International Civil Aviation Organization
South American Regional Office
Sixteenth Multilateral Workshop/Meeting of the SAM Region for the transition of AIS to AIM (SAM/AIM/16)
Lima, Perú, 14 to 18 August 2023

Agenda Item 7: Review of proposed amendments to ICAO AIS documentation and proposal of new PANS-AIM and PANS-MET documents

PROPOSAL OF AMENDMENT TO SEVERAL ICAO ANNEXES AND DOCUMENTS, CREATION OF THE PANS-AIM AND ITS IMPACT ON AIS/AIM DOCUMENTATION

(Presented by the Secretariat)

SUMMARY

This working paper presents the proposal of amendment to some ICAO Annexes and documents and the creation of the PANS-AIM and their impact on AIS/AIM documentation.

References:

- State letter AN 2/36-23/6 dated 13 February 2023

ICAO strategic objectives:	*A – Safety* *B – Capacity and efficiency*

1. Background

1.1 The ICAO Secretariat circulated State letter AN 2/36-23/6 dated 13 February 2023 to communicate the proposal in relation to several ICAO Annexes and documents and the creation of the PANS-AIM.

1.2 These proposals include amendments to various parts of ICAO Annex 15 and ICAO Doc 10066 PANS-AIM.

2. Discussion

2.1 State letter AN 2/36-23/6 dated 13 February 2023 requested States to comment on, and state their agreement with, the proposals of amendment to several ICAO Annexes and documents and their impact on various ICAO documents, as well as the creation of PANS-MET. The State letter is attached as an Appendix to this paper.

2.2 Attachments B to H of the State letter contain the proposals of amendment to ICAO Annex 15 and to Doc 10066 PANS-AIM.

2.3 The Meeting should urge States to thoroughly analyse these proposed amendments because they include important changes in aeronautical information management and in the training of AIS/AIM personnel.

2.4 The Meeting should note that the effective date of the proposed amendments contained in Attachments B to H is 28 November 2024, in accordance with paragraph 6 of the State letter.

2.5 States should take measures to implement the amendments proposed in the aforementioned letter.

3. **Suggested action**

3.1. The Meeting is invited to:

a) take note of the information presented in this working paper;

b) consider actions to comply with paragraphs 2.3 and 2.5; and

c) consider any other action it may deem appropriate.

International Civil Aviation Organization
Organisation de l'aviation civile internationale
Organización de Aviación Civil Internacional
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Ref.: AN 2/36-23/6

13 February 2023

Subject: Proposals for amendment of Annexes 3, 4, 10, Volumes II and III,15, PANS-ABC, PANS-AIM, as well as the publication of the first edition of PANS-IM, concerning aeronautical information management, system-wide information management and information security

Action required: Comments to reach Montréal by 14 August 2023

Sir/Madam,

1. I have the honour to inform you that the Air Navigation Commission, at the sixth meeting of its 221st Session held on 29 November 2022, considered proposals developed by the Information Management Panel (IMP) to amend Annex 3 — *Meteorological Service for International Air Navigation*, Annex 4 — *Aeronautical Charts*, Annex 10 — *Aeronautical Telecommunications*, Volume II — *Communication Procedures including those with PANS Status* and Volume III — *Communication Systems*, Annex 15 — *Aeronautical Information Services*, *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400) and *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM, Doc 10066), as well as the publication of the first edition of *Procedures for Air Navigation Services — Information Management* (PANS-IM). The proposals for amendment concern a number of subjects related to aeronautical information management as well as system-wide information management and information security. The Commission authorized the transmission of these proposals to Contracting States and appropriate international organizations for comments.

2. The background of the aforementioned proposals is explained in Attachment A. The proposals for amendment of the multiple Annexes and PANS, as well as a first edition of PANS-IM, are presented by subject in Attachments B through H. To facilitate your review of the proposed amendments, the rationales for the amendments have been provided in a text box immediately following each proposal.

3. You will wish to note that at the time of writing the *Manual on System-wide information management implementation* (Doc xxxxx) and the *Manual on Information Security* (Doc xxxxx), referred to in the notes of the proposed amendment related to system-wide information management and information

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security (Attachment H refers), remain under development; however, they are scheduled to be published prior to the envisaged applicability date of the proposed amendment.

4. In examining the proposed amendments, you should not feel obliged to comment on editorial aspects as such matters will be addressed by the ANC during its final review of the draft amendment.

5. May I request that any comments you wish to make on the amendment proposals be dispatched to reach me not later than 14 August 2023. To facilitate the processing of replies with substantive comments, I invite you to submit an electronic version in Word format to icaohq@icao.int. The Commission has asked me to specifically indicate that comments received after the due date may not be considered by the Commission and the Council. In this connection, should you anticipate a delay in the receipt of your reply, please let me know in advance of the due date.

6. For your information, the proposed amendments in Attachments B through H are envisaged for applicability on 28 November 2024. Any comments you may have thereon would be appreciated

7. The subsequent work of the Commission and the Council would be greatly facilitated by specific statements on the acceptability or otherwise of the proposals.

8. Please note that for the review of your comments by the Commission and the Council, replies are normally classified as “agreement with or without comments”, “disagreement with or without comments” or “no indication of position”. If in your reply the expressions “no objections” or “no comments” are used, they will be taken to mean “agreement without comment” and “no indication of position”, respectively. In order to facilitate proper classification of your response, a form has been included in Attachment I which may be completed and returned together with your comments, if any, on the proposals in Attachments B through H.

9. Accept, Sir/Madam, the assurances of my highest consideration.

Juan Carlos Salazar
Secretary General

Enclosures:

A — Background information
B — Proposed amendment to Annex 4 concerning aircraft with folding wing tips
C — Proposed amendment to Annex 15 and PANS-AIM concerning competency-based training and assessment (CBTA) methodology
D — Proposed amendment to PANS-AIM concerning consistency of data appearing in multiple aeronautical information products
E — Proposed amendment to PANS-AIM concerning the processing of multi-part NOTAM

F — Proposed amendment to PANS-ABC concerning NOTAM code for hang gliding and paragliding activities

G — Proposed amendment to Annex 15 and PANS-AIM concerning editorial changes

H — Proposed amendment to Annexes 3 and 15, and proposed first edition of PANS-IM, with consequential amendments to Annex 10, Volumes II and III, and PANS-AIM, concerning system-wide information management and information security

I — Response form

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ATTACHMENT A to State letter AN 2/36-23/6

BACKGROUND INFORMATION

1. INTRODUCTION

1.1 The proposals for amendment arising from the second meeting of the Information Management Panel (IMP/2) are organized by subject as they relate to aeronautical information management, system-wide information management and information security.

2. AIRCRAFT WITH FOLDING WING TIPS

2.1 As per Annex 4, Amendment 61, the recommendation was added to depict the "location" where folding wing tips can be extended on aerodrome and aerodrome ground movement charts.

2.2 As a result, it was agreed to amend the *Aeronautical Chart Manual* (Doc 8697) to depict "locations and ground areas" where it was safe to operate with wing tips extended. The proposals for amendment to Annex 4 in Attachment B are necessary in order to keep consistency between Annex 4 and Amendment 1 to Doc 8697, published on 11 December 2020.

3. CBTA METHODOLOGY

3.1 The proposals for amendment to Annex 15 and PANS-AIM in Attachment C provide a lead-in for the CBTA methodology developed in the *Aeronautical Information Services Training Manual* (Doc 9991).

4. CONSISTENCY OF DATA THAT APPEARS IN MULTIPLE AERONAUTICAL INFORMATION PRODUCTS

4.1 The proposals for amendment to PANS-AIM in Attachment D remove the prohibition to duplicate information in the Aeronautical Information Publication (AIP) within itself or from other sources and reinforce the provision of consistency when the same data is contained in different aeronautical information products.

5. PROCESSING OF MULTI-PART NOTAM

5.1 The proposal for amendment to PANS-AIM in Attachment E clarifies, harmonizes and provides recommendations on how to identify multi-part NOTAM.

6. NOTAM CODE FOR HANG GLIDING AND PARAGLIDING ACTIVITIES

6.1 The proposals for amendment to PANS-ABC in Attachment F relocate paragliding and hang gliding activities from NOTAM code (second and third letters) “WP Parachute jumping exercise, paragliding or hang gliding” to “WG glider flying” as an appropriate classification commensurate to the character of these gliding activities. The proposed new NOTAM code would read “WP Parachute jumping exercise” and “WG glider flying, paragliding or hang gliding”.

7. PROPOSED AMENDMENTS TO ANNEX 15 AND PANS-AIM CONCERNING EDITORIAL CHANGES

7.1 The minor proposals for amendment to Annex 15 and PANS-AIM in Attachment G clarify the existing provisions and ensure consistency on content and terminology among Annex 15 and PANS-AIM.

8. SYSTEM-WIDE INFORMATION MANAGEMENT AND INFORMATION SECURITY

8.1 Digitalization and information management are key to the modernization of the air navigation system as they support quality data exchanges for a high-performing system. Information domains such as aeronautical information, flight and flow, or meteorology have started the transition towards a modern means of providing information. This is reflected in a series of proposals for amendment to Annexes 3 and 15, in Appendix H; proposals for amendment to the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) on this subject have been issued via State letter AN 13/1.8, AN 7/63.1.2, AN 13/2.5, AN 2/33.1-22/108, dated 29/12/2022.

8.2 The proposed first edition of PANS-IM, in Attachment H, provides the necessary interoperability and harmonization of a modern means of exchanging information, based on a service-oriented architecture, to all members of the air traffic management (ATM) community in accordance with the character and temporality of the information and the specific needs of each member. Moreover, it includes the removal of any barrier between systems and data domains so that unified interfaces can be used and therefore seamless access to global information can be provided.

8.3 These modern means translated as information services, support the sharing of information across all airspace users, and offer new opportunities to access and integrate existing and additional information sources beyond the traditional message streams to enhance situational awareness. Furthermore, a transition to standardized digital information exchange formats and information distribution via well-defined information services alleviates some of the limitations of the current environment like domain specific message limitations or point-to-point connectivity.

8.4 This first edition of PANS-IM focuses on the exchange of information. Although some elements of the collection and processing of information are included in this edition, the core provisions of these activities are addressed within the different information domains.

8.5 Information security is a fundamental aspect of information management. The loss of confidentiality, integrity and availability of the information may impact the safety of flight operations. For this reason the newly proposed PANS-IM includes a series of information security procedures. These

procedures provide an information security framework to have a common understanding on the level of protection of the information (AN-Conf/13 Recommendation 3.1/1 and 5.4/1 refer).

8.6 The proposal also includes consequential amendments to Annex 10, Volumes II and III, and PANS-AIM.

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ATTACHMENT B to State letter AN 2/36-23/6

PROPOSED AMENDMENT TO ANNEX 4
CONCERNING AIRCRAFT WITH FOLDING WING TIPS

NOTES ON THE PRESENTATION OF THE AMENDMENT

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PROPOSED AMENDMENT TO

INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

ANNEX 4
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

AERONAUTICAL CHARTS

INITIAL PROPOSAL 1

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CHAPTER 13. AERODROME/HELIPORT CHART — ICAO

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13.6 Aerodrome/heliport data

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13.6.2 **Recommendation**.— *For aerodromes accommodating aeroplanes with folding wing tips, the locations ~~where the wing tips may be safely extended~~ and all ground areas where it is safe for aeroplanes with folding wing tips to operate with wing tips extended, should be shown on the chart.*

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CHAPTER 14. AERODROME GROUND MOVEMENT CHART — ICAO

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14.6 Aerodrome data

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14.6.2 **Recommendation.**— *For aerodromes accommodating aeroplanes with folding wing tips, the locations ~~where the wing tips may be safely extended~~ and all ground areas where it is safe for aeroplanes with folding wing tips to operate with wing tips extended, should be shown on the chart.*

. . .

Origin	*Rationale*
ADOP/3 AN 4/1.1.59-18/103. AN-P/9323. AN-P/9375 IMP/2	As per Annex 4 – *Aeronautical Charts*, Amendment 61, the recommendation was added to depict the "location" where folding wing tips can be extended on aerodrome and aerodrome ground movement charts. At IMP/WG-A/4 it was agreed to amend the *Aeronautical Chart Manual* (Doc 8697) to depict "locations and ground areas" where it was safe to operate with wing tips extended. This change from a fixed point to a polygon was as a result of the deliberations of the 777X Boeing Airport Compatibility Group (BACG). It was agreed at IMP/WG-A/4 that a consequential amendment was required for Annex 4. An amendment proposal for Annex 4 was agreed at IMP/WG-A/6 and IMP/2. This proposal modifies the recommendation language to keep consistency between Annex 4 and Amendment 1 to Doc 8697, published 11 December 2020.

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ATTACHMENT C to State letter AN 2/36-23/6

PROPOSED AMENDMENT TO ANNEX 15 AND PANS-AIM CONCERNING COMPETENCY-BASED TRAINING AND ASSESSMENT (CBTA) METHODOLOGY

NOTES ON THE PRESENTATION OF THE AMENDMENT

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PROPOSED AMENDMENT TO

INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

ANNEX 15
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

AERONAUTICAL INFORMATION SERVICES

INITIAL PROPOSAL 2

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CHAPTER 3. AERONAUTICAL INFORMATION MANAGEMENT

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3.6 Quality management system

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3.6.4 Within the context of the established quality management system, the competencies and the associated knowledge, skills and ~~abilities~~ attitudes required for each function shall be identified, and personnel assigned to perform those functions shall be appropriately trained. Processes shall be in place to ensure that personnel possess the competencies required to perform specific assigned functions. Appropriate records shall be maintained so that the qualifications of personnel can be confirmed. Initial and periodic assessments shall be established that require personnel to demonstrate the required competencies. Periodic assessments of personnel shall be used as a means to detect and correct shortfalls in knowledge, skills and ~~abilities~~ attitudes.

Origin	*Rationale*
Secretariat	The use of knowledge, skills and attitudes (KSA) is defined in the *Procedures for Air Navigation Services — Training* (PANS-TRG, Doc 9868) and the *Aeronautical Information Services Training Manual* (Doc 9991). Therefore, it is recommended that "abilities" is replaced with "attitudes" in Annex 15 — *Aeronautical Information Services*.

INITIAL PROPOSAL 3

3.6.5 **Recommendation.**— *The training methodology established in accordance with 3.6.4 should follow the competency-based training and assessment methodology.*

Note 1.— Provisions related to the competency-based training and assessment methodology are contained in the Procedures for Air Navigation Services — Training *(PANS-TRG, Doc 9868) and in the* Procedures for Air Navigation Services — Aeronautical Information Management *(PANS-AIM, Doc 10066).*

Note 2.— Additional guidance concerning a competency-based training and assessment methodology to ensure the competency of personnel in accordance with the Procedures for Air Navigation Services — Training *(PANS-TRG, Doc 9868) is contained in the* Aeronautical Information Services Training Manual *(Doc 9991).*

. . .

Editorial Note.— Renumber subsequent paragraphs.

Origin	*Rationale*
IMP/2	The *Procedures for Air Navigation Services — Training* (PANS-TRG, Doc 9868), Amendment 5 introduced the competency-based training and assessment (CBTA) methodology. The *Aeronautical Information Services Training Manual* (Doc 9991) provides guidance on how to apply the CBTA methodology to the aeronautical information management (AIM) environment. To ensure that the CBTA methodology is adopted in accordance with PANS-TRG and Doc 9991, the provision (a recommendation, including notes) are herewith proposed for Annex 15. In this proposal, the note from PANS-AIM, 3.1.2, Note 4 regarding Doc 9991 has been updated to reflect the CBTA methodology and moved to Annex 15. Note that the proposal for amendment regarding the adoption of CBTA is a Recommendation. The intent is for States to become familiar with the CBTA methodology by developing their own unique training programmes.

PROPOSED AMENDMENT TO

PROCEDURES FOR AIR NAVIGATION SERVICES — AERONAUTICAL INFORMATION MANAGEMENT (PANS-AIM)

INITIAL PROPOSAL 4

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CHAPTER 3

QUALITY AND TRAINING MANAGEMENT

3.1 QUALITY MANAGEMENT SYSTEM

Note 1.— This ~~chapter~~ section provides general requirements on the quality management system (QMS) related to aeronautical information management (AIM) processes.

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Origin	*Rationale*
Secretariat	Editorial change to allow a new section for training information under quality management in this chapter.

INITIAL PROPOSAL 5

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3.1.2 In the framework of the QMS, a user feedback system shall be defined and implemented.

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~~*Note 4.— Guidance material concerning a training methodology to ensure the competency of personnel is contained in the Aeronautical Information Management Training Development Manual (Doc 9991).*~~

. . .

Origin	*Rationale*
IMP/2	Amendment 5 to the PANS-TRG introduced the CBTA methodology. The *Aeronautical Information Services Training Manual* (Doc 9991) is based on CBTA methodology applied to the AIM environment. The proposal is to move a revised Note 4 to Annex 15.

INITIAL PROPOSAL 6

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3.2 TRAINING MANAGEMENT

Note 1.— This section provides general competency-based training and assessment (CBTA) requirements related to aeronautical information management (AIM).

Note 2.— Detailed guidance concerning the CBTA methodology implementation is contained in the Aeronautical Information Services Training Manual *(Doc 9991).*

3.2.1 The general requirements for the establishment of processes for CBTA within the context of the established QMS shall be to:

a) analyse training needs based on requirements (e.g. legislative, regulatory, operational, technical and organizational);

b) identify required competencies and associated knowledge, skills and attitudes;

c) design, develop and implement a CBTA programme and associated training material;

d) train and assess assigned personnel to demonstrate required competencies;

e) monitor competencies and associated knowledge, skills and attitudes;

f) evaluate and update training to be consistent with emerging requirements and feedback; and

g) maintain and retain training records.

Origin	*Rationale*
IMP/2	The proposal is to add a new section 3.2 to PANS-AIM for AIM training requirements together with the existing requirements on quality management. The only reference to training in PANS-AIM is proposed to be moved to Annex 15, therefore new provisions regarding training are required for PANS-AIM. The requirements proposed for PANS-

	AIM are based on a distillation of the main CBTA elements from the new *Aeronautical Information Services Training Manual* (Doc 9991) and the proposed recommendation to Annex 15.

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ATTACHMENT D to State letter AN 2/36-23/6

PROPOSED AMENDMENT TO PANS-AIM CONCERNING CONSISTENCY OF DATA APPEARING IN MULTIPLE AERONAUTICAL INFORMATION PRODUCTS

NOTES ON THE PRESENTATION OF THE AMENDMENT

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PROPOSED AMENDMENT TO

PROCEDURES FOR AIR NAVIGATION SERVICES — AERONAUTICAL INFORMATION MANAGEMENT (PANS-AIM)

INITIAL PROPOSAL 7

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CHAPTER 2

AERONAUTICAL INFORMATION MANAGEMENT

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2.1 INFORMATION MANAGEMENT REQUIREMENTS

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2.1.3 Quality control

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2.1.3.2 When the same data is ~~duplicated~~ contained in different aeronautical information products, procedures shall be in place by the service provider to ensure the consistency of the data ~~checks should be undertaken~~.

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CHAPTER 5

AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

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5.2 AERONAUTICAL INFORMATION IN A STANDARDIZED PRESENTATION

5.2.1 Aeronautical Information Publication (AIP)

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5.2.1.2 General specification

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~~5.2.1.2.4 Each AIP shall not duplicate information within itself or from other sources.~~

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Editorial Note.— Renumber subsequent paragraphs.

Origin	*Rationale*
IMP/2	The same data element may appear in multiple Aeronautical Information Products, sometimes in different formats, in accordance to PANS-AIM. An amendment to PANS-AIM is needed in order to strengthen the current provisions to ensure the consistency of such data elements. The current provisions indicate that consistency checks should be undertaken. Instead, it is proposed that data consistency shall be ensured under the quality control section of PANS-AIM. PANS-AIM also contains a legacy requirement for AIP to not duplicate information within itself or from other sources. This is in conflict with the PANS-AIM provisions for the content of the AIP and of the other Aeronautical Information Products (charts, data sets, etc.). With the introduction of the Annex 15 Amendment 40 provisions for digital data sets, a large part of the AIP content is duplicated in digital data sets. Also, elements such as NAVAID positions, waypoint designators, etc. appear in multiple sections of the AIP, as prescribed by the PANS-AIM, Appendix 1. Therefore, it is proposed that this provision is removed. There is no risk that further data duplication occurs in the AIP, as the structure and the content of the AIP is explicitly specified in the PANS-AIM.

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ATTACHMENT E to State letter AN 2/36-23/6

PROPOSED AMENDMENT TO PANS-AIM
CONCERNING THE PROCESSING OF MULTI-PART NOTAM

NOTES ON THE PRESENTATION OF THE AMENDMENT

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PROPOSED AMENDMENT TO

PROCEDURES FOR AIR NAVIGATION SERVICES — AERONAUTICAL INFORMATION MANAGEMENT (PANS-AIM)

INITIAL PROPOSAL 8

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CHAPTER 5

AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

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5.2 AERONAUTICAL INFORMATION IN A STANDARDIZED PRESENTATION

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5.2.1.4 Specifications for AIP Supplements

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5.2.1.4.4 A checklist of valid AIP Supplements shall be issued at intervals of not more than one month as part of the checklist of NOTAM required by 5.2.5.~~3~~4 and with distribution as for the AIP Supplements.

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5.2.5 NOTAM

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5.2.5.3 Multi-part NOTAM

5.2.5.3.1 When the aeronautical fixed service (AFS) message exceeds the maximum number of characters permissible, the multi-part NOTAM procedure shall be applied, which includes a standard numbering scheme to facilitate the processing of multi-part NOTAMs.

Note.— Guidance for multi-part NOTAM are described in the Aeronautical Information Service Manual (Doc 8126).

. . .

5.2.5.~~3~~4 NOTAM checklist

Editorial Note.— Renumber subsequent paragraphs.

. . .

Origin	*Rationale*
IMP/2	There is a need to clarify, harmonize and provide guidance on how to identify multi-part NOTAMs, as in some cases multi-part NOTAMs are necessary considering the limitations inherent to AFTN messages to 1800 characters as Annex 10, Volume II, Chapter 4, 4.4.5.7 refers to. To assist States in applying the proposed procedures, guidance material will be added to Doc 8126, *Aeronautical Information Services Manual* on how to number, amend and/or cancel a multi-part NOTAM and on how to identify the multi-part indicator. Providing a harmonized procedure for processing multi-part NOTAM will improve efficiency on the exchanges of this type of NOTAM and the application of its content. The standard numbering scheme will facilitate the processing of multi-part NOTAM when they are used.

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ATTACHMENT F to State letter AN 2/36-23/6

PROPOSED AMENDMENT TO PANS-ABC
CONCERNING NOTAM CODE FOR HANG GLIDING AND PARAGLIDING ACTIVITIES

NOTES ON THE PRESENTATION OF THE AMENDMENT

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PROPOSED AMENDMENT TO

**PROCEDURES FOR AIR NAVIGATION SERVICES —
ICAO ABBREVIATIONS AND CODES (PANS-ABC)**

INITIAL PROPOSAL 9

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THE NOTAM CODE — DECODE

SECOND AND THIRD LETTERS

Code	*Signification*	*Uniform abbreviated phraseology*
. . .		
WG	Glider flying, paragliding or hang gliding	gld fly/paragliding/hang gliding
. . .		
WP	Parachute jumping exercise~~, paragliding or hang gliding~~	pje~~/paragliding/hang gliding~~

THE NOTAM CODE — ENCODE

SECOND AND THIRD LETTERS

Signification	*Code*
Glider flying, paragliding or hang gliding	WG
. . .	
Parachute jumping exercise~~, paragliding or hang gliding~~	WP
. . .	

Origin	*Rationale*
IMP/2	Relocating paragliding and hang gliding activities from NOTAM code "WP Parachute jumping exercise, paragliding or hang gliding" to "WG glider flying" as an appropriate classification commensurate to the character of these gliding activities. This should result in greater awareness of the nature of activities taking place amongst airspace users and better airspace utilization. It may also enable downstream users that utilize the Q Code for visualization of NOTAM to more accurately describe the activity.

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ATTACHMENT G to State letter AN 2/36-23/6

PROPOSED AMENDMENT TO ANNEX 15 AND PANS-AIM CONCERNING EDITORIAL CHANGES

NOTES ON THE PRESENTATION OF THE AMENDMENT

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PROPOSED AMENDMENT TO

INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

ANNEX 15
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

AERONAUTICAL INFORMATION SERVICES

INITIAL PROPOSAL 10

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CHAPTER 1. GENERAL

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1.2 Common reference systems for air navigation

1.2.1 Horizontal reference system

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1.2.1.2 **Recommendation.**— *In precise geodetic applications and some air navigation applications, temporal changes in the tectonic plate motion and tidal effects on the Earth's crust should be modelled and estimated. To reflect the temporal effect, an epoch should be included with any set of absolute station coordinates.*

Note 1.— The ~~epoch~~ latest version of the WGS-84 (~~G873~~ G2139) reference frame is realized through coordinates of 17 GPS tracking stations which are part of the GPS Control Segment. They are aligned to IGb14 (considered to be equivalent to ITRF2014 (International Terrestrial Reference System 2014)) at epoch 2005.0.~~1997.0 while the epoch of the latest updated WGS-84 (G1150) reference frame, which includes a plate-motion model, is 2001.0. (G indicates that the coordinates were obtained through Global Positioning System (GPS) techniques, and the number following G indicates the GPS week when these coordinates were implemented in the United States' National Geospatial-Intelligence Agency's precise ephemeris estimation process.)~~

~~*Note 2.— The set of geodetic coordinates of globally distributed permanent GPS tracking stations for the most recent realization of the WGS-84 reference frame (WGS-84 (G1150)) is provided in Doc 9674. For each permanent GPS tracking station, the accuracy of an individually estimated position in WGS-84 (G1150) has been in the order of 1 cm (1σ).*~~

Note ~~3~~2.— Another precise worldwide terrestrial coordinate system is the International Earth Rotation Service (IERS) Terrestrial Reference System (ITRS), and the realization of ITRS is the IERS Terrestrial Reference Frame (ITRF). Guidance material regarding the ITRS is provided in Appendix C of Doc 9674. ~~The most current realization of WGS-84 (G1150) is referenced to the ITRF 2000 epoch. WGS-84 (G1150~~ G2139) is consistent with ITRF ~~2000~~2014 and in practical realization the difference between

these two systems is ~~in the one to two centimetre range worldwide~~ statistically insignificant for most applications, meaning WGS-84 (~~G1150~~ G2139) and ITRF ~~2000~~2014 are essentially identical.

Origin	*Rationale*
IMP/2	This proposal is to eliminate references to non-existing information in the World Geodetic System — 1984 (WGS-84) Manual (Doc 9674), to update the information on current realizations of WGS-84 and ITRS.

INITIAL PROPOSAL 11

. . .

CHAPTER 3. AERONAUTICAL INFORMATION MANAGEMENT

. . .

3.2 Data quality ~~specifications~~ requirements

. . .

Origin	*Rationale*
Secretariat	This proposal is to align the terminology of Annex 15 with the one in PANS-AIM and Doc 8126.

INITIAL PROPOSAL 12

3.2.3 Data integrity

. . .

3.2.3.2 Based on the applicable integrity classification, procedures shall be put in place in order to:

. . .

b) for essential data: ~~assure~~ ensure corruption does not occur at any stage of the ~~entire process~~ data processing life cycle (e.g. collection, processing, storing, integration, exchange and delivery) and include additional ~~processes~~ measures or steps as needed to address potential risks in the overall ~~system architecture~~ processing of aeronautical data to further assure data integrity at this level; and

c) for critical data: ~~assure~~ ensure corruption does not occur at any stage of the ~~entire process~~ data processing life cycle (e.g. collection, processing, storing, integration, exchange and delivery) and include additional data integrity assurance processes to ~~fully~~ mitigate the ~~effects of faults~~ risk of errors ~~identified by thorough analysis of the overall system architecture as potential data integrity risks~~.

Note.— Guidance concerning measures to ensure data integrity is contained in the Aeronautical Information Service Manual *(Doc 8126), Part II, 4.1 and 6.2.*

. . .

Origin	*Rationale*
IMP/WG-A/6 IMP/-WG/10 IMP/WG-A/7	Editorial proposal to better convey the meaning of how to ensure data integrity at the level of essential and critical data. The addition of the note referring to the Aeronautical Information Service Manual (Doc 8126), Part II, Chapter 4, 4.1 - Verification and Validation, and Chapter 6, 6.2 - Quality Assurance, provides further background on data integrity.

INITIAL PROPOSAL 13

3.3 Aeronautical data and aeronautical information verification and validation

3.3.1 ~~Material to be issued~~Aeronautical data and aeronautical information to be published as part of an aeronautical information product shall be ~~thoroughly~~ checked before ~~it is~~ being submitted to the AIS in order to ensure that all necessary information has been included and that it is correct ~~in detail~~.

. . .

Origin	*Rationale*
Secretariat	Editorial change to better convey the meaning.

INITIAL PROPOSAL 14

CHAPTER 5. AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

. . .

5.2 Aeronautical information in a standardized presentation

. . .

5.2.5 Aeronautical charts

. . .

5.2.5.1 The aeronautical charts listed below shall, when available for designated international aerodromes/heliports, form part of the AIP, or be provided separately to recipients of the AIP:

. . .

m) Visual Approach Chart — ICAO.

~~*Note.— A page pocket may be used in the AIP to include the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) on appropriate electronic media.*~~

Origin	*Rationale*
Secretariat	Editorial change; note can be deleted since the chart can be provided as part of the AIP, or provided separately to recipients of the AIP, without the explicit need for a page pocket.

INITIAL PROPOSAL 15

5.2.5.2 The En-route Chart — ICAO shall, when available, form part of the AIP, or be provided separately to recipients of the AIP.

. . .

Origin	*Rationale*
Secretariat	Editorial change “enroute” to “en-route” to be consistent with rest of document and PANS-AIM.

PROPOSED AMENDMENT TO

PROCEDURES FOR AIR NAVIGATION SERVICES — AERONAUTICAL INFORMATION MANAGEMENT (PANS-AIM)

INITIAL PROPOSAL 16

. . .

FOREWORD

. . .

7. CONTENTS OF THE DOCUMENT

. . .

7.7 Appendices

7.7.1 Appendix 1 presents the scope of data and information to be collected and maintained by an AIS. The ~~A~~aeronautical ~~D~~data ~~C~~catalogue symbolizes the shift from product-centric to data-centric environments, is considered the point of reference for all provisions related to aeronautical data origination and publication, and represents the common ~~language~~ data description for data originators and the AIS. Data element properties, sub-properties and descriptions and quality requirements (e.g. accuracy, resolution and integrity) are contained in Appendix 1.

. . .

Chapter 2

AERONAUTICAL INFORMATION MANAGEMENT

2.1 INFORMATION MANAGEMENT REQUIREMENTS

. . .

2.1.1 Collection

. . .

2.1.1.6 Appendix 1 shall be considered as a reference for aeronautical data and aeronautical information origination and publication requirements.

. . .

Note 2.— Appendix 1 provides a common ~~language~~ data description that can be used by data originators and the AIS.

. . .

Origin	*Rationale*
Secretariat	Editorial change to align PANS-AIM with Doc 8126. Doc 8126, Part II, 2.1.5 and 3.1.4 refers to the aeronautical data catalogue to provide the common “data description” rather than “language”.

INITIAL PROPOSAL 17

2.2 DATA INTEGRITY MONITORING AND ASSURANCE

. . .

2.2.2 The ~~technical means~~ technique used for data error detection should be based on ~~the use of~~ systematic ~~cycling~~ cyclic codes.

. . .

Origin	*Rationale*
Secretariat	Editorial change to align with Annex 15, 3.4.2 which talks about “Digital data error detection techniques”. Correct term to read “systematic cyclic codes”.

INITIAL PROPOSAL 18

Chapter 5

AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

. . .

5.2 AERONAUTICAL INFORMATION IN A STANDARDIZED PRESENTATION

5.2.1 Aeronautical Information Publication (AIP)

. . .

5.2.1.2 General specification

. . .

5.2.1.2.7 Charts, maps or diagrams should be used to complement or as a substitute for the tabulations or text of AIP.

Note.— Where appropriate, charts produced in conformity with Annex 4 may be used to fulfil this requirement. ~~*Guidance material as to the specifications of index maps and diagrams included in AIP is contained in the*~~ Aeronautical Information Services Manual ~~*(Doc 8126).*~~

. . .

Origin	*Rationale*
Secretariat	The guidance material that was contained in Doc 8126, 6th edition, 5.6, has been moved to PANS-AIM, 5.2.1.2.13.

INITIAL PROPOSAL 19

5.2.1.3 Specifications for AIP Amendments

. . .

5.2.1.3.4 Each AIP Amendment shall be allocated a serial number, which shall be consecutive and based on the calendar year.

. . .

Origin	*Rationale*
IMP/2	Annex 15, PANS-AIM (Doc 10066) and AIS Manual (Doc 8126) provide requirements, specifications and guidance concerning allocation of a serial number for the aeronautical information products. The serial number for the AIP supplement, Aeronautical Information Circular and NOTAM shall be based on the calendar year. The serial number allocation procedure for AIP amendment is not harmonised. The PfA is to add an additional specification in the PANS-AIM regarding AIP amendment serial number allocation which shall be based on the calendar year. The PfA shall ensure a harmonized approach towards the provision of the aeronautical information products.

INITIAL PROPOSAL 20

5.2.3 Printed products

5.2.3.1 Printed AIP

. . .

5.2.3.1.6 Each AIP Amendment page~~, including the cover sheet,~~ shall contain a publication date ~~and~~ or, when applicable, an effective date. The cover sheet shall contain the publication date and, when applicable, an effective date.

. . .

Origin	*Rationale*
IMP/2	The PfA is to harmonize and align the requirements regarding the use of publication date and effective date for printed AIP publications. The PfA is to amend the PANS-AIM text concerning the use of dates on printed AIP publications.

INITIAL PROPOSAL 21

Appendix 1

AERONAUTICAL DATA CATALOGUE

Note 1.— The Aeronautical Data Catalogue is available electronically and provided as part of the PANS-AIM.

. . .

Table A1-1 Aerodrome/Heliport data

Tab: Apron-Taxiway

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Taxiway				A defined path on a land aerodrome established for the taxiing of aircraft and intended to provide a link between one part of the aerodrome and another,						
	…									
	Runway holding position			A designated position intended to protect a runway, an obstacle limitation surface, or an ILS/ MLS critical/sensitive area at which taxiing aircraft and vehicles shall stop and hold, unless otherwise authorized by the aerodrome control tower.						
	…									
		Geometry	Line	Geographical location of runway holding position		0.5m	~~essential~~ critical	surveyed	1/100 sec	1 sec

Origin	*Rationale*
IMP/2	The runway holding position's attribute "Integrity" was erroneously listed as "essential". The correct attribute is "critical".

INITIAL PROPOSAL 22

. . .

Appendix 4

SNOWTAM FORMAT
(see Chapter 5, 5.2.5.1.4)

. . .

INSTRUCTIONS FOR THE COMPLETION OF THE SNOWTAM FORMAT

. . .

e) The abbreviated heading "TTAAiiii CCCC MM~~YY~~DDGGgg (BBB)" is included to facilitate the automatic processing of SNOWTAM messages in computer data banks. The explanation of these symbols is:

. . .

MM~~YY~~DDGGgg = date/time of observation/measurement, whereby:
MM = month, e.g. January = 01, December = 12
~~YY~~DD = day of the month

. . .

Origin	*Rationale*
IMP/2	Editorial to correct "day of the month" abbreviation to "DD" instead of "YY" that is understood as meaning year.

INITIAL PROPOSAL 23

Appendix 6

TERRAIN AND OBSTACLE ATTRIBUTES PROVISION REQUIREMENTS

. . .

Table A6-2. Obstacle attributes

Obstacle attribute	Mandatory/Optional
. . .	
Lighting	Mandatory
Marking	Mandatory
. . .	

Origin	*Rationale*
IMP/2	The obstacle attribute “Marking” was omitted from the list of obstacle attributes.

— — — — — — — — —

ATTACHMENT H to State letter AN 2/36-23/6

PROPOSED AMENDMENT TO ANNEXES 3 AND 15, AND PROPOSED FIRST EDITION OF PANS-IM, WITH CONSEQUENTIAL AMENDMENTS TO ANNEX 10, VOLUMES II AND III, AND PANS-AIM, CONCERNING SYSTEM-WIDE INFORMATION MANAGEMENT AND INFORMATION SECURITY

NOTES ON THE PRESENTATION OF THE AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~	Text to be deleted
New text to be inserted is highlighted with grey shading.	New text to be inserted
~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	New text to replace existing text

PROPOSED AMENDMENT TO

INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

ANNEX 3 TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION

INITIAL PROPOSAL 24

. . .

CHAPTER 2. GENERAL PROVISIONS

. . .

2.2 Supply, use, quality management and interpretation of meteorological information

. . .

2.2.10 **Recommendation.—** *States should ensure that the meteorological information supplied to the users listed in 2.1.2 is provided through information services.*

Note 1.— In the context of system-wide information management, the notion of information service addresses machine-to-machine interaction in a service-oriented architecture.

Note 2.— Procedures on information services are contained in the Procedures for Air Navigation Services — Information Management *(PANS-IM, Doc xxxxx).*

Note 3.— Guidance material on information services can be found in the Manual on System-wide Information Management Implementation *(Doc xxxxx).*

. . .

Origin: IMP/2	*Rationale:* States are encouraged to make sure that meteorological information is made available via information services following the introduction of system-wide information management (SWIM). In a SWIM environment, information services are the means to be used for meteorological information exchange.

PROPOSED AMENDMENT TO

INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

ANNEX 15
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

AERONAUTICAL INFORMATION SERVICES

INITIAL PROPOSAL 25

. . .

CHAPTER 5. AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

. . .

5.4 Distribution services

. . .

5.4.3 Data set information services

5.4.3.1 **Recommendation.**— *When provided, the digital data sets specified in 5.3 should be made available through information services.*

Note 1.— In the context of system-wide information management, the notion of information service addresses machine-to-machine interaction in a service-oriented architecture.

Note 2.— Procedures on information services are contained in the Procedures for Air Navigation Services — Information Management *(PANS-IM, Doc xxxxx).*

Note 3.— Guidance material on information services can be found in the Manual on System-wide Information Management Implementation *(Doc xxxxx).*

Origin:	*Rationale:*
IMP/2	States are encouraged to make digital data sets available via information services following the introduction of system-wide information management (SWIM). According to PANS-IM, information services are the new mechanism to be used for every aeronautical information exchange.

5.4.3.1.1 A data set information service shall provide, as a minimum, the ability to query and retrieve as a whole each of the digital data sets specified in 5.3.

5.4.3.1.2 **Recommendation.**— *A data set information service should provide the ability to query and retrieve selected elements of the digital data sets specified in 5.3.*

Note.— Guidance material on how to query digital data sets is contained in the Aeronautical Information Services Manual *(Doc 8126), Part IV.*

Origin:	*Rationale:*
IMP/2	A data set information service is designed to at least support the provision of complete data sets or sub-set according to their specific characteristics.

5.4.3.1.3 **Recommendation.**— *A data set information service should provide the option to subscribe to notifications on data set updates.*

. . .

Origin:	*Rationale:*
IMP/2	Information service consumers should have the choice to directly receive updates corresponding to their subscription criteria or to be notified when an update is available.

. . .

PROPOSED FIRST EDITION OF

PROCEDURES FOR AIR NAVIGATION SERVICES — INFORMATION MANAGEMENT (PANS-IM)

INITIAL PROPOSAL 26

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FOREWORD

1. HISTORICAL BACKGROUND

1.1 Following the need expressed at the 38th Session of the ICAO Assembly for global agreement on the principles for the standardization and harmonized implementation of system-wide information management (SWIM), the Air Navigation Commission, at the eighth meeting of its 194th Session, held 28 November 2013, agreed to the establishment of the Information Management Panel (IMP) in order to develop a globally harmonized and interoperable approach to information management.

1.2 A global approach on information management (IM) is essential to ensure interoperability and harmonization across all information domains and to support activities such as: flight and flow – information for a collaborative environment (FF-ICE); the evolution of meteorological services towards digital information exchange; and addressing the need for aeronautical information, including the distribution of digital data sets via information services and a review of the NOTAM system.

1.3 This first edition of PANS-IM provides procedures related to the management of information in general and how they apply to the existing information domains and other domains that may arise. Future editions may also include related procedures for the different information domains.

2. SCOPE AND PURPOSE

2.1 The first edition of PANS-IM contains requirements supporting the transition towards a global air navigation system network as described in the *Global Air Navigation Plan* (GANP, Doc 9750). The focus of this first edition is on information services for ground-to-ground information exchanges based on the principles, benefits and components described in the *Manual on System-wide Information Management (SWIM) Concept* (Doc 10039) to establish SWIM as a key enabler of the *Global Air Traffic Management Operational Concept* (Doc 9854). The PANS-IM is supplemented, when necessary, by regional procedures contained in the *Regional Supplementary Procedures* (Doc 7030).

Note.— The transition towards a global air navigation system network, as described in the Global Air Navigation Plan *(GANP, Doc 9750), requires the air navigation system to become increasingly automated, digitalized and interconnected where information management and the use of information play a particularly important role in the evolution of the air navigation system and global interoperability.*

2.2 Building on an Internet Protocol Suite (IPS)-based communications infrastructure, a key objective of SWIM is to ensure interoperable information exchange between all air traffic management (ATM) stakeholders. To this end, the procedures contained in this document are generic and applicable to all information domains and guidance for the implementation and transition to SWIM can be found in the *Manual on System-wide Information Management Implementation* (Doc xxxxx). Information domains may specify additional SWIM requirements, e.g. addressing aeronautical information, meteorological information, and flight and flow information, to complement the generic SWIM requirements included in this document.

2.3 This first edition of PANS-IM also includes requirements for an information security framework to have a common understanding on the level of protection of the information and to provide end-to-end information security in a scalable approach.

3. STATUS

3.1 The PANS do not have the same status as Standards and Recommended Practices (SARPs). While the latter are *adopted* by Council in pursuance of Article 37 of the *Convention on International Civil Aviation*, and are subject to the full procedure of Article 90, the PANS are *approved* by the Council and recommended to Contracting States for worldwide application.

3.2 While the PANS may contain material, which may eventually become SARPs when it has reached the maturity and stability necessary for adoption as such, they may also comprise material prepared as an amplification of the basic principles in the corresponding SARPs and designed particularly to assist the user in the application of those SARPs.

4. IMPLEMENTATION

The implementation of procedures is the responsibility of Contracting States; they are applied in actual operations only after, and in so far as, States have enforced them. However, with a view to facilitating their processing towards implementation by States, they have been prepared in language, which will permit direct use by the air navigation community.

5. PUBLICATION OF DIFFERENCES

5.1 The PANS do not carry the status afforded to Standards adopted by the Council as Annexes to the Convention and, therefore, do not come within the obligation imposed by Article 38 of the Convention to notify differences in the event of non-implementation.

5.2 However, attention of States is drawn to the provisions of Annex 15 related to the publication in their Aeronautical Information Publications of lists of significant differences between their procedures and the related ICAO procedures.

Chapter 1

DEFINITIONS

When the following terms are used in the present document, they have the following meanings:

Data. A representation of facts, concepts or instructions in a formalized manner suitable for communication, interpretation or processing.

Exchange schema. Formal description of the data involved in an information exchange, in particular including the encodings and other applicable constraints.

Note.— An exchange schema assists information service consumers in understanding the syntax of the data delivered by the information service, and the technologies required for locally processing the data received. An exchange schema is based on a data exchange language which is standardized. For example, Extensive Markup Language (XML) schema is a World Wide Web Consortium (W3C) data exchange language used to define XML encoded messages.

Governance. The set of bodies, standards, policies and processes that ensure globally interoperable information is provided by reliable and trusted services.

Information. The result of the assembly, analysis, formatting, and documenting of data, to make the data useful in an ATM context.

Information domain. The scope of the integrated data for a distinct set of business activities that produce a set of unique information products and services.

Information exchange model. A formal description of the information that is agreed to be shared between two or more organizations or groups and includes at least one exchange schema for the associated data.

Note.— An information exchange model is normally defined for a specific information domain, such as aeronautical information, meteorological information or flight information. This typically includes the definition of information entities and their relationships.

Information security category. A categorization of the impact on the safety of operations due to the loss of information confidentiality, integrity or availability.

Information service. A type of service in a service-oriented architecture that provides an ATM-related information-sharing capability.

Information service overview. A set of information service metadata intended to promote information service discovery and an initial evaluation of the information service characteristics.

Information service payload. The assembly of information exchanged using an information service.

Note.— Information service payloads support a specified function(s) or purpose, independent of overhead required to enable the information exchange, such as headers, and security requirements.

Interface binding. Specification of the protocols and data formats to be used in transmitting messages defined by the associated interface.

Interoperability. The ability of information and communication technology (ICT) systems, and of the business processes they support, to exchange data and to enable the sharing of information and knowledge.

Message. A discrete unit of communication intended by the source for consumption by a given recipient or group of recipients.

Metadata. Information about a resource.

Note.— An information service, an information service overview, a dataset, are examples of resources.

Reference model. An abstract framework for understanding significant relationships among the entities of information domains.

Service-oriented architecture. Architectural style that supports the designing of systems in terms of services and service-based development.

System-wide information management (SWIM). Standards, infrastructure and governance enabling the management of ATM-related information and its exchange between qualified parties via interoperable information services.

System-wide information management (SWIM) region. A geographical area in which a group of States and/or ATM stakeholders has agreed upon common governance in support of regional system-wide information management implementation.

Note.— A SWIM region can be an ICAO region or any other area in which a community of interest has agreed on common governance.Communities of interest are established in a variety of ways and may be composed of members from one or more functions and organizations as needed for a shared mission.

System-wide information management (SWIM) registry. A directory containing entries with the information necessary to discover and access information services.

Technical infrastructure. The assembly of software and hardware used to enable the provision of information services.

Chapter 2

GENERAL

2.1 SYSTEM-WIDE INFORMATION MANAGEMENT

2.1.1 The provisions in this document are applicable to information being exchanged in a system-wide information management environment.

2.1.2 System-wide information management is essential for the digital transformation of air traffic management. The collection and processing of data within each information domain should result in information that can be exchanged and used for supporting ATM decision-making. Information management includes the following activities:

a) collection;

b) processing; and

c) exchange of data and information.

Note 1.— Annex 3 — Meteorological Service for International Air Navigation, *Annex 4* — Aeronautical Charts, *Annex 11* — Air Traffic Services, *Annex 14* — Aerodromes, *Annex 15* — Aeronautical Information Services, Procedures for Air Navigation Services — Aerodromes *(PANS-Aerodromes, Doc 9981),* Procedures for Air Navigation Services — Aeronautical Information Management *(PANS-AIM, Doc 10066) and* Procedures for Air Navigation Services — Air Traffic Management *(PANS-ATM, Doc 4444) contain requirements on the collection and processing of data and information for the respective information domains.*

Note 2.— Within this document, information refers to ATM-related information.

2.1.3 The information management activities given in 2.1.2 shall be performed in a quality-controlled manner as specified in 2.2.

2.1.4 The exchange of information shall be performed through information services which are a type of service in a service-oriented architecture that provides an ATM information-sharing capability.

Note 1.— More information on the evolution of information exchange in a service-oriented architecture can be found in the Manual on System-wide Information Management (SWIM) Concept *(Doc 10039).*

Note 2.— More information on service-oriented architecture can be found in Chapter 2 of the Manual on System-wide Information Management Implementation *(Doc xxxxx).*

Note 3.— Annex 3 — Meteorological Service for International Air Navigation, *Annex 4* — Aeronautical Charts, *Annex 11* — Air Traffic Services, *Annex 14* — Aerodromes, *Annex 15* — Aeronautical Information Services, Procedures for Air Navigation Services — Aerodromes *(PANS-Aerodromes, Doc 9981),* Procedures for Air Navigation Services — Aeronautical Information Management *(PANS-AIM,*

Doc 10066) and Procedures for Air Navigation Services — Air Traffic Management *(PANS-ATM, Doc 4444) contain other requirements of a particular information domain regarding the exchange of information.*

Note 4.— Information exchange is based on message exchange patterns that determine interactions between information service providers and consumers.

2.1.5 To support global interoperability, system-wide information management shall be based on the following six principles:

a) **Use of interoperable information services**. Interoperable information services facilitate required information exchanges and are based on operational needs and the analysis of related processes.

b) **Separation of information provision and information consumption.** Clear separation of provider and consumer concerns allows for flexibility in terms of the number and the nature of the consumers. To achieve this, each service is self-contained and the information service consumer is isolated from the implementation details of the service.

c) **Loose coupling**. A system characteristic where each of its components has, or makes use of, minimal dependencies with other distinct components. This principle applies to the information service interfaces.

d) **Discoverability**. A system characteristic for an information service consumer to be able to find available information services with the help of an information service overview.

e) **Use of open standards**. An open standard is one made available to the general public and which has been developed and maintained via a collaborative- and consensus-driven process.

f) **Secure information exchange.** The exchange of information based on a security framework that encompasses all the potential security dimensions, including the management, control and execution of responses to cyber threats and cyber attacks.

Note.— See the Manual on System-wide Information Management Implementation *(Doc xxxxx) for additional information on how these principles relate to the service-oriented architecture principles.*

2.2 QUALITY MANAGEMENT

2.2.1 The quality of the information shall comply with the requirements of the particular information domain(s) and be ensured through an implemented and maintained quality management system (QMS).

Note 1.— Annex 3 — Meteorological Service for International Air Navigation, *Annex 4* — Aeronautical Charts, *Annex 14* — Aerodromes, *Annex 15* — Aeronautical Information Services, Procedures for Air Navigation Services — Aeronautical Information Management *(PANS-AIM, Doc 10066) and* Procedures for Air Navigation Services — Air Traffic Management *(PANS-ATM, Doc 4444) contain specific provisions on information quality for the respective information domains.*

Note 2.— Annex 3 — Meteorological Service for International Air Navigation, *Annex 4* — Aeronautical Charts, *Annex 15* — Aeronautical Information Services *and* Procedures for Air Navigation Services — Aeronautical Information Management *(PANS-AIM, Doc 10066) contain specific provisions on QMS for information in the respective information domains.*

2.2.2 Information service providers shall implement and maintain a QMS to establish the necessary assurance and confidence for providing the required information service quality. The quality of the information service should be based on the requirements of the particular information domain(s).

Note.— International Organization for Standardization (ISO) 9000 series describes a quality management system as a way of defining how an organization can:

a) meet the requirements of stakeholders;
b) identify and address the risks associated with the organization;
c) determine efficient use of resources; and
d) *continually improve.*

Origin:	*Rationale:*
IMP/2	The procedures in this chapter introduce how the principles of information exchange are applied and how the information service providers should adhere to the quality management requirements. The procedures in PANS-IM do not address the collection and processing of data/information. However, reference is made to the detailed specific requirements for the data domain articulated in other provisions, such as Annexes 3, 15, PANS-AIM and PANS-ATM. The six principles selected, described and applicable to information exchanges are derived from service orientation which is a practice aiming at supporting interoperability while minimizing the impact on the systems providing and consuming the information. Service orientation was selected as the best way to address some of the existing limitations with the current messaging system used like the lack of flexibility or adaptability.

Chapter 3

GOVERNANCE

Note 1.— Governance provisions are contained throughout this document, as they specifically apply to information, information services and technical infrastructure. Therefore, this chapter only includes governance requirements that have not already been captured in the other chapters.

Note 2.— Further guidance on governance and implementation frameworks can be found in the Manual on System-wide Information Management Implementation *(Doc xxxxx).*

3.1 Governance supports the six global interoperability principles stated in 2.1.4 and should be addressed through the establishment of an implementation framework in accordance with 3.5.

Note.— Governance helps build and maintain trust among the various stakeholders providing and consuming information services in a collaborative environment.

3.2 Where system-wide information management is planned for implementation, States shall ensure that an appropriate implementation framework is established at the national level and/or within a SWIM region.

Note.— See the Manual on System-wide Information Management Implementation *(Doc xxxxx) for information on a SWIM region.*

3.3 States shall ensure adherence to the implementation framework for the provision of information under their responsibility.

Note.— Information under the responsibility of States is provided in Annex 3 — Meteorological Service for International Air Navigation, *Annex 4* — Aeronautical Charts, *Annex 11* — Air Traffic Services, *Annex 14* — Aerodromes, *Annex 15* — Aeronautical Information Services, Procedures for Air Navigation Services — Aerodromes *(PANS-Aerodromes, Doc 9981),* Procedures for Air Navigation Services — Aeronautical Information Management *(PANS-AIM, Doc 10066) and* Procedures for Air Navigation Services — Air Traffic Management *(PANS-ATM, Doc 4444).*

3.4 The implementation framework should include:

a) defining roles, responsibilities and accountabilities of the various system-wide information management stakeholders including, but not limited to, originator, information service provider, information service consumer and regulator;

b) identifying, if necessary, the appropriate governance bodies responsible for coordinating the implementation within a State or region;

Note.— See the Manual on System-wide Information Management Implementation *(Doc xxxxx) for more information on governance bodies.*

c) identifying and documenting the relevant standards and any additional standardization requirements; and

Note.— Standardization requirements may include standards such as ISO, Radio Technical Commission for Aeronautics (RTCA), European Organisation for Civil Aviation Equipment (EUROCAE) or Open Geospatial Consortium, as well as any additional procedure included in the Regional Supplementary Procedures *(Doc 7030).*

d) developing and maintaining policies, processes and guidance in support of system-wide information management implementation.

Origin:	*Rationale:*
IMP/2	System-wide information management should be implemented where a State, collection of States or a Region can derive benefits from sharing information, as with other Aviation System Block Upgrade (ASBU) elements. Therefore, the governance provisions in this chapter apply to States that have decided to implement system-wide information management. Governance is also key to establish and maintain trust amongst the various stakeholders exchanging information through information services. States need to ensure that system-wide information management is established in accordance with an appropriate implementation framework. This framework supports global interoperability by establishing governance bodies, regulations, policies and processes. Additionally, States that provide information services through SWIM are responsible for complying with the implementation framework for information under their responsibility.

Chapter 4

INFORMATION

4.1 GENERAL

4.1.1 Information service providers should determine how to meet the information exchange requirements by considering the intended uses of the information in the information service payload.

Note.— For more information on how to meet the information exchange requirements see the Manual on System-wide Information Management Implementation *(Doc xxxxx).*

4.1.2 Information service providers and consumers should have a common understanding of the meaning of the information in an information service payload.

Note 1.— The common understanding of the meaning of the information is achieved using an information exchange model or by aligning the information with a global reference model.

Note 2.— The information exchange models address the specific context of their related domain(s) while the global reference model supports alignment across various information domains.

*Note 3.— See the AIRM (*https://airm.aero/*) for a global reference model.*

4.1.3 Information service providers and consumers shall have a common understanding of the exchange schema used for the data in an information service payload.

4.2 INFORMATION EXCHANGE MODELS

4.2.1 Information service providers should use the domain-specific information exchange models and their business rules for their information service payloads. If the domain-specific information exchange models do not support the information exchange requirements, then information service providers should request a change to the domain-specific information exchange models.

Note 1.— The use of domain-specific information exchange models aligned with the AIRM satisfies the procedures stated in 4.1.2 and 4.1.3.

Note 2.— See the Manual on System-wide Information Management Implementation *(Doc xxxxx) for more information on the domain-specific information exchange models and their management.*

4.2.2 If information service providers do not use the domain-specific information exchange models for their information service payloads, they should align the definition of the information in the information service payloads with a global reference model. In this case, information service providers shall use a standardized exchange schema for the information service payloads.

Note 1.— Alignment with the AIRM and indication of the exchange schema used satisfy the procedures stated in 4.1.2 and 4.1.3.

Note 2.— Guidance on aligning the information in an information service payload with the AIRM is provided in the Manual on System-wide Information Management Implementation *(Doc xxxxx).*

4.3 METADATA

Note.— Metadata is essential in the understanding and exchange of information by an information service.

4.3.1 Information service providers shall provide metadata that describes both the information service payload and the information service that delivers the information.

Note.— Procedures related to the means to make available information service metadata are described in 5.2.

4.3.2 Metadata on information should be collected when performing information management activities based on the requirements of the particular information domain(s).

Note.— Annex 4 — Aeronautical Charts, *Annex 15* — Aeronautical Information Services *and* Procedures for Air Navigation Services — Aeronautical Information Management *(PANS-AIM, Doc 10066) include requirements on metadata for providers of information services. These requirements on the metadata for information may be different from the requirements on metadata for the information service.*

Origin:	*Rationale:*
IMP/2	In a collaborative environment, and in accordance with the principles described in Chapter 2, interoperable information services require interoperability of the information involved in digital information exchanges. This entails determining the required information, defining what its meaning is and how it is encoded, and providing information about it. The procedures in this chapter cover the determination of information exchange requirements, the common understanding of the meaning of the information, the common understanding of the exchange schema (i.e. the formal description of the data), and the provision of metadata. For the information service payloads, the procedures recommend the use of domain-specific information exchange models (e.g. the information exchange models referenced in the global interoperability framework of the SWIM Concept). In doing so service providers achieve (i) the common understanding of the meaning of the information, and (ii) the common understanding of the exchange schema. These procedures build upon investments in the structuration of digital ATM data in terms of information exchange models and recommend their re-use in the context of SWIM.

	The procedures also introduce the ATM Information Reference Model (AIRM), which provides the system-wide reference vocabulary for ATM information. When not using an information exchange model already aligned with the AIRM, the alignment of an information service payload with the AIRM is important to preserve the meaning of the information exchanged. This chapter includes procedures that recognize the importance of metadata. The procedures distinguish between metadata on the information service and metadata on the information. Metadata on information supports the good and intended use of the information. Chapter 5 covers metadata on information services enabling the discoverability of the information services.

Chapter 5

INFORMATION SERVICES

5.1 GENERAL

5.1.1 Information service providers shall publicize the information services that they provide.

5.1.2 Information service consumers should assess the fitness for purpose of an information service using information service metadata.

5.2 INFORMATION SERVICE OVERVIEW

5.2.1 Information service providers shall provide information service metadata through information service overviews.

5.2.2 Information service overviews shall be structured using the metadata fields in Table 5-1. This practice facilitates discoverability of information services and enables information service consumers to compare different information services.

5.2.3 Information service providers shall provide a complete description of all metadata fields in the information service overview for each version of an information service.

Table 5-1. Information service overview metadata fields

Note.— The "field schema" column serves to define the requirements for the internal structure of the metadata fields. It is not intended to prescribe an encode or a format.

Field name	Requirements	Field schema	Example
Information service name	Information service providers shall name the information service. The name of the information service should enable information service consumers to reference or identify the information service. The name should provide an indication of the purpose of the information service.	Free text	*DONLON TargetOffBlockTimeSetting Service*
Information service version	Information service providers shall provide versioning to the information services. The service version shall be provided in numerical format (n.n[.n]). The version of the information service shall allow information service	n.n[.n]	*1.0.0*

Field name	Requirements	Field schema	Example
	consumers to distinguish between versions of an information service.		
Information service life cycle status	Information service providers shall specify the stage that the information service version is currently in as one of three stages: prospective, operational or retired. *Note.— For more information on the stage that an information service can be see the* Manual on System-wide Information Management Implementation *(Doc xxxxx).*	Prospective *or* Operational *or* Retired	*OPERATIONAL*
Information service life cycle date	Information service providers should include the dates for current and future lifecycle stages. The planned date of retirement should be listed whenever it is known to exist. If an information service provider does not make the date available, the *information service life cycle date* metadata field shall specify "NIL". *Note.— In the case of a prospective stage, the date indicates the date by which the information service provider plans to make the information service operational.*	YYYY-MM-DD *or* NIL	*2018-07-31*
Information service functions	Information service providers should provide a description of the business level characteristics of the information service functions. This will provide information service consumers a business view of the interactions with the information service, without having to look at the interface details. The description should include the functionality of the service as a list of the functions and real world effects. If an information service provider does not make the information service functions available, the *information service functions* metadata field shall specify "NIL".	Free text *or* NIL	*Business function: Service for the information service consumer to set (i.e. define or update) or delete the target off-block time (TOBT) value for a specific flight.* *Real world effect: The target off-block time (TOBT) values are updated for each flight as the information service consumer performs:* • *Set TOBT – TOBT value is defined or updated* • *Delete TOBT – TOBT is marked as undefined*
Information category	The information domain(s) covered by the information service shall be listed as one or more of the following: a) flight information; b) aeronautical information; c) meteorological information;	Flight information; *and/or* Aeronautical information *and/or*	*FLIGHT INFORMATION*

Field name	Requirements	Field schema	Example
	d) environment information; e) capacity, demand and flow information; f) surveillance information; and/or g) other information.	Meteorological information *and/or* Environment information *and/or* Capacity, demand and flow information *and/or* Surveillance information *and/or* Other information	
Brief description of the information service	Information service providers shall provide a brief description of the information service to assist information service consumers on whether the described service is suitable for use in a particular situation. The brief description shall include the information domain(s) covered by the information service, the operational need being addressed by the information service, the intended use of the information service, and the intended consumer audience for the information service.	Free text (intended use)	*The TargetOffBlockTimeSetting service supports the Airport CDM concept and its implementation by allowing A-CDM Partners, typically aircraft operators and ground handlers, with the capability to set the target off-block time (TOBT) that indicates the target time for the aircraft to be ready for off-block.*
Additional information on the information service	Information service providers should provide a description of the location at which more information, potentially including more detailed technical information on an information service, may be found. The location should be provided as a link to where an information service consumer can find more information. If an information service provider does not make additional information available on the information service overview, the *additional information on the information service* metadata field shall specify "NIL".	Free text *or* NIL	*Additional information on the information service can be found at the DONLON Service Registry: https://donlonregistry.com/* *or* *DONLON service web site:* *https://donlon-atlanticservices.com*
Quality of the service	Information service providers shall provide a description on the qualitative and quantitative information pertaining to the characteristics of an information service to allow information service consumers to understand the quality of the information service. The description should specify parameters based on ISO 25010. The quality of the information	Capacity: free text (description of capacity) *and/or* Time behaviour: free text (description of	*AVAILABILITY: 99.95 % outside the planned outages* *CAPACITY: 2000 service requests per hour*

Field name	Requirements	Field schema	Example
	service should be expressed using the following parameters (or other applicable parameters): a) Performance parameters (quantitative) i) Capacity of a service ii) Time behaviour of a service b) Reliability parameters (quantitative) i) Availability of a service ii) Recoverability of a service c) Security parameters (qualitative) i) Confidentiality of a service ii) Integrity of a service *Note.— Examples of applicable parameters related to performance, reliability and security is provided in the* Manual on System-wide Information Management Implementation *(Doc xxxxx).*	time behaviour) *and/or* Availability: free text (description of availability) *and/or* Recoverability: free text (description of recoverability) *and/or* Confidentiality: free text (description of confidentiality) *and/or* Integrity: free text (description of integrity)	*TIME BEHAVIOUR: 2s delay for 95% of messages*
Information service validation type	Information service providers shall ensure that the information service is validated. This validation shall include the parameters provided in the *quality of service* metadata field of the information service overview to assist information service consumers with the initial evaluation of the information service. Information services shall be validated by at least one of the following validation methods: a) independent validation; b) collaborative validation; c) user validation; or d) self-validation. The validation method(s) used and its corresponding result shall be recorded. Information services may evolve which triggers the need for revalidation. Each new version of an information service should be revalidated. *Note.— For more information on the validation methods see the* Manual on System-wide Information Management Implementation *(Doc xxxxx).*	Independent validation *and/or* Collaborative validation *and/or* User validation *and/or* Self-validation	*SELF-VALIDATION*

Field name	Requirements	Field schema	Example
Information service validation description	Information service providers shall provide a description of the validation method applied to assist information service consumers in assessing the confidence level of the information service. By sharing the validation results, information service providers reassure information service consumers that the information service and its provider have the ability to deliver the declared capabilities and quality of service. The description should include a brief statement on the validation results, and how the information service consumers may obtain the validation evidence.	Free text (validation result)	*DONLON Airport tested the service in accordance with its QMS-based requirements.*
Filtering available	Information service providers should provide information on the availability of filtering to allow information service consumers to narrow the content of information that they consume. The capability of filtering information should describe the filters information service providers offer for an information service. If an information service provider does not offer filtering or does not make information on filtering available on the service overview, the *filtering available* metadata field shall specify "NIL".	Free text *or* NIL	*The DONLON Airport Weather data service supports the following filtering:* *Report Type - specify one or more of "METAR", "SPECI" or "TAF" in the subscription request to filter the results to only these types of reports.* *If no filtering option is specified, then all messages will be subscribed to.*
Access restrictions	Information service providers shall provide a description of any constraints on access to the information service to assist information service consumers in understanding whether they may be eligible to access the information service. These constraints should specify the requirements and/or restrictions on information service consumers for accessing the information exchanged by the information service that are considered to be sensitive.	Free text	*The service is targeting aircraft operators and ground handlers for their flights at DONLON Airport. The access to the service is subject to the signature of a Service Level Agreement with the DONLON Airport Operator. The access to the service is based on user ID and password, which can be obtained for authorized users through the point of contact (POC) listed.* *The service may, as well, be used by the DONLON Tower Controllers in specific circumstances, such as under adverse conditions or other special circumstances.*

Field name	Requirements	Field schema	Example
Message exchange patterns	Information service providers shall indicate the message exchange pattern used by the information service to assist information service consumers in understanding the relationships of multiple messages exchanged with the information service providers. The message exchange pattern shall be expressed as one or more of the following: a) request/reply; b) one way; *and/or* c) publish/subscribe.	Request/Reply *and/or* One way *and/or* Publish/Subscribe	*Request/Reply*
Information exchange models	If information service providers use for their information service payloads the domain specific information exchange models, then information service providers shall indicate the domain-specific information exchange models used for their information service payloads, including the extensions of the information exchange models and their versions. If information service providers do not use the domain-specific information exchange models for their information service payloads, then information service providers shall describe the alignment to a global reference model and indicate the exchange schema used. *Note.— See the AIRM (https://airm.aero/) for an example of a global reference model.*	Free text	*The service is using an information exchange model aligned with the AIRM version 1.0.0.*
Geographical extent of information	Information service providers shall provide a description of the geographical coverage of the information exchanged to allow information service consumers to understand the geographical coverage of the information being provided. *Note.— The geographical coverage may be expressed in terms such as of ICAO Region, flight information region (FIR), aerodrome or polygon. More granular information such as coverage at airport "x", FIR "y" may be provided as it may facilitate search responses.*	Free text	*DONLON Airport*
Source of information	Information service providers should specify the sources of information exchanged. Information service providers should also provide information on any subsequent	Free text *or* NIL	*DONLON Airport Operator*

Field name	Requirements	Field schema	Example
	modifications applied in order to provide information service consumers with background on information sources and modifications. If an information service provider does not make the source of information available, the *source of information* metadata field shall specify "NIL".		
Information security category	Information service providers shall indicate the information security category to provide information service consumers with an understanding of the level of protection of the information. The information security category shall be expressed as one of the following: a) none; b) basic; c) intermediate; or d) advanced. *Note.— More information is provided in the* Manual on Information Security *(Doc xxxxx).*	None *or* Basic *or* Intermediate *or* Advanced	*Intermediate*
Provider organization	Information service providers shall provide the name of their organization to assist information service consumers in identifying and gaining context on the information service. The name of the organization shall be followed by any abbreviated name, if any, by which the organization is known. *Note.— The provider organization may or may not be the organization originating the information.*	Free text	*DONLON Atlantic Services* *Federal Aviation Administration (FAA)*
Support availability	Information service providers should provide a description of the support offered to information service consumers on all relevant aspects related to the information service, to allow information service consumers to understand the level of support to expect. If an information service provider does not make support availability information available, the *support availability* metadata field shall specify "NO SUPPORT AVAILABLE".	Free text or NO SUPPORT AVAILABLE	*For incidents on services in operation, contact the Service desk [24/7]: +693 555 01 service-desk@donlon-atlanticservices.com*

Field name	Requirements	Field schema	Example
Provider point of contact	Information service consumers should have a point of contact to request, if needed, additional information regarding an information service. Information service providers shall provide a point of contact such as an email or website where a potential information service consumer can direct additional questions regarding the information service.	Free text	*To request access to the service:* www.donlon-atlanticservices.com/swim/service-request

5.3 INFORMATION SERVICE OVERVIEW PUBLICATION

5.3.1 Information service providers shall inform information service consumers where they can access the information service overviews and the metadata on information services therein.

5.3.2 The uniform resource locator (URL) where information service overviews are publicized shall be included in the aeronautical information publication (AIP). In case a SWIM registry is used (see 5.4), the URL shall be the one of the registry.

Note 1.— To mitigate the risk of inconsistencies, a limited number of locations where service overviews are made available by the information service providers is preferred.

Note 2.— Information regarding the uniform resource locator (URL) is provided in Procedures for Air Navigation Services — Aeronautical Information Management *(PANS-AIM, Doc 10066), Appendix 2, GEN 3.7.1.*

5.4 SWIM REGISTRY

5.4.1 SWIM registries should be used by:

a) information service providers as a means to publicize available information services; and

b) information service consumers as a means to discover information services.

Note.— Information service providers do not have to implement a SWIM Registry, they could use a SWIM Registry already implemented. The implementation of a SWIM Registry could be done by any stakeholder.

5.4.2 When a SWIM registry is used:

a) it shall make information service overviews available;

b) it shall provide access control for the registration of information service overviews;

c) it shall provide search functionalities on information service overviews and its fields;

d) it should provide notification functionalities on changes to information service overviews and its fields; and

e) it should be made publicly available.

Note.— The classification of information services according to information category and/or information service lifecycle status will facilitate the search functionality of a SWIM registry (see Table 5-1).

Origin:	*Rationale:*
IMP/2	Information services are services that provide an information sharing capability in a system-wide information management (SWIM) environment based on the principles described in Chapter 2. Essential for using information services is the ability for information service consumers to discover available information services and to evaluate and compare these services for (future) use. The procedures in this chapter provide a number of requirements that facilitate a harmonized manner to support discovery, evaluation and comparison of information services. Information service overviews provide potential information service consumers with a consistent set of information by which they can perform an initial evaluation of an information service. Information service consumers utilize information service overviews to determine which information service will best fit their needs. Information service overviews enable easier comparison between multiple similar information services. In this regard, information service overviews need to include a minimum set of fields for information service consumers to perform an initial discovery and assessment of the information service. These fields provide information service consumers a way to identify the information service, an overview of the service capabilities and how to gather additional information about the information service. There are several fields with the option for information service providers to enter a “NIL” value. These fields provide information service consumers more context for their initial information service selection. Since these fields may only apply to certain information services, information service providers have to enter a “NIL” value rather than leaving the field blank. This practice makes it clear that the provider has visited the field and marked it to indicate that the information is either unavailable or left purposely blank. Information service overviews need to be made available for discovery by information service consumers. The AIP is a common location for a wide variety of information to support ATM services and is an appropriate location where to find information regarding information services.

	The use of a registry, for publicizing and allowing users to discover information services, is a best practice within service-oriented architecture (SOA). A SWIM registry is a means to link information service providers with consumers and thereby facilitate design-time interoperability.

Chapter 6

TECHNICAL INFRASTRUCTURE

6.1 GENERAL

6.1.1 Information services shall be provided and consumed using a technical infrastructure based on the Internet Protocol Suite (IPS).

Note.— The ATN/IPS meets the requirements for the technical infrastructure. Corresponding provisions are contained in Annex 10 — Aeronautical Telecommunications, *Volume III —* Communication Systems *and the* Manual on the Aeronautical Telecommunication Network (ATN) using Internet Protocol Suite (IPS) Standards and Protocols *(Doc 9896).*

6.2 INTERFACE BINDINGS

6.2.1 Information services use interface bindings to interact with the technical infrastructure.

Note.— See the Manual on System-wide Information Management Implementation *(Doc xxxxx) for more information on interface bindings.*

6.2.2 Interface bindings shall be based on standardized and widely used and supported protocols.

Note 1.— These protocols provide the necessary capabilities to enable information service providers and consumers to exchange information via interoperable services applying loose coupling principles between systems.

Note 2.— Two systems that implement the same interface binding are technically interoperable, and therefore capable to connect and to exchange information.

6.2.2.1 In order to ensure interoperability, if information service providers and consumers are using different protocols, both parties shall ensure that lossless mediation between protocols has been established.

Note 1.— Lossless mediation means that the message and its properties are preserved in the bi-directional conversion between two protocols.

Note 2.— Guidance on lossless mediation, including the required application property names and types can be found in the Manual on System-wide Information Management Implementation *(Doc xxxxx).*

6.2.3 Information service providers should manage interface bindings to consolidate the potentially large number of technologies that could be used for implementing interfaces between systems and to maintain flexibility in relation to the opportunities of emerging potential technologies.

6.2.4 Information services should use defined interface bindings in accordance with 6.2.2 and 6.2.3.

Note 1.— The Manual on System-wide Information Management Implementation *(Doc xxxxx) provides further guidance on functional capabilities, loosely coupling, interface bindings and interoperable mediation between protocols.*

Note 2.— A specification on interface bindings is shown in EUROCONTROL Specification for SWIM Technical Infrastructure (EUROCONTROL-SPEC-170).

6.3 INFORMATION SECURITY FRAMEWORK

6.3.1 System-wide information management stakeholders generating, storing, consuming or transferring information shall implement an information security framework, designed to ensure the confidentiality (when needed), integrity and availability of the information and information services.

6.3.2 The information security framework shall apply to the network, the technical infrastructure, the information, the information service and the applications in an integrated manner.

Note.— Guidance on how to implement the information security framework, as part of another framework or an independent framework, is provided in the Manual on Information Security *(Doc xxxxx).*

6.3.3 Information service providers shall classify information according to defined information security categories to ensure a mutual understanding of the level of protection of the information exchanged.

Note.— See the Manual on Information Security *(Doc xxxxx) for classification of information in the defined information security categories.*

6.3.4 System-wide information management stakeholders should implement information security requirements commensurate with the information security category determined in 6.3.3.

Note.—For more information on commensurate information security requirements, see the Manual on Information Security *(Doc xxxxx).*

6.3.5 Information service consumers shall assess the impact of the loss of confidentiality, integrity and availability of the information on safety to determine the information security category required for the operational use of the information.

Note 1.— The loss of confidentiality, integrity and availability of the information may impact safety.

Note 2.— See the Manual on Information Security *(Doc xxxxx) for the assessment of the impact of the loss of confidentiality, integrity and availability of the information on safety and classification of information in information security categories.*

Origin:	*Rationale:*
IMP/2	The technical infrastructure is a collection of software and hardware that enables the provision and consumption of information services in the context of system-wide information management. The availability of an IP-based network is a key prerequisite for the technical infrastructure that is based on the internet protocol suite (IPS). Consequently, the procedures in this chapter require an IP-based network. In accordance with the principles described in Chapter 2, digital information exchanges between service providers and consumers performed through information services lead to the need for standardised and managed (information service) interface bindings. These interface bindings specify the protocols and data formats to be used in transmitting messages defined by the associated (information service) interface. The procedures cover interface bindings characteristics to be based on (i) standardized and widely supported protocols, and (ii) the application of the loose coupling principle (Chapter 2) between systems. The procedures recommend the management of the technological diversity in the options to implement information services and the use of Quality of Service parameter requirements in the potential selection of the interface bindings. Whilst on one hand this is required for interoperability reasons, it is also important for minimizing the significant costs related to the maintenance, expertise and integration between different technologies used. For these reasons, it is good practice to consolidate the interface bindings around common standards. Information security is a fundamental aspect of information management. The loss of confidentiality, integrity and availability of the information may impact the safety of flight operations. The procedures provide an information security framework to have a common understanding on the level of protection of the information.

PROPOSED CONSEQUENTIAL AMENDMENT TO

INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

AERONAUTICAL TELECOMMUNICATIONS

ANNEX 10
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

VOLUME II — COMMUNICATION PROCEDURES
INCLUDING THOSE WITH PANS STATUS

INITIAL PROPOSAL 27

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ANNEX 10 — VOLUME II
COMMUNICATION PROCEDURES

Introduction

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Volume II contains a number of provisions relating to the exchange of information which were developed primarily for low modulation rates utilizing the coded character sets of International Alphabets Nos. 2 and 3. Provisions for International Alphabet No. 5 (IA-5) for use at medium and higher signalling rates are contained in Annex 10, Volume III.

Provisions related to information exchange via information services are found in the Procedures for Air Navigation Services — Information Management *(PANS-IM, Doc xxxxx). The provisions of the PANS-IM complement this Annex, notably for network access, and the internet and transport layers of ATN/IPS, to enable information services in a SWIM environment.*

Provisions related to information security can also be found in the PANS-IM (Doc xxxxx).

CHAPTER 1. DEFINITIONS

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1.1 SERVICES

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System-wide Information Management (SWIM). SWIM consists of standards, infrastructure and governance enabling the management of ATM related information and its exchange between qualified parties via interoperable information services.

. . .

Origin:	*Rationale:*
IMP/2	SWIM sits above the communication protocols described in Annex 10, hence, there is a need to add a reference pointing to where the SWIM provisions can be found. The information security provisions proposed in PANS-IM provide a ("holistic") approach to improving resilience of the global aviation system to cyber threats. This holistic approach implies the application of information security at different layers, including the network layer, hence, there is a need to add a reference pointing to where the information security provisions can be found.

PROPOSED CONSEQUENTIAL AMENDMENT TO

INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

AERONAUTICAL TELECOMMUNICATIONS

ANNEX 10
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

VOLUME III — COMMUNICATION SYSTEMS

INITIAL PROPOSAL 28

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INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

PART I — DIGITAL DATA COMMUNICATION SYSTEM

CHAPTER 1. DEFINITIONS

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Note 5.— Provisions related to information security can be found in the Procedures for Air Navigation Services — Information Management *(PANS-IM, Doc xxxxx).*

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Origin:	*Rationale:*
IMP/2	The introductory notes to the definitions chapter of Annex 10, Volume III contain the references to standards and conventions practices relevant to the interpretation of this Annex. It is therefore adequate to establish a link to the Information Security provisions of PANS-IM at this level.

PROPOSED CONSEQUENTIAL AMENDMENT TO

**PROCEDURES FOR AIR NAVIGATION SERVICES —
AERONAUTICAL INFORMATION MANAGEMENT (PANS-AIM)**

INITIAL PROPOSAL 29

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Appendix 2

**CONTENTS OF THE AERONAUTICAL
INFORMATION PUBLICATION (AIP)**

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GEN 3. SERVICES

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Editorial Note.— Insert new section.

GEN 3.7 Information services

GEN 3.7.1 SWIM Registry(s)/Information Service Overview(s)

When SWIM registries are used, the corresponding Uniform Resource Locator (URL) of each registry is provided. Otherwise, a list of the URLs where information service overviews can be found are provided.

Note.— SWIM registries provide a list of available information services with corresponding information service overviews.

. . .

Origin:	*Rationale:*
IMP/2	It is necessary to make SWIM registries and their associated information service overviews discoverable to information service consumers by publicizing the Uniform Resource Locators (URLs) in the AIP. There may be more than one registry where information services are available therefore more than one registry can be published. There are separate headings provided for information service registries; or information service overviews where service registries have not been implemented.

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ATTACHMENT I to State letter AN 2/36-23/6

RESPONSE FORM TO BE COMPLETED AND RETURNED TO ICAO TOGETHER WITH ANY COMMENTS YOU MAY HAVE ON THE PROPOSED AMENDMENTS

To: The Secretary General
International Civil Aviation Organization
999 Robert-Bourassa Boulevard
Montréal, Quebec
Canada, H3C 5H7

(State) _____

Please make a checkmark (✓) against one option for each amendment. If you choose options "agreement with comments" or "disagreement with comments", **please provide your comments on separate sheets**.

	Agreement without comments	*Agreement with comments**	*Disagreement without comments*	*Disagreement with comments*	*No position*
Amendment to Annex 4 — *Aeronautical Charts* and PANS-AIM — *Procedures for Air Navigation Services — Aeronautical Information Management* **(Attachment B related to aircraft with folding wing tips)**					
Amendment to Annex 15 — *Aeronautical Information Services* and *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM, Doc 10066) **(Attachment C related to competency-based training and assessment (CBTA) methodology)**					
Amendment to PANS-AIM — *Procedures for Air Navigation Services — Aeronautical Information Management* **(Attachment D related to consistency of data appearing in multiple aeronautical information products)**					
Amendment to PANS-AIM — *Procedures for Air Navigation Services — Aeronautical Information Management* **(Attachment E related to the processing of multi-part NOTAM)**					
Amendment to PANS-ABC — *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* **(Attachment F related to NOTAM code for hang gliding and paragliding activities)**					

	Agreement without comments	*Agreement with comments**	*Disagreement without comments*	*Disagreement with comments*	*No position*
Amendment to Annex 15 — *Aeronautical Information Services* and *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM, Doc 10066) **(Attachment G related to editorial changes)**					
Amendment to Annex 3 — *Meteorological Service for International Air Navigation*, Annex 15 — *Aeronautical Information Services*, proposed first edition of PANS-IM — *Procedures for Air Navigation Services — Information Management*, and consequential amendments to Annex 10 — *Aeronautical Telecommunications*, Volume II — *Communication Procedures including those with PANS Status* and Volume III — *Communication Systems*, and PANS-AIM — *Procedures for Air Navigation Services — Aeronautical Information Management* **(Attachment H related to system-wide information management and information security)**					

*"Agreement with comments" indicates that your State or organization agrees with the intent and overall thrust of the amendment proposal; the comments themselves may include, as necessary, your reservations concerning certain parts of the proposal and/or offer an alternative proposal in this regard.

Signature: _____ Date: _____

— END —