

Revision 4

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## Aerodrome Inspection Programme and Condition Reporting

### General

Civil Aviation Authority advisory circulars contain information about standards, practices and procedures that the Director has found to be an **acceptable means of compliance** with the associated rule.

An acceptable means of compliance is not intended to be the only means of compliance with a rule, and consideration will be given to other methods of compliance that may be presented to the Director. When new standards, practices, or procedures are found to be acceptable they will be added to the appropriate advisory circular.

Advisory circular may also include **guidance material** to facilitate compliance with the rule requirements. Guidance material must not be regarded as an acceptable means of compliance.

### Purpose

This advisory circular provides guidance material on aerodrome inspection programme and aerodrome condition reporting requirements, to assist aerodrome operators to meet Civil Aviation Rule Part 139 *Aerodromes—Certification, Operation and Use*.

This material is intended for applicants for and holders of—

- an aerodrome operator certificate; and
- a qualifying aerodrome operator certificate.

It is also recommended to operators of non-certificated aerodromes.

### Related Rules

This advisory circular relates to Civil Aviation Rule Part 139 - specifically rules 139.23, 139.117 and 139.123, for qualifying aerodrome operator determination.

### Change Notice

Revision 4 updates the content of this advisory circular to align with the latest amendment to Part 139; and makes editorial and formatting changes.

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## OVERVIEW

*While some hazardous aerodrome conditions develop virtually instantaneously, others are gradual. It is important therefore to have a comprehensive aerodrome inspection programme to ensure—*

- (a) all areas are systematically checked for conformance with established requirements; and*
- (b) any deficiencies are identified and effective remedial action is taken before small defects develop into significant safety hazards.*

*An effective aerodrome inspection programme is an essential element of preventive maintenance and of aerodrome internal quality assurance.*

*This advisory circular covers facilities, equipment and activities that could impact directly on the safety of operations. It does not cover those such as rescue fire services or emergency plans that are in place to respond to incidents or accidents.*

*Under Part 139, aerodromes may be operated:*

- (a) under an aerodrome operator certificate:*
- (b) under a qualified aerodrome operators certificate:*
- (c) as a non-certificated aerodrome.*

*The types of operations being conducted, and the size of aeroplanes using the aerodrome determine the level of certification required. Part 139 identifies specific aerodrome inspection programme requirements depending on the level of certification.*

*The underlying principles for an aerodrome inspection programme are the same for all levels of certification, but the specific requirements under a qualified aerodrome operator certificate or a non-certificated aerodrome are less than those under an aerodrome operator certificate. Throughout this advisory circular the generic term “aerodrome operator” is used unless it is necessary to refer to a particular type of operator.*

*This advisory circular suggests components and items for continuous, regular, periodic and special inspections and evaluations for use during these inspections and for aerodrome condition reporting.*

*This advisory circular is written around the requirements for holders of an aerodrome operation certificate, however this guidance can be modified to meet the less stringent requirements of the lower levels of certification, or to meet local situations.*

*The information in this advisory circular is intended to provide a explanation of the requirements for (and the guiding philosophy behind) an aerodrome inspection programme. It provides the basis by which aerodrome operators can develop their own aerodrome inspection programmes.*

# **1. AERODROME INSPECTION OVERVIEW**

## **1.1 Introduction**

**1.1.1** Aerodromes operating under an aerodrome operator certificate must have a documented aerodrome inspection programme.

The holder of a qualifying aerodrome operator certificate may be required, by a determination made by the Director following an aeronautical study, to have an aerodrome inspection programme. A determination requiring an aerodrome inspection programme will specify all matters to be included in it, and these will be based on the requirements for certificated aerodromes. These requirements will be no more onerous than those for holders of an aerodrome operator certificate.

Non-certificated aerodromes have certain requirements particularly to establish procedures to ensure aircraft movements are restricted or prohibited on parts of the aerodrome, where an unsafe condition exists. An aerodrome inspection programme may be needed as part of these procedures.

**1.1.2** Even if they are not directly required to have an aerodrome inspection programme, it is recommended that qualifying aerodrome operator certificate holders, and non-certificated aerodrome operators, consider the relevance and applicability of all matters discussed in this advisory circular to their aerodrome and adapt it as necessary.

## **1.2 Responsibility**

**1.2.1** Part 139 refers to requirements the applicant must meet before a certificate is issued. In this advisory circular, reference may be made to the certificate holder, not the applicant as stated in the rule, because the holder must continue to comply with the same requirements that were met before the certificate was issued.

**1.2.2** All matters are applicable to holders of an aerodrome operator certificate, but only those specifically included in a determination made by the Director are applicable for holders of a qualifying aerodrome operator certificate. The rules references are those applicable for aerodrome operator certificate holders.

**1.2.3** Aerodrome inspection is a responsibility of the aerodrome operator. Primary attention should be given to such operational items as pavement areas, safety areas, markings and signs, lighting, fuelling operations, navigational aids, ground vehicles, obstructions, public protection, wildlife hazard management, and construction.

**1.2.4** The responsibility for inspection of all or some of the aerodrome areas may be assigned to tenants or organisations, with which the aerodrome operator has a written agreement, but with the aerodrome operator retaining overall inspection supervision. The aerodrome operator cannot delegate responsibility for operating the aerodrome safely.

## **1.3 Components of an aerodrome inspection programme**

**1.3.1** An effective aerodrome inspection programme will, for all facilities and equipment on the aerodrome, have—

- (a) Established performance standards. This includes standards for operational area surfaces, paint markings etc., as well as equipment such as lights, signs, etc.
- (b) Identified environmental or other factors that could adversely affect these performance standards.
- (c) Determined how quickly or slowly changes that could affect performance might take place.

- (d) An inspection regime to monitor and record ongoing performance and to identify any change or deterioration in performance before operational safety is compromised.
- (e) Timely and effective procedures to—
  - (i) notify aerodrome users of any operational limitations resulting from a deficiency; and
  - (ii) correct any deficiencies found.

**1.3.2** Typically an aerodrome inspection programme has—

- (a) **continuous surveillance** of certain aerodrome activities, for example, vehicles on operational areas, passengers on the apron, fuelling operations, wildlife, construction and debris; and
- (b) **regular inspections** of physical facilities, for example, paved and unpaved movement areas, runway and taxiway strips, markings and signs, and lighting; and
- (c) **periodic condition evaluations** for such things as rubber build-up on runways, runway surface friction, markings and signs, visual aids, obstructions infringing approach slopes, and visual aids; and
- (d) **special inspections** during unusual conditions or situations such as inclement weather, after maintenance activity on the manoeuvring area, or following an incident or accident; and
- (e) **flight checking** of visual aids to navigation and approach lighting.

**1.3.3** The aerodrome inspection programme requirements discussed in this advisory circular are outlined below in Table 1.

**Table 1** Aerodrome inspection programme requirements

Requirement	Continuous Surveillance	Regular Inspection	Special Inspections	Periodic Condition Evaluation	Flight Checking of Visual Aids
	Section 2	Section 3	Section 4	Section 5	Section 6
Frequency of inspections / evaluations	2.1	3.2		5.2	6.2
Ground vehicles	2.2				
Paved movement areas		3.3			
Unpaved movement areas		3.4			
Runway and taxiway strips and safety areas		3.5			
Pavement surface conditions				5.3	
Heavy precipitation			4.2		
Markings and signs		3.6.1		5.4	
Lighting		3.6.2		5.5	

Visual aids to navigation		3.6.3		5.6	
Flight checking criteria					6.3
Obstacles and obstructions		3.7		5.7	
Construction and maintenance	2.3	3.8	4.3		
Public protection	2.4	3.9			
Wildlife hazard management	2.5	3.10			
Potential problems	2.6	3.11			
Operator reports			4.4		
Incidents and accidents			4.5		

## 1.4 Inspection frequency

**1.4.1** The frequency of inspections should be determined by identifying areas critical to the ongoing safety of aircraft operations, taking into account factors including—

- frequency of operations
- duration of operations
- types of aircraft served
- the aerodrome environment
- complexity of the facilities
- size of the aerodrome

**1.4.2** The reasons for establishing the frequency of inspections should be documented, and submitted to support the contents of the exposition that address the certificate holder's safety inspection programme.

**1.4.3** Further information on establishing the frequency of each inspection/evaluation type is given at the beginning of section 2 to section 6 of this advisory circular.

## 1.5 Inspection checklist

**1.5.1** For even the smallest aerodrome, it is desirable to use an aerodrome inspection checklist which—

- (a) provides a record of all items inspected; and
- (b) can be used as a check that follow-up actions have been taken.

**1.5.2** While the format of checklists may vary, it is important to develop a checklist that is relevant to the aerodrome and its operation. The checklist format needs to clearly record the status or condition of every inspected item.

**1.5.3** When preparing a checklist, the relevant requirements of Part 139, including all appendices, should be reviewed to ensure all applicable requirements have been identified.

**1.5.4** For consistent interpretation of requirements, a checklist can include the standard, or a reference to the standard.

**1.5.5** A checklist should identify the type of inspection, who carried it out, the date (and time if necessary), and the result for every item checked (pass or fail) with comments if needed. Following completion of the inspection the checklist should be signed to confirm it has been carried out in accordance with procedures. The use of electronic checklists with the results and deficiencies stored on an electronic database is acceptable.

**1.5.6** If certain inspectors will be responsible for only certain items, separate checklists pertinent to those areas may be developed. If necessary a sketch of the aerodrome should accompany the checklist to record the location of any problem.

**1.5.7** Deficiencies found during an inspection should be recorded, with sufficient detail to ensure appropriate remedial action can be taken. It is suggested that photographs are used to support and clarify the nature of the deficiency.

**1.5.8** A typical checklist should contain, as a minimum, the information on the following example:

**Figure 1** Example of an inspection checklist

EXAMPLE AERODROME Regular Inspection Checklist		
Inspection date: <i>18 July 2015</i>		Inspector: <i>A.B.C Smith</i>
ITEM	Result	Location, Comments
<b>3.3 Paved movement areas</b>		
(a) Edges < 75mm lip	<i>OK</i>	
(b) Holes < 125 mm dia, < 75 mm deep < 45 degrees side slope <i>(AC139-3, 3.3(b))</i>	<i>OK</i>	<i>Some damage on runway 125m from southern end, 2.3 m from eastern edge. Within spec. but needs repair</i>
<b>Comments:</b> <i>Large flock of seagulls on recently ploughed paddock east of 34 glidepath building</i>		
I confirm this inspection has been carried out in accordance with procedures		Signed: <b>A.B.C Smith</b>

## 1.6 Corrective action

**1.6.1** An effective aerodrome inspection programme requires a procedure for the reporting of deficiencies to the responsible person so that they can be corrected. The scheduled use of a dated checklist will ensure the regularity and thoroughness of safety inspections and follow-up of deficient items.

**1.6.2** For any aerodrome condition or defect which could have an immediate and critical impact on the safety of aircraft operations, the aerodrome operator should inform the staff at the stationed ATS unit and notify the Aeronautical Information Service (AIS) for the issue of a NOTAM as soon as practicable. When corrective action has been taken, the NOTAM is to be cancelled. Section 7 of this advisory circular provides the detailed requirements for aerodrome condition notification.

## **1.7 Inspection personnel**

**1.7.1** The holder of an aerodrome operator certificate, or a qualifying aerodrome operator certificate if required under their certification, must have procedures to ensure that personnel performing aerodrome inspections are appropriately trained. The procedures need to assess and maintain the competence of these personnel. They need to—

- (a) for those facilities and equipment that they are inspecting, know—
  - (i) their location and types; and
  - (ii) the applicable inspection standards.
- (b) be familiar with, and follow the established procedures for carrying out inspection on an operational aerodrome including correct radio communication procedures and techniques; and
- (c) be familiar with any identified deficiencies found during previous inspections and which are not yet rectified; and
- (d) if construction is in process, be familiar with the method of work plan (MOWP) and safety plan for the project; and
- (e) be familiar with the aerodrome certification exposition requirements for aerodrome inspections.

## **1.8 Inspection equipment**

**1.8.1** Personnel conducting aerodrome inspections should—

- (a) be provided with a two way radio for—
  - (i) communications with the air traffic services unit, if provided for the aerodrome;
  - (ii) notifying intentions and monitoring the unattended radio frequency used at the aerodrome; and
- (b) have a vehicle equipped with a flashing or rotating beacon or a chequered flag for day time inspections, or a flashing or rotating beacon for night time inspections; and
- (c) be supplied with checklists covering the various inspection areas.

## **1.9 Foreign object debris (FOD)**

**1.9.1** Foreign object debris (FOD) is fragments of loose material (such as sand, stone, paper, wood, metal and fragments of pavements) that are detrimental to aeroplane structures or engines or that might impair the operation of aeroplane systems if they strike the structure or are ingested into engines. Damage caused by debris is also known as foreign object damage.

**1.9.2** A program to control airport FOD should be adopted and is most effective when it addresses 4 main areas—

- (a) Training of all personnel to include the identification and elimination of FOD.
- (b) Inspection of areas by airline, airport, and airplane handling agency personnel.
- (c) Maintenance of areas to include manual or mechanical sweeping. The areas in which ground support equipment (GSE) is staged should be swept periodically.
- (d) Coordination of landside and airside activities to control and contain generation of FOD.

## **2. CONTINUOUS SURVEILLANCE**

### **2.1 Introduction**

**2.1.1** Continuous surveillance depends on the alertness of aerodrome personnel whenever they are on the aerodrome operational area. All aerodrome personnel should, as part of the induction process, and periodically thereafter, be encouraged to actively monitor and report any defects observed, or concerns that they may have regarding operational activities. Continuous surveillance of aerodrome physical facilities and activities should cover at least the areas described in this section.

### **2.2 Ground vehicles**

**2.2.1** Check procedures for the orderly operation of ground vehicles (including grass mowing machines) are being followed.

### **2.3 Construction and maintenance**

**2.3.1** Check for—

- (a) unauthorised use of runways, taxiways, and aprons by construction or maintenance personnel and equipment; and
- (b) potential runway incursions or other irregularities; and
- (c) compliance with the method of work plans (MOWP) and safety plans for all construction or maintenance projects; and
- (d) containment of all debris; and
- (e) protection of navigation aids by exclusion of construction or maintenance equipment from critical areas; and
- (f) protection of the approach and take off flight paths immediately outside of the airport boundary, for installations or equipment that may impede normal safe operation.

### **2.4 Public protection**

**2.4.1** Check that—

- (a) there are no unauthorised persons, unsupervised passengers, vehicles or animals in operational areas; and
- (b) measures to protect persons and property from aircraft propeller wash or jet blast are implemented and effective; and
- (c) barriers and gates are serviceable and secure; and
- (d) emergency access for rescue and firefighting vehicles or other emergency services is not obstructed; and
- (e) designated points of emergency egress are not obstructed.

### **2.5 Wildlife hazard management**

**2.5.1** Check for any—

- (a) birds or animals on or adjacent to the runways, taxiways and aprons that could present a hazard to aircraft; and

- (b) unusual activity or change in numbers of birds; and
- (c) activity on or adjacent to the aerodrome that could attract birds to create a hazard.

## **2.6 Potential problems**

**2.6.1** Note any other issues, to include security of airfield buildings and airfield perimeter, which, if not dealt with, might affect the safe or efficient operation of the aerodrome.

### **3. REGULAR INSPECTION**

#### **3.1 Introduction**

**3.1.1** The regular inspection consists of specific observations of aerodrome physical facilities at a frequency determined by the aerodrome operator.

**3.1.2** It is important that whenever deficiencies that could affect the safety of aircraft operations are identified, aircraft operators are advised. Section 7 of this advisory circular provides information on these requirements.

#### **3.2 Frequency of inspections**

**3.2.1** As a minimum, regular inspections should be carried out daily before the start of flight operations, with a second inspection at dusk if further aircraft operations are expected.

**3.2.2** If analysis of inspection reports identifies areas that require more frequent inspections, the inspection programme should be adjusted accordingly.

#### **3.3 Paved movement areas**

**3.3.1** The condition of pavement surfaces is an important part of aerodrome safety, and pavement inspections should be carried out to ensure all pavement surfaces are clear and have no defects that could present a hazard to aircraft. As a minimum the inspection should check—

- (a) pavement edges to assure that they are the minimum necessary to allow water to drain off the pavement. A lip height no greater than 25 mm to 35 mm is usually sufficient to allow proper drainage. Any edge of 75 mm or more is a hazard to aircraft; and
- (b) for any holes - a hole greater than 125 mm in diameter and 75 mm in depth with a side slope of 45 degrees or greater, is a hazard to aircraft; and
- (c) the condition of pavement areas for scaling, spalling, bumps, low spots, and for debris that could cause damage to aircraft; and
- (d) for any surface cracking; and
- (e) for vegetation growth along runway and taxiway edges that could impede drainage from the pavement surface or slowly break up the paved surface; and
- (f) for vegetation growth in cracks.

**3.3.2** All results should be recorded on the aerodrome inspection checklist.

#### **3.4 Unpaved movement areas**

**3.4.1** The condition of these surfaces is as important as paved surfaces, and they should be inspected with the same thoroughness as those areas. As a minimum the inspection should check—

- (a) for ruts, depressions, humps or variations from the normal smooth surfaces that could present a hazard to aircraft; and
- (b) for holes that could cause directional control problems for aircraft; and
- (c) for debris and other foreign objects; and
- (d) the condition of grass surfaces, and that the height of the grass is not excessive; and

- (e) for vegetation growth along the edges that could impede drainage from the movement areas.

**3.4.2** All results should be recorded on the aerodrome inspection checklist.

### **3.5 Runway and taxiway strips and safety areas**

**3.5.1** These surfaces should be inspected to the same level of thoroughness as other areas. As a minimum the inspection should check—

- (a) there are no ruts, depressions, humps or variations from the normal smooth surface that could present a hazard to aircraft; and
- (b) there are no objects in these areas, except those that must be located there because of their function (for example, runway lights, signs, or navigation aids); and
- (c) the base for any equipment is at the same level as the surrounding safety area; and
- (d) the ground has not been eroded from around light bases, manhole covers, or other fittings that should be flush with the surface; and
- (e) there is no damage that may have been caused by animals.

**3.5.2** All results should be recorded on the aerodrome inspection checklist.

### **3.6 Markings and signs, lighting, and visual aids to navigation**

**3.6.1** Some aerodrome facilities may fit into more than one grouping under paragraph 3.6. The following simplistic approach has therefore been taken—

- (a) Markings and signs includes painted pavement markings and signage that provides direction pilots using the aerodrome.
- (b) Lighting includes runway and taxiway lighting, obstruction lighting, and any other lighting such as apron floodlighting found in the operational areas.
- (c) Visual aids to navigation include the wind direction indicator, the aerodrome beacon, and specialised lighting systems such as VASI and REIL.

**3.6.2** When developing the inspection programme particular facilities should be included where it works best for the aerodrome operator. What is important is that all facilities and equipment are included.

**3.6.3 Markings and signs.** Markings and signs provide important information to pilots during take-off, landing and taxiing. A regular aerodrome inspection should check, as a minimum—

- (a) all painted pavement markings for correct colour, blistering, chipping, fading, or obscurity due to rubber build-up; and
- (b) all markers are correctly positioned and in good condition; and
- (c) that signs—
  - (i) have the correct inscription, orientation and colour; and
  - (ii) are easy to read, secure, and in good condition; and
  - (iii) are frangible mounted if within the strip areas; and

- (iv) are free of vegetation growth that would impede sign visibility; and
- (d) that no signs or markers are missing.

**3.6.4** All results should be recorded on the aerodrome inspection checklist.

**3.6.5 Lighting.** At night and during periods of low visibility, lighting is important for safe aerodrome operations. Lights come in different shapes, sizes, colours, and configurations and can be flush mounted or elevated. As a minimum, the inspection should check—

- (a) All lights are working and their optical systems are not obscured by vegetation or deposits of foreign material.
- (b) No lights have broken lenses or other damage, and no fixtures are missing.
- (c) Runway, taxiway and runway threshold lights are the correct colour and are oriented correctly.
- (d) Lighting on-off and intensity controls are working correctly. This should include any remotely operated, manual or automatic system for controlling the lighting.

**3.6.6** All results should be recorded on the checklist and referenced against allowable outages detailed in the aerodromes local operating procedures.

**3.6.7 Visual aids to navigation.** The inspection should concentrate on the visual navigational aids and check—

- (a) the wind direction indicator (windsock) area is clear of vegetation and that it can be easily seen; and
- (b) the wind direction indicator is secure and in good condition, its supporting mast is upright, the indicator can move freely and, if lighted, the lights operate; and
- (c) the aerodrome beacon, if provided, is visible and working properly; and
- (d) the runway end identifier lights (REIL) are flashing, and not obscured to approaching aircraft; and
- (e) Visual glide slope indicators (VASIS, PAPI) to ensure that their lights are working, not obscured to an approaching aircraft, and that the mountings have not been damaged or disturbed.

**3.6.8** All results should be recorded on the checklist.

## **3.7 Obstructions**

**3.7.1** The inspection should concentrate on a visual check of any construction underway on or near the aerodrome that could affect aircraft operations. In particular check—

- (a) for new or unreported obstructions such as cranes, masts, advertising hoardings, balloons, etc. that could intrude into the aerodrome obstacle free surfaces; and
- (b) that obstructions are properly marked and lit.

**3.7.2** All results should be recorded on the checklist.

### **3.8 Construction and maintenance**

**3.8.1** The inspection should focus on construction or maintenance activities on the aerodrome to ensure that a high level of safety for aircraft operations is maintained. In particular check—

- (a) construction or maintenance materials are properly stored or stockpiled to prevent them being moved by wind, jet blast, or propeller wash; and
- (b) construction or maintenance activities adjacent to movement areas are identified with conspicuous marking and lighting; and
- (c) heavy construction or maintenance equipment (such as bulldozers and cranes) are marked, lighted, and parked clear of the runway and taxiway strips and any safety areas; and
- (d) stockpiles and stored equipment are not left in a position that would infringe the obstacle free surfaces; and
- (e) construction and maintenance areas are managed to ensure all debris or foreign objects is contained within the work site.

**3.8.2** All results should be recorded on the checklist.

### **3.9 Public protection**

**3.9.1** The inspection should check—

- (a) safeguards for preventing inadvertent entry of animals to the movement area; and
- (b) barriers for preventing unauthorised entry of persons and vehicles to the aerodrome operational area; and
- (c) proper operation of gates and doors with secured or controlled access; and
- (d) protection of persons and property from aircraft blast.

**3.9.2** All results should be recorded on the checklist.

### **3.10 Wildlife hazard management**

**3.10.1** The inspection should check for any—

- (a) birds or animals on or adjacent to operational areas that could present a hazard to aircraft; and
- (b) unusual activity or change in numbers of birds; and
- (c) activity on or adjacent to the aerodrome that could attract birds to create a hazard.

**3.10.2** All results should be recorded on the aerodrome inspection checklist.

### **3.11 Potential problems**

**3.11.1** Note on the aerodrome inspection checklist or other means, any other issues to include security of airfield buildings and airfield perimeter which, if not dealt with, might affect the safe or efficient operation of the aerodrome.

## 4. SPECIAL INSPECTIONS

### 4.1 Introduction

**4.1.1** Special aerodrome inspections should occur after an unusual condition or event, after receipt of a complaint (for example, substandard braking action), or an accident or incident.

**4.1.2** Depending upon circumstances, special inspections can include any or all of components of regular inspections, periodic condition evaluations, or flight checking of visual aids.

### 4.2 Heavy precipitation

**4.2.1** Runway surface contamination, and issues with any movement areas, must be notified immediately (via the local air traffic services unit if provided) to arriving and departing aircraft, and the AIS for the issue of a NOTAM.

**4.2.2** After heavy precipitation an inspection should be made to assess the runway surface contamination.

- (a) **Water on a runway.** Whenever water is present on a runway, a description of the runway surface conditions on the centre half of the width of the runway, including the possible assessment of water depth, where applicable, should be made available using the following terms—
- (i) **DAMP** - the surface shows a change of colour due to moisture.
  - (ii) **WET** - the surface is soaked but there is no standing water.
  - (iii) **STANDING WATER** - more than 25% 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.
- (b) **Snow, slush or ice on a runway.** Whenever a runway is affected by snow, slush or ice, and it has not been possible to clear the precipitant fully, the condition of the runway should be assessed.

Whenever dry snow, wet snow or slush is present on a runway, an assessment of the mean depth over each third of the runway should be made to an accuracy of approximately 20 mm for dry snow, 10 mm for wet snow and 3 mm for slush.

- (c) **Water on other areas.** Other areas should be checked for ongoing serviceability—
- (i) **Unpaved movement areas.** Check for ponding, and any surface softness which might affect the bearing strength and braking.
  - (ii) **Runway and taxiway strips and safety areas—**
    - o check storm water system to verify that inlets are not clogged and drainage channels are free of debris. Note any standing water; and
    - o ensure all drain covers are in place and flush with the surface.

### 4.3 Construction and maintenance

**4.3.1** After maintenance or construction a special aerodrome inspection should be made to confirm—

- (a) any operational area has been restored to fully operational condition before reopening; and

- (b) all pavement markings are correct and that any unserviceable markers in place during the work have been removed; and
- (c) no hazardous conditions have been created (equipment left in safety areas, unacceptable pavement edges created by ground alteration work, ruts from equipment); and
- (d) no damage has been done to other equipment or facilities in the vicinity of the work.

#### **4.4 Aircraft operator reports**

**4.4.1** Following aircraft operator reports of unsatisfactory equipment or facility performance it may be necessary to carry out a special aerodrome inspection. The circumstances will vary with each report as will the action taken, but the following options should be considered:

- (a) the equipment or facility is immediately removed from service until an inspection verifies it can safely be returned to service:
- (b) a special inspection is done to determine if removal from service is necessary:
- (c) the information reported identifies an issue that does not affect the safety of operations, and no immediate follow-up is needed to maintain operations.

**4.4.2** The inspection should use relevant parts of the regular inspection and periodic condition evaluation checklists, supplemented by additional items as necessary.

#### **4.5 Incidents and accidents**

**4.5.1** There are mandatory requirements for incident investigation, and for reporting certain incidents and all accidents to the CAA under Civil Aviation Rule Part 12. These requirements are summarised in—

- *AC12-1 Mandatory Occurrence Notification and Information.* A full list of aerodrome incidents is contained in Appendix A; and
- *AC12-2 Incident investigation.*

**4.5.2** Following an incident or accident involving an aircraft it may be necessary to carry out a special aerodrome inspection if there is any suggestion that aerodrome equipment or facilities were caused or contributed to the incident or accident. The circumstances will vary as will the action taken, but typically:

- (a) the equipment or facility is immediately removed from service until an inspection verifies it can safely be returned to service:
- (b) a special inspection is done to determine if permanent removal from service is necessary.

**4.5.3** The special inspection should use relevant parts of the regular inspection and periodic condition evaluation checklists, supplemented by additional items as necessary.

**4.5.4** In particular, any time an aircraft has left the pavement and entered a strip or safety area, check to ensure that no ruts or holes have been made by the aircraft tires or personnel and equipment during the recovery operation.

## 5. PERIODIC CONDITION EVALUATION

### 5.1 Introduction

Periodic condition evaluations consist of specific aerodrome inspections on a regularly scheduled basis. These inspections may require use of specialist equipment. They should cover at least the areas described in this section.

### 5.2 Frequency of evaluations

**5.2.1** All facilities and equipment will, over time, slowly deteriorate until they reach a point where they will fail to meet their specified performance criteria. Restoring performance to “as new” condition can require major (and often expensive) maintenance work which may take some time to complete.

**5.2.2** A periodic condition evaluation programme will help to measure this deterioration so remedial work can be scheduled and completed before performance drops below the minimum performance requirements.

**5.2.3** The frequency of periodic evaluation should be adjusted as necessary if analysis of evaluation reports, and regular inspection reports, shows deterioration is occurring at a slower or faster rate than was anticipated when the programme was established.

### 5.3 Pavement surface condition

**5.3.1** The condition of all pavement surfaces should be evaluated periodically. As a minimum, and in addition to the items covered during regular inspections, the evaluation should confirm—

- (a) pavement meets current specifications; and
- (b) pavement, particularly in the touchdown zone areas, is not affected by rubber build-up; and
- (c) pavement has not deteriorated to a point where, without remedial work, it is likely it will be found defective during regular inspections before the next periodic condition evaluation; and
- (d) runway surface friction has been measured and meets specified standards.

**5.3.2** Detailed information on the specific requirements and procedures to be used for determining and reporting the friction characteristics of runways are contained in AC139-13 *Aerodrome Maintenance: Runway Surface Friction Characteristics and Testing*.

**5.3.3** AC139-13 outlines the procedures for undertaking runway surface friction assessments, and defines the criteria by which friction values should be assessed on runways, under specified conditions. These assessments are for maintenance purposes only. Surface contamination measurement is covered in section 4 of this advisory circular.

### 5.4 Markings and signs

**5.4.1** A periodic condition evaluation of pavement markings and signs should be carried out to determine that they—

- (a) conform to current specifications; and
- (b) are clearly visible (if night operations take place, this evaluation should be carried out at night); and

- (c) have not deteriorated to a point where, if remedial work is not undertaken, it is likely they will be found defective during regular inspections before the next periodic condition evaluation; and
- (d) are not affected by rubber build-up, particularly in the touchdown zone areas.

**5.4.2** Detailed information on the specific requirements for marking and signs is contained in AC139-6 *Aerodrome Design Requirements*.

## **5.5 Lighting**

**5.5.1** In addition to the periodic inspection requirements, a periodic condition evaluation should confirm, as a minimum—

- (a) lighting is positioned correctly and meets current standards; and
- (b) switching and intensity controls are working correctly; and
- (c) power supply reliability, including changeover to auxiliary power, if provided, meets specified changeover times with no effect on performance; and
- (d) all prescribed maintenance has been carried out.

## **5.6 Visual aids to navigation**

**5.6.1** A periodic condition evaluation must be carried out for all visual aids to navigation. This, as a minimum should confirm—

- (a) accurate alignment of visual navigation aids; and
- (b) correct light emission; and
- (c) correct operation of control switching; and
- (d) power supply reliability, including changeover to auxiliary power, if provided, meets specified changeover times with no effect on performance; and
- (e) all prescribed maintenance has been carried out.

**5.6.2** The periodic condition evaluation of some visual aids to navigation requires a flight check to verify performance. This is covered in section 6 of this advisory circular.

## **5.7 Obstacles**

**5.7.1** Obstacles need to be evaluated periodically to ensure significant obstructions, such as tree growth, new structures, etc. are identified, and that appropriate action is taken to minimise any hazard to aircraft operations that they may create. The period between checks should be determined by identifying the rate changes are likely to occur. This as a minimum should confirm—

- (a) If the aerodrome is required to provide the AIS with data for the promulgation of aerodrome obstacle charts, survey all take-off flight paths to confirm the accuracy of the data.
- (b) Survey the other aerodrome obstacle limitation surfaces established for the aerodrome for clearance from protruding obstacles.
- (c) If an obstruction is found to infringe an obstacle limitation surface, either:
  - (i) immediately remove the obstruction:

- (ii) notify the AIS with the corrected effective operational lengths (EOL) for promulgation in a NOTAM.
- (d) If the infringing obstruction is permanent, notify the AIS of the permanent EOL for promulgation in the AIP.

## **6. FLIGHT CHECKING OF VISUAL AIDS**

### **6.1 Introduction**

**6.1.1** Flight checking of visual aids is carried out to confirm the accuracy of guidance provided, and to verify all lights required for the aerodrome are conspicuous from the air.

**6.1.2** Flight checking is not intended to determine the serviceability of lights and visual aids. This is best done by inspection and evaluation programmes covered in sections 2, 3 and 5 of this advisory circular. The need for ongoing flight checking can be minimised by the effective application of these programmes.

### **6.2 Specific flight checking**

**6.2.1** Visual aids to navigation include approach lighting, specialised lighting systems such as VASI and REIL, runway markings and lighting, the wind direction indicator, and the aerodrome beacon.

**6.2.2** Visual aids and aerodrome lights, other than taxiway and apron lights, should be flight checked in the following circumstances—

- (a) prior to commissioning into service; and
- (b) when any major component has been replaced with re-alignment or re-siting required; and
- (c) when any visual aid is re-sited; and
- (d) periodically to confirm ongoing performance.

### **6.3 Flight checking criteria**

**6.3.1** The flight check should establish that all lights are clearly visible, and there must be no interference to visibility by any objects or other lights. The appearance of all lights must be in accordance with the standards specified. Where variable intensity lighting is provided levels should be checked.

**6.3.2** Approach slope indicators should be flight checked to confirm that each aid provides accurate guidance within the tolerances prescribed for that aid.

**6.3.3** All other visual aids should be flight checked to verify the appearance, uniformity, and intensities of the light.

## **7. AERODROME CONDITION NOTIFICATION**

### **7.1 Introduction**

**7.1.1** The holder of an aerodrome operator certificate or qualifying aerodrome operator certificate is required to provide information on any conditions that might affect the safe operations of aircraft.

**7.1.2** Information on the condition of the movement area and the operational status of related facilities should be notified to the AIS. The local air traffic service unit should also be notified to enable them to provide the information to arriving and departing aircraft. The information must be kept up to date and changes in condition reported without delay.

### **7.2 NOTAM**

**7.2.1** The certificate holder or aerodrome operator must ensure that if an unsafe condition that cannot be immediately rectified is found—

- (a) appropriate NOTAM are issued; and
- (b) local aerodrome users are notified.

After providing the information to the AIS, the aerodrome operator should follow up to ensure the NOTAM were issued.

**7.2.2** Once a NOTAM has been issued it is the responsibility of the aerodrome operator to monitor the reported condition and to either:

- (a) update the NOTAM information if necessary;
- (b) cancel the NOTAM when the condition has been rectified.

### **7.3 Information**

**7.3.1** The information provided for the issue of NOTAM should be clear and precise and should contain—

- (a) type of unserviceability or unsafe condition; and
- (b) extent (area) of the unserviceability or condition; and
- (c) duration (expected length of time) the condition will remain.

**7.3.2** It is important that the area in which the unserviceability or unsafe condition occurs is referred to correctly. Runways and runway strips should be referred to by the correct runway designator rather than the “long” or “main strip”. Similarly the difference between the runways and runway strips should be recognised and the correct terminology used.

**7.3.3** To comply with the rule, the aerodrome operator should provide information to the AIS for the issue of a NOTAM on any of the following aerodrome conditions which may affect the safe operations of aircraft—

- (a) establishment, closure or significant changes in the operation of the aerodrome or runways; and
- (b) establishment, withdrawal or significant changes made to visual aids; and

- (c) interruption of, or return to operation of major components of the aerodrome lighting systems; and
- (d) occurrence, or correction of major defects or impediments in the manoeuvring areas; and
- (e) changes to and limitations on availability of fuel, oil and oxygen (international aerodromes); and
- (f) establishment, withdrawal or return to operation of hazard beacons marking significant obstacle to air navigation; and
- (g) erecting, removal of or changes to significant obstacles to air navigation in the take-off, climb, missed approach, approach areas, and runway strip; and
- (h) significant changes in the level of rescue and firefighting protection normally provided at the aerodrome; and
- (i) presence or removal of significant changes in hazardous conditions due to snow, slush, ice or water on the movement area; and
- (j) any other occurrence associated with the aerodrome which might be a hazard to the safety of aircraft operations.

## 8. SUPPORTING PUBLICATIONS

There are several publications available which address the elements of *Aerodrome Inspection Programme and Condition Reporting*. Below is a list of some publications which can be referred to, for further guidance material.

- *ICAO Annex 14 Volume 1 - Aerodromes*
- *Doc 9137 Airport Services Manual Part 2 - Pavement Surface Conditions*
- *Doc 9137 Airport Services Manual Part 8 - Airport Operational Services*
- *Doc 9137 Airport Services Manual Part 9 - Airport Maintenance Practices*
- *Doc 9157 Aerodrome Design Manual Part 1 – Runways*
- *Doc 9157 Aerodrome Design Manual Part 2 – Taxiways, Apron and Holding Bays*
- *Doc 9157 Aerodrome Design Manual Part 3 – Pavements*
- *Doc 9365 Manual of All-Weather Operations*
- *Doc 9981 PANS OPS Aerodromes*