AERONAUTICAL INFORMATION CIRCULAR - MOÇAMBIQUE
INSTITUTO DE AVIAÇÃO CIVIL DE MOÇAMBIQUE
DIRECÇÃO DOS SERVIÇOS DE NAVEGAÇÃO AÉREA
AERONAUTICAL INFORMATION SERVICE

Tel: (258) 21-465416
Fax: (258) 21-465415
AFTN: FQHQYSYX
iacm@tvcabo.co.mz
www.iacm.gov.mz

ALAMEDA DO AEROPORTO
Caixa Postal, 227 - Maputo

CIA - International
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ADVISORY

CONTROL OF OBSTACLES FOR AVIATION

1. AUTORITY

This advisory circular is issued by the Executive Chairman of Institute of Civil Aviation of Mozambique (IACM) in pursuance of power vested in him under Article 31 of Law 21/2009 of 21 September and Article 12 of Resolution 19/2011 of 30 of November.

2. OBJECTIVE

The purpose of this advisory circular is to provide guidance to the aerodrome operators in the Republic of Moçambique on the procedures and methods for controlling of obstacles at and in the vicinity of aerodromes in order to comply with the requirements of the MOZ CATS 139, Volume 1, Section 139.4 and 139.6

3. REFERENCE

4.

1) MOZ CARS
2) MOZ CATS 139, Volume I
3) MOZ CATS 139, Volume II
4) ICAO Annex 4 - Aeronautical Charts
5) ICAO Annex 14 – Aerodromes
    a. Volume I – Aerodromes Design & Operations
    b. Volume II - Heliports
6) ICAO Annex 15 - Aeronautical Information Services (AIS)
7) ICAO Document 8168 - Aircraft Operations
8) ICAO Document 9137 - Airport Service Manual Part 6 – Control of Obstacles

5. INTRODUCTION

Efficient operation of an aerodrome may be influenced by natural features inside and/or outside the aerodrome boundary. During planning for the initial construction, the aerodrome operator has to evaluate carefully the effect of these natural features on operational planning. Similar evaluation has to be made during planning for any future development and/or expansion.

In addition to the natural features, there are the manmade objects to be considered that the aerodrome operator has responsibility to monitor and control. Uncontrolled growth of such obstacles may result in limitations on the distance available for take-off and landing, higher weather minima for operations, an increase in the obstacle clearance altitude/height for an instrument approach procedure or any associated visual circling procedure or have an impact on the operational procedure design, restriction in the payload, restrictions on certain types of aircraft and even possible closure of airports.

To ensure safety and efficiency of aircraft operations, certain areas of the local airspace must be regarded as an integral part of the aerodrome environment. The degree of freedom from obstacles in these areas is as important to the safe and efficient use of the aerodrome as are the more obvious physical requirements of the runways and their associated strip.

Chapter 4 of the MOZ CATS 139, Volume I define the technical standards for airspace around an aerodrome to be maintained free of obstacles so as to permit the intended aircraft operations to be conducted safely and to prevent the aerodrome from becoming unusable by the growth of obstacles around it. This is done by defining a series of obstacle limitation surfaces that define the limits to which objects may project into the airspace.

6. CRITERIA FOR ASSESSMENT OF OBSTACLES

6.1. General

The MOZ CATS 139, Volume I, Sub-section 139.4.1 provides specifications regarding the Obstacle Limitation Surfaces (OLS) and the broad purpose of the OLS is to define the volume of airspace that should ideally be kept free from obstacles in order to minimize the dangers presented by obstacles to aircraft, either during an entirely visual approach or during the visual segment of an instrument approach. The OLS are based on the aerodrome reference code and are thus directly related to the critical aircraft intended to operate at a particular aerodrome.

The OLS provided for in the MOZ CATS 139, Volume I include;

a) Outer Horizontal surface,
b) Inner Horizontal Surface,
c) Conical surface,
d) Approach surface,
e) Transitional surfaces,
f) Inner Approach Surface,
g) Inner Transitional Surface, and

h) Balked landing surface

They are intended to be of a permanent nature and to be effective, the aerodrome operator should have them incorporated in the local government laws and the aerodrome operator should agree with the local government a procedure for their control and monitoring. The surfaces established shall allow not only for existing operations, but also for the ultimate development envisaged for each aerodrome. Where the aerodrome has or intends to develop more than one runway, the OLS should be established based on the composite limitations.

The procedure for control of obstacles within the aerodrome boundaries rests fully with the aerodrome operator. Outside the aerodrome boundaries, land use planning is usually the responsibility of the local governments. It is for this reason that the aerodrome operator must agree with them on the acceptable effective and efficient procedures for obstacle control. For both however, the aerodrome operator should make reference to the IACM to ensure MOZ CATS 139, Volume I provisions are complied with.

6.2. **Description of Obstacle Limitation Surfaces**

Outer Horizontal Surfaces

Significant operational problems can arise from the existence of tall structures in the vicinity of airports beyond the areas currently recognized as areas in which restriction of new construction may be necessary. In view of the potentially important operational considerations, airport operators are required to adopt measures to ensure that they have advance notice of any proposals to construct any tall structures. This will enable them to study the aeronautical implications and take such action as may be at their disposal to protect aviation interests.

As a broad specification for the outer horizontal surface, tall structures can be considered to be of possible significance if they are both higher than 30 m above local ground level, and higher than 150 m above aerodrome elevation within a radius of 15 000 m of the centre of the airport where the runway code number is 3 or 4. The area of concern may need to be extended to coincide with the obstacle-accountable areas of PANS OPS for the individual approach procedures at the airport under consideration.

Inner Horizontal Surface and Conical Surfaces

The purpose of the inner horizontal surface is to protect the airspace for visual circling prior to landing, possibly after a descent through cloud aligned with a runway other than that in use for landing. Whilst visual circling protection for slower aircraft using shorter runways may be achieved by a single circular inner horizontal surface, with an increase in aircraft speed it becomes essential to adopt a race-track pattern and use circular arcs centered on runway strip ends joined tangentially by straight lines. To protect two or more widely spaced runways, a more complex pattern could become necessary, involving four or more circular arcs.

To satisfy the intention of the inner horizontal surface, the airport operator shall select a datum elevation from which the top elevation of the surface is determined. Selection of the datum shall take account of:-

a) the elevations of the most frequently used altimeter setting datum points;
b) minimum circling altitudes in use or required; and
c) the nature of operations at the airport

For relatively level runways the choice of datum is not critical, but when the thresholds elevations differ by more than 6 m, the datum selected should have particular regard to the factors above. For complex inner horizontal surfaces a common elevation is not essential, but where surfaces overlap the lower surface should be regarded as dominant.

Approach and Transitional Surfaces

Approach and Transitional Surfaces define the volume of airspace that should be kept free from obstacles to protect an aeroplane in the final phase of the approach-to-land manoeuvre. The slopes and dimensions of approach and transitional surfaces will vary with the aerodrome reference code and whether the runway is used for visual, non-precision or precision approaches as indicated in the MOZ CATS 139 Volume I.

Inner Approach, Inner Transitional and Balked Landing Surfaces

Together, these surfaces define a volume of airspace in the immediate vicinity of a precision approach runway which is known as the obstacle-free zone (OFZ). This zone shall be kept free from fixed objects, other than lightweight frangible aids to air navigation which must be near the runway to perform their function, and from transient objects such as aircraft and vehicles when the runway is being used for category I1 or III ILS approaches. When an OFZ is established for a precision approach runway category I, it shall be clear of such objects when the runway is used for category I ILS approaches.

The OFZ provided on a precision approach runway where the code number is 3 or 4 is designed to protect an aircraft with a wingspan of 60 m on a precision approach below a height of 30 m having been correctly aligned with the runway at that height, to climb at a gradient of 3.33 per cent and diverge from the runway centre line at a splay no greater than 10 per cent. The gradient of 3.33 per cent is the lowest permitted for an all-engine-operating balked landing. A horizontal distance of 1 800 m from threshold to the start of the balked landing surface assumes that the latest point for a pilot to initiate a balked landing is the end of the touchdown zone lighting, and that changes to aircraft configuration to achieve a positive climb gradient will normally require a further distance of 900 m which is equivalent to a maximum time of about 15 seconds. A slope of 33.33 per cent for the inner transitional surfaces results from a 3.33 per cent climb gradient with a splay of' I0 per cent.

Take off Climb Surfaces

The take off and climb surface provides protection for an aircraft on take-off by indicating which obstacles should be removed if possible and marked or lighted if removal is impossible. The slopes and dimensions of dimensions and slopes will vary with the aerodrome reference code as specified in the MOZ CATS 139, Volume I..

6.3. Establishment of an aerodrome obstacle limitation surfaces

The MOZ CATS 139 Volume I provide the standards that are required to be complied with for the control of obstacles. The aerodrome operator shall establish the aerodrome obstacle limitation surfaces taking into account the pertinent information about the aerodrome, including:

a) location, orientation, length and elevation of all runway(s);
b) location and elevation of all reference points used in establishing the aerodrome obstacle limitation surfaces;
c) proposed categories of runway use - non-instrument, non-precision approach or precision approach (category I, II or III);
d) plans for future runway extension or change in category; and
e) the aerodrome master plan

It is generally acknowledged that it is easier to control the development of a structure at its planning stage and the obstacle control procedures to be developed by the aerodrome operator should ensure compliance at this stage. Further it would be desirable to base all the aerodrome obstacle limitation surfaces on the most critical airport design features anticipated for future development, since it is always easier to relax a strict standard than to increase a requirement of a lesser standard if plans are changed. Some major airport make a practice of attempting to protect all runways to the standards required for category III precision approaches, to maintain maximum flexibility for future development.

7. CRITERIA FOR ASSESSMENT OF OBSTACLES USING PANS OPS SURFACES

7.1. General

The PANS OPS surfaces are intended for use by procedure designers in the construction of instrument flight procedures and for specifying minimum safe altitudes/heights in order to safeguard aircraft from collision with obstacles when flying on instruments. They specify areas used by aircraft in holding, approach, visual circling and missed approach and enable airport operators to institute obstacle control measures beyond the MOZ CATS 139, Volume I surfaces in order to accommodate current and future demands in instrument approach operations.

The PANS OPS surfaces include the procedure design areas for the following instrument approach segments;

a) Holding procedure
b) Arrival,
c) Initial approach,
d) Intermediate Approach,
e) Final Approach,
f) Visual circling; and
g) Missed Approach

8. Descriptions of the PANS OPS surfaces

Minimum safe Altitude (Height)

In designing instrument approach procedures, the designer will determine areas (horizontally) needed for various segments as required for obstacle assessment. Based on the obstacle assessment, the minimum safe altitudes/heights for each segment of the procedure is established. The minimum safe altitude/height specified for the final approach phase of a flight is called Obstacle Clearance Altitude/Height (OCA/H). Close coordination between aerodrome operator (aerodrome operations and air traffic services) and the IACM is necessary to ensure the descent minima are not infringed.

The size and dimensions of the obstacle-free airspace needed for the approach, for the missed approach initiated at or above the OCA/H and for the visual manoeuvring (circling) procedure are specified in PANS-OPS Document 8168.

The airspace required for an approach (including missed approach and visual circling) is bounded by surfaces which do not usually coincide with the obstacle limitation surfaces specified in the MOZ CATS 139, Volume I.

Basic ILS surfaces

The "basic ILS surfaces" defined in PANS-OPS Document 8168 represent the simplest form of protection for ILS operations. These surfaces are extensions of certain Annex 14 surfaces, referenced to threshold level throughout and modified after threshold to protect the instrument missed approach.

Obstacle assessment surfaces

The obstacle assessment surfaces (OAS) establish a volume of airspace, inside which it is assumed the flight paths of aeroplanes making ILS approaches and subsequent missed approaches will be contained with sufficiently high probability. Accordingly, aeroplanes need normally only be protected from those obstacles that penetrate this airspace; objects that do not penetrate it usually present no danger to ILS operations. However, if the density of obstacles below the OAS is very high, these obstacles will add to the total risk and may need to be evaluated.

The difference between the basic ILS surfaces and the OAS is that the dimensions of the latter are based upon a collection of data on aircraft ILS precision approach performance during actual instrument meteorological conditions, rather than existing Annex 14 surfaces.

ILS Collision Risk Model (CRM)

The Collision Risk Model (CRM) is a computer programme that calculates the probability of collision with obstacles by an aeroplane on an ILS approach and subsequent missed approach**.**

The CRM may be used to assist in:-

a) Aerodrome planning during evaluation of possible location of new runways in a given geographical and obstacle environment;
b) Deciding whether or not an existing obstacle should be removed; and
c) Deciding whether or not a particular new construction will result in an increase in OCA/H

Visual manoeuvring (circling procedure)

Visual manoeuvring described in the PANS-OPS, is a visual extension of an instrument approach procedure. The size of the area for a visual manoeuvring varies with the speed of aircraft. It is permissible to eliminate from consideration a particular sector where a prominent obstacle exists by establishing appropriate operational procedures.

In many cases, the size of the area will be considerably larger than that covered by the Annex 14 inner horizontal surface. Therefore circling altitudes/heights calculated according to PANS-OPS for actual operations may be higher than those based only on obstacles penetrating the inner horizontal surface area.

Note 1: It must be stressed that a runway protected only by the obstacle limitation surfaces of Annex 14 will not necessarily allow the achievement of the lowest possible operational minima if it does not, at the same time, satisfy the provisions of the PANS-OPS.

Note 2: Consideration needs to be given to objects which penetrate the PANS-OPS surfaces, regardless of whether or not they penetrate an Annex 14 obstacle limitation surface, and such obstacles may result in an operational penalty.

9. Controlling obstacles at an aerodrome

9.1. Background

When buildings encroach on the airspace needed for aircraft operations, a conflict of interest arises between property owners and the aerodrome operator. If such differences are not resolved, IACM is, in the interest of safety of operations, obliged to impose restrictions limiting operations. Such restrictions might take the form of requiring displaced thresholds (resulting in a reduction in effective runway length), higher weather minima for operations, reductions in authorized aircraft masses and in certain cases restrictions of certain aircraft types. Any of these actions seriously affect orderly and efficient air transportation and adversely affect the economy of the communities served by the airport.

Control of obstacles in the vicinity of airports is, therefore, a matter of interest and concern not only to the aerodrome operator but also IACM, aircraft operators, local governments and communities and prospective and current property owners. The measures IACM institutes to control obstacles in the limitation surfaces, for the interest of safety of operations, are severe legally, economically, socially and politically. Every effort should therefore be exerted by all responsible agencies to ensure obstacle control procedures agreed are strictly adhered.

10. 1Legal authority and responsibility

Pursuant to the Subpart VIII of MOZ CARS Part 139, the Instituto de Aviação Civil de Moçambique may impose prohibitions or restrictions on the use of any area of land or water in the vicinity of aerodromes as may be necessary to ensure safe and efficient aircraft operations. The ultimate responsibility for limitation and control of obstacles rests with the aerodrome operator. This includes the responsibility for controlling obstacles within the aerodrome property and for arranging the removal or lowering of obstacles within the aerodrome vicinity. The latter obligation may require negotiations leading to purchase or condemnation where necessary.

The aerodrome operator shall therefore in coordination with the local governmeg agencies and construction licensing authorities develop height zoning limitations based on appropriate obstacle limitation surfaces for the aerodrome. The height zoning limitations shall be used to develop a procedure for obstacle control within the aerodrome vicinity and all the responsible parties shall sign to its implementation, monitoring and review as necessary. As a minimum, the aerodrome operator shall require property owners or developers to give formal notice of any proposed structure which may penetrate an obstacle limitation surface. On the other hand, the other parties should co-operate closely to ensure that the measures taken provide the assurance of the degree of safety and efficiency for aircraft operations, the maximum economic benefits to neighboring communities and the least possible interference with the rights of property owners. If necessary the Instituto de Aviação Civil de Moçambique may be called upon to offer the necessary technical advise to the parties.

The aerodrome operator shall designate an official to be responsible for monitoring the growth of obstacles at and in the vicinity of aerodromes and to coordinate with the parties to the agreed procedures to prevent unauthorized growth of obstacles. The designated official should establish a programme of regular and frequent visual inspections of all areas around the 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 becomes a problem.

11. Methods of control

Height zoning

The objective of height zoning is to protect the aerodrome obstacle limitation surfaces from intrusion by man-made objects and natural growth such as trees. Height zoning may provide for a minimum allowable height for land use in the vicinity of the aerodrome. Land use zoning is also a means of preventing erection of new obstacles.

Obstacle Removal

When obstacles have been identified, the first and most appropriate line of defense for the aerodrome operator is obstacle removal or reduction of height so that it no longer is an obstacle. If the obstacle is a single object it may be possible to reach agreement with the owner of the property to reduce the height to acceptable limits without adverse effect. In the case of trees, an agreement should be reached in writing with the property owner to ensure that future growth will not create new obstacles. The property owners can give

such assurance by agreeing to trim the trees when necessary, or by permitting access to the premises to have the trimming done by the aerodrome operator's representative.

Purchase of Easements and Property Rights

The aerodrome operator may, in some cases, be obliged to acquire the property through easements or property rights after which obstacle removal or reduction in height may be possible. This ensures that no new obstacles are allowed to be erected in future. With the purchase of easements, the aerodrome operator secures the consent of the owner (after paying suitable compensation) to lower the height of the obstacle in question.

Obstacle shielding

The principle of obstacle shielding is employed to permit a more logical approach to restricting new construction and to prescribing obstacles marking and lighting. Shielding principles are employed when some object, an existing building or natural terrain, already penetrates above one of the aerodrome limitation surfaces. If it is considered that the nature of an object is such that its presence may be described as permanent, then additional objects within a specified area around it may be permitted to penetrate the surface without being considered as obstacles. The original obstacle is considered as dominating or shielding the surrounding area.

Shielding effect of immovable obstacle laterally in approach and take-off climb areas is more uncertain. In certain circumstances, it may be advantageous to preserve existing unobstructed cross-section areas, particularly when the obstacle is close to the runway. This would guard against future changes in either approach or take-off climb area specifications or the adoption of a turned take-off procedure. The permanency of the immovable obstacle which is to be considered as shielding an area should be given after consultation with the Instituto de Aviação Civil de Moçambique.

Marking and lighting of obstacle

Where it has been determined that it is impractical to eliminate an obstacle, it should be appropriately marked and/or lighted so as to be clearly visible to pilots in all weather and visibility conditions. The MOZ CATS 139, Volume 1 provides detailed requirements concerning marking and/or lighting of obstacles. It should be noted that the marking and lighting of obstacles is intended to reduce hazards to aircraft by indicating the presence of the obstacles. It does not necessarily reduce operating limitation which may be imposed by the obstacle. When considering marking and/or lighting an obstacle, the Instituto de Aviação Civil de Moçambique should be consulted and its written agreement sought.

The aerodrome operator should make a daily visual inspection of all obstacle lights on and around the aerodrome, and take steps to have inoperative lights repaired. Aerodrome operators may find it helpful to use dual light fixtures with an automatic switch to the second light fixture in case the first one fails. Such an arrangement provides greater assurance of continued obstacle lighting and reduces the number of visits to replace inoperative lamps

12. Obstacle control during construction activities

The aerodrome operators, through the designated official should conduct regular inspections of the aerodrome environs to be aware of any construction activities in order to ensure the height zoning limits are not penetrated during such constructions. This may include cranes, ladders, trucks (parked or mobile), material stockpiles, construction material production plants etc. Such temporary structures, if allowed, may require marking and/or lighting as provided for in the MOZ CATS 139, Volume I. The aerodrome operator will have to ensure, by consulting the Instituto de Aviação Civil de Moçambique, that such fixed or mobile obstacles do not at any time interfere with the safe operation of the navigational and visual aids.

In any case, the Instituto de Aviação Civil de Moçambique shall be notified of the existence of plans for any such construction activities.

13. AERODROME EQUIPMENT AND INSTALLATIONS WHICH MAY CONSTITUTE OBSTACLES

13.1. General

All fixed and mobile objects, or parts thereof, that are located on an area intended for the surface movement of aircraft or that extends above 300ft above ground level are obstacles. Certain aerodrome equipment and installations, because of their air navigation functions, must inevitably be so located and/or constructed that they constitute obstacles. Equipment or installations other than these should not be permitted. This section discusses the sitting and construction of aerodrome equipment and installations which of necessity must be located on a runway strip; a runway end safety area; a taxiway strip; or within the taxiway clearance distance specified in the MOZ CATS 139. Volume 1.

Any equipment or installation which is situated on an aerodrome and which is an obstacle should be of minimum practicable mass and height and be sited in such a manner as to reduce the hazard to aircraft to a minimum. Additionally, any such equipment or installation which is fixed at its base should incorporate frangible mounting. Many factors must be considered in the selection of aid fixtures and their mounting devices to ensure that the reliability of the aids is maintained and that the hazard to aircraft in flight or manoeuvring on the ground is minimal. It is therefore important that the appropriate structural characteristics of all aids which may be obstacles be specified and published.

14. Types of aerodrome equipment and installations which may constitute obstacles

There are many types of aerodrome equipment and installations which, because of their particular air navigation functions, must be so located that they constitute obstacles. Such airport equipment and installations include but are not limited to:

a) ILS glide path antennas;
b) ILS inner marker beacons;
c) ILS localizer antennas;
d) Wind direction indicators;
e) Landing direction indicators;
f) Anemometers;
g) Ceilometers;
h) Transmissometers;
i) Elevated runway edge, threshold, end and stopway lights;
j) Elevated taxiway edge lights;
k) Approach lights;
l) Visual approach slope indicator systems/precision approach slope indicator systems;
m) Signs and markers;
n) Components of the microwave landing system (MLS);
o) Certain radar and other electronic installations and other devices;
p) VOR or VOR/DME when located on aerodrome;
q) Precision approach radar system or elements;
r) VHF direction finders; and
s) Airport maintenance equipment, e.g. trucks, tractors.

Elevated runway edge, threshold, end, stopway and taxiway edge lighting

The height of these lights should be sufficiently low to ensure propeller and engine pod clearance. Wings flex and strut compression under dynamic loads can bring the engine pods of some aircraft to near ground level. Only a small height can be tolerated, and a maximum height of 36 cm is advocated. These aids should be mounted on frangible mounting devices. The impact load required to cause failure at the break point should not exceed 5kg.m and a static load required to cause failure should not exceed 230 kg applied horizontally 30 cm above the break point of the mounting device.

In addition, all elevated light installed on runways of code letters A and B should be capable of withstanding a jet engine exhaust velocity of 300kt, and lights on runways of code letters C, D, and E, a lower velocity of 200kt. Elevated taxiway edge lights should be able to withstand an exhaust velocity of 200kt.

Approach lighting system

To minimize the hazard to aircraft that may strike them, approach light should have a frangible device, or their supports be of a frangible design. Where the terrain requires light fittings and their supporting structure to be taller than approximately 1.8 m and they constitute the critical hazard, it is considered that it is not practicable to require that the

frangible mounting devise be at the base of the structure. The frangible portion may be limited to the top 1.8 m of the structure, except if the structure itself is frangible. Though there is some question of the need to provide frangibility for approach lights installed beyond 300 m before the threshold (as these light are required to be below the approach surface), it is recognized that protection needs to be provided for aircraft that might descend below the approach or take-off surfaces. A frangible top portion of 1.8 m is considered to be a minimum specification, and a longer frangible top potion should be provided where possible.

In all cases the unit and supports of the approach lighting system should fail when an impact load of not more than 5kg.m and a static load of not less than 230 kg is applied horizontally at 30 cm above the break point of the structure. Where it is necessary for approach lights to be installed in stop ways, the light should be inset in the surface when the stopway is paved. When the stopway is not paved, they should either be inset or, if elevated, meet the criteria for frangibility agreed for lights installed beyond the runway end.

Other aids (e.g. VASIS, signs and markers)

These aids should be located as far as practicable from the edges of runways, taxiways and aprons as is compatible with their function. Every effort should be made to ensure that the aids will retain their structural integrity when subjected to the most severe environmental conditions. However, when subjected to aircraft impact in excess of the foregoing conditions, the aids will break or distort in a manner which will cause minimum or no damage to aircraft. Caution should be taken when installing visual aids in the movement area to ensure that the light support base does not protrude above ground, but rather terminates below ground as required by environmental conditions so as to cause minimum or no damage to the aircraft overrunning them. However, the frangible coupling should always be above ground level.

15. OBSTACLE CONTROL PROCEDURES IN THE AERODROME MANUAL

Details of the procedures for inspection of the aerodrome movement area, obstacle limitation surface and for obstacle control at an aerodrome should be presented in the Aerodrome Manual. Particulars in the aerodrome manual of the procedures for the inspection of the aerodrome movement area and obstacle limitation surface must include details of the following:

a) Arrangements for carrying out inspections;

b) Arrangements and means of communicating with ATC during an inspection;

c) Arrangements for keeping an inspection logbook and the location of the logbook;

d) Details of inspection intervals and times;

e) Inspection checklist;

f) Arrangements for reporting the results of inspections and for taking prompt follow-up actions to ensure correction of unsafe conditions; and

g) The names and roles of persons responsible for carrying out inspections and their contact numbers during and after working hours.

Particulars in the aerodrome manual for obstacle control must contain details setting out the procedures for –

a) Monitoring the obstacle limitation surfaces and Type A chart for obstacle in the take-off surface;

b) Controlling obstacles within the authority of the aerodrome operator;

c) Monitoring the height of buildings or structures within the boundaries of the obstacle limitation surfaces;

d) Controlling new developments in the vicinity of the aerodrome;

e) Notifying the Authority of the nature and location of obstacles and any subsequent addition or removal of obstacles for action as necessary, including amendment of AIS publications.

Maputo, 21 April 2015

INSTITUTE OF CIVIL AVIATION OF MOZAMBIQUE

THE CHAIRMAN OF THE BOARD AND CEO

Capt. João Martins de Abreu