



MALDIVES CIVIL AVIATION AUTHORITY
Republic of Maldives

AIR SAFETY CIRCULAR
ASC 139 - II

Guidance on Aerodrome Certification for Prospective
Aerodrome Certificate Holders

Issue 1.00, 31 March 2021

AERODROME CERTIFICATION GUIDANCE FOR PROSPECTIVE AERODROME CERTIFICATE HOLDERS

1 Applicability

- 1.1 MCAR 139 requires operator of an aerodrome intended for public use, and where the passenger seating capacity of the aircraft employed in the operations exceed 30 seats, shall in accordance with the national requirement be in possession of an aerodrome certificate.
- 1.2 When an aerodrome is granted a certificate, it signifies to aircraft operators and other organizations operating on the aerodrome that, at the time of certification, the aerodrome meets the specifications regarding the facility and its operation, and that it has, according to the certifying authority the capability to maintain these specifications for the period of validity of the certificate.
- 1.3 The certification process also establishes the baseline for continued monitoring of compliance with the specifications. Information on the status of certification of aerodromes would need to be provided to the appropriate aeronautical information services for promulgation in the Aeronautical Information Publication (AIP).
- 1.4 In order to carry out its responsibilities in accordance with MCAR 139, the Maldives Civil Aviation Authority (MCAA) has developed a formal process for the certification of Aerodromes. That process is described in the following paragraphs.

2 Timescale for processing of Applications

- 2.1 CAA will require a minimum of 30 days to process each completed application for Stage 1, 2 and 3 (minimum 90days), to grant Aerodrome Certificate to the applicant.

3 Service Fees for Aerodrome Certificate

- 3.1 Applicants must pay Service Fees, as published by the CAA and varied from time to time, in respect of an Aerodrome Certificate:
 - a) upon submission of an application for an Aerodrome Certificate; and
 - b) on a periodic basis after the grant of an Aerodrome Certificate.

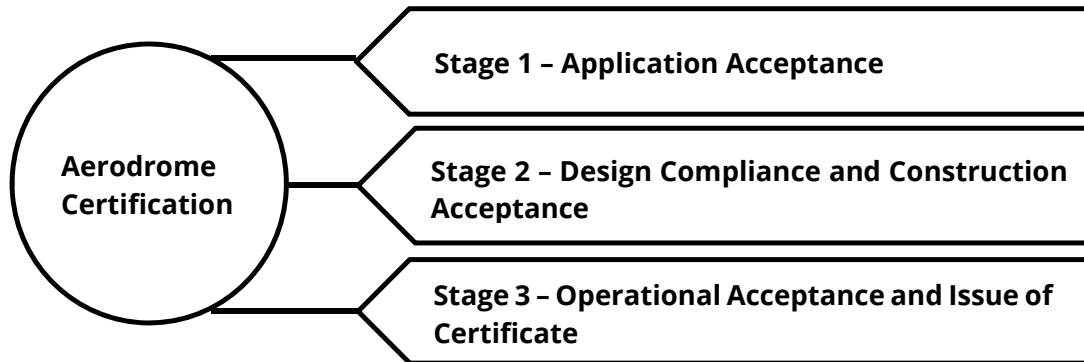
4 Permissions and Approvals

- 4.1 It is the responsibility of the aerodrome operator to obtain necessary permissions/consents and approvals from any other relevant authority outside of the CAA, as maybe be appropriate.
- 4.2 Aerodromes used for international operations may also require approvals from other government or supporting national authorities.
- 4.3 If Air Navigation Services such as Air Traffic Control; Communication, Navigation & Surveillance; Meteorology; or Aeronautical Information Services are to be provided at the aerodrome, additional approvals may be required.

- 4.4 The aerodrome operator may also require appropriate approvals from other bodies such as local authorities for planning/building permissions.
- 4.2 The aerodrome operator shall provide evidence of the above permissions and approvals to the CAA.

5 Aerodrome Certification Process

- 5.1 This guidance reflects Certification process based on three milestones:



Note: Attachment A contains the Sample Application Letter for all 3 stages.

6 Aerodrome Certification - Stage 1 - Application Acceptance

- 6.1 The purpose of the Stage 1 acceptance is to allow the applicant to commence detailed planning for a new aerodrome (normally after bid processing and rewarding is completed by the relevant national agency), or compliance assessment of an existing aerodrome.
- A Stage 1 submission is not an authorization for the applicant to commence physical work or aircraft operations.
- 6.2 The applicant shall complete the details required in the application form and submit an application for Stage 1 acceptance.
- 6.3 Stage 1 submission requirements include the following:
- a) nominated representative as a point of contact for the application;
 - b) details of the intended scope of operations; aerodrome concept design details, type of aircraft intended for the operation (Design Aircraft); Proposed routes, including geographical tracks, minimum flight altitudes, destination and alternate aerodromes to be used including data on instrument approach procedures, proposed aerodrome operating minima, navigation and communications facilities; Nature of operations passenger/cargo/mail, day, night, VFR or IFR, International operations/domestic operations;
 - c) Passenger Terminal facility design and drawings incorporating Customs, Immigration & Quarantine (CIQ) requirements for international operations;
 - d) Provision of ANS services.

The Aerodrome should have the means and equipment to provide Air Traffic Control Services: -

As such the unit providing Aerodrome Control or Flight Information Services must be adequately equipped to provide meteorological and other necessary data related to that aerodrome.

As a minimum the following ATS requirements (Infrastructure and Operational) shall be made available:

- a) A Tower or at least a designated building with clear view of the manoeuvring area and the aerodrome circuit must be ensured
- b) VHF communication radios, including emergency radio and backup radio
- c) When direct pilot-controller two-way radiotelephony or data link communications are used for the provision of air traffic control service, recording facilities shall be provided on all such air-ground communication channels.
- d) Temperature and Dew Point Equipment/ Barometer or Automated Weather System approved and calibrated by Maldives Meteorological Service.
- e) Landline communication system
- f) Back up power source for essential equipment, i.e., radios
- g) operable binoculars (7x50 or greater)
- h) Signal light gun with a back-up power source
- i) 24-hour clock with seconds display, i.e. digital LED
- j) Crash Alarm
- k) Easily accessible rest room with attached toilet, within the tower building.
- l) Accommodation facility for at least two controllers close to the tower

Note: Minimum of 12 months notification is required for the ANS provider to recruit and train ATS personnel for New Aerodromes.

- e) Arrangements for maintenance and inspection of aircraft and associated equipment if provided;
- f) Arrangements for Aerodrome operational staff, training and qualification;
- g) Installations and equipment available for ground handling services if provided;
- h) Desired date for operation to commence;
- i) Land Lease Agreements and Government approvals, a copy of the lease agreement for the land use and copy of any agreements entered into by the applicant with the Government of Maldives in relation to the operation of the Aerodrome, if applicable;

- j) Environmental Impact Assessments, EIA will cover the environment and socio-economic impacts arising from the project and outlines measures to mitigate these impacts in accordance with Maldives legislations and policies.
 - k) Any other approvals, permits, or clearances from other relevant authorities.
- 6.4 The applicant should initiate a meeting with the CAA to discuss the application and the contents of the submission.
- Note: It is anticipated that throughout the acceptance process, additional meetings may be necessary and beneficial to both the CAA and the applicant. Such meetings may be arranged at the request of either party.
- 6.5 At the meeting, the applicant should present any approvals, permits or clearances obtained from other relevant authorities.
- 6.6 The CAA may ask for clarification or additional information if the information provided is deemed incomplete or inadequate.
- 6.7 The CAA will provide an acceptance of the Stage 1 application following the evaluation of the application and meeting with the applicant.

7 Aerodrome Certification - Stage 2 – Design Compliance and Construction

- 7.1 The purpose of the Stage 2 acceptance is to allow the applicant to commence actual construction or remedial works. The Stage 2 submission will provide details on the proposed or existing physical characteristics of the aerodrome.
- 7.2 The applicant shall submit an application for Stage 2 acceptance.
- 7.3 For an existing aerodrome the applicant should conduct an assessment of the facility against the applicable physical characteristic requirements contained in Maldives Civil Aviation Regulations.
- 7.4 If the facility does not meet the applicable physical characteristic requirements, then a Stage 2 application should be submitted together with an action plan showing what actions are to be undertaken in order for the aerodrome to comply.
- 7.5 The Stage 2 submission requirements include the following:
- a) completed Stage 2 application form;
 - b) a compliance matrix demonstrating compliance with CAA regulations with regard to the physical characteristics and visual aids appropriate to the scope and scale of the proposed operations;
 - c) drawings to support the compliance matrix;
 - d) an action plan showing what actions are to be undertaken in order for the aerodrome to comply with CAA regulations, if necessary;
 - e) an obstacle limitation surface assessment with an action plan indicating the action to be taken to mitigate any identified obstacles; and
 - f) evidence of payment of the Service Fee as prescribed by CAA.

- 7.6 An Independent Engineer shall be appointed for the purpose of ensuring compliance with planning approvals and standards with respect to Aerodrome development.

Note: "Independent Engineer or IE" means the person or team, depending on the vastness of the project, that shall control and approve the Designs and supervise the Project's Constructions during the Design - Construction Period, in accordance with IE Agreement and the more specific terms of the Project.

- 7.7 The CAA may ask for clarification or additional information if the information provided within the Stage 2 submission is deemed incomplete or inadequate.
- 7.8 The CAA will provide a full acceptance of the Stage 2 application further to the evaluation of the application, compliance matrix and the detail provided within the construction drawings.

8 Aerodrome Certification - Stage 3 – Operational Acceptance

- 8.1 The purpose of the Stage 3 acceptance is to provide the applicant with an operational acceptance of the aerodrome and for aircraft operations to commence.
- 8.2 The Stage 3 submission provides information on the completed aerodrome along with the Aerodrome Manual, final compliance matrix and other supporting documentation.
- 8.3 The applicant shall submit an application for Stage 3 acceptance.
- 8.4 The Stage 3 submission requirements include the following:
- a) evidence that any actions identified during the self-assessment process have been completed (self-assessment checklist ref: Attachment C);
 - b) a final compliance matrix;
 - c) as-built drawings/photographs to support the compliance matrix;
 - d) a compliant and functional final version of the Aerodrome Manual;
 - e) a completed Aerodrome Manual Checklist (applicant's self-checklist);
 - f) a completed Data Catalogue in accordance with ICAO PANS AIM Doc 1066. The Data Catalogue is a reference of the aeronautical data subjects, properties and sub-properties organized in:
 - i) Aerodrome data;
 - ii) Airspace data;
 - iii) ATS and other routes data;
 - iv) Instrument flight procedure data;
 - v) Radio navigation aids/systems data;
 - vi) Obstacle data; and
 - vii) Geographic data;

Note: Aerodrome data quality requirements (accuracy, integrity & resolutions) should meet World Geoid System 84 (WGS84) requirements and shall be reflected in the Service level

agreement with the Aeronautical Information Services (AIS) provider. For Data Catalogue format, refer to Attachment E of this circular.

- g) Engineering report (Pavement Strength evaluation report) and Aerodrome Data survey reports (in WGS format) of the physical characteristics of the movement area, obstacle limitation surfaces, etc., stamped by a licensed Surveyor/Engineer;
- h) evidence that all Security, Emergency planning and any requirements relating to the provision of Air Navigation Services have been satisfied;
- i) confirmation that any required Post Holders have been accepted by the CAA (ref: Attachment D);
- j) Service level Agreement with ATS provider & Unit Operating Instructions;
- k) Service level agreement with AIS provider;
- l) Aerodrome Insurance;
- m) Master Plan:

The aim of a master plan is to provide guidelines for the airport development which will satisfy aviation demand in a financially feasible manner in the development phases and in the future expansions, while at the same time resolving the aviation, environmental and socio-economic issues existing in the community. The master plan should contain a schedule of priorities including a phased implementation and be reviewed periodically to take in to account current and future aerodrome traffic.

Master plan should include:

- i) Overview of the business (products and services);
- ii) Market review and competition (e.g. local and regional demand/supply, alternative modes of transportation);
- iii) Strategic plan (operations management, marketing, human capital development);
- iv) Revenue and cost drivers;
- v) Benefits for the nation and risks;
- vi) Projection of airport charges from aeronautical operations (e.g. Landing, parking, aerobridges etc.);
- vii) Breakdown of income from non-aeronautical activities and other non-airport activities;
- viii) Breakdown of operation cost structure (e.g. staff cost, utilities, maintenance, lease, user fee, administrative) and CapEx plan;

Reference: Airport Planning Manual (ICAO Doc 9184, Part 1 — Master Planning)

- n) any other documents or evidence as requested by the CAA.

8.5 The CAA will conduct an audit of the facilities and equipment, including sampling of policies and procedures and other related safety activities.

- 8.6 The aim of the audit is to verify compliance with the applicable requirements, through the examination of documentation, demonstration of compliance and technical inspections. It should be noted that the CAA audit, inspection, testing or sampling processes do not absolve the applicant from the responsibility to provide accurate information and documentary evidence.
- 8.7 The CAA will produce an audit report identifying any shortfalls in compliance.
If shortfalls in compliance are identified during the audit, the applicant will be required to provide an acceptance confirmation of the audit report together with an action plan with timescales to rectify or mitigate all findings to a level acceptable to the CAA.
- 8.8 The CAA will only issue an Aerodrome Certificate when completely satisfied that all regulatory and critical safety elements have been adequately addressed. This may also include evidence of any approvals or permissions from relevant authorities mentioned in Stage 1.

For the Civil Aviation Authority

Hussain Jaleel

Chief Executive

Attachment A — Sample Application letter

Applications shall be addressed to the Chief Executive and submitted by post or hand delivered to:

*Maldives Civil Aviation Authority
2nd floor, Velaanaage
Ameeru Ahmed Magu
Male' 20096
Republic of Maldives*

Title

The application should be titled "An Application for Aerodrome Certificate – by (full registered name of the company)".

Aerodrome Certification Stage1/ Stage2/ Stage3

Please accept this document as a formal application for the issuance of an Aerodrome Certificate please elaborate, providing details and rationale relating to the application.....and relevant Stage#)

(Signature)

Print Name:

Status of signatory:

Contact Details of Applicant

Applicants are to provide the names of the heads of the following components of the organization, together with postal and street addresses, telephone and facsimile numbers and email address if available. (ref: Attachment B)

Attached Documents

Please provide a table of contents identifying all attached documents in accordance with the relevant part of the application.

The pages of an application should be consecutively numbered and paragraphs should be titled identically with the corresponding items in this guide.

Note:

The original of the application shall be signed:

- by the applicant, if an individual who is the sole owner
- if a registered company or corporation, by an officer or officers of the company or corporation duly authorized to submit such application on behalf of the company or corporation.

The status of the signatory must be indicated in terms of one of the above business structure.

Attachment B — Applicant Details

1.1	Name of Applicant	
1.2	Contact Number	
1.3	Head Office	
	Name	
	Company Registration number	
	Nominated contact and position within organization	
	Street address	
	Postal address (If different to Street Address)	
	Phone	
	(include area code)	
	Fax	
	Email	
1.4 Operating Headquarters (if different to above)		
	Name	
	Nominated contact and position within organization	
	Street address	
	Postal address (If different to Street Address)	
	Phone	
	(include area code)	
	Fax	
	Email	

Documentation required relating to the establishment of the company

- i) Attested Copy of Certification of incorporation including company name and number
- ii) Attested Company Memorandum and Articles of Association
- iii) Attested Business Registration name

Attachment C — Self-Assessment Checklist

No	Core Item	Yes	No	NA
1	PHYSICAL CHARACTERISTICS			
1.1	Runway Pavement completed			
1.2	Runway Shoulders(graded)			
1.3	Runway Turn pads			
1.4	Runway Strips			
1.5	Runway Strip Graded & Cleared			
1.6	Aiming Point / TDZ			
1.7	Provision of RESA			
1.8	Taxiways			
1.9	Taxiway shoulders (graded)			
1.10	Taxiway Strips (if applicable)			
1.11	Apron			
1.12	Vehicle access roads			
1.13	Fencing			
1.14	Security lighting			
1.15	Perimeter road (if available)			
1.16	Terminal Infrastructure completed			
2	APRON MANAGEMENT			
2.1	Apron Markings			
2.2	Aircraft Parking Areas			
2.3	Apron Equipment			
2.4	Turnaround Procedures			
2.5	Visual Docking Guidance Systems (if available)			
2.6	FOD Control mechanism			
2.8	Marshalling arrangement			
3	VISUAL AIDS FOR NAGIVATION			
3.1	Wind direction indicator			
3.2	Signalling lamp			
4	MARKINGS			
4.1	Runway Designation Marking			
4.2	Runway Centreline Markings			
4.3	Threshold Marking			
4.4	Aiming point marking			
4.5	Touchdown zone marking			
4.6	Runway side stripe marking			
4.7	Runway turn pad markings			
4.8	Runway holding position marking			
4.9	Intermediate holding position marking			NA
4.10	VOR Aerodrome checkpoint marking (if applicable)			
4.11	Displaced threshold marking (if applicable)			
4.12	Aircraft Stand Marking			
4.13	Apron Safety Lines			
4.14	Road holding position marking			
4.15	Mandatory Instruction Marking			
4.16	Information Marking			

No	Core Item	Yes	No	NA
5	LIGHTS			
5.1	Runway threshold identification lights (if applicable)			
5.2	Runway edge lights			
5.3	Runway End Lights			
5.4	Runway threshold and wind bar lights			
5.5	Taxiway edge lights (if applicable)			
5.6	Runway turn pad lights			
5.7	Apron floodlighting			
5.8	Runway centreline light (if applicable)			
5.9	Runway touchdown zone lights (if applicable)			
5.10	Approach Lighting system (if applicable)			
5.11	Aeronautical Beacons (if applicable)			
5.12	Alternate Power Switch-Over Times			
5.13	PAPI			
5.14	PAPI Checks (location & survey)			
5.15	Flight Checks			
6	RUNWAY SURFACE FRICTION			
6.1	Runway Surface Friction Assessments (for existing runways)			
6.2	Procedures / Documentation			
7	OBSTACLE RESTRICTION AND REMOVAL			
7.1	Obstacles clear of OLS			
7.2	Obstacles identified and surveyed			
7.3	Obstacles marked as per the requirement			
8	WILDLIFE HAZARD CONTROL & HABITAT MANAGEMENT			
8.1	Wildlife Hazard Management Plan			
8.2	Equipment, vehicle and dispersal techniques			
9	RESCUE AND FIRE FIGHTING SERVICES			
9.1	Level of protection provided:	(insert category here)		
	AIRPORT FACILITIES			
9.2	Emergency Access Roads			
9.3	Emergency Access Gates Identification			
9.4	Auxiliary Water Supplies (replenishment mechanism)			
	COMMUNICATION			
9.5	Direct Line ATC - Watchroom			
9.6	RFS Alerting System			
9.7	External Emergency Communication Facilities			
9.8	RFS Internal Comms Facilities			
9.9	Radio Communication (Appliances)			
9.10	Communications (Portable)			
	RESCUE & FIREFIGHTING VEHICLES			
9.11	Procurement of Vehicles			
	NUMBER OF VEHICLES FOR CATEGORY	(insert no.s here)		
9.13	Vehicle Certification / Calibration			
9.14	Vehicle Daily Testing & Recording			
9.15	Vehicle Overall Condition - Satisfactory			
9.16	Vehicle Equipment Locker Storage			

No	Core Item	Yes	No	NA
9.17	Vehicle Maintenance Records			
9.18	Vehicle Foam Testing Records			
9.19	Specialist Vehicles/vessel (Difficult Terrain)			
	PERSONAL PROTECTIVE EQUIPMENT (CLOTHING)			
9.20	PPE Procurement			
9.21	Adequate No. PPE availability			
9.22	PPE Inspection Records			
9.23	PPE Storage (Drying Room)			
	RESPIRATORY PROTECTIVE EQUIPMENT			
9.24	Breathing Apparatus Sets			
9.25	Breathing Apparatus Cylinders			
9.26	Storage & Servicing Facilities			
9.27	Foam Testing facilities			
9.28	Testing & Inspection Records			
9.29	Breathing Apparatus Cylinder Recharge			
9.30	Induction Training / Assessing Process			
9.31	Respirators (Post Fire Protection)			
9.32	Respirator Records & Procedures			
	FIREFIGHTING AGENTS			
9.33	Storage Facilities			
9.34	Foam Certification of Conformity			
9.35	Foam Storage (200%) Facilities			
9.36	Appliance Replenishment Process (Foam)			
9.37	Foam Environmental Considerations			
9.38	Complementary Media storage (200%) Facilities			
9.39	Appliance Replenishment Process (Comp)			
9.40	Training in the application of Foam / Equipment			
9.41	Training on the use of Complementary Media			
	FIRE STATION			
9.42	Infrastructure Completion			
9.43	Domestic Facilities			
9.44	Watchroom Facilities / Observation / Staffing			
9.45	Station Alarm & Alerting System			
9.46	PA systems			
9.47	Training/Lecture Room			
9.48	BA Servicing Facilities			
9.49	Equipment Storage Facilities			
9.50	Equipment Maintenance Facilities			
10	MEDICAL SERVICES			
10.1	Medical Clinic / First Aid Room Provided			
10.2	Ambulance Provided / Alternate means			
10.3	First Aid Training			
10.4	Medical Equipment provided			

No	Core Item	Yes	No	NA
11	PERSONNEL			
11.1	Organizational Chart			
11.2	Key personnel Identified			
11.3	Training Needs Identified and Training Programme developed			
12	TERMINAL SERVICES AND RELATED FACILITIES			
12.1	Check-in services and facilities (based on per hour pax capacity)			
12.2	Security Inspection area (based on per hour pax capacity)			
12.3	Seating capacity and arrangements at Gate lounges and other waiting areas			
12.4	Inbound baggage systems, including reclaiming services and facilities			
12.5	Baggage Trolleys Numbers and retrieval mechanism (based on per hour pax capacity)			
12.6	Flight Information, signage and public address systems			
12.7	Washrooms			
12.8	Portable water within the terminal area			
12.9	Access to and within the airport <ul style="list-style-type: none"> - pathways, Jetties - Convenience for Passenger with Reduced Mobility (PRM) and elderly passengers 			
12.10	First Aid <ul style="list-style-type: none"> - Trained personal - Medical room with access to both departure and arrival - Medicine, Oxygen, wheelchair, beds - Arrangement with Island/Regional hospital 			
13	CERTIFICATION DOCUMENTATION			
13.1	Aerodrome Manual			
13.2	Airport Emergency Plan			
13.3	SMS Manual			
13.4	Aerodrome Data Survey Report (WGS 84)			
13.5	Aerodrome Boundary Map			
13.6	Aerodrome Lease/Management Agreements			
13.7	Pavement Strength evaluation report			
13.8	Terminal Services functional Chart			
13.9	Terminal floor plan			
13.10	Aerodrome Insurance			
13.11	Approved Airport Security Programme			
13.12	Wildlife Management Programme			
13.13	Preventative Maintenance Programme			
13.14	Staff Training Programme			
13.15	Aerodrome Reporting			
13.16	Runway Surface Condition reporting			
13.17	Drug Testing Programme			
13.18	Runway Works Safety			
13.19	Runway Friction assessment			

Attachment D — Confirmation of Aerodrome Details and Key Personnel – Including Aerodrome Post Holders

Name and Address of Aerodrome:		
Name & Address		
Telephone:	Fax:	Email:

Name and Address of Aerodrome Operator:		
Name & Address		
Telephone:	Fax:	Email:

Accountable Manager				
Name / Title				
Telephone:	Email:	Post Holder?	YES <input type="checkbox"/>	NO <input type="checkbox"/>

Key Person responsible for Aerodrome Safety				
Name / Title				
Telephone:	Email:	Post Holder?	YES <input type="checkbox"/>	NO <input type="checkbox"/>

Key Person responsible for day to day provision of Aerodrome Operations				
Name / Title				
Telephone:	Email:	Post Holder?	YES <input type="checkbox"/>	NO <input type="checkbox"/>

Key Person responsible for Aerodrome Maintenance				
Name / Title				
Telephone:	Email:	Post Holder?	YES <input type="checkbox"/>	NO <input type="checkbox"/>

Key Person responsible for Air Traffic Services				
Name / Title				
Telephone:	Email:	Post Holder?	YES <input type="checkbox"/>	NO <input type="checkbox"/>

Key Person responsible for day to day Aviation Security				
Name / Title				
Telephone:	Email:	Post Holder?	YES <input type="checkbox"/>	NO <input type="checkbox"/>

Key Person responsible for Accounts Payable				
Name / Title				
Telephone:	Email:	Post Holder?	YES <input type="checkbox"/>	NO <input type="checkbox"/>

On behalf of the Aerodrome Operator, I confirm that the details for this Part 1 - Aerodrome Pre-Audit Assessment - Confirmation of Aerodrome Details and Key Personnel – including Aerodrome Post Holders are correct to the best of my knowledge.

Signed:

Name:

Organisation:

Date:

Attachment E — Data Catalogue format

Data catalogue provides a description of aeronautical data to be provided in a standardized format. It defines the data quality requirements and consolidates the aeronautical data required for AIP publication.

Aerodrome Data

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Aerodrome / Heliport				A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.						
	Designator			Designator of the aerodrome / heliport						
		ICAO location indicator	Text	The four letter ICAO location indicator of the aerodrome/heliport, as listed in ICAO DOC 7910 (Location Indicators).	if any					
		Designator IATA	Text	The identifier that is assigned to a location in accordance with rules (resolution 767) governed by the International Air Transport Association (IATA).	if any					
		Other	Text	A locally defined airport identifier, if other than an ICAO Location Indicator						
	Name		Text	The primary official name of an aerodrome as designated by an appropriate authority.						
	Served city		Text	The full name of the city or town the aerodrome/heliport is serving						
	Type of traffic permitted									
		International_national	Code list	Indication if international and/or national flights are permitted at the aerodrome/heliport						
		IFR_VFR	Code list	Indication if IFR and/or VFR flights are permitted at the aerodrome/heliport						
		Sched_nonsched	Code list	Indication if scheduled and/or nonscheduled flights are permitted at the aerodrome/heliport						
		Civil_military	Code list	Indication if civil commercial aviation and/or general aviation and/or military flights are permitted at the aerodrome/heliport						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
		Restricted_use	Text	Indication if an aerodrome or heliport is not open for the public (Only for the use of the owners).						
	Heliport type		Text	The type of the heliport as mentioned in Annex 14 Volume II (Surface-level, elevated, shipboard or helideck)						
	Control type		Text	Indication if an aerodrome is under civil control, military control or joint control						
	Certified ICAO		Text	Indication if airport is/is not certified according to the ICAO rules						
	Certification date		Date	The date when the airport certification has been issued by the supervising authority.						
	Certification expiration date		Date	The date when the airport certification will become invalid.						
	Field elevation									
		Elevation	Elevation	The vertical distance above Mean Sea Level (MSL) of the highest point of the landing area.		0.5 m	essential	surveyed	1m or 1 ft	1 m or 1 ft
		Geoid undulation	Height	Geoid undulation at the aerodrome/ heliport elevation position	where appropriate	0.5 m	essential	surveyed	1 m or 1 ft	1 m or 1 ft
	Reference temperature		Value	The monthly mean of the daily maximum temperatures for the hottest month of the year at an aerodrome. This temperature should be averaged over a period of years. (ICAO recommendation)						
	Mean low temperature		Value	The mean lowest temperature of the coldest month of the year, for the last five years of data at the aerodrome elevation.		5 degrees				
	Magnetic variation			The angular difference between True North and Magnetic North.						
		Angle	Angle	The magnetic variation angle value		1 degree	essential	surveyed	1 degree	1 degree
		Date	Date	The date on which the magnetic variation had the corresponding value.						
		Annual change	Value	The annual rate of change of the magnetic variation.						
	Reference point			The designated geographical location of an aerodrome.						
		Position	Point	Geographical location of aerodrome reference point.		30 m	routine	surveyed/ calculated	1 sec	1 sec
		Site	Text	The location of the reference point on the aerodrome.						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
		Direction	Text	Direction of aerodrome reference point from centre of the city or town which the aerodrome serves						
		Distance	Distance	Distance of aerodrome reference point from centre of the city or town which the aerodrome serves						
Landing direction indicator				A device to indicate visually the direction currently designated for landing and for take-off.						
	Location		Text	Location of landing direction indicator						
	Lighting		Text	Lighting of landing direction indicator	if any					
Secondary Power Supply										
	Characteristics		Text	The description of the secondary power supply						
	Switch-over time		Value	Secondary power supply switch-over time						
Anemometer				Device used for measuring wind speed						
	Location		Text	Location of anemometer						
	Lighting		Text	Lighting of anemometer	if any					
ABN / IBN				Aerodrome beacon / identification beacon used to indicate the location of an aerodrome/heliport from the air.						
	Location		Text	Location of aerodrome/heliport beacon/identification beacon	if any					
	Characteristics		Text	Description of aerodrome/heliport beacon/identification beacon						
	Hours of operation		Schedule	Hours of operation of aerodrome/heliport beacon/identification beacon						
Wind Direction Indicator										
	Location		Text	Location of wind direction indicator						
	Lighting		Text	Lighting of wind direction indicator						
RVR observation site				The observation site of Runway Visual Range.						
	Position		Point	Geographical location of runway visual						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
				range (RVR) observation sites						
Frequency Area				Designated part of a surface movement area where a specific frequency is required by air traffic control or ground control.						
	Station		Text	Name of the station providing the service						
	Frequency		Value	Frequency of the station providing the service						
	Boundary		Polygon	Area boundary of the frequency area						
Hot spot				A location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary.						
	Identifier		Text	The identifier of the hot spot						
	Annotation		Text	Additional information about the hot spot						
	Geometry		Polygon	The geographical area of the hot spot						

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 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 stopway	Definition from Annex 4 3.8.4.2	1 m	critical	surveyed		
		Elevation	Elevation	The elevation of the corresponding centre line point. (See Annex 14 I 2.3.2:		0.25 m	critical	surveyed		

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
				--- 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...) See Note 3)						
		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) 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						
	Strip			A defined area including the runway and the stop-way if provided a) to reduce the risk of damage to aircraft running off a runway; and b) to protect aircraft flying over it during take-off or landing operations						
		Length	Distance	The longitudinal extent of the runway strip.						
		Width	Distance	The transversal extent of the runway strip						
		Surface type	Text	The surface type of the runway strip						
	Shoulder			An area adjacent to the edge of a pavement so prepared as to provide a transition between the pavement and the adjacent surface.						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
		Geometry	Polygon	The geographical location of the shoulders						
		Surface type	Text	The surface type of the shoulder						
		Width	Distance	The width of the runway shoulder		1m	essential	surveyed	1 m or 1 ft	
	Blastpad			The area provided to reduce the erosive effects of jet blast and propeller wash.						
		Geometry	Polygon	The geographical location of the blastpad						
	Obstacle free zone		Text	Existence of an obstacle-free zone for a precision approach runway category I	when provided					
	RWYmarking									
		Type	Text	Type of runway marking						
		Description	Text	Description of the runway markings						
		Geometry	Polygon	The geographical location of the runway marking						
	RWY center line LGT									
		Length	Distance	The longitudinal extent of the runway centre line lights						
		Spacing	Distance	Spacing of runway centre line lights						
		Colour	Text	Colour of runway centre line lights						
		Intensity	Text	Intensity of runway centre line lights						
		Position	Point	Geographical location of each individual light of the runway center line lights						
	RWY Edge LGT									
		Length	Distance	The longitudinal extent of the runway edge lights						
		Spacing	Distance	Spacing of the runway edge lights						
		Colour	Text	Colour of runway edge lights						
		Intensity	Text	Intensity of runway edge lights						
		Position	Point	Geographical location of each individual light of the runway edge lights						
	Reference Code			The intent of the reference code is to provide a simple method for interrelating the numerous specifications concerning the characteristics of aerodromes so as to provide a series of aerodrome facilities that are suitable for						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.			
				the aeroplanes that are intended to operate at the aerodrome									
		Number	Code list	A number based on the aeroplane reference field length									
		Letter	Code list	A letter based on the aeroplane wingspan and outer main gear wheel span									
	Restriction		Text	Description of restrictions imposed on runway									
Runway Direction													
	Designator		Text	The full textual designator of the landing and take-off direction. Examples: 27, 35L, 01R.									
	True bearing		Bearing	The true bearing of the runway.		1/100 deg	Routine	surveyed	1/100 degree	1 degree			
	Type		Text	Type of runway: precision (CAT I, II, III) / non-precision / non-instrument									
	Threshold			The beginning of that portion of the runway usable for landing.									
				Position	Point	Geographical location for runway threshold		1 m	critical	surveyed	1/100 sec	1 sec	
				Elevation	Elevation	Elevation of the runway threshold		See Note 1)					
				Geoid undulation	Height	WGS-84 Geoid undulation at runway threshold position		See Note 2)					
				Type	Text	The indication if the threshold is displaced/ not displaced. A displaced threshold is not located at the extremity of a runway.							
				Displacement	Distance	Distance of displaced threshold	If displaced threshold	1 m	routine	surveyed	1m or 1ft		
	Runway end			Runway end (flight path alignment point)									
				Position	Point	Location of the runway end in the direction of departure		1 m	critical	surveyed	1/100 sec	1 sec	
				Elevation	Elevation	Elevation of the end position of the runway		See Note 3					
	Departure end of runway			Departure end of the runway (DER), which is the end of the area declared suitable for take-off (i.e. the end of the runway or, where a clearway is provided, the end of the clearway).	Beginning of departure procedure								
				Position	Point	Geographical location of DER							
				Elevation	Elevation	The elevation of DER is the elevation of the end of the runway or the elevation of the end of the clearway, whichever is higher.							

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
	Touchdown zone			The portion of a runway, beyond the threshold, where it is intended landing aeroplanes first contact the runway.						
		Elevation	Elevation	Highest elevation of the touchdown zone of a precision approach runway	precision approach RWY	0.25 m or 1 ft				
		Slope	Value	The slope of the runway touchdown zone						
	Slope		Value	Slope of the runway						
	LAHSO			Land and Hold Short Operations						
		Geometry	Line	Geographical location of Land and Hold Short Operations (LAHSO)						
		Protected element	Text	Name of runway or taxiway being protected						
	Displaced area			That portion of a runway between the beginning of the runway and the displaced threshold.						
		Geometry	Polygon	Geographical location of the displaced area						
		PCN	Text	Pavement classification number of the displaced area						
		Surface type	Text	The surface type of the displaced area						
		Aircraft restriction	Text	Usage restriction for specific aircraft type						
	Stopway			A defined rectangular area on the ground at the end of take-off run available prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned take-off.						
		Length	Distance	The longitudinal extent of stopway	if any	1 m	critical	surveyed	1 m or 1 ft	1 m
		Width	Distance	Width of the stopway		1 m	critical	surveyed	1 m or 1 ft	1 m
		Geometry	Polygon	Geographical location of the stopway						
		Slope	Value	Slope of stopway						
		Surface type	Text	The surface type of the stopway						
	Clearway			A defined rectangular area on the ground or water under the control of the appropriate authority, selected or prepared as a suitable area over which an aeroplane may make a portion of its initial climb to a specified height.						
		Length	Distance	The longitudinal extent of the clearway		1 m	essential	surveyed	1 m or 1 ft	
		Width	Distance	The transversal extent of the clearway		1 m	essential	surveyed	1 m or 1 ft	

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
		Ground profile		The vertical profile (or slope) of the clearway	if any					
	RESA			An area symmetrical about the extended runway centre line and adjacent to the end of the strip primarily intended to reduce the risk of damage to an aeroplane undershooting or overrunning the runway.						
		Length	Distance	The longitudinal extent of Runway End Safety Area						
		Width	Distance	The transversal extent of the Runway End Safety Area						
		Longitudinal slope	Value	Longitudinal slope of Runway End Safety Area						
		Transverse slope	Value	Transverse slope Runway End Safety Area						
	Declared distances									
		TORA	Distance	Take-off run available - The length of runway declared available and suitable for the ground run of an aeroplane taking off.		1 m	critical	surveyed	1 m or 1 ft	1 m
		TODA	Distance	Take-off distance available - The length of the take-off run available plus the length of the clearway, if provided.		1 m	critical	surveyed	1 m or 1 ft	1 m
		ASDA	Distance	Accelerate-stop distance available - The length of the take-off run available plus the length of the stopway, if provided.		1 m	critical	surveyed	1 m or 1 ft	1 m
		LDA	Distance	Landing distance available - The length of runway which is declared available and suitable for the ground run of an aeroplane landing.		1 m	critical	surveyed	1 m or 1 ft	1 m
		Remarks	Text	Remarks including runway entry or start point where alternative reduced declared distances have been declared.						
	RWY End LGT									
		Colour	Text	Colour of runway end lights						
		Position	Point	Geographical location of each individual light of the runway end lights						
	SWY LGT									
		Length	Distance	The longitudinal extent of stopway lights						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
		Colour	Text	Colour of stopway lights						
		Position	Point	Geographical location of each individual light of the stopway lights						
	Approach lighting system									
		Type	Text	Classification of the approach lighting system using as criteria the ICAO Annex 14 standards						
		Length	Distance	The longitudinal extent of approach lighting system						
		Intensity	Text	A code indicating the relative intensity of the lighting system						
		Position	Point	Geographical location of each individual light of the approach lighting system						
	RWY threshold lights									
		Colour	Text	Colour of runway threshold lights						
		Wing bar color	Text	Colour of runway threshold wing bars						
		Position	Point	Geographical location of each individual light of the threshold and wing bar lights						
	Touchdown zone lights									
		Length	Distance	The longitudinal extent of the runway touchdown zone lights						
		Position	Point	Geographical location of each individual light of the touchdown zone lights						
	Visual approach slope indicator system									
		MEHT	Height	Minimum Eye Height over the Threshold						
		Position	Point	Geographical location of Visual approach slope indicator system						
		Angle	Angle	Nominal approach slope angle(s)						
		Type	Text	Type of VGSI (VASI, PAPI etc.)						
		Displacement angle	Angle	Where the axis of the system is not parallel to the runway centre line, the angle of displacement						
		Displacement direction	Text	Where the axis of the system is not parallel to the runway centre line, the direction of displacement, i.e. left or right						
	Arresting gear		Line	Geographical location of the arresting gear cable across the runway						
	Arresting system			High energy absorbing material located at the end of a runway or stopway designed to crush under the weight of an aircraft as the material exerts						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
				deceleration forces on the aircraft landing gear.						
				Geometry	Polygon	The geographical location of the arresting system				
				Setback	Distance	Setback of the arresting system				
				Length	Distance	The longitudinal extent of arresting system				
				Width	Distance	The transverse extent of arresting system				
Radio altimeter area										
	Length		Distance	The longitudinal extent of radio altimeter area						
	Width		Distance	The transverse extent of radio altimeter area						
	Geometry		Polygon	Geographical location of radio altimeter area						

		Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Note 1)	Threshold elevation for runways with non-precision approaches	0.5 m	essential	surveyed	1 m or 1 ft	1 m or 1 ft
	Threshold elevation for runways with precision approaches	0.25 m	critical	surveyed	0.1 m or 0.1 ft	0.5 m or 0.1 ft
Note 2)	WGS-84 geoid undulation at runway threshold, non-precision approaches	0.5 m	essential	surveyed	1 m or 1 ft	1 m or 1 ft
	WGS-84 geoid undulation at runway threshold, precision approaches	0.25 m	critical	surveyed	0.1 m or 0.1 ft	0.5 m or 0.1 ft
Note 3)	Elevation of the runway end and any significant high and low intermediate points along the runway for non-precision approaches	0.5 m or 1 ft				
	Elevation of the runway end and the highest elevation of the touchdown zone for precision approach runways	0.25 m or 1 ft				

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Apron				A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance.						
	Designator		Text	The full textual name or designator used to identify an apron at an aerodrome/heliport.						
	Geometry		Polygon	Geographical location of the apron element		1m	routine	surveyed	1/10 sec	1 sec
	Type		Text	Classification of the primary use for the apron						
	Aircraft restriction		Text	Usage restriction (prohibition) for specified aircraft type						
	Surface type		Text	The surface type of the apron						
	Strength									
		PCN	Text	Pavement classification number of apron						
		Pavement type	Text	Pavement type for aircraft classification number — pavement classification number (ACN-PCN) determination						
		Subgrade category	Text	Subgrade strength category of apron						
		Allowable pressure	Text	Maximum allowable tire pressure category or maximum allowable tire pressure value						
		Evaluation method	Text	The evaluation method used to determine the apron strength						
	Elevation		Elevation	The elevation of the apron						

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,						
	Designator		Text	The full textual designator of the taxiway.						
	Width		Distance	The transversal extent of the taxiway.		1m	essential	surveyed	1 m or 1 ft	
	Geometry		Polygon	Geographical location of the taxiway element						
	Bridge		Text	Type of bridge (none, overpass, underpass)						
	Surface type		Text	Surface type of taxiway						
	Strength									
		PCN	Text	Pavement classification number of taxiway						
		Pavement type	Text	Pavement type for aircraft classification number — pavement classification number (ACN-PCN) determination						
		Subgrade category	Text	Subgrade strength category of taxiway						
		Allowable pressure	Text	Maximum allowable tire pressure category or maximum allowable tire pressure value						
		Evaluation method	Text	The evaluation method used to determine the taxiway strength						
	Aircraft restrictions		Text	Usage restriction (prohibition) for specified aircraft type						
	Reference code letter	Code list		A letter based on the aeroplane wingspan and outer main gear wheel span						
	Center line points									
		Position	Point	Geographical coordinates of taxiway center line points		0.5m	essential	surveyed	1/100 sec	1/100 sec
		Elevation	Elevation	Elevation of taxiway center line points		1m	essential	surveyed		
	Shoulder			An area adjacent to the edge of a pavement so prepared as to provide a transition between the pavement and the adjacent surface.						
		Geometry	Polygon	Geographical location of the taxiway shoulder						
		Surface type	Text	Surface type of taxiway shoulder						
		Width	Distance	The width of the taxiway shoulder		1m	essential	surveyed	1 m or 1 ft	
	Guidance lines									
		Geometry	Line	Geographical location of guidance lines		0.5 m	essential	surveyed	1/100 sec	1/100 sec
		Colour	Text	Colour of taxiway guidance lines						
		Style	Text	Style of taxiway guidance lines						
		Wingspan	Value	Wingspan						
		Maxspeed	Value	Maximum speed						
		Direction	Text	Direction						
	Intermediate holding position marking line		Line	Intermediate holding position marking line		0.5 m	essential	surveyed	1/100 sec	1 sec
	Taxiway marking									
		Description	Text	Description of taxiway marking						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
	Taxiway edge lights									
		Description	Text	Description of taxiway edge lights						
		Position	Point	Geographical location of each individual light of the taxiway edge lights						
	Taxiway centre line lights									
		Description	Text	Description of taxiway centre line lights						
		Position	Point	Geographical location of each individual light of the taxiway center line lights						
	Stop bars									
		Description	Text	Description of the stop bars	if any					
		Geometry	Line	Location of the stop bar						
	Runway guard lights									
		Description	Text	Description of the runway guard lights and other runway protection measures	if any					
		Position	Point	Location of the stop bar	Configuration A					
		Geometry	Line	Location of the stop bar	Configuration B					
	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	surveyed	1/100 sec	1 sec
		Protected runway	Text	Designator of the runway protected						
		Catstop	Code list	CAT of runway (0, I, II, III)						
		RWY ahead text	Text	Actual text as it exists in the marking. For example, RWY AHEAD or RUNWAY AHEAD.						
	Intermediate holding position	Geometry	Line	Geographical location of intermediate holding position - A designated position intended for traffic control at which taxiing aircraft and vehicles shall stop and hold until further cleared to proceed, when so instructed by the aerodrome control tower.						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Communication facility										
	Service designation		Text	Designation of the service provided						
	Call sign		Text	Call sign of the communication facility						
	Channel		Text	Channel/Frequency of the communication facility						
	Logon address		Text	The logon address of the facility	as appropriate					
	Hours of operation		Schedule	Operational hours of the station serving the unit						

Radio navigation aids/systems data

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Radio navigation aid										
	Type		Text	Type of radio navigation aid						
	Identification		Text	The code assigned to uniquely identify the navaid						
	Name		Text	The textual name assigned to the navaid						
	Purpose		Code list	Indication whether navigation aid serves en-route (E), aerodrome (A) or dual (AE) purposes.						
	Aerodrome/heliport served		Text	The ICAO location indicator or name of the aerodrome/heliport served						
	Runway served		Text	Designator of the runway served						
	Operating authority		Text	Name of the operating authority of the facility						
	Type of supported ops		Code list	Indication of the type of supported operation for ILS/MLS and GBAS						
	Co-location		Text	Information that a navaid is co-located with another navaid						
	Hours of operation		Schedule	The hours of operation of the radio navigation aid						
	Magnetic variation			The angular difference between True North and Magnetic North						
		Angle	Angle	The magnetic variation at the radio navigation aid	ILS/NDB	See Note 1)				
		Date	Date	The date on which the magnetic variation had the corresponding value.						
	Station declination		Angle	An alignment variation of the navaid between the zero degree radial and true north, determined at the time the station is calibrated.	VOR/ILS/MLS					
	Zero bearing direction		Text	Direction of the 'zero bearing' provided by the station. For example: magnetic north, true north	VOR					
	Frequency		Value	Frequency or tuning frequency of the radio navigation aid						
	Channel		Text	The channel number of the radio navigation aid	DME					
	Position		Point	Geographical location of the radio navigation aid		See Note 2)				
	Elevation		Elevation	The elevation of the transmitting antenna of DME The elevation of GBAS reference point	DME GBAS	See Note 3)				
	Ellipsoidal height		Height	The ellipsoid height of the GBAS reference point,	GBAS					
	Localizer alignment									
		Bearing	Bearing	The localizer course	ILS Localizer	1/100 deg	essential	surveyed	1/100 degree (if true)	1 degree
		Type	Text	Type of localizer alignment, true or magnetic	ILS Localizer					

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
	Zero azimuth alignment		Bearing	MLS zero azimuth alignment	MLS	1/100 deg	essential	surveyed	1/100 degree (if true)	1 degree
	Angle		Angle	The angle of the glide path of an ILS or the normal glide path angle for the MLS installation	ILS GP /MLS					
	RDH		Value	The value of the ILS Reference Datum Height (ILS RDH).	ILS GP	0.5m	critical	calculated	0.1m or 0.1 ft	0.5m or 1ft
	Localizer antenna rwy end distance		Distance	ILS localizer runway/FATO end distance	ILS Localizer	3 m	routine	calculated	1 m or 1 ft	as plotted
	ILS glideslope antenna TRSH distance		Distance	ILS glideslope antenna - threshold distance along centerline	ILS GP	3 m	routine	calculated	1 m or 1 ft	as plotted
	ILS marker TRSH distance		Distance	ILS marker - threshold distance	ILS	3 m	essential	calculated	1 m or 1 ft	2/10 km (1/10 NM)
	ILS DME antenna TRSH distance		Distance	ILS DME antenna - threshold distance along centerline	ILS	3 m	essential	calculated	1 m or 1 ft	as plotted
	MLS azimuth antenna rwy end distance		Distance	MLS azimuth antenna - runway/FATO end distance	MLS	3 m	routine	calculated	1 m or 1 ft	as plotted
	MLS elevation antenna TRSH distance		Distance	MLS elevation antenna - threshold distance along centre line	MLS	3 m	routine	calculated	1 m or 1 ft	as plotted
	MLS DME antenna TRSH distance		Distance	MLS DME/P antenna - threshold distance along centre line	MLS	3 m	essential	calculated	1 m or 1 ft	as plotted
	Signal polarization		Code list	GBAS signal polarization (GBAS/H or GBAS/E)	GBAS					
	DOC		Text	Designated operational coverage (DOC or stadard service volume SSV) as range or service volume radius from the navaid / GBAS reference point, height and sectors if required						

Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Note 1)	ILS Localizer	1 degree	essential	surveyed	1 degree	
	NDB	1 degree	routine	surveyed	1 degree	

Note 2)	Aerodrome Navaid	3 m	essential	surveyed	1/10 sec	as plotted
	GBAS Ref Point	1 m				
	Enroute	100 m	essential	surveyed	1 sec	

Note 3)	DME	30m (100ft)	essential	surveyed	30 m (100 ft)	30 m (100 ft)
	DME/P	3 m	essential	surveyed	3 m (10 ft)	
	GBAS Ref Point	0.25 m	essential		1 m or 1 ft	

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
GNSS				A worldwide position and time determination system that includes one or more satellite constellations, aircraft receivers and system integrity monitoring, augmented as necessary to support the required navigation performance for the intended operation.						
	Name		Text	The name of the GNSS element (GPS, GBAS, GLONASS, EGNOS, MSAS, WAAS, etc.)						

	Frequency		Value	Frequency of the GNSS	as appropriate					
	Service area		Polygon	Geographical location of the GNSS service area						
	Coverage area		Polygon	Geographical location of the GNSS coverage area						
	Operating authority		Text	Name of the operating authority of the facility						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Aeronautical ground lights				Ground lights and other light beacons designating geographical positions which are selected by the State as being significant.						
	Type		Text	Type of beacon						
	Designator		Text	The code assigned to uniquely identify to the beacon						
	Name		Text	The name of the city or town or other identification of the beacon						
	Intensity		Value	Intensity of the light of the beacon					1000 candela	
	Characteristics		Text	Information about the characteristics of beacon						
	Hours of operations		Schedule	The hours of operation of the beacon						
	Position		Point	Geographical location of the beacon						
Marine lights										
	Position		Point	Geographical location of the beacon						
	Visibility range		Distance	The visibility range of the beacon						
	Characteristics		Text	Information about the characteristics of the beacon						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Special navigation system				Stations associated with special navigation systems (DECCA, LORAN, etc.).						
	Type		Text	Type of service available (master signal, slave signal, colour).						
	Designator		Text	The code assigned to uniquely identify to the special navigation system						
	Name		Text	The textual name assigned to the special navigation system						
	Frequency		Value	Frequency (channel number, basic pulse rate, recurrence rate, as applicable) of the special navigation system						
	Hours of operations		Schedule	The hours of operation of the special navigation system						
	Position		Point	Geographical location of the special navigation system		100m	essential	surveyed / calculated		
	Operating authority		Text	Name of the operating authority of the facility						
	Facility coverage		Text	Description of special navigation system facility coverage						

Obstacle data

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Obstacle				All fixed (whether temporary or permanent) and mobile obstacles or parts thereof.						
	Obstacle identifier		Text	Unique identifier of obstacle						
	Operator / Owner		Text	Name and Contact information of obstacle operator or owner						

	Geometry type		Code list	An indication whether the obstacle is a point, line or polygon.						
	Horizontal position		Point Line Polygon	Horizontal position of obstacle		See Note 1)				
	Horizontal extent		Distance	Horizontal extent of the obstacle						
	Elevation		Elevation	Elevation of the highest point of the obstacle.		See Note 2)				
	Height		Height	Height of the obstacle above ground						
	Type		Text	Type of obstacle						
	Date and time stamp		Date	Date and time the obstacle was created						
	Operations		Text	Feature operations of mobile obstacles						
	Effectivity		Text	Effectivity of temporary types of obstacles						
	Lighting									
		Type	Text	Type of lighting						
		Colour	Text	Colour of the obstacle lighting						
	Marking		Text	Type of marking of obstacle						
	Material		Text	Predominant surface material of the obstacle						

Description		Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Note 1)	Obstacles in Area 1	50 m	routine	surveyed	1 sec	as plotted
	Obstacles in Area 2 (including 2a, 2b, 2c, 2d, take-off flight path area and obstacle limitation surfaces)	5 m	essential	surveyed	1/10 sec	1/10 sec
	Obstacles in Area 3	0.5 m	essential	surveyed	1/10 sec	1/10 sec
	Obstacles in Area 4	2.5 m	essential	surveyed		
Note 2)	Obstacles in Area 1	30 m	routine	surveyed	1 m or 1 ft	3 m (10 ft)
	Obstacles in Area 2 (including 2a, 2b, 2c, 2d, take-off flight path area and obstacle limitation surfaces)	3 m	essential	surveyed	1 m or 1 ft	1 m or 1 ft
	Obstacles in Area 3	0.5 m	essential	surveyed	0.1 m or 0.1 ft 0.01 m	1m or 1 ft
	Obstacles in Area 4	1 m	essential	surveyed	0.1 m	

Geographic data

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Buildings				Buildings (of operational significance) and other salient/prominent (aerodrome) features						
	Name		Text	Name of the building						
	Geometry		Polygon	Geographical location of the building						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Built up areas				Areas covered by cities, towns and villages						
	Name		Text	Name of the build-up area						
	Geometry		Point/ Polygon	Geographical location of the build-up area						
Railroads				All railroads having landmark value						
	Name		Text	Name of the railroad						
	Geometry		Line	Geographical location of the railroads						
Highways and Roads				All highways and roads having landmark value						
	Name		Text	Name of highways and roads						
	Geometry		Line	Geographical location of highways and roads						
Landmarks				Natural and cultural landmarks, such as bridges, prominent transmission lines, permanent cable car installations, wind turbines, mine structures, forts, ruins, levees, pipelines, rocks, bluffs, cliffs, sand dunes, isolated lighthouses and lightships, when considered to be of importance for visual air navigation.						
	Characteristics		Text	Description of the landmark						
	Geometry		Point	Geographical location of the landmark						
Political boundaries				International political boundaries						
	Geometry		Line	Geographical location of international political boundaries						
Hydrography				All water features comprising shore lines, lakes, rivers and streams (including those non-perennial in nature), salt lakes, glaciers and ice caps						
	Name		Text	Name of the water feature						
	Geometry		Line/ Polygon	Geographical location of water feature						
Wooded areas				Wooded areas						
	Geometry		Polygon	Geographical location of wooded area						

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.	Chart Res.
Service roads				Part of aerodrome surface used by service vehicles						
	Geometry		Polygon	Geographical location of the service roads						
	featbase		Text	Identification of the feature type affected						
	ldbase		Text	Name of the underlying taxiway, parking stand area or apron						
Construction area				Part of aerodrome area under construction						
	Geometry		Polygon	Geographical location of the construction area						
Aircraft movement unsuitable area				Areas unsuitable for aircraft movement						
	Geometry		Polygon	Depicted movement area permanently unsuitable for aircraft, clearly identified as such						
Survey control point				A monumented survey control point						
	idnumber		Text	Special unique identifier permanently assigned to a feature instance by the data provider						

	Location		Point	Geographical location of the survey control point						
	Elevation		Elevation	Elevation of survey control point						
ASRN node				A vertex in a graph defining the Aerodrome Surface Routing Network						
	idnetwrk		Text	Logical name comprised of a delimited list of names for one or more features associated with this ASRN feature						
	idthr		Text	Name of feature instance						
	idnumber		Text	Special unique identifier permanently assigned to a feature instance by a data provider						
	termref		Text	Terminal building associated with the feature instance						
	nodetype		Text	Type of node						
	catstop		Text	Low visibility operation category of holding position						
	Position		Point	Geographical location of the ASRN node						
ASRN edge				A connection between two nodes in a graph defining the Aerodrome Surface Routing Network						
	idnetwrk		Text	Logical name comprised of a delimited list of names for one or more features associated with this ASRN feature						
	direc		Text	Directionality of corresponding feature instance, which can be one-way or two-way						
	node1ref		Text	The idnumber of the ASRN Node corresponding to the start point of the edge geometry						
	node2ref		Text	The idnumber of the ASRN Node corresponding to the end point of the edge geometry						
	edgetype		Text	Type of edge						
	edgederv		Text	Derivation method of edge geometry						
	Geometry		Line	Geographical location of the ASRN edge						

Data types referred to in column 4 'Type'

Type (1)	Description (2)	Data elements (3)
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
		Units of measurement
		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
Height	The vertical distance of a level, point or an object considered as a point, measured from a specific datum.	Numerical value
		Vertical reference system
		Units of measurement
		Vertical accuracy achieved
Altitude	The vertical distance of a level, a point or an object considered as a point, measured from mean sea level.	Numerical value
		Vertical reference system
		Units of measurement
		Vertical accuracy achieved
Elevation	The vertical distance of a point or a level, on or affixed to the surface of the earth, measured from mean sea level.	Numerical value
		Vertical reference system
		Units of measurement
		Vertical accuracy
Distance	A linear value	Numerical value
		Units of measurement
		Accuracy achieved
Angle / Bearing	An angular value	Numerical value
		Units of measurement
		Accuracy achieved
Value	Any measured, declared or derived value not listed above.	Numerical Value
		Units of Measurement
		Accuracy achieved
Date	A calendar date referencing a particular day or month	Text
Schedule	A repetitive time period, composed of one or more intervals or special dates (e.g. holidays) occurring cyclically	Text
Code list	A set of predefined Text strings or values	Text
Text	Free text	String of characters without constraints

Attachment F — ICAO Publication References

Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual (Doc 9830)
Aerodrome Design Manual (Doc 9157)
Part 1 — Runways
Part 2 — Taxiways, Aprons and Holding Bays
Part 3 — Pavements
Part 4 — Visual Aids
Part 5 — Electrical Systems
Part 6 — Frangibility
Aeronautical Information Services Manual (Doc 8126)
Aeroplane Performance Manual (Doc 10064)
Aircraft Type Designators (Doc 8643)
Airport Planning Manual (Doc 9184)
Part 1 — Master Planning
Part 2 — Land Use and Environmental Control
Part 3 — Guidelines for Consultant/Construction Services
Airport Services Manual (Doc 9137)
Part 1 — Rescue and Fire Fighting
Part 2 — Pavement Surface Conditions
Part 3 — Wildlife Control and Reduction
Part 5 — Removal of Disabled Aircraft
Part 6 — Control of Obstacles
Part 7 — Airport Emergency Planning
Part 8 — Airport Operational Services
Part 9 — Airport Maintenance Practices
Air Traffic Services Planning Manual (Doc 9426)
Airworthiness Manual (Doc 9760)
Guidance on the Balanced Approach to Aircraft Noise Management (Doc 9829)
Heliport Manual (Doc 9261)
Human Factors Training Manual (Doc 9683)
Manual of Aircraft Ground De-icing/Anti-icing Operations (Doc 9640)
Manual of All-Weather Operations (Doc 9365)
Manual of Surface Movement Guidance and Control Systems (SMGCS) (Doc 9476)
Manual on Certification of Aerodromes (Doc 9774)
Manual on Laser Emitters and Flight Safety (Doc 9815)
Manual on Simultaneous Operations on Parallel or Near-Parallel Instrument Runways (SOIR) (Doc 9643)
Manual on the ICAO Bird Strike Information System (IBIS) (Doc 9332)
Procedures for Air Navigation Services — Aerodromes (PANS-Aerodromes) (Doc 9981)
Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM) (Doc 10066)
Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS) (Doc 8168)
Volume I — Flight Procedures
Volume II — Construction of Visual and Instrument Flight Procedures
Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM) (Doc 4444)

Safety Management Manual (SMM) (Doc 9859)

Stolport Manual (Doc 9150)

World Geodetic System — 1984 (WGS-84) Manual (Doc 9674)

Assessment, Measurement and Reporting of Runway Surface Conditions (Cir 329)

New Larger Aeroplanes — Infringement of the Obstacle Free Zone: Operational Measures and Aeronautical Study (Cir 301)

New Larger Aeroplanes – Infringement of the Obstacle Free Zone: Collision Risk Model and Aeronautical Study (Cir 345)