NORTH ATLANTIC (NAT) AIR NAVIGATION PLAN

VOLUME II

RECORD OF AMENDMENTS

The North Atlantic (NAT) Air Navigation Plan Volume II (Doc 9634), based on the 2014 Council-approved eANP templates, was approved in 2016. It has since been updated with the following approved Proposals for Amendments (PfA):

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II 17/10-ATM	Portugal & NAT SPG	Table ATM II-1 (L576, T13, rev T16, T25)	07 Nov 2017	07 Nov 2017
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TABLE OF CONTENTS

PART 0 — Introduction ..... …0-1

PART I — General Planning Aspects (GEN) ..... …I-1

General Regional Requirements

Table GEN II-1 — Homogeneous areas and major traffic flows identified in the NAT Region

Specific Regional Requirements

PART II — Aerodromes / Aerodrome Operations (AOP) ..... …II-1

General Regional Requirements

Table AOP II-1 — Requirements and capacity assessment in international aerodromes in the NAT Region

Specific Regional Requirements

PART III — Communications, Navigation and Surveillance (CNS) ..... …III-1

General Regional Requirements

Table CNS II-1 — AFTN Plan

Table CNS II-2 — Required ATN Infrastructure Routing Plan

Table CNS II-3 — ATS Direct Speech Circuits Plan

Table CNS II-4 — HF Network designators applicable for the Region (not applicable)

Specific Regional Requirements

Table CNS II-5 —Aeronautical Mobile Service and AMSS

Table CNS II-6 —ATS Data Circuits Plan

Table CNS II-7 —Radio Navigation Aids

Table CNS II-8 —Surveillance Systems

PART IV — Air Traffic Management (ATM) ..... …IV-1

General Regional Requirements

Specific Regional Requirements

Table ATM II-1 — NAT Region ATS Routes

PART V — Meteorology (MET) ..... …V-1

General Regional Requirements

Table MET II-1 — Meteorological watch offices

Table MET II-2 — Aerodrome meteorological offices

Table MET II-3 — HF VOLMET broadcast

Specific Regional Requirements

Table MET II-4-Surface and Upper Air Synoptic Networks and Observations

PART VI — Search and Rescue Services (SAR) ..... …VI-1

General Regional Requirements

Table SAR II-1 — Rescue Coordination Centres (RCCs) and Rescue Sub-centres (RSCs) in the NAT Region

Chart SAR II-1 — Rescue Coordination Centres (RCCs) and Rescue Sub-Centres (RSCs) in the NAT Region

Specific Regional Requirements

PART VII — Aeronautical Information Management (AIM) .....…VII-1

General Regional Requirements

Table AIM II-1 - Responsibility for the provision of AIS/AIM Facilities and Services in the NAT Region

Table AIM II-2 - Production responsibility for sheets of the World Aeronautical Chart — ICAO 1: 1 000 000 or Aeronautical Chart — ICAO 1: 500 000

Specific Regional Requirements

NAT ANP, VOLUME II

PART 0 – INTRODUCTION

1. GENERAL

1.1 The background to the publication of ANPs in three volumes is explained in the Introduction in Volume I. The procedure for amendment of Volume II is also described in Volume I.

1.2 Volume II contains dynamic plan elements related to:

a) the assignment of responsibilities to States for the provision of aerodrome and air navigation facilities and services; and

b) the mandatory requirements related to aerodrome and air navigation facilities and services to be implemented by States in accordance with regional air navigation agreements.

1.3 Volume II does not list all facilities in the region but only those required for international civil aviation operations in accordance with regional air navigation agreements. A regional air navigation agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified. Documents from the Integrated Aeronautical Information Package and other publications should be consulted for information on additional facilities and for operational information in general. Detailed guidance material or concepts, complementary to the material in Volumes I, II and III are contained in documents that are referenced as NAT Documents.

2. MANAGEMENT OF REGIONAL AIR NAVIGATION PLANS

2.1 The elements in Volume II are reviewed by the North Atlantic Systems Planning Group (NAT SPG) in accordance with its schedule of meetings, in consultation with provider and user States and with the assistance of the ICAO European and North Atlantic (EUR/NAT) Regional Office.

2.2 The information on States' facilities and services included in Volume II, should be updated following the process of regional air navigation agreements.

2.3 The development and maintenance of region-specific documents that provide detailed guidance material or concepts that are complementary to the material in Volumes I, II and III is the responsibility of the NAT SPG.

NAT ANP, VOLUME II

PART I – GENERAL PLANNING ASPECTS (GEN)

1. INTRODUCTION

1.1. The material in this part of Volume II of ANP is applicable to one or more parts of the ANP. It should be taken into consideration in the overall planning process for the NAT Region.

2. GENERAL REGIONAL REQUIREMENTS

2.1. To facilitate air navigation systems planning and implementation, homogenous ATM areas and/or major traffic flows/routing areas have been defined for the Region. While these areas of routing do not encompass all movements in the Region, they include the major routes. This includes the domestic flights in that particular area of routing.

Homogeneous ATM area

2.2. A homogeneous ATM area is an airspace with a common ATM interest, based on similar characteristics of traffic density, complexity, air navigation system infrastructure requirements or other specified considerations. In such an ATM area a common detailed plan will foster the implementation of interoperable ATM systems. Homogeneous ATM areas may extend over States, specific portions of States, or groupings of States. They may also extend over large oceanic and continental areas. They are considered areas of shared interest and requirements.

2.3. The method of identifying homogeneous ATM areas involves consideration of the varying degrees of complexity and diversity of the worldwide air navigation infrastructure. Based on these considerations, planning could best be achieved at the global level if it was organized based on ATM areas of common requirements and interest, taking into account traffic density and the level of sophistication required.

Major traffic flows/routing areas

2.4. A major traffic flow refers to a concentration of significant volumes of air traffic on the same or proximate flight trajectories. Major traffic flows may cross several homogeneous ATM areas with different characteristics.

2.5. A routing area encompasses one or more major traffic flows, defined for the purpose of developing a detailed plan for the implementation of ATM systems and procedures. A routing area may cross several homogeneous ATM areas with different characteristics. A routing area specifies common interests and requirements of underlying homogeneous areas, for which a detailed plan for the implementation of ATM systems and procedures either for airspace or aircraft will be specified.

2.6. The homogeneous ATM areas and major traffic flows/routing areas identified are given in **Table GEN II-1**.

3. SPECIFIC REGIONAL REQUIREMENTS

Specific Regional Arrangements

3.1 Under the Agreement on the Joint Financing of Certain Air Navigation Services in Greenland (1956) and the Agreement on the Joint Financing of Certain Air Navigation Services in Iceland (1956) (referred to as the DEN/ICE Agreements), Iceland and Denmark agreed to provide air traffic control, communications and meteorology services for civil aircraft flying through the Reykjavik and Nuuk FIRs. However, the dynamic nature of the volume of the daily flows of traffic through these FIRs require the provision of permanent design capacities to cover the maximum potential traffic flows. Such services must be maintained and staffed even through the majority of days when meteorological conditions resulted in the major NAM/EUR traffic flows being further south, primarily through Shanwick and Gander Oceanic airspaces. Therefore, to support the financing of this level of services and facilities, it was agreed that cost recovery should be spread over the total traffic volume transiting the NAT Region north of 45th parallel North (i.e including additionally all traffic through Shanwick and Gander Oceanic FIRs). A portion of the costs are shared amongst the contracting States, in proportion to the benefits derived from the services. Currently, 24 States with civil aircraft flying across the North Atlantic are parties to these Agreements, including the two provider States, Denmark and Iceland. All States whose aircraft make a significant number of North Atlantic crossings are invited to adhere to these Agreements.

3.2 In the NAT Region, there are a number of operationally driven agreements to delegate ATC and CNS provision:

3.2.1 In portions of the Shanwick OCA, ATS provisions is delegated to Shannon ACC (NOTA & SOTA) and to Brest ACC (BOTA). In these areas the availability of continental CNS facilities (including radar surveillance and VHF DCPC) enables enhanced capacities for the efficient handling of Oceanic-Continental transitioning traffic.

3.2.2 With the same rationale, a similar arrangement exists in the Gander OCA where ATS provision (FL290 – 600) is delegated to Gander Domestic ACC (GOTA).

3.2.3 In the southern portion of the Nuuk FIR (above FL195) ATS provision is delegated to Gander OCA, thereby avoiding multiple transfers of control of the predominant East/West flow of flights through that airspace.

3.2.4 In the remaining northern portion of the Nuuk FIR (above FL195) ATS provision is delegated to Reykjavik OAC. This arrangement reduces centre-to-centre co-ordination requirements and allows for the a more cost-effective provision of services.

3.2.5 The control of traffic routing via 600000.0N 0100000.0W and 610000.0N 0100000.0W between the Scottish and Reykjavik FIRs is delegated by Shanwick OAC to Reykjavik OAC, thereby reducing the requirement for additional centre-to-centre co-ordination.

3.3 The NAT Central Monitoring Agency (CMA) is responsible for the monitoring and reporting of certain aspects of operations in the NAT Region. The NAT CMA was initially established in 1985 by the ICAO North Atlantic System Planning Group (NATSPG) to support the preparation and introduction of RVSM in the North Atlantic (NAT) Region, and thereafter to perform a database assessment and provide assurance of continuing system safety and integrity. The operating costs of the CMA and the maintenance of the Height Monitoring Unit are recovered from ICAO under a Joint Financing Arrangement signed in 1995 by the governments of several NATSPG Member States: Canada, Iceland, Ireland, Portugal, the United Kingdom, United States and ICAO. The CMA is located adjacent to the Shanwick Oceanic Area Control Centre, in Prestwick, Scotland in accommodation provided by NATS on behalf of the United Kingdom. While functionally autonomous from its host State the CMA can access specialist support and ATC expertise.

TABLE GEN II-1 - HOMOGENEOUS AREAS AND MAJOR TRAFFIC FLOWS IDENTIFIED IN THE NAT REGION

EXPLANATION OF TABLE

Column

1	Area of routing (AR)	Sequential number of area of routing
2	Homogeneous Areas and/or Traffic flows	Brief description and/or name
3	FIRs involved	List of FIRs concerned
4	Type of area covered	Brief description of type of area, examples: Oceanic or Continental High or low density Oceanic en-route or Continental en-route
5	Remarks	Homogeneous Area and Major Traffic Flow and Region(s) concerned

Area of routing (AR)	Homogeneous Areas and/or Traffic flows	FIRs involved	Type of area covered	Remarks
1	2	3	4	5
AR-1	NAT High level airspace (NAT MNPSA/HLA)	Bodo Oceanic, Gander Oceanic, New York Oceanic East, Reykjavik, Santa Maria Oceanic , Shanwick Oceanic	High density Oceanic en-route	Above FL285. Flights between EUR and NAM/CAR. ATM efficiency is enhanced by some delegations of airspace & ATS provision.
AR-2	Low Level Airspace	Bodo Oceanic, Gander Oceanic, New York Oceanic East, Reykjavik, Santa Maria Oceanic , Shanwick Oceanic	Low density Oceanic en-route	Below FL285 Transatlantic and Regional Flights. Mostly General Aviation.
AR-3	Northern Oceanic Transition Area (NOTA)	Shanwick Oceanic	High density Oceanic en-route & Oceanic/Continental transitions	Flights transitioning between Shanwick Oceanic and Scottish & Shannon FIRs. ATC & CNS services delegated to Shannon ACC.
AR-4	Shannon Oceanic Transition Area (SOTA)	Shanwick Oceanic	High density Oceanic en-route & Oceanic/Continental transitions	Flights transitioning between Shanwick Oceanic and London & Brest FIRs and Flights transitioning to Tango Routes. ATC & CNS services delegated to Shannon ACC.
AR-5	Brest Oceanic Transition Area (BOTA)	Shanwick Oceanic	Medium density Oceanic en-route & Oceanic/Continental transitions	Flights transitioning between Shanwick Oceanic and Brest FIR. ATC & CNS services delegated to Brest ACC.
AR-6	Gander Oceanic Transition Area (GOTA)	Gander Oceanic	High density Oceanic en-route & Oceanic/Continental transitions	Flights transitioning between Gander Oceanic and Montreal and Gander Domestic FIRs. FL290-FL600. ATC & CNS services delegated to Gander Domestic ACC.

NAT ANP, VOLUME II

PART II – AERODROMES / AERODROME OPERATIONS (AOP)

1. INTRODUCTION

1.1 This part of the NAT ANP, Volume II, complements the provisions in ICAO SARPs and PANS related to aerodrome design and operations (AOP). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of AOP facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to AOP facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

2. GENERAL REGIONAL REQUIREMENTS

2.1 **Table AOP II-1** contains the list of facilities and services to be provided by the State concerned at each aerodrome that is listed in **Table AOP I-1** in Volume I. Table AOP II-1 shows the operational requirements at each aerodrome to be considered in planning the facilities and services for safe and efficient aircraft operations.

Visual aids for low visibility aerodrome operations

2.2 At aerodromes where there is a requirement to conduct low visibility operations, the appropriate visual and non-visual aids should be provided.

Non-precision approach aids

2.3 Where required by the topographic and/or environmental situation of an aerodrome, improved track guidance during departure and/or approach by specific non-visual and/or visual aids should be provided even if such aids would not normally be required in accordance with the SARPs.

Reduced runway declared distances for take-off

Note. — In the following operational requirements the term "intersection" is used to cover both intersection and junction concepts.

2.4 The reduced runway declared distances for take-off, as for those used for full runway declared distances, should consist of take-off run available (TORA), take-off distance available (TODA) and accelerate-stop distance available (ASDA).

2.5 The datum-line from which the reduced runway declared distances for take-off should be determined is defined by the intersection of the downwind edge of the specific taxiway with the runway edge. The loss, if any, of runway length due to alignment of the aircraft prior to take-off should be taken into account by the operators for the calculation of the aircraft's take-off weight.

2.6 Intersections used as intermediate take-off positions should be identified by the "taxiway designator" to which the datum-line of the associated reduced runway declared distance for take-off refers.

2.7 At each international aerodrome, specific minima visibility for take-off should be established, regulating the use of intersection take-off positions. These minima should permit the appropriate ATC unit to maintain a permanent surveillance of the ground movement operations, and the flight crews to

constantly secure their position on the manoeuvring area, so as to exclude any potential risk of confusion as to the identification of the aircraft and intersections used for take-off. The minima should be consistent with the surface movement guidance and control system (SMGCS) provided at the aerodrome concerned.

2.8 The provision of marking and lighting aids together with signs should ensure the safe control and guidance of aircraft towards and at take-off intersections appropriate to the minima visibility criteria retained. At the runway holding position of the associated intersection take-off position, such signs should indicate the runway heading and the remaining TORA in metres.

2.9 At aerodromes regularly used by international commercial air transport, take-offs from runway/taxiway intersections may be justified for the following reasons:

a) runway capacity improvement;
b) taxi routes distances reduction;
c) noise alleviation; and
d) air pollution reduction.

2.10 The appropriate authorities should, upon prior consultation with aircraft operators, agree on the selection of suitable intermediate intersection take-off positions along the runway(s). Accordingly, authorities should determine the reduced runway declared distances for take-off associated with each selected intersection take-off position and establish the specific ATC rules and operational procedures/limitations. Such provisions should be published in the State aeronautical information publications (AIP).

Aerodrome capacity management

2.11 As an integral part of the air navigation system, the aerodrome should provide the needed ground infrastructure including, *inter alia*, lighting; taxiways; runway, including exits; aprons and precise surface guidance to improve safety and to maximize aerodrome capacity in all weather conditions. An efficient aerodrome capacity planning and management should include:

a) reduction of runway occupancy time;
b) the capability to safely manoeuvre in all weather conditions whilst maintaining capacity;
c) precise surface guidance to and from a runway required in all conditions; and
d) availability of information on the position (to an appropriate level of accuracy) and intent of all vehicles and aircraft operating on the movement area for the appropriate ATM community members.

2.12 States should ensure that adequate consultation and, where appropriate, cooperation between airport authorities and users/other involved parties are implemented at all international aerodromes to satisfy the provisions of aerodrome capacity assessment and requirement.

2.13 When international aerodromes are reaching designed operational capacity, a better and more efficient utilization of existing runways, taxiways and aprons is required. Runway selection procedures and standard taxi routes at aerodromes should ensure an optimum flow of air traffic with a minimum of delay and a maximum use of available capacity. They should also, if possible, take account of the need to keep taxiing times for arriving and departing aircraft as well as apron occupancy time to a minimum. The airport collaborative decision making (A-CDM) concept should be implemented to improve airport capacity as early as possible.

Aerodrome capacity assessment and requirement

2.14 The declared capacity/demand condition at aerodromes should be periodically reviewed in terms of a qualitative analysis for each system component and, when applicable, the result of the qualitative assessment upon mutual agreement be used for information.

2.15 The future capacity/demand, based on a forecast for the next five years, should be agreed upon after close cooperation between aerodrome authorities and affected users.

2.16 Operators should consult with aerodrome authorities when future plans indicate a significant increased requirement for capacity resulting in one of the elements reaching a limiting condition.

2.17 Aerodrome capacity should be assessed by aerodrome authorities in consultation with the parties involved for each component (terminal/apron/aircraft operations) using agreed methods and criteria for level of delays.

2.18 Where restrictions in aerodrome capacity are identified, a full range of options for their reduction or removal should be evaluated by the aerodrome authority, in close cooperation with the operators and other involved parties. Such options should include technical/operational/procedural and environmental improvements and facility expansion.

2.19 At many aerodromes, airspace capacity has influence on the aerodrome capacity. If the declared capacity of a specified airspace has influence on aerodrome operations, this should be indicated and action undertaken to reach a capacity in this airspace corresponding to the aerodrome capacity.

2.20 The possibility of overcoming capacity limitations should also take the use of other aerodromes in the vicinity into consideration.

Closure of regular aerodromes

2.21 When a regular aerodrome is to be closed, States should ensure that sufficient alternate aerodromes remain open to provide for the safety and efficiency of aircraft approaching the regular aerodrome that may be required to divert to an alternate.

Scheduling aerodrome maintenance

2.22 States, when planning major aerodrome maintenance work that would affect the regularity of international aircraft operations, should consider the need to notify aircraft operators sufficiently in advance prior to undertaking the scheduled work.

3. SPECIFIC REGIONAL REQUIREMENTS

3.1 None.

Table AOP II-1 – REQUIREMENTS AND CAPACITY ASSESSMENT IN INTERNATIONAL AERODROMES IN THE NAT REGION

EXPLANATION OF THE TABLE

Note: Columns 3 to 5 for physical characteristics relate to runways and taxiways. The physical characteristics of taxiways and aprons should be compatible with the aerodrome reference code (Column 3) and appropriate for the runways with which they are related.

Column

1 Name of the city and aerodrome, preceded by the location indicator.

Note 1— When the aerodrome is located on an island and no particular city or town is served by the aerodrome, the name of the island is included instead of a city.

Designation of the aerodrome as:
RS — international scheduled air transport, regular use;
RNS — international non-scheduled air transport, regular use;
AS — international scheduled air transport, alternate use; and
ANS — international non-scheduled air transport, alternate use;

2 Required rescue and firefighting service (RFF). The required level of protection expressed by means of an aerodrome RFF category number, in accordance with Annex 14, Volume I, 9.2.

3 Aerodrome reference code (RC). The aerodrome reference code for aerodrome characteristics expressed in accordance with Annex 14, Volume I, chapter 1. The code letter or number within an element selected for design purposes is related to the critical aeroplane characteristics for which the facilities are provided.

4 Runway Designation numbers

5 Type of each of the runways to be provided. The types of runways, as defined in Annex 14, Volume I, Chapter 1, are:
NINST — non-instrument runway;
NPA — non-precision approach runway;
PA1 — precision approach runway, Category I;
PA2 — precision approach runway, Category II;
PA3 — precision approach runway, Category III.

6 Remarks. Additional information including critical design aircraft selected for determining RC, critical aircraft selected for determining the RFF category and critical aircraft for pavement strength. Only one critical aircraft type is shown if it is used to determine all the above three elements: otherwise different critical aircraft types need to be shown for different elements.

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Table AOP II-1 - REQUIREMENTS AND CAPACITY ASSESSMENT IN INTERNATIONAL AERODROMES IN THE NAT REGION

City/Aerodrome/ Designation				RFF Category	Physical characteristics			Remarks
					RC	RWY No.	RWY Type	
1				2	3	4	5	6
DENMARK (Faeroes)								
EKVG	VAGAR	Vagar	RS	6	3C	12 30	NPA PA-1	
DENMARK (Greenland)								
BGAA	AASIAAT	Aasiaat	ANS	5	1C	11 29	NPA	
BGBW	NARSARSUAQ	Narsarsuaq	RS	7	4D	07 25	NPA	
BGCO	NERLERIT INAAT	Nerlerit Inaat	RS	5	2C	18 36	NPA	
BGGH	NUUK	Nuuk	RS	5	2C	05 23	NPA	
BGJN	ILULISSAT	Ilulissat	RS	5	2C	07 25	NPA	
BGKK	KULUSUK	Kulusuk	RS	5	2C	11 29	NPA	
BGMQ	MANIITSOQ	Maniitsoq	ANS	5	1C	16 34	NPA	
BGPT	PAAMIUT	Paamiut	ANS	5	1C	17 35	NPA	
BGQQ	QAANAAQ	Qaanaaq	ANS	5	2C	36 18	NPA	
BGSF	KANGERLUSSUAQ	Kangerlussuaq	RS	5	4D	09 27	NPA NINST	
BGSS	SISIMIUT	Sisimiut	ANS	5	1C	14 32	NPA	
BGTL	THULE	Thule	RNS	7	-	08T 26T		Military
BGUK	UPERNAVIK	Upernavik	ANS	5	1C	05 23	NPA	

City/Aerodrome/ Designation				RFF Category	Physical characteristics			Remarks
					RC	RWY No.	RWY Type	
BGUQ	UUMMANNAQ/QAARSUT	Uummannaq/Qaarsut	ANS	5	2C	16 34	NPA	
ICELAND								
BIAR	AKUREYRI	Akureyri	AS	5-7	4D	01 19	PA-1 NPA	
BIEG	EGILSSTADIR	Egilsstadir	AS	5-7	4D	04 22	PA-1 NPA	
BIKF	KEFLAVIK	Keflavik	RS	9	4E	11 29 02 20	PA-2 PA-1 PA-1 PA-2	
BIRK	REYKJAVIK	Reykjavik	RS	7	3D	01 19 13 31 06 24	NPA PA-1 NPA NPA NINST NINST	
NORWAY								
ENSB	SVALBARD	Svalbard-Longyear	RNS	6	4C	10 28	PA-1 NPA	
PORTUGAL (Acores)								
LPPD	PONTA DELGADA	Ponta Delgada	RS	7 (8-9 PA)	4E	12 30	NINST PA-1	
LPAZ	SANTA MARIA	Santa Maria	RS	6 (7-9 PA)	4E	36 18	NPA PA-1	

NAT ANP, VOLUME II

PART III – COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

1. INTRODUCTION

1.1 This part of the NAT ANP, Volume II, complements the provisions in ICAO SARPs and PANS related to communication, navigation and surveillance (CNS). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of CNS facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to CNS facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

2. GENERAL REGIONAL REQUIREMENTS

Communications

Aeronautical Fixed Service (AFS)

2.1 The aeronautical fixed service should comprise the following systems and applications that are used for ground-ground (i.e. point-to-point and/or point-to-multipoint) communications in the international aeronautical telecommunication service:

a) ATS direct speech circuits and networks;
b) meteorological operational circuits, networks and broadcast systems, including World Area Forecast System – Internet File Service (WIFS) and/or Secure Aviation Data Information Service (SADIS);
c) the aeronautical fixed telecommunications network (AFTN);
d) the common ICAO data interchange network (CIDIN);
e) the air traffic services (ATS) message handling services (AMHS); and
f) the inter-centre communications (ICC).

2.2 To meet the data communication requirements, a uniform high-grade aeronautical network should be provided, based on the aeronautical telecommunication network (ATN), taking into account the existence and continuation of current networks.

2.3 Contingency procedures should be in place to ensure that, in case of a communication centre breakdown, all the parties concerned are promptly informed of the prevailing situation. All possible arrangements should be made to ensure that, in case of breakdown of a communications centre or circuit, at least high-priority traffic continues to be handled by appropriate means.

2.4 AFS planning should permit flexibility in detailed development and implementation. The required AFTN Stations and Centres are listed in the AFTN Plan in **Table CNS II-1**.

The Aeronautical Telecommunication Network (ATN)

2.5 The ATN should be able to:

a) support applications carried by the existing networks;
b) support gateways enabling inter-operation with existing networks; and
c) support ground-ground communications traffic associated with air-ground data link applications.

2.6 The ATN should make optimum use of dedicated bilateral/multilateral aeronautical links and other communication means commensurate with the operational Quality of Service (QoS) requirements.

2.7 The implementation of the ATN should take into account the need for cost-effective evolution in terms of network capacity, requirements and time-frame and allow for a progressive transition from existing communication networks and services to a uniform, harmonised and integrated communications infrastructure, capable of supporting the implementation of future aeronautical services such as Flight and Flow Information in a Collaborative Environment (F-FICE), System-Wide Information Management (SWIM) applications, etc.

2.8 In case means other than dedicated bilateral links are used by the ATN, States should ensure that service level agreements (SLA) are met in terms of implementation priority, high availability, priority in restoration of service and appropriate levels of security.

2.9 The ATN should provide for interregional connections to support data exchange and mobile routing within the global ATN.

2.10 In planning the ATN, provisions should be made, where required, for interfacing with other international networks. The Required ATN Infrastructure Routing Plan is described under **Table CNS II-2**.

Network services

2.11 The Internet Society (ISOC) communications standards for the Internet Protocol Suite (IPS) should be used for the implementation of AMHS.

2.12 The migration from legacy bit-oriented protocols such as X.25 Protocol suite to IPS should be planned.

2.13 The migration of international or sub-regional ground networks to the ATN based on Internet Protocol (IP) to support AFS communication requirements, while reducing costs, should be planned.

2.14 States should ensure that the solutions provided for the implementation of the ATN meet the air traffic management and aeronautical fixed service requirements. Such requirements should consist of:

a) Performance requirements: availability, continuity, integrity, monitoring and alerting criteria per data flow. In the case where a required communication performance (RCP) is globally prescribed, requirements derived from RCP should be stated;
b) Interoperability requirements;
c) Safety and security requirements, duly derived after the identification of operational hazards and threats, and allocation of objectives; and
d) Implementation process requirements (creation, test, migration, upgrades, priority in restoration of service, termination).

Network management

2.15 An ICAO centralised off-line network management service is provided to participating AFTN/AMHS centres in the NAT Region under the ATS Messaging Centre (AMC).

2.16 In the case of integrated communications services procured and shared by several States, organizational provisions should allow for the planning and performing of the management of technical performance, network configuration, fault, security, cost division/allocation, contract, orders and payment.

Specific air traffic management (ATM) requirements

2.17 Where ATS speech and data communication links between any two points are provided, the engineering arrangements should be such as to avoid the simultaneous loss of both circuits. The required ATS direct speech circuits plan is detailed under **Table CNS II-3**.

2.18 Special provisions should be made to ensure a rapid restoration of ATS speech circuits in case of outage, as derived from the performance and safety requirements.

2.19 Data circuits between ATS systems should provide for both high capacity and message integrity.

2.20 The Inter-Centre Communication (ICC), consisting of ATS Inter-facility Data Communication (AIDC) application and the Online Data Interchange (OLDI) application, should be used for automated exchange of flight data between ATS units to enhance the overall safety of the ATM operation and increase airspace capacity.

2.21 Where Voice over IP is planned or implemented between ATS units for voice communications, it should meet the ATS requirements. When data and voice are multiplexed, particular attention should be paid to the achievement of the ATM performance and safety requirements.

Specific meteorological (MET) requirements

2.22 The increasing use of the GRIB (Gridded Binary or General Regularly-distributed Information in Binary form) and BUFR (Binary Universal Form for the Representation of meteorological data) code forms for the dissemination of the upper wind and temperature and significant weather forecasts and the planned transition to digital form using extensible markup language (XML)/geography markup language (GML) for the dissemination of OPMET data should be taken into account in the planning process of the ATN.

2.23 In planning the ATN, account should be taken of changes in the current pattern of distribution of meteorological information resulting from the increasing number of long-range direct flights and the trend towards centralized flight planning.

Specific aeronautical information management (AIM) requirements

2.24 The aeronautical fixed service (AFS) should meet the requirements to support efficient provision of aeronautical information services through appropriate connections to area control centres (ACCs), flight information centres (FICs), aerodromes and heliports at which an information service is established.

Aeronautical Mobile Service (AMS)

2.25 To meet the air-ground data communication requirements, a high-grade aeronautical network should be provided based on the ATN, recognising that other technologies may be used as part of the transition. The network needs to integrate the various data links in a seamless fashion and provide for end-to-end communications between airborne and ground-based facilities.

2.26 Whenever required, use of suitable techniques on VHF or higher frequencies should be made. The required HF network designators applicable for the NAT Region are in the *HF Management Guidance Material* (NAT Doc 003).

2.27 Aerodromes having a significant volume of International General Aviation (IGA) traffic should also be provided with appropriate air-ground communication channels.

Air-Ground Data Link Communications

2.28 A Strategy for the harmonised implementation of the data link communications in the NAT Region should be developed based on the Global Operational Data Link Document (GOLD) adopted by ICAO Regions and the Aviation System Block Upgrade (ASBU) methodology.

2.29 Where applicable, controller-pilot data link communications (CPDLC), based on ATN VDL data link Mode 2 (VDL2) and/or FANS-1/A, should be implemented for air-ground data link communications.

2.30 Partial or divergent aircraft data link evolutions that result in excluding messages from aircraft systems should not be pursued. Interim steps or phases toward full implementation of the common technical definition in ground systems should only be pursued on a regional basis, after coordination between all States concerned.

2.31 Harmonization of operational procedures for implementation of the above packages is essential. States, Planning and Implementation Regional Groups (PIRGs) and air navigation services

providers should adopt common procedures to support seamless ATS provision across FIR boundaries, rather than each State or Region developing and promulgating unique procedures for common functions.

Required Communication Performance (RCP)

2.32 The Required Communication Performance (RCP) concept characterizing the performance required for communication capabilities that support ATM functions without reference to any specific technology should be applied wherever possible.

2.33 States should determine, prescribe and monitor the implementation of the RCP in line with the provisions laid down in the *ICAO Manual on Required Communication Performance* (Doc 9869).

Navigation

Navigation Infrastructure

2.34 The navigation infrastructure should meet the requirements for all phases of flight from take-off to final approach and landing.

Note: Annex 10 to the Convention on International Civil Aviation—Aeronautical Telecommunications, Volume I — Radio Navigation Aids, Attachment B, provides the strategy for introduction and application of non-visual aids to approach and landing.

2.35 The NAT Minimum Navigation Performance Specification (MNPS) to PBN Transition Plan provides guidance to air navigation service providers, airspace operators and users, regulators, and international organizations, on the expected evolution of the NAT air navigation system in order to allow planning of airspace changes, enabling ATM systems and aircraft equipage. It takes due account of the operational environment of the NAT Region.

PBN Transition Strategy

2.36 During transition to performance-based navigation (PBN), sufficient ground infrastructure for conventional navigation systems should remain available. Before existing ground infrastructure is considered for removal, users should be given reasonable transition time to allow them to equip appropriately to attain a performance level equivalent to PBN. States should approach removal of existing ground infrastructure with caution to ensure that safety is not compromised. This should be guaranteed by conducting safety assessments and consultations with the users.

Use of specific navigation aids

2.37 Where, within a given airspace, specific groups of users have been authorized by the competent authorities to use special aids for navigation. The respective ground facilities should be located and aligned so as to provide for full compatibility of navigational guidance with that derived from the SARPs.

2.38 States should ensure and oversee that service providers take appropriate corrective measures promptly whenever required by a significant degradation in the accuracy of navigation aids (either space based or ground based or both) is detected.

Surveillance

2.40 An important element of modern air navigation infrastructure required to manage safely increasing levels and complexity of air traffic is aeronautical surveillance systems.

2.41 When operating Mode S radars, States should coordinate with their respective ICAO Regional Office the assignment of their corresponding interrogator identifier (II) codes and surveillance identifier (SI) codes, particularly where areas of overlapping coverage will occur.

Frequency Management

Aeronautical Mobile Service (AMS)

2.42 Frequencies should be assigned to all VHF aeronautical mobile service (AMS) facilities in accordance with the principles laid out in Annex 10, Volume V and *ICAO Handbook on Radio Frequency Spectrum Requirements for Civil Aviation* (Doc 9718) Volumes I and II, and take into account:

a) agreed geographical separation criteria based on 25 kHz or 8.33 kHz interleaving between channels;
b) agreed geographical separation criteria for the implementation of VDL services;
c) the need for maximum economy in frequency demands and in radio spectrum utilization; and
d) a deployment of frequencies which ensures that international services are planned to be free of interference from other services using the same band.

2.43 The priority order to be followed in the assignment of frequencies to service is:

a) ATS channels serving international services (ACC, APP, TWR, FIS);
b) ATS channels serving national purposes;
c) channels serving international VOLMET services;
d) channels serving ATIS and PAR; and
e) channels used for other than ATS purposes.

2.44 The criteria used for frequency assignment planning for VHF AMS facilities serving international requirements should, to the extent practicable, also be used to satisfy the need for national VHF AMS facilities.

2.45 Special provisions should be made, by agreement between the States concerned, for the sharing and the application of reduced protection of non-ATS frequencies in the national sub-bands, so as to obtain a more economical use of the available frequency spectrum consistent with operational requirements.

2.46 States should ensure that no air/ground frequency is utilized outside its designated operational coverage and that the stated operational requirements for coverage of a given frequency can be met for the transmission sites concerned, taking into account terrain configuration.

Radio navigation aids for Aeronautical Radio Navigation Services (ARNS)

2.47 Frequencies should be assigned to all radio navigation facilities taking into account agreed geographical separation criteria to ILS localizer, VOR and GBAS, X and Y channels to DME, in accordance with the principles laid out in Annex 10, Volume V and *ICAO Handbook on Radio Frequency Spectrum Requirements for Civil Aviation* (Doc 9718) Volumes I and II. Also, the need for maximum economy in frequency demands and in radio spectrum utilization and a deployment of frequencies which ensures that international services are planned to be free of interference from other services using the same band, need to be considered.

2.48 The principles used for frequency assignment planning for radio navigation aids serving international requirements should, to the extent possible, also be used to satisfy the needs for national radio aids to navigation.

Support to ICAO Positions for ITU World Radiocommunication Conferences (WRCs)

2.49 Considering the importance and continuous demand of the radio frequency spectrum and for the protection of the current aeronautical spectrum and the allocation of new spectrum for the new services and system to be implemented in civil air navigation, States and international organizations are to support ICAO's position at ITU World Radiocommunication Conferences (WRCs) and in regional and other international activities conducted in preparation for ITU WRCs.

Note: The Handbook on Radio Frequency Spectrum Requirements for Civil Aviation *(Doc 9718) Volume I, contains ICAO policy statements relevant to the aviation requirements for radio frequency spectrum. The handbook is intended to assist States and ICAO in preparing for ITU WRCs.*

3. SPECIFIC REGIONAL REQUIREMENTS

Communications

3.1 The NAT ground/ground data interchange should be in accordance with the procedures specified in the NAT *Common Coordination Interface Control Document* (NAT CC ICD, Pan Regional Interface Control Document (PAN ICD) for ATS Interfacility Data Communications (AIDC)

Aeronautical mobile service (AMS)

3.2 While current voice communication links such as HF and VHF will continue to be used where necessary and appropriate, satellite data links are ultimately expected to provide high quality near real-time information interchange in a major part of the NAT Region. In some parts of the Region, terrestrial data links will be used. Thus, where a choice of alternative air/ground delivery systems exists, the system should be designed to dynamically select the most economic data link routing consistent with efficiency and operational requirements. The AMS to be provided in the NAT Region are shown in **Table CNS II-5**.

3.3 Where appropriate, CPDLC should be used in lieu of voice communications.

3.4 States should plan for the use of satellite voice for routine communications as an alternative to HF voice. Overall system design should take into account planning for an orderly reduction of HF voice services in the NAT Region.

3.5 For the data circuits between ATS systems referred to in 2.19 above, **Table CNS II-6** shows the ATS data circuits plan for the NAT Region.

Navigation

3.6 **Table CNS II-7** details the radio navigation aids in the NAT Region.

Aeronautical Surveillance

3.7 **Table CNS II-8** shows the ATS surveillance systems in the NAT Region.

3.8 Aeronautical surveillance in the NAT Region is performed by means of automated and voice position reporting and by ATS surveillance in certain parts of the Region.

Regional data link performance monitoring

3.9 The NAT Data Link Monitoring Agency (DLMA) monitors data link performance in the NAT Region on the basis of reports provided by States and airspace users.

TABLE CNS II- 1 - AERONAUTICAL FIXED TELECOMMUNICATIONS NETWORK (AFTN) PLAN

EXPLANATION OF THE TABLE

Column

1 The AFTN Centres/Stations of each State are listed alphabetically. Each circuit appears twice in the table. The categories of these facilities are as follows:
M - Main AFTN COM Centre
T - Tributary AFTN COM Centre
S - AFTN Station

2 Category of circuit:
M - Main trunk circuit connecting Main AFTN communication centres.
T - Tributary circuit connecting Main AFTN communication centre and Tributary AFTN Communications Centre.
S - AFTN circuit connecting an AFTN Station to an AFTN Communication Centre.

3 Type of circuit provided:
LTT/a - Landline teletypewriter, analogue (e.g. cable, microwave)
LTT/d - Landline teletypewriter, digital (e.g. cable, microwave)
LDD/a - Landline data circuit, analogue (e.g. cable, microwave)
LDD/d - Landline data circuit, digital (e.g. cable, microwave)
SAT/a/d - Satellite link, with /a for analogue or /d for digital

4 Circuit signalling speed in bits/s.

5 Circuit protocols

6 Data transfer code (syntax):
ITA-2 - International Telegraph Alphabet No. 2 (5-unit Baudot code).
IA-5 - International Alphabet No. 5 (ICAO 7-unit code).
CBI - Code and Byte Independency (ATN compliant).

7 Remarks

State/Station	Category	Requirement				Remarks
		Type	Signalling speed	Procotol	Code	
1	2	3	4	5	6	7
CANADA						
Ottawa-M						
Reykjavik	M	LDD/d	9600	CIDIN	IA-5	
London A	M	LDD/d	9600	X.25	IA-5	
London C	M	LDD/d	9600	X.25	1A-5	
Atlanta	M	LDD/d	9600	X.25	1A-5	
Salt Lake City	M	LDD/d	9600	X.25	1A-5	
FAEROES (Denmark)						
Vagar-S						
Copenhagen	M	LDD/d	9600	TCP/IP via Internet	IA-5	
GREENLAND (Denmark)						
Nuuk-M						
Copenhagen	M	LDD/d	9600	TCP/IP via Internet	IA-5	

State/Station	Category	Requirement				Remarks
		Type	Signalling speed	Procotol	Code	
1	2	3	4	5	6	7
ICELAND						
Reykjavik-M						
Bergen	M	LDD/d	9600	CIDIN	IA-5	
London	M	LDD/d	9600	CIDIN	IA-5	
Ottawa	M	LDD/d	9600	CIDIN	IA-5	
IRELAND						
London-A	M	LDD/a	9600	AFTN	IA-5	
London-B	M	LDD/a	9600	AFTN	IA-5	
Bordeaux	M	LDD/a	4800	AFTN	IA-5	
NORWAY						
Bergen-M						
Copenhagen	M	LDD/d	9600	CIDIN	IA-5	
PORTUGAL						
Lisboa-M						
Santa Maria	M	LDD/d	2400	AFTN	IA-5	
UNITED KINGDOM						
London-M						
Bergen	M	LDD/d	64000	CIDIN	IA-5	
Lisbon	M	LDD/d	9600	CIDIN	IA-5	
UNITED STATES						
Atlanta	M	LDD/d	9600	X.25	IA-5	
Salt Lake City	M	LDD/d	9600	X.25	IA-5	

TABLE CNS II-2 - REQUIRED ATN INFRASTRUCTURE ROUTING PLAN

Note: Data to be incorporated[1]

EXPLANATION OF THE TABLE

Column

1 Name of the Administration and Location of the ATN Router
2 Type of Router (in end systems (ES) of the Administration shown in column 1)
3 Type of Interconnection:
Inter Regional: Connection between different Regions/ domains
Intra Regional: Connection within a Region/ domain.
4 Connected Router: List of the Administration and location of the ATN routers to be connected with the router shown in column 1.
5 Bandwidth: Link Speed expressed in bits per second (bps)
6 Network Protocol: If Internet Protocol Suite is used, indicate version of IP (IPv4 or IPv6)
7 Via: The media used to implement the interconnection of the routers. (in case of IP service bought from a service provider, indicate VPN)
8 Remarks

Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remarks
1	2	3	4	5	6	7	8

[1] *Canada: Table CNS II-2 cannot be filled at the moment, as all the information needed is currently being developed and negotiated with our neighbouring ANSPs in the North Atlantic Region as part of the North Atlantic Network Upgrade (NANU).*

TABLE CNS II-3 — ATS DIRECT SPEECH CIRCUITS PLAN

EXPLANATION OF THE TABLE

Column

1 and 2 Circuit terminal stations are listed alphabetically by the Terminal I.

3 A — indicates ATS requirement for the establishment of voice communication within 15 seconds.
D — indicates requirements for instantaneous communications.

4 Type of service specified:
LTF — landline telephone (landline, cable, UHF, VHF, satellite).
RTF — radiotelephone.

5 Type of circuits; Direct (DIR) or Switched (SW).
D — indicates a direct circuit connecting Terminals I and II.
S — indicates that a direct circuit does not exist and that the connection is established via switching at the switching centre(s) indicated in column 6.
IDD — International direct dialling by public switch telephone network

Note 1.— Number of D and/or S circuits between Terminals I and II are indicated by numerical prefix, i.e. 2 D/S means 2 direct circuits and one switched circuit.

Note 2.— Pending the implementation of proper ATS voice circuits, and provided that aeronautical operational requirements are met, IDD services may be used for the ATS voice communications in low traffic areas.

6 Location of switching centre(s). Alternate routing location, if available, is indicated in brackets.

7 Remarks

ATS requirements for speech communications			Circuit			Remarks
Terminal I	Terminal II	Type	Service	DIR/ SW	To be switched via/	
1	2	3	4	5	6	7
BODO						
	STAVANGER	A	LTF	D		
	MURMANSK	A	LTF	IDD		
	REYKJAVIK	A	LTF	D		
GANDER						
	MONCTON	A	LTF	D		
	MONTREAL	A	LTF	D		
	NEW YORK	A	LTF	D		
	PRESTWICK	A	LTF	2D		
	REYKJAVIK	A	LTF	2D		
	SANTA MARIA	A	LTF	S	New York	
	NUUK	A	LTF	D		
NEW YORK						
	BOSTON	A	LTF	D		
	BERMUDA	A	LTF	D		
	MONCTON	A	LTF	D		
	SANTA MARIA	A	LTF	3D		
	WASHINGTON	A	LTF	D		
PRESTWICK						
	BREST	A	LTF	D		
	GANDER	A	LTF	2D		
	MADRID	A	LTF	D		
	REYKJAVIK	A	LTF	2D		
	SANTA MARIA	A	LTF	2D		
	SCOTTISH	A	LTF	D		
	SHANNON	A	LTF	2D		
REYKJAVIK						
	ANCHORAGE	A	LTF	IDD		
	EDMONTON	A	LTF	D		

ATS requirements for speech communications			Circuit			Remarks
Terminal I	Terminal II	Type	Service	DIR/ SW	To be switched via/	
1	2	3	4	5	6	7
	GANDER	A	LTF	D		
	MURMANSK	A	LTF	IDD		
	STAVANGER	A	LTF	D		
	NUUK	A	LTF	D		
	THULE	A	LTF	IDD		
	PRESTWICK	A	LTF	4D+ 1IDD		
	BODO	A	LTF	D		Planned Q4-2015
SANTA MARIA						
	SAL	A	LTF	D		
	CANARIAS	A	LTF	IDD		
	LISBOA	A	LTF	2D		
	MADRID	A	LTF	3D		
	PIARCO	A	LTF	IDD		
	PRESTWICK	A	LTF	2D		
NUUK						
	EDMONTON	A	LTF	D		

TABLE CNS II-4 - HF NETWORK DESIGNATORS

Note: Not applicable in NAT Region.

TABLE CNS II-5 — AERONAUTICAL MOBILE SERVICE AND AMSS

EXPLANATION OF THE TABLE

Column

1 The name of the State and the locations within the same where the service is provided.

2 The required services or functions are provided. Suitable abbreviations for these services or functions are listed below.

ACC-L	Area control service for flights in lower airspace.
ACC-U	Area control service for flights in upper airspace.
AFIS	Aerodrome flight information service.
APP	Approach control centre.
ATIS	Automatic terminal information service.
D-ATIS	Data link-automatic terminal information service.
CLRD	Clearance delivery.
FIC-L	Flight information service in lower airspace.
FIC-U	Flight information service in upper airspace.
VHF-ER	VHF — Extended range.
GP	Facility providing VHF or HF en-route general purpose (GP) communication. These facilities provide air-ground radiotelephony for all categories of messages listed in Annex 10, Volume II, 5.1.8. This system of communication is normally indirect, i.e. exchanged through the intermediary of a third person who is usually a communicator at an aeronautical station.
SMC	Surface movement control up to limits of aerodrome.
TMA	Terminal area control service.
TWR	Aerodrome control service.
VOLMET	VOLMET broadcast.

3 Number of voice VHF channels for the corresponding services indicated in column 2. The number of implemented channels is shown in parentheses.

4 Requirement for VHF data link (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses

5 HF network designators for the corresponding services indicated in column 2. The number of implemented frequencies is shown in parentheses.

6 Requirement for HF data link (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses.

7 Requirement for satellite voice communications (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses.

8 Requirement for satellite data communications (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses.

9 Requirement for Mode S data communications (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses.

10 Remarks.

Note.— Data links and satellite voice will be used for CPDLC communications and the implementation year is indicated by two digits.

TABLE CNS II-5— AERONAUTICAL MOBILE SERVICE AND AMSS

Country and location		Service or function	VHF voice	VHF data	HF voice	HF data	Satellite voice	Satellite data	Mode S	Remarks
1		2	3	4	5	6	7	8	9	10
CANADA										
CZQX	GANDER	GP	5 (5)	X (01/2008)	NAT-A NAT-B NAT-C NAT-D		X (2009)	X (01/2008)		
		CLRD	5 (5)	X (05/2006)	NAT-F VNAT					
GREENLAND (Denmark)										
BGGL	NUUK	FIC-L	4 (4)		RDARA		X			
BGSF	KANGERLUSSUAQ	TWR APP	1 (1) 2 (2)							
FAROE ISLANDS (Denmark)										
EKVG	VAGAR	AFIS	1 (1)							
ICELAND										
BIAR	AKUREYRI	TWR APP	1 (1) 1 (1)							
BIEG	EGILSSTADIR	AFIS	1 (1)							
BIKF	KEFLAVIK	TWR GND APP CLRD ATIS	1 (1) 1 (1) 1 (1) 1 (1) 1 (1)							
BIRK	REYKJAVIK	TWR GND APP ATIS	1 (1) 1 (1) 1 (1) 1 (1)							
BIRD	REYKJAVIK	ACC-U ACC-L	9 (9) 2 (2)	X		X	X	X		
BICC	REYKJAVIK	GP	3 (3)		NAT-B NAT-C		X			

Country and location		Service or function	VHF voice	VHF data	HF voice	HF data	Satellite voice	Satellite data	Mode S	Remarks
1		2	3	4	5	6	7	8	9	10
					NAT-D					
IRELAND										
EIAA	SHANNON/Ballygireen	GP VOLMET	2 (2) 1 (1)		NAT-A NAT-B NAT-C NAT-D NAT-F VNAT		X			
NORWAY										
ENBD ENSB	BODO SVALBARD	ACC L,U AFIS	1 (1) 1 (1)	X	NAT-D 3023 6666 8840	X	X	X		Available to flights above FL 100 in emergency only
PORTUGAL										
LPPD	PONTA DELGADA/San Miguel I., Acores	TWR APP	1 (1) 1 (1)							
LPPO	SANTA MARIA, Acores	ACC L,U GP CLRD	2 (2) 1 (1) 2 (1)	X	 NAT-A NAT-E	X	X X	X		
LPAZ	SANTA MARIA/Santa Maria I., Acores	TWR APP	1 (1) 1 (1)							
UNITED KINGDOM										
EGGX	PRESTWICK	CLRD ACC L, U	2 (2)	X X		X	X	X		
UNITED STATES										
KZNY	NEW YORK	ACC L,U GP	9 (9) 2 (2)	X	 NAT-A NAT-E	X	X X	X		

TABLE CNS II-6 - ATS DATA CIRCUITS PLAN

EXPLANATION OF THE TABLE

Column

1 and 2 Circuit terminal stations are listed alphabetically by the Terminal I.

3 Type of service specified:

LTF — landline telephone (landline, cable, UHF, VHF, satellite).
RTF — radiotelephone.

4 Type of circuits; Direct (DIR) or Switched (SW).

D — indicates a direct circuit connecting Terminals I and II.
S — indicates that a direct circuit does not exist and that the connection is established via switching at the switching centre(s) indicated in column 6.

5 Location of switching centre(s). Alternate routing location, if available, is indicated in brackets.

6 Status of Implementation. Following codes are used in this column:

a) I — if the circuit is implemented.

b) No indication or mark if the circuit is not implemented and its implementation date is unknown.

c) If the circuit is not implemented but its implementation date is available, same is indicated in brackets.

Note.— If the circuit is implemented but there are short-term plans to establish it in other private/public network(s), the symbol I/P shall be introduced indicating in Column 8 — Remarks, the future network environment for the circuit.

7 Remarks

TABLE CNS II-6 - ATS DATA CIRCUITS PLAN

ATS requirements for data communications		Circuit			Status of implementation	Remarks
Terminal I	Terminal II	Service	D/S	To be switched via/		
1	2	3	4	5	6	7
GANDER						
	NEW YORK	LTF	D		(2005)	
	PRESTWICK	LTF	D		I	
	PRESTWICK	LTF	D		I	
	PRINS CHRISTIAN SUND	LTF	D		I	
	REYKJAVIK	LTF	D		(2005)	
NEW YORK						
	SANTA MARIA	LTF	D		I	
	GANDER	LTF	D			
PRESTWICK						
	BREST	LTF	D		I	
	GANDER	LTF	D		I	
	MADRID	LTF	D		I	
	REYKJAVIK	LTF	D		I	
	SANTA MARIA	LTF	D		I	
	SCOTTISH	LTF	D		I	
	SHANNON	LTF	D		I	
REYKJAVIK						
	SCOTTISH	LTF	D		I	
	STAVANGER	LTF	D		I	
	BODO	LTF	D		I	
	EDMONTON	LTF	S	CIDIN-Gufunes	I	
	GANDER	LTF	S	CIDIN-Gufunes	I	
	SHANWICK	LTF	D		I	
	MURMANSK	LTF	D		(2016)	
SANTA MARIA						
	SAL	LTF	D			
	MADRID	LTF	S	Lisboa	I	
	LISBOA	LTF	D			
	CANARIAS	LTF	S	Lisboa/Madrid		

TABLE CNS II-7 — RADIO NAVIGATION AIDS

EXPLANATION OF THE TABLE

Column

1 Name of the country, city and aerodrome and, for route aids, the location of the installation.

2 The designator number and runway type:

NINST — Visual flight runway
NPA — Non precision approach runway
PA1 — Precision approach runway, Category I
PA2 — Precision approach runway, Category II
PA3 — Precision approach runway, Category III

3 The functions carried out by the aids appear in columns 4 to 8 and 10 to 12.

A/L — Approach and landing
T — Terminal
E — En route

4 ILS —Instrument landing system. Roman numerals I, II and III indicate the acting category of the ILS I, II or III. (I) indicates that the facility is implemented.

The letter "D" indicates a DME requirement to serve as a substitute for a marker beacon component of an ILS.

Note.— Indication of the category refers to the performance standard to be achieved and maintained, in accordance with pertinent specifications in ICAO Annex 10, and not to specifications of the ILS equipment, since both specifications are not necessarily the same.

An asterisk (*) indicates that the ILS requires a Category II signal, but without the reliability and availability which redundant equipment and automatic switching provide.

5 Radio beacon localizer, be it associated with an ILS or to be used as an approach aid at an aerodrome.

6 Radiotelemetrical equipment. When an "X" appears in column 6 in line with the VOR in column 7, this indicates the need that the DME be installed at a common site with the VOR.

7 VOR — VHF omnidirectional radio range.

8 NDB — Non-directional radio beacon.

9 The distances and altitude to which the VOR or VOR/DME signals are required, indicated in nautical miles (NM) or thousands of feet, or the nominal coverage recommended of the NDB, indicated in nautical miles.

10, 11 GNSS — global navigation satellite system (includes GBAS and SBAS).

GBAS (ground-based augmentation system) implementation planned to be used in precision approach and landing CAT I, CAT II, CAT III.

SBAS (satellite-based augmentation system) implementation planned to be used for route navigation, for terminal, for non precision approach and landing. An "X" indicates service availability; exact location of installation will be determined.

Note. — GPS receiver is under standard rules and ABAS (aircraft-based augmentation system).

12 Remarks

Note.— Columns 5 to 12 use the following symbols:

D — DME required but not implemented.
DI — DME required and implemented.
X — Required but not implemented.
XI — Required and implemented.

TABLE CNS II-7 — RADIO NAVIGATION AIDS

Station/Territory	Rwy type	Function	ILS	L	DME	VOR	NDB	Coverage	GNSS		Remarks
									GBAS	SBAS	
1	2	3	4	5	6	7	8	9	10	11	12
FAROE ISLANDS (Denmark)											
MYGGENAES		E/T/A					X				
VAGAR	12 NPA	A/L		X	X						
	30 PA1				X						
GREENLAND (Denmark)											
HOLSTEINSBORG		E					X	SD			
KANGERLUSSUAQ		A/L	X	X							
		T					X				
		E					X	SD			
KULUSUK		E					X	SD			
PRINS CHRISTIANS SUND		E					X	LD			
SIMIUTAQ		E					X	SD			
ICELAND											
AKUREYRI	01 PA1	A/L		X	X						
	19 NPA	A/L		X		X			X		
		T/E			X	X					
		T/E					X	50			
EGILSSTADIR	04 PA1	A/L	X	X	X				X		
	22 NPA	A/L		X	X				X		
		T/E					X				
INGO		E			X	X					
KEFLAVÍK	02 PA1	A/L	X		X	X			X		
	20 PA2	A/L	X	X	X	X					
	11 PA2	A/L	X	X	X	X					
	29 PA1	A/L	X		X	X			X		
		T/E			X	X		250			
		T/E					X				
REYKJAVIK	01 NPA	A/L								X	
	19 PA1	A/L	X	X	X						
	13 NPA	A/L		X	X						
	31 NPA	A/L								X	
		T/E					X	100			
NORWAY											
SVALNARD/LONGYEAR	10PA1	A/L	1D		X		X				

Station/Territory	Rwy type	Function	ILS	L	DME	VOR	NDB	Coverage	GNSS		Remarks
									GBAS	SBAS	
1	2	3	4	5	6	7	8	9	10	11	12
	28NPA	A/L			X		X				
PORTUGAL											
FLORES, Flores I., Acores		E,T			X	X		275/300			
LAJES, Terceira I., Acores		A/L		X							
		E				X					
PONTA DELGADA, Sao Miguel I., Acores		E,T			X	X		275/300			
SANTA MARIA, Santa Maria I., Acores		A/L	19-I								
			X	X							
		E			X	X		200/500			

TABLE CNS II-8 - SURVEILLANCE SYSTEMS

EXPLANATION OF THE TABLE

Column

1 Name of State/Territory and location of the radar station

2 Longitude and Latitude of radar station.

3 Air traffic services unit served by the facility

4 PSR/Function — Primary surveillance radar/Function
E — En-route area control centres
T — Terminal

5 Coverage of primary surveillance radar in nautical miles

6 PSR/Status — Primary surveillance radar/Status of implementation

7 SSR/MSSR/Function — Secondary surveillance radar/Monopulse secondary surveillance radar/Function
E — En-route area control centres
T — Terminal

8 SSR/MSSR/Modes — Modes A, C or S

9 Coverage of secondary surveillance radar in nautical miles

10 SSR/MSSR/Status — Secondary surveillance radar/Monopulse secondary surveillance radar/Status of implementation

11 ADS-B/Coverage — Automatic dependent surveillance-Broadcast/Coverage

12 ADS-B/Status — Automatic dependent surveillance-Broadcast/Status of implementation

13 Remarks

Note.— The following codes are used in columns 6, 10, 12 and 13:

6, 10 and 12
I — Implemented using conventional SSR
I — Implemented using monopulse SSR*
NI — Not implemented
I/P — (Implemented/Planned) Indicates the implemented radar system and enlargement and/or replacement of the radar system at short term (2 years)
P — Planned using SSR
P — stands for future plan using monopulse SSR*
NP — (Not planned) Indicates that the State has no plans for radar implementation
R — Recommended

13
** MSSR — Monopulse SSR*
< - Year — Planned commissioning year
> - Year — Planned decommissioning year

TABLE CNS II-8 - SURVEILLANCE SYSTEMS

			PSR			SSR				ADS-B		
State (territory)/Location	Lat/Long	ATS unit served	Function	Coverage(NM)	Status	Function	Modes(A, C or S)	Coverage(NM)	Status	Coverage (NM)	Status	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13
CANADA												
Breevort	SSR 63 20 25N 064 09 24W ADS-B 63 20 25N 064 09 13W	Gander ACC				E	AC	250	I*	250	I	
Brisay	54 23 06N 070 34 56W	Gander ACC				E	AC	256	I*			
Cape Dyer	SSR 66 39 55N 061 21 22W ADS-B 66 39 54N 061 21 35W	Gander ACC				E	AC	250	I*	250	I	
Cartwright	53 33 04N 056 49 49W	Gander ACC				E	AC	250	I*			
Gander	48 59 10N 054 30 15W	Gander ACC				E	AC	250	I*			
Goose Bay	53 28 17N 060 17 40W	Gander ACC				E	AC	250	I*			
Hopedale	55 27 51N 060 13 07W	Gander ACC								250	I	

			PSR			SSR				ADS-B		
State (territory)/Location	Lat/Long	ATS unit served	Function	Coverage(NM)	Status	Function	Modes(A, C or S)	Coverage(NM)	Status	Coverage (NM)	Status	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13
Iqaluit	63 46 51N 068 32 41W	Gander ACC				E	S	256	I*			
Kuujjuaq	58 08 46N 068 24 12W	Gander ACC				E	S	256	I*			
Saglek	SSR 58 29 17N 062 35 08W ADS-B 58 29 20N 062 35 01W	Gander ACC				E	AC	250	I*	250 I		
Stephenville	48 35 27N 058 39 57W	Gander ACC				E	AC	250	I*			
St. Johns	47 39 01N 058 39 57W	Gander ACC	T	80		T	AC	250	I*			
Sydney	46 05 35N 060 26 19W	Gander ACC				E	AC	250	I*			
DENMARK												
Greenland												
Faeroess	SSR 62 04 08N 006 58 00W ADS-B 62 20 22N 006 19 19W AND 61 25 33N	Reykjavik ACC	E	240	I	E	A/C	240	I	250	II	

			PSR			SSR				ADS-B		
State (territory)/Location	Lat/Long	ATS unit served	Function	Coverage(NM)	Status	Function	Modes(A, C or S)	Coverage(NM)	Status	Coverage (NM)	Status	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13
	006 44 16W											
Frederiksdal	60 00 01N 044 36 36W	Gander ACC								250	I	Installed and maintained by Canada
Kangerlussuac	66 59 49N 050 36 58W	BGSF	T/A			T	A,C	200	I			
Paamuit	61 59 33N 049 40 28W	Gander ACC								250	I	Installed and maintained by Canada
Prins Christian Sun	60 02 59N 043 09 30W	Gander ACC								250	I	Installed and maintained by Canada
Simiutaq	60 40 59N 046 35 48W	Gander ACC								250	I	Installed and maintained by Canada
ICELAND												
Akureyri	65 39 18N 018 04 09W	Akureyri APP	T	20	I							
Blafjoll	63 58 37N 021 38 04W	Reykjavik ACC	E							250	I	
Bolafjall	66 10 42N 023 19 42W	Reykjavik ACC	E	240	I	E	A/C	240	I	250	I	MSSR 06
Gunnolfsvikurfjall	66 08 40N 015 05 24W	Reykjavik ACC	E	240	I	E	A/C	240	I	250	I	MSSR 06
Háfell	63 26 35N 018 51	Reykjavik ACC	E							250	I	

			PSR			SSR				ADS-B		
State (territory)/Location	Lat/Long	ATS unit served	Function	Coverage(NM)	Status	Function	Modes(A, C or S)	Coverage(NM)	Status	Coverage (NM)	Status	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13
	58W											
Háöxl	63 54 39N 016 36 49W	Reykjavik ACC	E							250	I	
Keflavik	63 59 18N 022 35 12W	Reykjavik ACC Keflavik APP	T/E	60	I	T/E	A/C	195	I			
Midnesheidi	64 01 19N 022 39 21W	Reykjavik ACC Keflavik APP	T/E	220	I	E	A/C	240	I			MSSR 06
Reykjanesviti	63 52 53N 022 42 15W	Reykjavik ACC	E							250	I	
Stokksnes	64 14 28N 014 57 46W	Reykjavik ACC	E	230	I	E	A/C	240	I			MSSR 06
Thverfjall	66 02 33N 023 18 35W	Reykjavik ACC	E							250	I	
Vidarfjall	66 15 36 N 015 46 26W	Reykjavik ACC	E							250	I	
PORTUGAL												
Acores		Santa Maria OACC			NP	E/T	C	240	P*			<2005
UNITED KINGDOM												
Bermuda												
Sumbourough	59 54 21N 001 22 57W	Reykjavik ACC	E				A/C			250	I	

NAT ANP, VOLUME II

PART IV - AIR TRAFFIC MANAGEMENT (ATM)

1. INTRODUCTION

1.1 This part of the NAT ANP, Volume II, complements the provisions in ICAO SARPs and PANS related to air traffic management (ATM). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of ATM facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to ATM facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

2. GENERAL REGIONAL REQUIREMENTS

Optimization of traffic flows

2.1 The Planning and Implementation Regional Groups (PIRGs), through regional air navigation agreement, are responsible for the optimization of the traffic flows through the continuous improvement of the regional ATS route network and organized track systems and implementation of random routing areas and free route airspace in the Region through the set-up of appropriate mechanisms for regional and inter-regional planning and coordination.

2.2 Whenever practicable, States should, in close coordination with operators, establish the most efficient routings.

2.3 The requirements for regional ATS route network, in particular, for ATS routes over the high seas and airspace of undetermined sovereignty, should be agreed upon through regional air navigation agreement.

Note: States' AIPs and other States publications should be consulted for information on the implemented ATS routes.

Aircraft Identification-SSR Code Management

Note:-Not applicable in the NATRegion

3. SPECIFIC REGIONAL REQUIREMENTS

3.1 ATS routes have been developed in the NAT Region for the use of aircraft equipped with only one long-range navigation system, and of aircraft equipped with short-range navigation equipment (VOR/DME, ADF). These routes are listed in NAT Doc 007.

3.2 Twice daily, organized track systems (OTS) are promulgated to manage the core East-West flows of traffic in the NAT Region. Details are provided in NAT SUPPs, 6.4 and NAT Doc 007.

Regional safety monitoring

3.3 The NAT Central Monitoring Agency (CMA) is responsible for the monitoring and reporting of certain aspects of operations in the NAT Region. The NAT CMA was initially established in 1985 by the ICAO North Atlantic System Planning Group (NATSPG) to support the preparation and introduction of RVSM in the North Atlantic (NAT) Region, and thereafter to perform a database assessment and provide assurance of continuing system safety and integrity.

3.4 The CMA is one of thirteen Regional Monitoring Agencies (RMAs) around the world which serves its ICAO Planning and Implementation Regional Groups, its associated States, ANSPs and aircraft operators. Currently, the NAT CMA maintains State Registration and Operational Approval records for aircraft registered in five designated States (Norway, Iceland, Ireland, Portugal and Bermuda) and Operational Approvals granted by other States for aircraft registered in these five States; it also assists those States in overseeing operator compliance with height monitoring targets in accordance with ICAO Annex 6 (Operation of Aircraft) requirements. It supports the RMA community by maintaining a combined database of aircraft registration, operators and RVSM Approvals, incorporating regular revisions of data from other RMAs into a common system.

3.5 To monitor compliance with the RVSM Minimum Navigation Performance Specification (RVSM MASPS) the CMA processes and reviews aircraft height keeping performance to determine altimetry system error (ASE) and issues height monitoring results to operators. To do this the CMA uses recorded data from the Height Monitoring Unit (HMU) at Strumble (Wales) on the basis of individual operator requests but also utilises the data continuously recorded of aircraft passing the HMU site within RVSM levels.

3.6 The CMA also receives, reviews and records operational safety occurrence reports from ANSPs and aircraft operators across the North Atlantic Region, in support of regional safety groups and other stakeholders. The resultant records provide data to support regional risk assessment (technical and operational risk), analysis and the measurement of performance against established Target Levels of Safety and trend data, to support the work of the ICAO safety groups. This data also supports the safe evolution of separation standards, navigational requirements and procedures.

3.7 The CMA has a small permanent staff augmented by specialists across a range of disciplines and skills. Since 1985 the scope of the CMA has included flight operations (pilot/navigator) and analytical, mathematical, technical, and engineering skills provided by NATS Ltd, the UK Air Navigation Service Provider (ANSP). The operating costs of the CMA and the maintenance of the Height Monitoring Unit are recovered from ICAO under a Joint Financing Arrangement signed in 1995 by the governments of several NATSPG Member States: Canada, Iceland, Ireland, Portugal the United Kingdom, United States and ICAO.

3.8 The CMA is located adjacent to the Shanwick Oceanic Area Control Centre, in Prestwick, Scotland in accommodation provided by NATS on behalf of the United Kingdom. While functionally autonomous from its host State the CMA can access specialist support and ATC expertise.

Monitoring

3.9 Operators engaged in North Atlantic operations and States having jurisdiction over such operators should investigate carefully any known or reported case of gross navigation error which has occurred during a flight in the NAT Region of an aircraft with which they are concerned and, where found appropriate, States concerned and operators should take the necessary corrective actions.

3.10 States should investigate navigation errors which are brought to the attention of operators and/or where necessary the State of Registry of the aircraft concerned with the least possible delay.

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TABLE ATM II-1 - NAT REGION ATS ROUTES

EXPLANATION OF THE TABLE

Column

1 Designator of ATS route

2 Significant points defining the ATS route. Only prominent locations have been listed.

3 Purpose/Usage of Routes

Designator	Significant Points	Purpose/Usage/Restrictions
1	**2**	**3**
TANGO Routes		
T9	LASNO - BEGAS	For flights between Northern Europe and Spain/ Canarias/Lisboa FIRs.
T13	MANOX – LUPOV (420000N 01505000W) – NILAV (450000N 01325000W) – OMOKO	For flights between Northern Europe and Canarias/Lisboa FIRs.
T213	TAMEL - BERUX	For flights between Northern Europe and Spain/ Canarias/Lisboa FIRs.
T16	OMOKO – GONAN – EKROL (420000N 01535000W) – NAVIX – SNT	For flights between Northern Europe and Canarias/Lisboa FIRs.
T25	GUNTI – LENSI (390000N 0200000W)	For flights between the Azores and the Portuguese mainland.
Routings between the Azores and Portugal and between the Azores and Madeira	TBA	Special Routes for Flights between the Azores and the Portuguese mainland and between the Azores and the Madeira Archipelago
Special Use Routings	Details listed in Provider State AIS and in ICAO NAT Doc.007 NAT Operations & Airspace Manual	For use by aircraft with a single functioning LRNS or with short range navigation systems. State Approvals for NAT HLA operations are still required.
L576	BDA/VOR 322152N 0644123W SEAVR 294156N 0630425W RKDIA 210000N 0600000W (CITRS 180000N 0590000W)	For flights southbound from the Bermuda VOR (BDA) between north-eastern United States to Rio de Janeiro (Brazil), Sao Paulo (Brazil) and Buenos Aires (Argentina).

NAT ANP, VOLUME II

PART V – METEOROLOGY (MET)

1. INTRODUCTION

1.1 This part of the NAT ANP, Volume II, complements the provisions in the ICAO SARPs and PANS related to aeronautical meteorology (MET). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of MET facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to the MET facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the States concerned to implement the requirements specified.

2. GENERAL REGIONAL REQUIREMENTS

Meteorological offices

2.1 In the NAT Region, meteorological watch offices (MWO) have been designated to maintain continuous watch on meteorological conditions affecting flight operations within their area(s) of responsibility, as indicated at **Table MET II-1**.

Meteorological observations and reports

2.2 In the NAT Region, routine observations, issued as a METAR, should be made throughout the 24 hours of each day at intervals of one half-hour or one hour at aerodromes as indicated in **Table MET II-2**.

2.3 At aerodromes that are not operational throughout 24 hours, METAR should be issued at least 3 hours prior to the aerodrome resuming operations or as agreed upon between airspace users and the MET Authority in the NAT Region.

Forecasts

2.4 In the NAT Region, an aerodrome forecast, issued as a TAF, should be for the aerodromes indicated in **Table MET II-2**.

2.5 In the NAT Region, the period of validity of a routine TAF should be of ~~9-,~~ 24-, or 30-hours to meet the requirements indicated in **Table MET II-2**.

2.6 In the NAT Region, the forecast maximum and minimum temperatures expected to occur during the period of validity, together with their corresponding day and time of occurrence, should be included in TAF at aerodromes indicated in **Table MET II-2**.

2.7 In the NAT Region, landing forecasts (prepared in the form of a trend forecast) should be provided at aerodromes indicated in **Table MET II-2**.

Requirements for and use of communications

2.8 Operational meteorological information prepared as METAR, SPECI and TAF for aerodromes indicated in **Table MET II-2**, and SIGMET messages prepared for flight information regions or control areas indicated in **Table MET II-1**, should be disseminated to the international OPMET databanks designated for the NAT Region (namely Brussels OPMET databank) and to the centre designated for the operation of the aeronautical fixed service Secure Aviation Data Information Service (SADIS) and/or WIFS in the NAT Region.

2.9 SIGMET messages should be disseminated to other meteorological offices in the NAT Region in accordance with the regional OPMET bulletin exchange scheme.

2.10 Special air-reports that do not warrant the issuance of a SIGMET should be disseminated to other meteorological offices in the NAT Region in accordance with the regional OPMET bulletin exchange scheme.

2.11 In the NAT Region, meteorological information for use by aircraft in flight should be supplied through VOLMET broadcasts.

2.12 In the NAT Region, the aerodromes for which METAR and SPECI are to be included in VOLMET broadcasts, the sequence in which they are to be transmitted and the broadcast time, is indicated in **Table MET II-3**.

3. SPECIFIC REGIONAL REQUIREMENTS

Meteorological observations and reports

3.1 In the NAT Region, information on the status of the runway should be included as supplementary information in METAR and SPECI as indicated in Table MET II-2.

3.2 The observations required under the current Danish and Icelandic Joint Financing Agreements are given in **Table MET II-4**.

OPMET information

3.3 The details of the NAT regional OPMET bulletin exchange scheme are provided in the EUR OPMET Data Management Handbook (EUR Doc 018).

Note: The EUR Data Management Group (DMG) of the European Air Navigation Planning Group (EANPG) Meteorological Group (METG) updates this document accordingly for approval by the EANPG Programme Coordinating Group (COG). Denmark, Iceland and the United States participate in the work of the METG. The Regional OPMET Centre (ROC) London coordinates exchange of date with Canada.

Service for operators and flight crew members

3.4 In the NAT Region, scheduled VOLMET broadcasts should contain TAF and SIGMET.

3.56 In the NAT Region, METAR, SPECI and TAF should be available for uplink to aircraft in flight via D-VOLMET.

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TABLE MET II-1 - METEOROLOGICAL WATCH OFFICES

EXPLANATION OF THE TABLE

Column

1 Name of the State where meteorological service is required

2 Name of the flight information region (FIR) or control area (CTA) where meteorological service is required

Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

3 ICAO location indicator of the FIR or CTA

4 Name of the meteorological watch office (MWO) responsible for the provision of meteorological service for the FIR or CTA

Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

5 ICAO location indicator of the responsible MWO

6 Requirement for SIGMET information (excluding for volcanic ash and for tropical cyclones) to be provided by the MWO for the FIR or CTA concerned, where:

Y – Yes, required
N – No, not required

7 Requirement for SIGMET information for volcanic ash to be provided by the MWO for the FIR or CTA concerned, where:

Y – Yes, required
N – No, not required

8 Requirement for SIGMET information for tropical cyclone to be provided by the MWO for the FIR or CTA concerned, where:

Y – Yes, required
N – No, not required

9 Requirement for AIRMET information to be provided by the MWO for the FIR or CTA concerned, where

Y – Yes, required
N – No, not required

State	FIR or CTA where meteorological service is required		Responsible meteorological watch office		Meteorological service to be provided			
	Name	ICAO Location Indicator	Name	ICAO Location Indicator	SIGMET (WS)	SIGMET (WV)	SIGMET (WC)	AIRMET (WA)
1	2	3	4	5	6	7	8	9
Canada	GANDER, NL (ACC)	CZQX	MONTREAL (QUEBEC FORECAST OFFICE), QUE[1]	CWUL	Y	Y	Y	
Denmark	NUUK FIR	BGGL	KANGERLUSSUAQ (Greenland) [1]	BGSF	Y	Y		
Iceland	REYKJAVIK FIR, OAC, ACC, FIC	BIRD	REYKJAVIK AIRPORT, NOF, MET	BIRK	Y	Y		

[1] Nuuk FIR/Gander Oceanic CTA and Nuuk FIR/Reykjavik CTA served by Montreal MWO and Reykjavik MWO respectively.

State	FIR or CTA where meteorological service is required		Responsible meteorological watch office		Meteorological service to be provided			
	Name	ICAO Location Indicator	Name	ICAO Location Indicator	SIGMET (WS)	SIGMET (WV)	SIGMET (WC)	AIRMET (WA)
1	2	3	4	5	6	7	8	9
Norway	BODO OCEANIC FIR	ENOB	THE NORWEGIAN METEOROLOGICAL INSTITUTE, OSLO	ENMI	Y	Y		
Portugal	SANTA MARIA OAC/FIC	LPPO	LISBOA	LPPT	Y	Y	Y	N
United Kingdom	SHANWICK OACC	EGGX	GATWICK CAA SRG (AVIATION HOUSE)	EGRR	Y	Y	Y	
United States	NEW YORK (ARTCC) RONKONKOMA NY.	KZNY	KANSAS CITY [2, 3]	KKCI	Y	Y	Y	

[2] The Washington MET/COM Centre (KWBC) is the AIREP Collecting Centre for the United States.
[3] KKCI location indicator not included in DOC 7910/149, September 2014

TABLE MET II-2 - AERODROME METEOROLOGICAL OFFICES

EXPLANATION OF THE TABLE

Column

1 Name of the State where meteorological service is required

2 Name of the AOP aerodrome where meteorological service is required
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

3 ICAO location indicator of the AOP aerodrome

4 Designation of AOP aerodrome:
RG - international general aviation, regular use
RS - international scheduled air transport, regular use
RNS - international non-scheduled air transport, regular use
AS - international scheduled air transport, alternate use
ANS - international non-scheduled air transport, alternate use

5 Name of the aerodrome meteorological office responsible for the provision of meteorological service
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

6 ICAO location indicator of the responsible aerodrome meteorological office

7 Requirement for METAR/SPECI from the aerodrome concerned, where:
Y – Yes, required
N – No, not required

8 Requirement for information on the state of the runway provided by the appropriate airport authority to be included as supplementary information in METAR/SPECI from the aerodrome concerned, where:
Y – Yes, required
N – No, not required

9 Requirement for trend forecast to be appended to METAR/SPECI from the aerodrome concerned, where
Y – Yes, required
N – No, not required

10 Requirement for TAF from the aerodrome concerned, where
C - Requirement for 9-hour validity aerodrome forecasts in TAF code (9H)
T - Requirement for 18/24-hour validity aerodrome forecasts in TAF code (18/24H)
X - Requirement for 30-hour validity aerodrome forecasts in TAF code (30H)
N – No, not required

11 Requirement for maximum and minimum temperature (expected to occur during the period of validity of the TAF) to be included in TAF from the aerodrome concerned, where:
Y – Yes, required
N – No, not required

12 Availability of METAR/SPECI and TAF from the aerodrome concerned, where:
F – Full availability : OPMET information as listed issued for the aerodrome all through the 24-hour period
P – Partial availability: OPMET information as listed not issued for the aerodrome for the entire 24-hour period

TABLE MET II-2 - AERODROME METEOROLOGICAL OFFICES

State	AOP aerodrome where meteorological service is to be provided			Responsible aerodrome meteorological office		Observations and forecasts to be provided					
	Name	ICAO Location Indicator	Use	Name	ICAO Location Indicator	METAR/SPECI	State of the runway	Trend forecast	TAF	Temperature Tx/Tn	METAR/SPECI and TAF
1	2	3	4	5	6	7	8	9	10	11	12
Greenland (Denmark)	KANGERLUSSUAQ	BGSF	RS	KANGERLUSSUAQ	BGSF	Y			T	Y	P
Iceland	AKUREYRI	BIAR	AS	REYKJAVIK AIRPORT, NOF, MET	BIRK	Y	Y		T	Y	F
	EGILSSTADIR	BIEG	AS	REYKJAVIK AIRPORT, NOF, MET	BIRK	Y	Y		T	Y	F
	KEFLAVIK APP/TWR, OPS, MET	BIKF	RS	REYKJAVIK AIRPORT, NOF, MET	BIRK	Y	Y		T	Y	F
	REYKJAVIK AIRPORT, NOF, MET	BIRK	RS	REYKJAVIK AIRPORT, NOF, MET	BIRK	Y	Y		T	Y	F
Portugal (Madeira and Azores) (Portugal)	PONTA DELGADA	LPPD	AS	LISBOA	LPPT	Y			T	Y	F
	SANTA MARIA	LPAZ	RS	LISBOA	LPPT	Y			X	Y	F

TABLE MET II-3 – HF VOLMET BROADCASTS

EXPLANATION OF THE TABLE

The transmitting station appears at the top of each block.

Names in lower case letters indicate aerodromes for which reports (routine or selected special) are required.

Names in upper-case letters indicate aerodromes for which forecasts are required.

The Gander, New York and Shannon VOLMET broadcasts should be made only in the English language.

New York	New York	New York	New York
00-05	05-10	10-15	15-20
DETROIT CLEVELAND CINCINNATI Detroit Cleveland Cincinnati Indianapolis Pittsburgh	SIGMET (New York Oceanic) BANGOR WINDSOR LOCKS CHARLOTTE Bangor Windsor Locks Norfolk [Charlotte]	NEW YORK/JFK NEWARK BOSTON New York Newark Boston Baltimore Washington/IAD	SIGMET (Miami/San Juan Oceanic) BERMUDA MIAMI ATLANTA Bermuda Miami Nassau Orlando [Atlanta]
30-35	35-40	40-45	45-50
CHICAGO MILWAUKEE MINNEAPOLIS Chicago Milwaukee Minneapolis Detroit Boston	SIGMET (New York Oceanic) INDIANAPOLIS ST. LOUIS PITTSBURGH Indianapolis St. Louis Pittsburgh [Atlantic City]	BALTIMORE PHILADELPHIA WASHINGTON/IAD Baltimore Philadelphia Washington/IAD New York/JFK Newark	SIGMET (New York Oceanic) NASSAU ORLANDO Bermuda Miami Nassau Orlando Atlanta Tampa [West Palm Beach]

Gander	Gander
20-25	25-30
MONTREAL/YUL TORONTO OTTAWA Gander Montreal/YUL Toronto Ottawa Goose Bay	SIGMET (1) WINNIPEG EDMONTON CALGARY [CHURCHILL] Kuujjuaq Winnipeg Churchill
50-55	55-60
GANDER ST. JOHNS HALIFAX Gander St. Johns Halifax Stephenville Montreal/Mirabel	SIGMET (1) GOOSE BAY IQALUIT KANGERLUSSUAQ Goose Bay Iqaluit Kangerlussuaq [Kuujjuaq]

Notes :

1. SIGMET information in the Gander broadcasts includes SIGMET or notification of SIGMET affecting flights operating above FL 100 in the Gander Oceanic and Gander, Moncton, Montreal and Toronto flight information regions (FIRs).

2. The reports and forecasts shown in brackets may be deleted from the broadcasts to provide broadcasting time for the inclusion of SIGMET messages.

Shannon[1]	Shannon[1]	Shannon[1]	Shannon[1]	Shannon[1]	Shannon[1]
00-05	05-10	10-15	15-20	20-25	25-30
SIGMET BRUXELLES/ NATIONAL AMSTERDAM/ SCHIPHOL Bruxelles/National Amsterdam/Schipol Frankfurt Hamburg München	LONDON/ HEATHROW LONDON/ GATWICK STANSTED London/Heathrow London/Gatwick Stansted Prestwick Glasgow	SIGMET DUBLIN SHANNON Dublin Shannon Manchester Keflavik	SANTA MARIA LISBOA MADRID Santa Maria Lisboa Madrid Lajes	SIGMET PARIS/ CHARLES-DE-GAULLE PARIS/ORLY Paris/Charles-de-Gaulle Paris/Orly Zurich Genève Milano/Malpensa	Stockholm/Arlanda Manchester Shannon Kobenhavn/Kastrup Bergen Dublin Helsinki/Vantaa
30-35	35-40	40-45	45-50	50-55	55-00
SIGMET FRANKFURT KOLN-BONN Frankfurt Köln-Bonn Düsseldorf München Luxembourg	KEFLAVIK GLASGOW MANCHESTER London/Heathrow London/Gatwick Keflavik Glasgow Manchester	SIGMET OSLO/ GARDERMOEN KOBENHAVN/ KASTRUP Oslo/Gardermoen Kobenhavn/Kastrup Göteborg/Landvetter Stockholm/Arlanda Bergen Helsinki/Vantaa	ZURICH GENEVE Zurich Genève Paris/Charles-de-Gaulle Paris/Orly	SIGMET HAMBURG Bruxelles/National Amsterdam/Schiphol Frankfurt Köln-Bonn Hamburg	ROMA/FIUMICINO MILANO/MALPENSA Roma/Fiumicino Milano/Malpensa Torino Lisboa Lajes Santa Maria

Shannon frequencies – 3413, 5505, 8957, 13264 kHz

NOTES

1. SIGMET denotes the time-blocks during SIGMETs are broadcast.
2. Capital letters, for example BRUXELLES/NATIONAL, indicate aerodrome forecasts. Small letters indicate aerodrome reports.
3. SIGMETs (where appropriate), forecasts and reports and broadcast in the order shown. If all the elements of a broadcast have been transmitted in less than the 5 minutes allotted, reports are repeated at the end of each period of transmission as time permits.
4. The reports broadcast are the latest routine reports (or selected special reports) plus landing forecasts in the TREND form when the latter are available. If a new report is not available, the earlier one will be broadcast for one hour only together with the time of observation.
5. The valid period of the aerodrome forecasts normally extends to at least 6 hours following the broadcast time. If no amendment is received, a forecast is repeated in unchanged form in each scheduled broadcast for three hours only, or until a new forecast is received.

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[1] The following procedures apply to Shannon HF VOLMET broadcasts as indicated:

a) the aerodrome forecasts only should, if required, be omitted if the broadcast would otherwise overrun;

b) when data have not arrived from an aerodrome in time for a broadcast, the latest earlier material should be included in the broadcast, together with the time of observation.

TABLE MET II-4
SURFACE and UPPER AIR SYNOPTIC NETWORKS and OBSERVATIONS
Observations to be provided under the Danish and Icelandic Joint Financing Agreements

Index No. Chiffre indicatif Indicativo	Station Estación	Surface synoptic observations Observations synoptiques à la surface Observaciones sinópticos de superficie								Half-hourly observations Observations semi-horaires Observaciones semi-horarios	Time of observation Heure d'observation Observaciones horarios							
											Radiowind Radiovent Radioviento				Radiosonde Radiosonda			
		00	03	06	09	12	15	18	21		00	06	12	18	00	06	12	18
	GREENLAND (D)																	
04220	Egedesminde	X	X	X	X	X	X	X	X		X		X		X		X	
04270	Narssarssuaq	X	X	X	X	X	X	X	X		X		X		X		X	
04320	Danmarkshavn	X	X	X	X	X	X	X	X		X		X		X		X	
	ICELAND (I)																	
04005	Bolungarvik	X	X	X	X	X	X	X	X									
04018	Keflavik	X	X	X	X	X	X	X	X	0000-2400[1]	X		X		X		X	
04082	Hofn Hornafjordur	X	X	X	X	X	X	X	X									

1. Plus any necessary special observations.
   Prière d'ajouter toute observation spéciale.
   Más cualquier otra observación especial.

LEGEND / LÉGENDE / CLAVE

D ICAO 1956 Danish Joint Financing Agreement
Accord de financement collectif de l'OACI avec le Danemark (1956)
Acuerdo de financiamiento colectivo de la OACI de 1956 con Dinamarca.

I ICAO 1956 Icelandic Joint Financing Agreement
Accord de financement collectif de l'OACI avec l'Islande (1956)
Acuerdo de financiamiento colectivo de la OACI de 1956 con Islandia.

NAT ANP, VOLUME II

PART VI - SEARCH AND RESCUE (SAR)

1. INTRODUCTION

1.1 This part of the NAT ANP, Volume II, complements the provisions in ICAO SARPs and PANS related to search and rescue (SAR). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of SAR facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to the SAR facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

2. GENERAL REGIONAL REQUIREMENTS

2.1 The Rescue Coordination Centres (RCCs) and Rescue Sub-Centres (RSCs) for the NAT Region are listed in **Table SAR II-1** and depicted in **Chart SAR II-1**.

2.2 In cases where the minimum SAR facilities are temporarily unavailable, alternative suitable means should be made available.

2.3 In cases where a SAR alert is proximate to a search and rescue region (SRR) delineation (e.g. 50 NM or less), or it is unclear if the alert corresponds to a position entirely contained within an SRR, the adjacent RCC or RSC should be notified of the alert immediately.

3. SPECIFIC REGIONAL REQUIREMENTS

3.1. None.

TABLE SAR II-1 - SEARCH AND RESCUE FACILITIES IN THE NAT REGION

EXPLANATION OF THE TABLE

Column

1 State

2 Name of the Rescue Coordination Centre (RCC) and Rescue Sub-centre (RSC).

3 SAR points of contact (SPOC). Name of the SPOC.

4 Remarks. Supplementary information such as the type of RCC (e.g. maritime or aviation or joint).

State	Name of and RCC/RSC	SPOC[6]	Remarks
1	2	3	4
CANADA	Halifax JRCC Trenton JRCC	Trenton JRCC	JRCC: Joint Rescue Coordination Centre
DENMARK (Greenland)	Nuuk RCC	Nuuk RCC	
ICELAND	Reykjavik JRCC	Reykjavik JRCC	JRCC: Joint Rescue Coordination Centre
NORWAY	Bodo RCC	Bodo RCC	
PORTUGAL	Lajes RCC	Lajes RCC	
UNITED KINGDOM	UK Aeronautical RCC		Royal Air Force and Royal Navy fixed-wing aircraft and helicopters; Department for Transport (DfT) helicopters; Royal Air Force Mountain Rescue Teams; HM Coastguard; Merchant vessels
UNITED STATES	Boston JRCC (Massachusetts) Norfolk JRCC (Virginia) Miami JRCC (Florida)	Boston JRCC Norfolk JRCC Miami JRCC	JRCC: Joint Rescue Coordination Centre

[6] List of the SAR Point of Contact (SPOC) in the NAT Region is available at http://www.cospas-sarsat.int/en/contacts-pro/contacts-details-all

NAT ANP, VOLUME II

PART VII - AERONAUTICAL INFORMATION MANAGEMENT (AIM)

1. INTRODUCTION

1.1 This part of the NAT ANP, Volume II, complements the provisions in ICAO SARPs and PANS related to AIS/AIM and aeronautical charts (MAP). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of AIS/AIM facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to the AIS/AIM facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

2. GENERAL REGIONAL REQUIREMENTS

2.1 The responsibility for the provision of AIS/AIM facilities and services in the NAT Region, is reflected in the **Table AIM II-1**, which shows the list of designated international NOTAM Offices (NOF), designated States for AIP production, designated States for aeronautical charts (MAP) production, designated States for the provision of the authoritative Integrated Aeronautical Information Database (IAID) and designated States for the provision of pre-flight information services.

2.2 States should designate and implement an authoritative Integrated Aeronautical Information Database (IAID) where data sets are integrated and used to produce current and future AIS/AIM products and services, which is a fundamental step in the transition to AIM. The designation of authoritative databases should be clearly stated in the Aeronautical Information Package AIP.

2.3 The national plans for the transition from AIS to AIM identifying clearly the timelines for the implementation of the different elements of the ICAO Roadmap for the transition from AIS to AIM should be submitted by States to the ICAO EUR/NAT Regional Office. States should also inform the ICAO EUR/NAT Regional Office of any update.

2.4 States should take necessary measures to ensure that aeronautical information and data they provide meet the regulatory aeronautical data quality requirements.

2.5 The Quality Management System (QMS) in AIS/AIM should define procedures to meet the safety and security objectives associated with the management of aeronautical data and information.

2.6 Recognizing the need to maintain or enhance existing safety levels of operations, States should ensure that any change to the existing systems or the introduction of new systems used for processing aeronautical data and/or information are preceded by a safety assessment.

2.7 Technical services responsible for origination of the raw aeronautical information should be acquainted with the requirements for promulgation and advance notification of changes that are operationally significant as established in Annexes 11 and 14 and other relevant ICAO documentation. They should take due account of the time needed by AIS/AIM for the preparation, production and issue of the relevant material, including the compliance with the AIRAC procedures.

2.8 AIS/AIM personnel should be involved in the air navigation planning processes. This should ensure the timely preparation of appropriate AIS documentation and that the effective dates for changes to the air navigation system and procedures are satisfied.

2.9 States should produce relevant aeronautical charts required for civil air operations employing visual air navigation independently or in support of other forms of air navigation. The production

responsibility for sheets of the World Aeronautical Chart (WAC) — ICAO 1: 1 000 000 or Aeronautical Chart — ICAO 1: 500 000 (*as an alternative to the World Aeronautical Chart — ICAO 1:1 000 000)* is set out in **Table AIM II-2**.

3. SPECIFIC REGIONAL REQUIREMENTS

3.1 None.

TABLE AIM II-1 - RESPONSIBILITY FOR THE PROVISION OF AIS/ AIM FACILITIES AND SERVICES IN THE NAT REGION

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory
2 Designated international NOTAM Office (NOF)
3 Designated State for AIP production
4 Designated State for aeronautical charts (MAP) production
5 Designated State for the provision of the authoritative Integrated Aeronautical Information Database (IAID)
6 Designated State for the provision of pre-flight information services
7 Remarks — additional information, as appropriate.

State/FIR	NOF	AIP	MAP	IAID	Pre-flight briefing	Remarks
1	**2**	**3**	**4**	**5**	**6**	**7**
BODO OCEANIC	OSLO	NORWAY	NORWAY	NORWAY	NORWAY	(Norway)
GANDER OCEANIC	OTTAWA	CANADA	CANADA	CANADA	CANADA	(Canada)
NEW YORK OCEANIC	WASHINGTON	UNITED STATES	UNITED STATES	UNITED STATES	UNITED STATES	(United States)
REYKJAVIK	REYKJAVIK	ICELAND	ICELAND	ICELAND	ICELAND	(Iceland)
SANTA MARIA OCEANIC	LISBON	PORTUGAL	PORTUGAL	PORTUGAL	PORTUGAL	(Portugal)
SHANWICK OCEANIC	LONDON	UNITED KINGDOM	UNITED KINGDOM	UNITED KINGDOM	UNITED KINGDOM	(United Kingdom)
NUUK	NUUK	DENMARK	DENMARK	DENMARK	DENMARK	(Denmark)

TABLE AIM II-2 - PRODUCTION RESPONSIBILITY FOR SHEETS OF THE WORLD AERONAUTICAL CHART - ICAO 1:1 000 000 OR AERONAUTICAL CHART — ICAO 1: 500 000

EXPLANATION OF THE TABLE

Column:

1 Name of the State accepting production responsibility.

2 World Aeronautical Chart — ICAO 1:1 000 000/ Aeronautical Chart — 1: 500 000 sheet number(s) for which production responsibility is accepted.

3 Remarks.

Note — In those instances where the production responsibility for certain sheets has been accepted by more than one State, these States by mutual agreement should define limits of responsibility for those sheets. This should be reflected in the Remarks column

State	Sheet number(s)	Remarks
1	**2**	**3**
CANADA	2107, 2148	Within Gander Oceanic FIR
DENMARK	2008, 2009, 2018, 2019, 2038-40, 2055-57, 2084, 2085	Within Nuuk FIR
ICELAND	2086, 2054, 2106	Within Reykjavik FIR
NORWAY	2010, 2016, 2042	Within Bodo Oceanic FIR
PORTUGAL	2351-50	Within Santa Maria Oceanic FIR
UNITED KINGDOM	2150, 2171	Within Shanwick Oceanic FIR
UNITED STATES	2412	Within New York Oceanic FIR

- END -