



| ICAO

CAPACITY & EFFICIENCY

CATALOGO DE DATOS AERONAUTICOS

AIM RO

Oficina NACC OACI

México/Octubre 2018





Carta a los Estados: La identificación y comprensión de lo que es NUEVO es lo más importante



International Civil Aviation Organization | Organisation de l'Aviation Civile Internationale | Organización de Aviación Civil Internacional | منظمة الطيران المدني الدولي | 國際民用航空組織

Tel.: +1 514-954-8219 ext. 5872 | Ref.: AN 22.1.1-1/22 | 21 April 2017

Subject: Proposed amendment to Annex 15, new PANS-ADM 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/Madam,

1. I have the honour to inform you that the Air Navigation Commission, at the sixth meeting of its 2016th 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-ADM) 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 — 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 — Heliports, 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-COPS, 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-ADM 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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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



Doc 10066

PANS - Aeronautical Information Management

1st Edition



This File will be ATIS 83000 non-approved by the Council of the ICAO on 14 April 2016 and will be approved on 15 November 2016.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Procedimientos para los servicios de navegación aérea de la gestión de la información aeronáutica de (PANS-AIM Doc. 10066)

Todo es sobre:

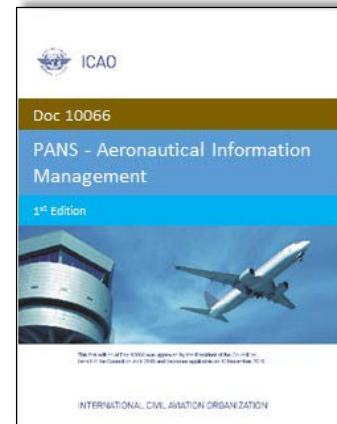
- Soporte GANP / ASBU
- Prioridad no. 1 = PBN (RNP)
- CDO, CCO, AMAN / DEMAN
- Rendimiento de la aeronave.
- Procedimientos de reducción de ruido

✓ Para eso necesitamos la AIM digital



Apoya la transición / migración por pasos

- ✈ Anexo = SARPS basados en el desempeño
- ✈ PANS = disposiciones técnicas y de procedimiento.
- ✈ Elevar ciertos procedimientos de orientación a PANS.
- ✈ Soporte a la **centricidad de datos** con procesos y procedimientos.
- ✈ Soporte de interoperabilidad.
- ✈ La desviación de PANS se publicará solo en AIP
- ✈ El ejemplo de mejores prácticas es PANS-ATM (Doc. 4444), que existe desde 1946 (el Anexo 2 y 11 no contienen formatos)



- ✓ Ideas iniciales sobre AIS-AIMSG / 3, Montreal, noviembre de 2010
- ✓ ANC en el sitio de mayo de 2011
- ✓ Grupo ad hoc PANS-AIM sobre AIS-AIMSG / 4, Burdeos, mayo de 2011
- ✓ Alcance de datos e información en AIS-AIMSG / 7, Montreal, enero de 2014
- ✓ Desde entonces participación de IFPP / IWG.
- ✓ Origen y terminología en AIS-AIMSG / 9, Tokio, abril de 2014
- ✓ DQR en AIS-AIMSG / 10, Montreal, noviembre de 2014
- ✓ Final sobre AIS-AIMSG / 12 en octubre de 2015 ... y más ...





Concentrarse en:

- ✓ División del origen de datos a partir de los requisitos de publicación de datos.
- ✓ Introducción del Catálogo de Datos Aeronáuticos.
- ✓ Conjuntos de datos digitales.
- ✓ Producto de información aeronáutica (estándar o electrónico).
- ✓ Requisitos de calidad de datos en un solo lugar (PANS-AIM)
- ✓ Nueva terminología.
- ✓ Propuesta de mejora de NOTAM.
- ✓ Requisitos basados en el rendimiento de CRC (Cycle redundancy Check)





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. 09/27, 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						

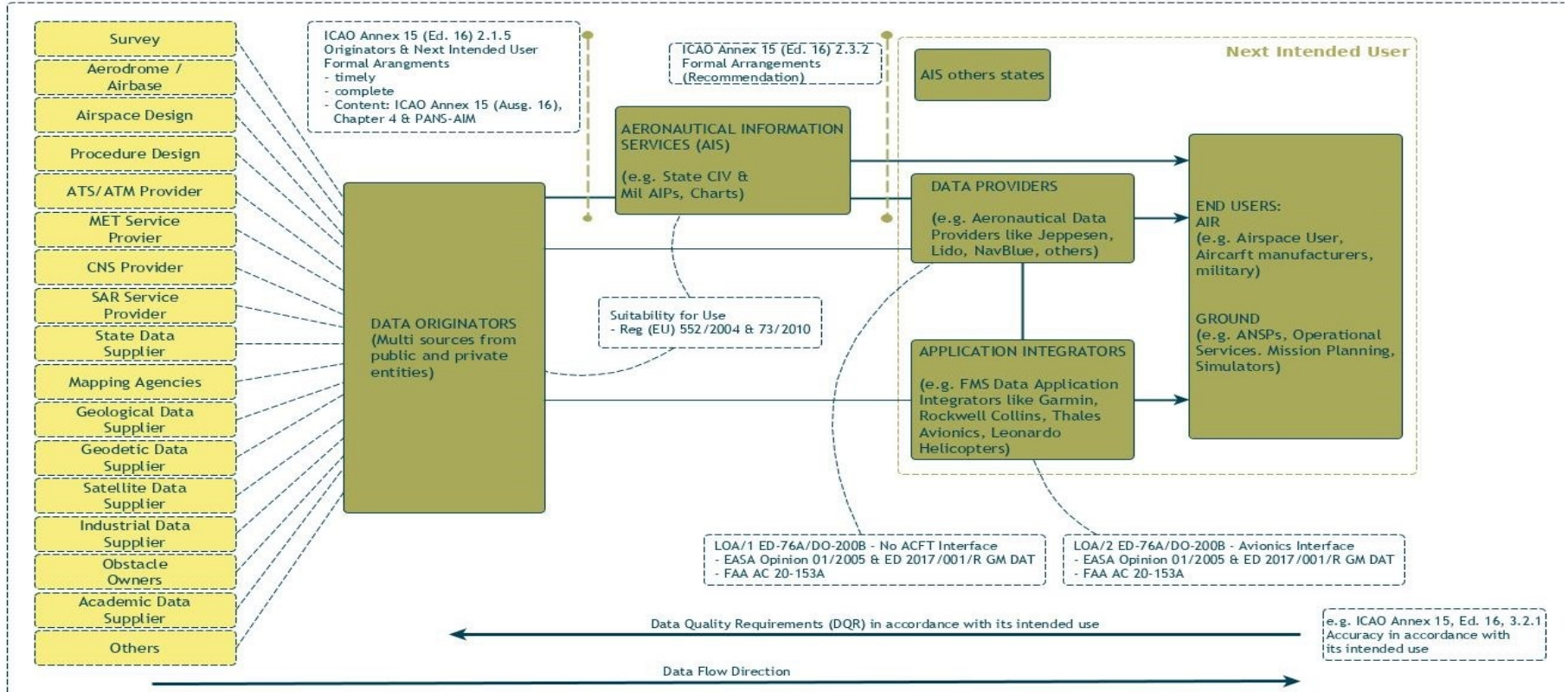


- ✈ El Catálogo de datos aeronáuticos presenta el alcance de **los datos y la información** que una organización AIS puede recopilar y mantener.
- ✈ El Catálogo de Datos Aeronáuticos:
 - ✈ simboliza el cambio de entornos centrados en el producto a entornos **centrados en los datos**,
 - ✈ se considera el punto de referencia para todas las disposiciones relacionadas con la creación y publicación de datos aeronáuticos y
 - ✈ representa **el lenguaje común** para los creadores de datos y las organizaciones AIS.



Enfoque: Procesos y cadenas de datos

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



Datos recogidos por AIS

➤ Aeródromo / Helipuerto

- Nombre
- Designador
- Ciudad servida

➤ Pista

- Designador
- Longitud nominal
- Ancho nominal
- Fuerza

➤ Dirección de la pista

- Designador
- Cojinete verdadero
- Límite

Subdominios de información

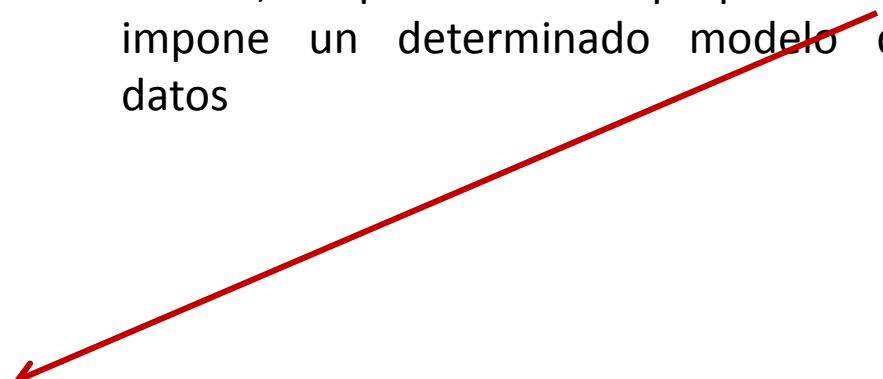
Aerodrome data	Airspace data	ATS and other routes data
Instrument flight procedure data	Radio navigation aids/systems data	Obstacle data
Geographic data	Terrain data	Other information (regulations, services and procures)



Estructura de cada subdominio

Subject	Property	Sub-Property
Runway		
	Designator	
	Nominal length	
	Nominal width	
	Geometry	
	Centre line points	
		Position
		Elevation
		Geoid undulation
Airport-Heliport	Runway	TLOF-FATO Apron-Taxiway Communication Facilities

- Las pestañas proporcionan un fácil acceso a los diferentes temas
- La clasificación de un elemento como Asunto, Propiedad o Sub-propiedad **no** impone un determinado modelo de datos





Tipos de datos

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



Requerimientos de la Calidad de Datos (DQR)

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		

- Todos los DQR se movieron desde los Anexos 4, 11 14 y 15 a el Catálogo de Datos
- “Tipo” es ahora llamado “Tipo de Originación”
- Campos sombreados:
 - ✈ Texto
 - ✈ Listas de Códigos

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

1	National regulations and requirements
...	
1.3.	Customs regulation and requirements
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.	Immigration regulation and requirements
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.	Health regulation and requirements
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.	Agricultural quarantine regulation and requirements
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.

Organización de responsable por Originación

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:

ICAO										
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						

PANS-AIM: Los códigos válidos para las listas de códigos deben definirse en los acuerdos formales

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")



El conjunto de datos AIP incluirá datos sobre los siguientes temas, con las propiedades ...

Aeródromo/Helipuerto

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						

- Indicador de ubicación de la OACI
- nombre
- designador IATA
- ciudad servida
- certificado por la OACI
- fecha de certificación
- fecha de vencimiento de la certificación
- tipo de control
- elevación del campo
- temperatura de referencia
- variación magnética
- punto de referencia



Ejemplo: propiedades adicionales agregadas para obstáculos

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				



Requisitos de Calidad de Datos Nacionales para IFR y 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. 09/27, 02R/20L, RWY 1.		Annex 15 App 1 AD 2.12 1) Annex 14 I 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 I 2.5.1 a)	1m	critical	surveyed	1m or 1ft	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 I 2.5.1 a)	1m	essential	surveyed	1m or 1ft	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 I 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 I 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 I 2.3.2 Annex 14 I 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											
RWY 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 RWY 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 I 2.5.1 a)											VFR AD INFO
Strength	PCN	115	Text	Pavement classification number		Annex 14 I 2.6.2 a)											VFR AD
	Pavement type	116	Text	Pavement type for aircraft classification number — pavement classification number (ACN-PCN) determination		Annex 14 I 2.6.2 b)											VFR AD INFO
	Subgrade category	117	Text	Subgrade strength category		Annex 14 I 2.6.2 c)											VFR AD
	Allowable pressure	118	Text	Maximum allowable tire pressure category or maximum allowable tire pressure value		Annex 14 I 2.6.2 c)											VFR AD INFO
	Evaluation method	119	Text	The evaluation method used		Annex 14 I 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 I 2.5.1 b)							1m	routine			
	Width	121	Distance	The transversal extent of the runway strip.		Annex 15 App 1 AD							1m	routine			



Tendencias - AIM

- ✈ Enfoque centrado en los datos
- ✈ Conjuntos de datos en lugar de páginas AIP
- ✈ Incentivos para los Estados
- ✈ 3 tipos de servicios
- ✈ Cadena de datos: Origenación AIS Próximo usuario deseado
- ✈ Nuevo Anexo 15 totalmente reestructurado.
- ✈ Nuevo PANS-AIM / Catálogo de datos
- ✈ 4 volúmenes de manual de AIS





El Catálogo de Datos Aeronáuticos en PANS-AIM:

- Proporciona una descripción de los datos aeronáuticos
- define los requisitos de calidad de los datos
- Consolida los datos aeronáuticos que un AIS recopilará y mantendrá
- Facilita arreglos formales
- Permite extensiones nacionales y regionales
- **no es solo un SARP de la OACI, sino una herramienta para facilitar su trabajo**



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CAPACITY & EFFICIENCY



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Central African
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Dakar

European and
North Atlantic
[EUR/NAT] Office
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Southern African
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Asia and Pacific
[APAC] Sub-office
Beijing

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