.3.4 ASMP	**Recommendation.—** *For a runway meant for use in runway visual range conditions less than a value of 550 m, the lighting systems detailed in Table 8-1 should be monitored automatically so as to provide an indication when the serviceability level of any*						

S. No.	Doc Ref	Description	Yes/ No	Status				RMKS
				S/A	U/S	SAT	U/SAT	
		element falls below the minimum serviceability level specified in 10.4.7 to 10.4.11, as appropriate. This information should be automatically relayed to the maintenance crew.						
18.	8.3.5 ASMP	**Recommendation.—** *For a runway meant for use in runway visual range conditions less than a value of 550 m, the lighting systems detailed in Table 8-1 should be monitored automatically to provide an indication when the serviceability level of any element falls below the minimum level specified by the appropriate authority below which operations should not continue. This information should be automatically relayed to the air traffic services unit and displayed in a prominent position.* *Note.— Guidance on air traffic control interface and visual aids monitoring is included in the* Aerodrome Design Manual, *Part 5.*						

Table 8-1. Secondary power supply requirements

Runway	Lighting aids requiring power	Maximum switch-over time
Non-instrument	Visual approach slope indicators[a], Runway edge[b] Runway threshold[b] Runway end[b] and Obstacle[a]	See 8.1.4 and 8.1.9
Non-precision approach	Approach lighting system	15 seconds
	Visual approach slope indicators[a, d]	15 seconds
	Runway edge[d]	15 seconds
	Runway threshold[d]	15 seconds
	Runway end	15 seconds
	Obstacle[a]	15 seconds
Precision approach category I	Approach lighting system	15 seconds
	Runway edge[d]	15 seconds
	Visual approach slope indicators[a, d]	15 seconds
	Runway threshold[d]	15 seconds
	Runway end	15 seconds

	Essential taxiway[a]	15 seconds
	Obstacle[a]	15 seconds
Precision approach category II/III	Inner 300 m of the approach lighting system	1 second
	Other parts of the approach lighting system	15 seconds
	Obstacle[a]	15 seconds
	Runway edge	15 seconds
	Runway threshold	1 second
	Runway end	1 second
	Runway centre line	1 second
	Runway touchdown zone	1 second
	All stop bars	1 second
	Essential taxiway	15 seconds
Runway meant for take-off in runway visual range conditions less than a value of 800 m	Runway edge	15 seconds[c]
	Runway end	1 second
	Runway centre line	1 second
	All stop bars	1 second
	Essential taxiway[a]	15 seconds
	Obstacle[a]	15 seconds

a. Supplied with secondary power when their operation is essential to the safety of flight operation.
b. See Chapter 5, 5.3.2 regarding the use of emergency lighting.
c. One second where no runway centre line lights are provided.
d. One second where approaches are over hazardous or precipitous terrain.

Signature:- _____

Name:- _____

Designation:- _____

3.3.6 CHECKLIST OF FIRE & SAFETY (F&S):

Location: _____ **Date: From** _____ **to** _____

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
				S/A	U/S	SAT	U/SAT	
Chapter 9. (ASMP) Aerodrome Operational services, equipment and installations								
	9.1	**Aerodrome emergency planning**						
1.		***General*** *Introductory Note.— Aerodrome emergency planning is the process of preparing an aerodrome to cope with an emergency occurring at the aerodrome or in its vicinity. The objective of aerodrome emergency planning is to minimize the effects of an emergency, particularly in respect of saving lives and maintaining aircraft operations. The aerodrome emergency plan sets forth the procedures for coordinating the response of*						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
				S/A	U/S	SAT	U/SAT	
		different aerodrome agencies (or services) and of those agencies in the surrounding community that could be of assistance in responding to the emergency. Guidance material to assist the appropriate authority in establishing aerodrome emergency planning is given in the Airport Services Manual *(Doc 9137), Part 7.*						
2.	9.1.1 ASMP	An aerodrome emergency plan shall be established at an aerodrome, commensurate with the aircraft operations and other activities conducted at the aerodrome.						
3.	9.1.2 ASMP	The aerodrome emergency plan shall provide for the coordination of the actions to be taken in an emergency occurring at an aerodrome or in its vicinity. ***Note 1**.— Examples of emergencies are: aircraft emergencies, sabotage including bomb threats, unlawfully seized aircraft, dangerous goods occurrences, building fires, natural disaster and public health emergencies.* ***Note 2**.— Examples of public health emergencies are increased risk of travellers or cargo spreading a serious communicable disease internationally through air transport and severe outbreak of a communicable disease potentially affecting a large proportion of aerodrome staff.*						
4.	9.1.3 ASMP	The plan shall coordinate the response or participation of all existing agencies which, in the opinion of the appropriate authority, could be of assistance in responding to an emergency. ***Note 1**.— Examples of agencies are:* *- on the aerodrome: air traffic control units, rescue and fire fighting services, aerodrome administration, medical and ambulance services, aircraft operators, security services, and police;* *- off the aerodrome: fire departments, police, health authorities (including medical, ambulance, hospital and public health services), military, and harbour patrol or coast guard.* ***Note 2**.— Public health services include planning to minimize adverse effects to the community from health-related events and deal with population health issues rather than provision of health services to individuals*						
5.	9.1.4 ASMP	**Recommendation.—** *The plan should provide for cooperation and coordination with the rescue coordination centre, as necessary.*						
6.	9.1.5 ASMP	**Recommendation.—** *The aerodrome emergency plan document should include at least the following:* *a) types of emergencies planned for;* *b) agencies involved in the plan;* *c) responsibility and role of each agency, the emergency operations centre and the command post, for each type of emergency;* *d) information on names and telephone numbers of offices*						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
				S/A	U/S	SAT	U/SAT	
		or people to be contacted in the case of a particular emergency; and *e) a grid map of the aerodrome and its immediate vicinity.*						
7.	9.1.6 ASMP	The plan shall observe Human Factors principles to ensure optimum response by all existing agencies participating in emergency operations. ***Note**.— Guidance material on Human Factors principles can be found in the* Human Factors Training Manual *(Doc 9683).*						
8.	9.1.7 ASMP	***Emergency operations centre and command post*** **Recommendation.—** *A fixed emergency operations centre and a mobile command post should be available for use during an emergency.*						
9.	9.1.8 ASMP	**Recommendation.—** *The emergency operations centre should be a part of the aerodrome facilities and should be responsible for the overall coordination and general direction of the response to an emergency.*						
10.	9.1.9 ASMP	**Recommendation.—** *The command post should be a facility capable of being moved rapidly to the site of an emergency, when required, and should undertake the local coordination of those agencies responding to the emergency.*						
11.	9.1.10 ASMP	**Recommendation.—** *A person should be assigned to assume control of the emergency operations centre and, when appropriate, another person the command post*						
12.	9.1.11 ASMP	***Communication system*** **Recommendation.—** *Adequate communication systems linking the command post and the emergency operations centre with each other and with the participating agencies should be provided in accordance with the plan and consistent with the particular requirements of the aerodrome.*						
13.	9.1.12 ASMP	***Aerodrome emergency exercise*** The plan shall contain procedures for periodic testing of the adequacy of the plan and for reviewing the results in order to improve its effectiveness. ***Note**.— The plan includes all participating agencies and associated equipment.*						
14.	9.1.13 ASMP	The plan shall be tested by conducting: a) a full-scale aerodrome emergency exercise at intervals not exceeding two years; and partial emergency exercises in the intervening year to ensure that any deficiencies found during the full-scale aerodrome						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
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		emergency exercise have been corrected; or b) a series of modular tests commencing in the first year and concluding in a full-scale aerodrome emergency exercise at intervals not exceeding three years; and reviewed thereafter, or after an actual emergency, so as to correct any deficiency found during such exercises or actual emergency. ***Note 1**.— The purpose of a full-scale exercise is to ensure the adequacy of the plan to cope with different types of emergencies. The purpose of a partial exercise is to ensure the adequacy of the response to individual participating agencies and components of the plan, such as the communications system. The purpose of modular tests is to enable concentrated effort on specific components of established emergency plans.* ***Note** 2.— Guidance material on airport emergency planning is available in the Airport Services Manual, Part 7.*						
15.	9.1.14 ASMP	***Emergencies in difficult environments*** The plan shall include the ready availability of, and coordination with, appropriate specialist rescue services to be able to respond to emergencies where an aerodrome is located close to water and/or swampy areas and where a significant portion of approach or departure operations takes place over these areas.						
16.	9.1.15 ASMP	**Recommendation.—** *At those aerodromes located close to water and/or swampy areas, or difficult terrain, the aerodrome emergency plan should include the establishment, testing and assessment at regular intervals of a predetermined response for the specialist rescue services*						
17.	9.1.16 ASMP	**Recommendation.—** *An assessment of the approach and departure areas within 1,000 m of the runway threshold should be carried out to determine the options available for intervention.* ***Note**.- Guidance material on assessing approach and departure areas within 1,000 m of runway thresholds can be found in Chapter 13 of the Airport Services Manual (Doc 9137), Part 1.*						
	9.2	Rescue and fire fighting						
18.	9.2.1 ASMP	***Application*** Rescue and firefighting equipment and services shall be provided at an aerodrome. ***Note**.— Public or private organizations, suitably located and equipped, may be designated to provide the rescue and fire fighting service. It is intended that the fire station housing these organizations be normally located on the aerodrome, although an off-aerodrome location is not precluded provided the response time can be met.*						
19.	9.2.2	Where an aerodrome is located close to water/swampy areas,						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
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	ASMP	or difficult terrain, and where a significant portion of approach or departure operations takes place over these areas, specialist rescue services and firefighting equipment appropriate to the hazard and risk shall be available. ***Note 1.***— *Special firefighting equipment need not be provided for water areas; this does not prevent the provision of such equipment if it would be of practical use, such as when the areas concerned include reefs or islands.* ***Note 2.***— *The objective is to plan and deploy the necessary life-saving flotation equipment as expeditiously as possible in a number commensurate with the largest aeroplane normally using the aerodrome*. ***Note 3.***— *Additional guidance is available in Chapter 13 of the* Airport Services Manual *(Doc 9137), Part 1*.						
20.	9.2.3 ASMP	***Level of protection to be provided*** The level of protection provided at an aerodrome for rescue and fire fighting shall be appropriate to the aerodrome category determined using the principles in 9.2.5 and 9.2.6, except that, where the number of movements of the aeroplanes in the highest category normally using the aerodrome is less than 700 in the busiest consecutive three months, the level of protection provided shall be not less than one category below the determined category. ***Note.***— *Either a take-off or a landing constitutes a movement.*						
21.	9.2.4 ASMP	***Level of protection to be provided*** **Recommendation.—** *The level of protection provided at an aerodrome for rescue and fire fighting should be equal to the aerodrome category determined using the principles in 9.2.5 and 9.2.6.*						
22.	9.2.5 ASMP	The aerodrome category shall be determined from Table 9-1 and shall be based on the longest aeroplanes normally using the aerodrome and their fuselage width. ***Note.***— *To categorize the aeroplanes using the aerodrome, first evaluate their overall length and second, their fuselage width.*						
23.	9.2.6 ASMP	If, after selecting the category appropriate to the longest aeroplane's overall length, that aeroplane's fuselage width is greater than the maximum width in Table 9-1, column 3, for that category, then the category for that aeroplane shall actually be one category higher. ***Note 1.***— *See guidance in the* Airport Services Manual *(Doc 9137), Part 1, for categorizing aerodromes, including those for all-cargo aircraft operations, for rescue and fire fighting purposes.* ***Note 2.***— *Guidance on training of personnel, rescue equipment for difficult environments and other facilities and services for rescue and fire fighting is given in Attachment A, Section 18, and in the* Airport Services Manual *(Doc*						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
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		9137), Part 1.						
24.	9.2.7 ASMP	During anticipated periods of reduced activity, the level of protection available shall be no less than that needed for the highest category of aeroplane planned to use the aerodrome during that time irrespective of the number of movements.						
25.	9.2.8 ASMP	***Extinguishing agents*** **Recommendation.—** *Both principal and complementary agents should normally be provided at an aerodrome.* ***Note**.— Descriptions of the agents may be found in the* Airport Services Manual *(Doc 9137), Part 1.*						
26.	9.2.9 ASMP	**Recommendation.—** *The principal extinguishing agent should be:*						
		a foam meeting the minimum performance level A; or						
		a foam meeting the minimum performance level B; or						
		a foam meeting the minimum performance Level C; or						
		a combination of these agents; *except that the principal extinguishing agent for aerodromes in categories 1 to 3 should preferably meet a performance level B or C foam.* ***Note**.— Information on the required physical properties and fire extinguishing performance criteria needed for a foam to achieve an acceptable performance level A, B or C rating is given in the* Airport Services Manual *(Doc 9137), Part 1.*						
27.	9.2.10 ASMP	**Recommendation.—** *The complementary extinguishing agent should be a dry chemical powder suitable for extinguishing hydrocarbon fires.* ***Note 1**.— When selecting dry chemical powders for use with foam, care must be exercised to ensure compatibility.* ***Note 2**.— Alternate complementary agents having equivalent fire fighting capability may be utilized. Additional information on extinguishing agents is given in the* Airport Services Manual *(Doc 9137), Part 1.*						
28.	9.2.11 ASMP	The amounts of water for foam production and the complementary agents to be provided on the rescue and fire fighting vehicles shall be in accordance with the aerodrome category determined under 9.2.3, 9.2.4, 9.2.5, 9.2.6 and Table 9-2, except that for aerodrome categories 1 and 2 up to 100 per cent of the water may be substituted with complementary agent; For the purpose of agent substitution, 1 kg of complementary agent shall be taken as equivalent to 1.0L of water for production of a foam meeting performance level A. ***Note 1**.— The amounts of water specified for foam production are predicated on an application rate of 8.2 L/min/m^2 for a foam meeting performance level A, 5.5 L/min/m^2 for a foam meeting performance level B and 3.75 L/min/m2 for a foam meeting performance Level C.*						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
				S/A	U/S	SAT	U/SAT	
		***Note 2**.— When any other complementary agent is used, the substitution ratios need to be checked.*						
29.	9.2.12 ASMP	**Recommendation.—** *At aerodromes where operations by aeroplanes larger than the average size in a given category are planned, the quantities of water should be recalculated and the amount of water for foam production and the discharge rates for foam solution should be increased accordingly.* ***Note**.— Guidance on the determination of quantities of water and discharge rates based on the largest theoretical aeroplane in a given category is available in Chapter 2 of the* Airport Services Manual *(Doc 9137), Part 1*.						
30.	9.2.13 ASMP	From 1 January 2015, at aerodromes where operations by aeroplanes larger than the average size in a given category are planned, the quantities of water shall be recalculated and the amount of water for foam production and the discharge rates for foam solution shall be increased accordingly. ***Note**.— Guidance on the determination of quantities of water and discharge rates based on the largest overall length of aeroplane in a given category is available in Chapter 2 of the* Airport Services Manual *(Doc 9137), Part 1.*						
31.	9.2.14 ASMP	The quantity of foam concentrates separately provided on vehicles for foam production shall be in proportion to the quantity of water provided and the foam concentrate selected.						
32.	9.2.15 ASMP	**Recommendation.—** *The amount of foam concentrate provided on a vehicle should be sufficient to produce at least two loads of foam solution.*						
33.	9.2.16 ASMP	**Recommendation.—** *Supplementary water supplies, for the expeditious replenishment of rescue and fire fighting vehicles at the scene of an aircraft accident, should be provided.*						
34.	9.2.17 ASMP	**Recommendation.—** *When a combination of different performance level foams are provided at an aerodrome, the total amount of water to be provided for foam production should be calculated for each foam type and the distribution of these quantities should be documented for each vehicle and applied to the overall rescue and fire fighting requirement.*						
35.	9.2.18 ASMP	The discharge rate of the foam solution shall not be less than the rates shown in Table 9-2.						
36.	9.2.19 ASMP	The complementary agents shall comply with the appropriate specifications of the International Organization for Standardization (ISO).*						
37.	9.2.20 ASMP	**Recommendation.—** *The discharge rate of complementary agents should be no less than the values shown in Table 9-2.*						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
				S/A	U/S	SAT	U/SAT	
38.	9.2.21 ASMP	**Recommendation.—** *Dry chemical powders should only be substituted with an agent that has equivalent or better fire fighting capabilities for all types of fires where complementary agent is expected to be used.* ***Note**.— Guidance on the use of complementary agents can be found in the* Airport Services Manual *(Doc 9137), Part 1.*						
39.	9.2.22 ASMP	**Recommendation.—** *A reserve supply of foam concentrate, equivalent to 200 per cent of the quantities identified in Table 9-2, should be maintained on the aerodrome for vehicle replenishment purposes.* ***Note**.— Foam concentrate carried on fire vehicles in excess of the quantity identified in Table 9-2 can contribute to the reserve.*						
40.	9.2.23 ASMP	**Recommendation.—** *A reserve supply of complementary agent, equivalent to 100 per cent of the quantity identified in Table 9-2, should be maintained on the aerodrome for vehicle replenishment purposes. Sufficient propellant gas should be included to utilize this reserve complementary agent.*						
41.	9.2.24 ASMP	**Recommendation.—** *Category 1 and 2 aerodromes that have replaced up to 100 per cent of the water with complementary agent should hold a reserve supply of complementary agent of 200 per cent.*						
42.	9.2.25 ASMP	**Recommendation.—** *Where a major delay in the replenishment of the supplies is anticipated, the amount of reserve supply in 9.2.22, 9.2.23 and 9.2.24 should be increased as determined by a risk assessment.* ***Note**.— See* Airport Services Manual *(Doc 9137), Part 1 for guidance on the conduct of a risk analysis to determine the quantities of reserve extinguishing agents*						
43.	9.2.26 ASMP	***Rescue equipment*** **Recommendation.—** *Rescue equipment commensurate with the level of aircraft operations should be provided on the rescue and fire fighting vehicle(s).* ***Note**.— Guidance on the rescue equipment to be provided at an aerodrome is given in the* Airport Services Manual *(Doc 9137), Part 1.*						
44.	Airport S. Manual -1	List of rescue equipments as per airport service manual Part 1.						
45.	9.2.27 ASMP	***Response time*** The operational objective of the rescue and fire fighting service shall be to achieve a response time not exceeding three minutes to any point of each operational runway, in optimum visibility and surface conditions						
46.	9.2.28 ASMP	**Recommendation.—** *The operational objective of the rescue and fire fighting service should be to achieve a response time not exceeding two minutes to any point of each operational*						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
				S/A	U/S	SAT	U/SAT	
		runway, in optimum visibility and surface conditions						
47.	9.2.29 ASMP	**Recommendation.—** *The operational objective of the rescue and fire fighting service should be to achieve a response time not exceeding three minutes to any other part of the movement area, in optimum visibility and surface conditions.* ***Note 1**.— Response time is considered to be the time between the initial call to the rescue and fire fighting service, and the time when the first responding vehicle(s) is (are) in position to apply foam at a rate of at least 50 per cent of the discharge rate specified in Table 9-2.* ***Note 2**.— Optimum visibility and surface conditions are defined as daytime, good visibility, no precipitation with normal response route free of surface contamination, e.g. water, ice or snow.*						
48.	9.2.30 ASMP	**Recommendation.—** *To meet the operational objective as nearly as possible in less than optimum conditions of visibility, especially during low visibility operations, suitable guidance, equipment and/or procedures for rescue and fire fighting services should be provided.* *Note.— Additional guidance is available in the* Airport Services Manual *(Doc 9137), Part 1*.						
49.	9.2.31 ASMP	Any vehicles, other than the first responding vehicle(s), required to deliver the amounts of extinguishing agents specified in Table 9-2 shall ensure continuous agent application and shall arrive no more than four minutes from the initial call.						
50.	9.2.32 ASMP	**Recommendation.—** *Any vehicles, other than the first responding vehicles(s), required to deliver the amounts of extinguishing agents specified in Table 9-2 should ensure continuous agent application and should arrive no more than three minutes from the initial call.*						
51.	9.2.33 ASMP	**Recommendation.—** *A system of preventive maintenance of rescue and fire fighting vehicles should be employed to ensure effectiveness of the equipment and compliance with the specified response time throughout the life of the vehicle.*						
52.	9.2.34 ASMP	***Emergency access roads*** **Recommendation.—** *Emergency access roads should be provided on an aerodrome where terrain conditions permit their construction, so as to facilitate achieving minimum response times. Particular attention should be given to the provision of ready access to approach areas up to 1000 m from the threshold, or at least within the aerodrome boundary. Where a fence is provided, the need for convenient access to outside areas should be taken into account.* ***Note**.— Aerodrome service roads may serve as emergency access roads when they are suitably located and constructed.*						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
				S/A	U/S	SAT	U/SAT	
53.	9.2.35 ASMP	**Recommendation.—** *Emergency access roads should be capable of supporting the heaviest vehicles which will use them, and be usable in all weather conditions. Roads within 90 m of a runway should be surfaced to prevent surface erosion and the transfer of debris to the runway. Sufficient vertical clearance should be provided from overhead obstructions for the largest vehicles.*						
54.	9.2.36 ASMP	**Recommendation.—** *When the surface of the road is indistinguishable from the surrounding area, or in areas where snow may obscure the location of the roads, edge markers should be placed at intervals of about 10 m.*						
55.	9.2.37 ASMP	***Fire stations*** **Recommendation.—** *All rescue and fire fighting vehicles should normally be housed in a fire station. Satellite fire stations should be provided whenever the response time cannot be achieved from a single fire station*						
56.	9.2.38 ASMP	**Recommendation.—** *The fire station should be located so that the access for rescue and fire fighting vehicles into the runway area is direct and clear, requiring a minimum number of turns.*						
57.	Airport S. Manual - 1	Number of Fire station						
58.	Airport S. Manual - 1	Satellite fire station						
59.	Airport S. Manual - 1	Does fire station include the following; a). Adequate accommodation for housing of RFF vehicles.						
		b). Minimum clearance of 1.2m around each vehicle.						
		c). Adequate space to conduct in service (minor) maintenance.						
		d). Appropriate storage and technical support facilities.						
		e). Adequate lighting.						
		f). Electrical system for RFF vehicles battery charging, engine heater etc.						
		g). Exhaust fans to avoid contamination/ suffocation during periodic engine run.						
		h). Replenishment of auxiliary water tank vehicles.						
		i). Compressor for maintaining RFF vehicles tyre pressure.						
		j). Standby electrical power						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
				S/A	U/S	SAT	U/SAT	
		k). Public address system						
		Sound proof watch room						
60.	Airport S. Manual - 1	Does Domestic facilities for the personnel required to operate and direct RFF service include following? a). Locker room						
		b). Mess room						
		c). Washroom included showers						
		d). Drying room where wet clothes are allowed to dry quickly.						
		e). Heating and air-conditioning						
61.	9.2.39 ASMP	***Communication and alerting systems*** **Recommendation.—** *A discrete communication system should be provided linking a fire station with the control tower, any other fire station on the aerodrome and the rescue and fire fighting vehicles.*						
62.	9.2.40 ASMP	**Recommendation.—** *An alerting system for rescue and fire fighting personnel, capable of being operated from that station, should be provided at a fire station, any other fire station on the aerodrome and the aerodrome control tower.*						
63.	Airport S. Manual - 1	The direct line with ATC identifiable by a distinguished buzzer.						
64.	Airport S. Manual - 1	The direct line with ATC is identifiable by a warning light.						
65.	Airport S. Manual - 1	A public address system at fire Station to allow all areas to receive instructions.						
66.	Airport S. Manual - 1	Siren/air horn at control tower/Fire station that can be heard in all areas to notify auxiliary personnel of an emergency.						
67.	Airport S. Manual - 1	A separate telephone circuit from telephone switchboard for calls of non-emergency in the watch room						
68.	9.2.41 ASMP	***Number of rescue and fire fighting vehicles*** **Recommendation.—** *The minimum number of rescue and fire fighting vehicles provided at an aerodrome should be in accordance with the following tabulation:* ***Note**.— Guidance on minimum characteristics of rescue and fire fighting vehicles is given in the* Airport Services Manual *(Doc 9137), Part 1.*						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
				S/A	U/S	SAT	U/SAT	
69.	Airport S. Manual - 1	**Minimum characteristics of rescue and fire fighting (RFF) vehicles**						
		RFF vehicles						
		Monitor						
		Design feature						
		Range						
		Hand lines						
		Under truck nozzles						
		Bumper turret						
		Acceleration						
		Top speed						
		All-wheel drive capability						
		Automatic or semi-automatic Transmission						
		Single rear wheel Configuration						
		Minimum angle of approach and departure						
		Minimum angle of tilt (static)						
70.	Airport S. Manual - 1	Are RFF vehicles provided with; a) Searchlights or floodlights						
		b) Beacon light/siren.						
		c) Public address system.						
71.	Airport S. Manual - 1	Test of the RFF vehicles to be checked; a) Acceleration.						
		b) Top speed.						
		c) Foam output through. i. Monitor ii. Side lines iii. Bumper turret iv. Under truck						
		d) Checks including, i. Range & Pattern of Foam ii. Low output iii. High output						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
				S/A	U/S	SAT	U/SAT	
		iv. Flushing system v. Replenishment system						
72.	9.2.42 ASMP	***Personnel*** All rescue and fire fighting personnel shall be properly trained to perform their duties in an efficient manner and shall participate in live fire drills commensurate with the types of aircraft and type of rescue and fire fighting equipment in use at the aerodrome, including pressure-fed fuel fires. ***Note 1***.— *Guidance to assist the appropriate authority in providing proper training is given in Attachment A, Section 18, and the* Airport Services Manual *(Doc 9137), Part 1.* ***Note 2***.— *Fires associated with fuel discharged under very high pressure from a ruptured fuel tank are known as "pressure-fed fuel fires".*						
73.	9.2.43 ASMP	The rescue and fire fighting personnel training programme shall include training in human performance, including team coordination. ***Note***.— *Guidance material to design training programmes on human performance and team coordination can be found in the* Human Factors Training Manual *(Doc 9683).*						
74.	Airport S. Manual - 1	Are RFF personnel **trained** in following fields; a). Fire and fire extinction						
		b). Type of extinguishing agents						
		c). Handling of RFF equipments						
		d). Local topography						
		e). Aircraft familiarization						
		f). First aid						
		g). Search and rescue						
		h). Fire fighting tactics						
75.	9.2.44 ASMP	**Recommendation.—** *During flight operations, sufficient trained and competent personnel should be designated to be readily available to ride the rescue and fire fighting vehicles and to operate the equipment at maximum capacity. These personnel should be deployed in a way that ensures that minimum response times can be achieved and that continuous agent application at the appropriate rate can be fully maintained. Consideration should also be given for personnel to use hand lines, ladders and other rescue and fire fighting equipment normally associated with aircraft rescue and fire fighting operations.*						
76.	9.2.45 ASMP	**Recommendation.—** *In determining the minimum number of rescue and fire fighting personnel required, a task resource analysis should be completed and the level of staffing*						

S. No.	Doc Ref.	Description	Y/N	Status				Remarks
				S/A	U/S	SAT	U/SAT	
		documented in the Aerodrome Manual. ***Note**: - Guidance on the use of a task resource analysis can be found in the* Airport Services Manual *(Doc 9137), Part 1.*						
77.	9.2.42 ASMP	All responding rescue and fire fighting personnel shall be provided with protective clothing and respiratory equipment to enable them to perform their duties in an effective manner.						
78.	9.6.1 ASMP	Fire extinguishing equipment suitable for at least initial intervention in the event of a fuel fire and personnel trained in its use shall be readily available during the ground servicing of an aircraft, and there shall be a means of quickly summoning the rescue and fire fighting service in the event of a fire or major fuel spill.						
79.	9.6.2 ASMP	When aircraft refueling operations take place while passengers are embarking, on board or disembarking, ground equipment shall be positioned so as to allow: a) The use of a sufficient number of exits for expeditious evacuation; and b) A ready escape route from each of the exits to be used in an emergency.						
		AMBULANCE & MEDICAL FACILITIES:-						
80.	Airport S. Manual - 1	Provision of adequate medical services and supplies at the airport.						
81.	Airport S. Manual - 1	Availability of first aid crew or trained personnel to deal with the emergency						
82.	Airport S. Manual - 1	Availability of Priority tags						
83.	Airport S. Manual - 1	RFFS personnel trained in CPR						
84.	Airport S. Manual - 1	mutual aid emergency agreements with local fire department, Hospitals and ambulance services						
85.	Airport S. Manual - 1	Availability of stretchers, blankets, backboards and/or immobilizing mattresses for use at airport preferably on suitable vehicles (trailer), which can be transported to the accident site						
86.	Airport S. Manual - 1	Sufficient emergency oxygen and respiratory equipments to treat smoke inhalation victims						
87.	S.O.P	**SCALE OF MEDICAL EQUIPMENT FOR AMBULANCES** **AMBULANCE (As per attachment given below)**						

Signature:- _____

Name:- _____

Designation:- _____

3.3.7 CHECKLIST OBSTACLE LIMITATION SURFACES (OLS):

Location _____ **Date: From**_____ **to** _____

S. No.	Doc. Ref.	Descriptions of Findings (N.Cs & Obs.)	Yes	No	Remarks

1.	2.5.5 ASMP	a) Are geographical coordinates of all obstacles around the airport are published in AIP Pakistan?			
2.	3.4.6 ASMP Para 2a(i) of Rule 68 of CARs 1994	*Recommendation: Is any object situated on a runway strip which may endanger to aeroplanes?*			
3.	3.4.7 ASMP (N.C)	i. Is any fixed object other than visual aids required for air navigation purposes situated on a runway strip? ii. Is any visual aid required for air navigation purposes situated on a runway strip? iii. Is it satisfying the frangibility requirements on a runway strip; a) within 77.5 m of the runway centre line of a precision approach runway category I, II or III where the code number is 4 and the code letter is F? or b) within 60 m of the runway centre line of a precision approach runway category I, II or III where the code number is 3 or 4? Or c) within 45 m of the runway centre line of a precision approach runway category I where the code number is 1 or 2? iv. Is any mobile object being permitted on the runway strip during the use of the runway for landing or take-off?			
	Para 2a(i) of Rule 68 of CARs 1994 (N.C)	a) Is any object located in the clearance area of 1500 feet wide symmetrically about the runway and extending the full length of the runway? b) Is any object located in the clearance area of 900 feet beyond each end of the runway? c) Is any object located in the clearance area of 3000 feet beyond 900 feet from each end of the runway and widening over its length from 1500 feet to a width of 2120 feet symmetrically about the runway?			
4.	3.5.7 ASMP (Obs)	*a) Is any object situated on a runway end safety area endangers aeroplanes?*			
5.	Para 2a(i) of Rule 68 of CARs 1994 (N.C)	a) Is any object located in the clearance area of 3000 feet beyond 900 feet from each end of the runway and widening over its length from 1500 feet to a width of 2120 feet symmetrically about the runway?			
6.	3.6.6 ASMP (Obs)	*a) Is any object situated on a clearway endangers aeroplanes?*			
7.	Para 2a(i) of Rule 68 of CARs 1994 (N.C)	a) Is any object located in the clearance area of 3000 feet beyond 900 feet from each end of the runway and widening over its length from 1500 feet to a width of 2120 feet symmetrically about the runway?			

8.	3.9 ASMP (N.C)	a) Are taxiway minimum separation distances available as per Table 3-1 of ASMP?			
	Para 2a(ii) of Rule 68 of CARs 1994 (N.C)	a) Is a clearance area of 450 feet wide, centered on the taxiway and extending the full length of the taxiway?			
9.	3.11.3 ASMP (Obs)	*a) Is any object situated on taxiway strip endangers taxiing aeroplanes?*			
	Para 2a(ii) of Rule 68 of CARs 1994 (N.C)	a) Is any object situated on the clearance area of 450 feet wide, centered on the taxiway and extending the full length of the taxiway?			
10.	3.13.6 ASMP (Obs)	*a) Are the following minimum clearances available between an aircraft using the stand and any adjacent building, aircraft on another stand and other objects?*			
		Code letter — Clearance			
		A — 3 m			
		B — 3 m			
		C — 4.5 m			
		D — 7.5 m			
		E — 7.5 m			
		F — 7.5 m			
11.	Para 2a(iii) of Rule 68 of CARs 1994 (N.C)	a) Is a clearance area of 125 feet available outside the edges of an apron? b) Is any object situated on a clearance area of 125 feet available outside the edges of an apron?			
12.	4.1 ASMP (Obs)	*a) Is any violation observed in Outer Horizontal Surface (from 6 to15 kms)?*			
	Para 2b(v) of Rule 68 of CARs 1994 (N.C)	a) Is any violation observed in Outer Horizontal Surface (from 6 to15 kms)?			
13.	4.1.1 ASMP (N.C)	a) Is any violation observed in Conical Surface (from 4 to 6 kms)?			
	Para 2b(iv) of Rule 68 of CARs 1994 (N.C)	a) Is any violation observed in Conical Surface (from 4 to 6 kms)?			
14.	4.1.4 ASMP	a) Is any violation observed in Inner Horizontal Surface (within 4 kms)?			

	(N.C)				
	Para 2b(iii) of Rule 68 of CARs 1994 (N.C)	a) Is any violation observed in Inner Horizontal Surface (within 4 kms)?			
15.	4.1.7 ASMP (N.C)	a) Is any violation observed in Funnel / Approach area as per Table 4-1 of ASMP?			
	Para 2b(i)(ii) of Rule 68 of CARs 1994 (N.C)	a) Is any violation observed in Funnel / Approach?			
16.	4.1.13 ASMP (N.C)	a) Is any violation observed in Transition area as per Table 4-1 of ASMP?			
	Para 2b(vi) of Rule 68 of CARs 1994 (N.C)	a) Is any violation observed in Transition area?			
17.	6.1, 6.2, 6.3 & 6.4 ASMP (N.C)	a) Is any fixed obstacle situated in take off climb area, approach or transition surface marked / flag / lighted as per ASMP?			
18.		b) Is any Mobile obstacle situated in take off climb area, approach or transition surface marked / flag / lighted as per ASMP?			
19.	9.9 ASMP (N.C)	Is any equipment or installation required for air navigation purposes located on or near a strip of a precision approach runway category I, II or III? and which: a) is situated on that portion of the strip within 77.5 m of the runway centre line where the code number is 4 and the code letter is F; or b) is situated within 240 m from the end of the strip and within: 1) 60 m of the extended runway centre line where the code number is 3 or 4; or 2) 45 m of the extended runway centre line where the code number is 1 or 2; or c) penetrates the inner approach surface, the inner transitional surface or the balked landing surface; shall be frangible and mounted as low as possible.			
20.	Para 2.2.5 of Doc 9137 Part 6	a) Has APM self or designated a member of his staff responsible for the control of obstacles at & around his Airport?			

	(Obs)	b) Has APM self or designated a member of his staff to coordinate with government / local agencies to ensure and prevent erection of obstacles at & around his airport? c) Has APM self or designated a member of his staff to maintain constant vigilance to prevent erection of obstacles at & around his airport? d) Has APM established a program for regular & frequent visual inspections of all areas at & around his airport in order to be sure that any construction activity or natural growth (i.e. trees) likely to infringe any of the obstacle limitation surfaces is discovered before it may become a problem? e) Has APM established a program for regular & frequent visual inspections of all areas at & around his airport in which it include a daily observation of all obstacle lights, both on and off the airport?			

Signature:- _____

Name:- _____

Designation:- _____

Chapter 4

STANDARD AUDITING/INSPECTION PROCEDURES

4.1 THE SAFETY OVERSIGHT AUDIT/INSPECTION PROCESS AND DAY-WISE WORK PROGRAMME:

4.1.1 PRE-AUDIT ACTIVITIES:

4.1.1.1 Approval of audit/inspection schedule for specific location along with composition of Aerodrome Inspectors and designated Team Leader at least three (03) weeks prior to audit/inspection schedule.

4.1.1.2 Letter to Service Provider informing audit/inspection schedule and day-wise work programme alongwith composition of Aerodrome Inspectors with Team Leader at least two (02) weeks or more prior to audit/inspection.

4.1.1.3 Review and analysis of documentation using prescribed check lists shall commence 0ne (01) month prior to the audit/inspection.

4.1.1.4 Briefing of Aerodrome Inspectors shall take place one (01) week prior to the audit/inspection schedule.

4.1.1.5 The audit/inspection Team Leader shall develop a specific safety oversight audit/inspection plan in coordination with Sr. AD AS/DAAR. The specific safety oversight audit/inspection plan shall include but not limited to the following information:

4.1.1.5.1 Dates of the on-site safety oversight audit/inspection;

4.1.1.5.2 Objectives of the on-site safety oversight audit/inspection

4.1.1.5.3 Scheduled dates for opening and closing meetings;

4.1.1.5.4 Scope of the on-site safety oversight audit/inspection to be conducted and areas to be covered;

4.1.1.5.5 Identification of documents necessary to conduct the safety oversight audit/inspection;

4.1.1.5.6 Travel and administration plans as well as the travel schedules for Aerodrome Inspectors;

4.1.1.5.7 The audit/inspection preparation briefing material for Aerodrome Inspectors and the on-site action plan;

4.1.1.5.8 Identification of priority issues brought to the attention of Aerodrome Inspectors in general and DAAR/Sr. AD AS in particular; including reviewing of material provided and other documents/records available. The specific safety issues shall be given due consideration;

4.1.1.5.9 Aerodrome Inspectors assignments and responsibilities; and

4.1.1.5.10 Contents and scope of the post-audit/inspection briefing.

4.1.1.5.11 The specific safety oversight audit/inspection plan shall be provided to all the Aerodrome Inspectors for information and comments (if any) prior to the commencement of the on-site audit.

4.1.2 ON-SITE ACTIVITIES (DAY WISE):

4.1.2.1 Opening meeting with concerned authorities of Service Provider.

4.1.2.2 On-site audit/inspection in accordance with day-wise work programme.

4.1.2.3 Development and compilation of initial safety oversight audit/inspection report

4.1.2.4 Closing meeting with the authorities of Service Provider.

4.1.3 POST-AUDIT/INSPECTION ACTIVITIES:

4.1.3.1 Service Provider (location) shall start working on the corrective action plan discussed during closing meeting.

4.1.3.2 DAAR/Sr. AD AS shall dispatch interim safety oversight audit/inspection report within 30 days of the audit/inspection after approval of DAAR/Principal Director (Regulatory)/ DG CAA.

4.1.3.3 Service Provider shall submit corrective action plan and comments within 30 days upon receipt of interim safety oversight audit/inspection report.

4.1.3.4 Sr. AD AS shall submit final safety oversight audit/inspection report to the DAAR/Principal Director (Regulatory)/Director General within 30 days upon receipt of corrective action plan from Service Provider. After approval of report, dispatch it to Service Provider and other concerned for implementation.

4.1.4 AERODROME INSPECTORS BRIEFING:

4.1.4.1 DAAR/ Sr. AD AS shall convene an audit/inspection briefing for Aerodrome Inspectors prior to the commencement of the on-site audit/inspection.

4.1.4.2 The Aerodrome Inspectors briefing shall be conducted with all Aerodrome Inspectors one (01) week prior to the opening meeting to be held on-site with Service Providers.

4.1.4.3 The objectives of the Aerodrome Inspectors briefing are:

4.1.4.3.1 to give the Aerodrome Inspectors an overview and understanding of the audit/inspection mission that lies ahead;

4.1.4.3.2 to assign responsibilities to each Aerodrome Inspector before, during and, if necessary, after the audit/inspection; and

4.1.4.3.3 to prepare Aerodrome Inspectors for the opening and closing meetings with the officials of the Service Provider.

4.1.5 OPENING MEETING:

4.1.5.1 Sr. AD AS/Team Leader will convene an opening meeting with concerned Service Providers of the location on the first day of the on-site audit/inspection. The purpose of the meeting is to brief the authorities of Service Provider on the audit/inspection process, its scope and to conduct the audit/inspection as per tentative work programme earlier forwarded to the Service Provider.

4.1.5.2 The opening meeting will be scheduled in advance and included in the audit/inspection plan forwarded to the Service Provider.

4.1.5.3 The opening meeting may also be addressed by the Service Provider's officials and experts, who may also wish to provide briefing and information to the Aerodrome Inspectors. The meeting, inter alia, should address:

4.1.5.3.1 introduction of Aerodrome Inspectors and the officials of the Service Provider;

4.1.5.3.2 introduction to the comprehensive systems approach or continuing monitoring approach;

4.1.5.3.3 scope and conduct of the audit/inspection;

4.1.5.3.4 review of the audit/inspection work programme (if any) ; and any other business.

4.1.5.4 The Service Provider shall assist the Aerodrome Inspectors by providing:

4.1.5.4.1 working space, preferably an office dedicated for the Aerodrome Inspectors during the audit/inspection period;

4.1.5.4.2 access to photocopier;

4.1.5.4.3 access to related facilities ;

4.1.5.4.4 access to electronic communication media such as the telephone, internet and e-mail, if available;

4.1.5.4.5 access to audit/inspection relevant files and records (organizational or personal as may be required); and

4.1.5.4.6 access to relevant personnel for interviews.

4.1.6 ON-SITE AUDIT/INSPECTION ACTIVITIES:

4.1.6.1 The on-site audit/inspection will be systematic and objective and all audit/inspection findings will be recorded on prescribed standardized forms/check lists, with reference made to the relevant Rules, Regulations, Standards, Recommended Practices, and/or guidance material for which the finding was made.

4.1.6.2 Evidence shall be collected through interviews, reviewing relevant materials, and observing activities and conditions in the aviation system. Findings shall be recorded with a clear indication of how and why they were made. Absence of evidence will normally be reflected as a finding. Each audit/inspection finding should have a corresponding recommendation requiring the Service Provider to propose an action for the resolution of the safety concern addressed by the finding.

4.1.6.3 After completion of on-site audit/inspection activities, the Aerodrome Inspectors will review all findings and recommendations to ensure that they reflect objectivity and address at least one of the eight critical elements. The Aerodrome Inspectors will ensure that the findings and recommendations are documented in a clear, concise manner and are supported by evidence.

4.1.6.4 To assist the Service Provider in finding early solutions to shortcomings identified, Aerodrome Inspectors may provide information on findings and recommendations to their Service Provider counterparts.

4.1.6.5 By checking records, not only those of the Service Provider's authorities but also of the actual operations, and by looking into how their personnel conducts its business in aspects related to safety, the Aerodrome Inspectors will be able to assess whether the Service Providers are capable of undertaking their safety responsibilities effectively. The Aerodrome Inspectors should neither take, nor propose any action which could interfere with the functions of Service Providers.

4.1.6.6 The Aerodrome Inspectors shall visit the Service Providers and their sections on the basis of the specific audit/inspection programme already agreed upon. However unscheduled/unannounced (surprise/random) visits may be carried out any time to monitor the compliance by service providers.

4.1.6.7 Safety concerns which may be identified during audit/inspection of the associated services of Service Provider should only be identified as a finding on visited/inspected associated section of Service Provider.

4.1.6.8 Audits/inspection may result in raising the awareness and interest of several aviation bodies, some of which may request interviews with the Aerodrome Inspectors. Interviews with organizations other than the relevant Service Provider's authorities and related organizations, such as the media, unions or other bodies, shall not be accepted.

4.1.6.9 No information related to the audit/inspection of the Service Provider will be provided to the media.

4.1.7 AUDIT/INSPECTION CHECKLISTS:

4.1.7.1 On-site safety oversight audits/inspections will be conducted on the basis of the Checklists given in Chapter-3 of this manual. Aerodrome Inspectors using standardized checklists ensure transparency, quality and reliability in the conduct of audits/inspections as well as fairness in their implementation.

4.1.7.1.1 The Chapter-3 to this manual provide a comprehensive checklists, covering all elements of the safety oversight audit programme subject to audit/inspection. In some cases, the checklists may be limited as a result of the size and complexity of their respective aviation activities. Nevertheless, depending on on-site situations, the Aerodrome Inspector in coordination with Team Leader may increase or decrease the checklists to be used. In such events, the Service Provider authorities should be informed of the change and the reason for the change.

4.1.7.1.2 The Checklists are divided into different sections specific to the audit/inspection areas covered. The checklist questions deal with the most relevant critical element of the aspect to be audited, e.g., primary legislation, Rules, Regulations, Air Navigation Orders, Safety Directives/Circulars, ICAO Documents, prescribed Standards and Recommended Practices and procedures etc.

4.1.7.1.3 Additional checklists may be prepared (if required) to supplement the checklists prescribed in this manual, in order to include the provisions of:

4.1.7.1.3.1 Operations Manual/Instructions issued by the Service Provider so as to reflect prevailing compliance level;

4.1.7.1.3.2 The findings and recommendations given in accidents and investigation reports; and

4.1.7.1.3.3 The reported and observed hazards including all safety aspects with respect to SMS.

4.1.7.1.4 In exceptional circumstances, an observation may be made that may not have been addressed by the checklist; in these circumstances the Aerodrome Inspectors making the observation will inform the Team Leader and advise the Service Provider of the reasons for it. Observations derived under such conditions shall be recorded as audit/inspection findings and recommendations to be made accordingly.

4.1.8 AUDIT/INSPECTION FINDINGS AND RECOMMENDATIONS:

4.1.8.1 All audit/inspection findings and recommendations will be related to one or more of the Rules and Regulations, relevant Standards and/or adherence to Recommended Practices, guidance material and/or recognized good safety practices.

4.1.8.1.1 The audit/inspection findings and recommendations, when initially completed, shall contain:

4.1.8.1.1.1 Reference to the relevant Rule, Regulation, Standards/Recommended Practices and Procedure etc.;

4.1.8.1.1.2 Questions;

4.1.8.1.1.3 Answers;

4.1.8.1.1.4 Findings;

4.1.8.1.1.5 Level of compliance satisfactory or unsatisfactory;

4.1.8.1.1.6 Corrective action required to be taken by the Service Provider to remove deficiency.

4.1.8.1.1.7 Proposed and/or agreed timeline as appropriate.

4.1.8.1.2 Following the submission of Service Provider's corrective action plan, if required, the audit/inspection findings and recommendations report may include:

4.1.8.1.2.1 Reference to the Service Provider's proposed corrective action plan and comments; and

4.1.8.1.2.2 Auditors/inspectors comments on the Service Provider's proposed corrective action plan.

4.1.9 CLOSING MEETING:

4.1.9.1 At the end of the audit/inspection, Sr. AD AS/Team Leader will convene a closing meeting with the concerned Service Providers, to brief them on the Aerodrome Inspectors findings and recommendations.

4.1.9.1.1 The closing meeting provides authorities of Service Provider with information relating to the findings and recommendations of the Aerodrome Inspectors.

4.1.9.1.2 The meeting should ensure that the authorities of Service Provider clearly understand the situation as audited/inspected by the

Aerodrome Inspectors and are able to start work on a corrective action plan, should it be deemed necessary.

4.1.9.1.3 The meeting should emphasize the most significant safety issues and concisely present the Aerodrome Inspectors findings and opinions regarding the effectiveness of the Service Provider's operating system.

4.1.9.1.4 The Team Leader shall inform the authorities of Service Provider of the actions to follow the on-site audit/inspection.

4.1.9.1.5 The Team Leader will also inform the authorities of Service Provider for the critical areas for the safety oversight audit/inspection reports and for the submission of corrective action plan and comments on the audit/inspection reports.

4.1.9.1.6 The closing meeting must include a briefing on all findings and recommendations that will be included in the interim safety oversight audit/inspection report.

4.1.9.1.7 The Team Leader should make it clear that the findings and recommendations are tentative and are to help Service Provider to start work on their action plan and that the official findings and recommendations to which they are expected to react will be contained in the official safety oversight audit/inspection report and will be forwarded by DAAR/ Sr. AD AS.

4.1.9.1.8 The following elements should be addressed during the closing meeting with the authorities of the Service Provider:

4.1.9.1.8.1 Brief review of the objective and scope of the audit;

4.1.9.1.8.2 Summary of the on-site audit/inspection procedures;

4.1.9.1.8.3 Presentation of findings and recommendations;

4.1.9.1.8.4 Information on the visits to the sections/units; and

4.1.9.1.8.5 Information on post- audit/inspection follow-up actions by Sr. AD AS/Team Leader and the Service Provider.

4.1.9.1.9 Authorities of the Service Provider should be invited to make comments and express any disagreement with the findings presented. The Team Leader shall report the disagreement, including the reason provided by the authorities of the Service Provider.

4.1.10 CORRECTIVE ACTION PLAN:

4.1.10.1 After completion of the on-site audit/inspection, the Service Provider has the responsibility to initiate the development of a corrective action plan on the basis of the findings and recommendations, should it be required. However, the official action plan to be submitted to DAAR/ Sr. AD AS should be based on the interim safety oversight audit/inspection report, which will be forwarded to the Service Provider within 30 days after the on-site audit/inspection is completed.

4.1.10.1.1 Following the closing meeting, the Service Provider should start to develop a corrective action plan to resolve the safety concerns identified by the Aerodrome Inspectors in their findings.

4.1.10.1.2 The corrective action plan to be submitted to DAAR/ Sr. AD AS, however, should be strictly based on the findings and recommendations attached to the interim safety oversight report and it should also indicate the time when the corrective action plan is expected to be completed.

4.1.10.1.3 The corrective action plan must be submitted by the Service Provider within 30 days after receiving the interim safety oversight audit/inspection report.

4.1.10.1.4 Service Providers should not submit a corrective action plan before receiving and reviewing the interim safety oversight audit/inspection report.

4.1.10.1.5 After receiving the corrective action plan from the Service Provider, Aerodrome Inspectors should evaluate and then forward the final safety oversight audit report to the Service Provider within 30 days for implementation as per agreed/acceptable corrective action plan.

4.1.10.1.6 The follow-up of final safety oversight audit/inspection report shall include the Service Provider's proposed and agreed/acceptable corrective action plan. If the Service Provider has not submitted the corrective action plan or has not submitted one within the prescribed or agreed-upon period, the interim or final (as per the case) safety oversight audit/inspection report will be submitted for the perusal of the DGCAA through DAAR with no input or comments from the audited/inspected Service Provider. In the latter case, the safety oversight audit/inspection report will indicate that the Service Provider has failed to provide a corrective action plan within the prescribed period and recommend actions as per compliance and enforcement (Para 4.3.).

4.1.11 AUDIT/INSPECTION REPORTS:

4.1.11.1 All briefs and reports shall be prepared on the basis of guidance provided in Para 4.2 of this manual.

4.1.11.2 All materials, notes, reports and evidence obtained or made during the safety oversight audit/inspection will be considered confidential by the Auditors/Inspectors including Team Leader. However, once the final audit report has been forwarded to the Service Provider for implementation, and their comments are received or the period allotted for submission of comments expires, the final audit/inspection report should be officially forwarded to the concerned Authorities including Service Provider

4.1.12 POST-AUDIT/INSPECTION ACTIVITIES:

4.1.12.1 Post-audit/inspection action commences following the closing meeting with the authorities of the Service Provider and the provision of findings and recommendations. This phase of the audit/inspection process starts with the preparation and submission of the interim safety oversight audit/inspection report.

4.1.12.2 The responsibilities of Aerodrome Inspectors of Aerodrome Standards Branch are the timely preparation and submission of the relevant audit/inspection reports and comments on the corrective action plan submitted by the Service Provider.

4.1.12.3 The responsibilities of Service Provider include the development of a corrective action plan and implementation of the action plan as scheduled and the provision of comments on the relevant safety oversight audit/inspection reports leading to the dissemination of the safety oversight audit/inspection report.

4.1.12.4 Aerodrome Standards Branch shall maintain a status of implementation record of agreed/accepted corrective actions.

4.1.12.5 Service Providers are required to provide update information for the completion of corrective actions, so that the status report can be kept current and Service Provider's progress on resolving its deficiencies can be monitored by the Aerodrome Standards Branch.

4.1.13 AUDIT/INSPECTION TEAM LEADER'S REPORT:

4.1.13.1 Team Leader shall prepare a separate report for each inspection, describing the conduct of the audit/inspection, difficulties encountered and proposals to improve the planning and conduct of audits.

4.1.13.1.1 The Team Leader's report provides feedback on the conduct of the audit, from planning to completion. This shall be used by the DAAR/ Sr. AD AS to improve audit/inspection planning.

4.1.13.1.2 DAAR/ Sr. AD AS will maintain a record of all feedback and recommendations made in the Team Leader's report and of action taken to address concerns raised.

4.1.13.1.3 Team Leader's report shall be prepared for each section of audited/inspected Service Provider.

4.1.13.1.4 Should the Team Leader's report identify issues which may be addressed through the amendment of Standards or Procedures, DAAR/ Sr. AD AS shall ensure the initiation of necessary action.

4.1.14 AUDIT/INSPECTION FEEDBACK FORM:

4.1.14.1 A confidential audit/inspection feedback form shall be provided to the Head of the unit/office (of the Service Provider) audited/inspected at the end of the audit/inspection. The purpose of this form is to allow the Service Provider to provide feedback on the planning and conduct of the audit/inspection, as well as to provide for continuous improvement of the Safety Oversight Audit.

4.1.14.2 Feedback Form attached as **Appendix-C**.

4.2 SAFETY OVERSIGHT AUDIT/INSPECTION REPORT:

4.2.1 GENERAL:

4.2.1.1 The safety oversight audit/inspection report is an objective reflection of the results of the safety oversight audit/inspection. It shall be prepared on the basis of the reporting policies and principles contained in this manual.

4.2.1.1.1 The various safety oversight audit/inspection reports are prepared to:

4.2.1.1.1.1 Provide information to the Authority, DAAR and audited / inspected Service Provider regarding the status of implementation of Rules/Regulations, ANOs, Prescribed Standards and Recommended Practices, procedures,

safety-related guidance material and good aviation safety practices;

4.2.1.1.1.2 Provide the audited/inspected Service Provider with information on the level of its safety performance and deficiencies as assessed and recorded by the Auditors/Inspectors based on the level of effective implementation of the safety related elements; and

4.2.1.1.1.3 Recommend action for the resolution of identified deficiencies and demonstrate the need to initiate corrective actions by the Service Provider.

4.2.1.1.2 Key principles in the development of the safety oversight audit/inspection reports are:

4.2.1.1.2.1 Consistency of findings and recommendations in the closing meeting brief and safety oversight audit/inspection report;

4.2.1.1.2.2 Conclusions substantiated with references;

4.2.1.1.2.3 Findings and recommendations stated clearly and concisely;

4.2.1.1.2.4 Avoidance of generalities and vague observations;

4.2.1.1.2.5 Objective presentation of audit/inspection findings;

4.2.1.1.2.6 Use of widely accepted aviation terminology, avoiding acronyms and jargon;

4.2.1.1.2.7 Avoidance of criticism of individuals or positions.

4.2.1.1.3 The following audit/inspection briefs and reports are prepared and submitted, as required and applicable, in conformity with the predetermined time frame:

4.2.1.1.3.1 The closing meeting brief, explaining findings and recommendations of the audit/inspection, addressed to the Service Provider authorities on the final day of the audit/inspection;

4.2.1.1.3.2 The interim safety oversight audit/inspection report, containing the official report on findings and recommendations of the audit/inspection, addressed to Service Provider authorities and submitted within 30 calendar days after the final day of the on-site audit/inspection; and

4.2.1.1.3.3 The final safety oversight audit report, (containing the report on the findings, recommended actions for each element; Service Provider's corrective action plan, comments and actions already initiated by the Service Provider) addressed to the Service Provider authorities approximately within 30 calendar days after the receipt of the corrective action plan from the Service Provider.

4.2.1.1.4 Reports shall be prepared following a standard reporting format prescribed by the Authority and the checklists contained in this manual shall be completed.

4.2.2 FINAL SAFETY OVERSIGHT AUDIT REPORT:

4.2.2.1 The safety oversight audit/inspection report is the official report of the audit/inspection of the Service Provider. It contains the detailed information found in the interim safety oversight audit/inspection report, the Service Provider's corrective action plan and comments, and an analysis of progress made by the Service Provider on the implementation of the corrective action plan.

4.2.2.2 The structure and contents of the final safety oversight audit/inspection report will be similar to the interim safety oversight audit/inspection report, with the exception that the final safety oversight audit/inspection report will include an analysis of the corrective action plan and comments submitted by the audited/inspected Service Provider and information on any progress made by them on the implementation of the corrective action plan. The final safety oversight audit/inspection report, in its entirety, will be made available to the Service Provider within 30 days after receipt of comments from Service Provider.

4.2.2.3 Any comments and information on the implementation of agreed/accepted corrective action plan on the final safety oversight audit/inspection report by the audited/inspected Service Provider should be provided to Sr. AD AS/DAAR within 30 calendar days upon the receipt of final audit/inspection report.

4.2.2.4 Sr. AD AS/DAAR is responsible to ensure preparation of final safety oversight audit/inspection report within given time line and they are also the authorized and accountable PCAA officers for the integrity and quality of the final audit/inspection report.

4.3 COMPLIANCE AND ENFORCEMENT:

4.3.1 It is the responsibility of aerodrome operators to comply with the requirements of the aerodrome certification regulations. Aviation safety at aerodromes depends primarily on voluntary adherence to these requirements by the aerodrome operators. Promoting compliance with the regulations through education, training and counseling is therefore of primary importance, and only when these efforts have failed should formal enforcement action be taken. Sanctions can be administrative or legal depending severity of the violation of the regulations and its impact on aviation safety.

4.3.2 Administrative action in the form of a warning letter or correction letter may be considered appropriate when legal action is deemed unnecessary. Administrative enforcement action is intended to bring the violation to the attention of the aerodrome operator, to document corrective action and to require future compliance. Such actions are warranted when the violation does not result in a significant unsafe condition, is not caused by incompetence or lack of required qualifications on the part of the aerodrome operator, is not deliberately caused, the attitude of the operator is constructive and positive towards compliance with the regulations and there is no history of such a violation by the operator.

4.3.3 Formal legal enforcement action may be warranted to prevent future violation of the regulations. Such action may include the issuance of cease-and-desist orders and injunctions and the imposition of sanctions after the act to deter violations. Such sanctions may include revocation, suspension or amendment

of the certificate. Legal enforcement actions are pursuant to appropriate statutory provisions in the CARs, 1994.

4.3.4 In determining the appropriate type and measure of sanction to be applied, the factors to be considered may include the nature of the violation, whether it was deliberate or inadvertently caused; the potential or actual hazard to aviation safety created by the violation; the aerodrome operator's level of responsibility; records of previous violations; the operator's attitude toward the violation, including whether the operator voluntarily disclosed the violation and whether action was taken to correct it; the impact of the proposed sanction on the violator and its value as a deterrent to other operators in similar situations.

4.3.5 Certificate-related legal sanctions can have a significant impact on air services and may also have other repercussions. Since the public interest and aviation safety are the principal objectives of aerodrome certification regulations, recourse to the imposition of sanctions may be warranted only after all other means of resolving safety violations have failed to ensure compliance.

4.3.6 Suspension of an aerodrome certificate may be considered if:

a) the aerodrome operator's safety management system is found to be inadequate;

b) it is in the interest of operational safety;

c) all other means for timely correction of the unsafe condition or ensuring safe aircraft operations have not yielded the required results;

d) the technical proficiency or qualifications of the aerodrome operator to perform the duties to meet the critical safety requirements in accordance with the regulations are found inadequate;

e) the operator resists or is unwilling to take action to correct or mitigate the condition affecting aviation safety; or

f) the operator willfully fails to perform an already agreed upon corrective action and suspension of the certificate is the last resort to avoid unsafe operations in the aerodrome movement area.

4.3.7 Revocation of an aerodrome certificate may be warranted if the aerodrome Operator:

a) is incapable or unwilling to carry out corrective action or has committed/repeated serious violations;

b) has demonstrated a lack of responsibility, such as deliberate and flagrant acts of non-compliance or falsification of records jeopardizing aviation safety' or

c) has made it convincingly clear that the continued operation of the aerodrome will be detrimental to the public interest.

APPENDIX "A"

FUNCTIONS AND RESPONSIBILITIES OF DAAR, SR. AD AS, SR. JD AERODROME STANDARDS, SR. JD AERODROME CERTIFICATION AND AERODROME INSPECTORS (CIVIL, ELECTRICAL, MECH, F&S AND AIRFIELD CLEARANCES) WITH RESPECT TO AERODROME CERTIFICATION AND SAFETY OVERSIGHT AUDIT/ SURVEILLANCE INSPECTIONS

1. DIRECTOR AIRSPACE & AERODROME REGULATIONS (DAAR):

1.1 Ensure that the Aerodromes under the jurisdiction of the CAA and others (Private) offer a safe operational environment in accordance with the convention on International Civil Aviation.

1.2 Ensure compliance with ICAO SARPs contained in Annex-14 (Vol-I) Aerodromes and notification of differences if any, between national regulation and ICAO Standards.

1.3 Receiving, recording, reviewing and processing, in cooperation with the Flight Standards Dte. of the CAA, the expressions of interest received from an intending applicant for an aerodrome certificate;

1.4 Receiving, recording, reviewing and processing, in cooperation with the Flight Standards Dte. of the CAA, the formal application for an aerodrome certificate, including the initial inspection covering the review of the aerodrome manual, on-site verification, inspection and testing of aerodrome particulars, facilities and equipment, including aeronautical studies, if and where permitted by the standards and practices.

1.5 Grant or refusal of an aerodrome certificate;

1.6 Estimating, recording and collecting the cost of the services from applicants (if applicable under the regulations);

1.7 Receiving, recording, reviewing and processing applications for the transfer of an aerodrome certificate;

1.8 Grant or refusal of the transfer of an aerodrome certificate;

1.9 Receiving, recording, reviewing and processing applications for the surrender of an aerodrome certificate;

1.10 Cancelling or suspending an aerodrome certificate;

1.11 Grant of an interim aerodrome certificate; and

1.12 Reviewing the factors requiring the amendment of an aerodrome certificate and issuing the required amendments.

1.13 Regulate the Aerodrome Certification process, through Aerodrome Standards Branch of DAAR.

1.14 Notifying AIS of the certified status of an aerodrome and providing the particulars of the aerodrome for promulgation by the AIS;

1.15 Reviewing any amendments to aerodrome manuals and notifying AIS of the changes to be made in the AIS publications;

1.16 Coordinating with AIS in the review of any notification received from an aerodrome operator for promulgation by AIS, such as notification of:

- inaccuracies in AIS publications;
- changes in aerodrome facilities, equipment and level of services planned in advance;
- obstacles, obstructions and hazards;
- closure of any part of the maneuvering area;
- immediate reduction in the level of service at the aerodrome
- any other conditions that could affect the safety at or near the aerodrome and warrant precautions to be taken; and

1.17 Coordinating with other agencies and service providers such as aeronautical information service, air traffic services, designated meteorological authorities, and security.

1.18 Periodic or special on-site audits of the aerodrome safety management system including verification of the aerodrome, and data published in the AIP and inspection of the aerodrome facilities, equipment and operating procedures; and

1.19 Review of the aerodrome operator's daily audits and special safety audit reports and actions thereon.

Note.— An aerodrome audit programme should operate on the principle that the aerodrome certificate holder's internal audit programme is of primary importance and that the CAA's audits are conducted to review and evaluate that programme and, in addition, to independently check and verify the particulars of the aerodrome notified in the AIP, as well as the aerodrome operating procedures, safety measures, facilities and equipment.

1.20 Periodic inspections are therefore required to ensure that aerodrome certificate holders meet their obligations under the terms of the certificate.

1.21 The frequency of such inspections may correspond to the class of the aerodrome as categorized by the CAA.

2. SENIOR ADDITIONAL DIRECTOR AERODROME STANDARDS (Sr. AD AS):

2.1 Specify the National Standards for operation and design for implementation of Aerodrome Certification Process.

2.2 Specify National Aerodrome SMS Standards to be complied by the aerodrome operator.

2.3 Maintain technical library and safety data with respect to aerodrome operation and design.

2.4 Receive record, review and process expression of interest for issuance of Aerodrome Certificate through Sr. JD Aerodrome Certification.

2.5 Conduct/Supervise Aerodrome Certification process/surveillance/surprise oversight visits.

2.6 Issuance/renewal of aerodrome certificate/ licenses and monitor safety over sight of NACP at airports.

2.7 Issuance/ renewal of licences for Private Aerodrome (Airstrips) and Heliports.

2.8 Pre-inspection briefing with Service Providers including coordination with air traffic control tower personnel.

2.9 Administrative inspection of the aerodrome safety management system, including such items as snow and ice control plans (if applicable); current NOTAMs; medical and RFF and training records; aviation fuel facilities' safety records; fuelling agents' certificated and fire safety training records; Airfield lighting system; documentation of the annual review of the aerodrome emergency plan, including full-scale emergency exercises, and the aerodrome operator's records of the safety audits of fixed-base operators, ground handling agents and other agencies engaged in airside activities.

2.10 Movement area inspection including the inspection and checking of runways and taxiways in order to ascertain the condition of pavements, markings, lighting, signs, shoulders, strips and runway end safety areas;

2.11 Post inspection briefing with the aerodrome management, including the determination of appropriate enforcement action for non-compliance with the regulations.

2.12 Other safety functions such as evaluation of full-scale airport emergency exercises to identify problems and deficiencies;

2.13 The provision of guidance at the design and construction stages of aerodrome projects, particularly complex projects or where there is significant work that may impact compliance with the regulations;

2.14 Final inspection of complete projects involving complex or significant work to identify problems or deficiencies that need to be corrected in order to comply with the requirements of the regulations;

2.15 The organization of, and participation in, aerodrome safety seminars and other training programmes to promote a safety culture.

2.16 Reviewing ICAO State letters on the subject of aerodromes, preparing responses thereto and taking action thereon;

2.17 Developing and continuing to review the national standards and practices for aerodrome design, operation and maintenance, and engineering specifications;

2.18 Developing and issuing orders, rules, advisory circulars and guidance material relating to aerodrome standards and practices;

2.19 Reviewing plans and designs for new aerodromes or the further development of, or modification to, existing aerodromes, submitted to the CAA for approval, to ensure that the requirements of the ICAO SARPs and the CAA's national regulations are complied with; and

2.20 Advising the aerodrome inspectors, as required, on aerodrome standards and practices.

2.21 To enable Aerodrome Inspectors to keep abreast of the subject of aerodrome design, specifications, operation and maintenance, it is essential to establish a

properly organized and administered technical library. The library should contain all documents issued by ICAO relating to the design, operation and maintenance of aerodrome facilities and equipment, and all national standards, rules, orders, advisory circulars and guidance material. important textbooks and magazines on the subject should also be kept in the technical library. It is important that the documents in the library be promptly amended to keep them current.

2.22 Maintain files for each aerodrome in the CAA including certified aerodromes. The file for each certified aerodrome should contain records from the expression of interest stage to the issuance or refusal of the certificate, and the file should remain open thereafter for further documentation and correspondence on the subject. Additionally, an aerodrome certificate register should be maintained for each aerodrome

2.23 Close liaison should be maintain with the Safety Investigation Board to obtained data on aircraft accident and incidence at are near aerodromes for use by aerodromes inspectors in their continuing work.

3. SR. JOINT DIRECTOR AERODROME STANDARDS (Sr. JD AS):

3.1 Develop rules and regulations for aerodrome certification and prepare / revise all documents in respect of National Legislation, operating procedures, ANOs, manuals, Check lists etc as and when required.

3.2 Assess the Aerodrome Manual(s) and verification of aerodrome data.

3.3 Prepare case for DAAR / Sr. AD AS for accept once approval of Aerodrome Manual of the airport to be certified

3.4 Prepare checklists for Ops area of activity.

3.5 Follow up Aerodrome Operator's compliance action as per corrective action plan and ensure removal of deficiencies in accordance with the recommendations of Aerodrome Inspectors.

3.6 Maintain files and relevant documents of certified aerodromes.

3.7 Conduct safety assessment/ aeronautical studies, if required and where permitted by the standards and practices.

3.8 Initiate NOTAMs and determine appropriate enforcement action in the event of non-compliance with the regulations.

3.9 Any other duty assigned by DAAR/ Sr. AD AS

4. SR. JOINT DIRECTOR AERODROME CERTIFICATION (Sr. JD AC):

4.1 Provide guidance to Aerodrome Operators on certification process and any other assistance as required.

4.2 Prepare schedule for approval from PD (R)/DAAR for certification /annual safety oversight audit/surprise visits of Int'l /Dom. airports for the year and disseminate to all concerned.

4.3 Coordinate with Flight Standards and other specialist Directorates for flying Ops and assessments of aerodromes.

4.4 Prepare tentative schedule for certification of applicant's aerodrome and safety oversight audit inspections of other certified aerodromes.

4.5 Coordinate and conduct on site inspection of applicant's aerodrome as Aerodrome Inspector Ops.

4.6 Verify the aerodrome data in the aerodrome manual during certification/ safety oversight audit visits and update Sr. JD AS.

4.7 Finalize the oversight audit inspection surveillance and certification visit reports of Aerodrome Inspectors and submit to Sr. AD AS for onward perusal of DAAR/PD (Reg)/ DGCAA.

4.8 Provide all verified data in Aerodrome manual to Sr. JD AS for acceptance/ approval of manual.

4.9 Ensure receipt of certification/renewal Fee from the aerodrome operator.

4.10 Ensure periodic surveillance of the certified Aerodromes.

4.11 Ensure implementation of SMS at all International/ Domestic Aerodromes.

4.12 Maintain files and relevant documents of certified aerodromes.

4.13 All other functions relating to the certification of aerodromes including receiving and processing of expressions of interest and applications for aerodrome certificates; processing request for the amendment, transfer or surrender of certificates or requests for interim certificates and reporting to AIS and Sr. JD AS.

4.14 Any other duty assigned by DAAR/ Sr. AD AS.

5. AERODROME INSPECTORS OF AS BRANCH:

5.1 Aerodrome Inspector (Ops):

5.1.1 To update check lists for Ops area of activity.

5.1.2 Verification of the aerodrome data in the aerodrome manual including details of:

5.1.2.1 The location of the aerodrome;

5.1.2.2 The name and address of the aerodrome operator;

5.1.2.3 The movement area;

5.1.2.4 The runway declared distances available;

5.1.2.5 Aeronautical ground lighting;

5.1.2.6 Ground services; and

5.1.2.7 Notices of special conditions and procedure, if any;

5.1.3 On site verification of aerodrome operating procedures.

5.1.4 The overall implementation of aerodrome safety management system.

5.1.5 Promulgation of changes to published aerodrome information;

5.1.6 The prevention of unauthorized entry to the aerodrome, particularly the movement area and protection of the public against jet or propeller blast;

5.1.7 The operator's daily inspection of the aerodrome;

5.1.8 Apron management and parking control;

5.1.9 The control of vehicles operating on or in the vicinity of the movement area;

5.1.10 Wildlife hazard management and control equipment;

5.1.11 The monitoring of obstacle limitation surfaces and notification;

5.1.12 The removal of disabled aircraft plan;

5.1.13 Hazardous material, including aviation fuel;

5.1.14 The protection of radar and navigational aids; and

5.1.15 Low-visibility operations and runway safety programme (runway incursions).

5.1.16 Landing direction indicators and wind direction indicators, aerodrome markings and markers;

5.1.17 Guidance signs and warning signs in the movement area;

5.1.18 Fuelling facilities;

5.1.19 wind socks

5.1.20 Runway surface friction measuring equipment and record.

5.1.21 Verification of record/SOP w.r.t. inspections of operational area/ facilities

5.1.22 Follow up with the locations and monitor the progress for removal of deficiencies as highlighted in safety oversight audit report and update Sr. AD AS accordingly.

5.1.23 Any other duty assigned by DAAR/ Sr. AD AS

5.2 Aerodrome Inspector (Civil Works):

5.2.1 To prepare/ update checklists for civil works area of activity.

5.2.2 To check planning and carrying out of aerodrome construction and maintenance work including compliance with construction safety requirements;

5.2.3 To check aerodrome safety management system;

5.2.4 To check the dimensions, markings and surface conditions of runways, taxiways, stop ways, runway end safety areas, runway and taxiway strips, shoulders and aprons;

5.2.5 Pavement conditions, assessment of LCN / PCN values of runways, taxiways, apron etc.

5.2.6 Rain water drain system and wild growth along runway, taxiway etc.

5.2.7 Follow up with the locations and monitor the progress for removal of deficiencies as highlighted in certification/safety oversight audit report and update Sr. AD AS accordingly.

5.2.8 Any other duty assigned by DAAR/ Sr. AD AS.

5.3 Aerodrome Inspector (Mechanical):

5.3.1 To prepare/ update checklists for mechanical area of activity

5.3.2 Inspection of Specialist vehicles (Fire fighting and airside) and all other mechanical equipment.

5.3.3 Verification of records/SOPs w.r.t inspections/ maintenance of specialist vehicles and all mechanical equipment facilities.

5.3.4 Inspection of workshop facilities, and stores if available.

5.3.5 To check aerodrome safety management system;

5.3.6 Follow up with the locations and monitor the progress for removal of deficiencies as highlighted in certification/safety oversight audit report and update Sr. AD AS accordingly.

5.3.7 Proactively develop legislation for Mechanical equipment / facilities as per ASMP.

5.3.8 Any other duty assigned by DAAR/ Sr. AD AS

5.4 Aerodrome Inspector (Fire & Safety):

5.4.1 To prepare/ update checklists for fire & safety area of activity.

5.4.2 Inspection of rescue and fire fighting vehicles with respect to operation.

5.4.3 To check aerodrome safety management system.

5.4.4 Inspection of ambulances.

5.4.5 To check aerodrome emergency plan and periodic aerodrome emergency exercises.

5.4.6 Inspection of first aid equipments and medical supplies.

5.4.7 Assessment of efficiency/ training of fire staff.

5.4.8 Inspection of operating procedures.

5.4.9 Inspection of fire station and watch room facilities.

5.4.10 Verification of records/ SOPs w.r.t. inspections/ maintenance of fire & safety vehicles/ equipment.

5.4.11 Inspection of fueling station / fuel storage area.

5.4.12 Follow up with the locations and monitor the progress for removal of deficiencies as highlighted in AIT report and update Sr. AD AS accordingly.

5.4.13 Any other duty assigned by DAAR/ Sr. AD AS.

5.5 Aerodrome Inspector (Electrical):

5.5.1 To prepare/ update checklists for electrical area of activity.

5.5.2 Inspection of airfield lighting system, commercial power supply, standby power supply.

5.5.3 Aeronautical ground lighting system including flight check records.

5.5.4 All generators and Ground power equipment.

5.5.5 Runway visual range measuring equipment.

5.5.6 Inspection of Visual Aids

5.5.7 The presence of dangerous lights.

5.5.8 Transformer and HT/ LT panels.

5.5.9 To check aerodrome safety management system.

5.5.10 Inspection of workshop facilities, and stores if available.

5.5.11 Inspection of HVAC (for AFL and Nav. aids) system.

5.5.12 Verification of records/ SOPs w.r.t. inspections/ maintenance of electrical equipment facilities.

5.5.13 Follow up with the locations and monitor the progress for removal of deficiencies as highlighted in AIT report and update Sr. AD AS accordingly.

5.5.14 Any other duty assigned by DAAR/ Sr. AD AS.

5.6 Aerodrome Inspector (Airfield Clearances):

5.6.1 Prepare/ update ANOs, Manuals and checklists for NACP under Rule 68 of CARs 1994 (Safe-Guarding at Aerodromes) and ICAO OLS criteria.

5.6.2 Inspection of airfields and its surroundings as per Rule 68 of CARs 1994 and ICAO OLS criteria.

5.6.3 Prepare and issue the initial/final Annual Safety Oversight Report to the concerned Airport Manager for corrective action plan (CAP).

5.6.4 Coordinate with Airport Managers for Implementation of Rule 68 of CARs 1994.

5.6.5 Coordinate with Survey of Pakistan, PTA and FAB for the issues pertaining to the implementation of Rule 68 of CARs 1994 & ICAO OLS criteria.

5.6.6 Coordinate with military authorities, ministries and general public and for the issues regarding issuance of NOCs for height clearances and implementation of Rule 68 of CARs 1994 & ICAO OLS criteria.

5.6.7 Coordinate with PRO to publish public notices for the general awareness, requirements of NOC for height clearance and implementation of Rule 68 of CARs 1994 & ICAO OLS criteria in all the leading news papers of the country.

5.6.8 Issue the NOC for height clearance to all vertical installations / constructions (buildings, BTS/ Microwave towers / antennas, oil rigs, wind mills / turbines, LNG floating terminals and flare stack etc).

5.6.9 Coordinate respective Airport Manager to take necessary action for the removal of un-authorized erection of structure under Rule 68 of CARs 1994 / ICAO OLS criteria to control the aerodrome in becoming unusable by the growth of obstacles around it.

5.6.10 Coordinate with various organizations / agencies on the awareness and importance of National Airfield Clearance Policy.

5.6.11 Mark NACP surfaces on Google Earth for the entire CAA airports for prompt evaluation of the height clearance NOC's.

5.6.12 Record and maintain data base on issued height clearance NOC's and relevant correspondences with various organizations / agencies for check & balance.

5.6.13 Any other duty assigned by the Senior Additional Director Aerodrome Standards.

APPENDIX "B"

PROFILE OF DIRECTOR AIRSPACE AND AERODROME REGULATIONS, SR. AD AS, SR. JD AERODROME STANDARDS, SR. JD AEROROME CERTIFICATION AND AERODROME INSPECTORS (CIVIL, MECH, ELECTRICAL, F&S AND AIRFIELD CLEARANCES) WITH RESPECT TO CERTIFICATION/SURVEILLANCE OF AERODROMES

1. DIRECTOR AIRSPACE & AERODROME REGULATIONS (DAAR):

1.1 Educational Qualification.

1.1.1 M.Sc. / B.Sc. / B.E in Civil, Electronics, Electrical, Mechanical Engineering or M.S / B.S in Aviation Management.

1.1.2 PEC Registration Certificate in case of engineering degree.

1.2 Technical Qualification.

1.2.1 Basic ATC course and Tower/Area/Approach Radar Control Ratings (For officers inducted in ATC trade);
1.2.2 Airport Electronics Engineering Course (For Electronics Engineers);
1.2.3 ICAO Courses/Seminars relating to Air Traffic Services, or Aerodrome Operations;
1.2.4 ICAO Courses/Seminars relating to Aerodrome Inspection & Certification;
1.2.5 State Safety Program and Safety Management System course.

1.3 Experience.

1.3.1 17 years of experience in PG-08 and above or 12 years of experience in PG-09 preferably in the field of Air Traffic Services and Aerodrome Operations or Technical Services (CNS, Civil and E/M) with at least five years of experience in senior executive level in the field of Airspace & Air Navigation Standards and Aerodrome Regulations;
1.3.2 Well conversant with Air Navigation Services and Systems, Aerodrome Operations and Civil/E&M/CNS engineering and allied services;
1.3.3 Well versed with IT and MS Office applications;
1.3.4 Well conversant with aircraft performance and operational limitations;
1.3.5 Fully conversant with Civil Aviation Rules, Operating Regulations, ANOs, ICAO Functions/SARPs and Safety Oversight System; and
1.3.6 Comprehensive knowledge of State Safety Program (SSP) & implied Safety Management System of service providers/operators.

2. Sr. AD AS:

2.1 Educational Qualification.

2.1.1 M.Sc./B.Sc./B.E in Civil, Electronics, Electrical, Mechanical Engineering or M.S/B.S in Aviation Management.
2.1.2 PEC Registration Certificate in case of engineering degree.

2.2 Technical Qualification.

2.2.1 Basic ATC and Area/Approach Radar Control courses (For officers inducted in ATC Trade)
2.2.2 Airport Electronics Engineering Course (For Electronics Engineers)
2.2.3 ICAO courses/seminars relating to Air Traffic Services or Aerodrome Operations.
2.2.4 ICAO courses/seminars relating to Aerodrome Inspection & Certification.
2.2.5 Safety Management System course.
2.2.6 Safety Management System course
2.2.7 State Safety Program course

2.3 Experience.

2.3.1 07 years service in PG-09 or 12 years service in PG-08 and above in Aerodrome Operations or Air Traffic Services or Technical (CNS, Civil and E/M) with at least five years of experience in executive level in the field of Air Navigation and Aerodrome Regulations.
2.3.2 Sound knowledge of International and National Regulations regarding Aerodrome Design and Operations.
2.3.3 Well versed with IT and MS Office applications.
2.3.4 Conversant with aircraft performance and operational limitations.
2.3.5 Fully conversant with Civil Aviation rules, ICAO functions/ SARPs and Safety Oversight program.
2.3.6 Knowledge of State Safety Program (SSP) & Safety Management System

3. Sr. JD AERODROME STANDARDS/CERTIFICATION:

3.1 Educational Qualification.

3.1.1 M.Sc /B.Sc /B.E in Civil, Electronics, Electrical, Mechanical Engineering or M.S/B.S in Aviation Management.
3.1.2 PEC Registration Certificate in case of engineering degree.

3.2 Technical Qualification.

3.2.1 Basic ATC and Area/Approach Radar Control courses (For officers of ATC Trade)
3.2.2 Airport Electronics Engineering Course (For Electronics Engineers)
3.2.3 ICAO courses/seminars relating to Aerodrome Inspection & Certification.
3.2.4 Safety Management System Course.
3.2.5 State Safety Program Course.

3.3 Experience.

3.3.1 07 years service in PG-08 and above in Aerodrome Operations or Air Traffic Services or Technical (CNS, Civil and E/M)
3.3.2 03 years of experience in Air Traffic Management.
3.3.3 Well versed with IT and MS Office applications.
3.3.4 Knowledge of International and National Regulations regarding Aerodrome Design and Operations.
3.3.5 Fully conversant with Civil Aviation rules, ICAO functions/regulations, and Safety Oversight program.
3.3.6 Knowledge of State Safety Program (SSP) & Safety Management System.

4. AERODROME INSPECTOR (CIVIL WORKS):

5.1 Educational Qualification.

5.1.1 M.S/B.Sc/B.E in Civil Engineering from a recognized institute.
5.1.2 PEC Registration Certificate.

5.2 Technical Qualification.

5.2.1 ICAO courses/seminars relating to Aerodrome Inspection & Certification.
5.2.2 Safety Management System course.
5.2.3 State Safety Program Course

5.3 Experience.

5.3.1 07 years service in PG-08 and above in Civil Engineering
5.3.2 Well versed with IT and MS Office applications.
5.3.3 Knowledge of International and National Regulations regarding Aerodrome Design and Operations.
5.3.4 Fully conversant with Civil Aviation rules, ICAO functions/regulations, and Safety Oversight program.
5.3.5 Knowledge of State Safety Program (SSP) & Safety Management System.

5. AERODROME INSPECTOR (MECHANICAL & FIRE):

6.1 Educational Qualification.

6.1.1 M.S/B.Sc /B.E in Mechanical Engineering.
6.1.2 PEC Registration Certificate.

6.2 Technical Qualification.

6.2.1 Basic Fire Fighting & Rescue course.
6.2.2 ICAO courses/seminars relating to Aerodrome Inspection & Certification.
6.2.3 Safety Management System course.
6.2.4 State Safety Program Course.

6.3 Experience.

6.3.1 07 years service in PG-08 and above in Mechanical Engineering.
6.3.2 Well versed with IT and MS Office applications.
6.3.3 Knowledge of International and National Regulations regarding Aerodrome Design and Operations.
6.3.4 Fully conversant with Civil Aviation rules, ICAO functions/regulations, and Safety Oversight program.
6.3.5 Knowledge of State Safety Program (SSP) & Safety Management System.

6. AERODROME INSPECTOR (ELECTRICAL):

7.1 Educational Qualification.

7.1.1 M.S/B.Sc /B.E in Electrical Engineering.
7.1.2 PEC Registration Certificate.

7.2 Technical Qualification.

7.2.1 ICAO courses/seminars relating to Aerodrome Inspection & Certification.
7.2.2 Safety Management System course.
7.2.3 State Safety Program course.

7.3 Experience.

7.3.1 07 years service in PG-08 and above in Electrical Engineering.
7.3.2 Well versed with IT and MS Office applications.
7.3.3 Knowledge of International and National Regulations regarding Aerodrome Design and Operations.
7.3.4 Fully conversant with Civil Aviation rules, ICAO functions/regulations, and Safety Oversight program.
7.3.5 Knowledge of State Safety Program (SSP) & Safety Management System.

9. AERODROME INSPECTOR (AIRFIELD CLEARANCES):

9.1 Educational Qualification.

9.1.1 M.Sc/B.Sc /B.E in Civil, Electronics, Electrical, Mechanical Engineering or M.S/B.S in Aviation Management.
9.1.2 PEC Registration Certificate in case of engineering degree.

9.2 Technical Qualification.

9.2.1 Basic ATC and Area/Approach Radar Control courses (For officers of ATC Trade)
9.2.2 Airport Electronics Engineering Course (For Electronics Engineers)
9.2.3 ICAO courses/seminars relating to Aerodrome Inspection & Certification.
9.2.4 Safety Management System Course
9.2.5 State Safety Program Course

9.3 Experience.

9.3.1 07 years service in PG-08 and above in Aerodrome Operations or Air Traffic Services or Technical (CNS, Civil and E/M)
9.3.2 03 years of experience in Air Traffic Management.
9.3.3 Well versed with IT and MS Office applications.
9.3.4 Fully conversant with Civil Aviation rules, ICAO functions/regulations, National Airfield Clearance Policy and Safety Oversight program.
9.3.5 Knowledge of State Safety Program (SSP) & Safety Management System.

APPENDIX – 'C'

AERODROME STANDARDS BRANCH
(DIRECTORATE OF AIRSPACE AND AERODROME REGULATIONS)

SAFETY OVERSIGHT AUDIT/AERODROME CERTIFICATION INSPECTION FEED BACK FORM

Location: _____

Name of the Unit/Office: _____

Safety Oversight Audit (SOA) /Aerodrome Certification inspection dates:

From: _____ To: _____

1. SERVICE PROVIDER'S COMMENTS ON PRE-AUDIT ACTIVITIES:

1.1. Was the schedule (day wise) of audit received in time to enable to plan and prepare for the audit? ☐ Yes ☐ No

1.2. Were the communication and correspondence with Aerodrome Standards Branch clear and in time prior to conduct of Safety Oversight Audit / Certification visit? ☐ Yes ☐ No

1.3. Have you faced any difficulty in communicating with Aerodrome Standards Branch regarding any issue of Audit / inspection? ☐ Yes ☐ No

1.4. Have you requested any assistance/support from Aerodrome Standards Branch before the audit / inspection, if so, were you able to get it timely? ☐ N/A ☐ Yes ☐ No

2. SERVICE PROVIDER'S COMMENTS ON SIGHT AUDIT ACTIVITIES:

2.1. During the audit opening meeting, were the briefing provided clear and useful to conduct on site audit? ☐ Yes ☐ No

2.2. Were the objective of on sight audit and the impending activities of the auditors are clearly explained? ☐ Yes ☐ No

2.3. During closing meeting, were the draft findings explained in detail on each technical area in a clear & concise manner and agreed? ☐ Yes ☐ No

2.4. Were corrective actions required for resolving the findings (non-compliances and observations) pointed out during SOA inspection, clearly explained during the session of closing meeting? ☐ Yes ☐ No

2.5. In your opinion, do the draft findings (non-compliances and observations) discussed in closing meeting reflect fair presentation on part of auditor and were fully based on evidence presented? ☐ Yes ☐ No

2.6. Were there any incidents during the conduct of on-site audit which require your intervention to resolve differences or misunderstanding between the members of audit team and service provider? ☐ Yes ☐ No

2.7. How do you categorize the auditor's knowledge for their area of specialty (please tick any one):

☐ Job knowledge is excellent and is a model for others to follow.

☐ Job knowledge is very good and meets the audit requirements.

☐ There are opportunities to improve job knowledge

☐ I do not have sufficient information to evaluate job knowledge.

2.8. What is your overall impression on the preparation, planning and conduct of SOA visit? Please comment:

_____

_____

_____

_____

2.9. Please comment / suggest to improve the overall audit process:

_____

_____

_____

_____

Signature _____

Name _____

Designation _____