GUIDANCE MATERIAL ORGANIZATION OF AN AUTOMATED AIS SYSTEM

(Presented by the secretary)

**SUMMARY**

This study note provides a proposal for discussion about amendment of the chapter 9 in AIS manual concerning organization of an automated AIS system.

1. **INTRODUCTION**

1.1 In the view of proposed update of Chapter 8 of the AIS Manual also the Chapter 9 Organizing of an automated aeronautical information service system needs to correspond to this update. Another reason is the amendment 36 of Annex 15 which made the automated pre-flight information system to a standard for all States.

2. **AMENDMENT PROPOSAL**

2.1 A restructuring of the Chapter is proposed to first introduce;

— the concept of automated system,

— then the concept for harmonization of AIS and MET information, and

— last the concept for centralized AIS databases.
The reason for this change is that in item 9.7 of concept for an integrated automated system includes descriptions of system features which are common independent of which level of automated system the State decide to implement.

2.2 Following item is proposed:

1) General
2) Basic principles
3) Flight crew members and other user’s operational requirements in an automated AIS system
4) Types of information to be provide for pre-flight information, flight planning and flight information service and administration
5) Database contents
6) Concept of automated AIS system
7) Concept for harmonization of AIS and MET information
8) Concept for centralized AIS databases
9) Use of Internet

2.3 The division of AIS data in static, basic and dynamic data is challenged as all data will change over time (Global ATM Operational Concept Doc 9854 2.9.7) therefore it is proposed to introduce following term “system required data”, “aeronautical data and information” and “meteorological data” as described in item 9.5.1.

2.4 The term Integrated automated AIS system describes a system including, national automated AIS systems, multinational automated AIS system and AIS not or not fully automated. The term Integrated briefing describes a harmonized service including AIS and MET. In the proposed amendment the term Integrated automated AIS system is proposed to be changed to Centralized AIS databases to avoid confusion.

2.5 Appendix B to Chapter 9 is updated with example of flowcharts describing the procedures for use in a self-briefing environment.

2.6 Proposed changes from Marvin and Eddy sent to the secretariat has been included in this study note, introducing digital data beyond NOTAM data and digital data exchange guidance.
3. **ACTION BY THE STUDY GROUP**

3.1 The AIS-AIMSG is invited to;

1) review and discuss the draft amendment proposal; and

2) recommend the secretariat to amend the AIS Manual chapter 9 in accordance with the proposal.
Chapter 9

ORGANIZATION OF AN AUTOMATED
AERONAUTICAL INFORMATION SERVICES SYSTEM

9.1 GENERAL

9.1.1 The main purpose of this chapter is to assist States or authorized AIS that are interested in the development and introduction of automated processes within their AIS infrastructure. The guidance focuses on all levels of automated system, harmonized system – automated system including AIS and MET information and centralized AIS system. The guidance also includes material that enables data exchange in compliance with the recommendation of 3.6.5 of Annex 15. States or authorized AIS having such an interest are at liberty to decide on the degree of sophistication they wish to see implemented within their AIS. Much depends on the specific output (Aeronautical Information Publication (AIP) in paper and electronic format (eAIP), NOTAM, Aeronautical Information Circulars (AIC), digital data, etc.) of the service concerned and this will, of course, have a bearing on overall planning.

9.1.2 The guidance contained in Chapters 6 and 8 is primarily intended for use in a manual or semi-automated AIS environment. Where the civil aviation authority, or the agency to which the authority to provide aeronautical information service has been delegated, uses automated pre-flight information systems to make aeronautical information/data available to flight operations personnel, including flight crew members, for self-briefing, flight planning and flight information service purposes, the information/data must comply with the provisions of 8.1.2 and 8.1.3 of Annex 15. These provisions specify the type of aeronautical information/data to be made available for pre-flight planning purposes and the availability of pre-flight information bulletins (PIB). According to requirement in Annex 15 8.2.1 States or authorized AIS

"shall use automated pre-flight systems to make aeronautical information and data available to operations personnel including flight crew members for self-briefing, flight planning and flight information service purpose".

To fulfill the requirement of automated pre-flight systems at least the NOTAM handling needs to be automated, to be able to make a recapitulation of current NOTAM of operational significance available in form of pre-flight information bulletins (PIB) and AIP and AIC available at least in a format suitable for viewing on graphical user interface. For guidance concerning PIB see also chapter 8.

9.1.3 The following guidance does not propose the purchase of any particular brand of computer or software for developing an automated AIS system. The selection of such equipment and associated applications is therefore left to the discretion of the State(s) concerned in consultation with hardware and/ or software manufacturers and bearing in mind the requirements of each AIS. The capacity of the equipment selected should be sufficient to cater for the immediate needs and future growth of the provider service. Also, it is conceivable that the automation requirements of an AIS could be integrated into an existing central mainframe computer system already providing such services as meteorology (MET) and air traffic services (ATS).
9.2 BASIC PRINCIPLES

9.2.1 The principal objective of developing an automated AIS system is to improve, through automation, the overall speed, quality, efficiency, accuracy and cost-effectiveness of the AIS, i.e. to:

- ensure integrity of all required information;
- ensure high availability and timeliness of all required information;
- ensure transparent and open access to all required information from any location;
- ensure the ability to tailor information in a guided manner according to the specific needs of the users; and
- provide service in a manner as cost effective as possible.

9.2.2 For States that are considering or already have an automated or computer-based AIS system, the following material focuses on the advantages and flexibility to be derived from such an application. Essentially, an automated AIS system should be capable of providing a more flexible pre-flight information service by tailoring information its automation processes to cater to a wider spectrum of users. As such, the tailoring of the automated AIS system should perform the selection functions required for this service should be performed by the automated AIS system with a minimum of manual intervention so that duplication of work can be reduced if not eliminated entirely. For reasons of cost-effectiveness, such a service must strike a balance between the degree of sophistication of the system required and the amount of information to be accepted in the various categories of bulletins. It is necessary therefore to:

a) select a simple, flexible and efficient system for storage and retrieval of information; and

b) develop methods of providing a greater selectivity of information in accordance with user requirements.

9.2.3 As such, design the system should be designed with the intent of avoiding incompatibilities, divergencies and unnecessary duplication of effort thereby ensuring standardization of procedures, products and services to end users flight crew members. While some States have already automated their AIS, others are still in the process of doing so, or are in the planning stage. Consequently, it is highly desirable that all AIS systems be automated along the same or similar lines in order to ensure compatibility.

9.2.4 With a view to ensuring progressive implementation of automated AIS systems and taking account of actual technical possibilities (e.g. the capacity and the capabilities of the systems currently automated, the communication facilities that are or will be available in the near future, and the existence of AIS that are manual or semi-automated) a number of basic principles should be adhered to as follows:

a) National automated AIS system centres should be able to closely cooperate with other AIS in adopting the various elements that will make up an integrated automated AIS system, taking into account compatibility and their current and planned degree of development.

b) The requirements of automated pre-flight information system implies, States should initially use of an automate NOTAM service within their own AIS, taking into account user requirements.

c) Certain national automated AIS systems should cooperate with other non-automated AIS systems to carry out agreed functions to improve the efficiency and the quality of processing of aeronautical information and distribution both within an agreed area of the system and externally.
d) Make optimum use should be made of available communication and public networks as well as new communication technology for the distribution, exchange and retrieval of aeronautical information, particularly NOTAM.

e) It is at the discretion of the individual State to select The selection of the various means for the retrieval of data at a national level should be at the discretion of the individual State and should be this is largely dependent on the availability and cost of the various services, communication links available and user requirements.

f) Use exclusively the The NOTAM Format, containing the necessary qualifiers to facilitate the sorting and retrieval of NOTAM information in accordance with user requirements, should be used exclusively.

g) In order to achieve interoperability compatibility and avoid complex and costly data conversions, automated systems that enable the provision of digital data (beyond NOTAM data) should derive their internal physical models from a common conceptual model and should export the data according to a common data exchanged specification. Further guidance on this matter is provided in 9.5.

gh) A system interrogation capability which takes account of the different categories of system users should be in place.

hi) Common, user-friendly query procedures for the interrogation of AIS or NOTAM databases should be used. These procedures should be in accordance with the different levels of user requirements.

ij) States must establish a quality system and procedures which will ensure that the available aeronautical information is of appropriate quality (accuracy, resolution, integrity) and timeliness.

jk) States that decide not to automate their AIS may, in the interest of improved efficiency, arrange for the provision of automated services on its behalf on the basis of bilateral or multilateral agreements between States or other non-governmental organizations. The arrangements must take into account the non-transferable responsibility of a State for the aeronautical information published as well as other technical and administrative aspects associated with such agreements.

9.2.5 The development of an automated AIS system must take into account the provisions in Annex 15 for the use of the World Geodetic System — 1984 (WGS-84), the adopted common geodetic reference system, when aeronautical geographical coordinates are provided.

9.3 FLIGHT CREW MEMBERS AND OTHER USERS’ OPERATIONAL REQUIREMENTS IN AN AUTOMATED AIS SYSTEM

9.3.1 The overall system should provide a service that is capable of satisfying users’ operational requirements, which include:

   a) availability of the latest PIB of the specific type needed (e.g. route or area);

   b) provision of information on specific items for given areas required by flight planning services, ATS, AIS or other users;

   c) availability of NOTAM entered into the system after a specific date-time group, to facilitate briefing; and
9.3 Automated pre-flight information systems for the supply of aeronautical information and data for self-briefing, flight planning and flight information service should:

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

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

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

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

e) provide for rapid responses to user requests for information.

9.3.3 On the basis of the foregoing, an automated AIS system should be able to provide end-users, such as pilots, flight crew members, ATS and military, with PIB aeronautical information and data geared to meet their specific requirements.

9.4 TYPES OF INFORMATION TO BE PROVIDED FOR PRE-FLIGHT INFORMATION, FLIGHT PLANNING AND FLIGHT INFORMATION SERVICE AND ADMINISTRATION

9.4.1 The system should provide NOTAM covering the States territory, the area of responsibility if the State is responsible for air traffic service outside its territory, and the area of coverage. The system should additionally provide the following PIB and lists:

a) route type bulletin containing NOTAM relevant to the aerodrome or heliport of departure, the planned route based on FIR crossed, the aerodrome or heliport of destination, and alternate aerodromes/heliports;

b) area type bulletin containing NOTAM relevant to FIR or State;

c) aerodrome type bulletin containing NOTAM concerning any aerodrome/heliport or group of aerodromes/heliports;

d) immediate notification of pertinent information items;

e) checklists of NOTAM by State, FIR and aerodrome or heliport; and

f) list of NOTAM for a specific period or NOTAM entered into the system after a specific date-time group; and

g) meteorological flight documentation, if integrated pre-flight planning service is provide.

9.4.2 The updating of PIB could be covered by the items listed in 9.4.1 d), e) and f), or by request for a new PIB. The system features described in 9.7 should permit PIB to be tailored to the needs of users operations personnel including flight crew members and should provide flexible options for information content ranging from full system data coverage to data of urgent operational significance. PIB should be provided in a
standard format.

Geographical reference qualifiers

9.4.3 The provision of more flexible and referred data retrievals can be satisfied by the application of a geographical reference system which may be required for the expansion of the overall system in order to meet future requirements. These requirements may derive from the introduction of RNAV operations, the expansion of automation within the ATS and the users’ flight crew members systems.

9.4.4 Sufficient flexibility and tailoring of information for the first set-up of automation in AIS is achieved by the use of the geographical reference qualifier. This qualifier consists of latitude and longitude to one minute resolution and referenced to the World Geodetic System — 1984 (WGS-84) geodetic datum and a three-digit distance figure giving radius of influence.

9.4.5 An automated AIS system should also provide digital system required static data (as defined in 9.5.1) covering the area of service, the area of responsibility and the area of coverage.

9.5 DATABASE CONTENTS

9.5.1 Aeronautical data has temporality and will change over time, but to varying degrees in terms of frequency or magnitude, varying from almost static to very dynamic. The following lists the types of data which can be made available in an automated AIS system centre database. These data are divided into three categories:

a) Static data

Data common to civil aviation and documented in AIP or other related documents. Such data include FIR, aerodromes, navaids, areas, maps, rules, and NOTAM related to these subjects;

b) Basic data

i) Data required by an AIS system to enable NOTAM processing, i.e. reference lists, standard routes, distribution files, the NOTAM Selection Criteria, association criteria, all system messages exchanged as well some static aeronautical and data such as FIR, aerodromes, heliports, navaids and areas routes, approach, arrival and departure procedures, data represented on maps, rules and data related to these subjects. Data is detailed in 9.5.4

ii) Data required for automated production of AIP (paper and electronic), of and charts and for direct digital data provision in support of automated flight planning, air traffic management and air navigation services, as detailed in 9.5.7 – 9.5.10.

c) Dynamic data

i) National and foreign (worldwide for the covering area) NOTAMN, NOTAMR, NOTAMC, NOTAMS, NOTAMV, SNOWTAM, ASHTAM, all checklists received, all system messages exchanged, and other aeronautical information such as AIP and AIC.

ii) Digital data provision in support of automated flight planning, air traffic management and air navigation services.
9.5.2 The common set of static data and basic system required data necessary for supporting NOTAM processing is given in 9.5.4. Data marked with an (*** ) are considered to be a “minimum set of data” required for the verifications, cross-checks and other data requirements related to NOTAM processing.

9.5.3 It should be noted that the list of data should not be limited to data required for NOTAM processing, and could be amended in light of future developments. One of these developments could be in the context of the transition to Aeronautical Information Management (AIM) and considering the increased need for digital data provision following data should be included in the scope of AIS automation; data necessary for AIP and eAIP production, for charting, as well as for air navigation, air traffic services be flight plan processing, etc see 9.5.5. using the same equipment as for AIS, within the framework of multi-access terminals development where different processing procedures could be based on common static data.

9.5.4 Common AIS static and basic database contents for NOTAM processing and meteorological data, if applicable.

a) NOTAM originator

— ICAO abbreviation of NOTAM originator (***)
— State (ICAO abbreviation and name)
— Reference table: State/originator
— Responsible source (***)
— Series and numbers used (***)

b) FIR data

— ICAO location indicator (***), name in plain language (***)
— Geographical description (polygon of LAT/LONG latitude and longitude positions)
— Artificial description (based on centralized LAT/LONG latitude and longitude position and radius for a circle comprising the FIR)
— Reference table: FIR/NOTAM originator

c) Aerodrome data

— ICAO location indicator (***)
— Four letter indicator, chosen if no ICAO locator exists (***)

c) Meteorological data and information (if harmonized system is provided)

National and foreign (for the covering area); forecast of upper wind and upper-air temperature, forecast of upper air humidity, forecast of upper wind and upper-air temperature, forecast of upper air humidity, geopotential altitude and flight levels, flight level and temperature of tropopause, direction speed and flight level of maximum wind; SIGWX phenomena, (SIGWX, SIGWXM, SIGWXH, METAR and SPECI, TAF and amended TAF, forecast for take-off, SIGMET and special air reports (ARS) that is not already used in preparation of SIGMET, volcanic ash and tropical cyclone advisories information, GAMET and or area forecast for low-level flights in chart form, AIRMET, aerodrome warnings for the local aerodrome, meteorological satellite images and ground-based weather radar information.
— Aerodrome name (plain language) (***)

— IATA three-letter code

— Correspondence table (Name, ICAO, IATA)

— Correspondence table (ICAO locator — FIR)

— Position (LAT/LONG latitude and longitude, radius of operational influence) (***)

— Runways (designation and ILS category)

— SIDs and STARs (designator and description)

— “International aerodrome or heliport” indicator

d) **Navaid data**

— Type of navaid (***)

— Identification (***), name in plain language (***)

— Frequency(ies) (***)

— Position (LAT/LONG latitude and longitude, radius of operational influence) (***)

— Correspondence table (identification — FIR)

— Collocation with other nav aids

— ILS (frequency, category and runway)

e) **Route data**

— Airways (designator)

— ATS route segments (2 waypoints with LAT/LONG latitude and longitude position — airway)

— ATS route segment association with FIR

f) **Areas**

— Identifier of airspace restrictions such as danger or restricted area

— Area name (plain language)

— Activity times, height limits

— Geographical description (polygon of LAT/LONG latitude and longitude positions)

— Artificial description (based on centralized LAT/LONG latitude and longitude position and radius for a circle comprising the area)

— Association of area to FIR(s)
9.5.5—NOTAM Selection Criteria selection criteria

9.5.5.1 9.5.5 The NOTAM Code contained in the PANS-ABC (Doc 8400) is the most comprehensive description of information requiring NOTAM promulgation. The NOTAM Code together with the qualifier, Traffic, Purpose and Scope is therefore used for the following:

a) the storage and retrieval of information;

b) to determine whether a particular item is of operational significance;

c) the relevance of particular items for various types of flight operations; and

d) the selection of those items of operational significance that require immediate notification.

9.5.5.2 9.5.6 The NOTAM Code constitutes the basis for the determination of the qualifiers TRAFFIC, PURPOSE, and SCOPE. The relationship between these qualifiers and the NOTAM Code is given in the NOTAM Selection Criteria tables in Chapter 6, Appendix B. These tables constitute a rationalized version of the NOTAM Code. They also provide the English language text to be used in Item E) of the NOTAM Format.

System required data for automated production of AIP, charts and for digital data provision

9.5.7 The definition of a common set of full static system required data, as required for the automated production of the AIP (on paper and electronic), of charts and for direct digital distribution to the users requires a common conceptual aeronautical data model. The provision of this data to the users in digital format requires a common data exchange specification, which describes the syntax and the content of the digital data sets. The Aeronautical Information Exchange Model (AIXM) developed by EUROCONTROL and the Federal Aviation Administration of the United States is one such model, which is already in wide global use.

9.5.8 States that wish to develop a system which enables the collection, storage and provision of their full static data in digital format are encouraged to consider the use of AIXM for this purpose. The complete AIXM documentation is openly and freely available on the public www.aixm.aero Web site.

9.5.9 AIXM provides a conceptual and logical data model of the information managed by AIS in the form of an UML model, compliant with the data modeling framework laid down in the ISO 19100 series of standards. This covers the following main data packages:

— Aerodrome/heliport infrastructure, services and facilities

— Airspace structures

— Navigation and landing aids

— Route network and flight restrictions

— Approach, landing and departure procedures

— Obstacle (in compliance with the Annex 15 requirements for electronic obstacle data sets)

\footnote{UML – Unified Modelling Language, a widely used standard for conceptual and logical data models}
9.5.10 AIXM also provides a data exchange encoding format, in the form of an XML\(^2\) schema, which defines the structure and enables the automatic syntactical validation of digital aeronautical data sets. Commercial and free “off-the-shelf” software able to process XML data is widely available. More specialized software solutions that implement AIXM are available from commercial companies that provide AIS solutions. The development of an AIXM based system with internal State resources is also possible.

9.6 CONCEPT OF AUTOMATED AIS SYSTEM
HARMONIZATION OF AIS AND MET INFORMATION
[8.2.1, 8.2.2, 8.2.3]

9.6.1 AIS and MET play an important role in pre-flight planning of operations. To satisfy the needs of the user, the AIS and MET delivery systems should be collocated. This could be achieved through collocation of two separate terminals, i.e. one for AIS and one for MET. However, there is an increased demand for the provision of combined AIS and MET information in a harmonized manner.

9.6.2 Therefore, in an automated environment users should be able to access both AIS and MET information on request, from a common interface, based on the flight plan (including time, route or area and height).

9.6.3 Annex 15 specifies that automated pre-flight information systems providing for a harmonized, common point of access by operations personnel, to aeronautical information in accordance with 8.2.1 of Annex 15 and meteorological information in accordance with 9.9.1 of Annex 3, should be established by an agreement between the civil aviation authority concerned and the relevant meteorological authority.

9.6.4 To achieve this, it is important to produce concise and precise pre-flight information through a common user interface to both AIS and MET databases, tailored to meet the needs of the user (operators, flight crew members, individual pilots and other aeronautical personnel concerned).

9.6.5 The civil aviation authority concerned must remain responsible for the quality and timeliness of aeronautical information/data provided by means of such a system.

9.6.6 It should be noted that the meteorological authority concerned remains responsible for the quality of meteorological information provided by means of a harmonized automated pre-flight information system.

9.6.7 The following major aspects must be considered:

a) the two information sources; and

b) retrieval and processing of information from those sources.

9.6.8 The data from the information sources must be easily accessible in databases and be available in digital and standardized form to allow automatic processing, storage and retrieval.

9.6.9 An integration layer may have to be developed to access the AIS and MET information from a common interface for harmonized access to both AIS and MET information. The benefits of the integration layer to the user are:

\(^{2}\) XML – Extensible Markup Language, a commonly used standard for digital data exchange
9.6.10 Technically, the benefits of harmonization would be:

a) faster and simpler information retrieval;

b) improvement of quality control; and

c) savings, by eliminating the duplication of effort in handling of information.

9.6.11 Harmonized access to AIS and MET pre-flight services should be restricted to aeronautical users only, to avoid unauthorized use of this information.

9.6.12 Harmonization of AIS and MET data for pre-flight information purposes is being developed by several States and should be encouraged, as it would represent a significant improvement in service level as requested by the users.

9.7 CONCEPT FOR AN INTEGRATED AUTOMATED AIS SYSTEM

System configuration

9.7.1 An integrated automated AIS system should be based on the current AIS facilities of participating States with the following structure:

a) national automated AIS systems of States that provide a national service;

b) multinational automated AIS systems of States providing, on the basis of bilateral and multilateral agreements, service to other State(s) in addition to national service; and

c) AIS of States that are not or not fully automated (i.e. manual or semi-automated).

9.7.2 The system should provide for automatic exchange of NOTAM between AIS centres providing national service and between these centres and AIS centres providing service based on bilateral and/or multilateral agreements.

Note: Most of the guidelines provided in 9.6 and 9.8 have been developed for automated NOTAM processing. However, many of these requirements are equally applicable to the automatic processing of full all digital aeronautical static data. More specific requirements for static data interrogation and reporting, through standard interfaces, are expected to be specified in future updates of the Manual.

National automated AIS system

9.7.3 The primary role of a national AIS system is to provide aeronautical information to users in a given State, either in accordance with predetermined arrangements or by computer interrogation. The system collects appropriate aeronautical information from national sources, processes the information, produces it in
the form of digital static data, eAIP or NOTAM, stores it in the national AIS database and makes it available:

a) within the State;

b) within the region, including an integrated system in accordance with bilateral or multilateral agreements; and

c) worldwide, in accordance with predetermined arrangements.

9.7.4 In addition, ensure to receive the required aeronautical information from other States should be received in the agreed digital data exchange format, eAIP or NOTAM Format for direct input into the national system database or for further processing, if required, so that the system also can accomplish specific requirements for international/foreign aeronautical information for pre-flight briefing can also be carried out by the system.

Multinational automated AIS system

9.7.5 In the multinational AIS system, one or more national automated AIS systems will, in addition to national service, provide service to users in other participating States (with automated or non-automated AIS systems) in accordance with pre-arranged agreements.

Non-automated AIS

9.7.6 States not having an automated AIS system would have an option to be linked with a national automated AIS system, via an intelligent or non-intelligent remote terminal, resulting from bilateral agreement.

Area to be covered

9.7.7 The system should have the capacity of holding and processing aeronautical information covering the entire world to fulfil the operational requirements for pre-flight information service for flights from point of origin to final destination.

System service

9.7.8 The overall system, when fully developed, should provide a service that is capable of meeting both the users’ flight crew members’ operational requirements and the types of information detailed in 9.4, respectively. The capabilities of the system could also be utilized to obtain information for the preparation of AIP material, for aeronautical charting purposes and for the production of route manuals by chart-producing agencies. The basic functions of the system, as described below, relate to the handling of information promulgated by States. It should, however, be borne in mind that the availability of an integrated automated AIS system would affect the working methods used in participating States for the exchange and distribution of aeronautical information.

System functions

9.7.9 Within an automated AIS system there are a number of functions which should be performed for NOTAM handling. They are:

a) Production function
1) National NOTAM production  
2) National NOTAM reception  
3) National NOTAM correction/repetition (in case of corruption in transit)  
4) National NOTAM translation (language and code)  
5) NOTAM qualifier insertion  
6) Addition of geographical reference  
7) Filtering for particular correspondents  
8) Transfer to the distribution function  
9) National NOTAM database input  
10) Foreign NOTAM reception  
11) Foreign NOTAM first level verification (syntax)  
12) Foreign NOTAM second level verification (validation of content)  
13) Foreign NOTAM correction/repetition  
14) Foreign NOTAM translation (language and code)  
15) Foreign NOTAM qualifier insertion, when needed  
16) Addition of geographical reference  
17) Foreign NOTAM database input  
18) Filtering for particular correspondents  
19) Transfer to the distribution function

b) Distribution function

1) National administrative users  
2) International administrative users  
3) National operational users  
4) International operational users

c) Retrieval function

1) National administrative users  
2) International administrative users  
3) National operational users  
4) International operational users

9.7.10.9.6.3 This is a minimum requirement for a national automated AIS NOTAM system, which States can expand as needed.

9.7.11 For a multinational automated AIS system, additional functions will depend on the agreement with the associated AIS system(s). This could include:

a) the functions of reception, verification and distribution of NOTAM initiated by the associated AIS and reception, verification and distribution of foreign NOTAM to associated AIS;

b) the international NOTAM office (NOF) of the multinational automated AIS system to act as the NOF of the associated AIS;

c) storage of all aeronautical information of the associated State/AIS in the database of the multi-national automated AIS system;

d) provision of pre-flight data/briefing (via computer terminals) at aerodromes in the associated State;

e) production of the AIP for the associated AIS.

Reception
9.7.12 The aeronautical fixed service (AFS) and other adequate and available communication networks should be used for distribution of the information concerned. The reception and initial distribution of NOTAM messages should be performed by an AFS message-switching centre. As necessary, complete certain checks should be carried out prior to subsequent processing. These initial checks should be seen in the context of the verification function.

Verification

9.7.13 A certain number of verification checks need to be carried out in different forms in the majority of systems, whether they are automated or not. To maximize the number of NOTAM that can be accepted directly by the system, perform the verification function at first and second levels should be performed in accordance with a common format. The first and second levels of the verification function are differentiated by the complexity of the checking processing functions which are:

a) First level: syntax verification; and

b) Second level: verification of content.

Correction/ and repetition

9.7.14 One of the aims of an automated AIS system is to minimize the number of requests for repetition of NOTAM messages. In this connection, the checking operations mentioned above can, depending upon their scope, allow certain corrections to be made. It is necessary, however, to define precisely, at the system level itself, the nature of the corrections that could be made. In the event of an error that cannot be corrected, a request for repetition of the incorrect NOTAM should be made.

Translation

9.7.15 Translation may be needed for the creation of NOTAM, and should be taken into account as a function of local needs (e.g. use of national languages).

Qualifier insertion

9.7.16 Use the common set of qualifiers, as outlined in Appendix A to this chapter, to ensure compatibility in any data exchange. It permits the production of common output products (e.g. PIB) that are adequately filtered and reduced to an acceptable amount of data of operational significance. It also permits the development of common, user-friendly, AIS query procedures. The qualifiers identify, for example, the area of concern, the type of operation the NOTAM information relates to and, additionally, where and how the information must be stored in an AIS database.

9.7.17 Qualifier insertion is an important function seen from the viewpoint of the distribution of NOTAM. The insertion of qualifiers can be carried out as part of the production function. Recourse to basic data is necessary, and a list of the types of static and basic data that might have to be available are found in 9.5. Chapter 6, Appendix B includes a compendium of selection criteria for NOTAM processing.

Production

9.7.18 NOTAM, in the NOTAM Format, should constitute the basic data exchange source in the system. Prepare NOTAM should be prepared only once, at the entry into the system.
Any AIS in the process of being automated should generally make provisions for recourse to computer assistance for the drafting of NOTAM to be issued by the NOF concerned. NOTAM so produced should be capable of being used directly by the various national AIS systems concerned. It is essential that NOTAM issued by an automated centre be directly acceptable both by the other centres and by other users of the system and provide for automatic exchange of NOTAM between automated AIS systems (national and multinational).

Database input

The functions for database input should be related to the NOTAM Format. Essentially, the databases should be capable of being interrogated by users on a national and international basis.

System query procedures

The system should provide a common set of query procedures. Since the objective is to provide common procedures for AIS users, flight crew member, wherever they proceed for an AIS briefing and whatever AIS system is interrogated, it is appropriate to use the term "common AIS query procedures". These query procedures should guide the user through transparent and common formulation of an interrogation, which would then be translated by each system into an appropriate query in the query language associated with the database management system in use.

For any automated pre-flight information service to be effective, it is essential that the query procedures established be user-friendly, i.e. they must allow an operator, a flight crew member, trained or untrained, to obtain the desired information without the assistance of AIS personnel. This is the self-briefing concept for which menu-type query procedures are the most appropriate. Menu-type query procedures also permit easy access to output products other than PIB. It should also be possible for qualified staff to obtain output products quickly.

The query procedures should make the best use of the database management system applied, in order to give rapid responses to simple and short requests.

The query procedures should be flexible and cater for progressive developments, such as changes in the definitions of user outputs or to the common set of qualifiers. The terminal used for AIS briefings should also have a future multi-access capability, giving the user the possibility to interrogate MET databases as well as to input flight plans. These procedures should take into account the concept that there should be one, common method for multi-access processing.

The query procedures should preferably be in English and should be identical at each AIS centre. A version using the local language can also be made available in any AIS system, as appropriate.

Database access

Basically, three modes of interrogation should exist in an integrated AIS system, i.e. via:

a) intelligent terminals (computer terminals, PCs, etc.) with a graphical user interface on which the above-mentioned common AIS query procedures apply; and

b) teletype terminals (e.g. AFS, telex), and

c) videotext terminals.
The procedures should allow for at least the following:

a) access to the automated AIS system centre, which should normally be the database the terminal is connected to;

b) access to other AIS databases within the system via available communication networks;

c) access to meteorological databases (subject to agreement between the State authorities concerned); and

d) ultimately, input of flight plans.

Access to an automated AIS system via intelligent terminals

There should be two modes of access to the database:

a) via the common query procedures employed in the self-briefing mode, where user-friendly, step-by-step guidance is given to the user (e.g. menu-type query). Examples of these procedures are shown in Appendix B to this chapter; and

b) to specific data directly by AIS briefing officers. Possible screen formats for direct formulation of bulletin products and for the retrieval of individual NOTAM are also shown in Appendix B to this chapter.

For each type of requested output, the query procedures should lead the user to the formulation of the shortest possible query. The application of the NOTAM qualifiers TRAFFIC, PURPOSE and SCOPE, appropriate to each case, should be implicit in the query.

Access to other AIS databases within the system (teletype terminals)

For various reasons, such as repeat messages or subscribed service data not stored in the national system, there may be a requirement to obtain data from databases situated in other States. In this case, the interrogation should be made via available communication networks, e.g. AFS, PSTN (telephone) or PSDN (Transpac, DSC, etc.). It is essential for the operation of the integrated automated system that, for this type of interrogation, agreed message formats be used. Such formats should be adequately supported by interrogation procedures available to AIS briefing officers but might exceptionally, however, be entered directly through a suitable network terminal, such as a teletype in the case of AFS. Examples of these messages are shown in Appendix C to this chapter.

Access to an automated AIS system via videotext terminals

Pre-flight information may be provided via videotext terminals (Minitel, BTX, etc.) which, in the self-briefing mode, also require user-friendly procedures. Screen standards being different to those of computer terminals, it is not possible to directly apply the common query procedures developed for intelligent terminals. For the benefit of the users, however, commonality should be achieved for this mode of interrogation, and query procedures should be, as much as possible, similar to the common query procedures of the AIS system or on a graphical user interface using a different application.

Use of multi-access terminals

AIS terminals should ultimately be able to provide AIS and operational meteorological information
for pre-flight briefings. This does not, of course, mean that AIS and MET data need to be in the same database. As a further enhancement, such terminals could also be programmed to contain a form for filing flight plans which would be completed on the visual display unit graphical user interface by the user and filed with the appropriate ATC authority directly from the terminal.

**System reliability and redundancy**

9.7.33 9.6.24 The system configuration should assure adequate reliability and redundancy.

9.7.34 9.6.25 The system should be provided with suitable equipment and be designed to ensure continuity of service.

**Fallback procedures**

9.7.35 When service based on bilateral and/or multilateral coordination and cooperation is provided, fallback procedures should be established.

**Response time**

9.7.36 9.6.26 With the features provided by the system, the use of modern computer techniques and means of communication, short response times should be assured.

**Communications**

9.7.37 9.6.27 The AFS should satisfy the communication requirements at an international level. Make optimum use should be made of available communication networks for the distribution, exchange and retrieval of aeronautical information, particularly NOTAM.

**Access to consultation with AIS**

9.7.38 9.6.28 Self-briefing facilities of automated pre-flight information systems must provide for easy access by flight operations personnel, including flight crew members and other aeronautical personnel concerned, to consultation, as necessary, with the AIS by telephone or other suitable communications means.

**Human-machine interface**

9.7.39 9.6.29 The human-machine interface of self-briefing facilities of automated pre-flight information systems must ensure easy access in a guided manner to all relevant information or data. Design the software in such a way that its use is intuitive i.e. it works in the way that you would expect it so work without the need to resort to manuals.

**CONCEPT FOR HARMONIZATION OF AIS AND MET INFORMATION**

9.6.39 9.7.1 Annex 15 specifies that automated pre-flight information systems providing for a harmonized, common point of access by operations personnel, to aeronautical information in accordance with 8.2.4 of Annex
15 and meteorological information in accordance with 9.5.1 of Annex 3, should be established by an agreement between the civil aviation authority concerned and the relevant meteorological authority.

9.6.49.7.2 To achieve this, it is important to produce concise and precise pre-flight information through a common graphical user interface to both AIS and MET databases, tailored to meet the needs of the flight crew members, and other aeronautical personnel concerned.

9.6.59.7.3 The civil aviation authority concerned or the agency to which the authority to provide service has been delegated, must remain responsible for the quality and timeliness of aeronautical information or data provided by means of such a system.

9.6.69.7.4 It should be noted that the meteorological authority concerned remains responsible for the quality of meteorological information provided by means of a harmonized automated pre-flight information system.

9.6.79.7.5 The following major aspects must be considered:

a) the two information sources; and

b) retrieval and processing of information from those sources.

9.7.6 In addition to requirement to database content in 9.51 following meteorological data is also needed, in order to meet the needs for an integrated pre-flight planning facility and service. The products are available either in alphanumeric or binary coded form and normally distributed via AFS.

a) forecast of upper wind and upper-air temperature,

b) forecast of upper air humidity, geopotential altitude and flight levels, flight level and temperature of tropopause, direction speed and flight level of maximum wind;

c) SIGWX phenomena, SIGWXL / SIGWXM / SIGWXH;

d) METAR and SPECI;

e) TAF and amended TAF;

f) forecast for take-off;

g) SIGMET and special air reports (ARS) that is not already used in preparation of SIGMET;

h) volcanic ash and tropical cyclone advisories information;

i) GAMET and or area forecast for low-level flights in chart form;

j) AIRMET;

k) aerodrome warnings for the local aerodrome;

l) meteorological satellite images; and

m) ground-based weather radar information.

9.6.89.7.7 The data from the information sources must be easily accessible in databases and be available in digital and standardized form to allow automatic processing, storage and retrieval.
9.6.97.8 An integration layer may have to be developed to access the AIS and MET information from a common graphical interface for harmonized access to both AIS and MET information. The benefits of the integration layer to the user are:

a) improved data consistency;

b) transparent data access;

c) extended functionality; and

d) flexibility.

9.6.119.7.9 Harmonized access to AIS and MET pre-flight services should be restricted to aeronautical users only, to avoid unauthorized use of this information.

9.6.12 Harmonization of AIS and MET data for pre-flight information purposes is being developed by several States and should be encouraged, as it would represent a significant improvement in service level as requested by the users.

Figure 1 – Integration layer

9.7.10 Such a layer is not a specific technical solution but a functional principle, e.g. it could be built into the application or as separate software, according to preference or circumstance.

9.7.11 It is important that all required AIS and MET information can be accessed through an integration layer before it is disseminated to the flight crew members. An integration layer allows for control of the data, minimises the degree of engineering expertise required at remote locations and provides for location transparency, i.e. flight crew members accessing the integration layer for common AIS and MET self briefing are neither bothered with heterogeneous local interfaces to the database management systems nor with unnecessary knowledge as to where the required data is physically kept.

9.7.12 Applications should use the State designated data sources (e.g. designated database as determined by the State authority). This national database could be fed by national data sources and/or international databases, via international communication links.

9.7.13 All required data must have a geographical reference, time and date before being stored in a database. As airspace is a continuum in which all airspace users move, the geographical reference, time and date of AIS and MET information are the only common attributes for retrieving the required data.
9.7.14 Arrangements concerning contingency, redundancy and fallback are necessary to cope with system failures and must be considered when designing operational procedures.

9.7.15 Due account must be taken of safety criticality and its relationship to redundancy in designing the interface for harmonized access to AIS and MET services. If any components on the AIS or MET side forming part of the system should fail or are not available, the user has to be made aware of this, as it is safety critical for the flight operation.

9.7.16 Automation should be applied as far as possible to serve and assist the user to obtain all required AIS and MET information with a minimum of actions.

Customizing

9.7.17 Flight crew members are currently supplied with a large amount of information. The harmonized pre-flight planning facility would be capable of providing even more information. It is essential, therefore, to avoid overloading. Reducing the flight crew members’ workload may be achieved by providing a means whereby they may select the type of information they receive in response to requests. For example, high-level wind information is not likely to be of any interest to a flight crew members flying VFR, whereas visibility condition information is essential. These settings could be maintained as part of the profile, so that this flight crew member can use them again.

9.7.18 The flight crew members must also be able to limit the geographical area for which information is provided. The facility could link the aerodromes and routes for which information is provided to a flight plan, ensuring that only relevant information is provided. Additional customisation would be necessary to enable the flight crew member to expand or contract the geographical area as required. This would enable the flight crew member to obtain information about alternative routes that were not yet specified on the flight plan if required.

9.69.8 CONCEPT FOR CENTRALIZED AIS DATABASES

9.7.19.8.1 An integrated automated AIS system should be based on the current AIS facilities of participating States with the following structure:

a) national automated AIS systems of States that provide a national service;

b) multinational automated AIS systems of States providing, on the basis of bilateral and multilateral agreements, service to other State(s) in addition to national service; and

c) AIS of States that are not or not fully automated (i.e. manual or semi-automated).

9.7.29.8.2 The system should provide for automatic exchange of digital static data, eAIP or NOTAM between AIS centres providing national service and between these centres and AIS centres providing service based on bilateral and/or multilateral agreements.

Multinational automated AIS system

9.7.59.8.3 In the multinational AIS system, one or more national automated AIS systems will, in addition to national service, provide service to users in other participating States (with automated or non-automated AIS systems) in accordance with pre-arranged agreements.

Non-automated AIS

9.7.69.8.4 States not having an automated AIS system would have an option to be linked with a national
automated AIS system, via an intelligent or non-intelligent remote terminal, resulting from bilateral agreement.

**Area to be covered**

9.7.79.8.5 The system should have the capacity of holding and processing aeronautical information covering the entire world to fulfil the operational requirements for pre-flight information service for flights from point of origin to final destination.

**System function**

9.7.119.8.6 For a multinational automated AIS system, additional functions will depend on the agreement with the associated AIS system(s). This could include:

a) the functions of reception, verification and distribution of NOTAM initiated by the associated AIS and reception, verification and distribution of foreign NOTAM to associated AIS;

b) the international NOTAM office (NOF) of the multinational automated AIS system to act as the NOF of the associated AIS;

c) storage of all aeronautical information of the associated States or authorized AIS in the database of the multi-national automated AIS system;

d) provision of pre-flight data/briefing information (via computer terminals, graphical user interface) at aerodromes in the associated State;

e) production of the AIP for the associated AIS.

**Fallback procedures**

9.7.359.8.7 Establish fallback procedures when service is provided based on bilateral and or multilateral coordination and cooperation is provided, fallback procedures should be established.

**Planning for and implementation of an integrated automated AIS system**

9.8.49.8.8 The planning and implementation of an integrated automated AIS system should be guided and adjusted by considerations related to efficiency, cost-effectiveness and experience.

9.8.29.8.9 Relevant bilateral or multilateral agreements should aim at minimizing costs by leading to work and equipment savings beneficial to all participants.

9.8.39.8.10 Regional Air Navigation Planning and Implementation Groups established by ICAO should:

a) coordinate the general development of the system and the activities required of States;

b) develop an appropriate form of system management;

c) monitor the overall situation for the purpose of detecting in advance divergencies, divergences in developments that could lead to later incompatibilities.

9.8.49.8.11 The planning and implementation of the system should also be closely monitored by States to permit speedy reaction to problems encountered and to shortcomings identified.
Identification of the correspondents of a multinational automated AIS system

9.9.19.8.12 The correspondents of a multinational automated AIS system can be identified as:

a) other multinational automated AIS systems;

b) the NOF serving the State(s) and territories in its area of responsibility;

c) the national systems (including NOF of non-automated AIS) for which it provides the service on the basis of bilateral or multilateral agreements;

d) all concerned services in its own State;

e) users in its own State;

f) users in other associated States (subject to bilateral or multilateral agreements).

Rules for AFS addressing

9.9.29.8.13 Predetermined AFS distribution lists should be available at each multinational automated AIS system containing the addresses or collective addresses of all States with which it intends to exchange NOTAM. It should also have the distribution lists of associated States containing the required addresses to which they wish to send NOTAM (i.e. States not on a pre-determined distribution list).

9.9.39.8.14 Based on the origination of the NOTAM, which is derived from the location indicator of the FIR qualifier field in Item Q) of the arriving NOTAM or identified in the AFS message preamble, the collective addresses required for distribution are entered (manually or automatically) in the preamble of the AFS message to be issued.

9.9.4 9.8.15 In some cases, the following procedures may be applicable:

a) Distribution of NOTAM produced by a multi-national automated AIS system

A multinational automated AIS system should use the distribution list prepared for promulgation of its own NOTAM. The list should normally contain the addresses (or collective addresses) of:

— the relevant State(s) (NOF) in its area of responsibility;

— the relevant State(s) (NOF) and users in the associated States;

— other multinational automated AIS systems which will each use their own list of addresses for further distribution.

b) Distribution of NOTAM received from other national automated AIS system centres

The multinational automated AIS system identifies the originator abbreviation in the preamble of the arriving NOTAM or by the FIR qualifier in Item Q) and selects and applies the relevant distribution list accordingly. The list should contain the addresses (or collective addresses) of:

— the States (NOF) in its area of responsibility;

— the AIS systems and users in the associated States;
9.9 INTERNET

9.9.1 The development of the Internet has brought a new means of delivery for many services. It has become a widely available and cheap way of providing access to a vast array of data to the millions of users throughout the world.

9.9.2 The Internet provides a means of delivering briefing material directly to a wider user base. Two main benefits may be seen:

a) Many small airports currently have no briefing facilities. Instead, these services are provided through the use of telephone and fax machines connected to the nearest airport that has these services. The addition of a small, low specification, computer and Internet access at such airports would allow the pilots to request briefing material directly, tailoring the request to suit their own needs.

b) An increasing number of pilots have their own computer equipment at home and as such may be able to assess the briefing material for a flight before leaving to possible they would not even need to leave home. The use of Wireless Application Protocol (WAP) would allow a pilot to obtain a pre-flight briefing via a mobile telephone.

9.9.5 In doc 9855 Guidelines on the Use of the Public Internet for Aeronautical Applications the use of Internet is recognised for non-time-critical aeronautical ground-ground applications and matters relating to meteorological information, aeronautical information services (AIS) and flight plans is explained. Doc 9855 outlines the responsibilities of States and propose that States should accredit the entities that will provide Internet-based provisions and exchange of information, and ensure that the entities have adequate information technology and information security expertise for overseeing the accreditation process.

9.8 PLANNING FOR AND IMPLEMENTATION OF AN INTEGRATED AUTOMATED AIS SYSTEM

9.8.1 The planning and implementation of an integrated automated AIS system should be guided and adjusted by considerations related to efficiency, cost-effectiveness and experience.

9.8.2 Relevant bilateral or multilateral agreements should aim at minimizing costs by leading to work and equipment savings beneficial to all participants.

9.8.3 Regional Air Navigation Planning and Implementation Groups established by ICAO should:

a) coordinate the general development of the system and the activities required of States;

b) develop an appropriate form of system management;

c) monitor the overall situation for the purpose of detecting in advance divergencies in developments that could lead to later incompatibilities.

9.8.4 The planning and implementation of the system should also be closely monitored by States to permit speedy reaction to problems encountered and to shortcomings identified.
9.9 AFS ADDRESSING

Identification of the correspondents of a multinational automated AIS system

9.9.1 The correspondents of a multinational automated AIS system can be identified as:

a) other multinational automated AIS systems;

b) the NOF serving the State(s) and territories in its area of responsibility;

c) the national systems (including NOF of non-automated AIS) for which it provides the service on the basis of bilateral or multilateral agreements;

d) all concerned services in its own State;

e) users in its own State;

f) users in other associated States (subject to bilateral/multilateral agreements).

Rules for AFS addressing

9.9.2 Predetermined AFS distribution lists should be available at each multinational automated AIS system containing the addresses or collective addresses of all States with which it intends to exchange NOTAM. It should also have the distribution lists of associated States containing the required addresses to which they wish to send NOTAM (i.e. States not on a pre-determined distribution list).

9.9.3 Based on the origination of the NOTAM, which is derived from the location indicator of the FIR qualifier field in Item Q) of the arriving NOTAM or identified in the AFS message preamble, the collective addresses required for distribution are entered (manually or automatically) in the preamble of the AFS message to be issued.

9.9.4 In some cases, the following procedures may be applicable:

a) Distribution of NOTAM produced by a multinational automated AIS system

A multinational automated AIS system should use the distribution list prepared for promulgation of its own NOTAM. The list should normally contain the addresses (or collective addresses) of:

- the relevant State(s) (NOF) in its area of responsibility;

- the relevant State(s) (NOF) and users in the associated States;

- other multinational automated AIS systems which will each use their own list of addresses for further distribution.

b) Distribution of NOTAM received from other national automated AIS system centres

The multinational automated AIS system identifies the originator abbreviation in the preamble of the arriving NOTAM or by the FIR qualifier in Item Q) and selects and applies the relevant distribution list accordingly. The list should contain the addresses (or collective addresses) of:

- the States (NOF) in its area of responsibility;
— the AIS systems and users in the associated States;

— other multinational automated AIS system centres which will each use their own list of addresses for further distribution.
Appendix A to Chapter 9

USE OF AUTOMATION IN THE COMPILATION, PROCESSING AND DISTRIBUTION OF NOTAM [3.6.6, Chapter 5 and Appendix 6]

1. GENERAL

The NOTAM Format has been developed to facilitate its use in a manual or automated environment. As such, it ensures compatibility between all AIS and NOTAM offices exchanging information on a worldwide basis. Bearing in mind that many States have already automated their AIS and others are in the process of doing so, the importance of a compatible and comprehensive automated global system cannot be over-emphasized.

2. BASIC NOTAM ELEMENTS AND CHARACTERISTICS

The NOTAM is one of the basic elements that allows an integrated automated AIS system to be developed progressively while at the same time assuring that overall compatibility can be achieved with the manual AIS environment. Its format allows direct utilization for data processing as well as for presentation to users. It contains, in particular, the necessary qualifiers to facilitate data retrieval by common query procedures and for sorting of information in accordance with user requirements. The development of the NOTAM has resulted from the requirements for a number of characteristics to be met by the NOTAM message in order to permit the introduction of automation in AIS. These characteristics are related to retrieval, presentation to users, format and storage.

3. RETRIEVAL AND PRESENTATION TO USERS

The retrieval of NOTAM information must be geared to the requirements of the users. To achieve this, a common set of qualifiers has been developed for use in the NOTAM Format (Item Q). Some of these qualifiers are already contained in the NOTAM while others need to be added as appropriate. One special feature of the NOTAM is its utility as a source for pre-flight information bulletins (PIB). Generally, the data contained in a NOTAM are easily transferable to the PIB format.

4. FORMAT

4.1 There is no need to store NOTAM in several formats in order to satisfy the different requirements of users. The data can be stored in such a way that “editing” programmes will produce output in various forms as requested by the user.

4.2 NOTAM can appear in various forms, for example, as an AFS message, on an input terminal or in a database. Omitting the communication text, a NOTAM has the following AFS format:

(A1282/03 NOTAMN
5. STORAGE

5.1 Storage of NOTAM must take place in a database. However, the NOTAM Format facilitates manual sorting and storage. One important aspect of the NOTAM Format is that each data item of the message can be stored individually in a different column of a database table. This method considerably simplifies further automatic data processing as it provides for:

a) automatic database entry after automatic extraction of items from the original NOTAM;

b) access to individual data items for the purpose of NOTAM retrieval;

c) access to individual data items for different output formats; and

d) easy identification of data items for automatic transmission on the AFS.

5.2 Examples of the storage of NOTAM data in a structured database are shown in Figures 9-A-1 to 9-A-5. Also shown are different output formats that can be produced from the database contents. As a result of the ability to structure the NOTAM contents, storage of several formats is not necessary. The merits of the NOTAM can best be appreciated in conjunction with the various steps in NOTAM production and processing inside and outside of an integrated automated AIS system.

6. COMMON SET OF QUALIFIERS

6.1 The qualifiers listed below represent the “common set of qualifiers”. Because these qualifiers have been derived from the NOTAM information itself, their use facilitates sorting and retrieval of NOTAM. States’ AIS may provide additional criteria for more refined data retrieval by its own users.

<table>
<thead>
<tr>
<th>Name of qualifier</th>
<th>Source (derived from NOTAM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Date of entry into database</td>
</tr>
<tr>
<td>Series/number/year</td>
<td>NOTAM number (e.g. A1282/03)</td>
</tr>
<tr>
<td>Type</td>
<td>NOTAM (N, C or R)</td>
</tr>
<tr>
<td>State</td>
<td>Item A) (e.g. LF--)</td>
</tr>
<tr>
<td>FIR</td>
<td>Item A) (e.g. LFFF)</td>
</tr>
<tr>
<td>AD</td>
<td>Item A) (e.g. LFPO)</td>
</tr>
<tr>
<td>VALFROM</td>
<td>Item B) (e.g. 0304041000)</td>
</tr>
<tr>
<td>VALTO</td>
<td>Item C) (e.g. 0304111200)</td>
</tr>
<tr>
<td>Schedule</td>
<td>Item D) (where applicable)</td>
</tr>
<tr>
<td>Lower</td>
<td>Item F)</td>
</tr>
<tr>
<td>Upper</td>
<td>Item G)</td>
</tr>
<tr>
<td>NOTAM Code</td>
<td>Item E) (significations/uniform abbreviated phraseology)</td>
</tr>
</tbody>
</table>
6.2 As already indicated, a certain number of qualifiers are contained in NOTAM and their extraction is relatively easy. But, adherence to rules and sequencing to be applied at the production of NOTAM are essential for the automatic extraction process. These rules are:

a) Items B) and C) must always show a date-time group (exception a PERM may appear in Item C));

b) Item D) is always a time period when applicable;

c) Item E) must contain a single subject.

6.3 The qualifiers not directly derived from the NOTAM (TRAFFIC, PURPOSE, SCOPE) must be added in order that the message contain all necessary elements for subsequent data processing. These are covered in detail in Chapter 6, Appendix A and need not be repeated here.

7. DISTRIBUTION

7.1 Essentially, the distribution of NOTAM originating from within an automated AIS system is identical to that for NOTAM processed manually. The guidance provided in Chapter 6 is therefore applicable to all NOTAM. To the extent possible, NOTAM should be transmitted via the AFS, although other international telecommunication networks can be used where required. With direct AFS links and the use of predetermined distribution lists, the exchange between NOF and other interested users of NOTAM prepared by automated means should require little human intervention. From this, it can be seen that the main objective of such automation is to improve the distribution process thereby enhancing overall efficiency in terms of speed, accuracy and cost-effectiveness.

7.2 The function of a multinational automated AIS system responsible for NOTAM distribution is based on the following principles:

a) All associated national AIS systems are to initiate their NOTAM and “trigger” NOTAM relative to AIP Amendments and AIP Supplements.

b) These NOTAM are to be sent only to the associated multinational automated AIS system which proceeds to automatic verification procedures and subsequent distribution in accordance with the relevant agreements.

c) Distribution should be automatic and not cause any delay.

d) NOTAM coming from non-associated AIS systems should be received exclusively by the multinational automated AIS system.

e) For any AIP Supplements containing information that should be included in PIB, the multinational automated AIS system concerned must produce and distribute a “trigger” NOTAM.
f) NOTAM received that are not of particular interest to its own State should nevertheless be stored in its database. Thus, each multinational automated AIS system would have worldwide NOTAM and “trigger” NOTAM relative to AIP Amendments and AIP Supplements available in its database for preparation of PIB.

g) Any NOTAM processed is to be sent as a new message, the multinational automated AIS system concerned being the originator.

h) All NOTAM are to be sent via AFS taking into account the AFS distribution procedures currently in use.

i) Each associated national system is to be responsible for the provision of NOTAM to users in its own territory.
1) NOTAM
A1282/03 NOTAMN Q) LFFF/QILAS/I/NBO/A/000/050/4840N00220E010
A) LFPO B) 0304041000 C) 0304111200
D) DAILY 1000 TO 1200
E) RWY 25R LLZ UNSERVICEABLE

2) TRANSITION INTO STORAGE (EXAMPLE OF DATABASE TABLE)

<table>
<thead>
<tr>
<th>DATE</th>
<th>NUMBER</th>
<th>TYPE</th>
<th>FIR</th>
<th>AD</th>
<th>NOTAM CODE</th>
<th>TRAFFIC</th>
<th>PURPOSE</th>
<th>SCOPE</th>
<th>LOWER</th>
<th>UPPER</th>
<th>FROM</th>
<th>TO</th>
<th>SCHEDULE</th>
<th>TEXT</th>
<th>COORDINATES</th>
<th>RADIUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>030401</td>
<td>1282/03</td>
<td>N</td>
<td>LFFF</td>
<td>LFPO</td>
<td>QILAS</td>
<td>I</td>
<td>NBO</td>
<td>A</td>
<td>000</td>
<td>050</td>
<td>0304041000</td>
<td>0304111200</td>
<td>DAILY 1000</td>
<td>TO 1200</td>
<td>RWY 25R LLZ</td>
<td>UNSERVICEABLE</td>
</tr>
</tbody>
</table>

3) EXTRACT FOR PRE-FLIGHT BULLETIN ENTRY
LFPO
DAILY 1000 TO 1200 A1282/03 RWY 25R LLZ UNSERVICEABLE
**NOTAM as received from AFS**

```
(A1282/03 NOTAMN
Q) LFFF/QILAS/I/NBO/A/000/050/4840N00220E010
A) LFPO
B) 04041000
C) 04111200
D) DAILY 1000 TO 1200
E) RWY 25R LLZ UNSERVICEABLE)
```

**Input operator terminal**

<table>
<thead>
<tr>
<th>Qualifiers</th>
<th>NOTAM INPUT AREA</th>
<th>Date: 01/04/03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series: A</td>
<td>Number: 1282/03</td>
<td>Type: N</td>
</tr>
<tr>
<td>NOTAM Code:</td>
<td>QILAS</td>
<td>Traffic: I</td>
</tr>
<tr>
<td>Coordinates:</td>
<td>4840N 00220E</td>
<td>Purpose: NBO</td>
</tr>
<tr>
<td>State:</td>
<td>LF</td>
<td>Lower: 000</td>
</tr>
<tr>
<td>FIR:</td>
<td>LFFF</td>
<td>Upper: 050</td>
</tr>
<tr>
<td>Aerodrome:</td>
<td>LFPO</td>
<td>Radius (NM):</td>
</tr>
<tr>
<td>From:</td>
<td>03/04/04/1000</td>
<td></td>
</tr>
<tr>
<td>Schedule:</td>
<td>Daily 1000 to 1200</td>
<td></td>
</tr>
<tr>
<td>To:</td>
<td>03/04/11/1200</td>
<td></td>
</tr>
<tr>
<td>Text</td>
<td>RWY 25R LLZ UNSERVICEABLE</td>
<td></td>
</tr>
</tbody>
</table>

* Names may be automatically derived from static database, if available.

**Figure 9-A-2. Example of NOTAM reception —
Transition from AFS format into input operator’s display**
Figure 9-A-3. Example of NOTAM production — Transition from AFS format input operator’s display into database
### Database table

<table>
<thead>
<tr>
<th>Date</th>
<th>Series</th>
<th>Number</th>
<th>Type</th>
<th>NOTAM Code</th>
<th>Traffic</th>
<th>Purpose</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>030401</td>
<td>A</td>
<td>1282/03</td>
<td>N</td>
<td>QILAS</td>
<td>I</td>
<td>NBO</td>
<td>A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lower</th>
<th>Upper</th>
<th>Coordinates</th>
<th>Radius</th>
<th>State</th>
<th>FIR</th>
<th>AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>050</td>
<td>4840N 00220E</td>
<td>010</td>
<td>LF</td>
<td>LFFF</td>
<td>LFPO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Valfrom</th>
<th>Valto</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>0304041000</td>
<td>0304111200</td>
<td>DAILY 1000 TO 1200</td>
</tr>
</tbody>
</table>

**Text (decode)**

RWY 25R LLZ UNSERVICEABLE

**Reconstructed NOTAM**

```plaintext
(A1282/03 NOTAMN
Q) LFFF/QILAS/I/NBO/A/000/050/4840N00220E010
A) LFPO  B) 0304041000  C) 0304111200
D) DAILY 1000 TO 1200
E) RWY 25R LLZ UNSERVICEABLE)
```

---

**Figure 9-A-4. Example of AFS NOTAM Format reconstruction from database contents**
### Database Table

<table>
<thead>
<tr>
<th>Date</th>
<th>Series</th>
<th>Number</th>
<th>Type</th>
<th>NOTAM Code</th>
<th>Traffic</th>
<th>Purpose</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>030401</td>
<td>A</td>
<td>1282/03</td>
<td>N</td>
<td>QILAS</td>
<td>I</td>
<td>NBO</td>
<td>A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lower</th>
<th>Upper</th>
<th>Coordinates</th>
<th>Radius</th>
<th>State</th>
<th>FIR</th>
<th>AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>050</td>
<td>4840N 00220E</td>
<td>010</td>
<td>LF</td>
<td>LFFF</td>
<td>LFPO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Valfrom</th>
<th>Valto</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>0304041000</td>
<td>0304111200</td>
<td>DAILY 1000 TO 1200</td>
</tr>
</tbody>
</table>

---

**Text (decode)**

**Bulletin output** *(Example: FIR bulletin)*

- **FIR PARIS (LFFF)**
  - EN-ROUTE
    - NOTAM information
  - AERODROMES
  - ORLY (LFPO)
    - RWY 25R LLZ UNSERVICEABLE
      - FROM: 03/04/04/1000 TO: 03/04/11/1200
      - DAILY 1000 TO 1200
    - SURFACE MOVEMENT RADAR COMPLETELY WITHDRAWN
      - FROM: 03/03/04/0000 TO: 03/05/10/1200
      - A1280/03
  - CHARLES DE GAULLE (LFPG)
    - NOTAM information
  - NAV WARNINGS
    - NOTAM information
    - A0003/03

*Note.*—Titles are generated by the edit programme.

---

**Figure 9-A-5. Example of bulletin production from database**
Appendix B to Chapter 9

COMMON AIS QUERY PROCEDURES
FOR SELF-BRIEFING BY END-USERS FLIGHT CREW MEMBERS

1. The examples that follow contain suggested common AIS query procedures for use in a self-briefing environment. Implementation of these procedures workflows would enable end-users (pilots and flight operations personnel) flight crew members to directly obtain required information from any aerodrome/ or heliport AIS unit participating in an integrated regional automated AIS system.

2. Because of local hardware/ or software requirements, the commonality is limited to the sequence and the contents of the frames presented. The keying graphical user interface used for interacting with the system may change depending on the hardware or software configuration. It is important, however, that all inputs be kept as simple as possible, preferably single key inputs, while ensuring that appropriate help menus are always available.

3. The way in which the selection may be performed is shown in Figure 1 and Figure 2, referring to two main scenarios:

   - Preflight Information Bulletin generation workflow (whether only AIS Information is selected)
   - Preflight Information Package generation workflow (whether the integration between AIS, MET, flight plans and flight related flow messages is ensured)

Each step in the selection process is described in the diagrams. The decision boxes are considered to be self-explanatory.
3.1. Select the PIB type option 2 (Figure 9-B-1, Figure 9-B-2)

The flight crew members are able to select one or more of the following options:

- Aerodrome PIB
- FIR (Area) PIB
- Area Type Route PIB
- Narrow Path Route PIB

For each type, the flight crew members are able to request a PIB or an update PIB.

When a PIB is generated all messages which respond to the filtering criteria are taken into account. If instead an update PIB is generated, the flight crew member needs to specify the PIB reference for which the update shall be generated. In this situation all messages related to the indicated PIB is provided, considered as a change to it.

The update will be possible only if:

- The same briefing system has been used for production of the original PIB
- The PIB has not been retrieved earlier than a certain number of hours (e.g. 12 hours)
- If the basic filter setting is unchanged (e.g. change of traffic will not be permitted for un update PIB)

3.2. Select information types option 7 (Figure 9-B-2)

The flight crew members are able to select one or more of the following types of information to be included in the report:

- AIS Information (Figure 9-B-2)
- MET Information (Figure 9-B-2)
- Flow Management Information (Figure 9-B-2)

3.3. Select AIS information option 9 (Figure 9-B-2)

To include the AIS Information into the PIB, the flight crew members are able to select one or more of the following message types (Figure 9-B-1):

- NOTAM
- SNOWTAM
- ASHTAM

3.5. Select MET information option 11 (Figure 9-B-2)
To include the MET information into the PIB, the flight crew members are able to select one or more of the following message types (Figure 9-B-2):

- METAR
- SPECI
- TAF FC
- TAF FT
- SIGMET
- AIRMET
- GAMET
- High-level wind and temperature tables

a) Charts
   i. High-level wind and temperature charts
   ii. SIGWX charts
   iii. Low level forecast charts

- Satellite or radar images

If any of the above messages is not available from the information source being used, the option will be disabled. If any additional messages type is available, they will be appended to the list of options.

3.6. Select flow management information option 13 (Figure 9-B-2)

The flight crew members are able to select Flow Management Information to be included in the PIB (Figure 9-B-2).

3.7. Select specific filters options 7 (Figure 9-B-1) and options 14 (Figure 9-B-2)

The flight crew members are able to specify, e.g.:

- flight rules, IFR, VFR or both IFR and VFR;
- validity period;
- Scope (NOTAM only);
- Purpose (NOTAM only);
- NOTAM Code for inclusion or exclusion, e.g. navigation warnings, obstacles;
- en-route information only;
- inclusion of miscellaneous information.

Definition of validity period of the PIB is very important for a tailored briefing output. By specifying flying times,
together with the lead and lag times (the required time window for the PIB), a concise and focused output can be provided by the system.

If a flight plan is used for generating pre-flight information, default calculations will be performed by a system, e.g. 90 minutes before estimated off-block time until 60 minutes after estimated time of arrival. These default values may be modified by the flight crew member, as required.

3.8. Select output device options 8 (Figure 9-B-1) and options 15 (Figure 9-B-2)

The flight crew members are able to select one of the following options:

- Graphical User interface
- Printer (including remote printer)
- Fax
- E-mail
- Other (e.g. file transfer)
AIS SELF BRIEFING

"LOCAL" AIS SYSTEM OF STATE "XYZ"

LANGUAGE CHOSEN — ENGLISH (E)
— "LOCAL" (L)

Type the indicated letter and Press "Enter"
To quit Press "F12"

Sample choice: E (English) → Panel 2

Sample choice on Panel 1: — E

SELF-BRIEFING MENU (IN ENGLISH)

THE "LOCAL" SYSTEM PROVIDES THE FOLLOWING CHOICES:

1. FLIGHT PLAN INPUT (F)
2. MET INFORMATION (M)
3. PRE-FLIGHT INFORMATION — VFR (V)
4. PRE-FLIGHT INFORMATION — IFR (I)
5. PRE-FLIGHT INFORMATION — IFR/VFR (B)
6. AIP CONSULTATION (A)

Type the indicated letter and Press "Enter"
To return to previous page Press "F3"
To quit Press "F12"

Sample choice: Pre-flight information — IFR (I) → Panel 3
Sample choice on Panel 2:

**BULLETIN-TYPE IFR**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3</strong></td>
<td><strong>PRE-FLIGHT INFORMATION—IFR</strong></td>
</tr>
</tbody>
</table>

THE FOLLOWING BULLETINS ARE AVAILABLE:

*COMMON OUTPUT FOR THE ENTIRE REGIONAL SYSTEM*

1. AERODROME BULLETIN (A)
2. AREA BULLETIN (F)
3. ROUTE BULLETIN (R)

*SPECIAL OUTPUT FROM “LOCAL” SYSTEM*

4. NARROW ROUTE BULLETIN (N)
5. SPECIAL AREA BULLETIN (S)

Type the indicated letter and Press “Enter”
To return to previous page Press “F3”
To quit Press “F12”

---

*This is the suggested common user output for an integrated regional AIS system*

Sample choice: Aerodrome bulletin (A) — Panel 4
Sample choice: Area bulletin (F) — Panel 5
Sample choice: Route bulletin (R) — Panel 7
### AERODROME BULLETIN — IFR

**BULLETIN VALIDITY:**
- ONE DAY (SPECIFY DATE (YYMMDD)):
- PERIOD
  - FROM (YYMMDDHH):          TO (YYMMDDHH):

**YOU MAY SPECIFY UP TO 12 AERODROMES (FOUR-LETTER CODE)**

<table>
<thead>
<tr>
<th>AD</th>
<th>AD</th>
<th>AD</th>
<th>AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
</tr>
</tbody>
</table>

If you do not know the ICAO four-letter code, function key “F2” will provide the list of aerodromes with plain language names.

Fill fields in sequence:
- To print bulletin: Press “Enter”
- For “Help” (list of aerodromes): Press “F2”
- To return to previous page: Press “F3”
- To quit: Press “F12”
| F | F | F | F | F | F |

**AREA BULLETIN—IFR**

**PRE-FLIGHT INFORMATION—IFR**

(StANDARD VERSION CONTAINS EN-ROUTE AND AD INFORMATION)

**BULLETIN VALIDITY:**
- ONE DAY (SPECIFY DATE (YYMMDD)):
- PERIOD
  - FROM (YYMMDDHH): _______ TO (YYMMDDHH):

**BULLETIN FOR STATE (ICAO TWO-LETTER CODE):**
OR **BULLETIN FOR FIR(S) (ICAO FOUR-LETTER CODE):**

| FIR1 | FIR2 | FIR3 | FIR4 | FIR5 | FIR6 |

**DESIRED FLIGHT LEVEL LIMITS (FOR NOTAM RETRIEVAL)**

| LOWER FL: _______ UPPER FL (OPTIONAL): _______ |

Fill desired fields (FIR) in sequence:
- To print standard bulletin Press “Enter”
- To obtain non-standard bulletin contents Press “F4”
- To return to previous page Press “F3”
- To quit Press “F12”

Sample choice: Non-standard bulletin contents (“F4”) → Panel 6
### Sample choice on Panel 5: "F4"

#### NON-STANDARD-BULLETIN-CONTENTS (AREA)

<table>
<thead>
<tr>
<th>ALL BULLETINS INCLUDE ITEMS OF IMMEDIATE NOTIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) ITEMS OF OPERATIONAL SIGNIFICANCE ONLY</td>
</tr>
<tr>
<td>— ALL INFORMATION: (O)</td>
</tr>
<tr>
<td>— ONLY EN-ROUTE: (OE)</td>
</tr>
<tr>
<td>— ONLY AERODROME: (OA)</td>
</tr>
<tr>
<td>B) GENERAL PURPOSE BULLETIN</td>
</tr>
<tr>
<td>— ONLY EN-ROUTE: (BE)</td>
</tr>
<tr>
<td>— ONLY AERODROME: (BA)</td>
</tr>
</tbody>
</table>

#### OPTION FOR GENERAL PURPOSE BULLETIN INCLUSION OF

- ALL MISCELLANEOUS INFORMATION: (M)
- SPECIFIC NOTAM, SUBJECT DEFINED
- BY 2/3 NOTAM CODE LETTER:
- AIRSPACE RESERV.: (RA)
- FIRING: (WM)
- AIR DISPLAY: (WA)
- FORMATION FLT.: (WV)
- PARACHUTE JUMPING: (WP)
- OTHERS:

Type indicated letter(s) for option, fill
desired 2/3 NOTAM code letters:

To print bulletin Press "Enter"
For "Help" (other NOTAM codes) Press "F2"
To return to previous page Press "F3"
To quit Press "F12"
Sample choice on Panel 3: R

**ROUTE BULLETIN—IFR**

The route bulletin obtained in this brief mode corresponds to the bulletin type defined as common for the regional system, i.e., by description of:
- Aerodromes of departure and arrival, alternates
- Sequence of FIRs to be overflown

You can obtain route bulletins in four different ways:
1. Manual route description (M)
2. Route proposal by city pair (C)
3. Route proposal according to destination (D)
4. Route proposal by flight number (F)

Type the indicated letter and Press "Enter"
To return to previous page Press "F3"
To quit Press "F12"

Sample choice: M (Manual route description) Panel 8
Sample choice: C (Route proposal by city pair) Panel 10
Sample choice: D (Route proposal according to destination) Panel 11
Sample choice: F (Route proposal by flight number) Panel 12
Sample choice on Panel 7: M

ROUTE-BULLETIN (MANUAL ROUTE DESCRIPTION)

BULLETIN VALIDITY:
- ONE DAY (SPECIFY DATE (YYMMDD));
- PERIOD
  FROM (YYMMDDHH) TO (YYMMDDHH);

AERODROMES (ICAO FOUR-LETTER CODE)
- DEPARTURE: ARRIVAL:
- ALTERNATE(S): ; ;
- SEQUENCE OF FIR (ICAO): ; ; ;

DESIRED FLIGHT LEVEL LIMITS FOR NOTAM RETRIEVAL (OPTION)
- ALL FIR FIRST OTHER LAST
  UPPER LEVEL (FL) OR :
  LOWER LEVEL (EX. 090) OR :

Fill desired fields (FIR) in sequence:
To print standard bulletin Press "Enter"
To obtain non-standard bulletin contents Press "F4"
For "Help" (FIRS, aerodromes) Press "F2"
To return to previous page Press "F3"
To quit Press "F12"

Sample choice: Non-standard bulletin contents ("F4") ➤ Panel 9
NON-STANDARD BULLETIN CONTENTS (ROUTE)

ALL BULLETINS INCLUDE ITEMS OF IMMEDIATE NOTIFICATION

A) ITEMS OF OPERATIONAL SIGNIFICANCE ONLY
   — ALL INFORMATION: ____________________________ (O)
   — ONLY EN-ROUTE: ____________________________ (OE)

B) GENERAL PURPOSE BULLETIN
   — ALL INFORMATION (EN ROUTE AND AD) (B)

OPTION FOR GENERAL PURPOSE BULLETIN — INCLUSION OF
   — ALL MISCELLANEOUS INFORMATION: ____________________________ (M)
   — SPECIFIC NOTAM, SUBJECT DEFINED
     BY 2/3 NOTAM CODE LETTER:
       — AIRSPACE RESERV.: (RA)
       — FIRING: (WM)
       — AIR DISPLAY: (WA)
       — FORMATION FLT: (WV)
       — PARACHUTE JUMPING: (WP)
       — OTHERS: ____________________________

Type indicated letter(s) for option, fill
desired 2/3 NOTAM code letters:
To print bulletin Press “Enter”
For “Help” (other NOTAM codes) Press “F2”
To return to previous page Press “F3”
To quit Press “F12”

ROUTE BULLETIN (ROUTE PROPOSAL BY CITY PAIR)

BULLETIN VALIDITY:
   — ONE DAY (SPECIFY DATE [YYMMDD]):
   — PERIOD
     — FROM (YYMMDHH):________________________ TO (YYMMDHH):

DEFINE CITY PAIR (ICAO FOUR-LETTER CODE)
   — AERODROME OF DEPARTURE: ADDEP
     (GENERATED BY SYSTEM, CHANGE IF REQUIRED)
   — DESTINATION:
     (AERODROME OF ARRIVAL)

Fill aerodrome(s), then
— Press “Enter”
— (Predetermined route descriptions will be
   presented for selection (Panel 13). If no route is
   known to the system, “Manual Route
   Description” (Panel 8) is displayed.)

For “Help” (list of aerodromes) Press “F2”
To return to previous page Press “F3”
To quit Press “F12”
### ROUTE BULLETIN (ROUTE PROPOSAL ACCORDING TO DESTINATION)

<table>
<thead>
<tr>
<th>Number</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>BULLETIN VALIDITY:</td>
</tr>
<tr>
<td></td>
<td>ONE DAY (SPECIFY DATE (YYMMDD)):</td>
</tr>
<tr>
<td></td>
<td>PERIOD</td>
</tr>
<tr>
<td></td>
<td>FROM (YYMMDDHH): TO (YYMMDDHH):</td>
</tr>
<tr>
<td></td>
<td>DEFINE DESTINATION (ICAO FOUR-LETTER CODE)</td>
</tr>
<tr>
<td></td>
<td>DESTINATION</td>
</tr>
<tr>
<td></td>
<td>AERODROME OF ARRIVAL</td>
</tr>
<tr>
<td></td>
<td>AERODROME OF DEPARTURE: ADDEP</td>
</tr>
<tr>
<td></td>
<td>(GENERATED BY SYSTEM)</td>
</tr>
<tr>
<td></td>
<td>Fill aerodrome(s), then Press “Enter”</td>
</tr>
<tr>
<td></td>
<td>(Predetermined route descriptions will be presented for selection (Panel 13). If no route is known to the system, “Manual Route Description” (Panel 8) is displayed.)</td>
</tr>
<tr>
<td></td>
<td>For “Help” (list of aerodromes) Press “F2”</td>
</tr>
<tr>
<td></td>
<td>To return to previous page Press “F3”</td>
</tr>
<tr>
<td></td>
<td>To quit Press “F12”</td>
</tr>
</tbody>
</table>

### ROUTE BULLETIN (ROUTE PROPOSAL BY FLIGHT NUMBER)

<table>
<thead>
<tr>
<th>Number</th>
<th>Field Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>BULLETIN VALIDITY:</td>
</tr>
<tr>
<td></td>
<td>ONE DAY (SPECIFY DATE (YYMMDD)):</td>
</tr>
<tr>
<td></td>
<td>PERIOD</td>
</tr>
<tr>
<td></td>
<td>FROM (YYMMDDHH): TO (YYMMDDHH):</td>
</tr>
<tr>
<td></td>
<td>FLIGHT NUMBER:</td>
</tr>
<tr>
<td></td>
<td>Give “Flight Number” and Press “Enter”</td>
</tr>
<tr>
<td></td>
<td>(Predetermined route descriptions will be presented for selection (Panel 14). If no route is known to the system, “Manual Route Description” (Panel 8) is displayed.)</td>
</tr>
<tr>
<td></td>
<td>For “Help” (list of flight numbers) Press “F2”</td>
</tr>
<tr>
<td></td>
<td>To return to previous page Press “F3”</td>
</tr>
<tr>
<td></td>
<td>To quit Press “F12”</td>
</tr>
</tbody>
</table>

Sample choice: Display of predetermined routes (“Enter”) → Panel 14

Sample choice on Panel 10: Display of predetermined routes (“Enter”)
SELECTION OF PREDETERMINED ROUTES (CITY PAIR)

<table>
<thead>
<tr>
<th>13</th>
</tr>
</thead>
</table>

SELECTION OF PREDETERMINED ROUTE (SEQUENCES OF FIRS)

FOR CITY PAIR: ICAO NAME (IF KNOWN TO SYSTEM)

<table>
<thead>
<tr>
<th>*DEPARTURE</th>
<th>LFAD</th>
<th>CHAMPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERT LA JOIE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>*ARRIVAL</th>
<th>EDAD</th>
<th>FLUGPLATZ LANDEFELD</th>
</tr>
</thead>
</table>

*DEPARTURE: LFAD, CHAMPS VERT LA JOIE

*ARRIVAL: EDAD, FLUGPLATZ LANDEFELD

ROUTES PROPOSED:

1) LFXX EDXX EDYY : : :
2) LFXX LFSS EDYY : : :
3) : : : :
4) : : : :

*ALTERNATES PROPOSED: EDAA EDAB EDAC

ALTERNATES ADDED: :

---

FLIGHT LEVEL LIMITS (OPTION) ALL FIR:

<table>
<thead>
<tr>
<th>FIRST</th>
<th>OTHER</th>
<th>LAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPPER LEVEL (FL):</td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>LOWER LEVEL (EX. 090):</td>
<td>OR</td>
<td></td>
</tr>
</tbody>
</table>

---

To print standard bulletin: Press "Enter"
To obtain non-standard bulletin contents: Press "F4"
For "Help" (aerodromes): Press "F2"
To return to previous page: Press "F3"
To quit: Press "F12"

*Fields filled by system.

Sample choice: Non-standard bulletin contents ("F4") ➔ Panel 9
Sample choice on Panel 12: Display of Predetermined Routes (“Enter”)

**SELECTION OF PREDETERMINED ROUTES (FLIGHT NUMBER)**

```
14

**SELECTION OF PREDETERMINED ROUTE (SEQUENCES OF FIRS)**

FOR FLIGHT NUMBER: **AF1234**  ETD: 14H30

*DEPARTURE* 
LEPG PARIS

*ARRIVAL*
CHARLES DE GAULLE

*ICAO* NAME (IF KNOWN TO SYSTEM)

### ROUTES PROPOSED: YOUR SELECTION

1) LEFF EDBB EDDF
2) LEFF EDEF
3) 
4) 

*ALTERNATES PROPOSED:*

EDAA EDAB EDAC

*ALTERNATES ADDED:*

FLIGHT LEVEL LIMITS (OPTION)

- UPPER LEVEL (FL): OR 
- LOWER LEVEL (EX. 090): OR 

To print standard bulletin Press "Enter"
To obtain non-standard bulletin contents Press "F4"
For "Help" (aerodromes) Press "F2"
To return to previous page Press "F3"
To quit Press "F12"

*Fields filled by system.

Sample choice: Non-standard bulletin contents (“F4”) — Panel 9
## STANDARD NOTAM RETRIEVAL FORMAT

### AIS Briefing Service — Intermediate users

#### Example for area or AD information (one or several locations)

<table>
<thead>
<tr>
<th>Output type: Summary (Summary bulletin)</th>
<th>Traffic: I (I, V, IV)</th>
<th>Validity: (YY/MM/DD/HHMM)</th>
<th>Date: 03/05/12/0800</th>
<th>From: / / /</th>
<th>To: / / /</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location (State, FIR, AD)</td>
<td>Selection by:</td>
<td></td>
<td>NOTAM RETRIEVAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NR</td>
<td>Type</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>FIR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>FIR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

#### Example for route bulletin (DEP AD, ARR AD, FIR)

<table>
<thead>
<tr>
<th>Output type: Summary (Summary bulletin)</th>
<th>Traffic: I (I, V, IV)</th>
<th>Validity: (YY/MM/DD/HHMM)</th>
<th>Date: 03/05/12/0800</th>
<th>From: / / /</th>
<th>To: / / /</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location (State, FIR, AD)</td>
<td>Selection by:</td>
<td></td>
<td>NOTAM RETRIEVAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NR</td>
<td>Type</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>AD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>AD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>FIR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>FIR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>
### STANDARD NOTAM RETRIEVAL FORMAT FOR INDIVIDUAL NOTAM

**AIS Briefing Service — Intermediate users**

#### Retrieval of one or several NOTAM

<table>
<thead>
<tr>
<th>INDIVIDUAL NOTAM RETRIEVAL</th>
<th>Date: (YMMDDHHMM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>State (Doc 7910) (HE)</td>
<td></td>
</tr>
<tr>
<td>NOE of origin (HECAYNYX)</td>
<td></td>
</tr>
<tr>
<td>Series (A, B, ...)</td>
<td></td>
</tr>
<tr>
<td>Number/Year(1234/03)</td>
<td></td>
</tr>
</tbody>
</table>

- **Fill, in sequence, desired NOTAM, then press “Execute” key.**
- **To retrieve more than 10 NOTAM, repeat query.**
Appendix C to Chapter 9

COMMON QUERY MESSAGES FOR THE INTERROGATION OF OTHER AIS DATABASES

1. The following query formats should be developed for the interrogation of database systems participating in an integrated regional automated AIS system. They are intended to complement the procedures described in Chapter 9 and could be used where self-briefing facilities are not directly available.

2. The command structure is simplified to allow a single-line inquiry format to be used which is not dependent upon the access terminal characteristics or the communication access method (AFS, public service telecommunication networks, public data transmission networks, etc.).

Inquiry format

3. An inquiry should comprise three sections separated by a stroke (/). The format should be:

<INQUIRY TYPE> / <FILTER> / <ARGUMENTS>

4. Different filters may be applied to different inquiry types. In some cases filters may be invalid for a particular inquiry type or, where no filter values are included in the inquiry, default values will be assumed. Table 9-C-1 depicts the range of inquiry types and the default/invalid filter values. In all cases the inquiry format delimiters (/) must be included whether or not filter values are provided in the inquiry. (See examples of inquiry formats.)

Common set of inquiries

5. The common set of inquiries is for interrogation of AIS databases using different access methods.

Inquiry type

6. A three-alpha-character sequence is to be used to identify the type of inquiry being made:

<table>
<thead>
<tr>
<th>Route</th>
<th>Briefing</th>
<th>FIR area</th>
<th>Briefing</th>
<th>Aerodrome/Heliport</th>
<th>Briefing</th>
<th>Original NOTAM</th>
<th>Briefing</th>
<th>NOTAM checklist</th>
<th>Briefing</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPR</td>
<td></td>
<td>FAB</td>
<td></td>
<td>AER</td>
<td></td>
<td>ONB</td>
<td></td>
<td>NCB</td>
<td></td>
</tr>
</tbody>
</table>

Filters

9-C-1
7. The following serve as filter switches:

<table>
<thead>
<tr>
<th>Traffic</th>
<th>IFR (I), VFR (V), BOTH (G)*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>Immediate notification (N)</td>
</tr>
<tr>
<td></td>
<td>Operationally significant (O)</td>
</tr>
<tr>
<td></td>
<td>Bulletin item (B)</td>
</tr>
<tr>
<td></td>
<td>Miscellaneous (M)</td>
</tr>
<tr>
<td><strong>Scope</strong></td>
<td>En-route information (E)</td>
</tr>
<tr>
<td></td>
<td>NAV warning information (W)</td>
</tr>
<tr>
<td></td>
<td>Aerodrome information (A)</td>
</tr>
<tr>
<td></td>
<td>Combined information (C)*</td>
</tr>
</tbody>
</table>

*These filter switches do not exist in the NOTAM qualifier definition but are valid in this inquiry format.

**Arguments**

8. Each argument must be separated by a comma.

**FIR**

  AAAA = four-letter location indicator

**Aerodrome**

  BBBB = four-letter location indicator

**NOTAM identifier**

  LLLL, AnnnnYY = four-letter location indicator followed by a series letter, the number and the year.
### Table 9-C-1. Inquiry types and default filters

<table>
<thead>
<tr>
<th>Inquiry type</th>
<th>Traffic</th>
<th>Purpose</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route bulletin</td>
<td>SPR</td>
<td>G</td>
<td>O #</td>
</tr>
<tr>
<td>Area bulletin</td>
<td>FAB</td>
<td>G</td>
<td>O C</td>
</tr>
<tr>
<td>Aerodrome bulletin</td>
<td>AER</td>
<td>G</td>
<td>O #</td>
</tr>
<tr>
<td>Original NOTAM</td>
<td>ONB</td>
<td>#</td>
<td># #</td>
</tr>
<tr>
<td>NOTAM checklist</td>
<td>NCB</td>
<td>#</td>
<td># #</td>
</tr>
</tbody>
</table>

*Note:* # indicates no filter required for this entry.

#### Examples of inquiry formats

- **Area type briefing**: `FAB/VNW/AAAA1,...,AAAAAn`
- **Route type briefing**: `SPR/ /ADEP,DEST,FIR1,...,FIRn`
- **Aerodrome type briefing**: `AER/VB/BBBB1,...,BBBBn`
- **NOTAM request**: `ONB/ /LLLL,AnnnnYY`

*Note:* n is always less than 10 (0 to 9 inclusive).