EUR Doc 028

EUR NSAP Address Registry

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11.0	20/10/2021	Adopted version (AST TF/2)	

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References

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[2] ICAO Doc 9880-AN/466: Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols, Part I – Air-Ground Applications, Second Edition – 2016

[3] ICAO Doc 9896: Manual on the Aeronautical Telecommunication Network (ATN) using Internet Protocol Suite (IPS) Standards and Protocols, Second Edition – 2015

[4] EUROCONTROL EATMP Programme Addressing database for LINK2000+, ATN Ref.: LINK2000/EEC/DOC/IH0426, Rev. No.: Issue 1.6, 6th Nov 2009

[5] EUROCONTROL, LINK2000+ ATN Naming and Addressing Plan, v1.2, 19 May 2004 (Working Draft)

[6] ICAO Doc 7910/146: Location Indicators Edition No. 146, December 2012

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Contacts

The focal point for the EUR NSAP Address Registry is the EUR/NAT ICAO Regional Office. All inquiries, reports and proposals for modifications concerning this document should be forwarded to:

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The ICAO EUR/NAT Office ensures that the information is forwarded to the appropriate working groups (e.g. Planning Group of AST TF).

The EUR NSAP Address Registry will be available at the ICAO website under “EUR Documents”:
http://www.icao.int/EURNAT/Pages/EUR-and-NAT-Document.aspx

1 Scope

1.1 Scope of the document

1.1.1 The purpose of this document is to collect the Context Management application addressing information of the ATS Units involved in the ATN/OSI based Air/Ground Data Link Communications. The ATS units concerned are mainly Area Control Centres (ACCs).

1.1.2 This information is requested to be registered within the ATN avionics systems in order to allow the air crew to perform a first LOGON with any of the participating centres.

1.1.3 The document provides additional guidance for the ATN NSAP addresses. Appendix A of this document contains ATN NSAP addresses for all EUR Air Traffic Control Centres (ACCs) as published by States in ICAO Doc 7910 [6], Chapter 5 or other official documentation. The ATN NSAP addresses constitute the EUR NSAP Address Registry, which either includes proposed addresses based on the guidelines included in this document or confirmed addresses by the respective State/Organisation. The EUR NSAP Address Registry does not depict the operational/non-operational status of the included addresses.

1.1.4 The document provides additionally the ATN NSAP addresses for ATN Ground Test Facilities.

1.2 Document Overview

1.2.1 The document includes the following Chapters:

- The first Chapter deals with the scope, structure, terminology and abbreviations used in the document.
- The second Chapter recalls the Network and Transport Addressing Specification.
- The third Chapter deals with the EUR Network Addressing for Fixed ATSC, the format, the recommended values and the address tables for Network and Upper Layers / application addressing.
- The fourth chapter presents the process followed for the assignment of ATN NSAP Addresses in the EUR Region using the NSAP Tool.
- The Attachment A provides the change control procedure of the document and guidance how ATN NSAP Address changes should be processed.

1.2.2 The Appendix A includes the following tables:

- ATN NSAP Address Table of fixed ATSUs in the EUR Region
- ATN NSAP Address Table of Test Systems in the EUR Region

1.3 Terminology

1.3.1 All definitions in this document are based on proposals from [5].

1.3.2 The term ATSU - Air traffic service unit – is used as synonym for the ACC ground system.

1.4 Abbreviations

1.4.1 Following main abbreviations are used in this document:

ACC	Air Traffic Control Centre, Area Control Centre
ACP	Aeronautical Communications Panel (ICAO)
ADM	Administrative identifier
AFI	Authority and format identifier
AFSG	Aeronautical Fixed Service Group (ICAO EANPG)
AINSC	Aeronautical industry services communication
AM	Address Modification
AMC	ATS Messaging Management Centre
AMHS	ATS Message Handling System
ANSP	Air Navigation Service provider
ARS	Administrative region selector
AST PG	Planning Group of AST TF
AST TF	AFS to SWIM Transition Task Force (ICAO EASPG)
ATC	Air Traffic Control
ATN	Aeronautical telecommunication network
ATSC	Air traffic services communication
ATSU	Air traffic service unit
CM	Context management
CM TSEL	Context management Transport selector
CP	Change Proposal
CPDLC	Controller-pilot data link communications
DR	Defect Report
DSP	Domain Specific Part
EAMTP	European Air Traffic Management Programme
EANPG	European Air Navigation Planning Group (ICAO)
EASPG	European Aviation System Planning Group (ICAO)
ES	End system
EUR/NAT	ICAO Region Europe / North Atlantic
FIR	Flight Information Region
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
ICD	International Code Designator
ID	Identifier
IDI	Initial domain identifier
IDP	Initial Domain Part
IDRP	Inter-domain routing protocol
IEC	International electrotechnical commission
IPS	Internet Protocol Suite
IS	Intermediate system
ISO	International Standards organisation
LOC	Location identifier
NET	Network Entity Title
NSAP	Network service access point
NSDU	Network Service Data Unit
NSEL	NSAP Selector
OSI	Open systems interconnection
PG	Planning Group (see AST PG)
RD	Routing domain
RDC	Routing Domain Confederation
RDF	Routing domain format
SARPs	Standards and recommended practices (ICAO)
SEL	Selector
SYS	System identifier
TMA	Terminal Area, Terminal Control Area

TSAP	Transport service access point
TSEL	Transport selector
UAC	Upper Area Control Center
UIR	Upper Flight Information Region
VER	Version identifier

2 Network and Transport Addressing Specification

2.1 Addressing Plan

2.1.1 The ATN Internet Addressing Plan defines the structure of an OSI Network Service Access Point (NSAP) address and an ATN Network Entity Title (NET) which can support efficient internet routing procedures, and which conform to common abstract syntax, semantic and encoding rules throughout the ATN OSI environment.

2.1.2 An ATN NSAP address is a 20-octet string used to uniquely identify and locate a given NSAP (i.e. a network service user) within the context of the ATN.

2.1.3 An ATN NET is a 20-octet string used to uniquely identify and locate a network layer entity of an ATN system (router or end system) and thus, in networking terms, is used to identify the system itself. Due to the global nature of the ATN internetwork addressing plan, a system's NET can be used to locate it anywhere within the ATN.

2.1.4 Several addressing elements exist for ATN upper layer and application elements. At Transport Layer an ATN Transport address, or in OSI terms an ATN TSAP address, uniquely identifies and locates a given transport service user within the context of the ATN.

2.1.5 In line with the above terminology, the purpose of the addressing plan is to define the format and use of TSAP Selectors to enable the unambiguous identification of Multiple Transport Service users within a single End System.

2.1.6 The ATN Internet Addressing Plan, which is a hierarchical addressing plan defines the Network and Transport Layer addressing information to be utilized by ATN End Systems, and by ATN Intermediate Systems.

2.1.7 The ATN Internet Addressing Plan serves the needs of a variety of aeronautical data communication user groups, including ATSC and AINSC users.

2.2 Transport Layer Addressing

2.2.1 General

2.2.1.1 This section provides requirements on the format of ATN TSAP addresses. An ATN TSAP address is an NSAP address and a TSAP selector (T-SEL). Thus the T-SEL identifies and locates a given transport service user within the context of the ATN system's NSAP address which in turn identifies a particular network service user.

Figure 1: ATN TSAP address format

2.2.1.2 The requirements in this section apply to the administration of transport addresses local to an ATN End System. They do not apply to all systems in a global OSI Environment. An ATN System

may allow remote transport addresses to obey different standards, e.g. when interworking with a non-ATN system is required.

2.2.2 ATN TSAP Selector

2.2.2.1 An ATN TSAP selector is either one or two octets in length and is administered on a local basis.

2.2.2.2 The TSAP Selector field (field values in the range 0 to 65535) is encoded as an unsigned binary number.

2.2.2.3 The encoding should follow the rules specified in ISO/IEC 8073 where the TSAP selector values in the range **0** to **255** should be encoded using one octet, higher values should be encoded using two octets.

2.3 Network Layer Addressing

2.3.1 NSAP Addresses and Network Entity Titles (NETs)

2.3.1.1 The NSAP Address is formally defined in ISO/IEC 8348. It is the name of a Network Service Access Point (NSAP) located in an End System, and uniquely identifies that NSAP. It is also an address that may be used to find a specific NSAP.

2.3.1.2 The Network Entity Title (NET) is formally defined in ISO/IEC 8348. It is the name of a Network Entity located within an End or Intermediate System. NETs are syntactically identical to NSAP Addresses and they are allocated from the same address space. A NET differs from the NSAP address assigned to the same system only in the last octet, i.e. the network selector (N-Sel) field value. A NET is also an address that may be used to find a specific Network Entity.

2.3.1.3 An NSAP Address Prefix is a substring of an NSAP Address or NET that is comprised of the first ‘n’ characters of the NSAP Address or NET.

2.3.2 Network Addressing Domains

2.3.2.1 Each ATN provider operates one or more routing domains (RD). Adjacent administrations may combine their routing domains into a single routing domain forming a routing domain confederation (RDC), sharing a common policy, which can be treated by the ‘outside’ world as a single entity for routing purposes.

2.3.2.2 A Network Addressing Domain comprises all NSAP Addresses and NETs with a common NSAP Address Prefix and it is always a sub-domain of the Global NSAP Addressing Domain which contains all NSAP Addresses.

2.3.2.3 A Network Addressing Domain has a single Administrator responsible for the assignment of NSAP Addresses and NSAP Address Prefixes within the domain. A Network Addressing Domain is often sub-divided into a number of subordinate domains each characterised by a unique NSAP Address Prefix. Management of such subordinate Network Addressing Domains may then be devolved to another Administrator.

2.3.3 The Syntax of an NSAP Address

2.3.3.1 Following ISO/IEC 10589 a Router interprets an NSAP Address as a three-field bit string. This is illustrated in Figure 2 below.

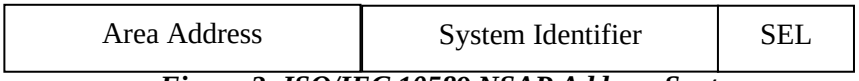

Figure 2: ISO/IEC 10589 NSAP Address Syntax

2.3.3.2 An Area Address is typically common to all NSAP Addresses and NETs assigned to systems in a single Routing Area. Area Address is an example of an NSAP Address Prefix.

2.3.3.3 A System Identifier uniquely identifies an End or Intermediate System within a Routing Area.

2.3.3.4 A Selector (SEL) identifies a Network Service User or the Network Entity within an End or Intermediate System.

2.3.4 The ATN Addressing Plan

2.3.4.1 ISO/IEC 8348 has specified how the Global Network Addressing Domain is broken down into a number of subordinate Network Addressing Domains, each of which is identified by a unique identifier that forms the initial part of all NSAP Addresses and NETs in those subordinate domains. This initial part is known as the Initial Domain Part (IDP) and it is followed by the Domain Specific Part (DSP).

2.3.4.2 The IDP itself is defined as comprising two parts: an Authority Format Identifier (AFI) and an Initial Domain Identifier (IDI). The AFI identifies the format and allocation procedures for the IDI and the format of the remainder of the NSAP Address.

2.3.4.3 The ATN Network Addressing Domain is such a subordinate Network Addressing Domain and has an IDP that uses an ISO 6523-ICD IDI.

Note 3.— The IDP is always expressed as decimal digits. However, ISO/IEC 8348 permits NSAP Addresses in an ISO 6523-ICD domain to have either a binary or a decimal format for the remainder of the address - the Domain Specific Part (DSP). The format of the DSP is determined by the AFI.

2.3.4.4 All ATN NSAP Addresses have an AFI with the value 47 decimal. This AFI value is defined by ISO/IEC 8348 to imply an ISO 6523-ICD IDI with a binary format DSP.

2.3.4.5 All ATN NSAP Addresses have an IDI value of 0027 decimal. This value has been allocated by ISO to ICAO under the ISO 6523-ICD scheme.

2.3.4.6 An IDP of **470027** therefore forms the common NSAP Address Prefix to all ATN NSAP Addresses and NETs and effectively defines the ATN Network Addressing Domain, as a sub-domain of the Global Network Addressing Domain.

2.3.5 The Reference Publication Format

2.3.5.1 The Reference Publication Format is defined by ISO/IEC 8348 for the publication of NSAP Addresses and NETs in a form suitable for text documents.

2.3.5.2 For the purposes of publication in a text format, ATN NSAP Addresses and NETs should be written as the character sequence “470027+”, identifying the common prefix for all ATN NSAP Addresses, followed by the DSP expressed as a sequence of hexadecimal characters.

2.3.5.3 The “+” sign is used as a separator between the decimal syntax IDP and the hexadecimal syntax DSP.

2.3.6 The ATN NSAP Address Format

2.3.6.1 The derivation of the ATN NSAP Address Format is illustrated in Figure 3. This starts with the AFI and IDI fields required by ISO/IEC 8348. It ends with the System ID (SYS) and SEL fields required by ISO/IEC 10589. The remaining DSP fields are specified below and used to co-ordinate the allocation of ATN NSAP Addresses.

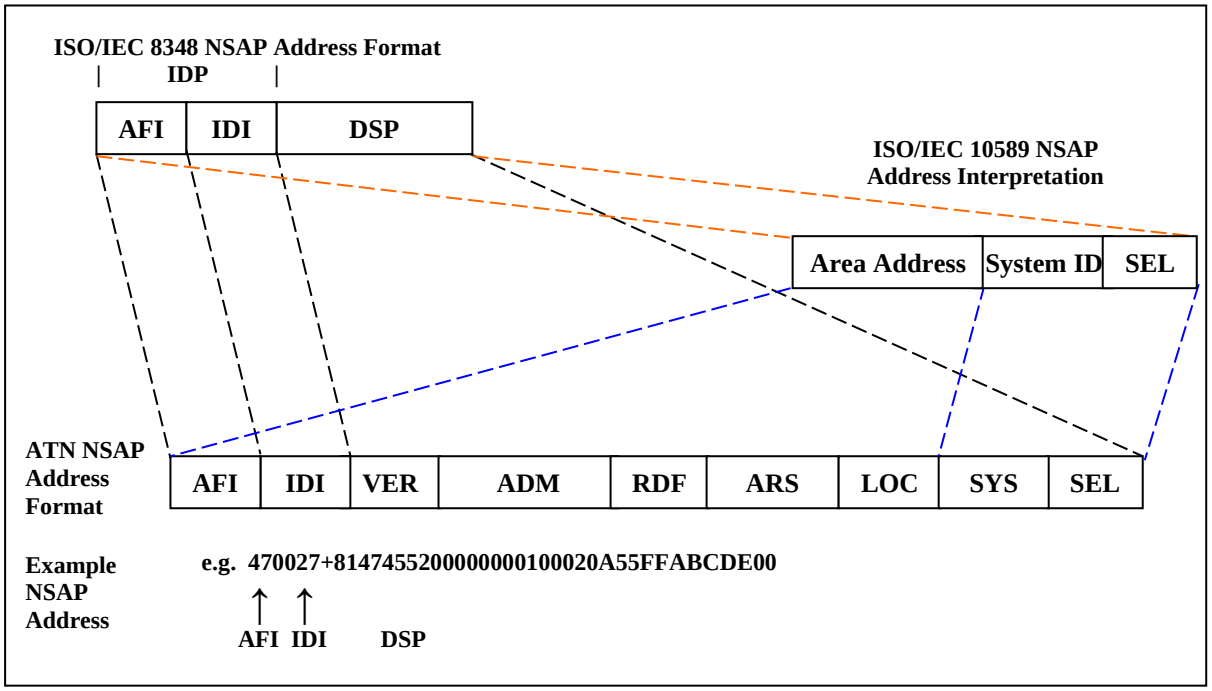

Figure 3: Derivation of the ATN NSAP Address Format

2.3.7 Allocation of the DSP

The DSP fields of an ATN NSAP Address are the VER, ADM, RDF, ARS, LOC, SYS and SEL fields. The size of each of these fields is given in Table 1.

Addr01ess Field Name	**Address Field Size**
VER	1 Octet
ADM	3 Octets
RDF	1 Octet
ARS	3 Octets
LOC	2 Octets
SYS	6 Octets
SEL	1 Octet

Table 1: DSP NSAP Address Field Sizes

2.3.7.1 The Version (VER) Field

2.3.7.1.1 The purpose of the VER field is to partition the ATN Network Addressing Domain into a number of subordinate Addressing Domains.

2.3.7.1.2 The values currently specified for the VER Field and the Network Addressing Domains so defined, are summarised in Table 2.

VER Field Value	**Network Addressing Domain**	**Common NSAP Address Prefix for Domain**
01 (hex)	Fixed AINSC	470027+01
41 (hex)	Mobile AINSC	470027+41
81 (hex)	Fixed ATSC	470027+81
C1 (hex)	Mobile ATSC	470027+C1

Table 2: VER Field Assigned Values

2.3.7.2 The Administration (ADM) Field

2.3.7.2.1 The purpose of the ADM field is to sub-divide each of the Network Addressing Domains introduced by the VER field into a further set of subordinate Network Addressing Domains, and to permit devolved administration (i.e. address allocation) of each resulting domain to an ICAO Region, individual State, airline, or aeronautical organisation.

Fixed AINSC NSAP Addresses and NETs

2.3.7.2.2 In the Fixed AINSC Network Addressing Domain, the ADM field is used to sub-divide this Addressing Domain into a number of subordinate Network Addressing Domains, each of which comprises NSAP Addresses and NETs for fixed systems operated by a single **AINSC Organisation**.

2.3.7.2.3 The ADM field value should be derived from the set of three-character alphanumeric symbols representing an IATA Airline or Aeronautical Stakeholder Designator (AINSC Organisations are intended to register their ADM values with IATA).

Fixed ATSC NSAP Addresses and NETs

2.3.7.2.4 In the Fixed ATSC Network Addressing Domain, the ADM field is used to sub-divide this Addressing Domain into a number of subordinate Network Addressing Domains, each of which comprises NSAP Addresses and NETs for fixed systems operated by a single **State or** within an **ICAO Region**.

2.3.7.2.5 When used to identify a **State**, the ADM field shall be derived from the State's three-character alphanumeric ISO 3166 Country Code, represented as upper case characters, e.g. the encoding of 'GBR' is 474252 in hexadecimal.
Therefore the NSAP Address Prefix 470027+81474252 is the common NSAP Address Prefix for all NSAP Addresses and NETs in the UK Fixed ATSC Network Addressing Domain.

2.3.7.2.6 When used to identify an **ICAO Region**, the first octet of the ADM field is assigned according to Table 3, while the values of the remaining two octets shall be assigned by the identified ICAO Region.

ADM Field First Octet	Value (hexadecimal)	ICAO Region
[1000 0000]	80	Africa
[1000 0001]	81	Asia
[1000 0010]	82	Caribbean
[1000 0011]	83	Europe
[1000 0100]	84	Middle East
[1000 0101]	85	North America
[1000 0110]	86	North Atlantic
[1000 0111]	87	Pacific
[1000 1000]	88	South America

Table 3: ICAO Region Identifiers

2.3.7.2.7 With regard to the allocation of the remaining two octets of the ADM field the following approach is proposed:

- For National RDCs within the ICAO Region Europe (EUR) use the State's two-character alphanumeric ISO 3166 (ALPHA-2) Country Code, represented as upper case characters.

  Example for Germany: the encoding of ISO code 'DE' is 4445 in hexadecimal.
  Therefore the common NSAP Address Prefix is 470027+81834445 for all NSAP Addresses and NETs in the ICAO/Germany Fixed ATSC Network Addressing Domain.

- For supra-national organisations within ICAO Region EUR set to a two character alphanumeric code, registered with the appropriate ICAO EUR forum and represented as lower case characters.

- For other RDCs set to a two octet numeric code in the hexadecimal range [8000-ffff], allocated by appropriate ICAO EUR forum.

Mobile NSAP Addresses and NETs

2.3.7.2.8 In both the Mobile AINSC and the Mobile ATSC Network Addressing Domains, the ADM field is used to sub-divide this Addressing Domain into a number of subordinate Network Addressing Domains, each of which comprises NSAP Addresses and NETs for mobile systems operated by a single Airline or onboard the General Aviation aircraft of a single State.

2.3.7.2.9 For Mobile AINSC NSAP Address and NETs, the ADM field value shall be set according to paragraphs 2.3.7.2.2 - 2.3.7.2.3 and the corresponding subordinate Network Addressing Domain administered by the organisation identified by the value of the ADM field.

2.3.7.2.10 For Mobile ATSC NSAP Address and NETs, the ADM field value shall be set according to paragraphs 2.3.7.2.4 - 2.3.7.2.7 and the corresponding subordinate Network Addressing Domain administered by the State identified by the value of the ADM field.

2.3.7.3 The Routing Domain Format (RDF) Field

2.3.7.3.1 There is no absolute requirement for the remainder of the DSP in each of the above defined Network Addressing Domains to be allocated according to a co-ordinated addressing plan, or for even the same fields to exist, or the NSAP Addresses to have the same length. However, in order to encourage common equipment development, the existence, size and use of the RDF, ARS and LOC fields are specified hereunder. The reason for the existence of the RDF field is historical.

2.3.7.3.2 The RDF field is one octet in length and its value is set to [0000 0000] in binary.

2.3.7.4 The Administrative Region Selector (ARS) Field

2.3.7.4.1 In Fixed Network Addressing Domains, the purpose of the ARS field is to distinguish Routing Domains or Routing Domains and subordinated Routing Areas respectively operated by the same State, airline or Organisation.

2.3.7.4.2 In Mobile Network Addressing Domain, the purpose of the ARS field is to identify the aircraft on which the addressed system is located. When the systems onboard an aircraft form a single Routing Domain, then the ARS field also identifies the Routing Domain. When the systems onboard an aircraft form multiple RDs, then part of the LOC field is used to distinguish them.

2.3.7.4.3 The ARS field consists of three octets in length.

2.3.7.4.4 In the Fixed AINSC and ATSC Network Addressing Domains, the value of the ARS field shall be a 24-bit unsigned binary number which is used to uniquely identify a Routing Domain or a Routing Domain and a subordinated Routing Area respectively.

2.3.7.4.5 Each State or organisation or RDC identified in the ADM field is free to assign its own values to the ARS field. Guidelines and recommended common practices are presented in the paragraphs below.

2.3.7.4.6 As far as States are concerned, the following categories of organisations have been identified as potential future operators of an ATN routing Domain:

a) the national ANSP(s),

b) the national military organisation,

c) the national meteorological organisation(s),

d) the airport operators.

2.3.7.4.7 As a possible approach for the provision of ATN internet addresses to the different national organisations, it is proposed that different ranges of values for the first octet of the ARS field be allocated to the different national organisations. As an example, it is proposed that:

- Values [00-1f] of the first octet of the ARS field be reserved for the addressing of domains and systems operated by the national ANSP.

- Values [20-3f] of the first octet of the ARS field be reserved for the addressing of domains and systems operated by the national military organisation.

- Values [40-5f] of the first octet of the ARS field be reserved for the addressing of domains and systems operated by the national airport operators.

- Values [60-7f] of the first octet of the ARS field be reserved for the addressing of domains and systems operated by the national meteorological organisation.

- Values [80-ff] be reserved.

2.3.7.4.8 A national organisation will then be required to register one or more values for the first octet of the ARS field within the range that has been reserved for its organisation category and to freely allocate values to the remaining two octets of the ARS field.

2.3.7.4.9 In Mobile AINSC and ATSC Network Addressing Domains, the value of the ARS field shall be the 24-bit ICAO Aircraft Address that uniquely identifies the NSAP Addresses and NETs in a single Routing Domain.

2.3.7.5 The Location (LOC) Field

2.3.7.5.1 In Fixed Network Addressing Domains, the purpose of the LOC field is to distinguish Routing Areas within the same Routing Domain.

2.3.7.5.2 In Mobile Network Addressing Domains, the LOC field is used

a) to distinguish Routing Areas within the same Mobile Routing Domain, or,

b) when more than one Routing Domain is located on a single Aircraft, to distinguish each Routing Domain and the Routing Areas contained within them.

2.3.7.5.3 The combination of AFI, IDI, VER, ADM, RDF, ARS and LOC fields therefore forms an Area Address.

2.3.7.5.4 The LOC field consists of two octets in length and may be given any binary value. The assignment of the LOC field value is under the responsibility of the organisation which constitutes the addressing authority for the routing domain in which the identified routing area is contained. The assignment of the LOC field value is entirely a matter local to the organisation and mainly depends on the intra routing domain organisation.

2.3.7.6 The System Identifier (SYS) Field

2.3.7.6.1 ISO/IEC 10589 defines the System Identifier as a variable length field which uniquely identifies an End or Intermediate System within an ISO/IEC 10589 Routing Area. Within a Routing Area, all System Identifiers are of the same length, although a Router is not able to make assumptions about the length of this field outside of its own Routing Area.

2.3.7.6.2 In an ATN NSAP Address or NET, the System Identifier (SYS field) consists of six octets in length.

2.3.7.6.3 The value of the SYS field shall be a unique binary number assigned by the addressing authority responsible for the Network Addressing Domain that corresponds with the Routing Area in which the identified system is located.

2.3.7.7 The NSAP Selector (SEL) Field

2.3.7.7.1 The NSAP Selector (SEL) field identifies the End System or Intermediate System network entity or network service user process responsible for originating or receiving Network Service Data Units (NSDUs) and is one octet in length.

2.3.7.7.2 The SEL field value for an Intermediate System network entity shall be [0000 0000], except for the case of an airborne Intermediate System implementing the procedures for the optional non-use of IDRP.

2.3.7.7.3 In the case of an airborne Intermediate System implementing the procedures for the optional non-use of IDRP, the SEL field value shall be [1111 1110].

2.3.7.7.4 Value FF is reserved and shall not be allocated.

2.3.7.7.5 In an Intermediate System, any other SEL field value may be assigned to NSAPs. The actual value chosen is a local matter.

3 EUR Network Addressing for Fixed ATSC

3.1 EUR ATN NSAP address format

3.1.1 As described above and in [5], the ATN NSAP address of Fixed ATSUs is of the following format, with fields including either fixed values or variable values (expressed in Hexadecimal format, HH):

AFI	IDI	VER	ADM	RDF	ARS	LOC	SYS	NSEL
47	**0027**	**81**	HHHHHH	**00**	HHHHHH	HHHH	HHHHHHHHHHHH	HH

Table 4: ATN NSAP Address fixed and variable values

3.1.2 The LINK Naming and Addressing Plan document [5] has proposed some values for the ADM and ARS fields and has given recommendations for the other fields (LOC, SYS and NSEL).

3.2 ADM, ARS, LOC, SYS and NSEL fields within ICAO EUR

3.2.1 Recommended ADM field values

3.2.1.1 Within the ICAO Region Europe (EUR) it is recommended to use for the first octet the ICAO Region identifier (83hex) and for the following two octets the State's two-character alphanumeric ISO 3166 Country Code.

Example for France: European Region+'FR', in hexadecimal: 834652

3.2.2 ARS field

3.2.2.1 It is recommended that national ANSPs, military organisations and meteorological organisations identify with each value of the first octet of the ARS field, a different set of Routing Domains as well as the operational nature of this set of Routing Domains.

3.2.2.2 The following specific allocations are proposed for the value of the first octet of the ARS field:

- 01: for the set of operational Routing Domains of the national ANSP,
- 11: for the set of non-operational Routing Domains of the national ANSP,
- 21: for the set of operational Routing Domains of the national military organisation,
- 31: for the set of non-operational Routing Domains of the national military organisation,
- 41: for the set of operational Routing Domains of the national airport operators,
- 51: for the set of non-operational Routing Domains of the national airport operators,

- 61: for the set of operational Routing Domains of the national meteorological organisation,

- 71: for the set of non-operational Routing Domains of the national meteorological organisation.

3.2.2.3 For the allocation of the 2nd and 3rd octet of the ARS field, local routing topology requirements, national particularities and the possible evolution of the routing domain should be considered.

3.2.2.4 For these two octets of the ARS field, the recommendation is to use, if suitable, either the last two alphabetical characters of the 4-letter ICAO Location Indicator that unambiguously identify an FIR or, the last two alphabetical characters of the 4-letter ICAO Location Indicator of the ACC where the ground system is located.

3.2.2.5 As default value, the last two alphabetical characters of the 4-letter ICAO Location Indicator of the ACC where the ground system is located should be used.

Example of a default value for Praha ACC (LKAA): ANSP – operational + 'AA', in hexadecimal: 014141

3.2.3 Recommended LOC field values

Recommended LOC field range	Area type	Recommended LOC field value
01xx	En-route ACC areas	0101
02xx	TMA and airports areas	0201
03xx	Technical services areas	0301
04xx	Other areas	0401

Table 5: Recommended LOC field values

3.2.4 Recommended SYS field values

3.2.4.1 The SYS field is used to uniquely identify an ATN end or intermediate system within a given routing area. The assignment of the SYS field value is under the responsibility of the organisation which constitutes the addressing authority for the routing area in which the identified ATN system is contained.

3.2.4.2 In addition to constitute the unique identifier of a system within a routing area, the 6 octets of the SYS field may be used to encode different information on the system.

3.2.4.3 Possible examples of the information that can be encoded in the SYS field are:

- Whether the system is an IS or an ES,

- The class (1 to 7) of an IS,

- The standby role of the system (primary system, Hot standby system, cold standby system),

- The type of the applications running on the system (e.g. Network Management station, AMHS User Agent, Air/Ground application server, etc...).

3.2.4.4 As default the following value is recommended: SYS: 000045533031 or (0000'ES01'$_{hexa}$)

3.2.5 NSEL field

3.2.5.1 All values are allowed except:

- 00 implementing the procedures for the optional non-use of IDRP
- FE shall be used as selector value for the NET of all airborne ISs implementing the procedures for the optional non-use of IDRP
- FF reserved and shall not be allocated.

3.2.5.2 As default the following value is recommended: NSEL: 01

3.3 Upper Layers and Application Addressing information

3.3.1 The addressing information concerning the Context Management (CM) ATN Application Address for all fixed ATSUs in the EUR Region is provided in Appendix A.

3.3.2 CM ATN Application Address is composed of two elements:

- the **ATN NSAP Address** element (as described in 3.1);
- the **CM TSAP** Selector element (CM TSEL) which locates the Transport Service User for the CM application within the ATN System. (In ATN, as the Session and Presentation address selectors are not used, the ATN TSAP Selector directly locates the ATN Application within the ATN System.)

3.3.3 For each ATSU (associated Ground Facility Designator) the CM TSEL value is listed.

3.3.4 As default the following value is recommended: CM TSEL: 636D ('cm'$_{hexa}$)

3.4 Description of the ATN NSAP addressing table

3.4.1 Considering both ADM and ARS values as recommended by [5], the Table 6 below summarises an example of the ATN NSAP addressing information for one ground End System involved in ATN/OSI based Air/Ground Data Link Communications. The complete table including the Context Management (CM) Application Addressing information is provided in Appendix A.

3.4.2 The LOC, SYS and NSEL values information as well as the CM TSEL value information is requested to be confirmed (if the default values are accepted) or delivered by the ATSU/ANSP representatives (in hexadecimal format).

3.4.3 Entries confirmed by States or Organisations are marked in green (under laying colour of the line). Proposed entries remain in white lines.

State/ Organisation	ISO 3166- 2 Letter	Fixed ATSU long name	Ground Facility Designator	ATN NSAP Address							CM TSAP Selector	Imple-menta-tion planned
				AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	NSEL	CM TSEL	
Albania	AL	TIRANA	LAAA	**47002781**	83414C	**00**	014141	0101	000045533031	01	636D	

Table 6: Example of an ATN NSAP Address Table

3.4.4 The Table 7 contains the description of the rows used in the ATN NSAP Address Table.

Head line	Description	Remark
State/ Organisation	State or Organisation where the Ground Facility is located / operated.	
ISO 3166- 2 Letter	'ISO 3166- 2 Letter' is the State's two-character alphanumeric ISO 3166 (ALPHA-2) Country Code issued by the International Standards Organisation (ISO).	
Fixed ATSU long name **(as published in Doc 7910 or other official documentation)**	Name of the location where the Ground Facility is located / operated as published in Doc 7910 or other official documentation.	
Ground Facility Designator	Location Indicator of the assigned ACC as published in Doc 7910 or other official documentation	Restricted to ACCs in EUR
ATN NSAP Address	The ATN NSAP Address is composed of following fields: AFI, IDI, VER, ADM, RDF, ARS, LOC, SYS and SEL.	
AFI, IDI, VER	Fixed value pre-defined by ICAO: 47002781	see 2.3.6.1, Table 2
ADM	Administrative identifier – within EUR the first octet the ICAO Region identifier (83hex) and the following two octets the State's two-character alphanumeric ISO 3166 Country Code.	see 2.3.7.2, 3.2.1
RDF	Routing Domain Format – fixed value pre-defined and set by ICAO to RDF = 00	see 2.3.7.3
ARS	Administrative Region Selector – first octet of the ARS field = 01. Default value for the following two octets = the last two alphabetical characters of the 4-letter ICAO Location Indicator of the ACC where the ground system is located.	see 2.3.7.4, 3.2.2
LOC	Location identifier – recommended default value LOC = 0101	see 2.3.7.5, 3.2.3
SYS	System Identifier – recommended default value SYS = 000045533031	see 2.3.7.6, 3.2.4
NSEL	NSAP Selector – recommended default value NSEL = 01	see 2.3.7.7, 3.2.5
CM TSAP Selector	Context Management Transport selector	

Head line	Description	Remark
CM TSEL	Context Management Transport selector – default value = 'cm' hexadecimal	Default: 636D
Implementation planned	Indicates the status of implementation by following values: In service, Yes, yyyy (year of the EU mandate[1]) or empty	Default: empty

Table 7: Description of the ATN NSAP Address Table

[1] COMMISSION REGULATION (EC) No 29/2009 of 16 January 2009 – laying down requirements on data link services for the single European sky, ANNEX 1 – Airspace referred to in Article 1(3)

3.5 Recommended values for Test Tools

3.5.1 In order to separate NSAP addresses for test tools from those for operational systems some fields of the NSAP address should use different values.

3.5.2 The Ground Facility Designator (GFD) of a test tool should be composed of 8 letters. The first 4 letters shall consist of the text "TEST" followed by 4 letters.[2] The unique allocation of the 8 Letters has to be ensured by the manager of the registry.

3.5.3 The ARS field of a dedicated test Routing Domain should start with "11" followed by two octets of the last two alphabetical characters of GFD of the test tool, represented as upper case.

Example: Denmark (TESTEKDK): ANSP-non-operational+'DK', in hexadecimal: 11444B

3.5.4 The LOC field of a test tool should use the value '0001'.

3.5.5 The SYS field of a test tool should contain the term TEST in hexadecimal, represented as upper case.

3.5.6 The Context Management Transport selector (CM TSEL) should use the value '0101'.

3.5.7 The ATN NSAP Addresses for Test Equipment used in the EUR Region is provided in Appendix A, A2.

[2] This avoids an unintended allocation of an operational device during tests. TEST will never be a valid Location Indicator for an ACC and therefore no match with existing operational GFD e.g. ESMM will occur during typing in.

4 EUR ATN NSAP Address assignment process

4.1 Introduction

4.1.1 An online tool is used to assist with the generation of the ATN NSAP Address Tables, for Fixed ATSUs (operational ATN NSAP Addresses) and Test Systems (test ATN NSAP Addresses) in the EUR Region. The relevant procedures are supported by an NSAP tool which has been implemented using the same software as the ATS Messaging Management Centre (AMC) by EUROCONTROL.

4.2 NSAP Tool

4.2.1 The NSAP tool provides the capability to register ATN NSAP Addresses of entities belonging to the Fixed ATSC and the Fixed AINSC Network Addressing Domains. It has been built to support both Operational and Test ATN NSAP Addresses. It has been designed to cover mainly the ATS units located in the EUR Region. Consequently it contains ATN NSAP Addresses for all EUR Air Traffic Control Centres (ACCs) as published by States in ICAO Doc 7910, Chapter 5 or other official documentation.

4.2.2 As output, the NSAP tool generates two different ATN NSAP Address Tables; the ATN NSAP Address Table of fixed ATSUs in the EUR Region and the ATN NSAP Address Table of Test Systems in the EUR Region. The Tables are produced in accordance with the elements described in Table 7.

4.3 NSAP Administrator

4.3.1 In terms of management of the ATN NSAP Address registry only one role is identified. More specifically, access to the NSAP module is restricted to the NSAP Administrator. Two designated Planning Group members act as NSAP Administrators. Access to the NSAP module is provided by means of user authentication (user-name and password).

4.3.2 The NSAP Administrator is able to add, modify or delete entries of the ATN NSAP Address Tables. In addition, the NSAP Administrator is able to generate either of the two ATN NSAP Address Tables at any time.

4.4 NSAP Tool functions

4.4.1 General

4.4.1.1 The NSAP tool registers ATN NSAP Addresses according to the provisions of Section 2 of this document. The size and value (i.e. decimal or hexadecimal) of each field of an ATN NSAP Address comply with the format described in Section 2.3. Fields with pre-defined values, like AFI, IDI, VER, RDF are restricted to these predetermined values. Furthermore, recommendations indicated in Section 3 are taken into consideration for systems located in the EUR Region.

4.4.1.2 The NSAP tool supports the following functions:

i. Registration of a new entry, operational or test ATN NSAP Address, based on input provided by the NSAP Administrator

ii. Modification/deletion of an existing ATN NSAP Address

iii. Validation of uniqueness of an ATN NSAP Address in the Registry

iv. Generation of the ATN NSAP Address Tables

4.4.2 Registration of a new entry based on input provided by the NSAP Administrator

4.4.2.1 The NSAP Administrator provides input to the following elements, either for Operational or Test NSAP Addresses:

- *State/Organisation*
- *ISO 3166-2 Letter*
- *Fixed ATSU Long Name (as published in Doc 7910 or other official documentation) or Test System Long Name*
- *Ground Facility Designator*
- *ATN NSAP Address of fixed ATSUs or Test Systems*

4.4.2.2 Fixed values are pre-defined for the ATN NSAP Address fields AFI, IDI, and RDF, while a drop-down menu lists the acceptable values for the field VER.

4.4.2.3 The NSAP Administrator can insert into the LOC, SYS and NSEL ATN NSAP Address fields the recommended default values as presented in Table 7 or provide other values.

4.4.2.4 The default values for the ATN NSAP Address fields ADM and ARS can be inserted according to the recommendations summarized in Table 7. The ADM field intends to sub-divide each of the Network Addressing Domains introduced by the field VER. According to Section 2.3.7.2 the value of this field is derived differently for entities belonging to Fixed AINSC, Fixed ATSC, Mobile AINSC or Mobile ATSC Network Addressing Domains. The NSAP Administrator can insert any value in the three octets of the ADM field; however a check of the value of the first octet is performed by the tool. As the majority of entries in the registry are for systems located at EUR ACCs it is expected that the most likely value assigned to the first octet of the ADM field is 83 (hex), as indicated in Table 3. If a different value is inserted a warning is generated by the tool.

4.4.2.5 The default value for the CM TSEL field can be registered; however the NSAP Administrator can provide a different one.

4.4.2.6 The NSAP Administrator can insert any of the allowed values of the field ‘Implementation planned’ according to Table 7.

4.4.2.7 Based on the provided input an ATN NSAP Address is generated by this function. A consistency check of the produced address is performed by the tool, concerning the length and the values provided in the various address fields. Furthermore the uniqueness of the new ATN NSAP Address is checked as described in Section 4.4.4.

4.4.3 Modification/deletion of an existing ATN NSAP Address

4.4.3.1 Address Modification requests are submitted by States/Organisations, including required details. The requested ATN NSAP Address is normally included in the respective AM request. It is probable that the requested ATN NSAP Address differs from the address that is generated by the recommendations of Section 3.

4.4.3.2 This function provides the capability for the NSAP Administrator to modify an existing ATN NSAP Address; Operational or Test. The tool checks the consistency of the modified fields of the ATN NSAP Address concerning the provided length and values.

4.4.3.3 The uniqueness of the modified ATN NSAP Address is checked as described in section 4.4.4.

4.4.3.4 In accordance with the Address Modification procedure described in Appendix A, the NSAP Administrator may remove an ATN NSAP Address from the ATN NSAP Address Registry upon request.

4.4.4 Validation of uniqueness of an ATN NSAP Address in the Registry

4.4.4.1 This function validates the uniqueness of a new or a modified NSAP Address versus the entries of the Registry. This check is applied each time an address is added or modified in the Registry. A new or modified address is checked against the Registry of 'Fixed ATSUs in the EUR Region' and of 'Test Systems in the EUR Region', irrespective of the type of the address (Operational or Test).

4.4.4.2 Duplications are detected by the tool and reported to the NSAP Administrator.

4.4.5 Generation of the ATN NSAP Address Tables

4.4.5.1 This function is used for the production of the ATN NSAP Address Tables; the ATN NSAP Address Table of fixed ATSUs in the EUR Region and the ATN NSAP Address Table of Test Systems in the EUR Region.

4.4.5.2 The NSAP Administrator can order the generation of the two Tables independently. The format of the produced Tables is in accordance with the Tables of Appendix A. The Tables can be extracted in pdf and xls format, upon selection by the NSAP Administrator.

4.4.5.3 The produced Tables are used for the update of EUR Doc 028 according to the procedures and frequency established by the AST TF. The updated version of EUR Doc 028, along with the extracted Tables in xls format, is forwarded to the ICAO EUR/NAT Office.

4.5 NSAP Tool procedures

4.5.1 The NSAP tool uses the concept of the data areas of the AMC, i.e background area, pre-operational area and operational area. The data entry phase is initiated upon reception of Address Modification (AM) request(s). Initially the NSAP Administrator enters data in the background area. After checking the inserted data, the NSAP Administrator moves the background data into the pre-operational area. The process is completed with the transfer of data from the pre-operational to the operational area. The background area for States/Organizations remains locked during the whole process.

4.5.2 Upon registration of new data in the NSAP tool, the procedure for the handling of the relevant Address Modification request(s), that triggered the initiation of the specific cycle, is completed.

4.6 Maintenance and Support

4.6.1 The NSAP module is maintained and supported by EUROCONTROL. New features or modifications of existing functionality are designed collaboratively by the Planning Group of AST TF and EUROCONTROL.

4.6.2 Changes to the NSAP tool will be documented in accordance with the processes described in the Change Control Mechanism of the EUR NSAP Address Registry (Attachment A).

4.6.3 Expandability of the tool shall be co-coordinated through the ICAO EUR/NAT Office and EUROCONTROL.

Attachment A: Change Control Mechanism of the EUR NSAP Address Registry

A.0.1 The change control mechanism provides for three possibilities:

- Address Modification (AM),
- Defect Report (DR), and
- Change Proposal (CP)

A.0.2 Modifications (add, change, delete) of EUR NSAP addresses published in the EUR Registry as well as proposals to introduce changes to the EUR NSAP Address Registry document itself may arise from users, implementers or manufacturers.

A.0.3 The interested party should send any proposal for modification (AM) or change (CP or DR) of the EUR NSAP Address Registry to the EUR/NAT ICAO Regional Office (focal point). The Regional Office forwards the document to the Planning Group of AST TF for further processing.

A.0.4 In accordance with the change control procedure described below, the updated and adopted version of the Registry will be published by the ICAO EUR/NAT Office after the annual AST TF meeting normally scheduled in spring-time.

A.0.5 The procedure for submission and processing of an Address Modification (AM), a Defect Report (DR) or a Change Proposal (CP) involves the following steps:

A.1 Procedure for Address Modification (AM)

Note.– As the ATN NSAP addresses need to be uploaded into the aircraft avionics the published data should be as stable as possible and change proposals infrequent.

A.1.1 A modification (addition, change or deletion) of an entry in the EUR NSAP Address Registry which should be published in this Registry is identified and/or confirmed by an ANSP or State authority, as appropriate.

A.1.2 The modification is reported to the Rapporteur of the Planning Group of AST TF (AST PG), normally via the EUR/NAT ICAO Regional Office, by submission of an Address Modification (AM). A standard reporting format is used (see attached template in A.2).

A.1.3 The Rapporteur assigns a number and priority to the address modification and introduces it to the agenda of an upcoming meeting of the PG.

A.1.4 The PG evaluates the modification and checks consistency related to other NSAP Address entries. The party, which submitted the address modification, is notified accordingly.

A.1.5 The PG collects all modifications and submits them to the AST TF for information.

A.1.6 The AST TF approves the updated EUR NSAP Address Registry and asks the ICAO EUR Office for publication.

A.2 Template for EUR NSAP Address Modifications (AM)

EUR NSAP Address Modification (AM)

Reference:	Number assigned by the PG Rapporteur
Originator reference:	Provided by the originator
Submission date:	
Submitting State/Organisation:	
Contact Information:	e-mail, fax, telephone and postal address
Author:	
Status:	Assigned by the PG Rapporteur
Priority:	Assigned by the PG Rapporteur
Document reference:	Affected table of the EUR NSAP Address Registry
Kind of modification:	Addition, Change or Deletion.
Proposed applicability date for the modification:	
Description of the modification:	Nature of the modification in detail Reason(s) for request
History:	Assigned by the PG Rapporteur

AM STATUS control sheet				
Event	**Date**	**Status**		**Remark**
AM received submission date		Set to submitted		
discussion at PG/ ...		Set to accepted	Set to rejected	
presentation to AST TF/ ...		Set to approved for application		
Additional DATES and comments				

A.3 Procedure for Defect Report (DR)

A.3.1 A problem is detected, which is reflected in the EUR NSAP Address Registry and may be attributed to implemented procedures and/or inconsistencies in this Registry.

A.3.2 The problem is reported to the Rapporteur of the Planning Group of AST TF (AST PG), normally via the EUR/NAT ICAO Regional Office, by submission of a defect report (DR). A standard reporting format is used (see attached template in A.5).

A.3.3 The Rapporteur assigns a number and priority to the defect report and introduces it to the agenda of an upcoming meeting of the PG.

A.3.4 The PG evaluates the report and either adopts it as a working item or rejects it. The party, which submitted the defect report, is notified accordingly.

A.3.5 Experts of the PG are assigned to the problem when adopted (Status: accepted) and milestone dates are set. Outside expertise may be invited to participate, as appropriate.

A.3.6 The PG develops proposals for resolving the problem and submits them to the AST TF for approval.

A.3.7 The AST TF approves or rejects the presented proposals. In case of the latter, the subject is referred back to the PG (step A.3.6) or discarded. The party which submitted the defect report is notified accordingly by the PG.

A.3.8 The PG drafts appropriate text for amendment of the EUR NSAP Address Registry and submits it to the AST TF for approval.

A.3.9 The AST TF approves or rejects the proposed material. In case of the latter, the subject is referred back to the PG (step A.3.8).

A.3.10 The proposed amendments to the EUR NSAP Address Registry are presented to the EASPG for approval.

A.3.11 Solutions are implemented.

Note.– Steps A.3.6 and A.3.8 may run in parallel.

A.4 Procedure for Change Proposal (CP)

A.4.1 The same structured procedure, with the exception of steps (A.3.10) and (A.3.11) applies in case of proposed enhancements to the EUR NSAP Address Registry or inconsistencies with relevant existing documentation.

A.4.2 In this case, a change proposal (CP) should be submitted to the PG, normally via the EUR/NAT ICAO Regional Office. The format of the CP is similar to that of the DR.

A.4.3 If ICAO SARPs and/or Technical Specifications are concerned, the change control process, set up by ACP and its Working groups, has to be followed by using appropriate procedures.

A.5 Template for Defect Reports / Change Proposals

TEMPLATE FOR DEFECT REPORTS / CHANGE PROPOSALS

DR_____ **CP_____**

Title:	Short, indicative textual name
Reference:	Number assigned by the PG Rapporteur
Originator reference:	Provided by the originator
Submission date:	
Submitting State/Organisation:	
Author:	
Contact Information:	e-mail, fax, telephone and postal address
Experts involved:	
Status:	Assigned by the PG Rapporteur
Priority:	Assigned by the PG Rapporteur
Document reference:	Affected section(s) of the EUR NSAP Address Registry
Description of defect:	Nature of the problem in detail Reason(s) for requesting changes
Assigned expert(s):	
Task history:	Working Papers and Information Papers Produced on the subject
Proposed solution:	Including amendments to the text, if feasible

DR/CP STATUS control sheet				
Event	**Date**	**Status**		**Remark**
DR or CP received submission date		Set to submitted		
discussion at PG/ ...		Set to accepted	Set to rejected	
Date for development of proposals/ solutions				Responsible:
discussion at PG/ ...		Set to resolved		
presentation to AST TF/ ...		Set to adopted	Set to rejected	
Date for development of amendment to the EUR NSAP Address Registry				Responsible:
discussion at PG/		Set to approved		
presentation to AST TF/ ...		Set to approved for application		
Additional DATES and comments				

END of Attachment A

Appendix A: ATN NSAP addressing tables

A1 ATN NSAP Address Table of fixed ATSUs in the EUR Region

Note 1.– The EUR NSAP Address Registry does not depict the operational/non-operational status of the included addresses-

Note 2.– Entries confirmed by States or Organisations are marked in green (under laying colour of the line). Proposed entries remain in white lines.

Note 3.– The table of this section (A1) is also available in .xls format, upon request to the ICAO EUR/NAT Office. It is highlighted that the official source of the EUR ATN NSAP Address Registry remains the Table included in EUR Doc 028 in pdf format, as published in the ICAO EUR/NAT web site.

** Contracting States to which ICAO European and North Atlantic (EUR/NAT) Office is accredited.*

State*/ Organisation	ISO 3166- 2 Letter	Fixed ATSU long name (as published in Doc 7910 or other official documentation)	Ground Facility Desig-nator	ATN NSAP Address							CM TSAP Selector CM TSEL
				AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	N SEL	
Albania	AL	TIRANA ACC	LAAA	47002781	83414C	00	014141	0101	000045533031	01	636D
Algeria	DZ	ALGER ACC	DAAA	47002781	83445A	00	014141	0101	000045533031	01	636D
Andorra	AD	Part of FIR Spain (Barcelona UIR)									
Armenia	AM	YEREVAN ACC	UDDD	47002781	83414D	00	014444	0101	000045533031	01	636D
Austria	AT	WIEN ACC	LOVV	47002781	834154	00	015656	0101	000045533031	01	636D
Azerbaijan	AZ	BAKU ACC	UBBB	47002781	83415A	00	014242	0101	000045533031	01	636D
Belarus	BY	MINSK ACC	UMMV	47002781	834259	00	014D56	0101	000045533031	01	636D
Belgium	BE	BRUSSELS (ACC-FIC)	EBBU	47002781	834245	00	014255	0101	000045533031	01	636D

State*/ Organisation	ISO 3166- 2 Letter	Fixed ATSU long name (as published in Doc 7910 or other official documentation)	Ground Facility Desig-nator	ATN NSAP Address							CM TSAP Selector CM TSEL
				AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	N SEL	
Bosnia and Herzegovina	BA	SARAJEVO ACC	LQSB	47002781	834241	00	015342	0101	000045533031	01	636D
Bulgaria	BG	SOFIA ACC	LBSR	47002781	834247	00	015352	0101	000045533031	01	636D
Croatia	HR	ZAGREB ACC	LDZO	47002781	834852	00	015A4F	0101	000045533031	01	636D
Cyprus	CY	NICOSIA ACC	LCCC	47002781	834359	00	014343	0101	000045533031	01	636D
Czech Republic	CZ	PRAHA ACC	LKAA	47002781	83435A	00	014141	0101	000045533031	01	636D
Denmark	DK	KOBENHAVN ACC	EKDK	47002781	83444B	00	01444B	0101	000045533031	01	636D
Estonia	EE	TALLINN ACC	EETT	47002781	834545	00	015454	0101	000045533031	01	636D
Eurocontrol	EU	MAASTRICHT UAC	EDYY	47002781	836575	00	014459	0001	000047473131	01	636C
Finland	FI	HELSINKI ACC	EFIN	47002781	834649	00	01494E	0101	000045533031	01	636D
France	FR	BORDEAUX ACC	LFBB	47002781	834652	00	014343	0143	45532D424458	01	636D
France	FR	REIMS ACC	LFEE	47002781	834652	00	014343	0143	45532D524D53	01	636D
France	FR	PARIS ACC	LFFF	47002781	834652	00	014343	0143	45532D415448	01	636D
France	FR	MARSEILLE ACC	LFMM	47002781	834652	00	014343	0143	45532D414958	01	636D
France	FR	BREST ACC	LFRR	47002781	834652	00	014343	0143	45532D425354	01	636D
Georgia	GE	TBILISI ACC	UGGG	47002781	834745	00	014747	0101	000045533031	01	636D
Germany	DE	LANGEN ACC	EDGG	47002781	834445	00	014444	0100	454447470001	01	636D
Germany	DE	MUENCHEN ACC	EDMM	47002781	834445	00	014444	0100	45444D4D0001	01	636D
Germany	DE	RHEIN UAC	EDUU	47002781	834445	00	014444	0100	454455550001	01	636D
Germany	DE	BREMEN ACC	EDWW	47002781	834445	00	014444	0100	454457570001	01	636D
Greece	GR	ATHINAI ACC	LGGG	47002781	834752	00	014747	0101	000045533031	01	636D
Greece	GR	MAKEDONIA ACC	LGMD	47002781	834752	00	014D44	0101	000045533031	01	636D

State*/ Organisation	ISO 3166- 2 Letter	Fixed ATSU long name (as published in Doc 7910 or other official documentation)	Ground Facility Desig-nator	ATN NSAP Address AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	N SEL	CM TSAP Selector CM TSEL
Greenland	GL	SONDRESTROM	BGGL	47002781	83474C	00	01474C	0101	000045533031	01	636D
Hungary	HU	BUDAPEST ACC	LHCC[3]	47002781	834855	00	014343	0101	000045533031	01	636D
Iceland	IS	REYKJAVIK ACC	BIRD	47002781	834953	00	015244	0101	000045533031	01	636D
Ireland	IE	DUBLIN ACC	EIDW	47002781	834945	00	014457	0101	000045533031	01	636D
Ireland	IE	SHANNON ACC	EISN	47002781	834945	00	01534E	0101	000045533031	01	636D
Israel*	IL	TEL-AVIV	LLLL	47002781	83494C	00	014C4C	0101	000045533031	01	636D
Italy	IT	BRINDISI ACC	LIBB	47002781	834954	00	015252	018D	455342520001	01	636D
Italy	IT	MILANO ACC	LIMM	47002781	834954	00	015252	018E	45534D490001	01	636D
Italy	IT	PADOVA ACC	LIPP	47002781	834954	00	015252	018F	455350440001	01	636D
Italy	IT	ROMA ACC	LIRR	47002781	834954	00	015252	018C	4553524D0001	01	636D
Kazakhstan	KZ	ALMATY	UAAA	47002781	834B5A	00	014141	0101	000045533031	01	636D
Kazakhstan	KZ	ASTANA	UACC	47002781	834B5A	00	014343	0101	000045533031	01	636D
Kazakhstan	KZ	SHYMKENT	UAII	47002781	834B5A	00	014949	0101	000045533031	01	636D
Kazakhstan	KZ	AKTOBE	UATT	47002781	834B5A	00	015454	0101	000045533031	01	636D
Kyrgyzstan	KG	BISHKEK/MANAS	UCFM	47002781	834B47	00	01464D	0101	000045533031	01	636D
Latvia	LV	RIGA ACC	EVRR	47002781	834C56	00	015252	0101	000045533031	01	636D
Lithuania	LT	VILNIUS ACC	EYVC	47002781	834C54	00	015643	0101	000045533031	01	636D
Luxembourg	LU	Part of Belgium FIR									
Malta	MT	MALTA ACC	LMMM	47002781	834D54	00	014D4D	0101	000045533031	01	636D
Monaco	MC	Part of FIR France									

[3] LHCC not listed in Doc 7910-162 (December 2016)

State*/ Organisation	ISO 3166- 2 Letter	Fixed ATSU long name (as published in Doc 7910 or other official documentation)	Ground Facility Desig-nator	ATN NSAP Address							CM TSAP Selector CM TSEL
				AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	N SEL	
Montenegro	ME	served by SMATSA (common ANSP for Serbia and Montenegro)									
Morocco	MA	CASABLANCA ACC	GMMM	47002781	834D41	00	014D4D	0101	000045533031	01	636D
Netherlands	NL	AMSTERDAM ACC	EHAA	47002781	834E4C	00	014141	0101	000045533031	01	636D
Norway	NO	BODO ACC	ENBD	47002781	834E4F	00	014244	0101	000045533031	01	636D
Norway	NO	BODO OAC	ENOB	47002781	834E4F	00	014F42	0101	000045533031	01	636D
Norway	NO	OSLO ACC	ENOS	47002781	834E4F	00	014F53	0101	000045533031	01	636D
Norway	NO	STAVANGER ACC	ENSV	47002781	834E4F	00	015356	0101	000045533031	01	636D
Poland	PL	WARSZAWA ACC	EPWW	47002781	83504C	00	015757	0101	000045533031	01	636D
Portugal	PT	LISBOA ACC	LPPC	47002781	835054	00	015043	4C58	4C5050433031	01	636D
Portugal	PT	SANTA MARIA OAC	LPPO	47002781	835054	00	01504F	534D	4C50504F3031	01	636D
Republic of Moldova	MD	CHISINAU ACC	LUUU	47002781	834D44	00	015555	0101	000045533031	01	636D
Romania	RO	BUCURESTI ACC	LRBB	47002781	83524F	00	014242	0101	000045533031	01	636D
Russian Federation	RU	YAKUTSK ACC	UEEE	47002781	835255	00	015545	0101	554545450001	01	636D
Russian Federation	RU	CHULMAN ACC	UELL	47002781	835255	00	015545	0101	55454C4C0001	01	636D
Russian Federation	RU	MIRNY ACC	UERR	47002781	835255	00	015545	0101	554552520001	01	636D
Russian Federation	RU	KHABAROVSK ACC	UHHH	47002781	835255	00	015548	0101	554848480001	01	636D

State*/ Organisation	ISO 3166- 2 Letter	Fixed ATSU long name (as published in Doc 7910 or other official documentation)	Ground Facility Desig-nator	ATN NSAP Address							CM TSAP Selector CM TSEL
				AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	N SEL	
Russian Federation	RU	MAGADAN ACC	UHMM	47002781	835255	00	015548	0101	55484D4D0001	01	636D
Russian Federation	RU	PETROPAVLOVSK-KAMCHATSKY ACC	UHPP	47002781	835255	00	015548	0101	554850500001	01	636D
Russian Federation	RU	IRKUTSK ACC	UIII	47002781	835255	00	015549	0101	554949490001	01	636D
Russian Federation	RU	ARKHANGELSK ACC	ULAA	47002781	835255	00	01554C	0101	554C41410001	01	636D
Russian Federation	RU	KOTLAS ACC	ULKK	47002781	835255	00	01554C	0101	554C4B4B0001	01	636D
Russian Federation	RU	SANKT-PETERBURG ACC	ULLL	47002781	835255	00	01554C	0101	554C4C4C0001	01	636D
Russian Federation	RU	MURMANSK ACC	ULMM	47002781	835255	00	01554C	0101	554C4D4D0001	01	636D
Russian Federation	RU	VOLOGDA ACC	ULWW	47002781	835255	00	01554C	0101	554C57570001	01	636D
Russian Federation	RU	KALININGRAD ACC	UMKK	47002781	835255	00	01554D	0101	554D4B4B0001	01	636D
Russian Federation	RU	KRASNOYARSK ACC	UNKL	47002781	835255	00	01554E	0101	554E4B4C0001	01	636D
Russian Federation	RU	NOVOSIBIRSK ACC	UNNT	47002781	835255	00	01554E	0101	554E4E540001	01	636D
Russian Federation	RU	ROSTOV-NA-DONU ACC	URRV	47002781	835255	00	015552	0101	555252560001	01	636D

State*/ Organisation	ISO 3166- 2 Letter	Fixed ATSU long name (as published in Doc 7910 or other official documentation)	Ground Facility Desig-nator	ATN NSAP Address							CM TSAP Selector CM TSEL
				AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	N SEL	
Russian Federation	RU	YEKATERINBURG ACC	USSV	47002781	835255	00	015553	0101	555353560001	01	636D
Russian Federation	RU	TYUMEN ACC	USTV	47002781	835255	00	015553	0101	555354560001	01	636D
Russian Federation	RU	MOSCOW ACC	UUWV	47002781	835255	00	015555	0101	555557560001	01	636D
Russian Federation	RU	SYKTYVKAR ACC	UUYY	47002781	835255	00	015555	0101	555559590001	01	636D
Russian Federation	RU	SAMARA ACC	UWWW	47002781	835255	00	015557	0101	555757570001	01	636D
San Marino	SM	Part of FIR Italia (Milano UIR)									
Serbia	RS	BEOGRAD ACC	LYBA	47002781	835253	00	014241	0101	000045533031	01	636D
Slovakia	SK	BRATISLAVA ACC	LZBB	47002781	83534B	00	014242	0101	000045533031	01	636D
Slovenia	SI	LJUBLJANA ACC	LJLA	47002781	835349	00	014C41	0101	000045533031	01	636D
Spain	ES	CANARIAS ACC	GCCC	47002781	834553	00	01434D	0101	0000DAA73031	01	636D
Spain	ES	BARCELONA ACC	LECB	47002781	834553	00	01434D	0101	000045533031	01	636D
Spain	ES	MADRID ACC	LECM	47002781	834553	00	01434D	0101	00006AA83031	01	636D
Sweden	SE	MALMO ACC	ESMM	47002781	835345	00	014D4D	0101	000045533031	01	636D
Sweden	SE	STOCKHOLM ACC	ESOS	47002781	835345	00	014F53	0101	000045533031	01	636D
Switzerland	CH	GENEVA ACC	LSAG	47002781	834348	00	015353	0101	455347453031	01	636D
Switzerland	CH	ZURICH ACC	LSAZ	47002781	834348	00	015353	0101	45535A483031	01	636D
Switzerland	CH	SWISS ACC	LSAC	47002781	834348	00	015353	0101	455343483031	01	636D
Tajikistan	TJ	DUSHANBE ACC	UTDD	47002781	83544A	00	014444	0101	000045533031	01	636D

State*/ Organisation	ISO 3166- 2 Letter	Fixed ATSU long name (as published in Doc 7910 or other official documentation)	Ground Facility Desig-nator	ATN NSAP Address							CM TSAP Selector CM TSEL
				AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	N SEL	
The former Yugoslav Republic of Macedonia	MK	SKOPJE ACC	LWSS	47002781	834D4B	00	015353	0101	000045533031	01	636D
Tunisia	TN	TUNIS ACC	DTTC	47002781	83544E	00	015443	0101	000045533031	01	636D
Turkey	TR	ANKARA ACC	LTAA	47002781	835452	00	014141	0101	000045533031	01	636D
Turkey	TR	ISTANBUL ACC	LTBB	47002781	835452	00	014242	0101	000045533031	01	636D
Turkmenistan	TM	ASHGABAT ACC	UTAA	47002781	83544D	00	014141	0101	000045533031	01	636D
Ukraine	UA	KYIV ACC	UKBV	47002781	835541	00	014256	0101	000045533031	01	636D
Ukraine	UA	DNEPROPETROVSK ACC	UKDV	47002781	835541	00	014456	0101	000045533031	01	636D
Ukraine	UA	SIMFEROPOL ACC	UKFV	47002781	835541	00	014656	0101	000045533031	01	636D
Ukraine	UA	L'VIV ACC	UKLV	47002781	835541	00	014C56	0101	000045533031	01	636D
Ukraine	UA	ODESA ACC	UKOV	47002781	835541	00	014F56	0101	000045533031	01	636D
United Kingdom	GB	SHANWICK OACC	EGGX	47002781	834742	00	014758	0101	000045533031	01	636D
United Kingdom	GB	SCOTTISH ACC	EGPX	47002781	834742	00	015058	0101	000045533031	01	636D
United Kingdom	GB	LONDON ACC	EGTT	47002781	834742	00	015454	0101	000045533031	01	636D
United Kingdom	GB	UK Flight Information Centre	EGII	47002781	834742	00	014949	0101	000045533031	01	636D
Uzbekistan	UZ	NUKUS FIR	UTNR	47002781	83555A	00	014E52	0101	000045533031	01	636D
Uzbekistan	UZ	SAMARKAND FIR	UTSD	47002781	83555A	00	015344	0101	000045533031	01	636D
Uzbekistan	UZ	TASHKENT/YUZHNY FIR	UTTR	47002781	83555A	00	015452	0101	000045533031	01	636D

A2 ATN NSAP Address Table of Test Systems in the EUR Region

A2-1 Test Systems belonging to ATSC Addressing Domains

Note 1.– The EUR NSAP Address Registry does not depict the operational/non-operational status of the included addresses.

Note 2.– Entries confirmed by States or Organisations are marked in green (under laying colour of the line). Proposed entries remain in white lines.

Note 3.– The table of this section (A2-1) is also available in .xls format, upon request to the ICAO EUR/NAT Office. It is highlighted that the official source of the EUR ATN NSAP Address Registry remains the Table included in EUR Doc 028 in pdf format, as published in the ICAO EUR/NAT web site.

State/ Organisation	ISO 3166- 2 Letter	Test system long name	Ground Facility Designator	ATN NSAP Address							CM TSAP Selector
				AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	N SEL	CM TSEL
Austria	AT	Test Tool Wien 1	TESTLOVV	47002781	834154	00	115656	0001	544553540001	01	0101
Austria	AT	Test Tool Wien 2	TESTLOVW	47002781	834154	00	115657	0001	544553540002	01	0101
Austria	AT	Test Tool Wien 3	TESTLOVE	47002781	834154	00	115645	0001	544553540003	01	0101
Croatia	HR	Test Tool ZAGREB 1	TESTLDZO	47002781	834852	00	115A4F	0001	544553540001	01	0101
Croatia	HR	Test Tool ZAGREB 2	TESTLDZT	47002781	834852	00	115A54	0001	544553540002	01	0101
Cyprus	CY	Test Tool NICOSIA ACC	TESTLCCC	47002781	834359	00	114343	0001	544553540001	01	0101
Denmark	DK	Test Tool Copenhagen	TESTEKDK	47002781	83444B	00	11444B	0001	544553540001	01	0101
Eurocontrol	EU	Bretigny Automated Tool	LFPYTEST	47002781	836575	00	115059	0001	000047473131	01	0101
Eurocontrol	EU	Test Tool Maastricht UAC	TESTEDYY	47002781	836575	00	114459	0001	544553540001	01	0101
Eurocontrol	EU	Bretigny B1 Test Tool 1	LFPYECAA	47002781	836575	00	11414D	0001	000047473033	01	0101

State/ Organisation	ISO 3166- 2 Letter	Test system long name	Ground Facility Designator	ATN NSAP Address							CM TSAP Selector
				AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	N SEL	CM TSEL
Eurocontrol	EU	Bretigny B1 Test Tool 2	LFPYECEO	47002781	836575	00	11414D	0001	000047473031	01	0101
Eurocontrol	EU	Bretigny B1 Test Tool 3	LFPYECDE	47002781	836575	00	11414D	0001	000041473031	01	0101
Eurocontrol	EU	Bretigny B2 Test Tool 5	LFPYEDTA	47002781	836575	00	114554	0001	45444C544731	01	0101
Eurocontrol	EU	Bretigny B2 Test Tool 6	LFPYEDTB	47002781	836575	00	114554	0001	45444C544732	01	0101
Eurocontrol	EU	Bretigny B2 Test Tool 7	LFPYEDTC	47002781	836575	00	114554	0001	45444C544733	01	0101
Eurocontrol	EU	Bretigny B2 Test ADS-C Server	LFPYADSC	47002781	836575	00	115349	0001	455341445331	01	0101
France	FR	Test Tool Bordeaux	TESTLFBB	47002781	834652	00	014343	0143	45542D424458	01	636D
France	FR	Test Tool Reims	TESTLFEE	47002781	834652	00	014343	0143	45542D524D53	01	636D
France	FR	Test Tool Paris	TESTLFFF	47002781	834652	00	014343	0143	45542D415448	01	636D
France	FR	Test Tool Aix	TESTLFMM	47002781	834652	00	014343	0143	45542D414958	01	636D
France	FR	Test Tool Brest	TESTLFRR	47002781	834652	00	014343	0143	45542D425354	01	636D
Germany	DE	Test Tool Frankfurt	TESTEDDD	47002781	834445	00	014444	0001	544553540001	01	0101
Germany	DE	Test Tool Karlsruhe	TESTEDUU	47002781	834445	00	115555	0001	544553540001	01	0101
Germany	DE	Test Tool Langen	TESTEDGG	47002781	834445	00	115555	0001	544553540002	01	0101
Germany	DE	Test Tool Muenchen	TESTEDMM	47002781	834445	00	115555	0001	544553540003	01	0101
Germany	DE	Test Tool Bremen	TESTEDWW	47002781	834445	00	115555	0001	544553540004	01	0101
Hungary	HU	TEST TOOL BUDAPEST	TESTLHCC	47002781	834855	00	114343	0001	544553540001	01	0101
Italy	IT	Test Tool Brindisi	TESTLIBB	47002781	834954	00	015252	018D	544553540001	01	0101
Italy	IT	Test Tool Milano	TESTLIMM	47002781	834954	00	015252	018E	544553540002	01	0101
Italy	IT	Test Tool Padova	TESTLIPP	47002781	834954	00	015252	018F	544553540003	01	0101
Italy	IT	Test Tool Roma	TESTLIRR	47002781	834954	00	015252	018C	544553540004	01	0101

State/ Organisation	ISO 3166- 2 Letter	Test system long name	Ground Facility Designator	ATN NSAP Address							CM TSAP Selector
				AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	N SEL	CM TSEL
Ireland	IE	Test Tool Dublin	TESTEIAT	47002781	834945	00	114154	0001	544553540001	01	0101
Ireland	IE	Test Tool Dublin 2	TESTEIAU	47002781	834945	00	114154	0001	544553540002	01	0101
Ireland	IE	Test Tool Shannon ACC	TESTEISN	47002781	834945	00	01534E	0001	544553540003	01	0101
Ireland	IE	Test Tool Dublin ACC	TESTEIDW	47002781	834945	00	014457	0001	544553540004	01	0101
Portugal	PT	Test Tool LISBOA	TESTLPPC	47002781	835054	00	115043	0001	544553543031	01	0101
Romania	RO	Test Tool Bucharest	TESTLRBB	47002781	83524F	00	114242	0101	000045533032	01	0101
Russian Federation	RU	TEST TOOL MOSCOW	TESTUUWV	47002781	835255	00	115555	0001	544553540001	01	0101
Russian Federation	RU	TEST TOOL SANKT-PETERBURG	TESTULLL	47002781	835255	00	11554C	0001	544553540001	01	0101
Russian Federation	RU	TEST TOOL ROSTOV-NA-DONU	TESTURRV	47002781	835255	00	115552	0001	544553540001	01	0101
Slovenia	SI	Test Tool Ljubljana 1	TESTLJLA	47002781	835349	00	114C41	0001	544553540001	01	0101
Slovenia	SI	Test Tool Ljubljana 2	TESTLJLD	47002781	835349	00	114C41	0001	544553540002	01	0101
Spain	ES	Test Tool Canarias ACC	TESTGCCC	47002781	834553	00	11434D	0001	0000DAA73031	01	0101
Spain	ES	Test Tool Barcelona ACC	TESTLECB	47002781	834553	00	11434D	0001	000045533031	01	0101
Spain	ES	Test Tool Madrid ACC	TESTLECM	47002781	834553	00	11434D	0001	00006AA83031	01	0101
Sweden	SE	Test Tool Malmö	TESTESMM	47002781	835345	00	114D4D	0001	544553540001	01	0101
Sweden	SE	Test Tool SESAR	TESTSESA	47002781	835345	00	115341	0001	544553540001	01	0101
Switzerland	CH	Test Tool GENEVA ACC	TESTLSAG	47002781	834348	00	115353	0001	544553543031	01	0101
Switzerland	CH	Test Tool ZURICH ACC	TESTLSAZ	47002781	834348	00	115353	0001	544553543032	01	0101

State/ Organisation	ISO 3166- 2 Letter	Test system long name	Ground Facility Designator	ATN NSAP Address							CM TSAP Selector
				AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	N SEL	CM TSEL
Switzerland	CH	Test Tool SWISS ACC	TESTLSAC	47002781	834348	00	115353	0001	544553543033	01	0101
United Kingdom	GB	Test Tool Scottish ACC	TESTEGPX	47002781	834742	00	115058	0101	000045533032	01	0101
United Kingdom	GB	Test Tool London ACC	TESTEGTT	47002781	834742	00	115454	0101	000045533032	01	0101
United Kingdom	GB	Test Tool UK Flight Information Centre	TESTEGII	47002781	834742	00	114949	0101	000045533032	01	0101

A2-2 Test Systems belonging to AINSC Addressing Domains

Note 1.– The EUR NSAP Address Registry does not depict the operational/non-operational status of the included addresses.

Note 2.– Entries confirmed by States or Organisations are marked in green (under laying colour of the line). Proposed entries remain in white lines.

Note 3.– The table of this section (A2-1) is also available in .xls format, upon request to the ICAO EUR/NAT Office. It is highlighted that the official source of the EUR ATN NSAP Address Registry remains the Table included in EUR Doc 028 in pdf format, as published in the ICAO EUR/NAT web site.

Organisation	ISO 3166-2 Letter	Test system long name	Ground Facility Designator	ATN NSAP Address							CM TSAP Selector
				AFI, IDI, VER	ADM	RDF	ARS	LOC	SYS	N SEL	CM TSEL
Egis Avia		Egis Avia Test 1	TESTEGI1	47002701	454749	00	114931	0001	544553540001	01	0101
Egis Avia		Egis Avia Test 2	TESTEGI2	47002701	454749	00	114932	0001	544553540002	01	0101
Egis Avia		Egis Avia Test 3	TESTEGI3	47002701	454749	00	114933	0001	544553540003	01	0101
Egis Avia		Egis Avia Test 4	TESTEGI4	47002701	454749	00	114934	0001	544553540004	01	0101
SITA		SITA Test System	SITATEST	47002701	534954	00	000001	0001	000045533031	01	0101

END of Appendix A