RA 3510 - Permanent Fixed Wing Aerodrome - Reference Information

Rationale

A Common Reference System, reference codes and aerodrome data are required to inform operators of the key information about the aerodrome. The accuracy and integrity of aeronautical data is essential to support safe operations in and around the aerodrome.

Contents

Regulation 3510(1)

Common Reference System

3510(1) Heads of Establishments (HoEs) and Aviation Duty Holder (ADH)-Facing organizations **shall** use a Common Reference System for horizontal, vertical and temporal measurements for an aerodrome.

Acceptable Means of Compliance 3510(1)

Common Reference System

1. For a Horizontal reference system, the World Geodetic System - 1984 (WGS-84) **should** be used. Reported aeronautical geographical coordinates (indicating latitude and longitude) **should** be expressed in terms of the WGS-84 geodetic reference datum.

2. For a Vertical reference system, Mean Sea Level **should** be used as the vertical reference system.

3. For a Temporal reference system, the Gregorian calendar and Coordinated Universal Time (UTC) **should** be used.

Guidance Material 3510(1)

Common Reference System

Civil Equivalence.

4. This regulation is in line with International Civil Aviation Organization (ICAO) Annex 14 Vol I Section 1.3.

Regulation 3510(2)

Reference Codes

3510(2) HoEs and ADH-Facing organizations **shall** determine an aerodrome reference code in accordance with (iaw) the critical characteristics of the Air System(s) for which an aerodrome facility is intended.

Acceptable Means of Compliance 3510(2)

Reference Codes

5. The aerodrome reference code numbers and letters **should** conform with the requirements in Table 1.

6. The code number for element 1 **should** be determined from Table 1 by selecting the code number corresponding to the highest value of the Air System reference field lengths of the Air System(s) for which the runway is intended.

7. The code letter for element 2 **should** be determined from Table 1 by selecting the code letter which corresponds to the greatest wingspan of the Air System(s) for which the facility is intended.

Acceptable Means of Compliance 3510(2)

Table 1. Aerodrome reference code

Code element 1	
Code number	Aeroplane reference field length
1	Less than 800 m
2	800 m up to but not including 1200 m
3	1200 m up to but not including 1800 m
4	1800 m and over
Code element 2	
Code letter	Wingspan
A	Up to but not including 15 m
B	15 m up to but not including 24 m
C	24 m up to but not including 36 m
D	36 m up to but not including 52 m
E	52 m up to but not including 65 m
F	65 m up to but not including 80 m

Note - Guidance on planning for Air Systems with wingspans greater than 80 m is given in the ICAO Aerodrome Design Manual (ICAO Doc 9157), Parts 1 and 2.

Guidance Material 3510(2)

Reference Codes

8. In addition to the reference codes, other Air System characteristics, such as Air System length and tail height, may have an impact on the design of an aerodrome. Some characteristics such as wingspan or wheel span directly impact one element of the code but not the other. Aerodrome design has to consider all the relationships between Air System characteristics, the aerodrome and the characteristics of the aerodrome infrastructure.

9. In practice an Air System exhibiting one or more of the most onerous characteristics is often referred to as the critical Air System for the purpose of Aerodrome design.

10. It is recognized that when planning and designing new aerodrome facilities (or reconfiguring existing areas of an aerodrome), not all areas of the aerodrome may need to adhere to the same Aerodrome Reference Code as determined by the critical Air System. Therefore, elements of the aerodrome infrastructure may be designated with an appropriate code letter for its dimensions and Air System use and communicated to relevant ADHs through the mechanism of the Defence Aerodrome Manual and appropriate Aeronautical Information Publication.

11. ►◄

Civil Equivalence.

12. This regulation is in line with ICAO Annex 14 Vol I para 1.6.1-1.6.4.

Regulation 3510(3)

Aerodrome Data

3510(3) HoEs and ADH-Facing organizations **shall** establish and report the following attributes to the aeronautical information services organization: Aerodrome Reference Point; Aerodrome and Runway Elevations; Aerodrome Reference Temperature; Aerodrome Dimensions; Pavement Strength; Declared Distances; Rescue and Fire Fighting Services

Regulation 3510(3)

category; and Visual Approach Slope Indicator Systems details.

Acceptable Means of Compliance 3510(3)

Aerodrome Data

13. The Aerodrome Reference point **should** be established for an aerodrome, be located near the initial or planned geometric centre of the aerodrome and **should** normally remain where first established and be measured and reported to the aeronautical information services authority in degrees, minutes and seconds.

14. The Aerodrome and Runway Elevations **should** also include the geoid undulation at the aerodrome elevation, be measured and reported to the aeronautical information services authority to the accuracy of one-half metre or foot and, for a Precision Approach runway, also include the geoid undulation of the threshold, the elevation of the runway end and the highest elevation of the touchdown zone and **should** be measured and reported to the accuracy of one-quarter metre or foot.

15. The Aerodrome Reference Temperature **should** be determined for an aerodrome in degrees Celsius and be the monthly mean of the daily maximum temperatures for the hottest month of the year (the hottest month being that which has the highest monthly mean temperature). This temperature **should** be averaged over a period of years.

16. The following Aerodrome Dimensions and related information **should** be reported:

a. For a runway:

(1) True Bearing (nearest one-hundredth of a degree).

(2) Designation Number.

(3) Length, width and displaced threshold location to nearest metre or foot.

(4) Slope, surface type and type of runway.

(5) For a precision approach runway (Cat I), the existence of an Obstacle Free Zone when provided.

b. For strips, runway end safety areas and stopways:

(1) Length and width to the nearest metre or foot.

(2) Surface type.

c. For taxiways:

(1) Designation.

(2) Width.

(3) Surface type.

d. For aprons:

(1) Surface type.

(2) Air System stands.

e. The boundaries of the Air Traffic Control (ATC) service:

f. For clearways:

(1) Length to the nearest metre or foot.

(2) Ground profiles.

g. For installed lighting:

(1) Visual approach aids.

(2) Runway, taxiway and apron lighting including guidance and control aids.

(3) Operating Minima.

Acceptable Means of Compliance 3510(3)

(4) Minimum Eye Height(s) over the Threshold (MEHT) of the on-slope Signals(s) MEHT.

(5) Visual and non-visual Glide Path (GP) and Touchdown Point elevation and distance with respect to Threshold location.

h. For airfield marking and mandatory signs:

(1) Runway, taxiway and apron markings and signs.

(2) Runway-holding positions and stop bars.

(3) Location and designation of standard taxi-routes.

i. For an Instrument Landing System (ILS), distances to the nearest metre or foot of localizer and GP elements of the ILS in relation to the runway extremities which they serve.

j. Pavement strength.

17. The following geographical coordinates **should** be measured and reported to the aeronautical information services authority in degrees, minutes, seconds and hundredths of seconds:

a. Each threshold;

b. Appropriate taxiway centre-line points;

c. Each Air System stand;

d. Obstacles within the aerodrome boundary.

18. The following distances to the nearest metre or foot **should** be calculated and declared for an aerodrome:

a. Take-off run available (TORA).

b. Take-off distance available (TODA).

c. Accelerate-stop distance available (ASDA).

d. Landing distance available (LDA).

19. Information concerning the level of protection provided at an aerodrome for Aerodrome Rescue and Firefighting (ARFF) services **should** be made available. The level of protection normally available at an aerodrome **should** be expressed in terms of the category of the rescue and firefighting services as described in DSA02 DFSR[1] and iaw with the types and amounts of extinguishing agents normally available at the aerodrome.

20. The following information concerning a visual approach slope indicator system installation **should** be made available:

a. Associated runway designation number.

b. The type of system according to RA 3515[2]. For a Precision Approach Path Indicators (PAPI) or an Abbreviated Precision Approach Path Indicators (APAPI) installation, the side of the runway on which the lights are installed **should** be given.

c. Where the axis of the system is not parallel to the runway centre-line, the angle of displacement and the direction of displacement, ie left or right, **should** be indicated.

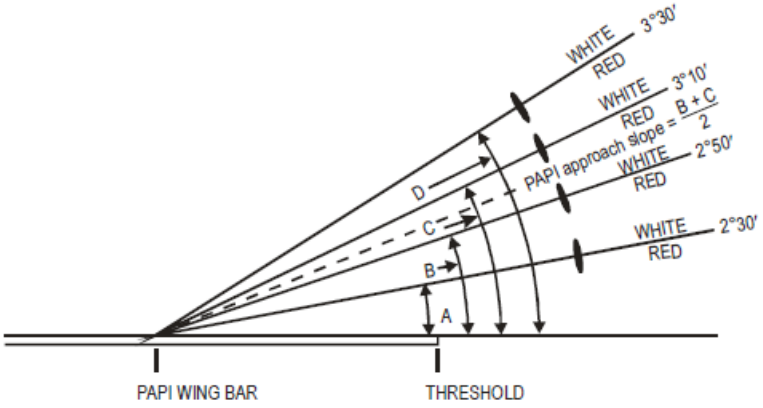
d. For a PAPI and an APAPI the Nominal approach angle(s) **should** be angle (B + C) ÷ 2 and (A + B) ÷ 2, respectively as in Figure 1; and

e. For MEHT of the on-slope signals for a PAPI this **should** be the setting angle of the third unit from the runway minus 2 minutes, ie angle B minus 2 minutes, and for an APAPI this **should** be the setting angle of the unit farther from the runway minus 2 minutes, ie angle A minus 2 minutes as in Figure 1.

[1] Refer to DSA02 DFSR – Defence Aerodrome Rescue and Firefighting Regulations.
[2] Refer to RA 3515 – Permanent Fixed Wing Aerodrome - Lighting.

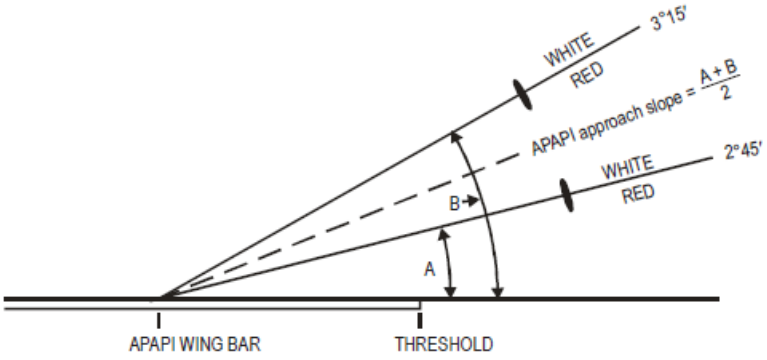
Acceptable Means of Compliance 3510(3)

Figure 1. Light beams and angle of elevation setting of PAPI and Abbreviated PAPI



The height of the pilot's eye above the aircraft's ILS glide path/MLS antenna varies with the type of aeroplane and approach attitude. Harmonization of the PAPI signal and ILS glide path and/or MLS minimum glide path to a point closer to the threshold may be achieved by increasing the on-course sector from 20′ to 30′. The setting angles for a 3° glide slope would then be 2°25′, 2°45′, 3°15′ and 3°35′.

A — 3° PAPI ILLUSTRATED



B — 3° APAPI ILLUSTRATED

21. Aeronautical Data Quality (ADQ) requirements **should** be iaw ICAO Annex 14. Volume I, Appendix 5.

Guidance Material 3510(3)

Aerodrome Data

Civil Equivalence.

22. This regulation is in line with ICAO Annex 14 Vol I para 2.2 – 2.12.

Intentionally Blank for Print Pagination