REPUBLICA DE CABO VERDE

AGÊNCIA DE AVIAÇÃO CIVIL

CIVIL AVIATION AUTHORITY

Advisory Circular CT 42-011

SUBJECT: NOTIFICATION OF AERODROME DATA AND INFORMATION

DATE: 14/03/2018

PURPOSE

This CT provides methods, acceptable to the Authority, for showing compliance with the notification of aerodrome data and information requirements of CV CAR Part 14.2 and explanatory material to assist in showing compliance.

RELATED CV CAR

This Advisory Circular relates specifically to Civil Aviation Regulations CV CAR 14.

CHANGE NOTICE

Revision 1 updates the content of this advisory circular to align with the latest amendment to Parts 14.

1. INTRODUCTION

1.1 Requirement to promulgate aeronautical information

A. Under CV CAR Part 15, Aeronautical Information Services, the AAC is required to publish or arrange for the publication of aeronautical information that is essential to air navigation. This aeronautical information is promulgated by the Aeronautical Information Service (AIS) that is operated by the Empresa Nacional de Aeroportos e Seguranca Aerea, SA (ASA). The promulgated aeronautical information includes aerodrome data and information and various aerodrome charts.

1.2 Purpose of promulgating aerodrome data and information

A. Before any person uses any place as an aerodrome, they must:

(1) ensure that the place has physical characteristics, obstacle limitation surfaces, and visual aids commensurate with the characteristics of the aeroplane being used, the lowest meteorological minima to be used, and the ambient light conditions; and

(2) ensure that the place is suitable for landing and taking-off.

B. To enable operators, both international and domestic, to assess the suitability and condition of an aerodrome for their aircraft operations, the Aeronautical Information Service is required to publish aerodrome data and information in the Cape Verde Aeronautical Information Publication (CVAIP) and to promulgate any significant change to that data or information by NOTAM where the change is of direct significance to the operation of aircraft. The aircraft operator can rely on the currency and accuracy of the data and information published in the CV AIP and promulgated by NOTAM to meet the applicable requirements of the applicable regulations (e.g. CV CAR Part 8) to determine the suitability and condition of an aerodrome for their operation.

1.3 Types of published aerodromes

Certificated aerodromes or aerodromes required to be certificated. Verified data and information on all certificated aerodromes or aerodromes required to be certificated under Part 14 must be published by the AIS in the CVAIP. Operationally significant changes to that data and information must be promulgated by NOTAM as applicable.

1.4 Procedure for promulgation

A. For the promulgation of aerodrome data and information in the CV AIP and by NOTAM each person responsible for an aerodrome shall submit the aerodrome data to the AIS service for review in coordination with the AAC before they are published in the AIP.

B. Holders of aerodrome certificates are required under CV CAR Part 14 to:

(1) establish any limitations on the use of the aerodrome that arise from the aerodrome design or the facilities or services provided at their aerodrome;

(2) notify the AIS and the AAC of the aerodrome data and information that is specified in this CT for publication in the CV AIP; and

(3) notify the AIS without delay of any aerodrome operational condition or defect at their aerodrome that may affect the safe operation of aircraft. Such notification is required for the issue of a NOTAM.

C. The certificate holder is responsible for —

(1) the accuracy and timeliness of the aerodrome data and information forwarded, and

(2) maintaining the currency of that data and information and notifying any changes, including changes to the operational data and status of the aerodrome,

1.5 Data and information to be notified

The aerodrome data and information to be provided to the AIS for publication in the AIP is as listed in Annex 15, Appendix 1, paragraph 2.2 for international aerodromes

1.6 Runway declared distances

The most critical data to be provided to the AIS for promulgation is the runway declared distances based on the design take-off climb and approach obstacle limitation surfaces. The safe operation of aircraft is dependent on the accuracy of the promulgated runway declared distances. Appendix 2 of this CT provides guidance for calculating the runway declared distances.

1.7 Aerodrome obstacle information

A. Under ICAO Annex 4, Aeronautical Charts, Cape Verde is required to ensure the availability of aerodrome obstacle information to enable aircraft operators to comply with the operating limitations of their aircraft.

B. Significant obstacles in the take-off flight path area of runways regularly used by international civil aviation and any runways regularly used by aeroplanes conducting air operations under IFR must be published by AIS as part of the AIP or made available in chart form on request.

C. The aerodrome operator is responsible for providing or arranging for the provision of the necessary surveyed aerodrome obstacle data to the AIS.

D. The aerodrome operator must notify the AIS if there are no significant obstacles in the take-off flight path area of a runway.

E. Appendix 3 of this AC contains survey instructions and data required to be provided to the AIS for the promulgation of obstacle information.

1.8 Control of obstacles

A. The effective use of an aerodrome may be influenced by natural features, trees and man–made objects inside and outside the aerodrome boundary. These may result in limitations on:

(1) the distances available for take-off and landing;

(2) the meteorological minima for take-off and landing; and

(3) the payload of some aircraft types.

B. The extent of the limitation depends on individual circumstances, but it is possible to significantly reduce the payload penalty by judicious obstacle removal and obstacle control.

C. Control of Obstacles provides advice on measures that can be taken to protect the aerodrome design obstacle limitation surfaces, the take-off flight path areas, and the PANS-OPS surfaces for instrument flight procedures.

1.9 Charting of aerodromes

All aerodromes promulgated in the CV AIP will be shown on the applicable aeronautical charts. Other aerodromes not published in the CV AIP will be shown on applicable aeronautical charts when the AAC determines that there is a need for these aerodromes to be shown for the safety of air navigation.

1.10 Qualifying Criteria

The aerodrome certificate holder shall satisfy itself as to the competence of the surveyors it employs for aerodrome surveys. The following is a list of characteristics that should be considered:

(1) Accredited to an ISO 9001:2000 standards or operate an equivalent quality control system.

(2) Professionally qualified surveyors and project managers to oversee the survey.

(3) Field survey staff competent in aerodrome surveying techniques and experienced at working in an operational aerodrome environment.

1.11 Accuracy

Appropriate survey methods shall be applied to qualify the accuracy and integrity of the data provided. Survey methodology shall be clearly demonstrated in the Survey Report. Requirements are stated in ICAO DOC 9674-AN/946 (WGS-84 Manual)

	Horizontal Accuracy	Vertical Accuracy	Integrity Classification
Aerodrome Control Network	1.0 m (*)	1.0 m (*)	1 x 10-8
Aerodrome Facilities	0.5 m (#)	0.25 m (#)	1 x 10-8
Obstacles and Off Aerodrome Facilities	3.0 m (#)	0.3 m (#)	1 x 10-5
(*) Accuracy with respect to the appropriate geodetic reference frame (#) Accuracy relative to the aerodrome control network			

1.12 Conversion Factors

ICAO Annex 5 is used as the standard for the application of all conversion factors.

Non-SI Units	SI Units
1 Nautical Mile (nm)	**1.852 kilometres (km)**
0.54 nm	**1 km**
1 Foot (ft)	**0.3048 metres (m)**
3.2808 ft	**1 m**
1nm = 6076.04 ft	

1.13 Instrumentation

All survey equipment shall have a current calibration certificate and be able to perform to the accuracy appropriate to the requirements of the surveys.

1.14 Methodology

A. All permanent controls that are established within the aerodrome boundary shall be documented and traceable.

B. Office appreciation using contour maps can aid in the process of defining the probable extent of the survey and the likely position of obstacles. Local scale factor adjustment to ground distances shall be considered, and the effects of curvature and refraction.

C. New obstacle data shall be proved by two independent measurements and their resultant elevations and positions shall satisfy the appropriate survey criteria.

D. Obstacles heighted on previous surveys need only to be checked to confirm their height and position without the rigour afforded to new obstacles. Particular attention should be paid to structures and trees whose height may change. An appreciation of the effects of vertical angles over variable distances is necessary to give good height accuracies.

E. An effective checking system shall be maintained to ensure that the data collected conforms to the accuracy standard and proof of that conformity shall be presented within the survey report.

2. Obstacles to be Heighted

A. Obstacles include terrain, vegetation and structures.

B. Where there are a large number of obstacles to be heighted it will be impractical to survey, for example, every tree in a wooded area and therefore the surveyor should consult with the aerodrome certificate holder and the Instrument Flight Procedure (IFP) designers where necessary.

C. Due consideration must be taken when observing transverse and longitudinal obstacles in close proximity to the runway because their leading edge may have greater significance than the highest point. (It must be appreciated that the highest object might not be the most important for consideration.)

D. Fine obstacles such as lightning conductors or aerials that surmount the object may not be visible over a distance. Therefore care must be taken when observing distant obstacles to ensure that the highest point is heighted.

E. When submitting the report, the surveyor should include details of all obstacles

3. Presentation

The format of the base mapping for the aerodrome plan is at the discretion of the aerodrome operator

4. Quality Records

Quality Records shall include:

(1) Surveying organisation

(2) Name of surveyor(s)

(3) Date and purpose of survey

(4) Method of survey and equipment used

(5) Equipment calibration information and method of checking the survey

(6) Evidence that the accuracy requirements have been met including details of the error budget analysis.

APPENDIX 1 — AERODROME DATA AND INFORMATION

Units of measurement

Dimensions	Metres
Heights and Elevations	Feet
Distances	nautical miles
Weights	Kilograms
Bearings	specified as true or magnetic
Magnetic variation	value for 1 January for year of the survey, based on the aerodrome reference point
Coordinates	degrees, minutes, and seconds measured to the nearest second
Geodetic datum	World Geodetic System – 1984 (WGS-84)

1. Domestic aerodromes

(L - applies to land aerodromes)
(W - applies to water aerodromes)

A. The following data and information applicable to the aerodrome must be provided to the AIS for publication in the AIP:

(1) General (L&W)

Provide contact details as follows:

(a) name of the aerodrome;

(b) identity of the aerodrome operator;

(c) postal address of the aerodrome operator;

(d) telephone number;

(e) facsimile number (if available);

(f) AFTN address (if available); and

(g) non-certificated aerodromes — the name and contact details of the person nominated by the aerodrome operator to be responsible for the notification of the aerodrome data and information.

(2) Aerodrome status (L&W)

Certificate aerodrome; or
Non-certificated.

(3) Aerodrome availability (L&W)

Declaration as public use, private use, or military and any limitations on its use.

(4) Operational conditions or limitations (L&W)

Weight restrictions, restricted use of movement areas, non standard circuit procedures or flight paths, special weather phenomena, or any other safety matter such as parachute or glider activities.

(5) Aerodrome location (L&W)

Allocated aerodrome location indicator (Application is to be made on form AED-F-011 for allocation of location indicator). True bearing and distance in nautical miles from the nearest significant reference point such as town, city or named topographical feature within 10 nm.

(6) Aerodrome Plan (L)

The following information is to be shown on a plan of the aerodrome certified:

(a) latitude and longitude of the aerodrome reference point in degrees, minutes and seconds;

(b) runways —

(i) designation, dimensions and longitudinal slopes of each runway and associated

(ii) stopways, clearways, and starter extensions;

(iii) elevation above mean sea level (AMSL) of each runway threshold; and

(iv) coordinates of each runway threshold;

(c) dimensions of each runway strip and runway end safety area;

(d) depiction of each taxiway and apron area;

(e) coordinates of aircraft stands (if needed for INS);

(f) VOR check point radial and distance from the facility;

(g) markings and lighting;

(h) location of windsocks and whether lit;

(i) location of the nearest telephone available for use by pilots; and

(j) location, height (AMSL and AGL) and description of any aerodrome significant obstacle i.e. any obstacle that intrudes into any of the aerodrome obstacle limitation surfaces.

(7) Aerodrome data (L)

Provide the following data for each runway and their associated facilities:

(a) surface of each runway expressed as concrete, bitumen, grass (firm or soft), metal (stabilised with lime, cement, or bitumen), or rolled earth;

(b) the bearing strength of a pavement intended for aircraft of apron (ramp) mass equal to or less than 5 700 kg shall be made available by reporting the following information:

(i) maximum allowable aircraft mass; and

(ii) maximum allowable tire pressure

(c) The bearing strength of a pavement intended for aircraft of apron (ramp) mass greater than 5700 kg shall be made available using the aircraft classification number - pavement classification number (ACN-PCN) method

(d) the centre line magnetic bearing of each runway expressed in three digits to the nearest whole degree;

(e) the declared distances for each runway (refer to Appendix 2 for guidance);

(f) description of the —

(i) runway lighting for each runway;

(ii) approach lighting for each runway;

(iii) visual approach slope indicator system including the glide path angle and threshold crossing height for each runway;

(iv) circling guidance lights, lead in light system, runway end identification lights, runway alignment indicator lights;

(v) other movement area lighting, taxiway, apron floodlighting, reflectors;

(vi) aerodrome beacon, hazard lights;

(vii)lighting controls and limitations of use;

(viii) emergency lighting; and

(ix) secondary power supply and for which facilities.

(8) Aerodrome services (L)

Details of the aerodrome services provided at the aerodrome (item (d) is optional) —

(a) hangar space, fuel types and availability, and repair facilities normally available for visiting aircraft;

(b) rescue fire service - category and hours of attendance;

(c) aerodrome air traffic service - type and hours of operation; and

(d) fees.

(9) Aerodrome plan (W)

The following information is to be shown on a plan of the aerodrome in relation to the surrounding area.

Dimensions are to be given in metres —

(a) latitude and longitude of the aerodrome reference point in degrees, minutes and seconds; and

(b) elevation of the aerodrome above mean sea level if the aerodrome is located on an inland waterway; and

(c) the area designated as an aerodrome; and

(d) dimensions of the aerodrome boundaries or water channels, or both; and

(e) mooring and beaching facilities.

APPENDIX 2 — RUNWAY DECLARED DISTANCES

Declared distance

A. The following distances are required to be calculated for each runway direction:

- take-off run available (TORA):
- take-off distance available (TODA):
- accelerate stop distance available (ASDA):
- landing distance available (LDA).

B. Where a runway is not provided with a stopway or clearway and the threshold is located at the extremity of the runway, the four declared distances should normally be equal to the length of the runway, as shown at A in Figure 2-1.

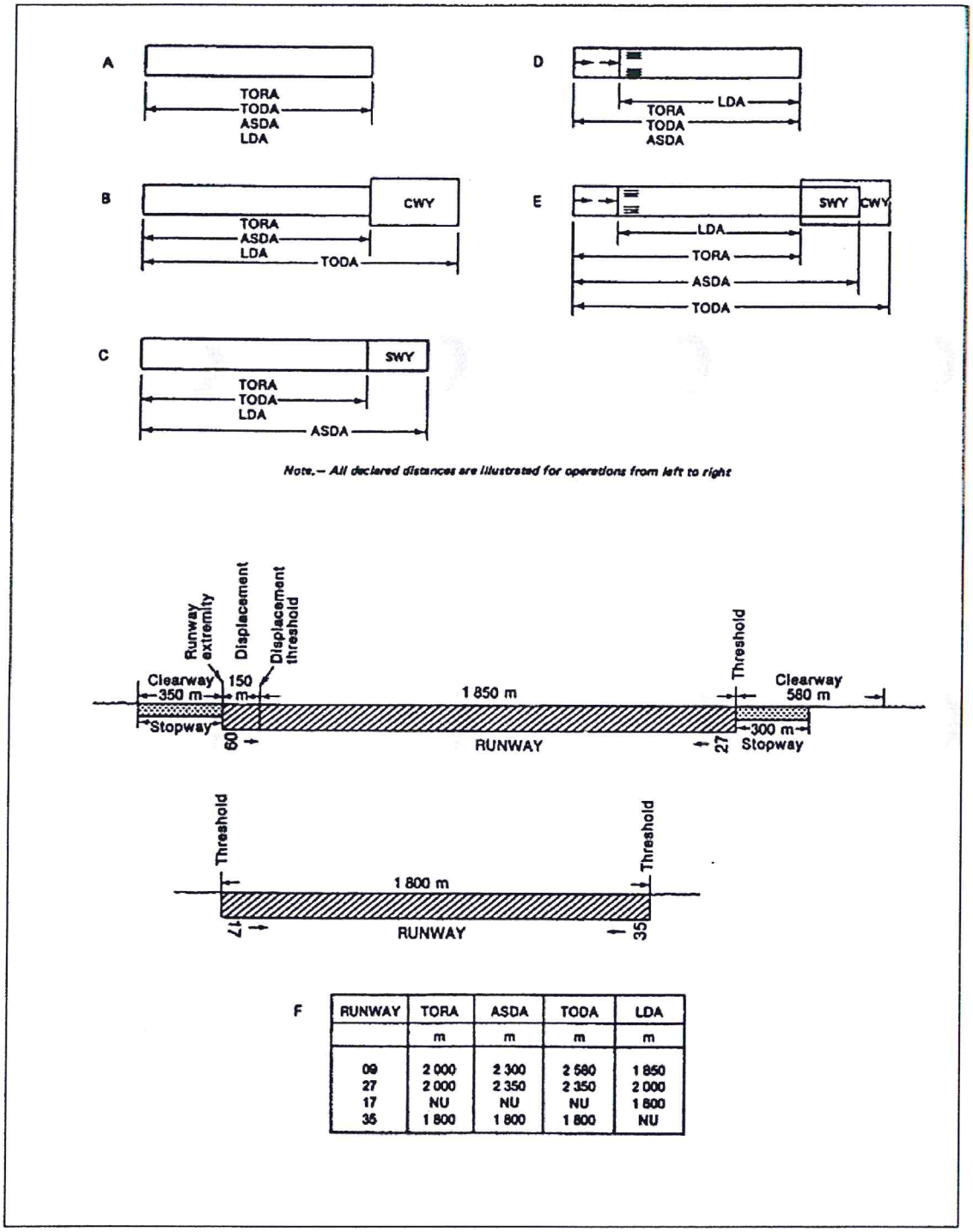
C. Where a runway is provided with a clearway (CWY) then the TODA will include the length of the clearway, as shown at B in Figure 2-1.

D. Where a runway is provided with a stopway (SWY) then the ASDA will include the length of the stopway, as shown at C in Figure 2-1.

E. Where a runway has a displaced threshold, then the LDA will be reduced by the distance the threshold is displaced as shown at D in Figure 2-1. A displaced threshold affects only the LDA for approaches made to that threshold and declared distances for operations in the reciprocal direction may or may not be affected depending on the cause of the displacement.

F. B through D in Figure 2-1 illustrates a runway provided with a clearway or a stopway or having a displaced threshold. Where more than one of these features exist, then more than one declared distances will be modified but the modification will follow the principle illustrated. An example showing a situation where all these features exist is shown at E in Figure 2-1.

G. A suggested format for providing information on declared distances is given at F in Figure 2-1. If a runway cannot be used for take-off or landing, or both, then this should be declared and the words "not useable" or the abbreviation NU entered.



F

RUNWAY	TORA	ASDA	TODA	LDA
	m	m	m	m
09	2 000	2 300	2 580	1 850
27	2 000	2 350	2 350	2 000
17	NU	NU	NU	1 800
35	1 800	1 800	1 800	NU

Figure 2-1. Illustration of declared distances

APPENDIX 3 — AERODROME TAKE-OFF SURFACE AREA OBSTACLE SURVEYS

1. General

Take-off flight path obstacle information. The promulgated runway take-off flight path obstacle information is used for planning the take-off weights of multi-engine aeroplanes so as to ensure that they can clear all obstacles in the event of an engine failure during take-off. Promulgation of the information as an aerodrome obstacle chart or by descriptive text is the responsibility of AIS on receipt of the survey data from the aerodrome operator.

2. Obstruction surveys

A. Survey specifications. The survey specifications are based on ICAO Annex 4, Chapter 3 - Aerodrome Obstruction Charts Type A and are intended to provide detailed data from which obstacle charts or descriptive text can be derived.

B. Units of measurement. Elevations are to be to the nearest foot and linear dimensions are to be to the nearest half-metre. Co-ordinates are to be expressed in degrees, minutes, and seconds referenced to the WGS-84 datum.

C. Significant obstacles. Obstacles in the take-off flight path area which project above a plane surface having a 1.2 percent slope and having a common origin with the take-off flight path area, are regarded as significant obstacles. A nominal vehicle height of 4500 mm is to be assumed to be at the nearest point from the origin of any road within the take-off flight path area.

D. Take-off flight path area. The flight path take-off area consists of a quadrilateral area on the surface of the earth lying directly below, and symmetrically about, the take-off flight path. This area has the following characteristics:

(1) it commences at the end of the area declared suitable for take-off (that is, at the end of the runway or clearway as appropriate);

(2) its width at the point of origin is 180 m and this width increases at the rate of 0.25D to a maximum of 1800 m, where D is the distance from the point of origin; and

(3) it extends to the point beyond which no significant obstacles exist or to a distance of 10 kilometres, whichever is the lesser.

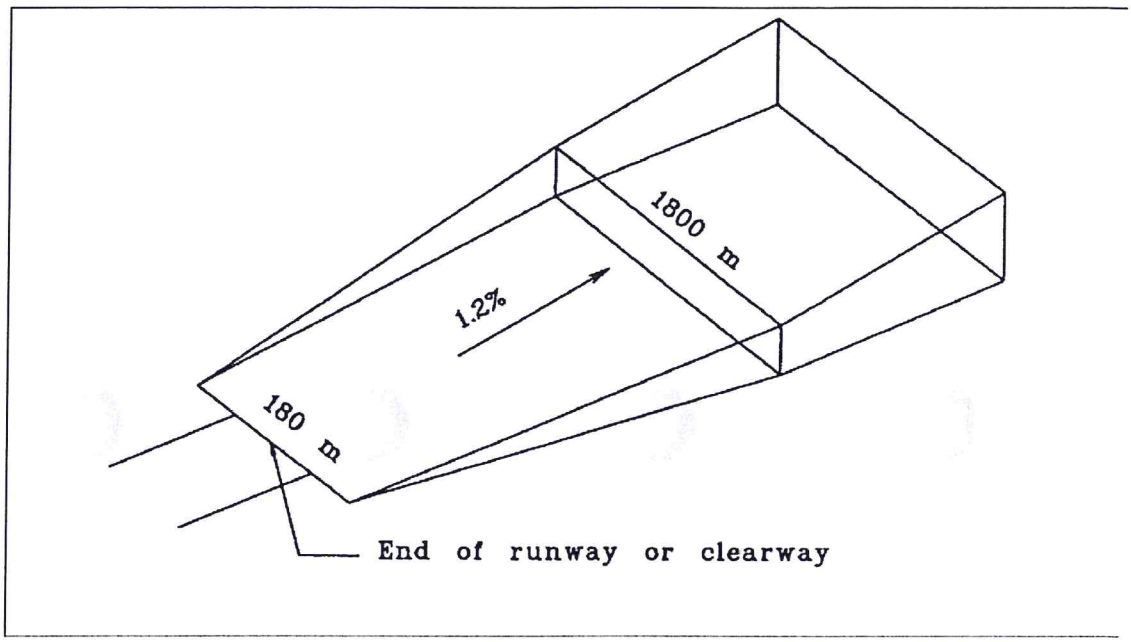


Figure 3.1 – Take-off flight path area

E. Obstacle data and information. The following information and data is required to be provided for each runway and its associated take-off flight path area:

(1) Point of origin. The point of origin location and elevation above mean sea level (AMSL) for each runway regularly used by multi-engine aircraft operating under IFR. The elevation of the point of origin is taken as the highest point of ground level along the centreline between the runway end and the end of the runway strip or clearway.

(2) Runway:

(a) runway designation;

(b) the following declared distances —

(c) take-off run available (TORA);

(d) accelerate-stop distance (ASDA);

(e) take-off distance available (TODA); and

(f) landing distance available (LDA); and

(3) Take-off flight path area:

(a) the exact location of each significant obstacle expressed as a distance from the point of

(b) origin and from, right or left, of the extended centre line or the extended flight path;

(c) in the case of a turned flight path, the radius of turn, the distance from the beginning of the

(d) runway to the centre of the curvature and the degrees turned; and

(e) the identification and the elevation (AMSL) of the top of each obstacle.

F. If the initial, or recurring, survey reveals no significant obstacle, provide a statement to that effect.

G. If a recurring survey reveals no change in the significant obstacles, provide a statement to that effect.

CHANGE NOTICE

Revision 1 updates the content of this advisory circular to align with the latest amendment to Parts 14.

João Monteiro
President of the Board

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