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NIGERIA CIVIL AVIATION AUTHORITY (NCAA)

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AERODROME INSPECTION PROGRAMME AND CONDITION REPORTING

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1.0 GENERAL

Nigeria Civil Aviation Authority Advisory Circulars from Aerodrome Standards Department contain information about standards, practices and procedures that the Authority has found to be an Acceptable Means of Compliance (AMC) with the associated Regulations.

An AMC is not intended to be the only means of compliance with a regulation, and consideration will be given to other methods of compliance that may be presented to the Authority.

2.0 PURPOSE

This Advisory Circular provides methods, acceptable to the Authority, for showing compliance with the Aerodrome Inspection Programme and Condition Reporting requirements of Nig. CARs Vol I Part 12 as well as explanatory and interpretative material to assist in showing compliance.

3.0 REFERENCE

The Advisory Circular relates specifically to Part 12.1.4.11 of Nig.CARs Vol I .

4.0 STATUS OF THIS AC

This is the Third edition of AC to be issued on this subject.

AMENDMENT PROCEDURES

The Director, Aerodrome and Airspace Standards is responsible for the development, issuance and control of amendments to this document as well as ensuring that the AC is updated in the technical library for staff and the website ***ncaa.gov.ng*** for public use.

Each page will show the document number, issue/amendment number, issue date and page number at the base of the page.

All amendments must be recorded in the Record of Amendments.

Any observation made or contribution to the content of this document by the user should be directed to the following address for consideration and adoption

Nigeria Civil Aviation Authority

Corporate Headquarters

Nnamdi Azikiwe International Airport,

FCT, Abuja.

RECORD OF AMENDMENTS

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CHAPTER 1

AERODROME INSPECTION OVERVIEW

1.1 Introduction

A certificated Aerodrome must have in place a documented aerodrome selfinspection programme approved by the Director- General of the Authority. This self-inspection programme will be based on the Nig.CARs Vol I part 12 inspection programme as well as the requirements of Part 12 of the Nig.CARs Vol I.

1.2 Responsibility

1.2.1 Aerodrome Inspection. Aerodrome inspection is a primary responsibility of the aerodrome operating certificate holder. Primary attention should be given to such operational items as pavement areas, safety areas, markings and signs, lighting, aircraft rescue and fire fighting, fuelling operations, navigational aids, ground vehicles, obstructions, public protection, wildlife strike hazard management, and construction. The responsibility for inspection of all or some of the aerodrome areas may be assigned to other tenants, but with aerodrome management retaining overall inspection supervision. Management cannot delegate responsibility for operating the aerodrome safely.

1.2.2 **Components of an aerodrome inspection programme**

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.

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 or construction or following an incident or accident; and
(e) flight checking of visual aids to navigation and approach lighting.

1.2.3 Inspection Frequency. The frequency of inspections should be determined by identifying areas critical to the ongoing safety of aircraft operations, taking into account the following factors —

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

As a minimum, the integrity and safety of the movement areas should be established by an inspection on each day that aircraft operations are scheduled. The inspection should be conducted at least 40 minutes prior to the first aircraft movement. The reasons for establishing the frequency of inspections should be documented, and submitted to support the contents of the exposition, addressing the certificate holder's safety inspection programme.

1.2.4 Inspection Recording. An effective aerodrome inspection requires a procedure for reporting deficiencies so that they can be corrected. The aerodrome operator shall notify the Aeronautical Information Service (AIS) (for the issue of a NOTAM), as soon as practicable, of any aerodrome condition or defect which could have an immediate and critical impact on the safety of aircraft operations. When corrective action has been taken, the NOTAM is to be cancelled. For even the smallest aerodrome, it is desirable to use an aerodrome inspection checklist which constitutes a written record of conditions noted, and acts as a check on the follow-up actions taken. The scheduled use of a dated checklist will assure the regularity and thoroughness of safety inspections and follow-up of deficient items. It is most desirable to use a format in which each inspected area of the aerodrome complex is positively noted. Check list in the form of "tick boxes" should be avoided unless they are devised in such a way that each item is a question whereby a tick yes or no box serves as the complete response to that question.

1.3 Knowledge and equipment for aerodrome inspection

Personnel who conduct aerodrome inspections should:

(1) knowthe location and types of aerodrome facilities and their design criteria;

(2) know the standards applicable to the aerodrome as in Nig. CARs Vol I Part 12 and the Aerodrome Standards Manual; (3)

have a vehicle equipped with —

(i) two way voice radio communications with the air traffic services unit, if provided for the aerodrome;

(ii) a flashing or rotating beacon for night time inspections; and

(iii) either a beacon or chequered flag for day time inspections;

(4) know and use correct radio communication procedures and techniques;

(5) be supplied with check lists covering the various inspection areas.
While the format of check lists vary, it is important to develop a check list that is useful for the aerodrome and its operation. If certain inspectors will be responsible for only certain items, separate check lists pertinent to those areas may be developed. A sketch of the

aerodrome should accompany the check list so that the location of problems can be marked for easy identification;

(6) read the previous inspection report;

(7) if construction is in process, be familiar with the safety plan for the project; and

(8) if the aerodrome is certificated under Part 12 of Nig.CARs Vol I, be familiar with the aerodrome certification requirements about aerodrome inspections.

1.4 Components of an aerodrome inspection

An effective safety inspection programme has four components —

(1) a regularly scheduled inspection of physical facilities

(2) continuous surveillance of certain aerodrome activities, such as fuelling operations, construction, aerodrome maintenance

(3) a periodic inspection programme for such things as surveying approach slopes, checking for obstructions, the checking of visual aids, operation of Air field lighting system etc

(4) special inspections during unusual conditions or situations, such as inclement weather or following maintenance activity on the manoeuvringareas.

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 or construction or following an incident or accident; and

(e) **flight checking** of visual aids to navigation and approach lighting

CHAPTER 2

REGULARLY SCHEDULED INSPECTION

2.1 Introduction

The regularly scheduled inspection consists of specific observations of aerodrome physical facilities on a frequency determined by the aerodrome operator. This inspection should concentrate on the areas described in this section and if deficiencies exist, indicate the item and identify its location on a sketch. If the deficiency is such that it could affect the safety of aircraft operations, the affected area must be immediately marked as being unserviceable and a NOTAM issued to that effect. Take photographs if appropriate, to document the condition.

2.2 Frequency of Inspection

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

2.3 Paved Movement Areas

The condition of pavement surfaces is an important part of aerodrome safety. Pavement inspection should be conducted before beginning flight operations to ensure pavement surfaces are clear. As a minimum, a daily inspection should be performed of all paved areas as follows -

(1) check the pavement edges to assure that they are not greater than necessary to allow water to drain off the pavement. A lip height not greater than 25 mm to 35 mm is usually sufficient to allow proper drainage. Any edge of 75 mm or more would be considered to be a hazard to aircraft;

(2) report and monitor any surface cracking;

(3) determine if there are any holes. A hole exceeding 125 mm in diameter that exceeds 75 mm in depth with a side slope of 45 degrees or greater, is considered to be a hazard to aircraft and should be dealt with immediately;

(4) check the condition of pavement areas for failures, scaling, spalling, bumps, low spots, and for debris that could cause damage to aircraft;

(5) check for vegetation growth along runway and taxiway edges that may impede drainage from the pavement surface or slowly break up the paved surface; and

(6) check for vegetation growth in cracks

2.4 Unpaved Movement Areas

The condition of these surfaces are as important as for paved surfaces and should be subject to the same level of thoroughness —

(1) determine if there are any hazardous ruts, depressions, humps or variations from the normal smooth surfaces;

(2) determine if there are any holes that could cause directional control problems for any aircraft;

(3) check for debris and other foreign objects;

(4) check the condition and length of grass surfaces. The height of thick grass should not exceed 150mm on runways and taxiways and 300mm on runway strips; and

(5) check for vegetation growth along the edges that may impede drainage from the movement areas.

2.5 Runway and taxiway strips and safety areas

The inspector should know the dimensions of the runway and taxiway strips and runway end safety areas at the aerodrome and:

(1) determine if there are any hazardous ruts, depressions, humps or variations from the normal smooth surface;

(2) check to ensure no object is located in these areas, except objects that must be in the areas because of their functions (such as runway lights, signs, or navigational aids);

(3) determine if the base for any equipment in safety areas is at grade level;

(4) check to ensure that the ground has not been eroded from around light bases, manhole covers, or other fittings that should be flush with the surface; and an exposed high edge could be a hazard to aircraft and should be filled in.

(5) check for any damage that might be caused by animals.

2.6 Markings and Signs

Aerodrome markings and signs provide important information to pilots during take-off, landing and taxiing.

The inspector should know the appropriate markings and signs at the aerodrome:

(1) check markings for correct colour coding, blistering, chipping, fading, and obscurity due to rubber build-up;

(2) check that markers are correctly positioned and in good condition;

(3) check signs to ensure they are the correct colour coding, easy to read, secure, and that all lights are working and not obscured by vegetation or dirt;

(4) check that signs within the strip areas are frangible mounted; and

(5) check to see that signs are not missing, that they have the correct legend and orientation, and whether they are in need of repair.

2.7 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:

(1) check to ensure that the following are operable, if installed, and that the optical systems are not obscured by vegetation or deposits of foreign material —

- runway threshold and end lights
- runway, taxiway, and apron edge lights
- runway centreline and touchdown zone lights
- taxiway centreline lights and apron guidance lights
- holding position lights
- runway end identifier lights
- reflectors

- floodlights for signs
- visual docking systems
- apron floodlighting
- obstruction lights.

(2) report all damaged or missing fixtures, and lights that are not working; (3) report any broken lenses;

(4) ensure that runway and taxiway lights and runway threshold lights are the proper colour and are oriented correctly; and

(5) check that lights function properly, including intensity controls, through the manual or radio control features, and that photocell controls function properly.

2.8 Visual Navigation Aids

The inspection should concentrate on the visual navigational aids as follows: (1) ensure that the windsock area is clear of vegetation and that it can be easily seen;

(2) check the windsock to ensure that the supporting mast is upright, that the windsock swings freely and, if lighted, that all lights are operating;

(3) ensure that the aerodrome beacon, if provided, is visible and working properly;

(4) ensure that the Runway Threshold Identification Lights are flashing, and not obscured to an approaching aircraft; and

(5) check 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.

2.9 Obstructions

The inspection should concentrate on a visual check of any construction underway on or around the aerodrome vicinity that could affect aircraft operations:

(1) check for any new or unreported obstructions such as cranes, masts, advertising hoardings, balloons etc, that intrude into the aerodrome obstacle free surfaces; and

(2) determine that obstructions are properly marked and lit.

(3) Check for non-aeronautical ground light which by virtue of their location and setting can present a hazard to aircraft operations

2.10 Construction

The inspection should focus on construction activities on the aerodrome to ensure that a high level of safety for aircraft operations is maintained:

(1) determine if stockpiled material and construction materials are properly stored to keep them from being moved by wind, jet blast, or prop-wash;

(2) check all construction adjacent to movement areas to ensure areas are identified with conspicuous marking and lighting;

(3) determine if heavy construction equipment (such as bulldozers and cranes) are marked and lighted and parked clear of the runway and taxiway strips and any safety areas;

(4) check to determine that stockpiles and stored equipment are not left in a position that would infringe the obstacle free surfaces; and

(5) check to ensure that debris and foreign objects are progressively being picked up around construction areas.

All results should be recorded on the checklist.

2.11 Aircraft Rescue and Fire-Fighting

The inspection should focus, if rescue and fire-fighting is required, on the rescue fire-fighting capability as follows —

(1) at applicable aerodromes, check aircraft rescue and fire-fighting equipment availability;

(2) determine that all required rescue and fire-fighting vehicles are serviceable and the required personnel are available;

(3) ensure communication systems are working; and

(4) determine the adequacy of the fire-fighting agents on hand.

2.12 Public protection

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.

All results should be recorded on the checklist.

2.13 Wildlife Strike hazard management

The inspection should check for any
(a) dead birds or animals on the runways, taxiways, and aprons or other signsthat wildlife problems may be developing — such as large flocks of birds on or adjacent to the aerodrome.
(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.

CHAPTER 3

CONTINUOUS SURVEILLANCE

3.1 Introduction

Continuous surveillance is an alertness practised by personnel to look for defects at any time they are on the aerodrome operational area. Continuous surveillance of aerodrome physical facilities and activities should cover at least the areas described in this section.

3.2 Frequency of inspection

Continuous surveillance depends on the alertness of aerodrome personnel whenever they are on the aerodrome operational area.

3.3 Ground vehicles

(1) determine if procedures and arrangements for the orderly operations of ground vehicles (including grass mowing machines) are being followed; and

(2) report any deficiencies, if appropriate.

3.4 Construction

(1) check for unauthorised use of runways, taxiways, and aprons by construction personnel and equipment;

(2) keep a sharp eye out for potential runway incursions and other irregularities;

(3) check all construction projects to ensure that the safety plan is being followed by the contractor; and

(4) ensure that construction equipment is not operated in navigational aid critical areas unless it is coordinated with the operator of the aid.

3.5 Public protection

(1) be alert for unauthorised persons, vehicles, and animals; and

(2)ensure gates are secured, serviceable and clear for access by rescue andfire- fightingvehicles.

(3) measures to protect persons and property from aircraft propeller wash or jet blast are implemented and effective; and

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3.6 Wildlife Strike hazard management

(1) note any birds or animals on or adjacent to the runways, taxiways, and aprons, to determine if there is a potential wildlife hazard problem; and

(2) report any potential hazard created by birds on or adjacent to the aerodrome.
(3) unusual activity or change in numbers of birds; and
(4) activity on or adjacent to the aerodrome that could attract birds to create a hazard.

3.7 Potential problems

Check the following for any potential problems —

(1) control of pedestrian access to the movement areas; (2)

passenger loading and off-loading areas;

(3) other movement areas frequented by the general public; and

(4) debris on movement areas

CHAPTER 4

PERIODIC CONDITION EVALUATION

4.1 Introduction

Periodic condition evaluations consist of specific checks on a regularly scheduled basis (but less frequently than daily). Checks may require use of specialist equipment and should cover at least the areas described in this section.

4.2 Frequency of evaluations

Facilities and equipment will, over time, slowly deteriorate until they reach a point where they willfail 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.

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.

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

4.3 Pavement areas

Check pavement surfaces for the following conditions—

(1) early signs of pavement failure, deformation and cracking: and

(2) rubber build-up, polishing, or other conditions affecting surface friction; and

(3) grooves on grooved pavements are clear.

(4) pavement, particularly in the touchdown zone areas, is not affected by rubber build-up

4.4 Markings and Signs

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

(b) have not deteriorated to a point where, if remedial work is not undertaken, it

(c) 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.

4.5 Visual Navigational Aids

An inspection programme for each visual navigation aid is essential to confirm their ongoing accuracy and reliability:

(1) visual navigation aids inspections should include regular checks of the power supply, light emission and alignment using such equipment as a spot meter and aiming and calibration bars;

(2) ensure that power generator and circuit resistance tests are being conducted;

(3) ensure that operation on auxiliary power will cause no deterioration in any aspect of the lighting systems and that the time to cut in does not exceed 15 seconds; and

(4) for the flight checking of visual aids, refer to Section 6.

4.5 Obstacles

(1) 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;

(2) survey the other aerodrome obstacle limitation surfaces established for the aerodrome for clearance from protruding obstacles;

(3) if an obstruction is found to infringe an obstacle limitation surface, either immediately remove the obstruction or notify the AIS with the corrected available runway lengths for promulgation in a NOTAM. If the infringing obstruction is permanent, notify the AIS of the permanent EOL for promulgation in the AIP; and

(4) the period for the conduct of the checks should be determined, and included in the aerodrome operating exposition, by a study of the aerodrome environment to identify the likelihood of significant obstructions, such as tree growth, structures, and similar, being developed in the intervening periods.

CHAPTER 5

SPECIAL INSPECTIONS

5.1 Introduction

Special inspections occur after receipt of a complaint such as substandard braking action, or as triggered by an unusual condition or event. A special inspection should be conducted after an accident or incident.

Depending upon circumstances, special inspections may include the inspection of any of the specific facilities or activities under the other three components. A special inspection should cover at least the areas described in this section.

5.2 Paved movement areas

After heavy precipitation an inspection and assessment should be made as follows:

5.2.1 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:

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 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

5.2.2 Debris on runway. After or during a period of heavy precipitation or strong winds, check for debris, mud and washouts on or at the edges of a runway.

5.2.3 Unpaved movement areas. After or during a period of heavy precipitation, check for ponding, and any surface softness which might affect the bearing strength and braking.

5.2.4 Runway and taxiway strips and safety areas

(1) check storm water system to verify that inlets are not clogged and drainage channels are free of debris. Note any standing water; and

(2) ensure all drain covers are in place and flush with the surface.

5.2.5 Maintenance and Construction

(1) conduct a special inspection before reopening a runway or taxiway following any construction or maintenance that has been performed in or around the manoeuvring area;

(2) 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;

(3) check for construction and maintenance activities to ensure that no hazardous conditions have been created the likes of—

- equipment and debris left in safety areas; and
- unacceptable pavement edges created by ground alteration work; and
- oil or hydraulic fluid spillage; and
- ruts from mowing equipment or other vehicles.

(4) after construction or maintenance operations, ensure that pavement markings are correct and that any unserviceable markers have been removed.

CHAPTER 6

FLIGHT CHECKING OF VISUAL AIDS

6.1 Introduction

6.1.1 The objective for the flight checking of visual aid lights is to confirm the accuracy of the guidance provided by visual approach aids and to otherwise determine the complicity of all the lights required for the aerodrome.

6.1.2 Flight checking is not a means for determining the serviceability of lights and visual aids as this is best done by an effective aerodrome inspection, and preventive maintenance programme as mentioned earlier in Section 4. The requirements for ongoing flight checking can also be minimised by such programmes.

6.2 Requirements for specific flight checking

Visual aids include markings, wind direction indicators and the like.

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

(1) prior to commissioning into service; and

(2) when any major component is replaced with re-alignment or re-setting required; and

(3) when any visual aid is re-setted; and

(4) periodically to confirm ongoing performance.

6.3 Flight checking criteria

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

6.3.2 All other visual aid lighting should be flight checked to verify the appearance, uniformity, intensities of the light and that there is no visual interference by any other light or object.

6.3.3 The visual aid lighting performance characteristics to be verified by flight checking prior to being commissioned into service should be:

T-VASIS and AT-VASIS

- Appearance and uniformity:
- Channel width, glide path angle and ILS/PAR coincidence:
- Top of red crossbar:
- Day and night angular coverage:
- Cut off light 1:
- Top of red light 1 and obstruction clearance:
- Cut in light 6:
- Range day and night, intensities and auxiliary power.

OTHER VASIS and PAPI

- Appearance and uniformity:
- Channel width, glide path angle and ILS/PAR coincidence:
- Day and night angular coverage:
- Top of red crossbar.

CHAPTER 7

AERODROME CONDITION REPORTING

7.1 Introduction

7.1.1 Under Nig.CARs Vol I Part 12 each holder of an aerodrome operating certificate is required to provide information on any conditions which 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 shall 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 shall be kept up to date and changes in condition reported without delay.

7.2 NOTAM

7.2.1 Each holder of an aerodrome operating certificate shall ensure that if unsafe conditions are uncovered as a result of aerodrome inspections, or from any other source, and cannot be immediately rectified, appropriate NOTAM are issued and that local aerodrome users are aware of the situation. After providing the information to the AIS, follow up to ensure that 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 update the NOTAM information or cancel the NOTAM if 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:

(1) type of unserviceability or unsafe condition;

(2) extent (area) of the unserviceability or condition; and

(3) 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 their runway designator and the difference between the runways and runway strips should be recognised and the correct terminology used.

7.3.3 In complying with Part 12 of Nig.CARs Vol I, the holder of an aerodrome operating certificate shall 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 —

(1) establishment, closure or significant changes in the operation of the aerodrome or runways;

(2) establishment, withdrawal or significant changes made to visual aids;

(3) interruption of, or return to operation of major components of the aerodrome lighting systems;

(4) occurrence, or correction of major defects or impediments in the manoeuvring areas;

(5) changes to and limitations on availability of fuel, oil and oxygen (International aerodromes);

(6) establishment, withdrawal or return to operation of hazard beacons marking significant obstacle to air navigation;

(7) erecting, removal of or changes to significant obstacles to air navigation in the take-off, climb, missed approach, approach areas, and runway strip;

(8) significant changes in the level of rescue and fire-fighting protection normally provided at the aerodrome;

(9) presence or removal of significant changes in hazardous conditions due to water on the movement area; and

(10) any other occurrence associated with the aerodrome which might be a hazard to the safety of aircraft operations.

CHAPTER 8

AERODROME RUNWAY INSPECTION PROCEDURES

1. GENERAL GUIDANCE

1.1 The objective is for each aerodrome to develop and implement fully documented runway inspection procedures, based on hazard analysis and risk assessment. The procedures will probably comprise core inspections plus a number of additional variable elements, which combine to form a 'basket of measures' approach. It is likely that each aerodrome's 'basket of measures' will be different, being dictated by local circumstances. The hazard analysis should be performed in order to identify local hazards, assess any level of risk, and determine the appropriate control measures.

1.2 The hazard analysis should be reviewed on a regular basis, depending upon changes to critical areas of the runway environment and/or its operation.

1.3 Runway inspections are carried out to accomplish a wide variety of important aviation safety related activities that should, as a minimum, include:

a) the inspection of the runway surface condition;

b) FOD detection and removal;

c) bird control and the removal of remains;

d) inspection of the visual aids, including markings and, where applicable, aeronautical ground lighting, particularly the structural integrity of the fittings;

e) runway friction measurement, if applicable;

f) checks in the clear and graded area; and

g) any other purpose (e.g. after an abandoned take-off or landing incident).

A more detailed list of core and optional/variable inspection procedures is included in Appendix A1 to this Guidance.

1.4 For unpaved surfaces, inspections will probably need to be increased after periods of prolonged rain, which may result in damage to the surface and whereby the surface is considered no longer suitable for use. In addition to those already stated, checks should also include the detection of irregular surfaces which may affect the performance and control of aircraft using it. There should be in place a level of understanding of the local and seasonal variations that may affect the surface condition.

1.5 It is probable that to undertake these varied tasks, many different agencies under the control of the aerodrome will have inspection-related duties. These should be carried out to a common high standard and so procedures should be developed to reflect this.

1.6 At present, no proprietary system has been proven to be fully effective as a stand-alone or automatic method in the monitoring and identification of FOD on runways. However, while such systems should not be ignored, the use of advanced technology should only supplement current methods of inspection.

1.7 A runway inspection involves the deliberate entry of an active runway. It is therefore essential that any hazards associated with this activity are identified and addressed so that each agency with an inspection duty has a clear understanding of what is involved and how the task is carried out safely. All personnel with a task that involves entering a runway should clearly understand their responsibilities and the identified hazards. This training should be recorded and a system of review should be established so that new hazards can be identified and new training needs satisfied.

1.8 Each inspection should include a reporting mechanism to ensure that appropriate action is taken. Reports should include details of the task(s); any remedial action(s) necessary or taken; and should identify the person/agency responsible for undertaking the task and/or further action.

1.9 The runway inspection regime should form an integral part of the existing aerodrome inspection procedure for the movement area, and the aerodrome certificate holder should ensure that the development and use of runway inspection procedures are addressed in the safety management system employed at the aerodrome.

APPENDIX A1: RUNWAY INSPECTION PROCEDURES

A1-1 CORE INSPECTIONS

1.1 These inspections should be carried out a number of times daily, dependent upon the movement rate and duration of operations. There is no minimum number, but they should be spread over the main times of operational activity. Inspections planned to take place during the hours of darkness may need to be done in a different manner from those undertaken during the daytime, with consideration being given to the presence of vehicles, people, lighting etc.

1.2 The frequency of on-runway inspections and the manner in which they are carried out will depend upon the results of the hazard analysis and risk assessment.

A1-2 OPTIONAL ELEMENTS (DAILY) A1-2.1

SPECIFIC INSPECTIONS

2.1.1 These additional on-runway inspections, for example bird hazard control or FOD detection, might be undertaken by a single vehicle and should be carried out at an appropriate speed for effective monitoring.

A1-2.2 OFF-RUNWAY OBSERVATIONS

2.2.1 This inspection involves observation of the runway from various vantage points, such as the edge of the clear and graded area, holding points, taxiways or tracks. Observations should be carried out from a stationary vehicle, with binoculars. This type of inspection may only be possible during daylight hours and, if utilised, should be integrated with the core 'on-runway' inspections.

A1-2.3 OFF-RUNWAY OBSERVATION BY A BIRD CONTROL UNIT

2.3.1 The primary objective of a bird control unit is to keep the runway environment clear of birds.

2.3.2 A critical element of this task is 'continuous' observation of the runway from various static observation points; but these observations may only be suitable for daylight hours, possibly integrated with the off-runway observations above.

A1-2.4 RUNWAY LIGHTING CHECKS

2.4.1 Daily runway lighting checks are normally undertaken in order to identify unserviceable lamps and possible failures of light fittings. It might be possible to incorporate inspections of particular areas of the runway at the same time. These inspections will need to integrate with the other on-runway inspections and be flexible in timing to cater for the variability of the onset of night.

A1-2.5 RUNWAY CRITICAL AREAS

2.5.1 It may be desirable to concentrate runway inspections within those areas that are 'high risk', such as touchdown zones, displaced thresholds and frequently used crossing points. The use of this type of inspection might be dictated by such variables as type of traffic, runway length, and the entry/exit points being used and whether mixed/single mode operations are in use.

A1-3 VARIABLE ELEMENTS

A1-3.1 RUNWAY CONDITION/AGE INSPECTION

3.1.1 Dependent upon the age and current condition of the runway surface, additional on-runway inspections may be needed, covering the whole surface or identified critical areas.

A1-3.2 RUNWAY WALKING INSPECTIONS

3.2.1. Although it may take a long period of time, walking the runway can provide a more thorough examination of the runway. The number of full walking inspections planned for each year will depend upon the age and use of the runway surface, and the level of operations undertaken at each aerodrome.

A1-3.3 RUNWAY SURFACE FRICTION MEASUREMENT

3.3.1 Use of the existing runway friction measurement regime may provide additional opportunities to observe the runway.

A1-3.4 DURING AND AFTER PERIODS OF MAINTENANCE

3.4.1 When engineering staff are working on the runway, it may be possible to provide an additional inspection of either the whole runway or part of it. In addition, a runway inspection should be conducted in the vicinity of the working area after completion of the works to ensure that tools, machinery and other forms of FOD are not present. This is particularly important after works at night where there is a greater risk of the misplacement of work items.

A1-3.5 RUNWAY SWEEPING PROGRAMME

3.5.1 Dependent upon the age and current condition of the runway surface, a periodic sweeping programme should be implemented.

APPENDIX A2: ACRONYMS

1. AIP - Aeronautical Information Publication
2. FOD - Foreign Object Debris
3. ILS - Instrument landing System
4. NOTAMS - Notice to Airmen
5. PAPI - Precision Approach Path Indicator
6. PAR- Precision Approach Radial
7. VASIS - Visual Approach Slope Indicator