#### **STATE OF KUWAIT**

2025/6/1

DIRECTORATE GENERAL OF CIVIL AVIATION AVIATION SAFETY



دولة الكويت الإدارة العامة للطيران المدني سلامة الطيران

#### 2025/42/SUPDT-R/41

#### All KCASR Stockholders and Users

#### Subject.: Notice of Proposed Amendment's (NPA) No. 2025-06 to Kuwait Civil Aviation Safety Regulations KCASR 10 - Aeronautical Telecommunications Volume - III Rev 4.

Dear Sir,

#### Purpose:

The purpose of this NPA is to announce to the KCASR users the intention of the Directorate General of Civil Aviation to amend <u>KCASR 10 – Aeronautical Telecommunications Volume - III</u> (issue 4) to comply with ICAO standers and recommended practices up to amendment (93).

#### **Action Required:**

All users of KCASR are required to refer to DGCA/ASD website (<u>https://kcasr.dgca.gov.kw</u>) for reviewing the NPA and mail or email (safety@dgca.gov.kw) their comments to DGCA by 03/Jul/2025 using the attached NPA Response Sheet Forms No. 1500 or using NPA comments & feedback form on the website. If we do not receive your response by this date, it will be assumed that you do not have any comments on the proposal.

If required, the DGCA/Aviation Safety Department personnel are available to answer your questions on the interpretation and intended implementation of the proposed amendments.

This is for your information and distribution to the concerned parties.

Yours Sincerely,

President of Civil Aviation



Acting / Deputy Director General for Aviation Salety, Air Transport & Aviation Security

CC: Director General of Civil Aviation. Dy. Dir. Gen. Kuwait. Intel. Airport Affairs. Dy. Dir. Gen. for Air Navigation Services Affairs. Safety Management Coordination Center (SMCC). Head of Technical Office. Civil Aviation Security Department. Aviation Safety Director. Air Transport Director. Inspection & oversight Superintendent. Head of Standards & Aviation Safety Regulations Division.



Rev. 11

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HRA

F.M

# Notes on the presentation of the Amendment Notice Of Proposed Amendment (NPA)

The text of the amendment is arranged to show deleted text in Red Color and with a line through it, new text to be inserted is in Blue color as shown below:

<del>Text to be deleted is in Red and shown with a line</del> <del>through it.</del>	Text to be deleted	
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through it, followed by the replacement text which is in existing text

... Indicates that remaining text is unchanged in front Text is unchanged or following the reflected amendment.

## Notice Of Safety Regulation Amendment (NPA, NSRA and Revisions)

Side bar indicates that text is changed or added.







## NPA RESPONSE FORM NPA





Please add your comments on the proposal by ticking [✓] the appropriate box below. Any additional constructive comments, suggested amendments or alternative action will be welcome and may be provided on this response sheet or by separate correspondence.					
No comments on the proposal.	No comments on the proposal.				
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Volume III



# **Kuwait Civil Aviation Safety Regulations**

# KCASR 10 – Aeronautical Telecommunications Volume - III

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## Amendment Record

Amendment No	Date of Issue	Remarks
1	June 2018	Part Rename
2	Oct. 2018	NPA 2018-33 (up to ICAO Amendment 90)
3	Mar. 2021	NPA 2021-05 (up to ICAO Amendment 91)
4	Aug 2024	NPA 2024-11 (Up to ICAO Amendment 92)
<u>5</u>	<u>Oct 2025</u>	NPA 2025-06 (Up to ICAO Amendment 93)

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**Energy per symbol to noise density ratio** ( $E_s/N_o$ ). The ratio of the average energy transmitted per channel symbol to the average noise power in a 1 Hz bandwidth, usually expressed in dB. For A-BPSK and A-QPSK, one channel symbol refers to one channel bit.

**Equivalent isotropically radiated power (e.i.r.p.).** The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna (absolute or isotropic gain).

**Flight information service (FIS).** A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.

**Forward error correction (FEC).** The process of adding redundant information to the transmitted signal in a manner which allows correction, at the receiver, of errors incurred in the transmission.

**Gain-to-noise temperature ratio.** The ratio, usually expressed in dB/K, of the antenna gain to the noise at the receiver output of the antenna subsystem. The noise is expressed as the temperature that a 1 ohm resistor must be raised to produce the same noise power density.

**Ground earth station (GES).** An earth station in the fixed satellite service, or, in some cases, in the aeronautical mobile-satellite service, located at a specified fixed point on land to provide a feeder link for the aeronautical mobile-satellite service.

**Note:** This definition is used in the ITU's Radio Regulations under the term "aeronautical earth station". The definition herein as "GES" for use in the SARPs is to clearly distinguish it from an aircraft earth station (AES), which is a mobile station on an aircraft.

**Intermediate system (IS).** A system which performs relaying and routing functions and comprises the lowest three layers of the OSI reference model.

**Mode S subnetwork.** A means of performing an interchange of digital data through the use of secondary surveillance radar (SSR) Mode S interrogators and transponders in accordance with defined protocols.

Multilink. The ability to use more than one available air-ground subnetworks in order to provide the required performance.

**Point-to-point.** Pertaining or relating to the interconnection of two devices, particularly enduser instruments. A communication path of service intended to connect two discrete endusers; as distinguished from broadcast or multipoint service.

**Router.** A router is a node that forwards Internet protocol (IP) packets not explicitly addressed to itself. A router manages the relaying and routing of data while in transit from an originating end system to a destination end system.

**Slotted aloha.** A random access strategy whereby multiple users access the same communications channel independently, but each communication must be confined to a fixed time slot. The same timing slot structure is known to all users, but there is no other coordination between the users.

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#### **CHAPTER 3. Aeronautical Telecommunication Network**

**Note 1**: Detailed technical specifications for ATN/OSI applications are contained in ICAO Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols (Doc 9880) and in ICAO Manual of Technical Provisions for the Aeronautical Telecommunication Network (ATN) (Doc 9705).

**Note 2**: Detailed technical specifications for ATN/IPS applications are contained in ICAO Manual for on the Aeronautical Telecommunication Network (ATN) using Internet Protocol Suite (IPS) Standards and Protocols (Doc 9896) (available electronically on the ICAO-Net).

Note 3: ATN requirements specified in this Annex, apply for both ATN/OSI and ATN/IPS.

#### 3.1 Definitions

*Application entity (AE).* An AE represents a set of ISO/OSI communication capabilities of a particular application process (see ISO/IEC 9545 for further details).

**ATN security services.** A set of information security provisions allowing the receiving end system or intermediate system to unambiguously identify (i.e. authenticate) the source of the received information and to verify the integrity of that information.

**ATS interfacility data communication (AIDC).** Automated data exchange between air traffic services units in support of flight notification, flight coordination, transfer of control and transfer of communication.

**ATS message handling service (ATSMHS).** An ATN application consisting of procedures used to exchange ATS messages in store-and-forward mode over the ATN such that the conveyance of an ATS message is in general not correlated with the conveyance of another ATS message by the service provider.

**ATS message handling system (AMHS).** The set of computing and communication resources implemented by ATS organizations to provide the ATS message handling service.

*Authorized path.* A communication path suitable for a given message category.

**Data link initiation capability (DLIC).** A data link application that provides the ability to exchange addresses, names and version numbers necessary to initiate data link applications (see ICAO Doc 4444).

*Directory service (DIR).* A service, based on the ITU-T X.500 series of recommendations, providing access to and management of structured information relevant to the operation of the ATN and its users.

**Required communication performance (RCP).** A statement of the performance requirements for operational communication in support of specific ATM functions (see ICAO *Manual on Required Communication Performance (RCP)* (Doc 9869)).

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#### 3.2 Introduction

- 3.2.1 The ATN is specifically and exclusively intended to provide <u>digital\_voice and\_</u>data communications services to air traffic service provider organizations and aircraft <u>operating agenciesoperators</u> in support of:
  - (a) air traffic services communications (ATSC) with aircraft;
  - (b) air traffic services communications between ATS units;
  - (c) aeronautical operational control communications (AOC); and
  - (d) aeronautical administrative communications (AAC).

#### 3.3 General

**Note:** The Standards and Recommended Practices in sections 3.4 to 3.8 define the minimum required protocols and services that will enable the global implementation of the aeronautical telecommunication network (ATN).

- 3.3.1 ATN communication services shall support ATN applications.
- 3.3.2 Requirements for implementation of the ATN shall be made on the basis of regional air navigation agreements. These agreements shall specify the area in which the communication standards for the ATN/OSI or the ATN/IPS are applicable.

#### 3.4 General Requirements

3.4.1 The ATN shall either use International Organization for Standardization (ISO) communication standards for open systems interconnection (OSI) or use the Internet Society (ISOC) communications standards for the Internet Protocol Suite (IPS).

**Note 1:** ATN/IPS implementation is preferred for ground-ground networks. While ATN/OSI continues to be supported in air-ground networks, particularly when using VDL Mode 2, it is expected that future air-ground implementations will use the ATN/IPS.

**Note 2:** Interoperability between interconnecting OSI/IPS networks is expected to be arranged prior to implementation.

**Note 3:** Guidance material on interoperability between ATN/OSI and ATN/IPS is contained in ICAO Manual on the Aeronautical Telecommunication Network (ATN) using Internet Protocol Suite (IPS) <u>Standards and Protocols (</u> Doc 9896).

- 3.4.2 The AFTN/AMHS gateway shall ensure the interoperability of AFTN and CIDIN stations and networks with the ATN.
- 3.4.3 An authorized path(s) shall be defined on the basis of a predefined routing policy.
- 3.4.<u>34</u> The ATN shall transmit, relay and deliver messages in accordance with the priority classifications and without discrimination or undue delay.
- 3.4.4 The ATN shall transmit, relay and deliver messages in accordance with the applicable security policy.
- 3.4.5 <u>The ATN shall transmit, relay and deliver messages in accordance with the applicable routing policy.</u>

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- <u>Note.:</u> The QoS as well as the applicable security and routing policies are predetermined and agreed by the entity responsible (such as air traffic services provider and/or aircraft operator) for the specific traffic types. The ATN shall provide means to define data communications that can be carried only over authorized paths for the traffic type and category specified by the user.
- 3.4.6 The ATN shall provide communication in accordance with the prescribed required communication performance (RCP) <u>specification and the required surveillance</u> <u>performance (RSP) specification</u>.

**Note:** For more guidance on RCP and RSP specifications, refer to the Performance-based Communication and Surveillance (PBCS) Manual ICAO Manual on Required Communication Performance (RCP) (Doc 9869) contains the necessary information on RCP.

- 3.4.7 The ATN shall operate in accordance with the communication priorities defined in Table 3-1 and Table 3-2.
- 3.4.8 The ATN shall enable exchange of application information when one or more authorized paths exist.
- 3.4.89 The ATN shall notify the appropriate application(s) if a message cannot be successfully delivered. processes when no authorized path exists.
- 3.4.940 The ATN shall make provisions for the efficient use of limited bandwidth subnetworks.
- 3.4.10 ATN/IPS shall be capable of supporting multilink.

**Note 1:** For guidance, refer to the Manual on the Aeronautical Telecommunication Network (ATN) using Internet Protocol Suite (IPS) Standards and Protocol (Doc 9896).

**Note 2:** ATN/OSI may also be used to support multilink. For relevant guidance, refer to Technical Specifications for ATN using ISO/OSI Standards and Protocols (Doc 9880).

- 3.4.11 The ATN should enable an aircraft intermediate system (router) to connect to a ground intermediate system (router) via different subnetworks.
- 3.4.12 The ATN should enable an aircraft intermediate system (router) to connect to different ground intermediate systems (routers).
- 3.4.13 The ATN shall enable the exchange of address information between applications.
- 3.4.<u>11</u>44 Where the absolute time of day is used within the ATN, it shall be accurate to within 1 second of coordinated universal time (UTC).

*Note:* The time accuracy value results in synchronization errors of up to two seconds.

#### 3.5 ATN Applications Requirements

#### 3.5.1 System applications

**Note:** System applications provide services that are necessary for operation of the ATN.

3.5.1.1 The ATN shall support the data link initiation capability (DLIC) applications when airground data links are implemented.

**Note:** <u>Global Operational Data Link (GOLD) Manual (Doc 10037</u> <u>ICAO Manual of Air Traffic Services</u> Data Link Applications (Doc 9694, Part I) defines provides guidance on the use of the data link initiation capability (DLIC) application.

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3.5.1.2 The ATN/OSI end-system shall support the following directory services (DIR) application functions when ATSMHS and/or security protocols are is implemented:

- (a) directory information retrieval; and
- (b) directory information modification.

Note: DIR can also be used when security protocols are implemented.

#### 3.5.2 Air-ground applications

- 3.5.2.1 The ATN shall be capable of supporting one or more of the following applications:
  - a) ADS-C; ADS-C; and
  - 3.5.3.1 b) CPDLC
    - (a) Tables 3-1 and 3-2 are located at the end of this chapter.
    - (b) CPDLC; and
    - (c) FIS (including ATIS and METAR).

Note:The Global Operational Data Link (GOLD) Manual (Doc 10037) provides guidance on the useof ADS-C and CPDLC.See ICAO Manual of Air Traffic Services Data Link Applications (Doc 9694).

### 3.5.3 Ground-ground applications

- 3.5.3.1 The ATN shall be capable of supporting the following applications:
  - (a) ATS interfacility data communication (AIDC); and
  - (b)\_\_\_ATS message handling services applications (ATSMHS)...);
  - (c) aeronautical voice communications; and

(b)(d) system-wide information management (SWIM)-enabled applications.

Note: See ICAO Manual of Air Traffic Services Data Link Applications (Doc 9694).

3.6 ATN Communications Service Requirements

### 3.6.1 ATN/IPS upper layer communications service

3.6.1.1 An ATN host shall be capable of supporting the ATN/IPS upper layers including an application layer.

#### 3.6.2 ATN/OSI upper layer communications service

3.6.2.1 An ATN/OSI end-system (ES) shall be capable of supporting the OSI upper layer communications service (ULCS) including session, presentation and application layers.

### 3.6.3 ATN/IPS communications service

3.6.3.1 An ATN host shall be capable of supporting the ATN/IPS including the:

(a) transport layer in accordance with RFC 793 (TCP) and RFC 768 (UDP); and

(b) network layer in accordance with RFC 2460 (IPv6).

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3.6.3.2 An IPS router shall support the ATN network layer in accordance with RFC 2460 (IPv6) and RFC 4271 (BGP), and RFC 2858 (BGP multiprotocol extensions).

#### 3.6.4 ATN/OSI communications service

3.6.4.1 An ATN/OSI end-system shall be capable of supporting the ATN including the:

a) transport layer in accordance with ISO/IEC 8073 (TP4) and optionally ISO/IEC 8602 (CLTP); and

b) network layer in accordance with ISO/IEC 8473 (CLNP).

**Note:** An ATN host is an ATN end-system in OSI terminology; an ATN end-system is an ATN host in IPS terminology.

3.6.4.2 An ATN intermediate system (IS) shall support the ATN network layer in accordance with ISO/IEC 8473 (CLNP) and ISO/IEC 10747 (IDRP).

#### 3.7 <u>6</u> An ATN Naming And Addressing Requirements

**Note:** The ATN naming and addressing scheme supports the principles of unambiguous identification of intermediate systems (routers) and end-systems (hosts) and provides global address standardization.

- 3.76.1 The ATN shall provide provisions for unambiguous application identification.
- 3.7<u>6</u>.2 The ATN shall <u>have the capability to uniquely identify source and destination entities.</u> provide provisions for unambiguous addressing.
- 3.7<u>6</u>.3 The ATN shall provide means to <u>uniquely</u> unambiguously address all ATN endsystems (hosts) and intermediate systems (routers).
- 3.7<u>6</u>.4 The ATN addressing and naming plans shall allow States and organizations to assign addresses and names within their own administrative domains.

**Note:** An ATN end-system is an ATN host in IPS terminology; An ATN host is an ATN end-system in OSI terminology.

#### 3.78 ATN Security Requirements

3.87.1 The ATN shall make provisions whereby only the controlling ATS unit may provide ATC instructions to aircraft operating in its airspace.

**Note:** This is achieved through the current and next data authority aspects of the controller-pilot data link communications (CPDLC) application.

3.87.2 The ATN shall enable the recipient of a message to identify the originator of that message.

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3.87.3 ATN end-systems supporting ATN security services shall be capable of authenticating the identity of peer end-systems, authenticating the source of messages and ensuring the data integrity of the messages.

**Note:** <u>capability to authenticate the identity of peer end-systems is intended to provide protection</u> against spoofing, "phantom controllers" or "phantom aircraft". The use of security is the default; however, its implementation is based on local policy.

3.87.4 The ATN services shall be protected against service attacks to a level consistent with the application service requirements and to a level commensurate with security risks and applicable security policy.

Note: Detailed information on security risks and applicable policy for ATN and their mitigation are provided in the Manual of Security Risk Assessment (SRA) for Aeronautical Communications (Doc 10145).

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#### CHAPTER 4. AERONAUTICAL VOICE COMMUNICATIONS SPEECH CIRCUITS

## 4.1 TECHNICAL PROVISIONS RELATING TO INTERNATIONAL AERONAUTICAL VOICE COMMUNICATIONS SPEECH CIRCUIT SWITCHING AND SIGNALLING FOR GROUND-GROUND APPLICATIONS

Note 1:— Detailed specifications and <u>Guidance-guidance</u> material on the implementation of aeronautical Voice over Internet Protocol (VoIP) communications <u>speech circuit switching and signalling</u> for groundground applications <u>is are</u> contained in the <u>Manual on the Aeronautical Telecommunication Network (ATN)</u> using Internet Protocol Suite (IPS) Standards and Protocols (Doc 9896).<u>Manual on Air Traffic Services</u> (ATS) Ground Ground Voice Switching and Signalling (Doc 9804). The material includes explanation of terms, performance parameters, guidance on basic call types and additional functions, references to appropriate ISO/IEC international standards and ITU T recommendations, guidance on the use of signalling systems, details of the recommended numbering scheme and guidance on migration to future schemes. Aeronautical VoIP communications for ground-ground applications include inter-ATS unit telephony and radio air-ground applications on the ground component between the ATS unit and the air-ground control radio station, which is responsible for handling communications pertaining to the operation and control of aircraft in a given area.

**Note: 2** Guidance material on the implementation of the speech circuits supported by air traffic services (ATS) ground-ground voice switching and signalling is contained in the Manual on Air Traffic Services (ATS) Ground-Ground Voice Switching and Signalling (Doc 9804).

- 4.1.1 The use of circuit switching and signalling to provide speech circuits to interconnect ATS units not interconnected by dedicated circuits shall be by agreement between the Administrations concerned.
- 4.1.2 The application of aeronautical speech circuit switching and signalling shall be made on the basis of regional air navigation agreements.
- <u>4.1.3 The operation of dedicated aeronautical VoIP communications for ground-ground</u> <u>applications to interconnect ATS units shall be performed based on an agreement</u> <u>between the administrations concerned.</u>
- 4.1.4 Implementation of aeronautical VoIP communications for ground-ground applications shall be made on the basis of a regional agreement.
- 4.1.35 The ATC communication requirements defined in Annex 11, Section 6.2 shall be met by implementation of one or more of the following basic three call types:
  - a) instantaneous access;
  - b) direct access; and
  - c) indirect access.

**Note:** Guidance on call types can be found in the Manual on the Aeronautical Telecommunication Network (ATN) using Internet Protocol Suite (IPS) Standards and Protocols (Doc 9896).

- 4.1.46 In addition to the ability to make basic telephone calls, the following functions shall be provided in order to meet the requirements set out in Annex 11:
  - a) means of indicating the calling/called party identity;
  - b) means of initiating urgent/priority calls; and

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- c) conference capabilities.
- 4.1.5 The characteristics of the circuits used in aeronautical speech circuit switching and signalling shall conform to appropriate ISO/IEC international standards and ITU T recommendations.
- 4.1.6 Digital signalling systems shall be used wherever their use can be justified in terms of any of the following:
  - a) improved quality of service;
  - b) improved user facilities; or
  - c) reduced costs where quality of service is maintained.
- 4.1.7 The characteristics of supervisory tones to be used (such as ringing, busy, number unobtainable) shall conform to appropriate ITU-T recommendations.
- 4.1.<u>78</u> To take advantage of the benefits of interconnecting regional and national aeronautical speech <u>legacy voice</u> networks, <u>the an</u> international aeronautical telephone network numbering scheme shall be used.

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