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# AERONAUTICAL DATA CATALOGUE

AIM RO

ICAO NACC OFFICE

Mexico/October 2018





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# State Letter: Identification & understanding what is really NEW is most important

## AERONAUTICAL DATA REQUIREMENTS

### 4.1 Data Origination Requirements

#### 4.1.1- New text

4.1.2 The order of accuracy for aeronautical data shall be as specified in Annex 11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2. In that respect, three types of positional data shall be identified: surveyed points (runway thresholds, navigation aid positions, etc.), calculated points (mathematical calculations from the known surveyed points of points in space/fixes) and declared points (e.g. flight information region boundary points).

*Editorial Note.*— 4.1.2 is relocated text from Annex 15, 3.3.1

4.1.3 World Geodetic System — 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system for international air navigation. Consequently, published aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.

*Editorial Note.*— 4.1.3 is relocated text from Annex 15, 1.2.1.1



International Civil Aviation Organization    Organisation de l'aviation civile internationale    Organization of the Americas and the Caribbean    منظمة الطيران المدني الدولي    國際民用航空組織

Tel.: +1 514-954-8219 ext. 5872  
Ref.: AN 22-1.1-1/722    21 April 2017

**Subject:** Proposed amendment to Annex 15, new PANS-AIM and consequential amendments to Annexes 3, 4, 6, 9, 10, 11 and 14, PANS-ATM, PANS-OPS, PANS-ABC and PANS-Aerodromes.


**Action required:** Comments to reach Montréal by 21 July 2017

Sir/Madame,

I have the honour to inform you that the Air Navigation Commission, at the sixth meeting of its 20th Session held on 1 December 2016, conducted a preliminary review of the proposals developed by the Aeronautical Information Service (AIS) to Aeronautical Information Management (AIM) Study Group (AIS-AISMG) for the amendment of Annex 15 — *Aeronautical Information Services*, the new *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM) and consequential amendments to Annex 3 — *Meteorological Service for International Air Navigation*, Annex 4 — *Aeronautical Charts*, Annex 6 — *Operation of Aircraft*, Part 1 — *International Commercial Air Transport*, 9 — *Aeroplanes*, Annex 9 — *Facilitation*, Annex 10 — *Aeronautical Telecommunications*, Volume 1 — *Radio Navigation Aids* and Volume 2 — *Communication Procedures* including those with PANS status, Annex 11 — *Air Traffic Services*, Annex 14 — *Aerodromes*, Volume 1 — *Aerodrome Design and Operations* and Volume 2 — *Helicopters*, *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444), *Procedures for Air Navigation Services — Aircraft Operations*, Volume 1 — *Flight Procedures* and Volume 2 — *Construction of Visual and Instrument Flight Procedures* (PANS-OPS, Doc 8160), *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400) and *Procedures for Air Navigation Services — Aerodromes* (PANS-Aerodromes, Doc 9981). The Commission authorized the transmission of the proposals to Contracting States and appropriate international organizations for comments.

2. The background of the aforementioned proposals for the amendment is explained in Attachment A. The proposals for amendment of Annex 15, the new PANS-AIM and the consequential amendments to multiple Annexes and PANS are presented by subject in Attachments B to V. To facilitate your review of the proposed amendments, the rationales for the amendments have been provided in a text box immediately following each proposal. The aeronautical data catalogue, which forms part of


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Doc 10066

PANS - Aeronautical Information Management

1<sup>st</sup> Edition



This first edition of the PANS-10066 was approved by the Council on 17 October 2016 and will be published in 2017.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

# *Procedures for Air Navigation Services Aeronautical Information Management (PANS-AIM, Doc. 10066)*

## It is all about:

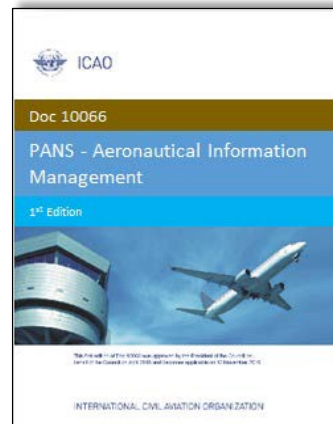
- ☐ GANP / ASBU support
- ☐ Priority no. 1 = PBN (RNP)
- ☐ CDO, CCO, AMAN/DEMAN
- ☐ Aircraft performance
- ☐ Noise reduction procedures

✈ **Therefor we need Digital AIM**

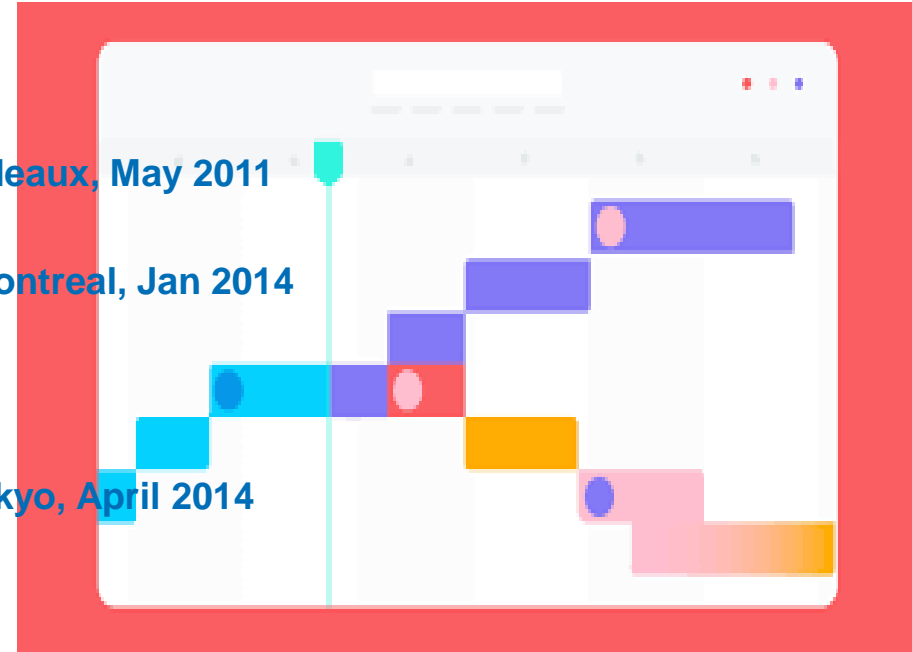


## Supports stepwise transition/migration

- ✈ **Annex = performance based SARPs**
- ✈ **PANS = technical & procedural provisions**
- ✈ **Elevate certain procedures from guidance to PANS**
- ✈ **Support data centricity with processes & procedures**
- ✈ **Support interoperability**
- ✈ **PANS deviation to be published in AIP only**
- ✈ **Best practice example is PANS-ATM (Doc 4444) which exists since 1946 (Annex 2 & 11 contain no formats)**



- ✓ Initial ideas on AIS-AIMSG/3, Montreal, Nov 2010
- ✓ ANC on site May 2011
- ✓ Ad hoc group PANS-AIM on AIS-AIMSG/4, Bordeaux, May 2011
- ✓ Data and information scope in AIS-AIMSG/7, Montreal, Jan 2014
- ✓ Since then involvement of IFPP/IWG
- ✓ Origination & Terminology on AIS-AIMSG/9, Tokyo, April 2014
- ✓ DQR on AIS-AIMSG/10, Montreal, Nov 2014
- ✓ Final on AIS-AIMSG/12 in Oct 2015 ...and more...





# Focus on:

- ✓ **Split of data origination from data publication requirements**
- ✓ **Introduction of the Aeronautical Data Catalogue**
- ✓ **Digital data sets**
- ✓ **Aeronautical information product (standard or electronic)**
- ✓ **Data quality requirements at one place (PANS-AIM)**
- ✓ **New terminology**
- ✓ **NOTAM improvement proposal**
- ✓ **CRC (Cycle redundancy Check) performance-based requirements**



## ✈ What is the Data Catalogue?

✈ Putting together the Data Catalogue

✈ Elements of the Data Catalogue

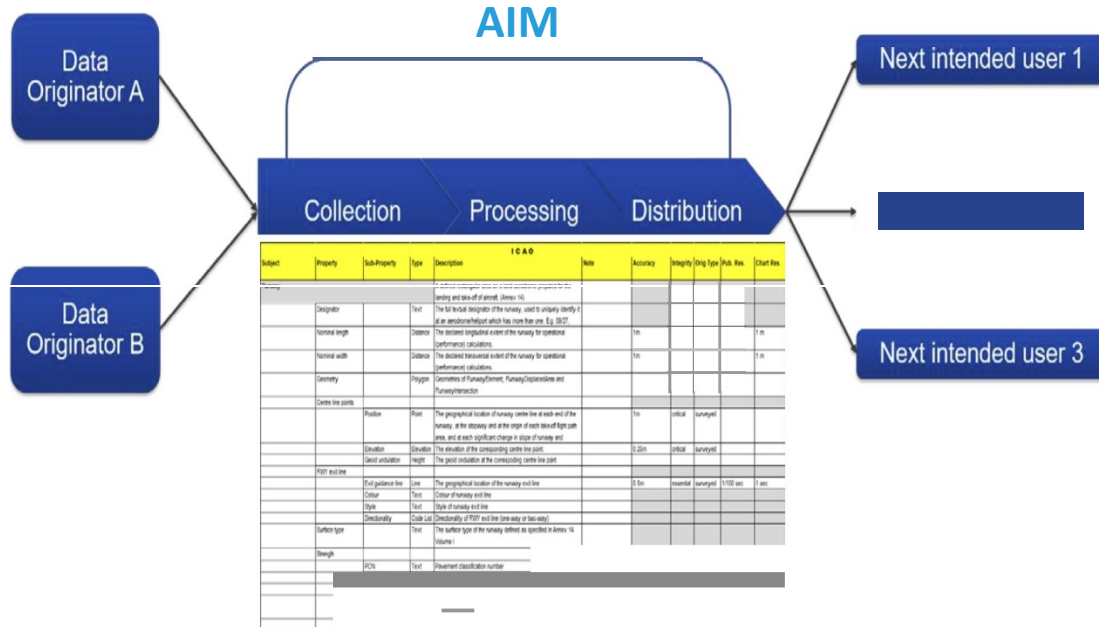
✈ Use of the Data Catalogue

✈ Data Originator Index

✈ Formal Arrangements

✈ Content of Products

✈ National Extensions





ICAO PANS-AM  
Aeronautical Data Catalogue

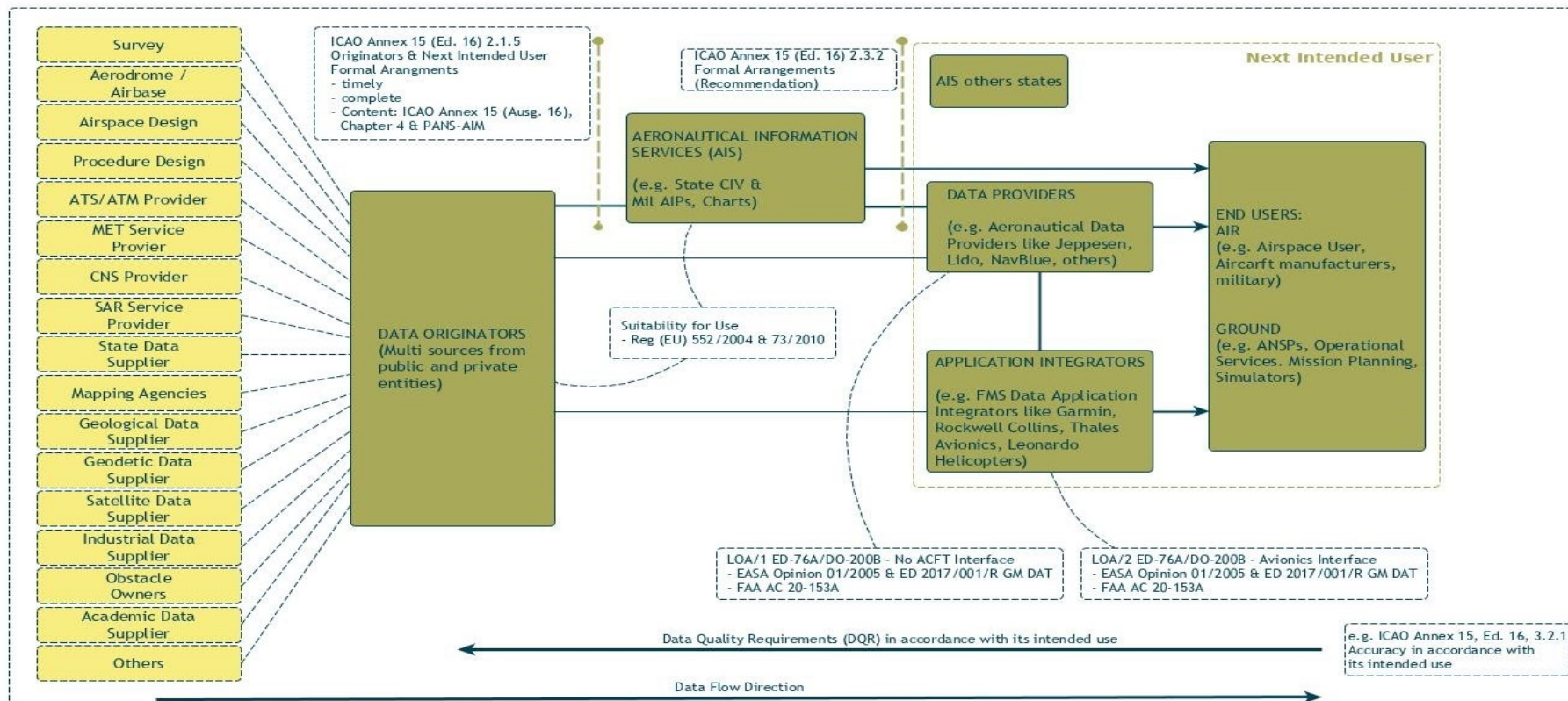
Table A 1-1 Aerodrome/Heliport data

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Runway				A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft. (Annex 14)						
	Designator		Text	The full textual designator of the runway, used to uniquely identify it at an aerodrome/heliport. E.g. 0927, 02R/20L, RWY 1.						
	Nominal length		Distance	The declared longitudinal extent of the runway for operational (performance) calculations.		1 m	critical	surveyed	1 m or 1 ft	1 m
	Nominal width		Distance	The declared transversal extent of the runway for operational (performance) calculations.		1 m	essential	surveyed	1 m or 1 ft	1 m
	Geometry		Polygon	Geometries of Runway/Element, Runway/Displaced Area and Runway/Intersection						
	Centre line points									
		Position	Point	The geographical location of runway centre line at each end of the runway, at the stopway and at the origin of each take-off flight path area, and at each significant change in slope of runway and stopway	Definition from Annex 4 3.8.4.2	1 m	critical	surveyed		
		Elevation	Elevation	The elevation of the corresponding centre line point.		0.25 m	critical	surveyed		
		Geoid undulation	Height	The geoid undulation at the corresponding centre line point						
	RWY exit line									
		Exit guidance line	Line	The geographical location of the runway exit line		0.5 m	essential	surveyed	1/100 sec	1 sec
		Colour	Text	Colour of runway exit line						
		Style	Text	Style of runway exit line						
		Directionality	Code List	Directionality of RWY exit line (one-way or two-way)						
	Surface type		Text	The surface type of the runway defined as specified in Annex 14 Volume I						
	Strength									
		PCN	Text	Pavement classification number						
		Pavement type	Text	Pavement type for aircraft classification number — pavement classification number (ACN-PCN)						
		Subgrade category	Text	Subgrade strength category						



- ✈ The Aeronautical Data Catalogue presents the scope of **data and information** that can be collected and maintained by an AIS organization
- ✈ The Aeronautical Data 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** for data originators and AIS organizations

RTCA DO-200B/EUROCAE ED-76, ICAO Annex 6 &amp; 15, EU / EASA / FAA Regulations &amp; AMCs - Overview



# Data collected by AIS

## Information Sub-Domains



### Aerodrome / Heliport

- Name
- Designator
- Served City



### Runway

- Designator
- Nominal length
- Nominal width
- Strength



### Runway direction

- Designator
- True bearing
- Threshold

Aerodrome data

Airspace data

ATS and other  
routes data

Instrument flight  
procedure data

Radio navigation  
aids/systems data

Obstacle data

Geographic data

Terrain data

Other information  
(regulations,  
services and  
procures)

## Structure of each sub-domain

Subject	Property	Sub-Property
Runway		
	Designator	
	Nominal length	
	Nominal width	
	Geometry	
	Centre line points	
		Position
		Elevation
		Geoid undulation

- The classification of an element as Subject, Property or Sub-Property does **not** impose a certain data model
- Tabs provide easy access to the different subjects



Airport-Heliport	<b>Runway</b>	TLOF-FATO	Apron-Taxiway	Communication Facilities
------------------	---------------	-----------	---------------	--------------------------

Subject	Property	Sub-Property	Type
Runway			
	Designator		Text
	Nominal length		Distance
	Nominal width		Distance
	Geometry		Polygon
	Centre line points		
		Position	Point
		Elevation	Elevation
		Geoid undulation	Height

Table A1-9. Data types		
Type	Description	Data elements
Point	A pair of coordinates (latitude and longitude) referenced to the mathematical reference ellipsoid which define the position of the point on the surface of the Earth.	Latitude Longitude Horizontal reference system Horizontal accuracy achieved
Line	Sequence of Points defining a linear object	Sequence of Points
Polygon	Sequence of Points forming the boundary of the polygon. The first and last Point are identical.	Closed sequence of Points

Property	Sub-Property	Type	Description
			A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft. (Annex 14)
Designator		Text	The full textual designator of the runway, used to uniquely identify it at an aerodrome/heliport. E.g. 09/27, 02R/20L, RWY 1.
Nominal length		Distance	The declared longitudinal extent of the runway for operational (performance) calculations.
Nominal width		Distance	The declared transversal extent of the runway for operational
Geometry		Polygon	Geometries of RunwayElement, RunwayDisplacedArea and
Centre line points			
	Position	Point	The geographical location of runway centre line at each end of the runway, at the stopway and at the origin of each take-off flight path area, and at each significant change in slope of runway and stopway
	Elevation	Elevation	The elevation of the corresponding centre line point.
	Geoid undulation	Height	The geoid undulation at the corresponding centre line point

Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
1 m	critical	surveyed	1 m or 1 ft	1 m
1 m	essential	surveyed	1 m or 1 ft	1 m
1 m	critical	surveyed		
0.25 m	critical	surveyed		

- All DQR moved from Annexes 4, 11 14 and 15 to the Data Catalogue
- “Type” is now called “Origination Type”
- Shaded fields:
  - ✈ Text
  - ✈ Code lists



# Originator Index

**Table AI-10 Information about national and local regulation, services and procedures**

1	National regulations and requirements
...	
1.3.	<b>Customs regulation and requirements</b>
1.3.1.	Name, contact information and description of the customs authorities.
1.3.2	Customs regulations and requirements concerning entry, transit and departure passengers and crew.
1.3.3	Customs regulations and requirements concerning entry, transit and departure of cargo and other articles.
1.4.	<b>Immigration regulation and requirements</b>
1.4.1.	Name, contact information and description of the immigration authorities.
1.4.2	Immigration regulations and requirements concerning entry, transit and departure passengers and crew.
1.5.	<b>Health regulation and requirements</b>
1.5.1.	Name, contact information and description of the health authorities.
1.5.2	Regulations and requirements concerning public health measures applied to aircraft on entry, transit and departure on international flights.
1.5.3	Public health regulations and requirements concerning entry, transit and departure passengers and crew.
1.6.	<b>Agricultural quarantine regulation and requirements</b>
1.6.1.	Name, contact information and description of the authorities concerned with agricultural quarantine.
1.6.2	Agricultural quarantine regulations and requirements concerning entry, transit and departure of cargo.

## Organization responsible for Origination

Ministry of Finance

Ministry of Justice

Ministry of the Interior, Public Health Department

Ministry of Agriculture

## Data to be originated by the airport is defined in Formal Arrangements:

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
				<b>ICAO</b>						
Runway				A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft. (Annex 14)						
	Designator		Text	The full textual designator of the runway, used to uniquely identify it at an aerodrome/heliport which has more than one. E.g. 09/27,						
	Nominal length		Distance	The declared longitudinal extent of the runway for operational (performance) calculations.		1m	critical	surveyed	1 m or 1 ft	1 m
	Nominal width		Distance	The declared transversal extent of the runway for operational (performance) calculations.		1m	essential	surveyed	1 m or 1 ft	1 m
	Geometry		Polygon	Geometries of RunwayElement, RunwayDisplacedArea and RunwayIntersection						
	Centre line points									
		Position	Point	The geographical location of runway centre line at each end of the runway, at the stopway and at the origin of each take-off flight path area, and at each significant change in slope of runway and		1m	critical	surveyed		
		Elevation	Elevation	The elevation of the corresponding centre line point.		0.25m	critical	surveyed		
		Geoid undulation	Height	The geoid undulation at the corresponding centre line point						
	RWY exit line									
		Exit guidance line	Line	The geographical location of the runway exit line		0.5m	essential	surveyed	1/100 sec	1 sec
		Colour	Text	Colour of runway exit line						
		Style	Text	Style of runway exit line						
		Directionality	Code List	Directionality of RWY exit line (one-way or two-way)						
	Surface type		Text	The surface type of the runway defined as specified in Annex 14 Volume I						
	Strength									
		PCN	Text	Pavement classification number						
		Pavement type	Text	Pavement type for ACN-PCN determination						
		Subgrade category	Text	Subgrade strength category						
		Allowable pressure	Text	Maximum allowable tire pressure category or maximum allowable tire pressure value						
		Evaluation method	Text	The evaluation method used						

**PANS-AIM:** Valid codes for the code lists should be defined in the formal arrangements

Subject	Property	Sub-Property	Type
Aerodrome / Heliport			
	Designator		
		ICAO location indicator	Text
		Designator IATA	Text
		Other	Text
	Name		Text
	Served city		Text
	Type of traffic permitted		
		International_national	Code list
		IFR_VFR	Code list
		Sched_nonsched	Code list
		Civil_military	Code list
		Restricted_use	Text

("INTL","NTL","INTL-NTL")

("IFR","VFR","IFR-VFR","NIL")

("S","NS","S-NS")

("CIV","MIL","GA","CIVIL-MIL","CIV-GA","MIL-GA","CIV-MIL-GA")

The **AIP data set** shall include data about the following subjects, with the properties ...

## Aerodrome/Heliport

I C A O										
Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Runway				A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft. (Annex 14)						
	Designator		Text	The full textual designator of the runway, used to uniquely identify it at an aerodrome/heliport which has more than one. E.g. 09/27.						
	Nominal length		Distance	The declared longitudinal extent of the runway for operational (performance) calculations.		1m	critical	surveyed	1 m or 1 ft	1 m
	Nominal width		Distance	The declared transversal extent of the runway for operational (performance) calculations.		1m	essential	surveyed	1 m or 1 ft	1 m
	Geometry		Polygon	Geometries of RunwayElement, RunwayDisplacedArea and RunwayIntersection						
	Centre line points									
		Position	Point	The geographical location of runway centre line at each end of the runway, at the stopway and at the origin of each take-off flight path area, and at each significant change in slope of runway and		1m	critical	surveyed		
		Elevation	Elevation	The elevation of the corresponding centre line point.		0.25m	critical	surveyed		
		Geoid undulation	Height	The geoid undulation at the corresponding centre line point						
	RWY exit line									
		Exit guidance line	Line	The geographical location of the runway exit line		0.5m	essential	surveyed	1/100 sec	1 sec
		Colour	Text	Colour of runway exit line						
		Style	Text	Style of runway exit line						
		Directionality	Code List	Directionality of RWY exit line (one-way or two-way)						
	Surface type		Text	The surface type of the runway defined as specified in Annex 14 Volume I						
	Strength									
		PCN	Text	Pavement classification number						
		Pavement type	Text	Pavement type for ACN-PCN determination						
		Subgrade category	Text	Subgrade strength category						
		Allowable pressure	Text	Maximum allowable tire pressure category or maximum allowable tire pressure value						
		Evaluation method	Text	The evaluation method used						

- ICAO location indicator
- name
- designator IATA
- served city
- certified ICAO
- certification date
- certification expiration date
- control type
- field elevation
- reference temperature
- magnetic variation
- reference point

## Example: Additional properties added for obstacles

Marking	625	Text	Type of marking of obstacle	Annex 15 App 8 Table A8-4 Annex 14 2.5.5				
Material	626	Text	Predominant surface material of the obstacle	AMDB				
Operator / Owner	995	Text	Name and Contact information of obstacle operator or owner	AIS-AIM SG 12				
Designation	Registration number	1061	Text	Registration number of obstacle in Swiss Obstacle Database	AIP, VFRM and WEGOM			
	NOTAM Nr	1062	Text	Nr of NOTAM the obstacle has first been published with	AIP, VFRM and WEGOM			
	Reference	1063	Text	Reference to aerodrome	AIP, VFRM and WEGOM			
	Runway / Area	1064	Text	Runway or AOC affected by obstacle	AIP, VFRM and WEGOM			
Coord Swissgrid		1060	Point Line	Horizontal position of obstacle in Swiss Grid coordinate system (CH1903/LV03, EPSG 21781)	VFRM			
Position Description		1067	Text	Description of the position of the obstacle relative to a map point or ARP	VFRM			



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# National Data Quality Requirements for IFR and VFR

Property	Sub-Property	ID	Type	Description	Note	Reference	Accuracy	Integrity	Origin type	Pub. Resolution	Chart Resolution	ADQ HL-	IFR Accuracy	IFR Integrity	VFR Accuracy	VFR Integrity	National Reference
Frequency		45	Value	Frequency of the station providing the service		AMDB											
Boundary		46	Polygon	Area boundary of the frequency area		AMDB											
Identifier		47	Text	The identifier of the hot spot		AMDB											
Annotation		48	Text	Additional information about the hot spot		Annex 4 13.6 h)											
Geometry		49	Polygon	The geographical area of the hot spot		Annex 4 13.6 h) AMDB							5 m	routine	5 m	routine	VFR AD INFO chart
Designator		67	Text	The full textual designator of the runway, used to uniquely identify it at an aerodrome/heliport. E.g. 03/27, 02R/20L, R/W Y L		Annex 15 App 1 AD 2.12 1) Annex 14 1 2.5.1 a)											VFR AD INFO
Nominal length		68	Distance	The declared longitudinal extent of the runway for operational (performance) calculations.		Annex 15 App 1 AD 2.12 3) Annex 14 1 2.5.1 a)	1m	critical	surveyed	1m or 1 ft	1m	LD005	1m	critical	1m	routine	VFR AD INFO
Nominal width		69	Distance	The declared transversal extent of the runway for operational (performance) calculations.		Annex 15 App 1 AD 2.12 3) Annex 14 1 2.5.1 a)	1m	essential	surveyed	1m or 1 ft	1m	LD007	1m	essential	1m	routine	VFR AD INFO
Geometry		70	Polygon	Geometries of RunwayElement, RunwayDisplacedArea and RunwayIntersection		AMDB											
Centre line points	Position	108	Point	The geographical location of runway centre line at each end of the runway, at the stopway and at the origin of each take-off flight path area, and at each significant change in slope of runway and stopway	Definition from Annex 4 3.8.4.2	Annex 14 1 App 5 A5-1 Annex 4 Ch 3 and 4, 5 AMDB	1m	critical	surveyed			LL020	1m	critical			
	Elevation	109	Elevation	The elevation of the corresponding centre line point. (See Annex 14 1 2.3.2: ---- for non-precision approaches ... any significant high and low intermediate points along the runway shall be measured to the accuracy of one-half metre or foot...)		Annex 4 1 2.3.2 Annex 14 1 App 5 A5-2 Annex 4 Ch 3 and 4, 5 AMDB	0.25 m	critical	surveyed			EH013	0.25 m	critical			
	Geoid undulation	110	Height	The geoid undulation at the corresponding centre line point		AMDB											
R/W exit line	Exit guidance line	111	Line	The geographical location of the runway exit line		Annex 14 AMDB	0.5 m	essential	surveyed	1/100 sec	1 sec	LL025	0.5 m	essential			
	Colour	112	Text	Colour of runway exit line		AMDB											
	Style	113	Text	Style of runway exit line		AMDB											
	Directionality	114	Code List	Directionality of R/W exit line (one-way or two-way)		AMDB											
Surface type		73	Text	The surface type of the runway defined as specified in Annex 14 Volume I		Annex 15 App 1 AD 2.12 4) Annex 14 1 2.5.1 a)											VFR AD INFO
Strength	PCN	115	Text	Pavement classification number		Annex 14 1 2.6.2 a)											VFR AD
	Pavement type	116	Text	Pavement type for aircraft classification number — pavement classification number (ACN-PCN) determination		Annex 14 1 2.6.2 b)											VFR AD INFO
	Subgrade category	117	Text	Subgrade strength category		Annex 14 1 2.6.2 c)											VFR AD
	Allowable pressure	118	Text	Maximum allowable tire pressure category or maximum allowable tire pressure value		Annex 14 1 2.6.2 c)											VFR AD INFO
	Evaluation method	119	Text	The evaluation method used		Annex 14 1 2.6.2 c)											VFR AD
	MPW	1065	Value	Runway strength in MPW (maximum permissible weight) for asphalt and concrete runways		VFRM											VFR AD INFO
	MPA	1066	Value	Runway strength in MPA (Max. tire pressure) for grass runways		VFRM											VFR AD INFO
Strip	Length	120	Distance	The longitudinal extent of the runway strip.		Annex 15 App 1 AD 2.12 10) Annex 14 1 2.5.1 b)							1m	routine			
	Width	121	Distance	The transversal extent of the runway strip.		Annex 15 App 1 AD							1m	routine			

# Trends – AIM

- ✈ **Data Centric Approach**
- ✈ **Data Sets instead of AIP pages**
- ✈ **Incentives for States**
- ✈ **3 Types of Services**
- ✈ **Data Chain: Origination AIS Next Intended User**
- ✈ **New Annex 15 totally restructured**
- ✈ **New PANS-AIM / Data Catalogue**
- ✈ **4 Volumes AIS Manual**







## The Aeronautical Data Catalogue in PANS-AIM:

- Provides a description of aeronautical data □ defines the data quality requirements
- Consolidates the aeronautical data to be collected and maintained by an AIS
- Facilitates formal arrangements
- Enables national and regional extensions
- is not just an ICAO SARP, but a tool to ease your job



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and Caribbean  
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[SAM] Office  
Lima

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Montréal

Western and  
Central African  
[WACAF] Office  
Dakar

European and  
North Atlantic  
[EUR/NAT] Office  
Paris

Middle East  
[MID] Office  
Cairo

Eastern and  
Southern African  
[ESAF] Office  
Nairobi

Asia and Pacific  
[APAC] Sub-office  
Beijing

Asia and Pacific  
[APAC] Office  
Bangkok



THANK YOU