

EUROCONTROL Guidelines for harmonised AIP publication and data set provision

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Abstract		
<p>These EUROCONTROL Guidelines provide harmonising guidelines for the publication of aeronautical information in Aeronautical Information Publication (AIP) and data set provision, serving as a reference document for the ECAC States on agreed harmonising solutions, complementing current ICAO AIS provisions.</p> <p>These Guidelines cover problems associated with the selection of information to be contained in the AIP, the manner of presentation and use of harmonised terminology for which ICAO AIS provisions are considered insufficient. The objective is for these Guidelines to be used to achieve harmonised AIP publication and aeronautical data set provision within the ECAC area.</p>		
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Contact Person(s)	Tel	Unit
Asa STANDAR	+32 2 7293186	ATM/STR/SWM

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Publications

EUROCONTROL Headquarters
96 Rue de la Fusée
B-1130 BRUSSELS

Tel: +32 (0)2 729 4715
Fax: +32 (0)2 729 5149
E-mail: publications@eurocontrol.int

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EXECUTIVE SUMMARY

In 2015, the AIM/SWIM Team discussed the urgent need for European guidance in addition to, or in the absence of, sufficient publication guidance in ICAO Aeronautical Information Services (AIS) Manual (Doc 8126), in support of European AIS needs. It was clear that there was a need to develop EUROCONTROL Guidelines for harmonised AIP publication and data set provision. The document has been developed with the involvement of the AIM/SWIM Team's AI Operations Sub-group, set up under EUROCONTROL working arrangements, and comprises harmonised aeronautical information publication and data set provision practices developed per subject, as endorsed by the AIM domain.

In addition, AIS stakeholders recognise that European aeronautical information publication guidance is also developed in domains other than AIM and published in EUROCONTROL documents not always known to, or easily accessible by, the AIS. This document therefore references other documents providing AIP publication guidance, collating all available EUROCONTROL aeronautical information publication guidance in one document. The detailed guidelines set out in other documents are not duplicated in this document; instead, a reference and/or link is provided to the respective documents.

These EUROCONTROL Guidelines have been developed under the EUROCONTROL Regulatory and Advisory Framework (ERAF) and are maintained by EUROCONTROL in accordance with the above framework.

1. Introduction

1.1 Purpose of the document

The purpose of these EUROCONTROL Guidelines is to provide harmonising guidance for the publication of aeronautical information in AIPs and on data set provision, serving as a reference document for ECAC States on agreed solutions complementing current ICAO AIS provisions. The guidance covers problems associated with the selection of information to be included in the AIP, the manner of presentation and the use of harmonised terminology for which ICAO AIS provisions are considered insufficient.

1.2 Scope

These Guidelines cover information elements published in accordance with ICAO Annex 15 and future PANS-AIM for which no sufficient guidance material is available in ICAO AIS Manual (Doc 8126), and for aspects developed and applied in Europe for which no publication guidance is provided by ICAO.

The document includes guidelines developed and approved by the EUROCONTROL AIS stakeholders, and serves as placeholder for future needs regarding aeronautical information publication and data set provision guidelines. In addition, the document provides references and/or links to other EUROCONTROL documents containing AIP publication guidance, with a view to collating aeronautical information publication guidance within a single document.

Although the first edition of these Guidelines focuses on AIP publication, the document is a placeholder for commonly agreed solutions for data set provision which may emerge to complement ICAO guidance material as States progressively provide AIP data sets.

The relevant EAD Static Data Operations (SDO) Data Harmonisation Objectives (DHO) are referenced to publication subjects as applicable. Where references are provided to other documents, any applicability of such guidance is in accordance with the respective documents.

1.3 Document structure

The document contains chapters and appendices as follows:

Chapter 1 – Introduction, presents the context, purpose, scope and structure of the Guidelines.

Chapter 2 – AIP publication guidelines, include harmonised aeronautical information publication guidance per subject complementing the ICAO AIS Manual (Doc 8126), provided either as publication guidelines developed and agreed by the AIM community, or as references to other EUROCONTROL documents containing publication guidelines.

Chapter 3 – Data set provision guidelines, include harmonised guidance for data set provision complementing the ICAO AIS Manual (Doc 8126), provided either as guidelines developed and agreed by the AIM community, or as references to other EUROCONTROL documents containing guidelines.

Chapter 4 – AIP charts guidelines, provide harmonised guidance for the publication of AIP charts.

Annex A – Acronym list, list of the meaning of acronyms used in the document.

Annex B – References, list of the relevant documents used as references for these Guidelines.

1.4 Use of terminology

These EUROCONTROL Guidelines are of informative character with the objective to enable harmonisation of ECAC States' aeronautical information publication and data set provision.

Guidelines using the term *should* are recommended, whereas Guidelines using the term *may* are optional. The term *shall* is used where appropriate in the context of ICAO SARPs or European regulatory references, and is then indicating the status of that particular text as *mandatory*.

2. AIP publication guidelines

2.1 Airspace information

2.1.1 Prohibited, Restricted and Danger areas

2.1.1.1 Publication guidelines for P, R and D areas are provided in ERNIP Part 3 - ASM Handbook [RD 8], paragraph 6.1.5.2.

<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-4.pdf>

The publication guidelines include rules for:

- appropriate AIP section:
 - ENR 5.1 Prohibited, restricted and danger area.
- identification,
- name (if applicable), and
- area definition.

2.1.1.2 Publication guidelines for P, R and D areas are also provided in ERNIP Part 1 - European Airspace Design Methodology Guidelines [RD 7], paragraph 7.2.8.

<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part%201-airspace-design-methodology-25062016.pdf>

It provides a fictitious example of the AIP ENR 5.1 table with reference to ICAO AIS Manual (Doc 8126) [RD 2], illustrating relevant textual information to be published for P, R and D areas.

2.1.2 Airspace Management Cell (AMC) manageable areas

2.1.2.1 Publication guidelines for Airspace Management Cell (AMC) manageable areas are provided in ERNIP Part 3, ASM Handbook [RD 8], paragraph 6.1.5.3.

<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-4.pdf>

The publication guidelines include rules for:

- appropriate AIP section:
 - ENR 5.2 Military exercise and training areas and air defence identification zone (*except those currently published in ENR 5.1*).
- identification,
- name (when and if required), and
- area definition.

2.1.2.2 Publication guidelines of AMC-manageable areas are also provided in ERNIP Part 1 - European Airspace Design Methodology Guidelines [RD 7], paragraph 7.2.8.

<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part%201-airspace-design-methodology-25062016.pdf>

It provides a fictitious example of the AIP ENR 5.2 table with reference to ICAO AIS Manual (Doc 8126) [RD 2], illustrating relevant textual information to be published for AMC manageable areas.

2.1.3 Cross-border area (CBA) identification

2.1.3.1 In order to ensure harmonised identification of cross-border areas across Europe, principles for the identification of CBAs (except areas over the high-seas) are provided in paragraph 6.1.5.1 of the ERNIP Part 3 - ASM Handbook [RD 8].

2.1.3.2 Identification of areas established over the high seas follows the rules for identification of a Danger Area, provided in paragraph 6.1.5.2 of the ERNIP Part 3 - ASM Handbook [RD 8].

<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-4.pdf>

2.1.3.3 Related EAD Static Data Operations Data Harmonisation Objective:
SDO DHO-8 Cross-border Area (CBA).

2.1.4 FPL Buffer Zone (FBZ)

2.1.4.1 Publication guidelines for an FPL Buffer Zone are provided in ERNIP Part 3 - ASM Handbook [RD 8], paragraph 6.1.5.4.

<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-4.pdf>

The guidelines provide relevant AIP placeholders for information related to the FBZ and its application, as well as procedures and means of notification of activation of the FBZ.

2.1.4.2 Related EAD Static Data Operations Data Harmonisation Objective:
SDO DHO-15 Flight plan buffer zone (FBZ).

2.1.5 Free Route Airspace (FRA)

2.1.5.1 Publication guidelines for Free Route Airspace information are provided in ERNIP Part 1, European Airspace Design Methodology Guidelines [RD 7], sections 6.5.2 to 6.5.5, based on the FRA concept described in section 6.5.1.

<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part%201-airspace-design-methodology-25062016.pdf>

2.1.5.2 The FRA AIP publication guidelines in ERNIP Part 1 covers:

- Terminology in GEN 2.2 Abbreviations used in AIS publications.
- FRA general procedures in ENR 1.3 Instrument flight rules.
- Flight planning in ENR 1.10.
- Free route airspace structures in ENR 2.1 and 2.2.
- Cross-border application of FRA in ENR 2.2.
- Delegation of responsibility for provision of ATS in ENR 2.2.
- FRA connecting routes to/from terminal airspace and aerodromes in ENR 3.5.
- FRA significant points in ENR 4.1 and 4.4.
- Airspace reservations in ENR 5.
- FRA Charts in ENR 6.
- FRA Glossary of terms.
- FRA AIP Publication template.

2.1.5.3 Related EAD Static Data Operations Data Harmonisation Objective:
SDO DHO-7 Free Route Airspace (FRA).

2.1.5.4 In order to permit ATS to obtain information regarding the progress of aircraft in flight, selected significant points may need to be designated as *reporting points*¹. The principle AIP placeholder for information on compulsory or on-request reporting on FRA significant points is the **ENR 6 en-route chart for FRA**.

The charting symbols for the FRA significant points on the ENR 6.x.FRA Index Chart are sufficient with regard to AIP publication. ICAO Annex 4 [RD 3] Aeronautical Charts symbols for significant points functionality “compulsory” and “on-request” are applied, as well as ERNIP Part 1 [RD 7] section 6.5.3 ENR 6 chart for FRA.

The EAD SDO DHO-7 FRA provides a solution for coding compulsory and/or on-request reporting information on FRA significant points, in cases where the ATS route network is completely removed from the AIP.

2.1.6 Functional Airspace Block (FAB)

2.1.6.1 The recommended AIP placeholder for publication of Functional Airspace Block (FAB) area structures and operational usage is ENR 2.2 Other regulated airspace.

2.1.6.2 ENR 2.2 Other regulated airspace

The following information for the area structure and operational usage for the FAB is published:

- Name and geographical coordinates of the FAB published as a single area, representing the common boundary of the included FIRs/UIRs.
- Vertical limits applied in the FAB (one value applicable for the entire FAB).
- In the remarks column, the FIRs/UIRs involved in the FAB and a reference to the respective States’ AIP for detailed description of the FIR/UIR.
- In the remarks column, a reference to relevant aeronautical chart is available.

<i>Unit(s) providing service</i>	<i>Name/ID Lateral and vertical limits</i>	<i>RMK</i>
<i>1</i>	<i>2</i>	<i>3</i>
AMSWELL ACC xxxxxxx ACC xxxxxxx ACC	DONFAB <i>Insert coordinates (latitude/ longitude for the entire functional airspace block, as a single area.</i> <u>UNL</u> GND	DONFAB covers in addition to xxxxxx FIR the (<i>insert names of included FIR as appropriate</i>) FIR. REF AIP for (<i>State</i>), (<i>State</i>) for exact description of their area of responsibility. REF ENR 6.2 – 13.

AIP template for Functional Airspace Block information.

¹ Reporting points are established either as “*compulsory*” or as “*on-request*” (ICAO 11, Appendix 2, paragraph 5). Hence, to be noted, that it is not mandatory to designate a reporting status on a significant point and a significant point can have different reporting status depending on its use.

2.1.6.3 Related EAD Static Data Operations Data Harmonisation Objective:
SDO DHO-14 Functional Airspace Block (FAB).

2.2 Route information

2.2.1 ATS routes

2.2.1.1 Publication of vertical limits

2.2.1.1.1

ICAO Annex 15 [RD 1] states that a detailed description of an ATS route shall be published (in ENR 3 sections) and to include the publication of the upper and lower limits. Guidance for publishing the vertical limits of ATS routes is provided in:

- ERNIP Part 3, ASM Handbook [RD 8], paragraph **6.1.3**.

<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-4.pdf>

- ERNIP Part 1 - European Airspace Design Methodology Guidelines [RD 7], paragraph **7.2.8**.

<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part%201-airspace-design-methodology-25062016.pdf>

2.2.2 Early Access to Weekend (EAW) routes

2.2.2.1

Publication guidelines for information related to Early Access to Weekend (EAW) routes are provided in **Annex 7** to the ERNIP Part 3 - ASM Handbook [RD 8], providing the following:

- Illustrative example of an AIP cover page for Early Access to Weekend Routes process, applicable for AIP ENR 3.x sections.
- Example of AIP publication of routes affected by early access arrangements, applicable for AIP ENR 3.x sections.
- Illustrative example of a common AIP Supplement annual notification of national differences, including:
 - Example of an AIP Supplement, listing routes affected by annual notification of national differences.

<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-4.pdf>

2.2.3 Conditional routes (CDR)

2.2.3.1

Publication of availability and conditions

Publication guidelines for information related to when a Conditional Route (CDR) is available for flight planning and conditions, are provided in:

- ERNIP Part 3 - ASM Handbook [RD 8], paragraph **6.1.4**.

<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-4.pdf>

- ERNIP Part 1 - European Airspace Design Methodology Guidelines [RD 7], **Annex 2** and section **7.2.8**.

<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part%201-airspace-design-methodology-25062016.pdf>

2.3 Aerodrome information

2.3.1 RNAV SID/STARs & instrument approach procedures significant points

2.3.1.1 Current ICAO provisions instruct on publication of RNAV SID/STARs and instrument approach procedures significant points in Annex 4 [RD 3], Annex 15 [RD 1] and Doc 8168 PANS-OPS [RD 5]. Relevant ICAO provisions state that appropriate data shall be published in AIP as follows:

- In Part AD – AD 2.24; and
- In tabular form or a formal textual description; and
- On the verso of the chart or a separate, properly referenced sheet.

2.3.1.2 All significant point 5-letter name codes (5LNCs) and/or 5-alfa-numeric name codes (5ANNCs) defining the route, including annotation as to whether the significant point is fly-by or flyover are also published as part of this data.

2.3.1.3 In addition to the current ICAO provisions, harmonised publication guidance related to the separate, properly referenced sheet providing the relevant significant points, 5LNCs and 5ANNCs for RNAV SID/STAR and instrument approach procedures is agreed as follows:

2.3.1.4 *“A separate sheet containing a list of all relevant RNAV SID/STARs and instrument approach procedures significant points (including 5LNCs and/or 5ANNCs) is published:*

- *As the next consecutive page/s after the relevant chart, or;*
- *As the last page/s after all charts related to particular aerodrome(s).*

2.4 Obstacles

The EUROCONTROL Terrain and Obstacle Data (TOD) Manual [RD 6] provides guidelines for parties involved in the origination, processing and provision of electronic terrain and obstacle data, from the point at which the need for origination is identified, through to the point when the State makes it available in accordance with the requirements of ICAO Annex 15 [RD 1]. The document also includes some guidelines on AIP publication and data provision, which is referenced hereunder.

It is envisaged that future editions of the TOD Manual will include a dedicated section for “publication and provisions matters”. This section is expected to include more detail on the harmonised approach to certain matters relating to the publication and/or provision of terrain and obstacle data in the national AIP and/or relevant aeronautical products (e.g. data set, electronic files). Such guidelines would not replace, but rather enhance current ICAO Annex 15 requirements in order to satisfy the operational needs of the next intended users.

2.4.1 Announcement of TOD availability in AIP GEN 3.1.6

2.4.1.1 Guidelines for an harmonised approach to announcing the availability of electronic Terrain and Obstacle Data (eTOD) in AIP GEN 3.1.6 is provided in the EUROCONTROL TOD Manual [RD 6], **chapter 3.8**.

<http://www.eurocontrol.int/sites/default/files/publication/files/EUROCONTROL%20Terrain%20and%20Obstacle%20Data%20Manual%20v2.1.pdf>

2.4.2 Publication of obstacles as points, polygons and lines

2.4.2.1 The current requirements of ICAO Annex 15 [RD 1] and the guidance material in ICAO Doc 8126 [RD 2] for the publication of obstacles in AIP sections ENR 5.4 and AD 2.10 include only instructions for and examples of the publication of single point obstacles. Until all obstacles are provided in the data set, there is a need for the AIP publication of obstacles, representing a group of obstacles (e.g. windfarm) and obstacles represented by lines and polygons.

2.4.2.2 In accordance with ICAO requirements, an obstacle type should be defined for each obstacle. For individual obstacles (points), commonly known types such as “*wind turbine*”, “*chimney*”, “*mast*” should be used in the AIP as obstacle types.

2.4.2.3 For obstacles with geometry other than points (e.g. grouping of obstacles), the common types representing lines and polygons (area) such as “*wind farm*”, “*wind plant*”, “*cableway*”, “*power line*” should be used in the AIP, accompanied with (*area*), (*line*) or (*polygon*) to support the described location (coordinates) of the obstacle.

2.4.3 Publication of groups of obstacles with similar height located in close proximity to one another

2.4.3.1 With the increase in the construction of wind power plants (wind farms), States publish obstacles of similar height that are located in close proximity to one another as groups.

2.4.3.2 As general publication guidelines, each obstacle collected is published individually and include the required information as stated in ICAO Annex 15 (*Appendix 1 ENR 5.4*) [RD 1]:

(1) obstacle identification or designation.

(2) type of obstacle.

(3) obstacle position, represented by geographical coordinates in degrees, minutes and seconds.

(4) obstacle elevation and height to the nearest metre or foot.

(5) type and colour of obstacle lighting (if any).

2.4.3.3

To indicate that the individual listed obstacles are part of a group, the (2) *obstacle type* may be published commonly for the obstacle group. Required information (3, 4 and 5) is published for each individual obstacle.

Identification/ Designation	Type	Position	ELEV (M/FT)	Height (M/FT)	Obstacle lighting Type/Colour
Windpark Baumgarten	Wind turbine	474442N 0163133E	264 / 866	150 / 490	no
		474432N 0163126E	253 / 831	150 / 490	no
		474431N 0163144E	255 / 837	150 / 490	no
		474420N 0163139E	239 / 784	150 / 490	no
		474420N 0163201E	269 / 883	150 / 490	no

AIP template for individual obstacles part of a group.

2.4.3.4

In cases where a large number of obstacles with similar elevation are grouped, an area (*polygon*) encompassing the grouped obstacles may be published instead of publishing each individual object.

Guidelines for a published area for a group of obstacles within similar elevation:

- The *obstacle type* is followed by the word “area” within brackets (area), to indicate that it is an area.
- The elevation of the area is encompassing the highest obstacle in the group.
- The number of objects included in the area may be published together with the *obstacle type*.
- The area is described with coordinates (latitude/longitude), separated by a hyphen, and where the first and the last coordinate is the same.
- A circle with a centre coordinate and radius can also be used to define the area.

Identification/ Designation	Type	Position	ELEV (M/FT)	Height (M/FT)	Obstacle lighting Type/Colour
Rodsand II	Windfarm (area)	54 35 00N 011 29 08E - 54 33 44N 011 37 01E - 54 31 35N 011 37 01E - 54 34 16N 011 27 28E - 54 35 00N 011 29 08E	115/378	115/378	LIM FLG R Turbines marked with green

AIP template for an area for a group of obstacles with similar elevation.

2.4.4 Publication of obstacles as a line

2.4.4.1 Obstacle types such as cableways, high voltage power lines and transmission lines may be published as *lines*, comprising the masts/poles (*vertices*) and the cable/line itself in between the masts/poles.

2.4.4.2 Group of obstacles with similar elevations may be defined as a geometric line where there is a linear arrangement, for example a wind farm. In this case the obstacle type will determine the absence of a cable/line between the vertices.

2.4.4.3 Guidelines for publication of obstacles as a line :

- The *obstacle type* is followed with the word “*line*” within brackets (line), to indicate that it is a line.
- The line is published by at least 2 coordinate-pairs (latitude/longitude), defining as a minimum the end-positions (*points*) of the obstacle-line.
- The elevation and height is published for each published mast/pole position.
- The maximum height for each portion of the cable/line in between the consecutive poles/masts is published.

Identification/ Designation	Type	Position	ELEV (M / FT)	MAX Height above GND (M / FT)	Obstacle lighting Type/Colour
Langtalereckhütte - Hochwildehaus	Cableway (line)	464938N 0105930E 464820N E0105911E	2438 / 7999 2883 / 9459	280 / 919	no
Mutterbergalm - Dresdner Hütte - Eisgrat	Cableway (line)	470038N 0110906E 465948N 0110835E 465913N 0110659E	1750 / 5741 2310 / 7579 3200 / 10499	95 / 312 95 / 312	no no

Identification/ Designation	Type	Position	ELEV (M/FT)	Height M/FT)	Obstacle lighting Type/Colour
Tuborg IIB	Windfarm (line)	54 20 00N 011 29 08E - 54 20 16N 011 27 28E	75/246	75/246	FLG R Turbines marked with green

AIP templates for obstacles published as a line.

2.4.5 Publication of obstacles as a polygon

2.4.5.1.1 In cases where an obstacle such as a large building or a moving obstacle is published as a polygon and not as a point, the following publication guidelines apply:

- The polygon is described with coordinates (latitude/longitude) separated with a hyphen, where the first and the last coordinate is the same.
- The published elevation/height of the polygon is encompassing the highest position of the obstacle.

2.5 AIP annotation of data not compliant with Commission Regulation (EU) No 73/2010 (ADQ)

Commission Regulation (EU) No 73/2010 of 26 January 2010, laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky (ADQ) Article 7(2), requires aeronautical information service providers to ensure that aeronautical data and aeronautical information items published in their AIPs are annotated to indicate those that do not meet the data quality of this regulation. The EUROCONTROL Guidelines for AIP annotation of ADQ non-compliance [RD 9] provide harmonising guidance on AIP placeholder for the publication of relevant information, as well as annotation alternatives.

<http://www.eurocontrol.int/sites/default/files/content/documents/single-sky/mandates/Guidelines%20for%20AIP%20Annotation%20of%20ADQ%20non%20compliance%20%28Ed%201%200%29.pdf>

2.6 AIM recommendations for the prevention of runway incursions

The European Action Plan for the Prevention of Runway Incursions (EAPPRI) [RD 10] serves as guidance to enhance the safety of runway operations, by advocating implementation of the recommendations contained in the document. The recommendations target various actors and aspects, including Aeronautical Information Management and the publication of aeronautical information.

https://www.eurocontrol.int/sites/default/files/press_release/content/european-action-plan-prevention-runway-incursions-v3.pdf

2.7 Military AIP consistency with ICAO Annex 15

EUROCONTROL Guidance for Military Aeronautical Information Publication Consistency with ICAO Annex 15 [RD 11] provides guidelines to enable military organisations to implement a harmonised way to elaborate and to publish Military AIP in Europe.

<http://www.eurocontrol.int/sites/default/files/publication/files/201706-eurcontrol-guidance-military-aips.pdf>

2.8 Publication of 8.33kHz channel spacing for VHF communication information

From 1 January 2018 an airspace user operator shall not operate an aircraft in airspace where carriage of radio is required (in the airspace in which EU Member States provide air traffic services) unless the aircraft radio requirement has 8.33kHz channel spacing capability (Commission Implementing Regulation (EU) No 1079/2012 of 16 November 2012 laying down requirements for voice channels spacing for the single European sky (VCS regulation) Art 5(4)).

The EUROCONTROL 8.33kHz Voice Channel Spacing (VCS) Implementation Handbook [RD 12] provides recommendations on a number of aspects involved in implementation, including publication of relevant aeronautical information in AIS publications.

<https://www.eurocontrol.int/sites/default/files/publication/files/201707-8.33-vcs-user-handbook%201.1.pdf>

3. Data set provision guidelines

3.1 Obstacle data set provision

3.1.1 Guidelines on State provision of obstacle data and status of TOD implementation

3.1.1.1 Advance notification of a State's intention to stop providing obstacle data in the AIP and only to provide them in electronic format.

Advance announcements to the user community of a State's intention to stop providing obstacle data in the AIP and to only provide the data in electronic format should be published by AIC. The AIC should be published early enough to enable industry implementation.

Note: Information on how to obtain electronic obstacle data should be provided in GEN 3.1.6 of the AIP.

3.1.1.2 Declaration of the primary source if obstacle information is provided both in AIP and electronic format.

If a State provides obstacle information both in AIP as well as in electronic format (obstacle data set), neither source should take precedence over the other in terms of correctness. It is the State's responsibility to ensure the consistency of information published in multiple formats.

However, should a State need to declare that the sources available are of equal status or that one means of publication is the primary source, the recommended placeholder is AIP GEN 3.1.6.

3.1.1.3 Change management of the obstacle data set.

The EUROCONTROL TOD Manual [RD 6] specifies use of the Aeronautical Information Exchange Model (AIXM) version 5.1 for modelling and encoding obstacle data. AIXM 5.1 supports the attributes required by ICAO Annex 15 [RD 1] to be contained in the obstacle data set. It also provides support identifying the modifications made to the attributes of the obstacle data set (new, edited or deleted).

Publication in AIP of which data model is used for obstacle data set is currently not foreseen in ICAO provisions and neither how to notify changes to the data structure of the data format in the obstacle data set. However, such information could be provided in AIP GEN 3.1.6.

3.1.1.4 Adherence to ICAO provisions on mandatory obstacle data set attributes.

Adherence to mandatory obstacle attributes in accordance with ICAO Annex 15 Appendix 8, Table A8-4 *Obstacle attributes* applies to the provision of an obstacle data set. Differences to the list of mandatory obstacles data attribute shall be published in AIP GEN 1.7.

3.1.1.5 En-route and aerodrome obstacles provided as one single data file

It is recommended that en-route obstacles and aerodrome obstacles be provided in one single data file, instead of two separate data files. Separate data files for the en-route and aerodrome obstacles create excessive workload for the end users.

Note: The current ICAO list of obstacle attributes does not include a specification of an en-route or an aerodrome obstacle. Therefore, a single obstacle data file will not distinguish between the two obstacle types.

3.1.1.6

Common format for announcing changes to obstacle electronic files in spreadsheets.

Although the data model AIXM 5.1 provides full coverage of the attributes of the obstacle data set (new, edited, deleted), in the transition period from the publication of obstacles in AIP tables until the full provision of data sets, there may be a need for provision of obstacle data in a *spreadsheet format*, rather than in the form of xml-provided files. In a typical obstacle management process, an AIS provider receives obstacle data from the originating source in one or more files in non-AIXM format. From there, the data is processed by AIS in various steps before finally being stored in AIXM databases. In the database, each obstacle record has two attributes, namely the start date and end date, describing the period of validity of the record, and only one record can be valid at one time. This allows the identification of new, changed and deleted obstacles from the previously provided electronic obstacle.

A harmonised common format for informing users about changes to the obstacle data set from the previous version, to a spreadsheet-type electronic obstacle file is provided below.

This consists of additional spreadsheets identified by the following tabs:

- “Changed” - UIDs which have a match are compared and if a change is detected are added to the ‘Changed’ sheet.
- “New” - UIDs in new spreadsheet but not in the old one are added to the ‘New’ sheet.
- “Deleted” - UIDs in the old spreadsheet but not in new are added to the ‘Deleted’ sheet.
- “All” – The full list is added to the ‘All’ sheet.

	A	B	C	D	E	F
1	Designation/Identification	Obstacle Type	Obstacle Position	Elevation	Height	Obstacle Lighting
2	EGPM1303 UK0105A390F	FLR Single	602739.98N 0011521.69W	490 FT	338 FT	No
3	UK0150H074F	TURB-ON HILL O TOWIE W/F2/21 L14 Single	572946.83N 0030458.15W	1410 FT	328 FT	No
4	UK0150G791F	TURB-ON EDINBANEW/F 13/13PH.1 L14 Single	572711.31N 0062342.72W	873 FT	328 FT	No
5	UK0150G789F	TURB-ON EDINBANEW/F 11/13PH.1 L14 Single	572707.94N 0062417.93W	787 FT	328 FT	No
6	UK0150G784F	TURB-ON EDINBANE W/F6/13PH.1 L14 Single	572640.29N 0062502.46W	824 FT	328 FT	No
7	UK0150G783F	TURB-ON EDINBANE W/F5/13PH.1 L14 Single	572625.71N 0062507.13W	886 FT	328 FT	No
8	UK0150G781F	TURB-ON EDINBANE W/F3/13PH.1 L14 Single	572558.32N 0062504.36W	951 FT	328 FT	No

Format for announcing changes to obstacle electronic files in spreadsheets.

4. AIP charts guidance

4.1 PBN instrument procedures

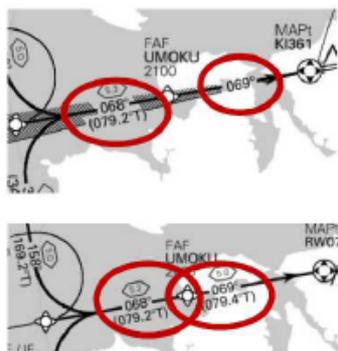
4.1.1 RNP approach information publication and charting

4.1.1.1 Alignment of the intermediate approach segment

4.1.1.1.1 The RNAV Approach Implementation Support Group (RAISG) raised a request for harmonised guidelines on how to publish the alignment of the intermediate segment with the final approach segment of an RNP instrument approach, which may result in different values when published with the resolution of 1 degree.

4.1.1.1.2 The harmonising principle in this situation agreed by the RAISG is to publish segments with the bearing obtained from geodesic calculation, although there is a difference (misalignment) in rounded values.

Alignment of the intermediate segment



- Sometimes this results in different values when published with the resolution of 1 degree
- Equal values would mean misalignment and a (small) turn
- ARINC 424 requires that the values shall be the same
- How should we understand the "alignment"?

- PANS-OPS:
 - The intermediate approach segment...:
 - For APV, III-3.5.3.2: ...shall be aligned with the final approach
 - For ILS, II-1-1.3.1: ...shall be aligned with the localizer **course**

Principle of alignment of intermediate and final approach segments.

ANNEX A – Acronym list

5ANNC	5-Alfa-Numeric Name Code
5LNC	5-Letter Name Code
AD	Aerodromes (AIP Part)
ADQ	Aeronautical Data Quality (Commission Regulation (EU) No 73/2010 of 26 January 2010, laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky)
AIC	Aeronautical Information Circular
AIM	Aeronautical Information Management
AIP	Aeronautical Information Publication
AIXM	Aeronautical Information Exchange Model
AIS	Aeronautical Information Services
AMC	Airspace Management Cell
ATS	Air Traffic Services
ASM	Airspace Management
CBA	Cross-border Area
CDR	Conditional Route
DHO	Data Harmonisation Objectives (EAD SDO)
EAD	European AIS Database
EAPPRI	European Action Plan for the Prevention of Runway Incursions
EAW	Early Access to Weekend
EC	European Commission
ECAC	European Civil Aviation Conference
ERAF	EUROCONTROL Regulatory and Advisory Framework
ERNIP	European Route Network Improvement Plan
EU	European Union
EUROCONTROL	European Organisation for the Safety of Air Navigation

FAB	Functional Airspace Block
FBZ	FPL Buffer Zone
FRA	Free Route Airspace
FIR	Flight Information Region
GEN	General (AIP Part)
ICAO	International Civil Aviation Organisation
PANS-OPS	Procedures for Air Navigation Services - Aircraft Operations
RAISG	RNAV Approach Implementation Support Group
RNAV	Area Navigation
RNP	Required Navigation Performance
SID	Standard Instrument Departure
SDO	Static Data Operations (EAD)
STAR	Standard Instrument Arrival
SWIM	System Wide Information Management
TOD	Terrain and Obstacle Data
UID	Unique Identifier
UIR	Upper Flight Information Region
VCS	Voice Channel Spacing

ANNEX B – References

B.1 References documents

- [RD 1] ICAO Annex 15 Aeronautical Information Services, fifteenth edition (July 2016).
- [RD 2] ICAO Aeronautical Information Services Manual (Doc 8126), sixth edition, amendment 2 (28 Sep 2009).
- [RD 3] ICAO Annex 4 Aeronautical Charts, eleventh edition (July 2016).
- [RD 4] ICAO Aeronautical Charts Manual (Doc 8697), third edition (July 2016).
- [RD 5] ICAO PANS Aircraft Operations (Doc 8168); Volume I, fifth edition (2006), Volume II, sixth edition (2014).
- [RD 6] EUROCONTROL Terrain and Obstacle Data Manual, Ed. 2.1 (November 2015).
<http://www.eurocontrol.int/sites/default/files/publication/files/EUROCONTROL%20Terrain%20and%20Obstacle%20Data%20Manual%20v2.1.pdf>
- [RD 7] EUROCONTROL European Route Network Implementation Plan Part 1, European Airspace Design Methodology Guidelines (June 2016).
<http://www.eurocontrol.int/publications/european-route-network-improvement-plan-ernip-part-1-european-airspace-design>
- [RD 8] EUROCONTROL European Route Network Implementation Plan, Part 3 – ASM Handbook, (November 2017).
<http://www.eurocontrol.int/sites/default/files/publication/files/ernip-part-3-asm-handbook-edition-5-v5-4.pdf>
- [RD 9] EUROCONTROL Guidelines for the annotation of data not compliant with Commission Regulation (EU) No 73/2010 (ADQ) Ed. 1.0 (2015).
<http://www.eurocontrol.int/sites/default/files/content/documents/single-sky/mandates/Guidelines%20for%20AIP%20Annotation%20of%20ADQ%20non%20compliance%20%28Ed%201%200%29.pdf>
- [RD 10] The European Action Plan for the Prevention of Runway Incursion (EAPPRI), version 3 (2017).
https://www.eurocontrol.int/sites/default/files/press_release/content/european-action-plan-prevention-runway-incursions-v3.pdf
- [RD 11] EUROCONTROL Guidance for Military Aeronautical Information Publications Consistency with ICAO Annex 15, Ed. 1.0 (08/03/2017).
<http://www.eurocontrol.int/sites/default/files/publication/files/201706-eurcontrol-guidance-military-aips.pdf>
- [RD 12] EUROCONTROL 8.33 kHz Voice Channel Spacing (VCS) Implementation Handbook (Ed. 1.1 July 2017).
<https://www.eurocontrol.int/sites/default/files/publication/files/201707-8.33-vcs-user-handbook%201.1.pdf>



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