Kingdom of Saudi Arabia
General Authority of Civil Aviation

GACA REGULATION

Section 15
Aeronautical Information Services

Edition 4.0

FOREWORD

The following Regulations governing Air Navigation Services (ANS) are based on Articles 1, 2, 3, 4, 5, 89, 90, 94, 175 and 177 of the Civil Aviation Act as approved by Council of Ministers Resolution No. 185, dated 17/07/1426 Has authorized by Royal Decree No. M/44, dated 18/07/1426 H, and are in accordance with ICAO Annex 15 – Aeronautical Information Services and its related documents.

The promulgation of this regulation is based on the authority granted in Article 179 of the Civil Aviation Act, and is issued under the authority of the President, General Authority of Civil Aviation, as a duly delegated representative of the GACA Board of Directors, in accordance with Order No.T-41, dated 30/12/1429H (28/12/2008G).

The General Authority of Civil Aviation is responsible for the preparation and distribution of all regulations and procedures in sufficient quantities so that all service providers and aircraft operators based in the Kingdom of Saudi Arabia are able to obtain an authentic copy prior to the effective date of the Regulation.

APPROVED:

Original Signed by

Fahad Bin Abdullah Al-Saud

President, General Authority of Civil Aviation

Effective Date: 13 November 2014

CONTENT RULES

3) Organization Structure:

- GACA has established an Air Navigation System Safety Division (ANS Safety) within the Safety Department (SD) of the Safety and Air Transport Sector (S&AT) with the following responsibilities:

  - Ensure and enforce compliance with the applicable regulations and procedures of GACAR Section 15 including the identification of conditions and circumstances under which Air Navigation Services Sector are allowed to deal with, and resolve, events involving certain deviations internally, within the context of the GACA-ANS safety management system (SMS);

  - Perform safety oversight functions include audits, inspections, investigations and data analysis;

  - Conduct on site facilities audits based on pre-established annual audit program and frequent inspections of areas of greater safety concern or need, as identified by the analysis of data, or as instructed by senior management;

  - Ensure the capture and storage of data on safety risks and deviations;

  - Perform analysis of the stored data and actively exchange safety information with the concerned departments within Air Navigation Services;

  - Organize internal training, communication and dissemination of safety information; and

  - Promote dissemination of safety information to support, within Air Navigation Services, the development of an organizational culture that fosters an effective and efficient Safety Management System

- Under current arrangements for the provision of Aeronautical Information Services (AIS) in Kingdom of Saudi Arabia, the GACA is responsible for disseminating out the aeronautical information activity. GACA has delegated this activity to GACA Air Navigation Services.

- The Aeronautical Information Service Department is a unit within the Air Navigation Services Sector responsible for the promulgating, and dissemination of all aeronautical information activity required for inclusion in KSA AIP.

- This regulation covers all the data produced by GACA Air Navigation Services and relating to Aeronautical Information, which is based on the provisions of ICAO Annex 15. When the content of this regulation do not cover any item related to the production, dissemination, and promulgation of, the Aeronautical Information GACA Air Navigation Services shall apply the Standards and Recommended Practices of ICAO Annex 15 and its related Documents and guidance materials.

2) Rules of Construction

1. To avoid any misunderstanding within this regulation, certain words are to be interpreted as having specific meanings when they are used, unless the context requires otherwise:

   (1) Words importing the singular include the plural;

   (2) Words importing the plural include the singular; and

   (3) Words importing the masculine gender include the feminine.

2. In this regulation, the following protocol is used:

   1. The words **"shall"** and **"must"** indicate that compliance is compulsory;

   2. The word **"should"** indicates a recommendation. It does not means that compliance is optional but rather that, where insurmountable difficulties exist, the GACA- S&AT may accept an alternative means of compliance, provided that an acceptable safety assurance from the Air Navigation Services shows that the safety requirements will not be reduced below that intended by the requirement.

   3. The word **"Can" or "May"** is used in a permissive sense to state authority or permission to do the act prescribed, and the words "no person may * * *" or "a person may not * * *" mean that no person is required, authorized, or permitted to do the act prescribed;

   4. The word **"will"** is used to express the future; and

   5. The word **"includes"** means **"includes but is not limited to"**.

AMENDMENT PROCEDURE

The existing General Authority of Civil Aviation Regulations (GACAR) will be periodically reviewed to reflect the latest updates of International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs); it will be also amended to reflect the latest aviation safety provisions issued by GACA and other regional and international civil aviation organizations. A complete revised edition incorporating all amendments will be published every three years from the original effective date of this regulation. The amendment procedure shall be as follows:

1. When the General Authority of Civil Aviation (GACA) receives an amendment to any of the current ICAO Annexes that can affect the provisions of this regulation, it will be forwarded by the Vice President of International Organization Affairs to the Assistant Vice President, Safety and Air Transport (S&AT) who in turn will forward it to Aviation Regulation Department to coordinate with the concerned department to study and comments, taking into account the ICAO deadline for the reply.

2. When any GACA department or stakeholder proposes an amendment to this regulation, it will send a letter with the proposed amendment including a clear justification and argument for such amendment. Following the receipt of an amendment proposal, the (S&AT) will analyze this proposal and forward its comments and any proposed decision action to the S&AT Vice President.

3. An accepted amendment proposal will be prepared as draft amendment to the GACAR-Section 15 and forwarded to the originator of the amendment proposal and concerned GACA department (s) for further review and comment within a specified timeline.

4. All accepted amendments will be drafted in the form of Notices of Proposed Amendments (NPA) and forwarded to all concerned parties including stakeholders for comment within a two-month reply period. The NPA shall indicate the proposed Amendment's effective date.

5. Following the receipt of NPA replies, the S&AT will analyze the comments received and produce a new draft in consultation with the concerned GACA department. The final draft will be submitted to President of the General Authority of Civil Aviation for formal approval prior to publication.

6. The Amendment's effective date will take into account the comments of all the concerned parties and stakeholders.

7. Any differences between the GACAR Section 15 new amendment and ICAO Annexes Standards and Recommended Practices will be forwarded to ICAO as a Difference and published as it is in the Aeronautical Information Publication (AIP).

8. All concerned parties and stakeholders will be provided a copy of the new amendment and will be requested to update their copy of the GACAR Section 15 accordingly.

9. It is the responsibility of all concerned parties to keep their copy of GACAR Section 15 and other GACA regulation publication up to date.

SUPPLEMENTARY REGULATIONS

From time to time it will be necessary to issue regulations which supplement or augment the GACA Regulations. The following procedures will apply:

1. Supplementary regulations will be issued in the form of a GACA Regulation Circular (RC).

2. The GACA Regulation Circular will be approved by the President.

3. The process for preparation and publishing of the GACA Regulation Circular will be addressed in the GACA Quality System Manual.

AMENDMENT RECORD

This edition incorporates all amendments to ICAO annex 15 up to and including amendment 38

Amendment number	Amendment date	Affected pages	Effective date	Incorporated by	Incorporated on
Edition 1.0	20 July 2009	VI	19 Nov 2009	ANS Safety	10 Oct 2009
		1-1, 1-4, 1-6			
		2-1, 2,2			
		3-1			
		5-1			
		8-1			
		8-2			
		A1-2, A1-4			
Edition 2.0	15 Nov 2012	All pages reviewed	15 Nov 2012	ANS Safety	01 Oct 2012
Edition 3.0	26 Mar 2013	All pages reviewed	13 Nov 2013	ANS Safety	01 Nov 2013
Edition 4.0	13 Nov 2014	All pages reviewed	13 Nov 2014	ANS Safety	13 Nov 2014

LIST OF CURRENT DIFFERENCES TO ICAO SARPS

GACA Regulation Section 15 is based on ICAO Annex 15. The following is a list of differences between the GACA Regulation and the ICAO Standards and Recommended Practices (SARPS). Differences, if any will be notified to ICAO and are also published in the KSA Aeronautical Information Publication (AIP-GEN 1.7).

ICAO Annex 15 – AERONAUTICAL INFORMATION SERVICES – Amendment 38		
SARP Identifier	**Regulation Reference**	**Difference**
		Nil Differences

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CHAPTER 1 –GENERAL

Note 1.— The object of the aeronautical information service (AIS) is to ensure the flow of aeronautical data and aeronautical information necessary for global air traffic management (ATM) system safety, regularity, economy and efficiency in an environmentally sustainable manner. The role and importance of aeronautical data and aeronautical information changed significantly with the implementation of area navigation (RNAV), performance-based navigation (PBN), airborne computer-based navigation systems and data link systems. Corrupt, erroneous, late, or missing aeronautical data and aeronautical information can potentially affect the safety of air navigation.

Note 2.— These Standards and Recommended Practices are to be used in conjunction with the Procedures for Air Navigation Services — ICAO Abbreviations and Codes *(PANS-ABC, Doc 8400).*

Note 3.— Guidance material on the organization and operation of aeronautical information services is contained in the Aeronautical Information Services Manual *(Doc 8126).*

1.1 Definitions

1.1.1 When the following definitions and abbreviations are used in this regulation, they shall have the following meanings:

Accuracy A degree of conformance between the estimated or measured value and the true value.

Note.— For measured positional data the accuracy is normally expressed in terms of a distance from a stated position within which there is a defined confidence of the true position falling.

Aerodrome 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.

Aerodrome mapping data (AMD). Data collected for the purpose of compiling aerodrome mapping information.

Note.— Aerodrome mapping data are collected for purposes that include the improvement of the user's situational awareness, surface navigation operations, training, charting and planning.

Aerodrome mapping database (AMDB). A collection of aerodrome mapping data organized and arranged as a structured data set.

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

Aeronautical information. Information resulting from the assembly, analysis and formatting of aeronautical data.

Aeronautical Information Circular (AIC). A notice containing information that does not qualify for the origination of a NOTAM or for inclusion in the AIP, but which relates to flight safety, air navigation, technical, administrative or legislative matters.

Aeronautical information management (AIM). The dynamic, integrated management of aeronautical information through the provision and exchange of quality-assured digital aeronautical data in

collaboration with all parties.

Aeronautical Information Publication (AIP)

A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.

Aeronautical information service (AIS). A service established within the defined area of coverage responsible for the provision of aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation.

AIP Amendment. Permanent changes to the information contained in the AIP.

AIP Supplement. Temporary changes to the information contained in the AIP which are published by means of special pages.

AIRAC. An acronym (aeronautical information regulation and control) signifying a system aimed at advance notification based on common effective dates, of circumstances that necessitate significant changes in operating practices.

Air defense identification zone (ADIZ)

Special designated airspace of defined dimensions within which aircraft are required to comply with special identification and/or reporting procedures additional to those related to the provision of air traffic services (ATS).

AIS product. Aeronautical information provided in the form of the elements of the Integrated Aeronautical Information Package (except NOTAM and PIB), including aeronautical charts, or in the form of suitable electronic media.

Air navigation services. Services provided to air traffic during all phases of operations including air traffic management (ATM), communication, navigation and surveillance (CNS), meteorological services for air navigation (MET), search and rescue (SAR) and aeronautical information services (AIS).

Air traffic management (ATM). The dynamic, integrated management of air traffic and airspace including air traffic services, airspace management and air traffic flow management — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions

AIS product. Aeronautical data and aeronautical information/data provided in the form of the elements of

the Integrated Aeronautical Information Package (except NOTAM and PIB), including aeronautical

charts, or in the form of suitable electronic media.

Application. Manipulation and processing of data in support of user requirements (ISO 19104*).

Area navigation (RNAV).. A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground- or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

> *Note.— Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.*

ASHTAM. A special series NOTAM notifying by means of a specific format change in activity of a volcano, a volcanic eruption and/or volcanic ash cloud that is of significance to aircraft operations.

Assemble. A process of merging data from multiple sources into a database and establishing a baseline for subsequent processing.

> *Note.— The assemble phase includes checking the data and ensuring that detected errors and omissions are rectified.*

ATS surveillance service. Term used to indicate a service pro- vided directly by means of an ATS surveillance system.

ATS surveillance system. A generic term meaning variously, ADS-B, PSR, SSR or any comparable ground-based system that enables the identification of aircraft.

Note.— A comparable ground-based system is one that has been demonstrated, by comparative assessment or other

methodology, to have a level of safety and performance equal to or better than monopulse SSR.

Automatic dependent surveillance—broadcast (ADS-B). A means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link.

Automatic dependent surveillance — contract (ADS-C). A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.

> *Note.— The abbreviated term "ADS contract" is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode.*

Automatic terminal information service (ATIS). The automatic provision of current, routine information to arriving and departing aircraft throughout 24 hours or a specified portion thereof:

Data link-automatic terminal information service (D-ATIS). The provision of ATIS via data link.

Voice-automatic terminal information service (Voice-ATIS). The provision of ATIS by means of continuous and repetitive voice broadcasts.

Bare Earth. Surface of the Earth including bodies of water and permanent ice and snow, and excluding vegetation and man-made objects.

Calendar
Discrete temporal reference system that provides the basis for defining temporal position to a resolution of one day (ISO 19108*).

Canopy. Bare Earth supplemented by vegetation height.

Controller-pilot data link communications (CPDLC). A means of communication between controller and pilot, using data link for ATC communications.

Confidence level. The probability that the true value of a parameter is within a certain interval around the estimate of its value.

Note.— The interval is usually referred to as the accuracy of the estimate

Cyclic redundancy check (CRC). A mathematical algorithm applied to the digital expression of data that provides a level of assurance against loss or alteration of data.

Controller-pilot data link communications (CPDLC). A means of communication between controller and pilot, using data link for ATC communications.

Culture. All man-made features constructed on the surface of the Earth, such as cities, railways and canals.

Cyclic redundancy check (CRC). A mathematical algorithm applied to the digital expression of data that provides a level of assurance against loss or alteration of data.

Danger area. An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

Data product. Data set or data set series that conforms to a data product specification (ISO 19131*).

Data product specification

Detailed description of a data set or data set series together with additional information that will enable it to be created, supplied to and used by another party (ISO 19131*).

Note.— A data product specification provides a description of the universe of discourse and a specification for mapping the universe of discourse to a data set. It may be used for production, sales, end-use or other purpose.

Data quality. A degree or level of confidence that the data provided meets the requirements of the data user in terms of accuracy, resolution and integrity.

Data set. Identifiable collection of data (ISO 19101*).

Data set series. Collection of data sets sharing the same product specification (ISO 19115*).

Datum. Any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities (ISO 19104*).

Digital Elevation Model (DEM). The representation of terrain surface by continuous elevation values at all intersections of a defined grid, referenced to common datum.

Direct transit arrangements. Special arrangements approved by the public authorities concerned by which traffic which is pausing briefly in its passage through the Contracting State may remain under their direct control.

Ellipsoid height (Geodetic height). The height related to the reference ellipsoid, measured along the ellipsoidal outer normal through the point in question.

Feature. Abstraction of real world phenomena (ISO 19101*).

Note.— A feature attribute has a name, a data type and a value domain associated with it. **Feature attribute.** Characteristic of a feature (ISO 19101*).

Feature operation. Operation that every instance of a feature type may perform (ISO 19110*).

Note.— An operation upon the feature type dam is to raise the dam. The result of this operation is to raise the level of water in the reservoir.

Feature relationship. Relationship that links instances of one feature type with instances of the same or a different feature type (ISO 19101*).

Feature type. Class of real world phenomena with common properties (ISO 19110*).

Note.— In a feature catalogue, the basic level of classification is the feature type.

Geodesic distance. The shortest distance between any two points on a mathematically defined ellipsoidal surface.

Geodetic datum. A minimum set of parameters required to define location and orientation of the local reference system with respect to the global reference system/frame.

Geoid. The equipotential surface in the gravity field of the Earth which coincides with the undisturbed mean sea level (MSL) extended continuously through the continents.

Note.— The geoid is irregular in shape because of local gravitational disturbances (wind tides, salinity, current, etc.) and the direction of gravity is perpendicular to the geoid at every point.

Geoid undulation. The distance of the geoid above (positive) or below (negative) the mathematical reference ellipsoid.

Note.— In respect to the World Geodetic System — 1984 (WGS-84) defined ellipsoid, the difference between the WGS-84 ellipsoidal height and orthometric height represents WGS-84 geoid undulation

Gregorian calendar. Calendar in general use; first introduced in 1582 to define a year that more closely approximates the tropical year than the Julian calendar (ISO 19108*)

Note.— In the Gregorian calendar, common years have 365 days and leap years 366 days divided into twelve sequential months.

Height. The vertical distance of a level, point or an object considered as a point, measured from a specific datum.

Heliport. An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

Human Factors principles. Principles which apply to aero- nautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.

Integrated Aeronautical Information Package. A package in paper, or electronic media which consists of the following elements:

— Supplements to the AIP;

— NOTAM and PIB;

— AIC; and

— checklists and lists of valid NOTAM

Integrity (aeronautical data). A degree of assurance that an aeronautical data and its value has not been lost or altered since the data origination or authorized amendment.

Integrity classification (aeronautical data). Classification based upon the potential risk resulting from the use of corrupted data. Aeronautical data is classified as:

a) routine data: there is a very low probability when using corrupted routine data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe;

b) essential data: there is a low probability when using corrupted essential data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe; and

c) critical data: there is a high probability when using corrupted critical data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe.

International airport. Any airport designated by the Contracting State in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to customs, immigration, public health, animal and plant quarantine and similar procedures are carried out.

International NOTAM office (NOF). An office designated by a State for the exchange of NOTAM internationally.

Logon address. A specified code used for data link logon to an ATS unit.

Manoeuvring area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

Metadata. Data about data (ISO 19115*).

Note.— Data that describes and documents data. A structured description of the content, quality, condition or other characteristics of data.

Minimum en-route altitude (MEA) . The altitude for an en- route segment that provides adequate reception of relevant navigation facilities and ATS communications, complies with the airspace structure and provides the required obstacle clearance.

Minimum obstacle clearance altitude (MOCA) . The minimum altitude for a defined segment of flight that provides the required obstacle clearance.

Movement area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the maneuvering area and the apron(s).

Navigation specification. A set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined airspace. There are two kinds of navigation specifications:
Required navigation performance (RNP) specification. A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by *the prefix RNP, e.g. RNP 4, RNP APCH.*

Area navigation (RNAV) specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.

> *Note 1.— The* Performance-based Navigation (PBN) Manual *(Doc 9613), Volume II, contains detailed guidance on navigation specifications.*
>
> *Note 2.— The term RNP, previously defined as "a statement of the navigation performance necessary for operation within a defined airspace", has been removed from this Annex as the concept of RNP has been overtaken by the concept of PBN. The term RNP in this Annex is now solely used in the context of navigation specifications that require performance monitoring and alerting, e.g. RNP 4 refers to the aircraft and operating requirements, including a 4 NM lateral performance with on-board performance monitoring and alerting that are detailed in Doc 9613.*

NOTAM. A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

Obstacle. All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that:
a) are located on an area intended for the surface movement of aircraft; or
b) extend above a defined surface intended to protect aircraft in flight; or
c) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

Obstacle/terrain data collection surface. A defined surface intended for the purpose of collecting obstacle/terrain data.

Orthometric height. Height of a point related to the geoid, generally presented as an MSL elevation

Required navigation performance (RNP) specification. A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH.

Area navigation (RNAV) specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.

NOTAM. A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

Obstacle. All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that:

- are located on an area intended for the surface movement of aircraft; or
- extend above a defined surface intended to protect aircraft in flight; or
- stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

Obstacle/terrain data collection surface . A defined surface intended for the purpose of collecting obstacle/terrain data.

Orthometric height. Height of a point related to the geoid, generally presented as an MSL elevation.

Performance-based navigation (PBN). Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

Note.— Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.

Portrayal. Presentation of information to humans (ISO 19117*).

Position (geographical). Set of coordinates (latitude and longitude) referenced to the mathematical reference ellipsoid which define the position of a point on the surface of the Earth.

Post spacing. Angular or linear distance between two adjacent elevation points.

Precision. The smallest difference that can be reliably distinguished by a measurement process.

Note.— In reference to geodetic surveys, precision is a degree of refinement in performance of an operation or a degree of perfection in the instruments and methods used when taking measurements.

Pre-flight information bulletin (PIB). A presentation of current NOTAM information of operational significance, prepared prior to flight.

Prohibited area. An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

Quality. Degree to which a set of inherent characteristics fulfils requirements (ISO 9000*).

Note 1.— The term "quality" can be used with adjectives such as poor, good or excellent.

Note 2.— "Inherent", as opposed to "assigned", means existing in something, especially as a permanent characteristic.

Quality assurance. Part of quality management focused on providing confidence that quality requirements will be fulfilled (ISO 9000*).

Quality control. Part of quality management focused on fulfilling quality requirements (ISO 9000*).

Quality management. Coordinated activities to direct and control an organization with regard to quality (ISO 9000*).

Radio navigation service. A service providing guidance information or position data for the efficient and safe operation of aircraft supported by one or more radio navigation aids.

Requirement. Need or expectation that is stated, generally implied or obligatory (ISO 9000*).

Note 1.— "Generally implied" means that it is custom or common practice for the organization, its customers and other interested parties, that the need or expectation under consideration is implied.

Note 2.— A qualifier can be used to denote a specific type of requirement, e.g. product requirement, quality management requirement, customer requirement.

Note 3.— A specified requirement is one which is stated, for example, in a document.

Note 4.— Requirements can be generated by different interested parties.

Resolution. A number of units or digits to which a measured or calculated value is expressed and used.

Restricted area. An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

Route stage. A route or portion of a route flown without an intermediate landing.

SNOWTAM. A special series NOTAM notifying the presence or removal of hazardous conditions due to snow, ice, slush or standing water associated with snow, slush and ice on the movement area, by means of a specific format.

Station declination. An alignment variation between the zero degree radial of a VOR and true north, determined at the time the VOR station is calibrated.

Terrain. The surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles.

Note.— In practical terms, depending on the method of data collection used, terrain represents the continuous surface that exists at the bare Earth, the top of the canopy or something in-between, also known as "first reflective surface".

Traceability. Ability to trace the history, application or location of that which is under consideration (ISO 9000*).

Note.— When considering product, traceability can relate to:

— the origin of materials and parts;

— the processing history; and

— the distribution and location of the product after delivery.

Validation. Confirmation, through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled (ISO 9000*).

Verification. Confirmation, through the provision of objective evidence, that specified requirements have been fulfilled (ISO 9000*).

Note 1.— The term "verified" is used to designate the corresponding status.

Note 2.— Confirmation can comprise activities such as:

— performing alternative calculations;

— comparing a new design specification with a similar proven design specification;

— undertaking tests and demonstrations; and

— reviewing documents prior to issue.

VOLMET. Meteorological information for aircraft in flight.

Data link-VOLMET (D-VOLMET). Provision of current aerodrome routine meteorological reports (METAR) and aerodrome special meteorological reports (SPECI), aerodrome forecasts (TAF), SIGMET, special air-reports not covered by a SIGMET and, where available, AIRMET via data link.

VOLMET broadcast. Provision, as appropriate, of current METAR, SPECI, TAF and SIGMET by means of continuous and repetitive voice broadcasts.

* ISO Standards

9000 — Quality Management Systems — Fundamentals and Vocabulary

19101 —Geographic information — Reference model

19104 —Geographic information — Terminology

19108 —Geographic information — Temporal schema

19109 —Geographic information — Rules for application schema

19110 —Geographic information — Feature cataloguing schema

19115 —Geographic information — Metadata

19117 —Geographic information — Portrayal

19131 —Geographic information — Data product specification

1.1.2 Abbreviations

1.2.1 Those abbreviations which are annotated with an asterisk (*) are either not used by ICAO in Annex 15, or have a different meaning to ICAO.

ACC	Area Control Center or Area Control
ACFT	Aircraft
ACL	Altimeter check location
ACN	Aircraft classification number
AD	Aerodrome
ADA	Advisory area
ADF	Automatic direction finding equipment
ADIZ	Air defense identification zone
ADR	Advisory route
AFIS service	Aerodrome flight information
AGA aids	Aerodromes, air routes and ground
AGL	Above ground level
AIC	Aeronautical information circular
AIM management	Aeronautical information
AIP publication	Aeronautical information
AIRAC and control	Aeronautical information regulation
AIS	Aeronautical information services
ALT	Altitude
ALTN	Alternate (aerodrome)
ANS	Air Navigation Services
AMSL	Above mean sea level
APCH	Approach
APP control	Approach control office or approach
APV guidance	Approach procedure with vertical
ARP	Aerodrome reference point
ASDA	Accelerate-stop distance available
ATC	Air traffic control
ATIS service	Automatic terminal information
ATS	Air traffic services
ATSP*	Air traffic services procedures
ATSU*	Air traffic services unit
ATZ	Aerodrome traffic zone
AVASIS	Abbreviated visual approach slope indicator system
AWY	Airway
AZM	Azimuth
B	Blue
BA	Braking action
BASE	Cloud base
BCN	Beacon (aeronautical ground light)
BCST	Broadcast
BDRY	Boundary
BKN	Broken
BLDG	Building
BLW	Below
BRG	Bearing
BTN	Between
C	Degrees Celsius
C/L	Center line
CAS	Calibrated air speed
CAT I-II-III*	Associated with an approach type.
CAVOK	Visibility, cloud and present weather better than prescribed values or conditions
CBA*	Cross Border Area
CCB	Common Control Boundary
CM	Centimetre
CNS	Communications, Navigation, Surveillance

COM	Communications
COP	Change-over point
CRC	Cyclic redundancy check
CTA	Control area
CTL	Control
CTR	Control zone
D	Danger area
DA	Decision altitude
D-ATIS	Digital automatic terminal information service
DEG	Degrees
DH	Decision height
DIST	Distance
DME	Distance measuring equipment
DVOR	Doppler VOR
E	East or eastern longitude
ELEV	Elevation
F	
FAF	Final approach fix
FAP	Final approach point
FIC	Flight information center
FIR	Flight information region
FIS	Flight information service
FL	Flight level
FREQ	Frequency
FT	Feet
G	Green
GACA	General Authority of Civil Aviation
GACAR	GACA Regulation
GAT	General air traffic
GEN	General
GND	Ground
GP	Glide path
GS	Ground speed
H	
H24	Continuous day and night service
HDG	Heading
HEL	Helicopter
HF	High frequency (3 to 30 MHz)
HGT	Height or height above
hPA	HECTOPASCAL
HZ	Hertz (cycle per second)
I	
IAC	Instrument approach chart
IAF	Initial approach fix
IAP	Instrument approach procedure
IAS	Indicated air speed
ICAO	International Civil Aviation Organization
ID	Identifier or identify
IDENT	Identification
IF	Intermediate fix
IFR	Instrument flight rules
ILS	Instrument landing system
IM	Inner Marker
IMC	Instrument meteorological conditions
INA	Initial approach
INFO	Information
INS	Inertial navigational system
INT	Intersection
ISA	International standard atmosphere
ISO	International Standards Organization
K	
Khz	Kilohertz
KM	Kilometers
KSA*	Kingdom of Saudi Arabia
KT	Knots
L	Left
LAT	Latitude
LCN	Load classification number
LDA	Landing distance available

LDG	Landing
LDI	Landing direction indicator
LLZ	Localizer
LM	Locator, middle
LO	Locator outer
LONG	Longitude
LVL	Level
M	Meters
MAG	Magnetic
MAPT	Missed approach point
MDA	Minimum descent altitude
MDH	Minimum descent height
MEA	Minimum en-route altitude
MET	Meteorological or meteorology
METAR	Aviation routine weather report
MHZ	Megahertz
MIL	Military
MIN	Minutes
MKR	Marker radio beacon
MM	Middle Marker
MNM	Minimum
MOA	Military operating area
MOC	Minimum obstacle clearance
MOR	Meteorological optical range
MRP	ATS/MET reporting point
MS	Minus
MSA	Minimum sector altitude
MSAW	Minimum Safe Altitude Warning
MSL	Mean sea level
MVA	Minimum Vectoring Altitude
N	North
NAV	Navigation
NDB	Non-directional radio beacon
NE	North-east
NIL	None
NM	Nautical miles
NOF	International NOTAM office
NOSIG	No significant change
NOTAM*	Notice to airmen
NOZ	Normal operating zone
NPA	Non precision approach
NTZ	No transgression zone
NW	North-west
O/R	On request
OAT*	Operational Air Traffic
OCA	Obstacle clearance altitude
OCH	Obstacle clearance height
OM	Outer marker
P	Prohibited
PA	Precision approach
PANS services	Procedures for air navigation
PAPI	Precision Approach Path Indicator
PAR	Precision approach radar
PCN	Pavement classification number
PLN	Flight Plan
PSN	Position
PSR	Primary Surveillance Radar
PTN	Procedure turn
QFE	Atmospheric pressure at aerodrome elevation (or at runway threshold)
QNH	Altimeter sub-scale setting to obtain elevation when on the ground
R	Red, right, restricted area, radar, or RNP certified
RA	Resolution Advisory
RCC	Rescue Coordination Center
RCF	Radio communication failure
RCL	Runway center line
RCP performance	Required communications

RDL	Radial
REP	Reporting point
RNAV	Area Navigation
RNP	Required Navigation Performance
ROC	Rate of climb
RPI	Radar position indication
RPS	Radar position symbol
RSR	En-route surveillance radar
RVR	Runway Visual range
RWY	Runway
S	South or southern latitude
SARPS	Standards and recommended practices
SE	South-east
SD	Safety Department
S&AT*	Safety & Air Transport
SFC	Surface of the Earth
SID	Standard instrument departure
SMC	Surface movement control
SRA	Surveillance radar approach
STAR	Standard (instrument) arrival
SW	South-west
SWY	Stop-way
T	Temperature
TA	Transition altitude
TACAN	Tactical air navigation aid
TAR	Terminal area surveillance radar
TAS	True airspeed
TDZ	Touchdown zone
TEL	Telephone
TFC	Traffic
TFR*	Transfer of control
TGS	Taxiing guidance system
THR	Threshold
TIL	Until
TIBA	Traffic Information Broadcasts by Aircraft
TKOF	Take off
TMA	Terminal control area
TODA	Take off distance available
TORA	Take off run available
TR	Track
TRA	Radar transfer of control message
TWR	Aerodrome control TWR or aerodrome control
TWY	Taxiway
U/S	Unserviceable
UHF	Ultra high frequency (300 to 3000 MHZ)
UNL	Unlimited
UTC	Coordinated Universal Time
V	
VAC	Visual approach chart
VAR	Magnetic Variation
VASIS	Visual approach slope indicator system
V-ATIS	Voice-automatic terminal information service
VER	Vertical
VFR	Visual flight rules
VHF	Very high frequency (30 to 300 MHZ)
VIS	Visibility
VMC	Visual meteorological conditions
VOR	VHF omni-directional radio range
VORTAC	VOR and TACAN
VSM	Vertical separation minimum
W	West, western longitude
WAC	World aeronautical chart ICAO 1:1,000,000
WDI	Wind direction indicator
WPT	Way-point
WX	Weather
X	

XBAR	Crossbar
Y	Yellow
YCZ	Yellow caution zon

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1.2 Common reference systems for air navigation

1.2.1 Horizontal reference system

1.2.1.1 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.

Note 1.— Comprehensive guidance material concerning WGS-84 is contained in the World Geodetic System — 1984 (WGS-84) Manual *(Doc 9674).*

Note 2.— Specifications governing the determination and reporting (accuracy of field work and data integrity) of WGS-

84-related aeronautical coordinates for geographical positions established by air traffic services are given in Annex 11,

Chapter 2, and Appendix 5, Table 1, and for aerodrome/heliport-related positions, in Annex 14, Volumes I and II, Chapter 2, and Table A5-1 and Table 1 of Appendices 5 and 1, respectively.

1.2.1.2 **Recommendation.—** *In precise geodetic applications and some air navigation applications, temporal changes*

in the tectonic plate motion and tidal effects on the Earth's crust should be modelled and estimated. To reflect the temporal effect, an epoch should be included with any set of absolute station coordinates.

Note 1.— The epoch of the WGS-84 (G873) reference frame is 1997.0 while the epoch of the latest updated WGS-84 (G1150) reference frame, which includes plate motion model, is 2001.0. (G indicates that the coordinates were obtained through Global Positioning System (GPS) techniques, and the number following G indicates the GPS week when these coordinates were implemented in the United States of America's National Geospatial-Intelligence Agency's (NGA's) precise ephemeris estimation process.)

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

Note 3.— Another precise worldwide terrestrial coordinate system is the International Earth Rotation Service (IERS) Terrestrial Reference System (ITRS), and the realization of ITRS is the IERS Terrestrial Reference Frame (ITRF). Guidance material regarding the ITRS is provided in Appendix C of Doc 9674. The most current realization of the WGS-84 (G1150) is referenced to the ITRF 2000 epoch. The WGS-84 (G1150) is consistent with the ITRF 2000 and in practical realization the difference between these two systems is in the one to two centimetre range worldwide, meaning WGS-84 (G1150) and ITRF 2000 are essentially identical.

1.2.1.3 Geographical coordinates which have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in Annex 11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2, shall be identified by an asterisk.

1.2.1.4 The order of publication resolution of geographical coordinates shall be that specified in Appendix 1 and Table A7-1 of Appendix 7 while the order of chart resolution of geographical coordinates shall be that specified in Annex 4, Appendix 6, Table 1.

1.2.2 Vertical reference system

1.2.2.1 Mean sea level (MSL) datum, which gives the relationship of gravity-related height (elevation) to a surface known as the geoid, shall be used as the vertical reference system for international air navigation.

1.2.2.2 For any volume of airspace or military area starting from the Surface of the Earth, the abbreviation SFC shall be used as reference datum for the description of the lower limit of this volume of airspace or military area in KSA AIP.

Note 1.— The geoid globally most closely approximates MSL. It is defined as the equipotential surface in the gravity field of the Earth which coincides with the undisturbed MSL extended continuously through the continents.

Note 2.— Gravity-related heights (elevations) are also referred to as orthometric heights while distances of points above the ellipsoid are referred to as ellipsoidal heights.

1.2.2.3 The Earth Gravitational Model — 2008 (EGM-2008), containing long wavelength gravity field data to degree and order 360, shall be used by international air navigation as the global gravity model.

1.2.2.4 At those geographical positions where the accuracy of EGM-2008 does not meet the accuracy requirements for elevation and geoid undulation specified in Annex 14, Volumes I and II, on the basis of EGM-2008 data, regional, national or

local geoid models containing high resolution (short wavelength) gravity field data shall be developed and used. When a geoid model other than the EGM-2008 model is used, a description of the model used, including the parameters required for height transformation between the model and EGM-2008, shall be provided in the Aeronautical Information Publication (AIP).

Note.— Specifications governing determination and reporting (accuracy of field work and data integrity) of elevation and geoid undulation at specific positions at aerodromes/heliports are given in Annex 14, Volumes I and II, Chapter 2, and Table A5-2 and Table 2 of Appendices 5 and 1, respectively.

1.2.2.5 In addition to elevation referenced to the MSL (geoid), for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions specified in Appendix 1 shall also be published.

1.2.2.6 The order of publication resolution of elevation and geoid undulation shall be that specified in Appendix 1 and Table A7-2 of Appendix 7 while the order of chart resolution of elevation and geoid undulation shall be that specified in Annex 4, Appendix 6, Table 2.

1.2.3 Temporal reference system

1.2.3.1 For international civil aviation, the Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system.

Note 1.— A value in the time domain is a temporal position measured relative to a temporal reference system.

Note 2.— Coordinated Universal Time (UTC) is a time scale maintained by the Bureau International de l'Heure (BIH) and the IERS and forms the basis of a coordinated dissemination of standard frequencies and time signals.

Note 3.— See Attachment D of Annex 5 for guidance material relating to UTC.

Note 4.— ISO Standard 8601 specifies the use of the Gregorian calendar and 24-hour local or UTC for information interchange while ISO Standard 19108 prescribes the Gregorian calendar and UTC as the primary temporal reference system for use with geographic information.

1.2.3.2 When a different temporal reference system is used for some applications, the feature catalogue, or the metadata associated with an application schema or a data set, as appropriate, shall include either a description of that system or a citation for a document that describes that temporal reference system.

Note.— ISO Standard 19108, Annex D, describes some aspects of calendars that may have to be considered in such a description.

1.3 Miscellaneous specifications

1.3.1 Each element of the Integrated Aeronautical Information Package for international distribution shall include English text for those parts expressed in plain language.

1.3 Miscellaneous specifications

1.3.1 Each element of the Integrated Aeronautical Information Package for international distribution shall include English text for those parts expressed in plain language.

1.3.2 Place names shall be spelt in conformity with local usage, transliterated, when necessary, into the Latin alphabet.

1.3.3 **Recommendation.—** *Units of measurement used in the origination, processing and distribution of aeronautical data and aeronautical information should be consistent with the decision taken by the State in respect of the use of the tables contained in Annex 5* — Units of Measurement to be Used in Air and Ground Operations.

1.3.4 ICAO abbreviations shall be used in the aeronautical information services whenever they are appropriate and their use will facilitate distribution of aeronautical data and aeronautical information.

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* ISO Standard

9000 — Quality Management Systems — Fundamentals and Vocabulary

19101 — Geographic information — Reference model

19104 — Geographic information — Terminology

19108 — Geographic information — Temporal schema

19109 — Geographic information — Rules for application schema

19110 — Geographic information — Feature cataloguing schema

19115 — Geographic information — Metadata

19117 — Geographic information — Portrayal

19131 — Geographic information — Data product specification

CHAPTER 2 – RESPONSIBILITIES AND FUNCTIONS

2.1 Aeronautical Information Service

2.1.1 The objective of the Aeronautical Information Service is to ensure the flow of accurate aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of international air navigation. This is achieved by the publication and distribution of the Integrated Aeronautical Information Package (IAIP), the elements of which originate from the requirements specified in:

a) ICAO Annex 15 – Standards and Recommended Practices for Aeronautical Information Services;

b) ICAO Annex 4 – Standards and Recommended practices for Aeronautical Charts; and

2.2 Aeronautical Information Management

2.2.1 Scope of AIS

2.2.1.1 Under the provision of Article 5 of the Civil Aviation Law, the General Authority of Civil Aviation (GACA) shall be solely in charge of all civil aviation affairs in the Kingdom of Saudi Arabia which include the Aeronautical Information Services.

2.2.2 AIS Staff operational competence

2.2.2.1 The AIS Department shall develop job description for all AIS technical staff involved in the management of aeronautical information.

2.2.2.2 In order to ensure an adequate level of operational competence, AIS department shall develop training program for all AIS staff, which covers initial, on-the-job (OJT), recurrent and advanced/specialized training, as appropriate. In addition, AIS department shall develop an annual training plan detailing and prioritizing what type of training will be provided. This plan shall cover at least the recurrent training and include all AIS staff involved in the management of aeronautical information.

2.2.2.3 Prior to being assigned tasks and responsibilities, each new AIS technical staff shall be required to satisfactory complete OJT in accordance with the AIS department OJT program.

2.2.2.4 The AIS department, together with GACA-ANS-Human Resources, shall develop a system for keeping current the training records for all AIS technical staff.

2.3 Integrated Aeronautical Information Package

2.3.1 The Integrated Aeronautical Information Package (IAIP) is the collective term for the Aeronautical data and aeronautical information that AIS is required to provide and which consists of:

a) the AIP, including amendment service;

b) Supplements to the AIP;

c) NOTAM;

d) Pre-Flight Information Bulletins;

e) AIC;

f) Checklists and lists of valid NOTAM.

2.4 Copyright & cost recovery

Note.— In order to protect the investment in the products of a AIS as well as to ensure better control of their use, AIS may wish to apply copyright to those products in accordance with KSA national laws.
Any product of AIS which has been granted copyright protection and provided to another State in accordance with 2.6.3 shall only be made available to a third party on the condition that the third party is made aware that the product is copyright protected and provided that it is appropriately annotated that the product is subject to copyright by the originating AIS.

Recommendation.— *The overhead cost of collecting and compiling aeronautical data and aeronautical information*

should be included in the cost basis for airport and air navigation services charges, as appropriate, in accordance with the principles contained in ICAO's Policies on Charges for Airports and Air Navigation Services *(Doc 9082).*
Note.— When costs of collection and compilation of aeronautical data and aeronautical information are recovered through airports and air navigation services charges, the charge to an individual customer for the supply of a particular AIS product may be based on the costs of printing paper copies, production of electronic media, and costs of distribution.

2.5 Regulatory Oversight Mechanism

2.5.1 Through GACA-S&AT, GACA exercises regulatory oversight of the AIM domain, in accordance with its responsibilities under Civil Aviation Act and applicable regulations.

2.5.2 Regulated Areas

2.5.2.1 Regulated areas fall into four main categories, these being – data management, the construction of the individual elements of the IAIP, publication and distribution. Within this categorization, the following aspects shall be examined:

a) Conformity to GACAR Section 15 and any ICAO Annex 15 provision not covered by GACA regulation - ensuring that the Standards and Recommended Practices (SARP) in Annex 15 are being followed and applied;

b) Conformity to GACAR Section 4 and any ICAO Annex 4 – provision not covered by GACA Regulation ensuring that the Standards and Recommended Practices in Annex 4 are being followed and applied;

c) Quality management: The system in place for aeronautical information management (AIM) must be capable to assess, check and support the quality of aeronautical information and all aspects of the AIS operations;

d) Adherence to the publication procedures and provision of hard and soft copies of all aeronautical information that will be published;

e) Adherence to the AIRAC cycle requiring the publication and distribution of information 56 days before its AIRAC effective date;

f) Customer satisfaction addressing the quality and relevance of the service to the customer.

2.5.3 ICAO Compliance

2.5.3.1 GACA regulatory policy is to ensure compliance with each ICAO SARP. Where GACA arrangements for the provision of the AIS or the presentation of aeronautical data and aeronautical information differ from ICAO, these differences shall be notified by GACA to ICAO and published within KSA AIP.(Section GEN-1.7).

2.5.3.2.1 All differences notified to ICAO against Annex 15 shall be agreed between GACA-ANS and GACA-S&AT.

2.5.4 Methods of implementing the Regulatory Oversight Mechanism

2.5.4.1 Regulatory oversight of the AIS is achieved by direct interface between GACA-S&AT and GACA-ANS.

2.5.5 Contact Persons

2.5.5.1 The GACA-S&AT and GACA-ANS have nominated the managers GACA-S&AT (ANS Safety) and the GACA-ANS (AIS department) as contact person responsible for ongoing liaison and discussion

2.5.6 Bi-Annual Interface Meetings

2.5.6.1 When needed, formal bi-annual interface meetings will be held between AIS Managers and the GACA-S&AT (Safety department). These meetings shall address any operational difficulties or other issues that may have raised in relation to the KSA AIM provision. The outcome of these meetings shall be documented and forwarded to, GACA-S&AT Vice President and GACA-ANS Vice President.

2.5.7 Annual Meetings

2.5.7.1 When needed, GACA-S&AT Vice President and GACA-ANS Vice President will convene a joint meeting at least once during each year with all the concerned managers. These meetings shall address strategic developments within the Aeronautical Information Services (AIS) environment, and include a general review of the performance during the year. The outcome of this meeting shall be documented and forwarded to GACA President.

2.5.8 Other Meetings

2.5.8.1 Other ad-hoc formal meetings may be arranged between the GACA-S&AT (Safety Department) and the GACA-ANS concerned departments, if either party deems it necessary, and, with adequate notice and reasonable justification given. The outcome of any such meetings shall be documented.

2.5.9 Annual Formal Audits

2.5.9.1 Audits of GACA-ANS (AIS) shall be carried out on an annual basis in addition to the activities described in paragraphs 2.5.6 and 2.5.7. Audits shall be held on predetermined dates agreed in advance and reasonable notice shall be given to the GACA-ANS (AIS). More frequent audits may be instigated as determined by GACA-S&AT. The annual audit shall at least address the following items:

a) Outstanding Items form previous audits or inspections;

b) Staff issues;

c) Coordination with data originators and customers;

d) Traceability of information;

e) Service availability;

f) Timeliness/compliance with AIRAC procedures;

g) Publication Schedule Effectiveness;

h) AIS Information Distribution Process;

i) NOTAM Specific Measures;

j) Safety and Quality of Information;

k) User consultation;

l) Compliance with Quality Management System;

m) Other areas as required.

2.5.10 Customer Forum

2.5.10.1 GACA-ANS (AIS department) shall hold an annual forum, consultation or survey with its customers in order to determine the quality of the service provided and to ascertain whether or not it meets their requirements. The GACA-S&AT shall be informed and can attend any meetings as an observer.

2.5.11 Users and Customer Feedback

2.5.11.1 GACA-ANS (AIS department) shall address and respond to all customer inquiries and feedback. Customers have the right to contact GACA-S&AT (Safety Department) when an issue raised remains open or not resolved.

2.6 RESPONSIBILITIES AND FUNCTIONS

2.6.1 GACA-ANS responsibilities

2.6.1.1 GACA-ANS shall provide aeronautical information service on behalf of the General Authority of Civil Aviation (GACA).

2.6.1.2 GACA-ANS shall ensure that the provision of aeronautical data and aeronautical information covers Jeddah Flight Information Region where GACA-ANS is responsible for the provision of air traffic services.

2.6.1.3 GACA-ANS shall remain responsible for the aeronautical data and aeronautical information provided in accordance with 2.6.1.2.
2.6.1.4 GACA-ANS shall ensure that the aeronautical data and aeronautical information provided are complete, timely and of required quality in accordance with 3.3.

2.6.1.5 GACA-ANS shall ensure that formal arrangements are established between originators of aeronautical data and aeronautical information and the aeronautical information service in relation to the timely and complete provision of aeronautical data and aeronautical information.

2.6.2 AIS responsibilities and functions

2.6.2.1 AIS Department shall ensure that aeronautical data and aeronautical information necessary for the safety, regularity or efficiency of air navigation are made available in a form suitable for the operational requirements of the ATM community, including:

a) Those involved in flight operations, including flight crews, flight planning and flight simulators; and

b) the air traffic services unit responsible for flight information service and the services responsible for pre-flight information.

Note.— A description of the ATM community is contained in the Global Air Traffic Management Operational Concept *(Doc 9854).*

2.6.2.2 AIS Department shall receive, collate or assemble, edit, format, publish/store and distribute aeronautical data and aeronautical information concerning the entire territory of KSA as well as those areas over the high seas in which GACA-ANS is responsible for the provision of air traffic services. Aeronautical data and aeronautical information shall be provided as an Integrated Aeronautical Information Package.

Note.— An aeronautical information service may include origination functions.

2.6.2.3 Where 24-hour service is not provided, service shall be available during the whole period an aircraft is in flight in the area of responsibility of an aeronautical information service, plus a period of at least two hours before and after such a period. The service shall also be available at such other time as may be requested by an appropriate ground organization.
2.6.2.4 AIS Department shall, in addition, obtain aeronautical data and aeronautical information to enable it to provide pre-flight information service and to meet the need for in-flight information:
a) from the aeronautical information services of other States;

b) from other sources that may be available.

Note.— One such source is the subject of a provision in 8.3.

2.6.2.5 Aeronautical data and aeronautical information obtained under 2.6.2.4 a) shall, when distributed, be clearly identified as having the authority of the State of Origin.

2.6.2.6 Aeronautical data and aeronautical information obtained under 2.6.2.4 b) shall, if possible, be verified before distribution and if not verified shall, when distributed, be clearly identified as such.

2.6.2.7 An aeronautical information service shall promptly make available to the aeronautical information services of other States any aeronautical data and aeronautical information necessary for the safety, regularity or efficiency of air navigation required by them, to enable them to comply with 2.6.2.1.

2.6.3 Exchange of aeronautical data and aeronautical information

2.6.3.1 Each State shall designate the office to which all elements of the Integrated Aeronautical Information Package originated by other States shall be addressed. Such an office shall be qualified to deal with requests for aeronautical data and aeronautical information originated by other States.
2.6.3.2 Where more than one international NOTAM office is designated within GACA-ANS, the extent of responsibility and the territory covered by each office shall be defined.

2.6.3.3 An aeronautical information service shall arrange, as necessary, to satisfy operational requirements for the issuance and receipt of NOTAM distributed by telecommunication.

2.6.3.4 Wherever practicable, direct contact between AIS Department and other aeronautical information services shall be established in order to facilitate the international exchange of aeronautical data and aeronautical information.

2.6.3.5 One copy of each of the elements of the Integrated Aeronautical Information Package that have been requested by the aeronautical information service of an ICAO Contracting State shall be made available by the

originating State in the mutually-agreed form(s), without charge, even where authority for publication/storage and distribution has been delegated to a non-governmental agency.

2.6.3.6 **Recommendation.—** *The exchange of more than one copy of the elements of the Integrated Aeronautical Information Package and other air navigation documents, including those containing air navigation legislation and regulations, should be subject to bilateral agreement between ICAO Contracting States.*

2.6.3.7 **Recommendation.—** *The procurement of aeronautical data and aeronautical information, including the elements of the Integrated Aeronautical Information Package, and other air navigation documents, including those containing air navigation legislation and regulations, by States other than ICAO Contracting States and by other entities should be subject to separate agreement with the originating State.*

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CHAPTER 3. AERONAUTICAL INFORMATION MANAGEMENT

3.1 Information management requirements

3.1.1 The information management resources and processes established by AIS department shall be adequate to ensure the timely collection, processing, storing, integration, exchange and delivery of quality-assured aeronautical data and aeronautical information within the ATM system.

3.2 Aeronautical data and aeronautical information validation and verification

3.2.1 Material to be issued as part of the Integrated Aeronautical Information Package shall be thoroughly checked before it is submitted to the aeronautical information service, in order to make certain that all necessary information has been included and that it is correct in detail prior to distribution.

3.2.2 An aeronautical information service shall establish verification and validation procedures which ensure that upon receipt of aeronautical data and aeronautical information, quality requirements (accuracy, resolution, integrity and traceability) are met.

Note 1.— Guidance material on the liaison with other related services is contained in Doc 8126.

Note 2.— Guidance material on the aeronautical data quality requirements (accuracy, resolution, integrity, and traceability and protection requirements) may be found in the World Geodetic System — 1984 (WGS-84) Manual *(Doc 9674). Supporting data quality material in respect of data accuracy, publication resolution, and integrity of aeronautical data, together with guidance material in respect to the rounding convention for aeronautical data, is contained in RTCA Document DO-201A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-77 — Standards for Aeronautical Information (or equivalent).*

Note 3.— Guidance material on the management of aeronautical data quality is included in the Manual on the Quality Management System for Aeronautical Information Services (Doc 9839).

3.3 Data quality specifications

3.3.1 Accuracy

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)

Note.— The accuracy requirements for electronic terrain and obstacle data are specified in Appendix 8.

3.3.2 Resolution

3.3.2.1 The order of publication resolution of aeronautical data shall be that as specified in Appendices 1 and 7.*3.3.2.2*

Recommendation.— The resolution of the data features contained in the database should be commensurate with the data accuracy requirements.

Note.— The resolution of the data features contained in the database may be the same or finer than the publication resolution.

3.3.3 Integrity

3.3.3.1 The integrity classification related to aeronautical data shall be as provided in Tables A7-1 to A7-5 of Appendix A7

7.3.3.3.2 The integrity of aeronautical data shall be maintained throughout the data process from survey/origin to distribution to the next intended user (the entity that receives the aeronautical information from the aeronautical information service provider). Based on the applicable integrity classification, the validation and verification procedures shall:

a) for routine data: avoid corruption throughout the processing of the data;

b) for essential data: assure corruption does not occur at any stage of the entire process and may include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and

c) for critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance processes to fully mitigate the effects of faults identified by thorough analysis of the overall system architecture as potential data integrity risks.

Note 1.— Guidance material in respect to the processing of aeronautical data and aeronautical information is contained in RTCA Document DO-200A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76 — Standards for Processing Aeronautical Data.

Note 2.— Error-producing faults in the entire process may be mitigated by additional data quality assurance techniques as may be required. These could include application tests for critical data (for example, by flight check); the use of security, logic, semantic, comparison, and redundancy checks; digital error detection; and the qualification of human resources and process tools such as hardware and software.

Note 3.— Distribution to the next intended user will differ in the delivery method applied which may either be: Physical distribution. The means by which aeronautical data and aeronautical information distribution is achieved through the delivery of a physical package, such as postal services; or Direct electronic distribution. The means by which aeronautical data and aeronautical information distribution is achieved automatically through the use of a direct electronic connection between the AIS and the next intended user.

Note 4.— Different delivery methods and data media may require different procedures to ensure the required data

3.4 Metadata

3.4.1 Metadata shall be collected for aeronautical data processes and exchange points. This metadata collection shall be applied throughout the aeronautical information data chain, from survey/origin to distribution to the next intended user.
Note.— ISO Standard 19115 specifies requirements for geographic information metadata.

3.4.2 The metadata to be collected shall include, as a minimum:

a) the name of the organizations or entities performing any action of originating, transmitting or manipulating the data;

b) the action performed; and

c) the date and time the action was performed.

3.5 Data protection

3.5.1 Aeronautical data and data sets shall be protected in accordance with data error detection, security, and authentication techniques.

Note.— The Aeronautical Information Services Manual *(Doc 8126) contains suitable guidance on data error detection, security, and authentication techniques.*

3.5.2 Electronic aeronautical data sets shall be protected by the inclusion in the data sets of a 32-bit cyclic redundancy check (CRC) implemented by the application dealing with the data sets. This shall apply to the protection of the integrity classification of data sets as specified in 3.3.3.

Note 1.— This requirement does not apply to the communications systems used for the transfer of data sets.

Note 2.— Guidance on the use of a 32-bit CRC algorithm to implement a protection of electronic aeronautical data sets is contained in the Aeronautical Information Services Manual *(Doc 8126).*

3.6 Use of automation

3.6.1 Automation shall be introduced with the objective of improving the timeliness, quality, efficiency and cost effectiveness of aeronautical information services.

Note.— Guidance on the development of databases and the establishment of data exchange services may be found in the Aeronautical Information Services Manual *(Doc 8126).*

3.6.2 Where aeronautical data and aeronautical information are provided in multiple formats, processes shall be implemented to ensure data and information consistency between formats.

3.6.3 In order to meet the data quality requirements, automation shall:

a) enable digital aeronautical data exchange between the parties involved in the data processing chain; and

b) use aeronautical information exchange models and data exchange models designed to be globally interoperable.

Note.— Guidance on the aeronautical information and data exchange models may be found in the Aeronautical Information Services Manual *(Doc 8126).*

3.6.4 **Recommendation.—** *The aeronautical information model used should encompass the aeronautical data and aeronautical information to be exchanged.*

3.6.5 **Recommendation.—** *The aeronautical information model used should:*
a) use the Unified Modelling Language (UML) to describe the aeronautical information features and their properties, associations and data types;
b) include data value constraints and data verification rules;
c) include provisions for metadata as specified in 3.4.2; and
d) include a temporality model to enable capturing the evolution of the properties of an aeronautical information feature during its life cycle.

3.6.6 **Recommendation.—** *The aeronautical data exchange model used should:*

a) apply a commonly used data encoding format;
b) cover all the classes, attributes, data types and associations of the aeronautical information model detailed in 3.6.5; and

c) provide an extension mechanism by which groups of users can extend the properties of existing features and add new features which do not adversely affect global standardization.

Note 1.—The intent of using a commonly used data encoding format is to ensure interoperability of aeronautical data exchange between agencies and organizations involved in the data processing chain.

Note 2.—Examples of commonly used data encoding formats include Extensible Markup Language (XML), Geography Markup Language (GML), and JavaScript Object Notation (JSON).

3.7 Quality management system

3.7.1 Quality management systems shall be implemented and maintained encompassing all functions of an aeronautical information service, as outlined in 2.2. The execution of such quality management systems shall be made demonstrable for each function stage.

Note.— Guidance material is contained in the Manual on the Quality Management System for Aeronautical Information Services *(Doc 9839).*

3.7.2 **Recommendation.—** *Quality management should be applicable to the whole aeronautical information data chain from data origination to distribution to the next intended user, taking into consideration the intended use of data.*

Note 1.— Quality management may be provided by a single quality management system or serial quality management systems.

Note 2.— Letters of agreement concerning data quality between originator and distributor and between distributor and next intended user may be used to manage the aeronautical information data chain.

3.7.3 **Recommendation.—** *The quality management system established in accordance with 3.7.1 should follow the International Organization for Standardization (ISO) 9000 series of quality assurance standards, and be certified by an approved organization.*

Note 1.— An ISO 9000 certificate issued by an accredited certification body would be considered an acceptable means of compliance.

Note 2.— International Organization for Standardization (ISO) 9000 series of quality assurance standards provide a basic framework for the development of a quality assurance programme and define the term "accredited certification body". The details of a successful programme are to be formulated by each State and in most cases are unique to the State organization.

Note 3.— Supporting material in respect of the processing of aeronautical data is contained in RTCA Document DO-200A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76 — Standards for Processing Aeronautical Data. *These standards support the development and application of aeronautical databases.*

3.7.4 Within the context of the established quality management system, the competencies and the associated knowledge, skills and abilities required for each function shall be identified, and personnel assigned to perform those functions shall be appropriately trained. Processes shall be in place to ensure that personnel possess the competencies required to perform specific assigned functions. Appropriate records shall be maintained so that the qualifications of personnel can

be confirmed. Initial and periodic assessments shall be established that require personnel to demonstrate the required competencies. Periodic assessments of personnel shall be used as a means to detect and correct shortfalls.

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

3.7.5 Each quality management system shall include the necessary policies, processes and procedures, including those for the use of metadata, to ensure and verify that aeronautical data are traceable throughout the aeronautical information data chain so as to allow any data anomalies or errors detected in use to be identified by root cause, corrected and communicated to affected users.

3.7.6 The established quality management system shall provide users with the necessary assurance and confidence that distributed aeronautical data and aeronautical information satisfy the aeronautical data quality requirements for accuracy, resolution and integrity as specified in 3.2 and 3.3 and that the data traceability requirements are met through the provision of appropriate metadata as specified in 3.4. The system shall also provide assurance of the applicability period of intended use of aeronautical data as well as that the agreed distribution dates will be met.

3.7.7 All necessary measures shall be taken to monitor compliance with the quality management system in place.

3.7.8 Demonstration of compliance of the quality management system applied shall be by audit. If nonconformity is identified, initiating action to correct its cause shall be determined and taken without undue delay. All audit observations and remedial actions shall be evidenced and properly documented.

3.8 Human Factors considerations

3.8.1 The organization of the aeronautical information services as well as the design, contents, processing and distribution of aeronautical data and aeronautical information shall take into consideration Human Factors principles which facilitate their optimum utilization.

3.8.2 Due consideration shall be given to the integrity of information where human interaction is required and mitigating steps taken where risks are identified.

Note.— This may be accomplished through the design of systems, through operating procedures or through improvements in the operating environment

CHAPTER 4 - AERONAUTICAL INFORMATION PUBLICATIONS (AIP)

Note 1.— KSA AIP is intended primarily to satisfy international requirements for the exchange of aeronautical information of a lasting character essential to air navigation. When practicable, the form of presentation is designed to facilitate its use in flight.

Note 2.— KSA AIP constitute the basic information source for permanent information and long duration temporary changes.

4.1 Contents

4.1.1 The KSA Aeronautical Information Publication shall contain, in three parts, sections and subsections uniformly referenced to allow for standardized electronic data storage and retrieval, current information relating to, and arranged under, those subjects enumerated in Appendix A1 that appear in Roman type.

4.1.1.1 KSA Aeronautical Information Publications shall, in addition, contain current information relating to those subjects enumerated in Appendix A1 that appear in italic type.

4.1.2 KSA Aeronautical Information Publications shall include in Part 1 — General (GEN):

a) a statement of GACA-ANS, services or procedures covered by the AIP;

b) the general conditions under which the services or facilities are available for international use;

c) a list of significant differences between GACA regulations and practices and the related ICAO Standards, Recommended Practices and Procedures, given in a form that would enable a user to differentiate readily between the requirements of GACA and the related ICAO provisions;

d) the choice made by GACA in each significant case where an alternative course of action is provided for in ICAO Standards, Recommended Practices and Procedures.

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

a) Aerodrome/Heliport Chart — ICAO;

b) Aerodrome Ground Movement Chart — ICAO;

c) Aerodrome Obstacle Chart — ICAO Type A;

d) Aircraft Parking/Docking Chart — ICAO;

e) Area Chart — ICAO;

f) ATC Surveillance Minimum Altitude Chart — ICAO;

g) Instrument Approach Chart — ICAO;

h) Precision Approach Terrain Chart — ICAO;

i) Standard Arrival Chart — Instrument (STAR) — ICAO;

j) Standard Departure Chart — Instrument (SID) — ICAO;

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

4.1.4 Charts, maps or diagrams shall be used, when appropriate, to complement or as a substitute for the tabulations or text of Aeronautical Information Publications.

Note.— Where appropriate, charts produced in conformity with GACAR Section 4 — Aeronautical Charts, may be used to fulfill this requirement. Guidance material as to the specifications of index maps and diagrams included in Aeronautical Information Publications is contained in the Aeronautical Information Services Manual (ICAO Doc 8126).

4.2 General specifications

4.2.1 Each KSA Aeronautical Information Publication shall be self-contained and shall include a table of contents. For convenience, KSA AIP is published in two volumes, each of them shall indicate that the remainder of the information is to be found in each volume.

4.2.1.1 Each KSA AIP volume shall not duplicate information within itself or from other sources.

4.2.1.2 Reserved

4.2.2 KSA AIP shall be published in loose-leaf form.

4.2.3 Each KSA Aeronautical Information Publication shall be dated. In the case of integrated Aeronautical Information Publications issued in loose-leaf form, each page shall be dated. The date, consisting of the day, month (by name) and year, shall be the publication date or the effective date of the information.

4.2.4 A checklist giving the current date of each page in the Aeronautical Information Publication series shall be reissued frequently to assist the user in maintaining a current publication. The page number/chart title and date of the checklist shall appear on the checklist itself.

4.2.5 Each KSA Aeronautical Information Publication issued as a bound volume and each page of an Aeronautical Information Publication issued in loose-leaf form shall be so annotated as to indicate clearly:

a) the identity of the Aeronautical Information Publication;

b) the area covered and subdivisions when necessary;

c) General Authority of Civil Aviation

d) page numbers/chart titles;

e) the degree of reliability if the information is doubtful.

4.2.6 The sheet size shall be no larger than 210 × 297 mm, except that larger sheets may be used provided they are folded to the same size.

4.2.7 All changes to the KSA AIP, or new information on a republished page, shall be identified by a distinctive symbol or annotation.

4.2.8 Operationally significant changes to the KSA AIP shall be published in accordance with AIRAC procedures and shall be clearly identified by the acronym — AIRAC.

4.2.9 KSA AIP shall be amended or reissued at such regular intervals as may be necessary to keep them up to date. Recourse to hand amendments or annotations shall be kept to the minimum. The normal method of amendment shall be by means of replacement sheets.

4.2.10 The regular interval referred to in 4.2.9 shall be specified in the AIP, Part 1 — General (GEN).

4.3 Specifications for AIP Amendments

4.3.1 Permanent changes to the KSA AIP shall be published as AIP Amendments.

4.3.2 Each AIP Amendment shall be allocated a serial number, which shall be consecutive.

4.3.3 Each AIP Amendment page, including the cover sheet, shall display a publication date.

4.3.4 Each AIRAC AIP Amendment page, including the cover sheet, shall display an effective date.

4.3.5 When an AIP Amendment is issued, it shall include references to the serial number of those elements, if any, of the Integrated Aeronautical Information Package which have been incorporated into the amendment.

4.3.6 A brief indication of the subjects affected by the amendment shall be given on the AIP Amendment cover sheet.

4.3.7 When an AIP Amendment will not be published at the established interval or publication date, a NIL notification shall be originated and distributed by the monthly plain-language list of valid NOTAM required by 5.2.13.3.

4.4 Specifications for AIP Supplements

4.4.1 Temporary changes of long duration (three months or longer) and information of short duration which contains extensive text and/or graphics shall be published as AIP Supplements.

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

4.4.3 AIP Supplement pages shall be kept in the KSA AIP as long as all or some of their contents remain valid.

4.4.4 When an error occurs in an AIP Supplement or when the period of validity of an AIP Supplement is changed, a new AIP Supplement shall be published as a replacement.

4.4.5 When an AIP Supplement is sent in replacement of a NOTAM, it shall include a reference to the serial number of the NOTAM.

4.4.6 A checklist of valid AIP Supplements shall be issued at intervals of not more than one month. This information shall be issued through the medium of the monthly plain- language list of valid NOTAM required by 5.2.13.3.

4.4.7 AIP Supplement pages shall be colored in yellow in order to be conspicuous.

4.4.8 AIP Supplement pages shall be kept as the first item in the KSA AIP parts

4.5 Distribution

GACA-ANS shall ensure that KSA AIP, AIP Amendments and AIP Supplements shall be made available by the most expeditious means.

4.6 Electronic AIP (eAIP)

4.6.1 The AIP, AIP Amendment, AIP Supplement and AIC should also be published in a format that allows for displaying on a computer screen and printing on paper. This composite electronic document is named “Electronic AIP” (eAIP) and may be based on a format that allows for digital data exchange.

4.6.2 When provided, the information content of the eAIP and the structure of chapters, sections and sub-sections shall follow the content and structure of the paper AIP. The eAIP shall include files that allow for printing a paper AIP.

4.6.3 When provided, the eAIP should be available on a physical distribution medium (CD, DVD, etc.) and/or online on the Internet.

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CHAPTER 5 – NOTAM

5.1 Origination

5.1.1 A NOTAM shall be originated and issued promptly whenever the information to be distributed is of a temporary nature and of short duration or when operationally significant permanent changes or temporary changes of long duration are made at short notice, except for extensive text and/or graphics.

Note 1.— Operationally significant changes concerning circumstances listed in Appendix A 4, Part 1, are issued under the Aeronautical Information Regulation and Control (AIRAC) system specified in Chapter 6.

Note 2.— Information of short duration containing extensive text and/or graphics is published as an AIP Supplement (see Chapter 4, 4.4).

5.1.1.1 A NOTAM shall be originated and issued concerning the following information:

a) establishment, closure or significant changes in operation of aerodrome(s)/heliport(s) or runways;

b) establishment, withdrawal and significant changes in operation of aeronautical services (AGA, AIS, ATS, CNS, MET, SAR, etc.);

c) establishment, withdrawal and significant changes in operational capability of radio navigation and air-ground communication services. This includes: interruption or return to operation, change of frequencies, change in notified hours of service, change of identification, change of orientation (directional aids), change of location, power increase or decrease amounting to 50 per cent or more, change in broadcast schedules or contents, or irregularity or unreliability of operation of any radio navigation, and air-ground communication services;

d) establishment, withdrawal or significant changes made to visual aids;

e) interruption of or return to operation of major components of aerodrome lighting systems;

f) establishment, withdrawal or significant changes made to procedures for air navigation services;

g) occurrence or correction of major defects or impediments in the manoeuvring area;

h) changes to and limitations on availability of fuel, oil and oxygen;

i) major changes to search and rescue facilities and services available;

j) establishment, withdrawal or return to operation of hazard beacons marking obstacles to air navigation;

k) changes in regulations requiring immediate action, e.g. prohibited areas for SAR action;

l) presence of hazards which affect air navigation (including obstacles, military exercises, displays, races and major parachuting events outside promulgated sites);

m) erecting or removal of, or changes to, obstacles to air navigation in the take-off/climb, missed approach, approach areas and runway strip;

n) establishment or discontinuance (including activation or deactivation) as applicable, or changes in the status of prohibited, restricted or danger areas;

o) establishment or discontinuance of areas or routes or portions thereof where the possibility of interception exists and where the maintenance of guard on the VHF emergency frequency 121.5 MHz is required;

p) allocation, cancellation or change of location indicators;

q) significant changes in the level of protection normally available at an aerodrome/heliport for rescue and firefighting purposes. NOTAM shall be originated only when a change of category is involved and such change of category shall be clearly stated (see GACAR Section 14, Volume I, Chapter 9, and Attachment A, Section 17);

r) presence or removal of, or significant changes in, hazardous conditions due to snow, slush, ice, radioactive material, toxic chemicals, volcanic ash deposition or water on the movement area;

s) outbreaks of epidemics necessitating changes in notified requirements for inoculations and quarantine measures;

t) forecasts of solar cosmic radiation, where provided;

u) an operationally significant change in volcanic activity, the location, date and time of volcanic eruptions and/or horizontal and vertical extent of volcanic ash cloud, including direction of movement, flight levels and routes or portions of routes which could be affected;

v) release into the atmosphere of radioactive materials or toxic chemicals following a nuclear or chemical incident, the location, date and time of the incident, the flight levels and routes or portions thereof which could be affected and the direction of movement;

w) establishment of operations of humanitarian relief missions, such as those undertaken under the auspices of United Nations, together with procedures and/or limitations which affect air navigation; and

x) implementation of short-term contingency measures in cases of disruption, or partial disruption, of air traffic services and related supporting services.

5.1.1.2 The need for origination of a NOTAM should be considered in any other circumstance which may affect the operations of aircraft.

5.1.1.3 The following information shall not be notified by NOTAM:

a) routine maintenance work on aprons and taxiways which does not affect the safe movement of aircraft;

b) runway marking work, when aircraft operations can safely be conducted on other available runways, or the equipment used can be removed when necessary;

c) temporary obstructions in the vicinity of aerodromes/heliports that do not affect the safe operation of aircraft;

d) partial failure of aerodrome/heliport lighting facilities where such failure does not directly affect aircraft operations;

e) partial temporary failure of air-ground communications when suitable alternative frequencies are known to be available and are operative;

f) the lack of apron marshalling services and road traffic control;

g) the unserviceability of location, destination or other instruction signs on the aerodrome movement area;

h) parachuting when in uncontrolled airspace under VFR (see 5.1.1.1 l)), when controlled, at promulgated sites or within danger or prohibited areas;

i) other information of a similar temporary nature.

5.1.1.4 At least seven days' advance notice shall be given of the activation of established danger, restricted or prohibited areas and of activities requiring temporary airspace restrictions other than for emergency operations.

5.1.1.4.1 Notice of any subsequent cancellation of the activities or any reduction of the hours of activity or the dimensions of the airspace shall be given as soon as possible.

Note.— Whenever possible, at least 24 hours' advance notice is desirable, to permit timely completion of the notification process and to facilitate airspace utilization planning.

5.1.1.5 NOTAM notifying unserviceability of aids to air navigation, facilities or communication services shall give an estimate of the period of unserviceability or the time at which restoration of service is expected.

5.1.1.6 When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, NOTAM shall be originated giving a brief description of the contents, the effective date and the reference number to the amendment or supplement. This NOTAM shall come into force on the same effective date as the amendment or supplement and shall remain valid in the pre-flight information bulletin for a period of fourteen days.

Note.— Guidance material for the origination of NOTAM announcing the existence of AIRAC AIP Amendments or AIP Supplements ("Trigger NOTAM") is contained in the Aeronautical Information Services Manual (ICAO Doc 8126).

5.2 General specifications

5.2.1 Except as otherwise provided in 5.2.3 and 5.2.4, each NOTAM shall contain the information in the order shown in the NOTAM Format in Appendix A 6.

5.2.2 Text of NOTAM shall be composed of the significations/uniform abbreviated phraseology assigned to the ICAO NOTAM Code complemented by ICAO abbreviations, indicators, identifiers, designators, call signs, frequencies, figures and plain language.

5.2.2.1 When NOTAM is selected for international distribution, English text shall be included for those parts expressed in plain language.

Note.— The ICAO NOTAM Code together with significations/ uniform abbreviated phraseology, and ICAO Abbreviations are those contained in the ICAO PANS-ABC (ICAO Doc 8400).

5.2.3 Information concerning snow, slush, ice and standing water on aerodrome/heliport pavements shall, when reported by means of a SNOWTAM, contain the information in the order shown in the SNOWTAM Format in Appendix A 2.

5.2.4 Information concerning an operationally significant change in volcanic activity, a volcanic eruption and/or volcanic ash cloud shall, when reported by means of an ASHTAM, contain the information in the order shown in the ASHTAM Format in Appendix A 3.

5.2.5 The NOTAM originator shall allocate to each NOTAM a series identified by a letter and a four-digit number followed by a stroke and a two-digit number for the year. The four-digit number shall be consecutive and based on the calendar year.

Note.— Letters A to Z, with the exception of S and T, may be used to identify a NOTAM series.

5.2.6 When errors occur in a NOTAM, a NOTAM with a new number to replace the erroneous NOTAM shall be issued or the erroneous NOTAM shall be cancelled and a new NOTAM issued.

5.2.7 When a NOTAM is issued which cancels or replaces a previous NOTAM, the series and number of the previous NOTAM shall be indicated. The series, location indicator and subject of both NOTAM shall be the same. Only one NOTAM shall be cancelled or replaced by a NOTAM.

5.2.8 Each NOTAM shall deal with only one subject and one condition of the subject.

Note.— Guidance concerning the combination of a subject and a condition of the subject in accordance with the NOTAM Selection Criteria is contained in the Aeronautical Information Services Manual (ICAO Doc 8126).

5.2.9 Each NOTAM shall be as brief as possible and so compiled that its meaning is clear without the need to refer to another document.

5.2.10 Each NOTAM shall be transmitted as a single telecommunication message.

5.2.11 A NOTAM containing permanent or temporary information of long duration shall refer to the KSA AIP or AIP Supplement.

5.2.12 Location indicators included in the text of a NOTAM shall be those contained in Location Indicators (ICAO Doc 7910).

5.2.12.1 In no case shall a curtailed form of such indicators be used.

5.2.12.2 Where no ICAO location indicator is assigned to the location, its place name spelt in accordance with 3.6.2 shall be entered in plain language.

5.2.13 A checklist of valid NOTAM shall be issued as a NOTAM over the Aeronautical Fixed Service (AFS) at intervals of not more than one month using the NOTAM Format specified in Appendix A 6. One NOTAM shall be issued for each series. Omitting a NOTAM from the checklist does not serve to cancel a NOTAM.

5.2.13.1 A checklist of NOTAM shall refer to the latest AIP Amendments, AIP Supplements and at least the internationally distributed AIC.

5.2.13.2 A checklist of NOTAM shall have the same distribution as the actual message series to which they refer and shall be clearly identified as checklist.

5.2.13.3 A monthly plain-language list of valid NOTAM, including indications of the latest AIP Amendments, AIC issued and a checklist of AIP Supplements, shall be prepared with a minimum of delay and forwarded by the most expeditious means to recipients of the Integrated Aeronautical Information Package.

5.3 Distribution

5.3.1 NOTAM shall be distributed on the basis of a request.

5.3.2 NOTAM shall be prepared in conformity with the relevant provisions of the ICAO communication procedures.

5.3.2.1 The AFS shall, whenever practicable, be employed for NOTAM distribution.

5.3.2.2 When a NOTAM exchanged as specified in 5.3.4 is sent by means other than the AFS, a six-digit date-time group indicating the date and time of NOTAM origination, and the identification of the originator shall be used, preceding the text.

5.3.3 GACA-ANS shall select the NOTAM that are to be given international distribution.

5.3.3.1 Selective distribution lists shall be used when practicable.

Note.— These lists are intended to obviate superfluous distribution of information. Guidance material relating to this is contained in the Aeronautical Information Services Manual (ICAO Doc 8126).

5.3.4 International exchange of NOTAM shall take place only as mutually agreed between the (see 5.2.4), and NOTAM where States continue to use NOTAM for distribution of information on volcanic activity, shall include volcanic ash advisory centres and the centres designated by regional air navigation agreement for the operation of AFS satellite distribution systems (satellite distribution system for information relating to air navigation (SADIS) and inter- national satellite communications system (ISCS)), and shall take account of the requirements of long-range operations.

Note.— Arrangements may be made for direct exchange of SNOWTAM (see Appendix A2) between aerodromes/heliports.

5.3.4.1 These exchanges of NOTAM between international NOTAM offices shall, as far as practicable, be limited to the requirements of the receiving States concerned by means of separate series providing for at least international and domestic flights.

5.3.4.2 A predetermined distribution system for NOTAM transmitted on the AFS in accordance with Appendix A 5 shall be used whenever possible, subject to the requirements of 5.3.4.

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CHAPTER 6 - AERONAUTICAL INFORMATION REGULATION AND CONTROL (AIRAC)

6.1 General specifications

6.1.1 Information concerning the circumstances listed in Appendix A 4, Part 1, shall be distributed under the regulated system (AIRAC), i.e. basing establishment, withdrawal or significant changes upon a series of common effective dates at intervals of 28 days. The information notified therein shall not be changed further for at least another 28 days after the effective date, unless the circumstance notified is of a temporary nature and would not persist for the full period.

Note.— Guidance material on the procedures applicable to the AIRAC system is contained in the Aeronautical Information Services Manual (ICAO Doc 8126).

6.1.2 The regulated system (AIRAC) shall also be used for the provision of information relating to the establishment and withdrawal of, and premeditated significant changes in, the circumstances listed in Appendix A 4, Part 2.

6.1.3 When information has not been submitted by the AIRAC date, a NIL notification shall be originated and distributed by NOTAM or other suitable means, not later than one cycle before the AIRAC effective date concerned.

6.1.4 Implementation dates other than AIRAC effective dates shall not be used for pre-planned operationally significant changes requiring cartographic work and/or for updating of navigation databases.

6.1.5 The use of the date in the AIRAC cycle which occurs between 21 December and 17 January inclusive shall be avoided as an effective date for the introduction of significant changes under the AIRAC system.

6.2 Provision of information in paper copy form

6.2.1 Information provided under the AIRAC system in paper copy form shall be distributed by the AIS unit at least 42 days in advance of the effective date with the objective of reaching recipients at least 28 days in advance of the effective date.

6.2.2 Recommendation — Whenever major changes are planned and where advance notice is desirable and practicable, information provided in paper copy form shall be distributed by the AIS Department at least 56 days before the effective date.

6.3 Provision of information as electronic media

6.3.1 GACA-ANS shall ensure that aeronautical database (electronic form) shall, when updating its contents concerning the circumstances listed in Appendix A4, Part 1, ensure that the effective dates of data coincide with the established AIRAC effective dates.

6.3.2 Information provided as electronic media, concerning the circumstances listed in Appendix A 4, Part 1, shall be distributed/made available by the AIS unit so as to reach recipients at least 28 days in advance of the AIRAC effective date.

6.3.3 *Recommendation* — Whenever major changes are planned and where advance notice is desirable and practicable, information provided as electronic media should be distributed/made available at least 56 days in advance of the effective date. *This should be applied to the establishment of, and premeditated major changes in, the circumstances listed in Appendix 4, Part 3, and other major changes if deemed necessary.*

Note.— Guidance on what constitutes a major change is included in Doc 8126.

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CHAPTER 7 - AERONAUTICAL INFORMATION CIRCULARS (AIC)

7.1 Origination

7.1.1 GACA-ANS shall originate an AIC whenever it is necessary to promulgate aeronautical information which does not qualify:

a) under the specifications in 4.1 for inclusion in an AIP; or

b) under the specifications in 5.1 for the origination of a NOTAM.

7.1.1.1 An AIC shall be originated whenever it is desirable to promulgate:

a) a long-term forecast of any major change in legislation, regulations, procedures or facilities;

b) information of a purely explanatory or advisory nature liable to affect flight safety;

c) information or notification of an explanatory or advisory nature concerning technical, legislative or purely administrative matters.

7.1.1,3 This shall include:

1) forecasts of important changes in the air navigation procedures, services and facilities provided;

2) forecasts of implementation of new navigational systems;

3) significant information arising from aircraft accident/ incident investigation which has a bearing on flight safety;

4) information on regulations relating to the safeguarding of international civil aviation against acts of unlawful interference;

5) advice on medical matters of special interest to pilots;

6) warnings to pilots concerning the avoidance of physical hazards;

7) effect of certain weather phenomena on aircraft operations;

8) information on new hazards affecting aircraft handling techniques;

9) regulations relating to the carriage of restricted articles by air;

10) reference to the requirements of, and publication of changes in, national legislation;

11) aircrew licensing arrangements;

12) training of aviation personnel;

13) application of, or exemption from, requirements in national legislation;

14) advice on the use and maintenance of specific types of equipment;

15) actual or planned availability of new or revised editions of aeronautical charts;

16) carriage of communication equipment;

17) explanatory information relating to noise abatement;

18) selected airworthiness directives;

19) changes in NOTAM series or distribution, new editions of KSA AIP or major changes in their contents, coverage or format;

20) other information of a similar nature.

Note.— The publication of an AIC does not remove the obligations set forth in Chapters 4 and 5.

7.2 General specifications

7.2.1 AIC shall be issued in printed form.

Note.— Both text and diagrams may be included.

7.2.1.1 GACA-ANS shall select the AIC that are to be given international distribution.

7.2.1.2 Each AIC shall be allocated a serial number which shall be consecutive and based on the calendar year.

7.2.1.3 When AIC are distributed in more than one series, each series shall be separately identified by a letter.

7.2.1.4 Differentiation and identification of AIC topics according to subjects using color coding shall be practiced where the numbers of AIC in force are sufficient to make identification in this form necessary.

Note.— Guidance on color coding of AIC by subject can be found in the Aeronautical Information Services Manual (ICAO Doc 8126).

7.2.2 A checklist of AIC currently in force shall be issued at least once a year, with distribution as for the AIC.

7.3 Distribution

7.3.1 GACA-ANS shall give AIC selected for international distribution the same distribution as for the KSA AIP.

CHAPTER 8 - PRE-FLIGHT AND POST-FLIGHT INFORMATION

8.1 Pre-flight information

8.1.1 At any aerodrome/heliport normally used for international air operations, aeronautical information essential for the safety, regularity and efficiency of air navigation and relative to the route stages originating at the aerodrome/heliport shall be made available to flight operations personnel, including flight crews and services responsible for pre-flight information.

8.1.2 Aeronautical information provided for pre-flight planning purposes at the aerodromes/heliports referred to in 8.1.1 shall include relevant:

a) elements of the Integrated Aeronautical Information Package;

b) maps and charts.

Note.— The documentation listed in a) and b) may be limited to GACA publications and when practicable, those of immediately adjacent States, provided a complete library of aeronautical information is available at a central location and means of direct communications are available between the aerodrome AIS unit and that library.

8.1.3 Additional current information relating to the aerodrome of departure shall be provided concerning the following:

a) construction or maintenance work on or immediately adjacent to the manoeuvring area;

b) rough portions of any part of the manoeuvring area, whether marked or not, e.g. broken parts of the surface of runways and taxiways;

c) presence and depth of snow, ice or water on runways and taxiways, including their effect on surface friction;

d) snow drifted or piled on or adjacent to runways or taxiways;

e) parked aircraft or other objects on or immediately adjacent to taxiways;

f) presence of other temporary hazards;

g) presence of birds constituting a potential hazard to aircraft operations;

h) failure or irregular operation of part or all of the aerodrome lighting system including approach, threshold, runway, taxiway, obstruction and manoeuvring area unserviceability lights and aerodrome power supply;

i) failure, irregular operation and changes in the operational status of SSR, ADS-B, ADS-C, CPDLC, D-ATIS, D-VOLMET, radio navigation services, VHF aero-mobile channels, RVR observing system, and secondary power supply; and

j) presence and operation of humanitarian relief missions, such as those undertaken under the auspices of the United Nations, together with any associated procedures and/or limitations applied thereof.

8.1.4 A recapitulation of valid NOTAM of operational significance and other information of urgent character shall be made available to flight crews in the form of plain-language pre-flight information bulletins (PIB).

Note.— Guidance on the preparation of PIB is contained in the Aeronautical Information Services Manual (ICAO Doc 8126).

8.2 Automated aeronautical information systems

8.2.1 GACA-ANS shall use automated pre-flight information systems to make aeronautical information available to operations personnel including flight crew members for self-briefing, flight planning and flight

information service purposes., The aeronautical data and aeronautical information made available shall comply with the provisions of 8.1.2 and 8.1.3.

8.2.2 Self-briefing facilities of an automated pre-flight information system shall provide access to operations personnel, including flight crew members and other aeronautical personnel concerned, to consultation as necessary with the aeronautical information service by telephone or other suitable telecommunications means. The human/machine interface of such facilities shall ensure easy access in a guided manner to all relevant information/data.

8.2.3 Automated pre-flight information systems for the supply of aeronautical data and aeronautical information for self-briefing, flight planning and flight information service shall:

a) provide for continuous and timely updating of the system database and monitoring of the validity and quality of the aeronautical data stored;

b) permit access to the system by operations personnel including flight crew members, aeronautical personnel concerned and other aeronautical users through suitable telecommunications means;

c) ensure provision, in paper copy form, of the aeronautical data and aeronautical information accessed, as required;

d) use access and interrogation procedures based on abbreviated plain language and ICAO location indicators, as appropriate, or based on a menu-driven user interface or other appropriate mechanism as agreed between the civil aviation authority and operator concerned; and

e) provide for rapid response to a user request for information.

8.2.4 Automated pre-flight information systems providing a harmonized, common point of access by operations personnel, including flight crew members and other aeronautical personnel concerned, to aeronautical information in accordance with 8.2.1 and meteorological information in accordance with 9.5.1 of PME-REG-Section 3—Meteorological Service for International Air Navigation, shall be established by an agreement between GACA-ANS and the PME.

8.2.5 Where automated pre-flight information systems are used to provide the harmonized, common point of access by operations personnel, including flight crew members and other aeronautical personnel concerned, to aeronautical information/ data and meteorological information, GACA-ANS shall remain responsible for the quality and timeliness of the aeronautical data and aeronautical information provided by means of such a system.

Note.— PME remains responsible for the quality of the meteorological information provided by means of such a system in accordance with 9.4.3 of PME-REG-Section 3.

8.3 Post-flight information

8.3.1 GACA-ANS shall ensure that arrangements are made to receive at aerodromes/heliports information concerning KSA and operation of air navigation facilities or services noted by air- crews and shall ensure that such information is made available to the aeronautical information service for such distribution as the circumstances necessitate.

8.3.2 GACA-ANS shall ensure that arrangements are made to receive at aerodromes/heliports information concerning the presence of birds observed by aircrews and shall ensure that such information is made available to the aeronautical information service for such distribution as the circumstances necessitate.

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CHAPTER 9 - TELECOMMUNICATION REQUIREMENTS

9.1 GACA-ANS International NOTAM office shall be connected to the aeronautical fixed service (AFS).

9.1.1 The connections shall provide for printed communications.

9.2 GACA-ANS international NOTAM office shall be connected, through the aeronautical fixed service (AFS), to the following points:

a) area control centers and flight information centers;

b) aerodromes/heliports at which an information service is established in accordance with Chapter 8.

9.3 Subject to availability, satisfactory operation and bilateral/multilateral and/or regional air navigation agreements, the use of public Internet should be permitted for exchange of non-time critical types of aeronautical information.

CHAPTER 10 - ELECTRONIC TERRAIN AND OBSTACLE DATA

Note.— Electronic terrain and obstacle data is intended to be used in the following air navigation applications:

1) *ground proximity warning system with forward looking terrain avoidance function and minimum safe altitude warning (MSAW) system;*
2) *determination of contingency procedures for use in the event of an emergency during a missed approach or take-off;*
3) *aircraft operating limitations analysis;*
4) *instrument procedure design (including circling procedure);*
5) *determination of en-route "drift-down" procedure and en-route emergency landing location;*
6) *advanced surface movement guidance and control system (A-SMGCS);*
7) *aeronautical chart production and on-board databases.*

The data may also be used in other applications such as flight simulator and synthetic vision systems, and may assist in determining the height restriction or removal of obstacles that pose a hazard to air navigation.

10.1 Coverage areas and requirements for data provision

10.1.1 The coverage areas for sets of electronic terrain and obstacle data shall be specified as:

Area 1: the entire territory of KSA;

Area 2: within the vicinity of an aerodrome, sub-divided as follows;

Area 2a: a rectangular area around a runway that comprises the runway strip plus any clearway that exists, as defined in GACAR Section 14.

Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15 per cent to each side;

Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a; and

Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing TMA boundary, whichever is nearest;

Area 3: the area bordering an aerodrome movement area that extends horizontally from the edge of a runway to 90 m from the runway centre line and 50 m from the edge of all other parts of the aerodrome movement area

Area 4: The area extending 900 m prior to the runway threshold and 60 m each side of the extended runway centre line in the direction of the approach on a precision approach runway, Category II or III.

Note.— See Appendix 8 for descriptions and graphical illustrations of the coverage areas.

10.1.2 Where the terrain at a distance greater than 900 m (3 000 ft) from the runway threshold is mountainous or otherwise significant, the length of Area 4 should be extended to a distance not exceeding 2 000 m (6 500 ft) from the runway threshold.

10.1.3 Electronic terrain data shall be provided for Area 1. The obstacle data shall be provided for obstacles in Area 1higher than 100 m above ground.

10.1.4 From 12 November 2015, at aerodromes regularly used by international civil aviation, electronic obstacle data shall be provided for all obstacles within Area 2 that are assessed as being a hazard to air navigation.

10.1.5 From 12 November 2015, at aerodromes regularly used by international civil aviation, electronic terrain data shall be provided for:

a) Area 2a;
b) the take-off flight path area; and
c) an area bounded by the lateral extent of the aerodrome obstacle limitation surfaces.

10.1.6 From 12 November 2015, at aerodromes regularly used by international civil aviation, electronic terrain and obstacle data shall be provided for:

a) Area 2a, for those obstacles that penetrate the relevant obstacle data collection surface specified in Appendix 8;

b) objects in the take-off flight path area which project above a plane surface having a 1.2 per cent slope and having a common origin with the take-off flight path area; and

c) penetrations of the aerodrome obstacle limitation surfaces.

Note.— Take-off flight path area obstacle identification surfaces are specified in Annex 4, 3.8.2. Aerodrome obstacle limitation surfaces are specified in ICAO Annex 14, Volume 1, Chapter 4.

10.1.7 *Recommendation — At aerodromes regularly used by international civil aviation, electronic terrain and obstacle data should be provided for Areas 2b, 2c and 2d for obstacles and terrain that penetrate the relevant terrain and obstacle data collection surface specified in Appendix 8, except that data need not be collected for obstacles less than a height of 3 m above ground in Area 2b and less than a height of 15 m above ground in Area 2c.*

10.1.8 *Recommendation — At aerodromes regularly used by international civil aviation, electronic terrain and obstacle data should be provided for Area 3 for terrain and obstacles that penetrate the relevant obstacle data collection surface specified in Appendix 8.*

10.1.9 At aerodromes regularly used by international civil aviation, electronic terrain and obstacle data shall be provided for Area 4 for terrain and obstacles that penetrate the relevant obstacle data collection surface specified in Appendix 8, for all runways where precision approach Category II or III operations have been established and where detailed terrain information is required by operators to enable them to assess the effect of terrain on decision height determination by use of radio altimeters.

Note.— Area 4 terrain data and Area 2 obstacle data are normally sufficient to support the production of the Precision Approach Terrain Chart — ICAO. When more detailed obstacle data is required for Area 4, this may be provided in accordance with the Area 4 obstacle data requirements specified in Appendix 8, Table A8-2. Guidance on appropriate obstacles for this chart is given in the Aeronautical Chart Manual (ICAO Doc 8697).

10.1.10 Where additional electronic obstacle or terrain data is collected to meet other aeronautical requirements, the obstacle and terrain data sets should be expanded to include these additional data.

10.1.11Arrangements should be made for the coordination of providing Area 2 electronic terrain and obstacle data for adjacent aerodromes where their respective coverage Areas overlap to assure that the data for the same obstacle or terrain is correct.

10.1.12 At those aerodromes located near KSA territorial boundaries, arrangements should be made among neighboring States to share Area 2 electronic terrain and obstacle data.

10.2 Terrain data set — content, numerical specification and structure

10.2.1 A terrain data set shall contain digital sets of data representing terrain surface in the form of continuous elevation values at all intersections (points) of a defined grid, referenced to common datum. A terrain grid shall be angular or linear and shall be of regular or irregular shape.

10.2.2 Sets of electronic terrain data shall include spatial (position and elevation), thematic and temporal aspects for the surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles. In practical terms, depending on the acquisition method used, this shall represent the continuous surface that exists at the bare Earth, the top of the canopy or something in between, also known as “first reflective surface”.

10.2.3 . In terrain data sets, only one feature type, i.e. terrain, shall be provided. Feature attributes describing terrain shall be those listed in Table A8-3.The terrain feature attributes listed in Table A8-3 represent the minimum set of terrain attributes, and those annotated as mandatory shall be recorded in the terrain data set.

10.2.4 Electronic terrain data for each area shall conform to the applicable numerical requirements in Appendix 8, Table 8A-1.

10.3 Obstacle data set — content, numerical specification and structure

10.3.1 Obstacle data shall comprise the digital representation of the vertical and horizontal extent of the obstacle. Obstacles shall not be included in terrain data sets. Obstacle data elements are features that shall be represented in the data sets by points, lines or polygons.

10.3.2 . In an obstacle data set, all defined obstacle feature types shall be provided and each of them shall be described according to the list of mandatory attributes provided in Appendix A 8 table A8-4.

10.3.3 By definition, obstacles can be fixed (permanent or temporary) or mobile. Specific attributes associated with mobile (feature operations) and temporary types of obstacles are annotated in Appendix A 8, Table A8-4, as optional attributes. If these types of obstacles are to be provided in the data set, appropriate attributes describing such obstacles are also required.

10.3.4 Electronic obstacle data for each area shall conform to the applicable numerical requirements in Appendix 8, Table 8A-2.

10.4 Terrain and obstacle data product specifications

10.4.1 To allow and support the interchange and use of sets of electronic terrain and obstacle data among different data providers and data users, the ISO 19100 series of standards for geographic information shall be used as a general data modeling framework.

10.4.2 A comprehensive statement of available electronic terrain and obstacle data sets shall be provided in the form of terrain data product specifications as well as obstacle data product specifications on which basis air navigation users will be able to evaluate the products and determine whether they fulfill the requirements for their intended use (application).

Note.— ISO Standard 19131 specifies the requirements and outline of data product specifications for geographic information.

10.4.3 Each terrain data product specification shall include an overview, a specification scope, data product identification, data content and structure, reference system, data quality, data capture, data maintenance, data portrayal, data product delivery, additional information, and metadata.

10.4.4 The overview of terrain data product specification or obstacle data product specification shall provide an informal description of the product and shall contain general information about the data product. Specification of terrain data may not be homogenous across the whole data product but may vary for different parts of the data sets. For each such subset of data, a specification scope shall be identified. Identification information concerning both terrain and obstacle data products shall include the title of the product; a brief narrative summary of the content, purpose, and spatial resolution if appropriate (a general

statement about the density of spatial data); the geographic area covered by the data product; and supplemental information.

10.4.5 Content information of feature-based terrain data sets or of feature-based obstacle data sets shall each be described in terms of an application schema and a feature catalogue. Application schema shall provide a formal description of the data structure and content of data sets while the feature catalogue shall provide the semantics of all feature types together with their attributes and attribute value domains, association types between feature types and feature operations, inheritance relations and constraints. Coverage is considered a subtype of a feature and can be derived from a collection of features that have common attributes. Both terrain and obstacle data product specifications shall identify clearly the coverage and/or imagery they include and shall provide a narrative description of each of them.

Note 1. — ISO Standard 19109 contains rules for application schema while ISO Standard 19110 describes feature cataloguing methodology for geographic information.
Note 2.— ISO Standard 19123 contains schema for coverage geometry and functions.

10.4.6 Both terrain data product specifications and obstacle data product specifications shall include information that identifies the reference system used in the data product. This shall include the spatial reference system and temporal reference system. Additionally, both data product specifications shall identify the data quality requirements for each data product. This shall include a statement on acceptable conformance quality levels and corresponding data quality measures. This statement shall cover all the data quality elements and data quality sub- elements, even if only to state that a specific data quality element or sub-element is not applicable.

Note.— ISO Standard 19113 contains quality principles for geographic information while ISO Standard 19114 covers quality evaluation procedures.

10.4.7 Terrain data product specifications shall include a data capture statement which shall be a general description of the sources and of processes applied for the capture of terrain data. The principles and criteria applied in the maintenance of terrain data sets and obstacle data sets shall also be provided with the data specifications, including the frequency with which data products are updated. Of particular importance shall be the maintenance information of obstacle data sets and an indication of the principles, methods and criteria applied for obstacle data maintenance.

10.4.8 Terrain data product specifications shall contain information on how data held with data sets is presented, i.e. as a graphic output, as a plot or as an image. The product specifications for both terrain and obstacles shall also contain data product delivery information which shall include delivery formats and delivery medium information.

Note.— ISO Standard 19117 contains a definition of the schema describing the portrayal of geographic information including the methodology for describing symbols and mapping of the schema to an application schema.

10.4.9 The core terrain and obstacle metadata elements shall be included in the data product specifications. Any additional metadata items required to be supplied shall be stated in each product specification together with the format and encoding of the metadata.

Note.— ISO Standard 19115 specifies requirements for geographic information metadata.

10.4.10 The obstacle data product specification, supported by geographical coordinates for each aerodrome included within the dataset, shall describe the following areas:

Areas 2a, 2b, 2c, 2d;

the take-off flight path area; and

the obstacle limitation surfaces.

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CHAPTER 11 - Aerodrome mapping data

Note 1.— Aerodrome mapping data include aerodrome geographic information that supports applications which improve the user's situational awareness or supplements surface navigation, thereby increasing safety margins and operational efficiency. Aerodrome mapping data sets with appropriate data element accuracy support requirements for collaborative decision making, common situational awareness, and aerodrome guidance applications are intended to be used, among others, in the following air navigation applications:

a) position and route awareness including moving maps with own ship position, surface guidance and navigation (such as A-SMGCS);

b) traffic awareness including surveillance and runway incursion detection and alerting;

c) facilitation of aerodrome-related aeronautical information, including NOTAM;

d) resource and aerodrome facility management; and

e) aeronautical chart production.

The data may also be used in other applications such as training/flight simulator and synthetic vision systems.

Note 2.— Aerodrome mapping data are organized and arranged in aerodrome mapping databases (AMDBs) for ease of electronic storage and usage by appropriate applications.

11.1 Aerodrome mapping data — requirements for provision

11.1.1 **Recommendation.—** *Aerodrome mapping data should be supported by electronic terrain and obstacle data for Area 3 in order to ensure consistency and quality of all geographical data related to the aerodrome.*

Note 1.— Accuracy and integrity requirements for aerodrome mapping data are contained in Annex 14, Volume I, Appendix 5.

Note 2.— Electronic terrain and obstacle data pertaining to Area 3 and aerodrome mapping data may be originated using common acquisition techniques and managed within a single geographic information system (GIS).

Note 3.— Supporting material with respect to the processing of electronic terrain and obstacle data and aerodrome mapping data is contained in RTCA Document DO-200A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76 — Standards for Processing Aeronautical Data.

11.2 Aerodrome mapping data product specification

11.2.1 The ISO 19100 series of standards for geographic information shall be used as a reference framework.

Note.— This is intended to facilitate and support the use and exchange of aerodrome mapping data between dataproviders and data users.

11.2.2 Aerodrome mapping data products shall be described following the ISO 19131 data product specification standard.

Note.— This includes an overview, specification scope, data product identification, data content and structure, reference system, data quality, data capture, data maintenance, data portrayal, data product delivery, additional information, and metadata.

11.3 Aerodrome mapping database — data set content and structure

11.3.1 The content and structure of aerodrome mapping data sets shall be defined in terms of an application schema and a feature catalogue.

Note.— ISO Standard 19109 contains rules for application schema while ISO Standard 19110 describes the feature at aloguing methodology for geographic information.

11.3.2 Aerodrome mapping data sets shall contain aerodrome mapping data consisting of aerodrome features.

Note 1.— Aerodrome features consist of attributes and geometries, which are characterized as points, lines or polygons. Examples include runway thresholds, taxiway guidance lines and parking stand areas.

Note 2.— Aerodrome mapping data feature definitions, constraints and rules applicable to aerodrome mapping data are contained in RTCA Document DO-272C/European Organization for Civil Aviation Equipment (EUROCAE) Document ED-99C — User Requirements for Aerodrome Mapping Information. *These constraints ensure the connectivity between features on a spatial and functional level in accordance with the connections observed in the real world.*

Note 3.— An application schema applicable to aerodrome mapping data feature definitions may be found in RTCA Document DO-291B and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-119B — Interchange Standards for Terrain, Obstacle, and Aerodrome Mapping Data. *This application schema contains a feature catalogue which specifies the feature types and associated attributes.*

11.3.3 Aerodrome mapping metadata shall comply with ISO 19115.

Note.— Metadata elements applicable to aerodrome mapping data are contained in RTCA Document DO-291B and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-119B — Interchange Standards for Terrain, Obstacle, and Aerodrome Mapping Data.

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APPENDIX A1- CONTENTS OF AERONAUTICAL INFORMATION PUBLICATION (AIP)

PART 1 — GENERAL (GEN)

When the AIP is produced as one volume, the preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments appear only in Part 1 — GEN, and the annotation "not applicable" must be entered against each of these subsections in Parts 2 and 3.

If an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments must be included in each volume.

GEN 0.1 Preface

Brief description of the Aeronautical Information Publication (AIP), including:

1) name of the publishing authority;
2) applicable ICAO documents;
3) publication media (i.e. printed, online or other electronic media);
4) the AIP structure and established regular amendment interval;
5) copyright policy, if applicable; and
6) service to contact in case of detected AIP errors or omissions.

GEN 0.2 Record of AIP Amendments

A record of AIP Amendments and AIRAC AIP Amendments (published in accordance with the AIRAC system) containing:

1) amendment number;
2) publication date;
3) date inserted (for the AIRAC AIP Amendments, effective date); and
4) initials of officer who inserted the amendment.

GEN 0.3 Record of AIP Supplements

A record of issued AIP Supplements containing:

1) Supplement number;
2) Supplement subject;
3) AIP section(s) affected;
4) period of validity; and
5) cancellation record.

GEN 0.4 Checklist of AIP pages

A checklist of AIP pages containing:

1) page number/chart title; and
2) publication or effective date (day, month by name and year) of the aeronautical information.

GEN 0.5 List of hand amendments to the AIP

A list of current hand amendments to the AIP containing:

1) AIP page(s) affected;
2) amendment text; and
3) AIP Amendment number by which a hand amendment was introduced.

GEN 0.6 Table of contents to Part 1

A list of sections and subsections contained in Part 1 — General (GEN).
Note.— Subsections may be listed alphabetically.

GEN 1. NATIONAL REGULATIONS AND REQUIREMENTS

GEN 1.1 Designated authorities

The addresses of designated authorities concerned with the facilitation of international air navigation (civil aviation, meteorology, customs, immigration, health, en-route and aerodrome/heliport charges, agricultural quarantine and aircraft accident investigation) containing, for each authority:

1) designated authority;
2) name of the authority;
3) postal address;
4) telephone number;
5) telefax number;
6) e-mail address;
7) aeronautical fixed service (AFS) address; and
8) website address, if available.

GEN 1.2 Entry, transit and departure of aircraft

Regulations and requirements for advance notification and applications for permission concerning entry, transit and departure of aircraft on international flights.

GEN 1.3 Entry, transit and departure of passengers and crew

Regulations (including customs, immigration and quarantine, and requirements for advance notification and applications for permission) concerning entry, transit and departure of non-immigrant passengers and crew.

GEN 1.4 Entry, transit and departure of cargo
Regulations (including customs, and requirements for advance notification and applications for permission) concerning entry, transit and departure of cargo.

Note.— Provisions for facilitating entry and departure for search, rescue, salvage, investigation, repair or salvage in connection with lost or damaged aircraft are detailed in section GEN 3.6, Search and rescue.

GEN 1.5 Aircraft instruments, equipment and flight documents

Brief description of aircraft instruments, equipment and flight documents, including:

1) instruments, equipment (including aircraft communication, navigation and surveillance equipment) and flight documents to be carried on aircraft, including any special requirement in addition to the provisions specified in Annex 6, Part I, Chapters 6 and 7; and

2) emergency locator transmitter (ELT), signalling devices and life-saving equipment as presented in GACA Regulation Section 6, Part I, 6.6 and Part II, 2.4.5, where so determined by regional air navigation meetings, for flights over designated land areas.

GEN 1.6 Summary of national regulations and international agreements/conventions

A list of titles and references and, where applicable, summaries of national regulations affecting air navigation, together with a list of international agreements/conventions ratified by Saudi Arabia.

GEN 1.7 Differences from ICAO Standards, Recommended Practices and Procedures

A list of significant differences between national regulations and practices of the State and related ICAO provisions, including:
1) provision affected (Annex and edition number, paragraph); and

2) difference in full text.

All significant differences must be listed under this subsection. All Annexes must be listed in numerical order even if there is no difference to an Annex, in which case a NIL notification must be provided. National differences or the degree of nonapplication of the regional supplementary procedures (SUPPs) must be notified immediately following the Annex to which the supplementary procedure relates.

GEN 2. TABLES AND CODES

GEN 2.1 Measuring system, aircraft markings, holidays

GEN 2.1.1 Units of measurement

Description of units of measurement used including table of units of measurement.

GEN 2.1.2 Temporal reference system

Description of the temporal reference system (calendar and time system) employed, together with an indication of whether or not daylight saving hours are employed and how the temporal reference system is presented throughout the AIP.

GEN 2.1.3 Horizontal reference system

Brief description of the horizontal (geodetic) reference system used, including:
1) name/designation of the reference system;
2) identification and parameters of the projection;
3) identification of the ellipsoid used;
4) identification of the datum used;
5) area(s) of application; and
6) an explanation, if applicable, of the asterisk used to identify those coordinates that do not meet GACA Regulation Section 11 and 14 accuracy requirements.

GEN 2.1.4 Vertical reference system

Brief description of the vertical reference system used, including:

1) name/designation of the reference system;
2) description of the geoid model used including the parameters required for height transformation between the model used and EGM-2008; and
3) an explanation, if applicable, of the asterisk used to identify those elevations/geoid undulations that do not meet Annex 14 accuracy requirements.

GEN 2.1.5 Aircraft nationality and registration marks

Indication of aircraft nationality and registration marks adopted by the Saudi Arabia.

GEN 2.1.6 Public holidays

A list of public holidays with indication of services being affected.

GEN 2.2 Abbreviations used in AIS publications

A list of alphabetically arranged abbreviations and their respective significations used by the State in its AIP and in the distribution of aeronautical data and aeronautical information with appropriate annotation for those national abbreviations that are different from those contained in the *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400).

Note.— A list of alphabetically arranged definitions/glossary of terms may also be added.

GEN 2.3 Chart symbols

A list of chart symbols arranged according to the chart series where symbols are applied.

GEN 2.4 Location indicators

A list of alphabetically arranged location indicators assigned to the locations of aeronautical fixed stations to be used for encoding and decoding purposes. An annotation to locations not connected to the aeronautical fixed service (AFS) must be provided.

GEN 2.5 List of radio navigation aids

A list of radio navigation aids arranged alphabetically, containing:
1) identifier;
2) name of the station;
3) type of facility/aid; and
4) indication whether aid serves en-route (E), aerodrome (A) or dual (AE) purposes.

GEN 2.6 Conversion of units of measurement

Tables for conversion or, alternatively, conversion formulae between:

1) nautical miles and kilometers and vice versa;
2) feet and meters and vice versa;
3) decimal minutes of arc and seconds of arc and vice versa; and
4) other conversion tables, as appropriate.

GEN 2.7 Sunrise/sunset tables

Information on the time of sunrise and sunset including a brief description of criteria used for determination of the times given and either a simple formulae or table from which times may be calculated for any location within its territory/area of responsibility, or an alphabetical list of locations for which the times are given with a reference to the related page in the table and the sunrise/sunset tables for the selected stations/locations, including:

1) station name;
2) ICAO location indicator;
3) geographical coordinates in degrees and minutes;
4) date(s) for which times are given;
5) time for the beginning of morning civil twilight;
6) time for sunrise;
7) time for sunset; and
8) time for the end of evening civil twilight.

GEN 3. SERVICES

GEN 3.1 Aeronautical information services

GEN 3.1.1 Responsible service

Description of the Aeronautical Information Service (AIS) provided and its major components, including:

1) service/unit name;
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address;

7) website address, if available;
8) a statement concerning the ICAO documents on which the service is based and a reference to the KSA AIP location where differences, if any, are listed; and
9) an indication if service is not H24.

GEN 3.1.2 Area of responsibility

The area of responsibility for the aeronautical information service.

GEN 3.1.3 Aeronautical publications

Description of the elements of the Integrated Aeronautical Information Package, including:

1) AIP and related amendment service;
2) AIP Supplements;
3) AIC;
4) NOTAM and pre-flight information bulletins (PIB);
5) checklists and lists of valid NOTAM; and
6) how they may be obtained.

When an AIC is used to promulgate publication prices, that must be indicated in this section of the AIP.

GEN 3.1.4 AIRAC system

Brief description of the AIRAC system provided including a table of present and near future AIRAC dates.

GEN 3.1.5 Pre-flight information service at aerodromes/heliports

A list of aerodromes/heliports at which pre-flight information is routinely available, including an indication of relevant:

1) elements of the Integrated Aeronautical Information Packages held;
2) maps and charts held; and
3) general area of coverage of such data.

GEN 3.1.6 Electronic terrain and obstacle data

Details of how electronic terrain and obstacle data may be obtained, containing:

1) name of the individual, service or organization responsible;
2) street address and e-mail address of the individual, service or organization responsible;
3) telefax number of the individual, service or organization responsible;
4) contact telephone number of the individual, service or organization responsible;
5) hours of service (time period including time zone when contact can be made);
6) online information that can be used to contact the individual, service or organization; and
7) supplemental information, if necessary, on how and when to contact the individual, service or organization.

GEN 3.2 Aeronautical charts

GEN 3.2.1 Responsible service(s)

Description of service(s) responsible for the production of aeronautical charts, including:

1) service name;
2) postal address;
3) telephone number;
4) telefax number;

5) e-mail address;
6) AFS address;
7) website address, if available;
8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
9) an indication if service is not H24.

GEN 3.2.2 Maintenance of charts

Brief description of how aeronautical charts are revised and amended.

GEN 3.2.3 Purchase arrangements

Details of how charts may be obtained, containing:

1) service;
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address; and
7) website address, if available.

GEN 3.2.4 Aeronautical chart series available

A list of aeronautical chart series available followed by a general description of each series and an indication of the intended use.

GEN 3.2.5 List of aeronautical charts available

A list of aeronautical charts available, including:

1) title of series;
2) scale of series;
3) name and/or number of each chart or each sheet in a series;
4) price per sheet; and
5) date of latest revision.

GEN 3.2.6 Index to the World Aeronautical Chart (WAC) — ICAO 1:1 000 000

An index chart showing coverage and sheet layout for the WAC 1:1 000 000 produced, if any. If Aeronautical Chart — ICAO 1:500 000 is produced instead of WAC 1:1 000 000, index charts must be used to indicate coverage and sheet layout for the Aeronautical Chart — ICAO 1:500 000.

GEN 3.2.7 Topographical charts

Details of how topographical charts may be obtained, containing:

1) name of service/agency(ies);
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address; and
7) website address, if available.

GEN 3.2.8 Corrections to charts not contained in the AIP

A list of corrections to aeronautical charts not contained in the AIP, or an indication where such information can be obtained.

GEN 3.3 Air traffic services

GEN 3.3.1 Responsible service

Description of the air traffic service and its major components, including:

1) service name;
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address;
7) website address, if available;
8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
9) an indication if service is not H24.

GEN 3.3.2 Area of responsibility

Brief description of area of responsibility for which air traffic services are provided.

GEN 3.3.3 Types of services

Brief description of main types of air traffic services provided.

GEN 3.3.4 Coordination between the operator and ATS

General conditions under which coordination between the operator and air traffic services is effected.

GEN 3.3.5 Minimum flight altitude

The criteria used to determine minimum flight altitudes.

GEN 3.3.6 ATS units address list

A list of ATS units and their addresses arranged alphabetically, containing:

1) unit name;
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address; and
7) website address, if available.

GEN 3.4 Communication services

GEN 3.4.1 Responsable service

Description of the service responsible for the provision of telecommunication and navigation facilities, including:

1) service name;
2) postal address;
3) telephone number;

4) telefax number;
5) e-mail address;
6) AFS address;
7) website address, if available;
8) a statement concerning the ICAO documents on which the service is based and a reference to the KSA AIP location where differences, if any, are listed; and
9) an indication if service is not H24.

GEN 3.4.2 Area of responsibility

Brief description of area of responsibility for which telecommunication service is provided.

GEN 3.4.3 Types of service

Brief description of the main types of service and facilities provided, including:

1) radio navigation services;
2) voice and/or data link services;
3) broadcasting service;
4) language(s) used; and
5) an indication of where detailed information can be obtained.

GEN 3.4.4 Requirements and conditions

Brief description concerning the requirements and conditions under which the communication service is available.

GEN 3.4.5 Miscellaneous

Any additional information (e.g. selected radio broadcasting stations, telecommunications diagram).

GEN 3.5 Meteorological services

GEN 3.5.1 Responsible service

Brief description of the meteorological service responsible for the provision of meteorological information, including:

1) service name;
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address;
7) website address, if available;
8) a statement concerning the ICAO documents on which the service is based and a reference to the KSA AIP location where differences, if any, are listed; and
9) an indication if service is not H24.

GEN 3.5.2 Area of responsibility

Brief description of area and/or air routes for which meteorological service is provided.

GEN 3.5.3 Meteorological observations and reports

Detailed description of the meteorological observations and reports provided for international air navigation, including:

1) name of the station and the ICAO location indicator;

2) type and frequency of observation including an indication of automatic observing equipment;
3) types of meteorological reports (e.g. METAR) and availability of a trend forecast;
4) specific type of observation system and number of observation sites used to observe and report surface wind, visibility, runway visual range, cloud base, temperature and, where applicable, wind shear (e.g. anemometer at intersection of runways, transmissometer next to touchdown zone, etc.);
5) hours of operation; and
6) indication of aeronautical climatological information available.

GEN 3.5.4 Types of services

Brief description of the main types of service provided, including details of briefing, consultation, display of meteorological information, flight documentation available for operators and flight crew members, and of the methods and means used for supplying the meteorological information.

GEN 3.5.5 Notification required from operators

Minimum amount of advance notice required by the meteorological authority from operators in respect of briefing, consultation and flight documentation and other meteorological information they require or change.

GEN 3.5.6 Aircraft reports

As necessary, requirements of the meteorological authority for the making and transmission of aircraft reports.

GEN 3.5.7 VOLMET service

Description of VOLMET and/or D-VOLMET service, including:

1) name of transmitting station;
2) call sign or identification and abbreviation for the radio communication emission;
3) frequency or frequencies used for broadcast;
4) broadcasting period;
5) hours of service;
6) list of aerodromes/heliports for which reports and/or forecasts are included; and
7) reports, forecasts and SIGMET information included and remarks.

GEN 3.5.8 SIGMET and AIRMET service

Description of the meteorological watch provided within flight information regions or control areas for which air traffic services are provided, including a list of the meteorological watch offices with:

1) name of the meteorological watch office, ICAO location indicator;
2) hours of service;
3) flight information region(s) or control area(s) served;
4) SIGMET validity periods;
5) specific procedures applied to SIGMET information (e.g. for volcanic ash and tropical cyclones);
6) procedures applied to AIRMET information (in accordance with relevant regional air navigation agreements);
7) the air traffic services unit(s) provided AIRMET information; and
8) additional information (e.g. concerning any limitation of service, etc.).

GEN 3.5.9 Other automated meteorological services

Description of available automated services for the provision of meteorological information (e.g. automated pre-flight information service accessible by telephone and/or computer modem) including:

1) service name;

2) information available;
3) areas, routes and aerodromes covered; and
4) telephone, telex and telefax number(s).

GEN 3.6 Search and rescue

GEN 3.6.1 Responsible service(s)

Brief description of service(s) responsible for the provision of search and rescue (SAR), including:

1) service/unit name;
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address;
7) website address, if available; and
8) a statement concerning the ICAO documents on which the service is based and a reference to the KSA AIP location where differences, if any, are listed.

GEN 3.6.2 Area of responsibility

Brief description of area of responsibility within which search and rescue services are provided.

Note.— A chart may be included to supplement the description of the area.

GEN 3.6.3 Types of service

Brief description and geographical portrayal, where appropriate, of the type of service and facilities provided including indications where SAR aerial coverage is dependent upon significant deployment of aircraft.

GEN 3.6.4 SAR agreements

Brief description of SAR agreements in force, including provisions for facilitating entry and departure of other States' aircraft for search, rescue, salvage, repair or salvage in connection with lost or damaged aircraft, either with airborne notification only or after flight plan notification.

GEN 3.6.5 Conditions of availability

Brief description of provisions for search and rescue, including the general conditions under which the service and facilities are available for international use, including an indication of whether a facility available for search and rescue is specialized in SAR techniques and functions, or is specially used for other purposes but adapted for SAR purposes by training and equipment, or is only occasionally available and has no particular training or preparation for SAR work.

GEN 3.6.6 Procedures and signals used

Brief description of the procedures and signals employed by rescue aircraft and a table showing the signals to be used by survivors.

GEN 4. CHARGES FOR AERODROMES/HELIPORTS AND AIR NAVIGATION SERVICES

Reference may be made to where details of actual charges may be found, if not itemized in this chapter.

GEN 4.1 Aerodrome/heliport charges

Brief description of type of charges which may be applicable at aerodromes/heliports available for international use, including:

1) landing of aircraft;
2) parking, hangarage and long-term storage of aircraft;

3) passenger service;
4) security;
5) noise-related items;
6) other (customs, health, immigration, etc.);
7) exemptions/reductions; and
8) methods of payment.

GEN 4.2 Air navigation services charges

Brief description of charges which may be applicable to air navigation services provided for international use, including:

1) approach control;
2) route air navigation services;
3) cost basis for air navigation services and exemptions/
4) reductions; and
5) methods of payment.

PART 2 — EN-ROUTE (ENR)

If the KSA AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments must be included in each volume. In the case of an AIP being published as one volume, the annotation "not applicable" must be entered against each of the above subsections.

ENR 0.6 Table of contents to Part 2

A list of sections and subsections contained in Part 2 — En-route.

Note.— Subsections may be listed alphabetically.

ENR 1. GENERAL RULES AND PROCEDURES

ENR 1.1 General rules

The requirement is for publication of the general rules as applied within the Kingdom of Saudi Arabia.

ENR 1.2 Visual flight rules

The requirement is for publication of the visual flight rules as applied within the Kingdom of Saudi Arabia.

ENR 1.3 Instrument flight rules

The requirement is for publication of the instrument flight rules as applied within KSA.

ENR 1.4 ATS airspace classification and description

ENR 1.4.1 ATS airspaces classification

The description of ATS airspace classes in the form of the ATS airspace classification table in GACAR Section 11, Appendix 4, appropriately annotated to indicate those airspace classes not used by GACA.

ENR 1.4.2 ATS airspace description

Other ATS airspace descriptions as applicable, including general textual descriptions.

ENR 1.5 Holding, approach and departure procedures

ENR 1.5.1 General

The requirement is for a statement concerning the criteria on which holding, approach and departure procedures are established. If different from ICAO provisions, the requirement is for presentation of criteria used in a tabular form.

ENR 1.5.2 Arriving flights

The requirement is to present procedures (conventional or area navigation or both) for arriving flights which are common to flights into or within the same type of airspace. If different procedures apply within a terminal airspace, a note to this effect must be given together with a reference to where the specific procedures can be found.

ENR 1.5.3 Departing flights

The requirement is to present procedures (conventional or area navigation or both) for departing flights which are common to flights departing from any aerodrome/heliport.

ENR 1.5.4 Other relevant information and procedures

Brief description of additional information, e.g. entry procedures, final approach alignment, holding procedures and patterns.

ENR 1.6 ATS surveillance services and procedures

ENR 1.6.1 Primary radar

Description of primary radar services and procedures, including:

1) supplementary services;
2) the application of radar control service;
3) radar and air-ground communication failure procedures;
4) voice and CPDLC position reporting requirements; and
5) graphic portrayal of area of radar coverage.

ENR 1.6.2 Secondary surveillance radar (SSR)

Description of secondary surveillance radar (SSR) operating procedures, including:

1) emergency procedures;
2) air-ground communication failure and unlawful interference procedures;
3) the system of SSR code assignment;
4) voice and CPDLC position reporting requirements; and
5) graphic portrayal of area of SSR coverage.

Note.— The SSR description is of particular importance in areas or routes where the possibility of interception exists.

ENR 1.6.3 Automatic dependent surveillance — broadcast (ADS-B)

Description of automatic dependent surveillance — broadcast (ADS-B) operating procedures, including:

a) emergency procedures;
b) air-ground communication failure and unlawful interference procedures;
c) aircraft identification requirements;
d) voice and CPDLC position reporting requirements; and
e) graphic portrayal of area of ADS-B coverage.

Note.— The ADS-B description is of particular importance in areas or routes where the possibility of interception exists.

ENR 1.6.4 Other relevant information and procedures

Brief description of additional information and procedures, e.g. radar failure procedures, and transponder failure procedures.

ENR 1.7 Altimeter setting procedures

The requirement is for a statement of altimeter setting procedures in use, containing:

1) brief introduction with a statement concerning the ICAO documents on which the procedures are based together with differences to ICAO provisions, if any;
2) basic altimeter setting procedures;
3) description of altimeter setting region(s);
4) procedures applicable to operators (including pilots); and
5) table of cruising levels.

ENR 1.8 Regional supplementary procedures

The requirement is for presentation of regional supplementary procedures (SUPPS) affecting the entire area of responsibility.

ENR 1.9 Air traffic flow management and airspace management

Brief description of air traffic flow management (ATFM) system and airspace management, including:

1) ATFM structure, service area, service provided, location of unit(s) and hours of operation;
2) types of flow messages and descriptions of the formats; and
3) procedures applicable for departing flights, containing:
   a) service responsible for provision of information on applied ATFM measures;
   b) flight plan requirements; and
   c) slot allocations.
4) *Information on overall responsibility regarding airspace management within FIR(s), details of civil/military airspace allocation and management coordination, structure of manageable airspace (allocation and changes to allocation) and general operating procedures*.

ENR 1.10 Flight planning

The requirement is to indicate any restriction, limitation or advisory information related to the flight planning stage which may assist the user in the presentation of the intended flight operation, including:

1) procedures for the submission of a flight plan;
2) repetitive flight plan system; and
3) changes to the submitted flight plan.

ENR 1.11 Addressing of flight plan messages

The requirement is for an indication, in tabular form, of the addresses allocated to flight plans, showing:

1) category of flight (IFR, VFR or both);
2) route (into or via FIR and/or TMA); and
3) message address.

ENR 1.12 Interception of civil aircraft

The requirement is for a complete statement of interception procedures and visual signals to be used with a clear indication of whether ICAO provisions are applied and if not, that differences exist.

Note. — A list of significant differences between national regulations and practices of the State and

related ICAO provisions is found in Gen 1.7.

ENR 1.13 Unlawful interference

The requirement is for presentation of appropriate procedures to be applied in case of unlawful interference.

ENR 1.14 Air traffic incidents

Description of air traffic incidents reporting system, including:

1) definition of air traffic incidents;
2) use of the "Air Traffic Incident Reporting Form";
3) reporting procedures (including in-flight procedures); and
4) purpose of reporting and handling of the form.

Note. — A copy of the "Air Traffic Incident Report Form" (PANS ATM, Doc 4444 Appendix 4) may be included for reference.

ENR 2. AIR TRAFFIC SERVICES AIRSPACE

ENR 2.1 FIR, UIR, TMA and CTA

Detailed description of flight information regions (FIR), upper flight information regions (UIR), and control areas (CTA including specific CTA such as TMA), including:

1) name, geographical coordinates in degrees and minutes of the FIR/UIR lateral limits and in degrees, minutes and seconds of the CTA lateral limits, vertical limits and class of airspace;
2) identification of unit providing the service;
3) call sign of aeronautical station serving the unit and language(s) used, specifying the area and conditions, when and where to be used, if applicable;
4) frequencies supplemented by indications for specific purposes; and
5) remarks.

Control zones around military air bases not otherwise described in the KSA AIP must be included in this subsection. Where the requirements of Annex 2 concerning flight plans, two-way communications and position reporting apply to all flights in order to eliminate or reduce the need for interceptions and/or where the possibility of interception exists and the maintenance of guard on the VHF emergency channel 121.5 MHz is required, a statement to this effect must be included for the relevant area(s) or portion(s) thereof.

A description of designated areas over which the carriage of an emergency locator transmitter (ELT) is required and where aircraft shall continuously guard the VHF emergency frequency 121.5 MHz, except for those periods when aircraft are carrying out communications on other VHF channels or when airborne equipment limitations or cockpit duties do not permit simultaneous guarding of two channels.

Note.— Other types of airspace around civil aerodromes/ heliports such as control zones and aerodrome traffic zones are described in the relevant aerodrome or heliport section.

ENR 2.2 Other regulated airspace

Where established, a detailed description of other types of regulated airspace and airspace classification.

ENR 3. ATS ROUTES

Note 1.— Bearings, tracks and radials are normally magnetic. In areas of high latitude, where it is determined by the appropriate authority that reference to Magnetic North is impractical, another suitable reference, i.e. True North or Grid North, may be used.

Note 2.— Changeover points established at the midpoint between two radio navigation aids, or at the intersection of the two radials in the case of a route which changes direction between the navigation aids, need not be shown for each route segment if a general statement regarding their existence is made.

ENR 3.1 Lower ATS routes

Detailed description of lower ATS routes, including:

1) route designator, designation of the navigation specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including "compulsory" or "on-request" reporting points;

2) tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometer or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;

3) upper and lower limits or minimum en-route altitudes, to the nearest higher 50 m or 100 ft, and airspace classification;

4) lateral limits and minimum obstacle clearance altitudes;

5) direction of cruising levels;

6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and

7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, and any navigation specification(s) limitations.

ENR 3.2 Upper ATS routes

Detailed description of upper ATS routes, including:

1) route designator, designation of the navigation specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including "compulsory" or "on-request" reporting points;

2) tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;

3) upper and lower limits and airspace classification;

4) lateral limits;

5) direction of cruising levels;

6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and.

7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, and any navigation specification(s) limitations.

ENR 3.3 Area navigation routes

Detailed description of PBN (RNAV and RNP) routes, including:

1) route designator, designation of the navigation specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including "compulsory" or "on-request" reporting points;

2) in respect of waypoints defining an area navigation route, additionally as applicable:

a) station identification of the reference VOR/DME;

b) bearing to the nearest degree and the distance to the nearest tenth of a kilometer or tenth of a nautical mile from the reference VOR/DME, if the waypoint is not collocated with it; and

c) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft);

3) magnetic bearing to the nearest degree, geodesic distance to the nearest tenth of a kilometer or tenth of a nautical mile between defined end-points and distance between each successive designated significant point;

a upper and lower limits and airspace classification;

a direction of cruising levels;

b the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and.

5) direction of cruising levels;

6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and

7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, and any navigation specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification is not considered to be an integral part of the route designator

ENR 3.4 Helicopter routes

Reserved

ENR 3.5 Other routes

The requirement is to describe other specifically designated routes which are compulsory within specified area(s).

Note.— Arrival, transit and departure routes which are specified in connection with procedures for traffic to and from aerodromes/heliports need not be described since they are described in the relevant section of Part 3 — Aerodromes.

ENR 4. RADIO NAVIGATION AIDS/SYSTEMS

ENR 4.1 Radio navigation aids — en-route

A list of stations providing radio navigation services established for en-route purposes and arranged alphabetically by name of the station, including:

1) name of the station and magnetic variation to the nearest degree and for VOR, station declination to the nearest degree used for technical line-up of the aid;

2) identification;

3) frequency/channel for each element;

4) ours of operation;

5) geographical coordinates in degrees, minutes and seconds of the position of the transmitting antenna;

6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft); and

7) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

ENR 4.2 Special navigation systems

Description of stations associated with special navigation systems, including:

a. name of station or chain;

b. type of service available (master signal, slave signal, colour);

c. frequency (channel number, basic pulse rate, recurrence rate, as applicable);

d. hours of operation;

e. geographical coordinates in degrees, minutes and seconds of the position of the transmitting station; and

f. remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

ENR 4.3 Global navigation satellite system (GNSS)

A list and description of elements of the global navigation satellite system (GNSS) providing the navigation service established for en-route purposes and arranged alphabetically by name of the element, including:

1) the name of the GNSS element (GPS, GLONASS, EGNOS, MSAS, WAAS, etc.);

2) frequency(ies), as appropriate;

3) geographical coordinates in degrees, minutes and seconds of the nominal service area and coverage area; and

4) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column.

ENR 4.4 Name-code designators for significant points

An alphabetically arranged list of name-code designators (five-letter pronounceable "name-code") established for significant points at positions not marked by the site of radio navigation aids, including:

1) name-code designator;
2) geographical coordinates in degrees, minutes and seconds of the position;
3) reference to ATS or other routes where the point is located. and
4) remarks, including supplementary definition of positions where required.

Note 1: All five letter code and ATS routes designators shall be managed and maintained by GACA-ANS (AIS Department) in coordination with ICAO MID Region Office and Eurocontrol.

ENR 4.5 Aeronautical ground lights — en-route

A list of aeronautical ground lights and other light beacons designating geographical positions which are selected by GACA as being significant, including:

1) name of the city or town or other identification of the beacon;
2) type of beacon and intensity of the light in thousands of candelas;
3) characteristics of the signal;
4) operational hours; and
5) remarks.

ENR 5. NAVIGATION WARNINGS

ENR 5.1 Prohibited, restricted and danger areas

Description, supplemented by graphic portrayal where appropriate, of prohibited, restricted and danger areas together with information regarding their establishment and activation, including:

1) identification, name and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
2) upper and lower limits; and
3) remarks, including time of activity.

Type of restriction or nature of hazard and risk of interception in the event of penetration must be indicated in the remarks column.

The template PRD 01 found in Appendix A9 shall be used for the origination or modification of the identification and delineation of any prohibited, danger and restricted area for publication in the KSA AIP.

To avoid confusion, identification numbers shall not be reused for a period of at least one year after cancellation of a PRD area to which they refer.

ENR 5.2 Military exercise and training areas and air defence identification zone (ADIZ)

Description, supplemented by graphic portrayal where appropriate, of established military training areas and military exercises taking place at regular intervals, and established air defence identification zone (ADIZ), including:

1) geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
2) upper and lower limits and system and means of activation announcements together with information pertinent to civil flights and applicable ADIZ procedures; and
3) remarks, including time of activity and risk of interception in the event of penetration of ADIZ.

ENR 5.3 Other activities of a dangerous nature and other potential hazards

ENR 5.3.1 Other activities of a dangerous nature

Description, supplemented by charts where appropriate, of activities that constitute a specific or obvious danger to aircraft operation and could affect flights including:

1) geographical coordinates in degrees and minutes of centre of area and range of influence;
2) vertical limits;
3) advisory measures;
4) authority responsible for the provision of information; and
5) remarks, including time of activity.

ENR 5.3.2 Other potential hazards

Description, supplemented by charts where appropriate, of other potential hazards that could affect flights (e.g. active volcanoes, nuclear power stations, etc.) including:

1) geographical coordinates in degrees and minutes of location of potential hazard;
2) vertical limits;
3) advisory measures;
4) authority responsible for the provision of information; and
5) remarks.

ENR 5.4 Air navigation obstacles

The list of obstacles affecting air navigation in Area 1 (the entire KSA territory), including:

1) obstacle identification or designation;
2) type of obstacle;
3) obstacle position, represented by geographical coordinates in degrees, minutes and seconds;
4) obstacle elevation and height to the nearest meter or foot;
5) type and color of obstacle lighting (if any); and
6) if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6.

Note 1.— An obstacle whose height above the ground is 100 m and higher is considered an obstacle for Area 1.

Note 2.— Specifications governing the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations/heights for obstacles in Area 1 are given in GACAR Section 11, Appendix A5, Tables 1 and 2, respectively.

ENR 5.5 Aerial sporting and recreational activities

Brief description, supplemented by graphic portrayal where appropriate, of intensive aerial sporting and recreational activities together with conditions under which they are carried out, including:

1) designation and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
2) vertical limits;
3) operator/user telephone number; and
4) remarks, including time of activity.

Note.— This paragraph may be subdivided into different sections for each different category of activity, giving the indicated details in each case.

ENR 5.6 Bird migration and areas with sensitive fauna

Description, supplemented by charts where practicable, of movements of birds associated with migration, including migration routes and permanent resting areas and areas with sensitive fauna.

ENR 6. EN-ROUTE CHARTS

The requirement is for the En-route Chart — ICAO and index charts to be included in this section.

PART 3 — AERODROMES (AD)

If the KSA AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments must be included in each volume. In the case of KSA AIP remains published as one volume, the annotation "not applicable" must be entered against each of the above subsections.

AD 0.6 Table of contents to Part 3

A list of sections and subsections contained in Part 3 — Aerodromes (AD).

Note.— Subsections may be listed alphabetically.

AD 1. AERODROMES/HELIPORTS — INTRODUCTION

AD 1.1 Aerodrome/heliport availability and conditions of use

AD 1.1.1 General conditions

Brief description of the GACA's designated authority responsible for aerodromes and heliports, including:

1) the general conditions under which aerodromes/heliports and associated facilities are available for use; and

2) a statement concerning the ICAO documents on which the services are based and a reference to the KSA AIP location where differences, if any, are listed.

AD 1.1.2 Use of military air bases

Regulations and procedures if any, concerning civil use of military air bases;

AD 1.1.3 Low visibility procedures (LVP)

The general conditions under which the low visibility procedures applicable to Cat II/III operations at aerodromes, if any, are applied

AD 1.1.4 Aerodrome operating minima

Details of aerodrome operating minima applied.

3) other information of a similar nature.

AD 1.1.5 Other information

If applicable, other information of a similar nature.

AD 1.2 Rescue and firefighting services

AD 1.2.1 Rescue and firefighting services

Brief description of rules governing the establishment of rescue and firefighting services at aerodromes and heliports available for public use together with an indication of rescue and fire- fighting categories established by GACA.

AD 1.3 Index to aerodromes and heliports

A list, supplemented by graphic portrayal, of aerodromes and heliports within the Kingdom of Saudi Arabia, including:

1) aerodrome/heliport name and ICAO location indicator;

2) type of traffic permitted to use the aerodrome/heliport (international/national, IFR/VFR, scheduled/non-scheduled, general aviation, military and other); and

- reference to KSA AIP, Part 3 subsection in which aerodrome/heliport details are presented.

AD 1.4 Grouping of aerodromes/heliports

Brief description of the criteria applied by GACA in grouping aerodromes/heliports for the production/distribution/ provision of information purposes (e.g. international / Regional/ Domestic; primary/secondary; major/other; civil/military; etc.).

AD 1.5 Status of certification of aerodromes

A list of aerodromes in KSA, indicating the status of certification, including:

(1) aerodrome name and ICAO location indicator;

(2) date and if applicable, validity of certification ; and

(3) remarks, if any.

AD 2. AERODROMES

Note.— ** is to be replaced by the relevant ICAO location indicator.**

****** AD 2.1 Aerodrome location indicator and name**

The requirement is for the ICAO location indicator allocated to the aerodrome and the name of aerodrome. An ICAO location indicator must be an integral part of the referencing system applicable to all subsections in section AD 2.

****** AD 2.2 Aerodrome geographical and administrative data**

The requirement is for aerodrome geographical and administrative data including:

1) aerodrome reference point (geographical coordinates in degrees, minutes and seconds) and its site;
2) direction and distance of aerodrome reference point from centre of the city or town which the aerodrome serves;
3) aerodrome elevation to the nearest meter or foot, and reference temperature;
4) where appropriate, geoid undulation at the aerodrome elevation position to the nearest metre or foot;
5) magnetic variation to the nearest degree, date of information and annual change;
6) name of aerodrome operator, address, telephone, telefax, e-mail address, AFS address, and, if available, website address;;
7) types of traffic permitted to use the aerodrome (IFR/VFR);and
8) remarks.

****** AD 2.3 Operational hours**

Detailed description of the hours of operation of services at the aerodrome, including:

1) aerodrome operator;
2) customs and immigration;
3) health and sanitation;
4) AIS briefing office;
5) ATS reporting office (ARO);
6) MET briefing office;
7) air traffic service;
8) fuelling;
9) handling
10) security;
11) de-icing; and
12) remarks.

****** AD 2.4 Handling services and facilities**

Detailed description of the handling services and facilities available at the aerodrome, including:

1) cargo-handling facilities;
2) fuel and oil types;
3) fuelling facilities and capacity;
4) de-icing facilities;
5) hangar space for visiting aircraft;

6) repair facilities for visiting aircraft; and

7) remarks.

****** AD 2.5 Passenger facilities**

Passenger facilities available at the aerodrome, provided as a brief description or a reference to other information sources such as a website including:

1) hotel(s) at or in the vicinity of aerodrome;

2) restaurant(s) at or in the vicinity of aerodrome;

3) transportation possibilities;

4) medical facilities;

5) bank and post office at or in the vicinity of aerodrome;

6) tourist office; and

7) remarks.

****** AD 2.6 Rescue and firefighting services**

Detailed description of the rescue and firefighting services and equipment available at the aerodrome, including:

1) aerodrome category for firefighting;

2) rescue equipment;

3) capability for removal of disabled aircraft; and

4) remarks.

****** AD 2.7 Seasonal availability —clearing**

Detailed description of the equipment and operational priorities established for the clearance of aerodrome movement areas, including:

1) type(s) of clearing equipment;

2) clearance priorities; and

3) remarks.

****** AD 2.8 Aprons, taxiways and check locations/positions data**

Details related to the physical characteristics of aprons, taxiways and locations/positions of designated checkpoints, including:

1) designation, surface and strength of aprons;

2) designation, width, surface and strength of taxiways;

3) location and elevation to the nearest meter or foot of altimeter checkpoints;

4) location of VOR checkpoints;

5) position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and

6) remarks.

If check locations/positions are presented on an aerodrome chart, a note to that effect must be provided under this subsection.

****** AD 2.9 Surface movement guidance and control system and markings**

Brief description of the surface movement guidance and control system and runway and taxiway markings, including:

1) use of aircraft stand identification signs, taxiway guide lines and visual docking/parking guidance system at aircraft stands;

2) runway and taxiway markings and lights;

3) stop bars (if any); and

4) remarks.

****** AD 2.10 Aerodrome obstacles**

Detailed description of obstacles, including:

1) obstacles in Area 2:

   a. obstacle identification or designation;

   b. type of obstacle;

   c. obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;

   2) obstacle elevation and height to the nearest meter or foot;

   3) obstacle marking, and type and color of obstacle lighting (if any);

   4) if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and

   5) NIL indication, if appropriate.

   Note 1.— Chapter 10, 10.1.1, provides a description of Area 2 while Appendix A8, Figure A8-2, contains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 2.

   Note 2.— Specifications governing the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations for obstacles in Area 2 are given in GACAR section11, Appendix 5, Tables 1 and 2, and in GACAR Section 14, Volume I, Appendix 5, Tables A5-1 and A5-2, respectively.

2) the absence of an Area 2 data set for the aerodrome is to be clearly stated and obstacle data are to be provided for:

   a) obstacles that penetrate the obstacle limitation surfaces;

   b) obstacles that penetrate the take-off flight path area obstacle identification surface; and

   c) other obstacles assessed as being hazardous to air navigation.

3) indication that information on obstacles in Area 3:

   a) obstacle identification or designation;

   b) type of obstacle;

   c) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;

   d) obstacle elevation and height to the nearest tenth of meter or tenth of foot;

   e) obstacle marking, and type and color of obstacle lighting (if any);

   if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and

   NIL indication, if appropriate.

   Note 1.— Chapter 10, 10.1.1, provides a description of Area 3 while Appendix 8, Figure A8-3, contains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 3.

   Note 2.— Specifications governing the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations for obstacles in Area 3 are given in GACAR Section 14, Volume I, Appendix 5, Tables A5-1 and A5-2, respectively.

****** AD 2.11 Meteorological information provided**

Detailed description of meteorological information provided at the aerodrome and an indication of which meteorological office is responsible for the service enumerated, including:

- name of the associated meteorological office;
- hours of service and, where applicable, the designation of the responsible meteorological office outside these hours;

- office responsible for preparation of TAFs and periods of validity and interval of issuance of the forecasts;
- availability of the trend forecasts for the aerodrome, and interval of issuance;
- information on how briefing and/or consultation is provided;
- types of flight documentation supplied and language(s) used in flight documentation;
- charts and other information displayed or available for briefing or consultation;
- supplementary equipment available for providing information on meteorological conditions, e.g. weather radar and receiver for satellite images;
- the air traffic services unit(s) provided with meteorological information; and
- additional information (e.g. concerning any limitation of service, etc.).

****** AD 2.12 Runway physical characteristics**

Detailed description of runway physical characteristics, for each runway, including:

1) designations;
2) true bearings to one-hundredth of a degree;
3) dimensions of runways to the nearest meter or foot;
4) strength of pavement (PCN and associated data) and surface of each runway and associated stopways;
5) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for each threshold and runway end and where appropriate, geoid undulation of:
   a) thresholds of a non-precision approach runway to the nearest metre or foot; and
   b) thresholds of a precision approach runway to the nearest tenth of a metre or tenth of a foot;
6) elevations of:
   1) thresholds of a non-precision approach runway to the nearest meter or foot; and
   2) thresholds and the highest elevation of the touchdown zone of a precision approach runway to the nearest tenth of a metre or tenth of a foot;
7) slope of each runway and associated stopways;
8) dimensions of stopway (if any) to the nearest meter or foot;
9) dimensions of clearway (if any) to the nearest meter or foot;
10) dimensions of strips;
11) the existence of an obstacle-free zone; and
12) remarks.

****** AD 2.13 Declared distances**

Detailed description of declared distances to the nearest meter or foot for each direction of each runway, including:

1) runway designator;
2) take-off run available;
3) take-off distance available; and if applicable, alternative reduced declared distances;
4) accelerate-stop distance available;
5) landing distance available; and
6) remarks , including runway entry or start point where alternative reduced declared distances have been declared

If a runway direction cannot be used for take-off or landing, or both, because it is operationally forbidden, then this must be declared and the words “not usable” or the abbreviation “NU” entered (GACAR Section 14, Volume I, Attachment A, Section 3).

****** AD 2.14 Approach and runway lighting**

Detailed description of approach and runway lighting, including:

1) runway designator;
2) type, length and intensity of approach lighting system;
3) runway threshold lights, color and wing bars;
4) type of visual approach slope indicator system;
5) length of runway touchdown zone lights;
6) length, spacing, color and intensity of runway centre line lights;
7) length, spacing, color and intensity of runway edge lights;
8) color of runway end lights and wing bars;
9) length and color of stopway lights; and
10) remarks.

****** AD 2.15 Other lighting, secondary power supply**

Description of other lighting and secondary power supply, including:

1) location, characteristics and hours of operation of aerodrome beacon/identification beacon (if any);
2) location and lighting (if any) of anemometer/landing direction indicator;
3) taxiway edge and taxiway centre line lights;
4) secondary power supply including switch-over time; and
5) remarks.

****** AD 2.16 Helicopter landing area**

Detailed description of helicopter landing area provided at the aerodrome, including:

geographical coordinates in degrees, minutes, seconds and hundredths of seconds and, where appropriate, geoid undulation of the geometric centre of touch- down and lift-off (TLOF) or of each threshold of final approach and take-off (FATO) area;

- for non-precision approaches, to the nearest metre or foot; and
- for precision approaches, to the nearest tenth of a metre or tenth of a foot;

1) TLOF and/or FATO area elevation:

   for non-precision approaches, to the nearest meter or foot; and

   for precision approaches, to the nearest tenth of a meter or tenth of a foot;
2) TLOF and FATO area dimensions to the nearest meter or foot, surface type, bearing strength and marking;
3) true bearings to one-hundredth of a degree of FATO;
4) declared distances available, to the nearest meter or foot;
5) approach and FATO lighting; and
6) remarks.

****** AD 2.17 Air traffic services airspace**

Detailed description of air traffic services (ATS) airspace organized at the aerodrome, including:

1) airspace designation and geographical coordinates in degrees, minutes and seconds of the lateral limits;
2) vertical limits;
3) airspace classification;
4) call sign and language(s) of the ATS unit providing service;
5) transition altitude;
6) hours of applicability; and

7) remarks.

****** AD 2.18 Air traffic services communication facilities**

Detailed description of air traffic services communication facilities established at the aerodrome, including:

1) service designation;
2) call sign;
3) channel(s);
4) logon address, as appropriate;
5) hours of operation; and
6) remarks.

****** AD 2.19 Radio navigation and landing aids**

Detailed description of radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the aerodrome, including:

1. type of aids, magnetic variation to the nearest degree, as appropriate, and type of supported operation for ILS/MLS, basic GNSS, SBAS, and GBAS and for VOR/ILS/MLS also station declination to the nearest degree used for technical line-up of the aid;
2. identification, if required;
3. frequency(ies), channel number(s), service provider, and reference path identifier(s) (RPI), as appropriate;
4. hours of operation, as appropriate;
5. geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;
6. elevation of the transmitting antenna of DME to the nearest 30 m (100 ft) elevation of DME/P to the nearest 3 m (10 ft) elevation of GBAS reference point to the nearest meter or foot, and the ellipsoid height of the point to the nearest metre or foot. For SBAS, the ellipsoid height of the landing threshold point (LTP) or the fictitious threshold point (FTP) to the nearest meter or foot;
7. service volume radius from the GBAS reference point to the nearest kilometer or nautical mile; and
8. remarks.

When the same aid is used for both en-route and aerodrome purposes, a description must also be given in section ENR 4. If the ground-based augmentation system (GBAS) serves more than one aerodrome, description of the aid must be provided under each aerodrome. If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

****** AD 2.20 Local aerodrome regulations**

Detailed description of regulations applicable to the use of the aerodrome including the acceptability of training flights, nonradio and microlight aircraft and similar, and to ground manoeuvring and parking but excluding flight procedures.

****** AD 2.21 Noise abatement procedures**

Detailed description of noise abatement procedures established at the aerodrome.

****** AD 2.22 Flight procedures**

Detailed description of the conditions and flight procedures, including radar and/or ADS-B procedures, established on the basis of airspace organization at the aerodrome. When established, detailed description of the low visibility procedures at the aerodrome, including:

1) runway(s) and associated equipment authorized for use under low visibility procedures;
2) defined meteorological conditions under which initiation, use and termination of low visibility procedures would be made;
3) description of ground marking/lighting for use under low visibility procedures, and

4) Remarks.

****** AD 2.23 Additional information**

Additional information at the aerodrome, such as an indication of bird concentrations at the aerodrome, together with an indication of significant daily movement between resting and feeding areas, to the extent practicable.

****** AD 2.24 Charts related to an aerodrome**

The requirement is for charts related to an aerodrome to be included in the following order:

1. Aerodrome/Heliport Chart — ICAO;
2. Aircraft Parking/Docking Chart — ICAO;
3. Aerodrome Ground Movement Chart — ICAO;
4. Aerodrome Obstacle Chart — ICAO Type A (for each runway);
5. Precision Approach Terrain Chart — ICAO (precision approach Cat II and III runways);
6. Area Chart — ICAO (departure and transit routes);
7. Standard Departure Chart — Instrument — ICAO;
8. Area Chart — ICAO (arrival and transit routes);
9. Standard Arrival Chart — Instrument — ICAO;
10. ATC Surveillance Minimum Altitude Chart — ICAO;
11. Instrument Approach Chart — ICAO (for each runway and procedure type);

If some of the charts are not produced, a statement to this effect must be given in section GEN 3.2, Aeronautical charts.

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

Intentionally left blank

APPENDIX A2- SNOWTAM FORMAT

(COM heading)	(PRIORITY INDICATOR)	(ADDRESSES)			<≡
	(DATE AND TIME OF FILING)	(ORIGINATOR'S INDICATOR)			<≡
(Abbreviated heading)	(SWAA* SERIAL NUMBER) S W * *	(LOCATION INDICATOR)	DATE-TIME OF OBSERVATION	(OPTIONAL GROUP)	≪≡(

SNOWTAM	(Serial number) <≡

(AERODROME LOCATION INDICATOR)	A) <≡
(DATE-TIME OF OBSERVATION *(Time of completion of measurement in UTC)*)	B) →
(RUNWAY DESIGNATOR)	C) →
(CLEARED RUNWAY LENGTH, IF LESS THAN PUBLISHED LENGTH *(m)*)	D) →
(CLEARED RUNWAY WIDTH, IF LESS THAN PUBLISHED WIDTH *(m; if offset left or right of centre line add "L" or "R")*)	E) →
(DEPOSITS OVER TOTAL RUNWAY LENGTH *(Observed on each third of the runway, starting from threshold having the lower runway designation number)* NIL — CLEAR AND DRY 1 — DAMP 2 — WET 3 — RIME OR FROST COVERED *(depth normally less than 1 mm)* 4 — DRY SNOW 5 — WET SNOW 6 — SLUSH 7 — ICE 8 — COMPACTED OR ROLLED SNOW 9 — FROZEN RUTS OR RIDGES)	F) …./…./…. →
(MEAN DEPTH *(mm)* FOR EACH THIRD OF TOTAL RUNWAY LENGTH)	G) …./…./…. →
(ESTIMATED SURFACE FRICTION ON EACH THIRD OF RUNWAY) ESTIMATED SURFACE FRICTION GOOD — 5 MEDIUM/GOOD — 4 MEDIUM — 3 MEDIUM/POOR — 2 POOR — 1 *(The intermediate values of "MEDIUM/GOOD" and "MEDIUM/POOR" provide for more precise information in the estimate when conditions are found to be between medium and either good or poor.)*	H) …./…./…. →
(CRITICAL SNOWBANKS *(If present, insert height (cm)/distance from the edge of runway (m) followed by "L", "R" or "LR" if applicable)*)	J) →
(RUNWAY LIGHTS *(If obscured, insert "YES" followed by "L", "R" or both "LR" if applicable)*)	K) →
(FURTHER CLEARANCE *(If planned, insert length (m)/width (m) to be cleared or if to full dimensions, insert "TOTAL")*)	L) →
(FURTHER CLEARANCE EXPECTED TO BE COMPLETED BY . . . *(UTC)*)	M) →
(TAXIWAY *(If no appropriate taxiway is available, insert "NO")*)	N) →
(TAXIWAY SNOWBANKS *(If higher than 60 cm, insert "YES" followed by the lateral distance apart, m)*)	P) <≡
(APRON *(If unusable insert "NO")*)	R) →
(NEXT PLANNED OBSERVATION/MEASUREMENT IS FOR) *(month/day/hour in UTC)*	S) →
(PLAIN-LANGUAGE REMARKS *(Including contaminant coverage and other operationally significant information, e.g. sanding, de-icing, chemicals)*)	T))<≡
NOTES: 1. *Enter ICAO nationality letters as given in ICAO Doc 7910, Part 2. 2. Information on other runways, repeat from B to P. 3. Words in brackets ( ) not to be transmitted.	

SIGNATURE OF ORIGINATOR *(not for transmission)*

INSTRUCTIONS FOR THE COMPLETION OF THE SNOWTAM FORMAT

1. General

a) When reporting on two or three runways, repeat Items C to P inclusive.

b) Items together with their indicator must be dropped completely, where no information is to be included.

c) Metric units must be used and the unit of measurement not reported.

d) The maximum validity of SNOWTAM is 24 hours. New SNOWTAM must be issued whenever there is a significant change in conditions. The following changes relating to runway conditions are considered as significant:

a. a change in the coefficient of friction of about 0.05;

b. changes in depth of deposit greater than the following: 20 mm for dry snow, 10 mm for wet snow, 3 mm for slush;

c. a change in the available length or width of a runway of 10 per cent or more;

d. any change in the type of deposit or extent of coverage which requires reclassification in Items F or T of the SNOWTAM;

e. when critical snow banks exist on one or both sides of the runway, any change in the height or distance from centre line;

f. any change in the conspicuity of runway lighting caused by obscuring of the lights;

g. any other conditions known to be significant according to experience or local circumstances.

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

TT = data designator for SNOWTAM = SW;

AA = geographical designator for States, e.g. LF = FRANCE, EG = United Kingdom (see Location Indicators (Doc 7910), Part 2, Index to Nationality Letters for Location Indicators);

iiii = SNOWTAM serial number in a four-figure group;

CCCC = four-letter location indicator of the aerodrome to which the SNOWTAM refers (see Location Indicators (Doc 7910));

MMYYGGgg = date/time of observation/measurement, whereby:

MM = month, e.g. January = 01,December = 12

YY = day of the month

GGgg = time in hours (GG) and minutes (gg) UTC;

(BBB) = optional group for:

Correction to SNOWTAM message previously disseminated with the same serial number = COR.

Note.— Brackets in (BBB) are used to indicate that this group is optional.

Example: Abbreviated heading of SNOWTAM No. 149 from Zurich, measurement/observation of 7 November at 0620 UTC:

SWLS0149 LSZH 11070620

2. **Item A** — Aerodrome location indicator (four-letter location indicator).

3. **Item B** — Eight-figure date/time group — giving time of observation as month, day, hour and minute in UTC; this item must always be completed.

4. **Item C** — Lower runway designator number.

5. **Item D** — Cleared runway length in metres, if less than published length (see Item T on reporting on part of runway not cleared).

6. **Item E** — Cleared runway width in metres, if less than published width; if offset left or right of centre line, add "L" or "R", as viewed from the threshold having the lower runway designation number.

7. **Item F** — Deposit over total runway length as explained in SNOWTAM Format. Suitable combinations of these numbers may be used to indicate varying conditions over runway segments. If more than one deposit is present on the same portion of the runway, they should be reported in sequence from the top to the bottom. Drifts, depths of deposit appreciably greater than the average values or other *significant* characteristics of the deposits may be reported under Item T in plain language.

   Note.— Definitions for the various types of snow are given at the end of this Appendix.

8. **Item G** — Mean depth in millimetres deposit for each third of total runway length, or "XX" if not measurable or operationally not significant; the assessment to be made to an accuracy of 20 mm for dry snow, 10 mm for wet snow and 3 mm for slush.

9. **Item H** — Friction measurements on each third of the run- way and friction measuring device. Measured or calculated coefficient (two digits) or, if not available, estimated surface friction (single digit) in the order from the threshold having the lower runway designation number. Insert a code 9 when surface conditions or available friction measuring device do not permit a reliable surface friction measurement to be made. Use the following abbreviations to indicate the type of friction measuring device used:

BRD	Brakemeter-Dynometer	
GRT	Grip tester	
MUM	Mu-meter	
RFT	Runway friction tester	
SFH	Surface friction tester (high-pressure tire)	SFL Surface friction tester (low-pressure tire)
SKH	Skiddometer (high-pressure tire)	
SKL	Skiddometer (low-pressure tire)	
TAP	Tapley meter	

If other equipment is used, specify in plain language.

10. **Item J** — Critical snowbanks. If present insert height in centimeters and distance from edge of runway in meters, followed by left ("L") or right ("R") side or both sides ("LR"), as viewed from the threshold having the lower runway designation number.

11. **Item K** — If runway lights are obscured, insert "YES" followed by "L", "R" or both "LR", as viewed from the threshold having the lower runway designation number.

12. **Item L** — When further clearance will be undertaken, enter length and width of runway or "TOTAL" if runway will be cleared to full dimensions.

13. **Item M** — Enter the anticipated time of completion in UTC.

14. **Item N** — The code for Item F may be used to describe taxiway conditions; enter "NO" if no taxiways serving the associated runway are available.

15. **Item P** — If applicable, enter "YES" followed by the lateral distance in meters.

16. **Item R** — The code for Item F may be used to describe apron conditions; enter "NO" if the apron is unusable.

17. **Item S** — Enter the anticipated time of next observation/measurement in UTC.

18. **Item T** — Describe in plain language any operationally significant information but always report on length of uncleared runway (Item D) and extent of runway contamination (Item F) for each third of the runway (if appropriate) in accordance with the following scale:

    Runway contamination — 10% — if less than 10% of runway contaminated

    Runway contamination — 25% — if 11–25% of runway contaminated

    Runway contamination — 50% — if 26–50% of runway contaminated

    Runway contamination — 100% — if 51–100% of runway contaminated.

EXAMPLE OF COMPLETED SNOWTAM FORMAT

GG EHAMZQZX EDDFZQZX EKCHZQZX

070645 LSZHYNYX SWLS0149 LSZH 11070620

(SNOWTAM 0149

A) LSZH B) 11070620 C) 02 D) ... P)

C) 09 D) ... P)

C) 12 D) ... P)

R) NO S)11070920 T) DEICING)

Definitions of the various types of snow

Slush. Water-saturated snow which with a heel-and-toe slap- down motion against the ground will be displaced with a splatter; specific gravity: 0.5 up to 0.8.

Note.— Combinations of ice, snow and/or standing water may, especially when rain, rain and snow, or snow is falling, produce substances with specific gravities in excess of 0.8. These substances, due to their high water/ice content, will have a transparent rather than a cloudy appearance and, at the higher specific gravities, will be readily distinguishable from slush.

Snow (on the ground).

1) *Dry snow.* Snow which can be blown if loose or, if compacted by hand, will fall apart again upon release; specific gravity: up to but not including 0.35.

2) *Wet snow.* Snow which, if compacted by hand, will stick together and tend to or form a snowball; specific gravity: 0.35 up to but not including 0.5.

3) *Compacted snow.* Snow which has been compressed into a solid mass that resists further compression and will hold together or break up into lumps if picked up; specific gravity: 0.5 and over.

APPENDIX A3– ASHTAM FORMAT

(COM heading)	(PRIORITY INDICATOR)	(ADDRESSEE INDICATOR(S))[1]			
	(DATE AND TIME OF FILING)		(ORIGINATOR'S INDICATOR)		
(Abbreviated heading)	(VA*[2] SERIAL NUMBER)		(LOCATION INDICATOR)	DATE/TIME OF ISSUANCE	(OPTIONAL GROUP)
	V A *[2] *[2]				

ASHTAM	(SERIAL NUMBER)
(FLIGHT INFORMATION REGION AFFECTED)	A)
(DATE/TIME (UTC) OF ERUPTION)	B)
(VOLCANO NAME AND NUMBER)	C)
(VOLCANO LATITUDE/LONGITUDE OR VOLCANO RADIAL AND DISTANCE FROM NAVAID)	D)
(VOLCANO LEVEL OF ALERT COLOUR CODE, INCLUDING ANY PRIOR LEVEL OF ALERT COLOUR CODE)[3]	E)
(EXISTENCE AND HORIZONTAL/VERTICAL EXTENT OF VOLCANIC ASH CLOUD)[4]	F)
(DIRECTION OF MOVEMENT OF ASH CLOUD)[4]	G)
(AIR ROUTES OR PORTIONS OF AIR ROUTES AND FLIGHT LEVELS AFFECTED)	H)
(CLOSURE OF AIRSPACE AND/OR AIR ROUTES OR PORTIONS OF AIR ROUTES, AND ALTERNATIVE AIR ROUTES AVAILABLE)	I)
(SOURCE OF INFORMATION)	J)
(PLAIN-LANGUAGE REMARKS)	K)

NOTES:
1. See also Appendix 5 regarding addressee indicators used in predetermined distribution systems.
2. *Enter ICAO nationality letter as given in ICAO Doc 7910, Part 2.
3. See paragraph 3.5 below.
4. Advice on the existence, extent and movement of volcanic ash cloud G) and H) may be obtained from the Volcanic Ash Advisory Centre(s) responsible for the FIR concerned.
5. Item titles in brackets ( ) not to be transmitted.

SIGNATURE OF ORIGINATOR *(not for transmission)*

INSTRUCTIONS FOR THE COMPLETION OF THE ASHTAM FORMAT

1. General

1.1 The ASHTAM provides information on the status of activity of a volcano when a change in its activity is, or is expected to be of operational significance. This information is provided using the volcano level of alert color code given in 3.5 below.

1.2 In the event of a volcanic eruption producing ash cloud of operational significance, the ASHTAM also provides information on the location, extent and movement of the ash cloud and the air routes and flight levels affected.

1.3 Issuance of an ASHTAM giving information on a volcanic eruption, in accordance with section 3 below, should not be delayed until complete information A) to K) is available but should be issued immediately following receipt of notification that an eruption has occurred or is expected to occur, or a change in the status of activity of a volcano of operational significance has occurred or is expected to occur, or an ash cloud is reported. In the case of an expected eruption, and hence no ash cloud evident at that time, items A) to E) should be completed and items F) to I) indicated as "not applicable". Similarly, if a volcanic ash cloud is reported, e.g. by special air-report, but the source volcano is not known at that time, the ASHTAM should be issued initially with items A) to E) indicated as "unknown", and items F) to K) completed, as necessary, based on the special air-report, pending receipt of further information. In other circumstances, if information for a specific field A) to K) is not available indicate "NIL".

1.4 The maximum period of validity of ASHTAM is 24 hours. New ASHTAM must be issued whenever there is a change in the level of alert.

2. Abbreviated heading

2.1 Following the usual AFTN communications header, the abbreviated heading "TT AAiiii CCCC MMYYGGgg (BBB)" is included to facilitate the automatic processing of ASHTAM messages in computer data banks. The explanation of these symbols is:

TT = data designator for ASHTAM = VA;

AA = geographical designator for States, e.g. NZ = New Zealand (see Location Indicators (Doc 7910), Part 2, Index to Nationality Letters for Location Indicators);

iiii = ASHTAM serial number in a four-figure group;

CCCC = four-letter location indicator of the flight information region concerned (see Location Indicators (Doc 7910), Part 5, addresses of centres in charge of FIR/UIR);

MMYYGGgg = date/time of report, whereby:

MM = month, e.g. January = 01, December = 12

YY = day of the month

GGgg = time in hours (GG) and minutes (gg) UTC;

(BBB) = Optional group for correction to an ASHTAM message previously disseminated with the same serial number = COR.

Note.— Brackets in (BBB) are used to indicate that this group is optional.

Example: Abbreviated heading of ASHTAM for Auckland Oceanic FIR, report on 7 November at 0620 UTC: VANZ0001 NZZO 11070620

3. Content of ASHTAM

3.1 Item A — Flight information region affected, plain- language equivalent of the location indicator given in the abbreviated heading, in this example "Auckland Oceanic FIR".

3.2 Item B — Date and time (UTC) of first eruption.

3.3 Item C — Name of volcano, and number of volcano as listed in the ICAO Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (Doc 9691), Appendix H, and on the World Map of Volcanoes and Principal Aeronautical Features.

3.4 Item D — Latitude/Longitude of the volcano in whole degrees or radial and distance of volcano from NAVAID (as listed in the ICAO Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (Doc 9691), Appendix H, and on the World Map of Volcanoes and Principal Aeronautical Features).

3.5 Item E — Color code for level of alert indicating volcanic activity, including any previous level of alert color code as follows:

Level of alert colour code	Status of activity of volcano
GREEN ALERT	Volcano is in normal, non-eruptive state.
	or, after a change from a higher alert level:
	Volcanic activity considered to have ceased, and volcano reverted to its normal, non-eruptive state.
YELLOW ALERT	Volcano is experiencing signs of elevated unrest above known background levels.
	or, after a change from higher alert level:
	Volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase.
ORANGE ALERT	Volcano is exhibiting heightened unrest with increased likelihood of eruption.
	or,
	Volcanic eruption is underway with no or minor ash emission *[specify ash-plume height if possible]*.
RED ALERT	Eruption is forecasted to be imminent with significant emission of ash into the atmosphere likely.
	or,
	Eruption is underway with significant emission of ash into the atmosphere *[specify ash-plume height if possible]*.

Note.— The colour code for the level of alert indicating the status of activity of the volcano and any change from a previous status of activity should be provided to the area control centre by the responsible vulcanological agency in the State concerned, e.g. "RED ALERT FOLLOWING YELLOW" OR "GREEN ALERT FOLLOWING ORANGE".

3.6 Item F — If volcanic ash cloud of operational significance is reported, indicate the horizontal extent and base/top of the ash cloud using latitude/longitude (in whole degrees) and altitudes in thousands of meters (feet) and/or radial and distance from source volcano. Information initially may be based only on special air-report, but subsequent information may be more detailed based on advice from the responsible meteorological watch office and/or volcanic ash advisory centre.

3.7 Item G — Indicate forecast direction of movement of the ash cloud at selected levels based on advice from the responsible meteorological watch office and/or volcanic ash advisory centre.

3.8 Item H — Indicate air routes and portions of air routes and flight levels affected, or expected to become affected.

3.9 Item I — Indicate closure of airspace, air routes or portions of air routes, and availability of alternative routes.

3.10 Item J — Source of the information, e.g. "special air-report" or "volcanological agency", etc. The source of information should always be indicated, whether an eruption has actually occurred or ash cloud reported, or not.

3.11 Item K — Include in plain language any operationally significant information additional to the foregoing.

APPENDIX A4- INFORMATION TO BE NOTIFIED BY AIRAC

PART 1

1 The establishment and withdrawal of, and premeditated significant changes (including operational trials) to:

1.1 Limits (horizontal and vertical), regulations and procedures applicable to:

1) flight information regions;

2) control areas;

3) control zones;

4) advisory areas;

5) ATS routes;

6) permanent danger, prohibited and restricted areas (including type and periods of activity when known) and ADIZ;

7) permanent areas or routes or portions thereof where the possibility of interception exists.

1.2 Positions, frequencies, call signs, identifiers, known irregularities and maintenance periods of radio navigation aids, communication and surveillance facilities.

1.3 Holding and approach procedures, arrival and departure procedures, noise abatement procedures and any other pertinent ATS procedures.

1.4 Transition levels, transition altitudes and minimum sector altitudes

1.5 Meteorological facilities (including broadcasts) and procedures.

1.6 Runways and stopways.

1.7 Taxiways and aprons.

1.8 Aerodrome ground operating procedures (including low visibility procedures).

1.9 Approach and runway lighting.

1.10 Aerodrome operating minima if published.

PART 2

2 The establishment and withdrawal of, and premeditated significant changes to:

2.1 Position, height and lighting of navigational obstacles.

2.2 Hours of service: aerodromes, facilities and services.

2.3 Customs, immigration and health services.

2.4 Temporary danger, prohibited and restricted areas and navigational hazards, military exercises and mass movements of aircraft.

2.5 Temporary areas or routes or portions thereof where the possibility of interception exists.

PART 3

3. The establishment of, and premeditated major changes to:

3.1 New aerodromes for international IFR operations.

3.2 New runways for IFR operations at international aerodromes.

3.3 Design and structure of the air traffic services route network.

3.4 Design and structure of a set of terminal procedures (including change of procedure bearings due to magnetic variation change).

3.5 Circumstances listed in Part 1 if all of KSA or any significant portion thereof is affected or if cross-border coordination is required.

APPENDIX A5- PREDETERMINED DISTRIBUTION SYSTEM FOR NOTAM

1 The predetermined distribution system provides for incoming NOTAM (including SNOWTAM and ASHTAM) to be channeled through the AFTN direct to designated addressees predetermined by the receiving country concerned while concurrently being routed to the international NOTAM office for checking and control purposes.

2 The addressee indicators for those designated addressees are constituted as follows:

1) First and second letters:

The first two letters of the location indicator for the AFTN communication centre associated with the relevant international NOTAM office of the receiving country.

2) Third and fourth letters:

The letters “ZZ” indicating a requirement for special distribution.

3) Fifth letter:

The fifth letter differentiating between NOTAM (letter “N”), SNOWTAM (letter “S”), and ASHTAM (letter “V”).

4) Sixth and seventh letters:

The sixth and seventh letters, each taken from the series A to Z and denoting the national and/or international distribution list(s) to be used by the receiving AFTN centre.

Note.— The fifth, sixth and seventh letters replace the three- letter designator YNY which, in the normal distribution system, denotes an international NOTAM office.

5) Eighth letter:

The eighth position letter shall be the filler letter “X” to complete the eight-letter addressee indicator.

3 GACA-ANS are to inform other States from which they receive NOTAM of the sixth and seventh letters to be used under different circumstances to ensure proper routing.

APPENDIX A6– NOTAM FORMAT

(see Chapter 5, 5.2.1)

Priority Indicator	→
Address	
	≪≡
Date and time of filing	→
Originator's Indicator	≪≡ (

Message Series, Number and Identifier

NOTAM containing new information	..... (series and number/year)	NOTAMN	
NOTAM replacing a previous NOTAM	..... (series and number/year)	NOTAMR ..... (series and number/year of NOTAM to be replaced)	
NOTAM cancelling a previous NOTAM	..... (series and number/year)	NOTAMC ..... (series and number/year of NOTAM to be cancelled)	≪≡

Qualifiers

	FIR	NOTAM Code	Traffic	Purpose	Scope	Lower Limit	Upper Limit	Coordinates, Radius	
Q)	/	Q /	/	/	/	/	/		≪≡
Identification of ICAO location indicator in which the facility, airspace or condition reported on is located								A)	→

Period of Validity

From *(date-time group)*	B)												→
To *(PERM or date-time group)*	C)											EST* PERM*	≪≡
Time Schedule *(if applicable)*	D)												→
													≪≡

Text of NOTAM; Plain-language Entry (using ICAO Abbreviations)

E)

≪≡

Lower Limit	F) →
Upper Limit	G))≪≡
Signature	

*Delete as appropriate

INSTRUCTIONS FOR THE COMPLETION OF THE NOTAM FORMAT

1. General

The qualifier line (Item Q) and all identifiers (Items A) to G) inclusive) each followed by a closing parenthesis, as shown in the format, shall be transmitted unless there is no entry to be made against a particular identifier.

2. NOTAM numbering

Each NOTAM shall be allocated a series identified by a letter and a four-digit number followed by a stroke and a two-digit number for the year (e.g. A0023/03). Each series shall start on 1 January with number 0001.

3. Qualifiers (Item Q)

Item Q) is divided in eight fields, each separated by a stroke. An entry shall be made in each field. Examples of how fields are to be filled are shown in the Aeronautical Information Services Manual (ICAO Doc 8126). The definition of the field is as follows:

1) FIR

a) If the subject of the information is located geographically within one FIR, the ICAO location indicator shall be that of the affected FIR concerned. When an aerodrome is situated within the overlying FIR of another State, the first field Item Q) shall contain the code for that overlying FIR (e.g. Q) LFRR/…A) EGJJ); or,

if the subject of the information is located geographically within more than one FIR within a State, the FIR field shall be composed of first two letters of the ICAO location indicator nationality letters of a the State originating the NOTAM plus followed by "XX". (The location indicator of the overlying UIR shall not be used). The ICAO location indicators of the FIRs concerned shall then be listed in Item A) or indicator of State or non-governmental agency which is responsible for provision of a navigation service in more than one State.

a. If one State issues a NOTAM affecting FIRs in a group of States, the first two letters of the ICAO location indicator of the issuing State plus "XX" shall be included. The location indicators of the FIRs concerned shall then be listed in Item A) or indicator of State or non-govern- mental agency which is responsible for provision of a navigation service in more than one State.

2) NOTAM CODE

All NOTAM Code groups contain a total of five letters and the first letter is always the letter Q. The second and third letters identify the subject, and the fourth and fifth letters denote the status or condition of the subject reported upon. The two-letter codes for subjects and conditions are those contained in the PANS-ABC (Doc 8400). For combinations of second and third, and fourth and fifth letters, refer to the NOTAM Selection Criteria contained in ICAO Doc 8126 or insert one of the following combinations, as appropriate:

a) If the subject is not listed in the NOTAM Code (Doc 8400) or in the NOTAM Selection Criteria (Doc 8126), insert "XX" as the second and third letters (e.g. QXXAK);

b) If the condition of the subject is not listed in the NOTAM Code (Doc 8400) or in the NOTAM Selection Criteria (Doc 8126), insert "XX" as the fourth and fifth letters (e.g. QFAXX);

c) When a NOTAM containing operationally significant information is issued in accordance with Appendix 4 and Chapter 6 and when it is used to announce the existence of AIRAC AIP Amendments or Supplements, insert "TT" as the fourth and fifth letters of the NOTAM Code;

d) When a NOTAM is issued containing a checklist of valid NOTAM, insert "KKKK" as the second, third, fourth and fifth letters; and

e) The following fourth and fifth letters of the NOTAM Code shall be used in NOTAM cancellations:

AK: RESUMED NORMAL OPERATION

AL: OPERATIVE (OR RE-OPERATIVE) SUBJECT TO PREVIOUSLYPUBLISHED LIMITATIONS/CONDITIONS

AO : OPERATIONAL

CC : COMPLETED

CN: CANCELLED

HV: WORK COMPLETED

XX : PLAIN LANGUAGE

3) TRAFFIC

I = IFR V = VFR

K = NOTAM is a checklist

Note.— Depending on the NOTAM subject and content, the qualifier field TRAFFIC may contain combined qualifiers. Guidance concerning the combination of TRAFFIC qualifiers with subject and conditions in accordance with the NOTAM Selection Criteria is contained i ICAO Doc 8126.

4) PURPOSE

N = NOTAM selected for the immediate attention of aircraft operators

B = NOTAM selected for PIB entry

O = NOTAM concerning flight operations

M = Miscellaneous NOTAM; not subject for a briefing, but it is available on request

K = NOTAM is a checklist

Note.— Depending on the NOTAM subject and content, the qualifier field PURPOSE may contain combined qualifiers. For possible combinations refer to the NOTAM Selection Criteria in the Aeronautical Information Services Manual (Doc 8126).

5) SCOPE

A = Aerodrome

E = En-route

W = Nav Warning

K = NOTAM is a checklist

Note.— Depending on the NOTAM subject and content, the qualifier field SCOPE may contain combined qualifiers. Guidance concerning the combination of SCOPE qualifiers with subject and conditions in accordance with the NOTAM Selection Criteria is contained in in ICAO Doc 8126.If the subject is qualified AE, the aerodrome location indicator must be reported in Item A).

6) and 7) LOWER/UPPER

LOWER and UPPER limits shall only be expressed in flight levels (FL) and shall express the actual vertical limits of the area of influence without the addition of buffer. In the case of navigation warnings and airspace restrictions, values entered shall be consistent with those provided under Items F) and G).

If the subject does not contain specific height information, insert “000” for LOWER and “999” for UPPER as default values.

8) COORDINATES, RADIUS

The latitude and longitude accurate to one minute, as well as a three-digit distance figure giving the radius of influence in NM (e.g. 4700N01140E043). Coordinates present approximate centre of circle whose radius encompasses the whole area of influence, and if the NOTAM affects the entire FIR/UIR or more than one FIR/UIR, enter the default value “999” for radius.

4. Item A)

Insert the location indicator as contained in ICAO Doc 7910 of the aerodrome or FIR in which the facility, airspace, or condition being reported on is located. More than one FIR/UIR may be indicated when appropriate. If there is no available ICAO location indicator, use the ICAO nationality letter as given in ICAO Doc 7910, Part 2, plus “XX” and followed up in Item E) by the name, in plain language.

If information concerns GNSS, insert the appropriate ICAO location indicator allocated for a GNSS element or the common location indicator allocated for all elements of GNSS (except GBAS).

Note.— In the case of GNSS, the location indicator may be used when identifying a GNSS element outage (e.g. KNMH for a GPS satellite outage).

5. Item B)

For date-time group use a ten-figure group, giving year, month, day, hours and minutes in UTC. This entry is the date- time at which the NOTAMN, comes into force. In the cases of NOTAMR and NOTAMC, the date-time group is the actual date and time of the NOTAM origination. The start of a day shall be indicated by “0000”.

6. Item C)

With the exception of NOTAMC, a date-time group (a ten-figure group giving year, month, day, hours and minutes in UTC) indicating duration of information shall be used unless the information is of a permanent nature in which case the abbreviation “PERM” is inserted instead. The end of a day shall be indicated by “2359” (i.e. do not use “2400”).If the information on timing is uncertain, the approximate duration shall be indicated using a date-time group followed by the abbreviation “EST”. Any NOTAM which includes an “EST” shall be cancelled or replaced before the date-time specified in Item C).

7. Item D)

If the hazard, status of operation or condition of facilities being reported on will be active in accordance with a specific time and date schedule between the dates-times indicated in Items B) and C), insert such information under Item D). If Item D) exceeds 200 characters, consideration shall be given to providing such information in a separate, consecutive NOTAM.

Note.— Guidance concerning a harmonized definition of Item D) content is provided in Doc 8126.

8. Item E)

Use decoded NOTAM Code, complemented where necessary by ICAO abbreviations, indicators, identifiers, designators, call signs, frequencies, figures and plain language. When NOTAM is selected for international distribution, English text shall be included for those parts expressed in plain language. This entry shall be clear and concise in order to provide a suitable PIB entry. In the case of NOTAMC, a subject reference and status message shall be included to enable accurate plausibility checks.

9. Items F) and G)

These items are normally applicable to navigation warnings or airspace restrictions and are usually part of the PIB entry. Insert both lower and upper height limits of activities or restrictions, clearly indicating only one reference datum and unit of measurement. The abbreviations GND or SFC shall be used in Item F) to designate ground and surface respectively. The abbreviation UNL shall be used in Item G) to designate unlimited.

Note.— For NOTAM examples see Doc 8126 and the PANS-ABC (ICAO Doc 8400).

APPENDIX 7. AERONAUTICAL DATA QUALITY REQUIREMENTS

Table A7-1. Latitude and longitude

Latitude and longitude	Publication resolution	Integrity Classification
Flight information region boundary points .	1 min	routine
P, R, D area boundary points (outside CTA/CTR boundaries)	1 min	routine
P, R, D area boundary points (inside CTA/CTR boundaries) .	1 sec	essential
CTA/CTR boundary points	1 sec	essential
En-route NAVAIDS, intersections and waypoints, and holding, and STAR/SID points	1 sec	essential
Obstacles in Area 1 (the entire KSA territory)	1 sec	routine
Aerodrome/heliport reference point	1 sec	routine
NAVAIDS located at the aerodrome/heliport	1/10 sec	essential
Obstacles in Area 3	1/10 sec	essential
Obstacles in Area 2	1/10 sec	essential
Final approach fixes/points and other essential	1/10 sec	essential
fixes/points comprising the instrument approach procedure	1/10 sec	essential
Runway threshold	1/100 sec	critical
Runway end	1/100 sec	critical
Runway holding position	1/100 sec	critical
Taxiway centre line/parking guidance line points	1/100 sec	essential
Taxiway intersection marking line	1/100 sec	essential
Exit guidance line	1/100 sec	essential
Aircraft stand points/INS checkpoints	1/100 sec	routine
Geometric centre of TLOF or FATO thresholds, heliports	1/100 sec	critical
Apron boundaries (polygon)	1/10 sec	routine
De-icing/anti-icing facility (polygon)	1/10 sec	routine

Note.— See Appendix 8 for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in the defined areas.

Table A7-2. Elevation/altitude/height

Elevation/altitude/height classification	Publication resolution	Integrity classification
Aerodrome/heliport elevation	1 m or 1 ft	essential
GBAS reference point	*1 m or 1 ft*	*essential*
Heliport crossing height, PinS approaches	*1 m or 1 ft*	*essential*
WGS-84 geoid undulation at aerodrome/heliport elevation position	1 m or 1 ft	essential
Runway or FATO threshold, non-precision approaches	1 m or 1 ft	essential
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, non-precision approaches	1 m or 1 ft	essential
Runway or FATO threshold, precision approaches	0.1 m or 0.1 ft	critical
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, precision approaches	0.1 m or 0.1 ft	critical
Threshold crossing height (reference datum height), precision approaches	0.1 m or 0.1 ft	critical
Obstacles in Area 2	1 m or 1 ft	essential
Obstacles in Area 3	0.1 m or 0.1 ft	essential
Obstacles in Area 1 (the entire KSA territory)	1 m or 1 ft	routine
Distance measuring equipment/precision (DME/P)	3 m (10 ft)	essential
Distance measuring equipment (DME)	30 m (100 ft)	essential
Minimum altitudes	50 m or 100 ft	routine

Note.— See Appendix 8 for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in the defined areas.

Table A7-3. Declination and magnetic variation

Declination/variation classification	Publication resolution	Integrity classification
VHF NAVAID station declination used for technical line-up	1 degree	essential
NDB NAVAID magnetic variation	1 degree	routine
Aerodrome/heliport magnetic variation	1 degree	essential
ILS localizer antenna magnetic variation	1 degree	essential
MLS azimuth antenna magnetic variation	1 degree	essential

Table A7-4. Bearing

Bearing	Publication resolution	Integrity classification
Airway segments	1 degree	routine
Bearing used for the formation of an en-route and a terminal fix	1/10 degree	routine
Terminal arrival/departure route segments	1 degree	routine
Bearing used for the formation of an instrument approach procedure fix	1/100 degree	essential
ILS localizer alignment (True)	1/100 degree	essential
MLS zero azimuth alignment (True)	1/100 degree	essential
Runway and FATO bearing (True)	1/100 degree	routine

Table A7-5. Length/distance/dimension

Length/distance/dimension	**Publication resolution**	**Integrity classification**
Airway segment length	1/10 km or 1/10 NM	routine
Distance used for the formation of an en-route fix	1/10 km or 1/10 NM	routine
Terminal arrival/departure route segment length	1/100 km or 1/100 NM	essential
Runway and FATO length, TLOF dimensions	1 m or 1 ft	critical
Runway width	1 m or 1 ft	essential
Displaced threshold distance	1 m or 1 ft	routine
Clearway length and width	1 m or 1 ft	essential
Stopway length and width	1 m or 1 ft	critical
Landing distance available	1 m or 1 ft	critical
Take-off run available	1 m or 1 ft	critical
Take-off distance available	1 m or 1 ft	critical
Accelerate-stop distance available	1 m or 1 ft	critical
Runway shoulder width	1 m or 1 ft	essential
Taxiway width	1 m or 1 ft	essential
Taxiway shoulder width	1 m or 1 ft	essential
ILS localizer antenna-runway end, distance	1 m or 1 ft	routine
ILS glide slope antenna-threshold, distance along centre line	1 m or 1 ft	routine
ILS marker-threshold distance	1 m or 1 ft	essential
ILS DME antenna-threshold, distance along centre line	1 m or 1 ft	essential

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Intentionally left blank

APPENDIX A8- TERRAIN AND OBSTACLE DATA REQUIREMENTS

(SEE CHAPTER 10)

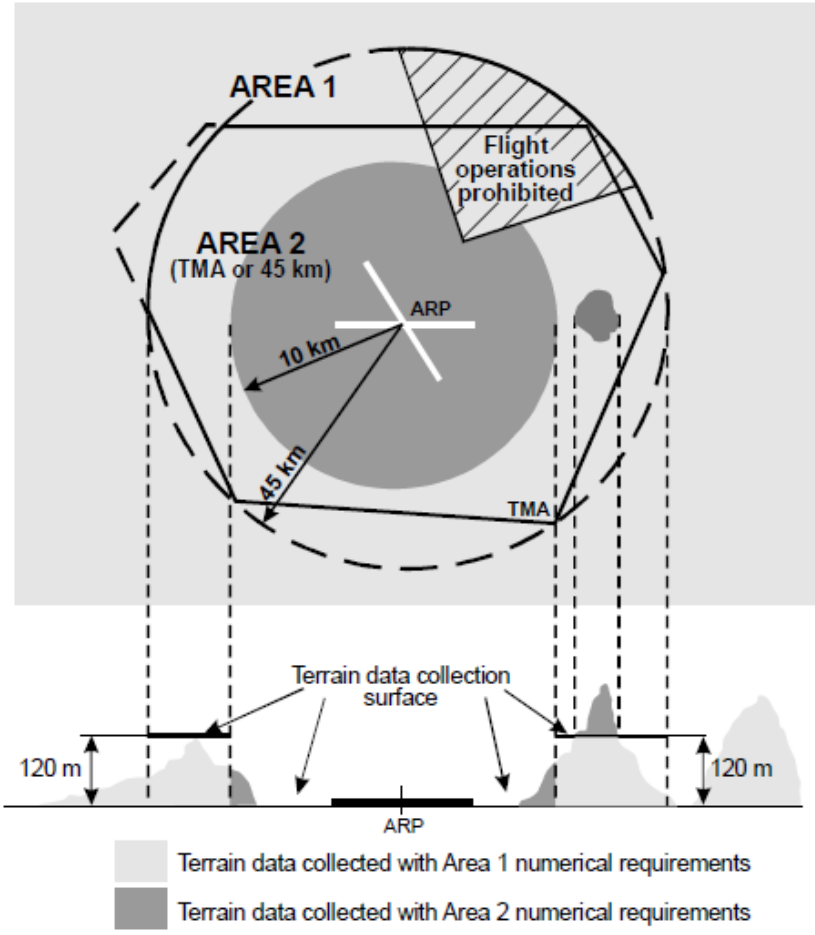

Figure A8-1. Terrain data collection surfaces — Area 1 and Area 2

1. Within the area covered by a 10-km radius from the ARP, terrain data shall comply with the Area 2 numerical requirements.

2. In the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller), data on terrain that penetrates the horizontal plane 120 m above the lowest runway elevation shall comply with the Area 2 numerical requirements.

3. In the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller), data on terrain that does not penetrate the horizontal plane 120 m above the lowest runway elevation shall comply with the Area 1 numerical requirements.

4. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, terrain data shall comply with the Area 1 numerical requirements.

Note.— Terrain data numerical requirements for Areas 1 and 2 are specified in Table A8-1.

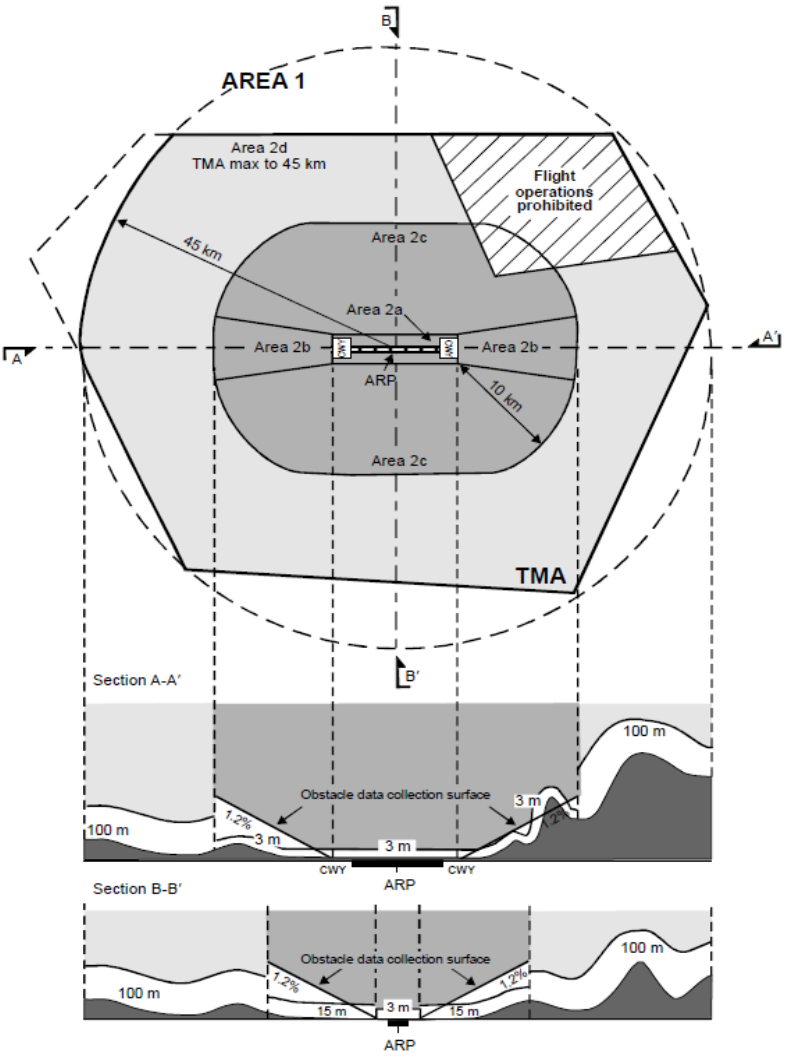

Figure A8-2. Obstacle data collection surfaces — Area 1 and Area 2

1. Obstacle data shall be collected and recorded in accordance with the Area 2 numerical requirements specified in Table A8-2:

a) Area 2a: a rectangular area around a runway that comprises the runway strip plus any clearway that exists. The Area 2a obstacle collection surface shall have height of 3 m above the nearest runway elevation measured along the runway centre line, and for those portions related to a clearway, if one exists, at the elevation of the nearest runway end;

b) Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15% to each side. The Area 2b collection surface has a 1.2% slope extending from the ends of Area 2a at the elevation of the runway end in the direction of departure, with a length of 10 km and a splay of 15% to each side;

c) Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The Area 2c collection surface has a 1.2% slope extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The initial elevation of Area 2c shall be the elevation of the point of Area 2a at which it commences; and

d) Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing TMA boundary, whichever is nearest. The Area 2d obstacle collection surface has a height of 100 m above ground.

2. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacle data shall be collected and recorded in accordance with the Area 1 requirements.

3. Data on every obstacle within Area 1 whose height above the ground is 100 m or higher shall be collected and recorded in the database in accordance with the Area 1 numerical requirements specified in Table A8-2.

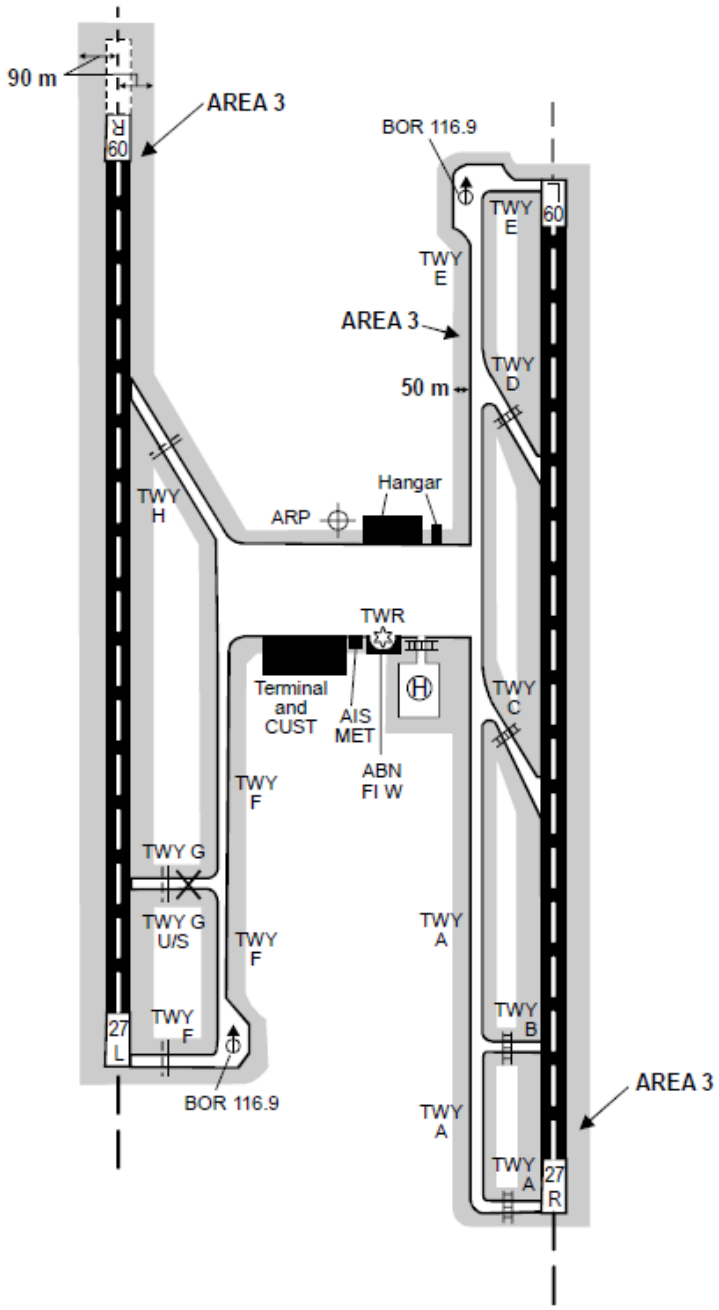

Figure A8-3. Terrain and obstacle data collection surface — Area 3

1. The data collection surface for terrain and obstacles extends a half-metre (0.5 m) above the horizontal plane passing through the nearest point on the aerodrome movement area.

2. Terrain and obstacle data in Area 3 shall comply with the numerical requirements specified in Table A8-1 and Table A8-2, respectively.

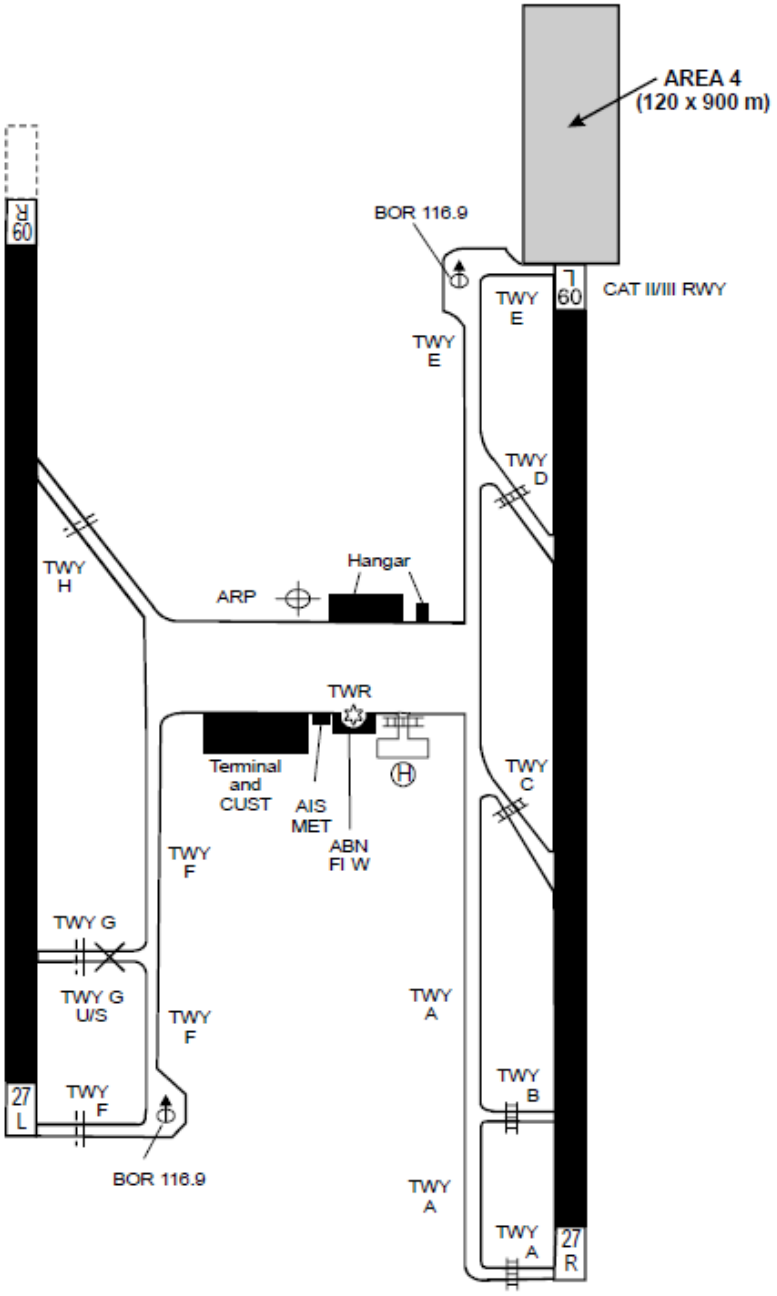

Figure A8-4. Terrain and obstacle data collection surface — Area 4

Terrain data in Area 4 shall comply with the numerical requirements specified in Table A8-1.

Note 1.— The horizontal extent of Area 2 covers Area 4. More detailed obstacle data may be collected in Area 4 in accordance with Area 4 numerical requirements for obstacle data specified in Table A8-2. (See 10.1.8.).

Note 2.— Area 4 may be extended in accordance with 10.1.2.

Table A8-1. Terrain data numerical requirements

	Area 1	**Area 2**	**Area 3**	**Area 4**
Post spacing	**3 arc seconds (approx. 90 m)**	**1 arc second (approx. 30 m)**	**0.6 arc seconds (approx. 20 m)**	***0.3 arc seconds (approx. 9 m)***
Vertical accuracy	30 m	3 m	0.5 m	1 m
Vertical resolution	1 m	0.1 m	0.01 m	0.1 m
Horizontal accuracy	50 m	5 m	0.5 m	2.5 m
Confidence level	90%	90%	90%	90%
Integrity classification	routine	essential	essential	essential
Maintenance period	as required	as required	as required	as required

Table A8-2. Obstacle data numerical requirements

	Area 1	**Area 2**	**Area 3**	**Area 4**
Vertical accuracy	30 m	3 m	0.5 m	1 m
Vertical resolution	1 m	0.1 m	0.01 m	0.1 m
Horizontal accuracy	50 m	5 m	0.5 m	m 2.5 m
Confidence level	90%	90%	90%	90%
Integrity classification	routine	essential	essential	essential
Maintenance period	as required	as required	as required	as required

Table A8-3. Terrain attributes

Terrain attribute	Mandatory/Optional
Area of coverage	Mandatory
Data originator identifier	Mandatory
Data source identifier	Mandatory
Acquisition method	Mandatory
Post spacing	Mandatory
Horizontal reference system	Mandatory
Horizontal resolution	Mandatory
Horizontal accuracy	Mandatory
Horizontal confidence level	Mandatory
Horizontal position	Mandatory
Elevation	Mandatory
Elevation reference	Mandatory
Vertical reference system	Mandatory
Vertical resolution	Mandatory
Vertical accuracy	Mandatory
Vertical confidence level	Mandatory
Surface type	Optional
Recorded surface	Mandatory
Penetration level	Optional
Known variations	Optional
Integrity	Mandatory
Date and time stamp	Mandatory
Unit of measurement used	Mandatory

Table A8-4. Obstacle attributes

Obstacle attribute	Mandatory/Optional
Area of coverage	Mandatory
Data originator identifier	Mandatory
Data source identifier	Mandatory
Obstacle identifier	Mandatory
Horizontal accuracy	Mandatory
Horizontal confidence level	Mandatory
Horizontal position	Mandatory
Horizontal resolution	Mandatory
Horizontal extent	Mandatory
Horizontal reference system	Mandatory
Elevation	Mandatory
Height	Optional
Vertical accuracy	Mandatory
Vertical confidence level	Mandatory
Vertical resolution	Mandatory
Vertical reference system	Mandatory
Obstacle type	Mandatory
Geometry type	Mandatory
Integrity	Mandatory
Date and time stamp	Mandatory
Unit of measurement used	Mandatory
Operations	Optional
Effectivity	Optional
Lighting	Mandatory
Marking	Mandatory

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APPENDIX A9 – Template for identification and delineation of prohibited, danger and restricted areas.

Aeronautical Information Services

Form No.: PRD-01 Issue : 1.0

ENR 5.1 Prohibited, Restricted or Danger Areas

Owner: (Select(☒) one or more of the indicated options)		Identification: (Select (☒)one of the indicated options) For explanations, see Note 1 below.				Name: (ICAO indicator of nearest aerodrome) For explanations, see Note 2 below.	
				3 digitsidentifier	Sub-part (optional)	OE	_ _
☐	Royal Saudi Air Force						
☐	Royal Saudi Navy	☐	OEP	_ _ _	_		
☐	Border Guard	☐	OED	_ _ _	_		
☐	National Guard	☐	OER	_ _ _	_		
☐	Other, please specify: _____						

Lateral Limits: (Select only one (☒) of the indicated options) For explanations, see Note 3 below.

☐ Check box (☒) if area is ***inside*** a Control Area (CTA)

	Latitude:				Longitude:			
	Degrees DD	Minutes MM	Seconds SS		Degrees DDD	Minutes MM	Seconds SS	
NW corner 1	_ _	_ _	_ _	N	0 _ _	_ _	_ _	E
2	_ _	_ _	_ _	N	0 _ _	_ _	_ _	E
3	_ _	_ _	_ _	N	0 _ _	_ _	_ _	E
4	_ _	_ _	_ _	N	0 _ _	_ _	_ _	E
5	_ _	_ _	_ _	N	0 _ _	_ _	_ _	E
6	_ _	_ _	_ _	N	0 _ _	_ _	_ _	E
7	_ _	_ _	_ _	N	0 _ _	_ _	_ _	E
8	_ _	_ _	_ _	N	0 _ _	_ _	_ _	E
9	_ _	_ _	_ _	N	0 _ _	_ _	_ _	E
10	_ _	_ _	_ _	N	0 _ _	_ _	_ _	E

☐ Check box (☒) if area is ***outside*** CTA

Latitude:			Longitude:		
Degrees DD	Minutes MM		Degrees DDD	Minutes MM	
_ _	_ _	N	0 _ _	_ _	E
_ _	_ _	N	0 _ _	_ _	E
_ _	_ _	N	0 _ _	_ _	E
_ _	_ _	N	0 _ _	_ _	E
_ _	_ _	N	0 _ _	_ _	E
_ _	_ _	N	0 _ _	_ _	E
_ _	_ _	N	0 _ _	_ _	E
_ _	_ _	N	0 _ _	_ _	E
_ _	_ _	N	0 _ _	_ _	E
_ _	_ _	N	0 _ _	_ _	E

☐	Check box (☒) if circular area;	center of circle given as DD MM SS if ***inside*** a Control Area (CTA), and DD MM if ***outside*** CTA								
		Radius NM		Degrees DD	Minutes MM	Seconds SS		Degrees DDD	Minutes MM	Seconds SS	
	Circle with radius	__._	NM centered on	_ _	_ _	_ _	N	0 _ _	_ _	_ _	E

Lower Limit: (select (☒) only one of the indicated options) For explanations, see Note 4 below.			Upper Limit: (select (☒) only one of the indicated options) For explanations, see Note 5 below.		
☐	FL_ _ _	At or above the transition level, i.e. for FL150 or higher	☐	FL_ _ _	At or above the transition level, i.e. for FL150 or higher
☐	_ _ _ _ _ FT AMSL	(rounded to the nearest hundred feet)	☐	_ _ _ _ _ FT AMSL	(rounded to the nearest hundred feet)
			☐	_ _ _ _ FT AGL	(rounded to the nearest fifty feet)
☐	SFC	Surface	☐	UNL	Unlimited

Remarks:					(Select (☒) one or more of the indicated options)For explanations, see Note 6 below.	
☐	Time of activity				☐ Permanent	☐ activated by NOTAM
☐	Type of restriction		☐	Risk of interception		
☐	Nature of hazard		☐	Other information		

Date: Signature of the originator:

Name in block letters: Stamp:

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Explanations:

Note 1. The **Identification** of Prohibited, Restricted or Danger (PRD) areas consist of up to a maximum of 7 (seven) characters composed of:

- 2 nationality letters for location indicator, namely OE;
- 1 letter indicating P for Prohibited,R for Restricted, or D for Danger area;
- 1 to 3 digits between 1 to 999; a leading "0" shall be used for single digits, e.g. OEP01; otherwise, no leading "00" shall be used, e.g. OER21;
- 1 letter indicating area sub-parts, e.g. OED14B; the letter Z shall not be used;
- No space to separate the elements comprising the identification;
- The identification number is assigned by ANS/ATM.

Note 2. The **Name** of the PRD area shall have the following characteristics:

- The name of the PRD area shall, for ease of locating the area, use theICAO aerodrome indicator of the nearest aerodrome;
- The name of the PRD consists of upper case letters only.

Note 3. The **Lateral limits** of a PRD area shall have the following characteristics:

- The designated area shall be kept as small as possible, without unnecessary buffers, and its geometry be kept as simple as possible;
- The area shall be defined by the geographical coordinates of its corner points;
- The geographical coordinates are based on WGS-84;
- The geographical coordinates shall be listed sequentially, starting in the northwest corner of the area and then be enumerated in clockwise order. The first and the last published geographical coordinates shall be the same to close the area;
- Complex geometries are here defined as shapes with more than 10 corner points, or shapes that are defined by a textual description, or a combination of geographical coordinates and textual description. In these cases, the lateral limits shall be described on a separate sheet together with a detailed chart of the area;
- Geographical coordinates are expressed, as appropriate, as degrees, minutes and seconds; decimals shall not be used and should be converted;
- There shall be one space separating the latitude and longitude coordinates, indicating N for northern latitude and E for eastern longitude; always include the leading "0" in longitude;
- The resolution of the coordinates shall be in accordance with GACA Regulation Section 15 Appendix 7; namely, PRD areas that are completely outside the lateral boundaries of a CTA are 1 min, and if all or part of the area is inside the lateral boundary of the CTA, the publication resolution is 1 sec;
- The terms "Area bounded by lines joining the following points" and "then back to starting point" shall not be used.

Note 4. The **Lower limit** shall be expressed as follows:

- When expressing the lower limit of a PRD area, SFC should be used to denote that the lower limit is the surface of the Earth.
- An AMSL altitude shall be indicated as a number (rounded to the nearest hundred feet) followed by the units of measurement, namely FT, followed by AMSL to indicate above mean sea level;
- An AGL altitude shall be indicated as a number (rounded to the nearest fifty feet) followed by the units of measurement, namely FT, followed by AGL to indicate above ground level.

Note 5. The **Upper limit** shall be expressed as follows:

- UNL denotes unlimited;
- FL followed by 3 numbers denotes an altitude at or above the transition level at FL150;
- An AMSL altitude shall be indicated as a number (rounded to the nearest hundred feet) followed by the units of measurement, namely FT, followed by AMSL to indicate above mean sea level.

Note 6. The **Remarks** shall have the following characteristics:

- Time of activity indicates if the area is only active during specific periods or time (e.g. 0300-1500, SR-SS), times of the week (e.g. MON, WED and THU), exceptions (e.g. except FRI and SAT), or a combination thereof. The area can also be declared to be "Activated by NOTAM" or "Permanent";
- Type of restriction (e.g. military training area);
- Nature of hazard (e.g. air-to-air firing, firing range, parachute jumping, etc);
- Risk of interception for aircraft penetrating the area;
- Any other references relating to the information contained in the previous fields.