REPORT OF

THE FIFTY-FIRST MEETING OF

THE EUROPEAN AIR NAVIGATION PLANNING GROUP

(Paris, 1 to 3 December 2009)

PREPARED BY THE EUROPEAN AND NORTH ATLANTIC OFFICE OF ICAO DECEMBER 2009

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0. INTRODUCTION

Place and duration

0.1 The 51st Meeting of the European Air Navigation Planning Group (EANPG) took place in the premises of the European and North Atlantic (EUR/NAT) Office of ICAO from 1 to 3 December 2009.

Attendance

0.2 The Meeting was attended by 78 representatives of 28 member and non-member States and by observers from 8 international organisations. A list of participants is at **Appendix A**.

Officers and Secretariat

0.3 Mr Phil Roberts, the Chairman of the EANPG, presided over the meeting throughout its duration. Mr Karsten Theil, ICAO Regional Director, Europe and North Atlantic, was Secretary of the meeting and was assisted by Mr George Firican, Deputy Director, Mrs Carole Green Stewart, Mr Gregory Brock, Mr Victor Kourenkov, Mr Elkhan Nahmadov, Mr Jacques Vanier, Mr Léon Vonlanthen, from the ICAO EUR/NAT Office, Mr Mohamed Smaoui from the MID Office and Mr Saulo Da Silva from Headquarters. Additional assistance was provided by Mr J. Benoist, Mrs Patricia Cuff, Mrs Nikki Goldschmid and Ms Leyla Suleymanova from the European and North Atlantic Office.

Conclusion, Decisions and Statements

0.4 The EANPG records its action in the form of Conclusions, Decisions and Statements with the following significance:

- **Conclusions** deal with matters which, in accordance with the Group's terms of reference, merit directly the attention of States or on which further action will be initiated by ICAO in accordance with established procedures.
- **Decisions** deal with matters of concern only to the EANPG and its contributory bodies.

  Note: in order to qualify as such, a Decision or a Conclusion shall be able to respond clearly to the "4W" criterion (What, Why, Who and When)

- **Statements** deal with a position reached by consensus regarding a subject without a requirement for specific follow-up activities.

Agenda

0.5 The Group agreed to the following agenda for organising the work of the Meeting and the structure of the report:

Agenda Item 1: Review of significant international aviation developments

Agenda Item 2: Previous EANPG follow up

Agenda Item 3: Aviation safety

Agenda Item 4: Planning and implementation issues

a) Management of the European Air Navigation Plan;

b) Proposals for amendments of ICAO provisions;

c) Air Traffic Management;

d) Communication, Navigation and Surveillance;

e) Language Proficiency Requirements;

f) Aeronautical Information Service;

g) Meteorology

h) The implementation of the new content of the FPL in 2012

Agenda Item 5: Monitoring

Agenda Item 6: Deficiencies

Agenda Item 7: Work programme

Agenda Item 8: Any Other Business

1. REVIEW OF SIGNIFICANT INTERNATIONAL AVIATION DEVELOPMENTS

Civil/Military Cooperation

1.1 The EANPG was informed about the regional seminar on civil/military cooperation "Flexible Use of Airspace – Demystified" which was hosted in Chisinau by the Republic of Moldova on 4-6 August 2009. The seminar had made useful comments on the ICAO Guidance Material on Civil/Military Cooperation that was under development. The seminar had also noted with appreciation the work done by the EANPG Task Force to develop a proposal for amendment of the European Air Navigation Plan to include material on Flexible Use of Airspace (FUA), including harmonised procedures for High Seas airspace.

1.2 The EANPG was also informed about the Global Air Traffic Management Forum on Civil/Military Cooperation which took place in ICAO Headquarters in Montréal on 19-21 October 2009. The Forum had proposed amendment to the Assembly Resolution A36-13 Appendix O, *Coordination of Civil and Military Air Traffic*, aimed at strengthening States commitments to enhance cooperation between civil and military authorities. The Forum had highlighted that ICAO does not regulate military aviation but serves as a global platform for cooperation and coordination. The Forum had also recommended that the ICAO Regional Directors should promote civil and military cooperation through the Planning and Implementation Regional Groups (PIRGs).

Activities of NATMC

1.3 The Representative of the NATO Air Traffic Management Committee (NATMC) informed the EANPG about the contribution from military authorities to the Global Forum, in particular the cooperation on integration of Unmanned Aerial Systems (UAS) in un-segregated airspace and on ATM and Airspace security. The EANPG was also informed about the outcome of the NATMC Plenary Meeting on 4-6 November 2009, about NATO's involvement in ATM modernisation programmes and about the NATO Russia Council – Cooperative Airspace Initiative.

Single European Sky

1.4 The Representative of the European Commission (EC) informed the EANPG that the Second Legislative Package of the Single European Sky Regulations (SES II) would become directly applicable on 5 December 2009. SES II included provisions regarding Performance Regulations Framework; Network Management; establishment of Functional Airspace Blocks (FABs) by 2012; expansion of the competency of the European Aviation Safety Agency (EASA) to cover Air Traffic Management (ATM); and the establishment of an Airport Observatory to advise the EC on airport capacity issues.

1.5 The EANPG was also informed that on 25-26 February 2010, under the Spanish presidency of the European Union, a conference would be held to explain the detailed content of SES II and the associated roadmap for its implementation.

ICAO Policy on Regional Cooperation

1.6 The EANPG was informed that the Council, on 23 October 2009, had endorsed the ICAO Policy on Regional Cooperation. The main objective of this Policy was to avoid duplication and achieve harmonisation on improvements in the technical and/or policy areas by strengthening cooperation between ICAO, the regional civil aviation bodies and regional organisations.

1.7 The EANPG was informed that the European and North Atlantic Office already enjoyed the positive and very fruitful cooperation with a number of regional bodies/organisations and that the Regional

Director would take steps to formalise this cooperation through Memorandums of Understanding with each of them.

ICAO High Level Safety Conference

1.8 The EANPG was informed about the forthcoming ICAO High Level Safety Conference in ICAO Headquarters in Montréal on 29 March – 1 April 2010. The main objective of the Conference would be to discuss procedures for sharing of safety data and the protection of their sources as well as agreement that the ICAO State Safety Programme (SSP) framework should form the basis for a Safety Management Annex to the ICAO Convention. The Conference would also be invited to comment on a proposal from the Secretariat on Continued Monitoring of the safety oversight performance of States after 2010 when the Universal Safety Oversight Audit Programme (USOAP) comes to an end.

1.9 The EANPG was also informed that a regional workshop to prepare for the Conference would take place in Baku, Azerbaijan on 9-11 February 2010. All the secretariat working documentation for the Conference would be made available to the workshop which would present the participating States with an opportunity to discuss and possibly coordinate their individual positions in advance of the Conference.

Preparations for the Assembly

1.10 The EANPG was informed about the preparation by the Council of the budget for the period 2011-13 to be presented to the 37th Session on the Assembly in September 2010. For the time being, two scenarios were envisaged, namely Zero Nominal Growth (ZNG) and Zero Real Growth (ZRG). No matter the outcome, reduction of staff – and resulting reduction of work programmes – was foreseen unless voluntary contributions would be received from States. In this context, the Regional Director invited States to consider secondment of experts to assist the European and North Atlantic Office in its key activities.

Service Provision in Tbilisi Flight Information Region

1.11 The Representative of Georgia informed the EANPG that on 30 November 2009 a letter had been sent by the Deputy Minister of Economic Development of Georgia to the President of the Council of ICAO concerning unauthorized flight operations within the Tbilisi FIR. In case of official request/inquiry from the Council of ICAO, the Russian Federation would provide the necessary clarifications on the issue.

Standardised lay-out for Air Operator Certificate

1.12 The opportunity of the EANPG/51 meeting was used to remind State representatives about the new requirements in Annex 6 Part I and Part III, becoming applicable on 1 January 2010, concerning a standardised layout for the air operator certificate (AOC) and its associated operations specifications, and copies of State letter AN 11/1.3.21 – 09/86 of 6 November 2009 were made available to the representatives.

Implementation of RVSM in the Eastern part of the ICAO European Region (EURASIA RVSM)

1.13 The EANPG was informed on the progress of the Eurasia RVSM implementation project covering several States in the Eastern part of the ICAO European Region (Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Uzbekistan). Thanks to the kind acceptance of the Russian Federation, the First Meeting of the EURASIA RVSM Task Force was held in Moscow, the Russian Federation, from 1 to 3 September 2009.

1.14 Upon request from States, in addition to Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Uzbekistan two other States, one from the ICAO Asia/Pacific Region – Mongolia, and one from the ICAO European Region - Belarus were invited to participate in this project. The

Task Force stressed the importance of including Afghanistan in the implementation planning and requested ICAO to initiate the necessary coordination.

1.15 The EANPG noted the coordinated actions by all States concerned in order to ensure a safe operational environment. Of particular importance was the commitment of all States involved in the project to implement the internationally required RVSM Flight Level System as indicated in ICAO Annex 2 (Tenth Edition), Appendix 3, Table 3-a, expressed in meters with equivalent feet, as of 17 November 2011. In order to advance its work in a timely manner so as to complete all necessary preparatory arrangements, the Task Force established two working groups to deal with ATM and monitoring issues.

1.16 The EANPG was informed that the ATM working group of the Eurasia RVSM Task Force held its first meeting in Almaty, Kazakhstan, from 17 to 19 November 2009. One of the important outcomes of this meeting was the draft proposal for amendment to ICAO Doc 7030. The working group also reviewed the Master Plan for the RVSM implementation.

1.17 Ukraine raised the issue of the need for closer coordination regarding the transition procedures related to the feet RVSM system already implemented in the Western part of the ICAO EUR Region and the one to be implemented in the Eastern part. The Russian Federation invited Ukraine to participate in the future meetings of the Task Force and its groups in order to achieve safe and fully harmonised transition. Furthermore, it was pointed out that the ATM working group would organise its work programme so that all interface States would be invited to participate in this activity during 2010.

1.18 The EANPG noted that States adjacent to the airspace in question would be consulted during spring 2010. A proposal for amendment of the Air Navigation Plan to reflect the RVSM implementation would be initiated by the Russian Federation on behalf of all States involved, and the go/no go decision would have to be made in May 2011.

2. PREVIOUS EANPG FOLLOW UP

Review of the actions of the ANC on the Report of EANPG/50

2.1 The EANPG was informed on the actions taken by the Air Navigation Commission (ANC) on the report of the fiftieth meeting of EANPG after its review. It was informed that the ANC and the Council take specific action on those EANPG conclusions that would require approval by the ANC or the Council.

2.2 In the case of the EANPG/50 Report, as there were no specific items that required Council action, the report was not submitted to the Council.

2.3 The EANPG was informed that the ANC agreed with the EANPG that the Global Air Navigation Plan and the Global Air Traffic Management Operational Concept would form the future basis for planning and implementation activities in the ICAO regions.

2.4 The ANC also noted that consolidation of flight information regions in the Russian Federation, as well as the defragmentation of airspace in the western part of the region through functional airspace blocks, increased civil/military coordination and cooperation, harmonization of different transition procedures between different flight level systems and ensuring interoperability and transparency across borders between regions present some challenges.

2.5 The EANPG was informed that the ANC noted the continued efforts of EANPG towards developing a concept for flexible use of airspace over the high seas, and encouraged the continuation of the

activity and recommended that the Secretariat monitor the progress for possible applicability in other regions.

2.6 Finally the EANPG was informed that the ANC noted with concern the incomplete implementation of WGS-84 and Quality Management Systems (QMS) for the AIS/MAP services within the Eastern part of the European Region.

2.7 The EANPG noted the information and it was remarked that any follow-up action would be incorporated in the EANPG work programme. It was also noted that some of the issues from the EANPG/50 were already advanced by the States.

3. AVIATION SAFETY

ICAO ECAC States ATM Safety Framework Monitoring

3.1 The EANPG reviewed the results of the 2009 ATM Safety Framework Maturity Study. The EANPG recalled that this study had been conducted in 2002, 2004, 2006, 2007 and 2008 and had initially included only the European Civil Aviation Conference (ECAC) States; since 2007, the additional 7 non-ECAC States of the ICAO EUR Region had been invited to participate and three additional North African States had been invited in 2008. The study methodology involved self-assessment surveys followed up by interviews. The results for the 2009 survey showed an encouraging increase in overall implementation of requirements. Within ECAC States the objective to get all ANSPs and Regulators above the 70% maturity level by the end of 2009 had been met by approximately 88% of ANSPs and by 77% of Regulators.

3.2 Although five non-ECAC ICAO EUR Region States participated in this year's survey, the EANPG was disappointed to note that Morocco, which had participated in 2008, did not submit a completed survey in 2009 and that no contact could be established with Algeria on the subject. The EANPG noted the lack of guidance material in Russian in relation to EUROCONTROL Safety Regulatory Requirements (ESARR) as well as guidance on risk assessment and development of Key Performance Indicators. When the non-ECAC States are included the overall scoring was lower than the ECAC only scores, however the ANSP and Regulator maturity scores were much closer together.

3.3 With respect to future monitoring, the EANPG noted that a new methodology and process, to be used from 2010 onwards, had been developed with stakeholders that would concentrate on assessing Safety Key Performance Indicators, Single European Sky requirements and the ICAO 8 Critical Elements for Safety Oversight. The EANPG agreed that, to increase and support States participation to the ATM Safety Framework Maturity Study, a specific workshop should be organised to allow States to complete the questionnaires and the follow up interviews. The EANPG was advised regarding a planned workshop to be held in February 2010 in Baku, Azerbaijan to assist States to prepare for the High Level Safety Conference which was planned to be held at ICAO Headquarters from 29 to 31 March 2010; a follow up workshop was planned to take place in Ukraine in early June 2010. The EANPG noted as well the recent decision of the Provisional Council of Eurocontrol to endorse these activities.

3.4 The EANPG therefore agreed to the following conclusion:

EANPG Conclusion 51/ 1 – Framework ATM Safety Maturity study

That the ICAO Regional Director, Europe and North Atlantic:

a) use the findings of the 2009 ATM Safety Framework Maturity Study as appropriate;

b) consider holding a workshop in Autumn 2010 to allow non- European Civil Aviation Conference (ECAC) States in the ICAO European region, participating in the study, to complete questionnaires and undertake face to face interviews;

c) encourage States to attend the High Level Safety Conference (HLSC) preparatory workshop in Baku, Azerbaijan in February 2010 and the follow-up workshop in Ukraine in early June 2010; and

d) invite EUROCONTROL to provide appropriate assistance (i.e. through European Safety Programme for ATM (ESP+)) to those States and Air Navigation Services Providers experiencing difficulties in raising their overall Safety Maturity Level.

EUROCONTROL Development of ATM Safety Key Performance Indicators (KPIs)

3.5 The EANPG noted the work undertaken by EUROCONTROL on developing ATM safety key performance indicators (KPIs), outlining a revised methodology and modus operandi for the ATM Safety Framework Maturity Studies, and introducing a new methodology for performance measurement. Populating a composite index or a limited set of safety KPIs with reliable, consistent and high-quality data is key to monitoring the European ATM system's safety performance. The EANPG agreed on the following:

EANPG Conclusion 51/2 – ATM Safety Key Performance Indicators

That the ICAO Regional Director, Europe and North Atlantic:

a) advise all States in the ICAO European Region of the work being undertaken to develop ATM Safety Key Performance Indicators and in particular the use of the ATM Safety Maturity Studies as an example of a Leading Indicator; and

b) re-emphasise to all States in the ICAO European Region the importance of the self assessment surveys and urge States and Air Navigation Services Providers to participate in the first baseline ATM Safety Maturity survey in 2010/2011.

Review of other safety-related activities

3.6 The EANPG noted the information provided by the Secretariat concerning the safety related activities conducted by ICAO in the EUR Region. The Regional Office continued to be involved in safety-related activities supporting the implementation of Safety Management Systems (SMS), State Safety programmes (SSP), Universal Safety Oversight Audit preparation and follow-up assistance, language proficiency, expansion of single European sky to non-European Union member States in the south-east part of the region as well as contribution to several EUROCONTROL safety-related initiatives such as the ATM safety maturity survey for the non-European Union, non ECAC and non-EUROCONTROL States to which the EUR/NAT office was accredited.

3.7 The EANPG was informed that, since November 2008 five SMS courses were given in Azerbaijan, Romania, Estonia, Kyrgyzstan, Switzerland and Turkey with a total of about 160 participants. Additionally, an SSP Implementation Course had taken place in June 2009 in the EUR/NAT Office of ICAO with 25 participants from 15 States and in October in Poland involving 25 participants from two States.

3.8 The first training course on Safe Transport of Dangerous Goods by Air ever held in the EUR Region was provided in Tashkent, Uzbekistan in March 2009 to more than 20 participants.

3.9 The EANPG noted that a workshop for Language Proficiency Raters had been organised by the EUR/NAT Office of ICAO at the Ulyanovsk Higher Civil Aviation School in Russian Federation in March 2009 assisting States towards the full implementation of the ICAO Language Proficiency Requirements.

4. PLANNING AND IMPLEMENTATION ISSUES

4.1 MANAGEMENT OF THE EUROPEAN AIR NAVIGATION PLAN

Establishment of FAB

4.1.1 In accordance with European Union (EU) legislation, the EU Member States were required to establish Functional Airspace Blocks (FAB). The European Commission (EC) had entered into or was negotiating agreements with non-EU Member States on the so-called European Common Aviation Area (ECAA). Under such an agreement, a non-EU Member State would accept to transpose, to the extent possible, the Single European Sky Regulations and the associated implementing rules, including the establishment of FABs, into nationally applicable legislation/regulation.

4.1.2 In order to comply with the EU Regulations, initiatives had been taken by all EU Member States as well as by some non-EU Member States to establish FABs. Most of the States currently engaged in the establishment of FABs were either members of or observers to the ICAO European Air Navigation Planning Group (EANPG). In accordance with its Terms of Reference, as established by the Council of ICAO, the EANPG should ensure the continuous and coherent development of the European Air Navigation Plan (ANP) and develop amendment proposals for its update to satisfy any changes in the requirements.

4.1.3 In order to prevent misunderstandings with regard to establishment of FABs and the ICAO air navigation planning process, the Secretariat had performed an analysis of the relevant EU legislation and ICAO provisions. The examination of the EU Regulations regarding the Single European Sky in general and of the implementation of FABs in particular had indicated that they seemed to be in conformance with and meet the spirit of the ICAO provisions. The European Regulations explicitly had established their relationship with the Convention on International Civil Aviation. Further, the definition of FABs was in line with Assembly Resolution A36-13, and the establishment of FABs based on the EU Regulations was considered to be in support of ICAO's stated objective of improving safety by reducing the potential for errors that can arise because of the application of different rules in adjacent airspaces.

4.1.4 On the basis on the analysis performed, the Secretariat had concluded that the establishment of FABs in accordance with the EU Regulations on the Single European Sky was not in itself subject to the process for amendment of ANPs. However, it was stressed that should changes to the FIR boundaries or to the facilities and services provided be required at a later stage, such changes might be subject to the ANP amendment procedure and should therefore be examined on a case-by-case basis.

4.1.5 The Secretariat had also concluded that pursuant to Article 83 of the ICAO Convention, agreements or arrangements for FABs were subject to registration with ICAO in accordance with the applicable Rules in ICAO Doc 6685: *Rules for Registration with ICAO of Aeronautical Agreements and Arrangements*. The Regional Director offered the good services of the EUR/NAT Office to assist States with such registration.

4.1.6 The EANPG noted the conclusions of the Secretariat. It was, however, also noted that activities related to implementation of some FABs included re-structuring of the ATS route network that would affect adjacent States not part of the FAB in question. The Secretariat stressed that such changes would be subject to the ICAO air navigation planning process and the procedure for amendment of the ANP.

4.1.7 The Group agreed that progress reports from all on-going FAB implementation projects should be presented to the next meeting of the Programme Coordination Group (COG). On the basis of the presentations, the COG would identify the necessary activities to ensure coherence at the region-wide level.

4.1.8 The Group invited the Regional Director to bring its considerations, including its concerns with regard to the need for coordination between adjacent FABs and FABs and adjacent States, to the attention of the Single Sky Committee of the European Commission.

4.2 PROPOSALS FOR AMENDMENTS OF ICAO PROVISIONS

Flexible Use of Airspace

4.2.1 The EANPG recalled that the Task Force on the Flexible Use of Airspace met twice in 2008 and provided an interim report to EANPG/50 in December 2008. The EANPG/50 agreed that, based on the initial work of the Task Force, a form of the Eurocontrol FUA Concept could be implemented in high seas airspace of the ICAO European Air Navigation Region and invited the Task Force to develop a proposal for the amendment to the ICAO European Regional Air Navigation Plan regarding the expansion of the FUA concept to airspace over the high seas (EANPG Decision 50/2 refers).

4.2.2 With this task in view, the FUA Task Force met twice since EANPG/50 in order to develop the proposals for amendment to the ICAO Basic Air Navigation Plan (EUR ANP – ICAO Doc 7754 Vol I) and to the Facilities and Services Implementation Document (EUR FASID – ICAO Doc 7754 Vol II). The last meeting of the Task Force indicated:

a) that all participants in the Task Force agreed to the proposal for amendment to the EUR Basic ANP;

b) that the participants from Greece and Turkey reserved their positions with regard to certain parts of the proposal for amendment to the EUR FASID; and

c) that the Regional Director, through discussions with the authorities of Greece, would try to obtain their agreement on the proposal for amendment to the EUR FASID.

4.2.3 The Task Force concluded that it had completed its work to the extent possible and agreed to recommend to the EANPG that the Task Force be disbanded.

Activities of the Regional Director

4.2.4 The reservations expressed by Greece and Turkey referred to the highlighted text in the following paragraph of the proposal for amendment:

> *"18 Access to high seas airspace cannot be denied nor can State aircraft be "forced" to participate in the application of an FUA concept. Any procedure or agreement developed must not give the operators of State aircraft the perception that their operations would be restricted in any way. Therefore, the procedures and/or agreements must also acknowledge that negotiating the use of the airspace was the ideal; however there would be circumstances when only notification of operation would be possible or operational considerations may preclude either negotiation or notification."*

4.2.5 Retention of the underlined text was considered as unacceptable to the Officials of Greece due to the *modus operandi* of some state aircraft over the Aegean Sea (it should be noted that this sentence was supported, with the exception of Greece, by most of the members of the FUA Task Force, including the representative of NATO, as it was seen to reflected the spirit of international law, in particular Article 3 d) of the Chicago Convention).

4.2.6 The EANPG noted that the reservations expressed by Greece and Turkey with regard to the proposal for amendment to the EUR FASID were based on special circumstances that prevailed over the Aegean Sea. Furthermore, the EANPG considered the material that had been developed by the Task Force to

be of high quality and very useful for other States in the EUR Region in their homogenous implementation of a concept for the application of FUA, within airspaces over their territories as well as within airspaces over the high seas.

4.2.7 The ICAO Regional Director, Europe and North Atlantic, visited Greece on 4 June 2009 and Turkey from 25 to26 of November 2009 and discussed the proposal for amendment to the FASID with representatives of the Civil Aviation Administration, of the Ministry of Foreign Affairs and of the Ministry of Defence.

4.2.8 After a fruitful negotiation process that continued during the EANPG meeting, the following amended text of the paragraph 18 was agreed by all parties concerned:

> *"18 Access to high seas airspace cannot be denied nor can State aircraft be "forced" to participate in the application of an FUA concept. Any procedure or agreement developed must not give the operators of State aircraft the perception that their operations would be restricted in any way. Therefore, the procedures and/or agreements must also acknowledge that negotiating the use of the airspace was the ideal; without prejudice to Articles 3a and 3d of the Chicago Convention, there may be exceptional circumstances when*:*
>
> - *only notification of operation would be possible; or*
> - *operational considerations may preclude either negotiation or notification."*

> ** Greece maintains that notification of operations must be secured under any circumstances.*

4.2.9 Based on the above, the EANPG agreed to invite the ICAO Regional Director, Europe and North Atlantic to process the proposal for amendment, in accordance with the established formal procedure, with the understanding that no objections would be expected from EANPG Member States during the circulation process. After due consideration of the issue, EANPG agreed the following EANPG Conclusion and Decision:

EANPG Conclusion 51/3 – Amendment to ICAO Doc 7754

> That the ICAO Regional Director, Europe and North Atlantic, process, on behalf of the EANPG, the draft proposal for amendment to the ICAO Basic Air Navigation Plan (EUR ANP – ICAO Doc 7754 Vol I) and to the Facilities and Services Implementation Document (EUR FASID – ICAO Doc 7754 Vol II), regarding Flexible Use of Airspace (FUA) over the high seas, as presented at Appendix B-1 and Appendix B-2 to this report.

EANPG Decision 51/1 – Dissolution of the EANPG FUA TF

> That the ICAO Regional Director, Europe and North Atlantic, inform States and international organisations on the completion of the work programme of the EANPG Flexible Use of Airspace Task Force (FUA TF) and that the Task Force is disbanded.

EUR/ANP Progress

4.2.10 The EANPG was presented with a progress report on the task assigned to the COG by the EANPG/48 (EANPG Decision 48/12 - *Review the European Regional Air Navigation Plan* refers) to revise

the current provisions of the Air Navigation Plan - European Region (EUR ANP) (Doc 7754) to reflect the relevant elements of the Global ANP and the evolving ATM operational concept that would be necessary for the entire ICAO European Region.

4.2.11 The EANPG recalled that it had been agreed that the new format of the EUR ANP would comprise of:

a) a web-based air navigation planning tool containing all details currently listed in Table ATS 1 and all FASID Tables (AOP, CNS, ATM, MET, SAR, AIS). This will be designed to easily support the coordination, agreement and recording process between States and international organisations, also through a user-friendly interface; and

b) Easy-to-use planning documents that would contain the relevant elements from the ATM operational concept and the Global ANP for the agreed CNS/ATM systems infrastructure necessary to support the implementation of the homogeneous ATM areas and major international traffic flows.

4.2.12 Concerning progress on the web-based air navigation planning tool, the EANPG was informed that the full globalisation of the five-letter name-code component of the ICAO Code and Route Designator system (ICARD) would be completed by the first quarter of 2010 and that coordination on the globalisation of the ATS route designator component of ICARD was underway. The EANPG noted that discussions on other candidate areas for inclusion in the web-based planning tool would take place in the future with ICAO Headquarters. The representative of Switzerland requested that the CNS related web-based tools, such as the SBAS Channel Allocation Utility, be given priority in the studies for further development of the web-based planning tool.

4.2.13 With respect to the progress on the drafting of the planning documentation, the EANPG noted that the ICAO EUR/NAT Office obtained resources to fund a technical officer between 1st September and 31st December 2009 to provide assistance in revising the EUR Air Navigation Plan in view of the fact that support for a COG Task Force to conduct part of this task had not been possible. The EANPG noted with satisfaction that this assistance has enabled good progress to be made in the drafting of the text of the new EUR ANP.

4.2.14 The EANPG noted that the following principles behind the proposed layout of the Basic Plan and how this was foreseen to relate to the FASID and Supporting material were adopted for the drafting exercise:

i) a clear relationship between the Regional Plan (in this case the EUR ANP (Doc 7754) and the ICAO Global Plan (Doc 9570) and ATM Concept (Doc 9854);

ii) Part One – the Basic ANP should be written to reflect the conceptual objectives for the EUR Region whilst including the current to medium term requirements. Material should be written to minimise the requirement for continual amendment. Dynamic lists such as descriptions of ATS routes should be referenced to the FASID as appropriate or flagged as candidates for the proposed web-based air navigation planning tool;

iii) Part Two – the FASID should provide sufficient detail of current and emerging programmes to provide the reader with an overview and sufficient detail of the current to short-term environment; and

iv) Guidance material on the detail of programmes or Concepts should be contained in supplementary material referenced appropriately and consideration should be given to adopting such material as ICAO EUR Documents.

4.2.15 The EANPG noted that the proposed layout and content of the EUR ANP had been revised with the addition of a new chapter on environmental provisions. The EANPG received a comprehensive presentation on the work that had been done so far and in particular, noted the specific elements that had been revised or inserted. The ICAO Secretariat informed the EANPG that it would coordinate the first two parts, i.e. Introduction and General Planning Aspects, informally with ICAO Headquarters and Regional Offices to receive their comments. Additionally, the ICAO Secretariat would ensure that the appropriate EANPG contributory bodies reviewed the sections as the drafts become mature as laid out in the work programmes of these EANPG contributory bodies.

4.2.16 The specific elements that concerned the Introduction Section were:

a) a paragraph on performance based services to replace CNS/ATM developments;

b) the introduction of a diagram (from Global Plan) to reflect the relationship between global, regional and national plans;

c) reformatting of the list of ICAO States to show their respective relationships with ICAO Regional Offices, ANPs and PIRGs; and

d) inclusion of the Basic Operational Requirements and Planning Criteria (BORPC).

4.2.17 The EANPG noted that the BORPC material did not reflect properly new developments, such as Performance Based Navigation (PBN) or new aircraft types such as the A380, and consequently tasked the ICAO Regional Director, Europe and North Atlantic, to invite ICAO Headquarters to update the BORPC to reflect the advancements in accordance with the Global Air Navigation Plan. The EANPG agreed to the following Conclusion:

EANPG Conclusion 51/4 – Update to Basic Operational Requirements and Planning Criteria (BORPC)

That the ICAO Regional Director, Europe and North Atlantic, invite ICAO Headquarters to update the Basic Operational Requirements and Planning Criteria (BORPC) in the Regional Air Navigation Plans to reflect new developments.

4.2.18 The EANPG was informed that the General Planning Aspects Section was completely rewritten. The following points were highlighted:

a) Sub-regional groups have been reflected to show the areas where major EUR Region programmes are being planned or implemented. It is considered a diagram reflecting group compositions should sit in the FASID or electronic database as the dynamics of such groups may change;

b) a paragraph concerning PBN has been introduced;

c) a paragraph on Global Planning Initiatives (GPI) has been introduced;

   i) This in turn links to the EUR Regional Planning Initiatives. This data was extracted from the EANPG/48 Report and it is considered it should be re-validated. Moreover, the inclusion of un-validated time lines in the Basic Plan should be avoided to minimise amendment;

   ii) Consequently, it is considered that the Basic Plan should only reflect the status of the GPI/RPI on the basis of being implemented, partially implemented, not applicable/implemented, or planning underway with only validated target dates shown in the Remarks column;

   iii) More detail on time frames/target dates should be included in the FASID; and

iv) the Planning Process has been aligned with material in the Global Air Navigation Plan whilst reflecting that there is a transition from existing programmes.

d) a paragraph on the relevance of human factors considerations has been included;

e) due account of safety management has been reflected, including that the EANPG should endorse safety plans associated with pan and sub-regional programmes. Linkage to the ICAO Global Aviation Safety Plan and associated Global Safety Initiatives has been included. A short paragraph on deficiency management has been included in the Safety Consideration section as it was considered this aspect should be included within the Plan;

f) a paragraph has been added to reflect the requirement to consider the environment;

Note: This has been accompanied by a statement that environmental considerations should not compromise acceptable levels of safety.

g) a diagram showing the homogeneous areas of the EUR Region has been included with a matrix detailing major traffic flows;

Note: This latter element is still to be updated as it contains a number of 'tbd' within the 'FIRs Involved' column.

h) A short paragraph on the requirement for air traffic forecasts, system capacity and air traffic demand has been included. More detail on the outputs of the forecasting sources should be contained in the FASID; and

i) a high level paragraph on implementation strategy has been included.

4.2.19 The EANPG noted that the status of implementation of the GPI/RPI listed in the matrix (paragraph 4.1.10 c) above refers) required verification and revalidation before the section could be circulated as an amendment proposal.

4.2.20 With respect to the Air Traffic Management (ATM) section, the EANPG noted that it had been completely revised. The following particular points were highlighted:

a) The first part had been based broadly on the NAT ANP ATM Section format and detailed the ATM Operational Concept and its associated component requirements. It set out current and developing requirements that would be required during transition to the ATM Concept. It was noted that the ATM section was more detailed than envisaged, as it had been necessary to include *verbatum* the amendment proposal from the FUA Task Force, which influenced the overall style and level of detail;

b) Reference to ICAO Annexes and Documents where SARPS should be followed has been shown at paragraph 2. Detailed references to listed annexes and documents has been omitted thus removing information which becomes out of date following ICAO document amendment; and

c) There was no reference to specific implementation programmes and it was intended to include these in the corresponding ATM chapter in the FASID with electronic programme links to enable the reader to access the level of detail required; this would facilitate the ability to more easily keep the document up to date.

4.2.21 The EANPG commended and endorsed the work that had been completed so far and confirmed that the style and content of the revised ATM Section as presented at the meeting was appropriate. The EANPG advised that the remaining sections of the EUR ANP should be revised in accordance with the model presented in the ATM section.

4.2.22 In view that the work to revise the EUR Air Navigation Plan would need to be continued in 2010, the EANPG supported the ICAO Secretariat's efforts in seeking resources to continue the funding of the technical officer in the year 2010.

Aircraft identification

4.2.23 The EANPG Group was informed regarding the strategy for aircraft identification in the European Civil Aviation Conference (ECAC) area that had been developed by the EUROCONTROL Air Navigation Services Board (ANSB) and endorsed by the Provisional Council (PC). The long term goal of the Aircraft Identification Strategy was to employ down-linked aircraft identification capabilities for all Instrument Flight Rules (IFR) General Air Traffic (GAT) by the year 2020. The Aircraft Identification Strategy also defined an Initial Operating Capability to be operational in the region by February 2012. The Initial Operating Capability was necessary to address the current problems of managing Mode 3/A codes, to bring Mode S enabled Elementary Surveillance (ELS) into operational service and to provide a solid basis for a coordinated and integrated evolution to the long term goal.

4.2.24 The EANPG was advised that the Aircraft Identification Programme had been established in order to achieve the Initial Operating Capability. The operational concept of the 2012 Initial Operating Capability combined in a complimentary and integrated fashion three different regimes for aircraft identification: ELS supported by improved Mode 3A code management; Centralised Codes Assignment and Management System (CCAMS) and enhanced Originating Code Assignment Method (ORCAM). The EANPG was advised of the Provisional Council decision to launch this program as of 1 January 2010.

4.2.25 The EANPG noted that the operational deployment of ELS was following an evolutionary path, starting with city pair routes between a numbers of major airports. By 9 February 2012 it was expected that States deploying Mode S ELS would have implemented a number of these city pairs but would still require a significant amount of Mode 3/A codes. Code management in the ELS airspace would have to operate seamlessly with adjacent non ELS airspace, so an optimisation of code assignment rules was necessary to ensure the minimum amount of code changes at interfaces and also ensure that the unambiguous identification of aircraft was maintained.

4.2.26 In airspace which was not planning to implement ELS operations by 9 February 2012, ANSPs would be required to implement enhanced and flexible capabilities for assigning Mode 3/A codes. A number of ANSP's had elected to meet this requirement through joining CCAMS. With CCAMS, code assignment would be determined by a central server located at the EUROCONTROL Central Flow Management Unit (CFMU) and the code to be used would be transmitted to the ANSP. The CCAMS Central Server would assign codes dynamically based on the actual and predicted traffic situation and also respect the ORCAM rules applying in non CCAMS airspace.

4.2.27 The EANPG was informed that the remaining group of ANSP's (non ELS and non CCAMS) would be required to implement the enhanced ORCAM (eORCAM) functionalities within their Flight Data Processing Systems (FDPS). These functionalities were similar to the capabilities of the CCAMS Central Server but would be implemented locally. Compliance with assigning codes correctly in accordance with ORCAM rules in airspace using eORCAM would be the responsibility of the ANSP. The EANPG noted the results of a survey to determine which of the three regimes each State planned to implement. A map depicting these results is provided at **Appendix C**.

4.2.28 The EANPG was advised that EUROCONTROL had created a dedicated Aircraft Identification Programme to achieve the 2012 Initial Operating Capability: The programme integrated those elements of the Mode S Programme, the original CCAMS programme and the necessary development of the ORCAM arrangements to ensure an operationally viable mixed ELS, CCAMS and eORCAM environment.

4.2.29 In formulating the strategy for aircraft identification, the EANPG noted it had been acknowledged that appropriate European regulation would be required to ensure that a harmonised and coherent operational implementation of the strategy could be achieved within the required timescales. For non European Community States this would be achieved by international agreement and through ICAO regional planning activities and supporting Regional Air Navigation Agreements.

4.2.30 The EANPG was advised that the Single Sky Committee had accepted a proposal to extend the scope of the draft implementing rule surveillance performance and interoperability requirements (SPI), currently under development, in order to address the regulatory aspects related to the implementation of the strategy. In line with the normal regulatory development, a preliminary impact assessment as well as an interoperability analysis had already been carried out and an informal consultation process was underway. It was expected that following the feedback from this consultation, the necessary regulatory material would be developed and would be submitted to a formal consultation expected to start in January or February 2010.

4.2.31 The EANPG was informed regarding the proposed working arrangements for the Aircraft Identification Programme, including the intent to establish a Programme Planning Group. In this regard, it was proposed to merge the current Mode S Programme Steering Group, the SSR Code Steering Group (SCSG) and the former CCAMS National Coordinators into the Programme Planning Group. Once formally established this group would report principally via the Airspace and Navigation Team (ANT), but also via the Operations and Development Sub-Group (ODSG) and the Operational Requirements and Data Processing Team (ODT) to the Operations Coordination Group (OCG) and the EANPG COG.

4.2.32 The EANPG recalled that the SSR Code Steering Group currently supported the SSR Code Secretariat provided by the EUROCONTROL Agency, in producing the Code Allocation List (CAL), developing proposals for amendments to the EUR Air Navigation Plan and Facilities and Services Implementation Document (FASID) and resolving operational problems related to code management. Drawing on the same pool of National Experts, the Programme Planning Group would take on the tasks of the current SSR Code Steering Group, in particular with respect to the review and approval of the twice yearly Code Allocation List (CAL) and any proposed amendments to the EUR Air Navigation Plan and FASID. Once approved by the Programme Planning Group, such proposals would then be submitted to the EANPG and EANPG COG in the usual manner. The EANPG noted that management oversight of the programme would be ensured by a dedicated ANSB Steering Group reporting through the ANSB to the Provisional Council.

4.2.33 The EANPG was advised that it would be necessary to amend Doc 7754 Volumes I and II to update the material related to ORCAM and to incorporate new material regarding eORCAM. Due to the time scales involved, it was noted that it would not be possible for this material to be reviewed and approved by the EANPG prior to being required within Doc 7754. Accordingly, the EANPG agreed to the following Decision:

EANPG Decision 51/2 – Development of proposal for amendment to ICAO Doc 7754 regarding ORCAM and Enhanced ORCAM

That the EANPG Programme Coordinating Group, be mandated to review and approve, as appropriate, a proposal for amendment to the *European Basic Air Navigation Plan* (EUR ANP) (Doc 7745 Volume I) and to the *European Facilities and Services Implementation Document* (EUR FASID) (Doc 7754 Volume II) to:

a) update the material relating to the procedures and technical requirements for the Originating Code Assignment Method (ORCAM); and

b) incorporate the material relating to the procedures and technical requirements for Enhanced ORCAM.

4.3 AIR TRAFFIC MANAGEMENT

Limit of a vector

4.3.1 The EANPG recalled its discussion regarding the changed provisions of *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM) (Doc 4444) related to radar vectoring (Report of the Fiftieth Meeting of the EANPG, paragraphs 5.2.19 to 5.2.22 refer).

4.3.2 Previously, PANS-ATM 8.6.5.1 b) read:

> "when an aircraft is given a vector diverting it from a previously assigned route, the pilot should be informed, unless it is self evident, what the vector it to accomplish and, when possible, the limit of the vector should be specified (e.g. to … position, for … approach);"

The current provisions of PANS-ATM 8.6.5.1 b) were:

> "when an aircraft is given its initial vector diverting it from a previously assigned route, the pilot shall be informed what the vector is to accomplish, and the limit of the vector shall be specified (e.g. to … position, for … approach);"

4.3.3 There were concerns because it appeared that some States did not intend to implement this change and it was not clear whether such States would notify the difference in their national Aeronautical Information Publications (AIP). Consequently, it had been determined that EANPG COG should further examine the various issues and concerns that had been raised (EANPG Decision 50/3 refers).

4.3.4 The EANPG was advised that further information was sought from States via a State Letter (MTG/PIRG/EANPG/50/FOL-09-0333.TEC) dated 6 July 2009. States were requested to indicate whether or not the current provisions of PANS-ATM 8.6.5.1 b) were fully applied, and if they were not, whether or not a difference had been notified in the national AIP. States were also invited to provide any additional comments they felt were necessary.

4.3.5 Of the States that had not fully implemented the changed PANS-ATM provision, one advised that a difference had already been published in the national AIP, some indicated that PANS-ATM 8.6.5.1 b) would be fully implemented by the end of 2009, one advised that the difference would be published in the national AIP, one advised that the difference was published in the State's Air Traffic Management Manual and the rest did not advise of an intention to publish a difference. The EANPG was advised that a number of States had explained that it was not possible or operationally suitable, in every case when an aircraft was given an initial vector diverting it from a previously assigned route, to specify the limit of the vector. These reasons included:

a) it is not possible to specify a position if the purpose of the vector is to maintain spacing between aircraft;

b) it is not possible for the initiating air traffic controller to know when/where a subsequent air traffic controller will end a vector when the aircraft would remain on the vector after control responsibility was transferred to another sector/unit; and/or

c) in very busy control environments, particularly terminal areas and adjacent sectors, it is not possible to inform each individual aircraft of the purpose and limit of the vector without an unacceptable increase in radio telephony.

4.3.6 The EANPG was informed that some States contended that specifying the limit of the vector was not required to guard against the possibility of radio communication failure due to the existing Annex 2, 3.6.5.2.2 c) provisions. Additionally, some States contended that indicating the purpose of the vector

without also specifying the limit of the vector, in most operational circumstances, met the spirit of PANS-ATM 8.6.5.1 b).

4.3.7 Considering all of the foregoing, it was agreed that it was possible that a variety of current operational practices could indeed meet the intent of PANS-ATM 8.6.5.1 b), and that, if so, providing a clarification or note in PANS-ATM might alleviate the current situation where it was not clear what would or would not meet the intent of the provision. It was further noted that changing the provision to read "… should be specified…" would provide sufficient latitude that the current variety of operational practices, where pilots were always informed of what the vector was to accomplish, would clearly be in full compliance with the provision. To facilitate harmonised application of PANS ATM 8.6.5.1 b), the EANPG agreed to seek clarification from ICAO Headquarters regarding the intent of the change and invite consideration of amending PANS ATM to indicate that specifying the limit of the vector could be discretionary and to include additional examples of practices that would constitute appropriate application of the provision. After due consideration of the issue, EANPG agreed the following EANPG Conclusion:

EANPG Conclusion 51/5 – Limit of a Vector clarification

That the ICAO Regional Director, Europe and North Atlantic, invite ICAO Headquarters to:

a) clarify the intent of *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM) (Doc 4444) 8.6.5.1 b) with regard to the requirement to specify the limit of the vector;

b) consider revising PANS-ATM 8.6.5.1 b) to read " … and the limit of the vector ~~shall~~ should be specified …"; and

c) revise PANS-ATM 8.6.5.1 b) so as to provide additional examples of operational practices that constitute appropriate application of the provision.

4.4 COMMUNICATION, NAVIGATION AND SURVEILLANCE

Aeronautical Frequency Spectrum Management

ICAO WRC-12 Position

4.4.1 The EANPG was informed regarding the ICAO Position on the issues of critical concern for international civil aviation to be discussed at International Telecommunication Union (ITU) World Radiocommunication Conference 2012 (WRC-12) which had been circulated via State Letter E 3/5-09/61 dated 30 June 2009. The ICAO Position was developed by the ICAO Air Navigation Commission (ANC) in consultation with ICAO contracting States and had been approved by the ICAO Council. The foregoing State Letter urged the ICAO contracting States to consider the ICAO Position when developing their positions for WRC-12 and to support it at WRC-12.

4.4.2 The EANPG acknowledged that safety of international civil aviation could be seriously jeopardized unless aviation radio frequency spectrum requirements were satisfied. Support from the administrations of ITU members was required to ensure that the ICAO Position would be taken into account by the WRC. Therefore, the EANPG agreed to urge States and international organisations to firmly support the ICAO position. Such support should include providing for aviation interests to be fully integrated in the development of national positions, supporting the ICAO policy at the ITU WRC, providing civil aviation experts to participate in the development of national and regional positions and ensuring, to the maximum extent possible, that their delegations to regional conferences, ITU study groups and WRC would include aviation experts.

4.4.3 In addition, it was observed that there were several groups and international organisations in the ICAO EUR Region that actively participate in preparations for WRC-12. The list included the Aeronautical Spectrum and Frequency Consultation Group (ASFCG) sponsored by the European Civil Aviation Conference (ECAC) and EUROCONTROL, International Air Transport Association (IATA), North Atlantic Treaty Organisation (NATO) and the European Commission (EC) through the work of the Conférence Européenne des Administrations des Postes et des Télécommunications (CEPT). The EANPG emphasised the importance of ensuring that civil aviation needs, as consolidated in the ICAO WRC-12 Position, would be taken into account by these organisations.

4.4.4 In this respect, the role of ICAO Regional Offices participating in the meetings conducted by the regional telecommunications groups in preparation for WRC-12 was highlighted. In particular, participation of the EUR/NAT Office of ICAO in the work of the CEPT was seen as essential.

4.4.5 Therefore, the following Conclusions were endorsed by the EANPG:

EANPG Conclusion 51/6 – Preparation for WRC-12

That the ICAO Regional Director, Europe and North Atlantic:

a) urge States to:

   i) ensure, via their National Telecommunication Agencies, that the ICAO position is taken into account in the national and regional preparatory activities for World Radiocommunication Conference 2012 (WRC-12) ; and

   ii) provide civil aviation experts to assist in various national and regional WRC-12 preparatory activities.

b) invite International Organisations (IATA, NATO, EC, ECAC, EUROCONTROL) and other organisations to ensure coherence with the ICAO position and support ICAO during various regional WRC-12 preparatory activities

EANPG Conclusion 51/7 – ICAO EUR/NAT Support to WRC-12 Preparation

That the ICAO Regional Director, Europe and North Atlantic, make necessary arrangements to ensure the participation of the EUR/NAT Office in the regional WRC-12 preparatory activities at the level of the Conférence Européenne des Administrations des Postes et des Télécommunications (CEPT) Conference Preparatory Group (CPG).

Data Link Frequency Spectrum

4.4.6 In furthering, the EANPG was presented with a status report of the ongoing ICAO EUR data link frequency sub band reallocation programme that was proceeding to the second step whereby the availability of two VHF Data Link Mode -2 (VDL 2) and one VHF Data Link Mode 4 (VDL 4) channels was planned. This step would be rapidly followed by the third step which envisioned the deployment of three VDL 2 and two VDL 4 channels.

4.4.7 In this regard, the EANPG was informed that in line with its previous decisions, the removal of Airlines Operational Control (OPC) assignments from the data link frequency sub-band was progressing. The few remaining assignments would need to be cleared as soon as possible (**Appendix D** refers), effectively completing the third step of the data link frequency sub band reallocation programme. In reviewing the progress of the programme, the EANPG agreed that there was a need to support the progress of the programme by setting firm deadlines for the completion of the second and the third steps. The EANPG noted that COG/45 endorsed September 2010 and September 2011 as the deadlines for the completion of the second and the third steps. The EANPG emphasised the importance of the earliest possible reallocation of the OPC assignments from the data link sub-band in order to enable the timely completion of the above-

mentioned steps and support safe and timely implementation of the CPDLC programme in the ICAO EUR Region. Therefore, the EANPG agreed to the following Conclusion:

EANPG Conclusion 51/8 – Data Link Sub-Band reallocation programme

That the ICAO Regional Director, Europe and North Atlantic, urge States concerned to ensure the earliest removal of the Airlines Operational Control (OPC) assignments as specified in Appendix D to this report in order to enable the availability of the required frequency spectrum capacity to support data link implementation.

8.33 kHz VHF channel spacing implementation programme

4.4.8 The EANPG was presented with a progress report of the 8.33 kHz channel spacing below FL195 implementation programme. The EANPG was informed that the business and safety cases would be updated after the completion of the detailed definition of the phased implementation approach. The EANPG noted that the following milestones had been proposed by the 8.33kHz Programme Steering Group:

a) 8.33kHz equipment carriage forward-fit requirement for all aircraft operating in the EUR Region as of 1 January 2012;

b) Retrofit for all Instrument Flight Rules (IFR) General Air Traffic (GAT) operating in A, B,C and D class airspace as of 1 January 2014; and

c) Full implementation in all EUR airspace as of 1 January 2018.

4.4.9 In addition, the EANPG noted that the EUR/NAT office of ICAO in coordination with the Frequency Management Group (FMG) had been tasked to start drafting an appropriate proposal for amendment to ICAO *Regional Supplementary Procedures* (SUPPs) (Doc 7030) in connection with the 8.33 kHz channel spacing implementation below FL195 in the ICAO EUR region.

Frequency Usage Improvements

4.4.10 The EANPG was presented with the final report on the Study initiated in response to EANPG Conclusion 50/16 – Follow-up to the frequency usage audit. The EANPG noted that a State letter was circulated by the ICAO EUR/NAT Office in follow up to the foregoing Conclusion and a group of volunteers was identified to advance this work. A Frequency Usage Improvement Task Force (FUI TF) was therefore established and 26 experts from 15 States and 4 international organisations took part in its work.

4.4.11 It was recalled that the FUI TF work programme was based on the outcome of the EUROCONTROL Frequency Usage Analysis Phase 1 that identified the following areas to be studied as soon as possible in order to gain short-term frequency spectrum benefits:

a) Tailoring the Designated Operational Coverage (DOC) to the operational and communication area;

b) Reuse some emergency guard band channels;

c) Best practices in “National Aerodrome” and “A/G” frequency assignment usage should be identified and adopted;

d) Reviewing the frequency planning criteria with regards to the operational and Quality of Service requirements; and

e) A number of assignments reserved for future use or simply unused by Phase 1 States should be taken into account in overall VHF band capacity planning.

4.4.12 The FUI TF had produced the final report which was kept at high-level and broadly covered issues listed in the Work Programme. The report described the expected impact and the approach to achieving the related specific objective of each work item under consideration. The report included the steps that would need to be undertaken to achieve the objectives of the study, any assumptions and external factors that may have an impact, including the main barriers and foreseeable risk factors. The need for these steps was substantiated on the basis of clearly articulated operational requirements and benefits.

4.4.13 It was noted that the FUI TF had coordinated its work with the ICAO Frequency Management Group (FMG) on issues that required a technical peer review by experts in the field of aeronautical frequency management. The outcome was coordinated with various international organisations represented in the FUI TF, e.g. IFATCA, IFALPA, IATA and EUROCONTROL.

Designated Operational Coverage (DOC)

4.4.14 The EANPG noted the proposal to adopt a DOC definition that encompassed the area in which it was intended to communicate with aircraft stations that included the communications at and following handover. It was reported that, as an outcome of the FUI TF study, it appeared that such an approach was supported by the operational experts involved in the FUI TF work and was in line with the International Telecommunication Union (ITU) definition.

4.4.15 The EANPG noted that the adoption of an agreed DOC definition would minimise the potential for aircraft to cause harmful interference to adjacent services as the number of aircraft transmitting outside of the co-ordinated volume would also be minimised. This would also allow reviewing and potentially tightening the regional aeronautical frequency planning criteria as described in the ICAO EUR Frequency Management Manual (EUR Doc 013)

4.4.16 The EANPG was informed that the initial definition as proposed by the FUI TF had been reviewed and commented on by the COG. It was noted that the Secretariat will consolidate the comments received and circulate the revised DOC definition among the COG members for final approval. This step would be followed by a wider consultation involving all EANPG member States and international organisations, which was expected to lead to a regionally agreed common DOC definition. Such agreement would in turn permit the FMG to start reviewing and potentially tightening the frequency planning criteria.

Re-use of emergency channel guard bands

4.4.17 In reviewing the outcome of the study on the subject of the re-use of the former VHF emergency channel guard bands, the EANPG was informed that this action was being completed. The ICAO Aeronautical Communications Panel would initiate appropriate amendments to Annex 10. Amendment of EUR Doc 013 would be initiated by the FMG, which was also discussing measures to ensure the most effective utilization of the released frequency channels for the benefits of the whole community.

Best practice in frequency assignments usage at National aerodromes

4.4.18 The EANPG was advised that the following activities had been recommended by the FUI TF in order to identify best practice regarding frequency assignments usage at National aerodromes within the ICAO EUR region on a per State basis:

a) the minimum required number of National Aerodrome channels necessary to fulfil the operational requirements;

b) identify those channels in the VHF band which would best be suited for assignment grouping;

c) identify the expected spectrum gain;

d) draft, in case a significant spectrum gain could be expected, an action plan to re-shuffle the National Aerodrome assignments based on a) and b); and

e) implement all necessary assignment changes in a coordinated manner.

4.4.19 The EANPG noted that in order to gather necessary information in support of the foregoing activities, operational inputs from different user groups such as general aviation, military, flight inspection etc. would be required. Also there was a need to undertake an analysis of already assigned National Aerodrome channels, in particular taking into account the number of current users per assignment. This should provide the basis for generating a list of channels which could best be implemented while minimizing the number of frequency shifts. It was noted that this work and the analysis in particular, would require a significant resource commitment that was not available within the FUI TF, and therefore agreed that EUROCONTROL should be invited to organise a workshop to share practices between States and to carry out the necessary analysis regarding already assigned National Aerodrome frequency assignments and usage. Therefore the following Conclusion was endorsed by the EANPG:

EANPG Conclusion 51/9 – Best practice in frequency assignments usage for national aerodromes

That the ICAO Regional Director, Europe and North Atlantic, invite EUROCONTROL to:

a) organise a workshop in coordination with the Frequency Management Group to share best practice in frequency assignments usage for National Aerodromes in order to determine the minimum required number of National Aerodrome channels necessary to fulfil operational requirements; and

b) carry out an in-depth analysis of already assigned national aerodrome channels taking into account the number of current users per assignment.

Review of the planning criteria with regards to the operational and QoS requirements

4.4.20 The EANPG was presented with the FUI TF recommendations concerning the review of the frequency planning criteria with regards to the operational and Quality of Services (QoS) requirements.

4.4.21 The EANPG noted that a review of the planning criteria was not possible until the operational and QoS requirements were clearly defined. The EANPG noted the FUI TF recommendation that the ICAO Required Communications Performance (RCP) approach as laid down in *the Manual on Required Communication Performance (RCP)* (Doc 9869) could be used to define the QoS requirements. The EANPG noted that it was not possible to advance this work within the scope and deadlines of the FUI TF. Therefore the following conclusion was endorsed by the EANPG:

EANPG Conclusion 51/10 – Operational and quality of service requirements for the use of aeronautical frequency spectrum

That the ICAO Regional Director, Europe and North Atlantic, invite EUROCONTROL to undertake a study to determine operational and Quality of Service (QoS) requirements in the ICAO EUR Region taking into account the ICAO Required Communications Performance Concept as laid down in the *Manual on Required Communications Performance (RCP)* (Doc 9869).

Economy in the use of the frequency spectrum

4.4.22 The EANPG was informed that the EUROCONTROL Frequency Usage Analysis Phase 1 had identified that there were number of frequency assignments unused or reserved for future use. The EANPG agreed with the FUI TF recommendation that, in order to improve economy in the use of the frequency spectrum, the unused assignments need to be released. In order to identify similar cases in the scope of the

whole ICAO EUR Region, the EANPG agreed that the original frequency usage audit carried out by EUROCONTROL should be repeated to cover all of the ICAO EUR Region. Therefore the following was endorsed by the EANPG:

EANPG Conclusion 51/11 – Improve economy in the use of aeronautical frequency spectrum

That the ICAO Regional Director, Europe and North Atlantic:

a) urge States in the ICAO European region to release unused frequency assignments and remove the assignments concerned from the international frequency registers; and

b) invite EUROCONTROL to conduct, in cooperation and coordination with the ICAO EUR/NAT Office, the second phase of the frequency usage analysis in the scope of the ICAO European Region.

4.4.23 In conclusion, the EANPG acknowledged that the work programme of the FUI TF had been completed and the FUI TF could be disbanded. The EANPG also expressed its appreciation on the timeliness and completeness of the report and thanked the FUI TF members for their dedicated and accurate work.

EANPG Decision 51/3 – Dissolution of the EANPG FUI TF

That the ICAO Regional Director, Europe and North Atlantic, inform States and international organisations on the completion of the work programme of the EANPG Frequency Usage Improvements Task Force (FUI TF) and that the Task Force is disbanded.

All Weather Operations

4.4.24 The EANPG was informed that in follow-up to EANPG Conclusion 50/8, an ICAO EUR Low Visibility Procedures (LVP) Workshop had been conducted in Paris from 9 to10 June 2009. The workshop was attended by approximately 100 participants and was a great success. The EANPG thanked the States and international organisations that had contributed to the success of the Workshop by assisting in its organisation and providing presentations.

4.4.25 The EANPG noted a list of key issues that were considered important by the Workshop to ensure that LVP would continue to be developed to meet the needs of users. The following items were identified by the Workshop as potential areas to be updated in *European Guidance Material on Aerodrome Operations under Low Visibility Conditions* (EUR Doc 013):

a) The equipment failure table could be clearer;

b) The definition of Low Visibility Operations (LVO) needs to be corrected to align with *Procedures for Air Navigation Services - Air Traffic Management* (PANS-ATM) (Doc 4444)

c) Procedures for CAT I/LVO should be included;

d) Include latest experience on Microwave Landing System (MLS) operations;

e) The use of ICAO visibility conditions for purposes other than Advanced-Surface Movement Guidance and Control Systems (A-SMGCS) should be clarified;

f) The introduction and termination of LVP should be anticipated and information disseminated to the (EUROCONTROL) Central Flow Management Unit (CFMU) and other stakeholders. The CFMU was requested to provide structured information about their methods to airports and users, in relation to Advanced- Collaborative Decision Making (A-CDM).

4.4.26 The EANPG noted that these points would be addressed by the All-Weather Operations Group (AWOG) in order to amend EUR Doc 013.

4.4.27 The EANPG was also informed that the Workshop had identified a need to further harmonise the LVP provisions on a global level. The following specific areas for global harmonisation were identified:

a) The equipment failure table. There are differences in description of the effects of equipment failure on aircraft operations between ICAO, European Aviation Safety Agency (EASA) and the United States Federal Aviation Administration (FAA);

b) An LVP entry in the AIP. A standardised AIP entry for LVP is desirable;

Note: A standardised format has been recommended by EANPG Conclusion 44/19 but has not yet been implemented.

c) The ground charts to include reference to LVP specific items (provision of lighting, location of stopbars etc) and it is recommended to minimise the use of notes where possible;

d) As highlighted by airspace users, the LVP provisions should be simplified and globally harmonised;

e) A-SMGCS procedures should be based on the latest ICAO EUR Regional Supplementary Procedures (SUPPS) (Doc 7030) amendment (July 2009);

f) Standardised transponder operating procedures for A-SMGCS should be globally adopted;

g) The future PANS-Aerodromes needs to be harmonised for LVP; and

h) A global guidance material on the management of critical and sensitive areas is required.

4.4.28 Therefore and after due consideration of the issue, the following Conclusion was endorsed by the EANPG:

EANPG Conclusion 51/12 – Harmonisation of LVP provisions

That the ICAO Regional Director, Europe and North Atlantic, initiate coordination involving all parties concerned, with a view to ensuring the harmonisation of ICAO and European Union Common technical requirements and administrative procedures applicable to commercial transportation by airplane (EU-OPS) Low Visibility procedures (LVP) provisions in those areas identified in **Appendix E** to this report.

Application of Instrument Landing System (ILS) classification

4.4.29 The EANPG was informed that two presentations at the Workshop were dedicated to Lower Than Standard CAT I Operations (LTS) and Other Than Standard CAT II Operations (OTS) as defined in EU OPS[1]. There was another presentation by the FAA on similar operations as defined by FAA Order 8400.13C. The LTS CAT I operation was defined as an operation using CAT I decision height (DH) with a Runway Visual Range (RVR) lower than 550 m. The OTS CAT II operation was defined as a CAT II operation where some or all elements of the lighting system do not meet applicable Annex 14 standards (e.g. no Touchdown Zone (TDZ) lighting system).

4.4.30 The EANPG noted that there were differences between how EASA and the FAA specified these similar operations. It was feared that this may lead to the divergent development across the regions

[1] COMMISSION REGULATION (EC) No 859/2008 of 20 August 2008 amending Council Regulation (EEC) No 3922/91 as regards common technical requirements and administrative procedures applicable to commercial transportation by aeroplane (OJ 2008 L 254/1)

which could impede global interoperability and operational seamlessness. In addition, the EANPG noted that the way the ILS classification system was currently used in EU OPS to describe the requirements for ILS to support LTS and OTS operations demonstrated the necessity to clarify the application of the ILS classification system as contained in Annex 10. In the absence of the requirements for ILS integrity and continuity of service, the ILS classification system presented in Attachment C to Annex 10 Volume I was used to describe the performance of a particular ILS installation. These guidelines were seen as obsolete and ambiguous.

4.4.31 In concluding this discussion the EANPG agreed to recommend that relevant parties should be informed about this concern with a view to a possible amendment to Annex 10 and possible recognition of LTS CAT I and OTS CAT II operations in ICAO documents. Therefore the following Conclusion was endorsed by the EANPG

EANPG Conclusion 51/13 – Harmonisation of ILS classification

That the ICAO Regional Director, Europe and North Atlantic:

a) initiate coordination involving all parties concerned, with a view to ensuring the harmonisation of global and regional provisions related to Instrument Landing System (ILS) operations; and

b) invite ICAO Headquarters to:

   i) consider inclusion of Lower Than Standard (LTS) Cat I and Other Than Standard (OTS) Cat II operations in ICAO documentation; and

   ii) Review the guidance material on ILS classification contained in Annex 10, Volume 1, Attachment C.

<u>All-Weather Operations Transition Roadmap.</u>

4.4.32 An updated version of the ICAO *European Transition Methodology for the Introduction and Application of Non-visual Aids to All-weather Operations* (EUR Doc 017) companion document (Transition Key Issues) was presented to the EANPG.

4.4.33 The EANPG noted that EUR Doc 017 was first published in 2005 and had not been updated since then. A number of AWO areas had made significant progress that should be reflected in the document. Accordingly most sections of the document had been amended to reflect the progress of technology and introduction of new operations. After due consideration of the issue, the EANPG endorsed the following Decision:

EANPG Decision 51/4 – Revised ICAO EUR Doc 017

That the ICAO Regional Director, Europe and North Atlantic, take the necessary actions to publish the revised ICAO EUR Transition Methodology for the Introduction and Application of Non-visual Aids to All-weather Operations (EUR Doc 017) companion document (Transition Key Issues) as provided at **Appendix F** to this report.

4.4.34 The EANPG noted that a number of new working areas were identified for further work to be addressed by the AWOG, including:

a) An update of EUR Doc 013 to address the procedures for the new EASA operations namely OTS CAT II and LTS CAT I;

b) Air Traffic Management (ATM) requirements identification to support Enhanced Visual Systems (EVS/CVS) operations;

c) An update of EUR Doc 015 with refined Ground Based Augmentation System (GBAS) protection areas definitions;

d) Progress feasibility of parallel operations based on Global Navigation Satellite Systems (GNSS); and

e) Refinement of advanced X-Landing System (XLS) operations to reflect performance based air navigation services development.

Wind turbines impact on aeronautical systems

4.4.35 A proposal for amendment to the ICAO *European Guidance Material on Management of Building Restricted Areas* (EUR Doc 015) to take account of the impact of wind turbines on navigation aids was presented. The EANPG noted that a parallel action had been undertaken by EUROCONTROL to study the impact of wind turbines on surveillance systems. This work was planned to be completed in the first half of 2010 and would be used to produce a separate proposal for amendment to EUR Doc 015. Additionally GBAS protection areas would need to be revisited and the affect of wind turbines on GBAS should be investigated. Also the issue of prediction tools to assess wind turbines' impact on navigation systems would be studied. It was noted that these actions were included on the AWOG work programme. After due consideration of the issue, the following Decision was endorsed by the EANPG:

EANPG Decision 51/5 – Amendment to ICAO EUR Doc 015 on wind turbines impact on navigation systems

That the ICAO Regional Director, Europe and North Atlantic, take the necessary actions to publish the revised ICAO European guidance material on managing building restricted areas (EUR Doc 015) as provided at **Appendix G** to this report.

Proposal for Amendment to the ICAO EUR Regional Supplementary Procedures (SUPPS) (Doc 7030) on Low Visibility Procedures

4.4.36 The EANPG noted the status of the Proposal for Amendment (PFA) to EUR SUPPs (Serial No.: EUR/NAT-S 08/09), circulated under cover of State letter: PFA/SUP/EUR/2008/S08-09 – 09-0035.TEC dated 15 January 2009. The EANPG noted that the original PFA was amended to allay some concerns that were brought up in the consultation process. It was highlighted that these changes did not affect the intent and spirit of the PFA but only removed repetition of some global provisions contained in Doc 4444. The EANPG agreed that the Secretariat would proceed to the next step in the formal PFA approval process.

Aeronautical Fixed Service

4.4.37 The EANPG noted the progress of the Aeronautical Fixed Service Group (AFSG) work. It was reported that in follow up of previous EANPG conclusions, ICAO Headquarters had adopted the use of the EUR ATS Messaging Management Center as a global AMHS address register and change control facility, thus enabling smooth transition to AMHS operations globally. Furthermore, significant progress in the implementation of AMHS systems in the EUR and other Regions was noted.

Performance Based Navigation (PBN) Implementation

4.4.38 The EANPG was presented with the final report of the ICAO EUR PBN TF. It was recalled that the PBN TF was established by COG Decision 41/2. A State Letter was circulated by the ICAO EUR/NAT Office in response to this decision inviting the States to nominate their membership to the PBN TF. 38 nominations were received from 20 States, 3 International organisations and Jeppesen. The PBN TF had met 3 times and conducted most of the work through e-mail correspondence.

4.4.39 The EANPG recalled that the following tasks were assigned to the EUR PBN TF:

- Action A - Develop a PBN Implementation & Harmonisation Strategy for the ICAO EUR Region in support to and reinforcement of Assembly Resolution A36-23;
- Action B - Develop an amendment to the ICAO EUR *Regional Supplementary Procedures* (SUPPS) (Doc 7030);
- Action C - Review the contents of the ICAO *Air Navigation Plan - European Region* (EUR ANP) (Doc 7754) and develop an appropriate amendment proposal including a Regional PBN Implementation Roadmap; and
- Action D - Review the contents of the ICAO EUR RNAV Guidance material (EUR Doc 001).

4.4.40 The first action was completed by the 1st meeting of the PBN TF (15-16 October 2008) and was presented to EANPG/50 for endorsement. Later, this Strategy was amended by COG/44 (Conclusion 44/8 refers) upon a recommendation of the 2nd PBN TF meeting (15-16 April 2009). This was done in view of Amendment 1 to Doc4444, introducing changes to the format of ICAO Flight Plan with applicability date of 15 November 2012. The provisions of this Amendment necessitated the revision of the PBN Regional Implementation and Harmonisation Strategy.

4.4.41 The outcome of the PBN TF work concerning Actions B and C was presented to the EANPG. With regards to the amendment proposal to Doc 7030, it was noted that the section of the proposal related to flight planning would still need to be revised by the Secretariat. However, it was agreed to endorse the proposal as provided at **Appendix I** noting that there would be some changes to the flight planning section of the proposal. It was emphasised that the proposal for amendment would proceed through the normal consultation process which ensured that all parties concerned would have an opportunity to comment.

4.4.42 With regards to the proposal for amendment to the EUR ANP, it was highlighted that the material presented was aligned with the European Civil Aviation Conference (ECAC) Navigation Strategy and SESAR ATM Master Plan. It was also noted that the proposed amendment would be applicable in the context of the whole ICAO EUR Region as it took into account the specificities pertaining to all areas within the ICAO EUR area of responsibility. It was noted that the PBN Implementation Roadmap was included as part of the overall revision of the CNS Part of the ANP and that the PBN TF would be responsible for the revision of the PBN related parts of the ANP amendment. Other sections related to Communication, Surveillance and approach and landing services were reviewed by other contributory bodies, i.e. All-Weather Operations Group (AWOG), Aeronautical Fixed Services Group (AFSG) and Frequency Management Group (FMG).

4.4.43 Considering all of the foregoing, the EANPG endorsed the following Conclusions:

EANPG Conclusion 51/14 – Proposal for Amendment to Doc 7754 - Part IV regarding CNS

That the ICAO Regional Director, Europe and North Atlantic, on behalf of the EANPG, process the proposal for amendment to the ICAO Basic Air Navigation Plan (EUR ANP – ICAO Doc 7754 Vol I) and to the Facilities and Services Implementation Document (EUR FASID – ICAO Doc 7754 Vol II), Part IV – CNS as contained at **Appendix H**.

EANPG Conclusion 51/15 - Proposal for Amendment to Doc 7030 regarding PBN

That the ICAO Regional Director, Europe and North Atlantic, on behalf of the EANPG, process the proposal for amendment to the ICAO EUR *Regional Supplementary Procedures* (SUPPS) (Doc 7030) as presented at **Appendix I**.

4.4.44 The EANPG recalled that in line with *Action D* of the work programme, the PBN TF assessed the contents of EUR Doc 001 and identified items that needed to be reconsidered by virtue of the ICAO PBN concept. In reviewing these items it was agreed that further updating and maintaining of this document was a human resource intensive challenge. Furthermore, most of its content was already covered by other ICAO Documents (e.g. Doc 9613, Doc 7754 and Doc 7030). For these reasons, it was agreed that this document had served its purpose in enabling the implementation of pre-PBN concepts and in view of the latest developments should be withdrawn (COG Decision 44/4 refers).

4.4.45 The EANPG was informed that, as part of its work programme, the PBN TF conducted an *Approach Procedures with Vertical Guidance (APV)* Workshop on 11 June 2009 in Paris. The Workshop was attended by about 100 participants and was a great success. As an outcome of the Workshop, there was a recommendation to organise an ICAO EUR workshop to exchange information on APV procedures design aspects and other interrelated issues. After due consideration of the issue, the following Conclusion was endorsed by the EANPG:

EANPG Conclusion 51/16 - APV procedures design workshop

That the ICAO Regional Director, Europe and North Atlantic, organise an *Approach Procedures with Vertical guidance (APV) procedures design and inter-related issues* workshop during 2010.

4.4.46 The EANPG noted that the following actions had been initiated by the PBN TF in order to track the PBN implementation progress in the Region:

a) the State Letter (ref MTG/PIRG/EANPG/50/FLW/09-0222.SLG) was circulated on 28 April 2009 together with a questionnaire, intended to elicit information on the status and future plans related to the PBN implementation in en-route and terminal airspace and APV; and

b) a new Supplement Table (CNS4b) was designed to track the status of planning and implementation of approach and landing procedures and associated navigation aids and services, including APV. This Table was circulated on 26 March 2009 (ref. State Letter DOC/ANP/EUR/SUP/CNS - 09-0166.SLG).

4.4.47 The EANPG was informed that the number of responses to the Questionnaire on the status of PBN implementation was limited. It was noted that the PBN TF attributed the lack of response to the extensive scope of the Questionnaire, which had resulted from an attempt to align its content with the scope of the EUROCONTROL LCIP (LSSIP) database. Similarly, it was noted that information on the status of PBN implementation in the LCIP (LSSIP) database was also limited. In this regard it was agreed that a renewed State Letter with a simplified response form could be a better solution and could alleviate the foregoing concern. It was emphasised that such a Questionnaire would be timely since the deadline for the completion of the National PBN implementation plans set by ICAO Assembly Resolution 36-23 was the end of 2009.

4.4.48 Therefore, with the aim to assess the readiness of the States in the ICAO EUR Region to comply with the provisions of Assembly Resolution 36-23 the following Conclusion was endorsed by the EANPG:

EANPG Conclusion 51/17 – Implementation of Assembly Resolution 36-23

That the ICAO Regional Director, Europe and North Atlantic:

a) urge States to respond to the Questionnaire as provided at **Appendix J** to this report, by 1 March 2010; and

b) provide regular updates to the EANPG on the status of the PBN implementation.

4.4.49 The EANPG noted the COG decision to disband the EUR PBN TF as its Terms of Reference were largely completed. The task of tracking the progress of PBN implementation was assigned to the EANPG contributory bodies. It was noted that EUROCONTROL would be an essential element to enable the effective implementation progress monitoring function. Therefore EUROCONTROL was invited to provide regular updates on the status of PBN implementation in the ECAC area to the EANPG through its contributory bodies.

4.4.50 In concluding the EANPG noted that there was one objective that the PBN TF had not succeeded to achieve. The PBN implementation progress reports provided by the States indicated that there were differences in the way regulators approached the same issue in different States within the same ICAO Region. It was pointed out that principles for harmonisation had been developed in the course of the PBN TF work and that harmonisation could be achieved by implementing these agreed principles. The following potential hurdles to the progress of Assembly Resolution 36-23 were identified:

a) Some regulators still have not recognised GNSS as a valid means of navigation for approach and landing;

b) Some regulators, while taking proactive approach to APV implementation, had limited influence on business decisions of service providers and aerodrome operators to implement APV;

c) Some types of airspace users preferred SBAS based APV, whereas others favoured Baro-VNAV;

d) There was an urgent need to establish a global or regional SBAS channel number allocation mechanism; and

e) The rate of operators' approvals was far behind the progress of implementation on the ground and aircraft equipage.

4.4.51 The EANPG recalled that there were several previous EANPG Conclusions addressing some of the foregoing issues and agreed that those conclusions remained extant. In regard to the SBAS channel number allocation mechanism, the EANPG was informed that this issue was being investigated by the Secretariat in order to establish such a mechanism as soon as possible.

4.4.52 In concluding, the EANPG thanked the PBN TF members for the timely and effective completion of the tasks assigned.

4.5 LANGUAGE PROFICIENCY REQUIREMENTS (LPR)

Implementation of Language Proficiency Requirements (LPR) in the ICAO EUR Region

4.5.1 The EANPG recalled, that in order to support States' efforts to comply with the strengthened ICAO language proficiency requirements, it was agreed that the ICAO EUR/NAT Office will continue to provide assistance to those States that were not able to timely implement these requirements.

4.5.2 In this respect the EANPG was informed that in accordance with its Conclusion 50/24, the ICAO Regional Director, Europe and North Atlantic, organised a special language proficiency requirements (LPR) implementation workshop for raters and examiners. This workshop was held in Ulyanovsk, the Russian Federation, from 27 to 29 May 2009.

4.5.3 Based on the outcome of the Ulyanovsk workshop, the EANPG was informed about some areas of concern as identified by the workshop participants and related to training and testing issues:

a) there was a wide diversity in design and format among the tests presented during the workshop; certain tests in addition to the ICAO requirement (proficiency in speaking and listening) also test reading and writing skills which were not required by ICAO;

b) not all States applied general recommendations contained in ICAO Doc 9835 *Manual on Implementation of ICAO Language Proficiency Requirements* and specified in ICAO Circular 318 *Language Testing Criteria for Global Harmonization*;

c) the certification process for raters and examiners was not established properly in a number of States;

d) in States with limited opportunities of usage and practice of the English language outside the work context, the process of language erosion was faster thus laying ground for more frequent recurrent training; and

e) there were several reports of students failing to reach the required ICAO Level 4 in tests even after extensive training (sometimes in English-speaking countries). This raised concerns regarding the quality of some of the training conditions.

4.5.4 There was a desire expressed by the workshop for more support in the area of aviation English training and request was extended to ICAO to organise a regional workshop to this effect.

4.5.5 Based on the above the following Conclusion was adopted:

EANPG Conclusion 51/18 – Language Proficiency Testing and Training

That the ICAO Regional Director, Europe and North Atlantic:

a) encourage States to use recommendations specified in ICAO Circular 318 *Language Testing Criteria for Global Harmonization* and ICAO Circular 323 *Aviation English Language Training Programmes* by their organisations involved in testing and training to the greatest extent possible; and

b) organise a Regional workshop on language proficiency training in the first half of 2010.

4.5.6 The EANPG recalled that the ICAO Assembly Resolution A36-11 urged Contracting States that were not in a position to comply with these requirements by 5 March 2008 to post on the ICAO website their language proficiency implementation plans including their interim measures to mitigate risk.

4.5.7 In this respect, the EANPG was informed that a number of States in the ICAO EUR Region were still to publish their LPR Implementation plans at ICAO web-site. In addition to the question of non-compliance with the conditions of Resolution A36/11, this is a potential source of complication when States are studying reciprocal operating rights. It was also noted that only a certain number of States have submitted their replies to the ICAO State Letter (SL) AN12/44.3-09/53 of 17 July 2009 on the status of implementation of LPR.

4.5.8 Therefore the following Conclusion was adopted:

EANPG Conclusion 51/19 – LPR Implementation plans

That the ICAO Regional Director, Europe and North Atlantic, encourage States that have not already done so, to submit:

a) their updated Language Proficiency Requirements (LPR) implementation plans to ICAO; and

b) the status report as required in the ICAO State Letter AN12/44.6-09/53 of 17 July 2009.

4.5.9 The EANPG was also informed that the COG Training Task Force, mandated by the COG, continued to review the *Recommended ICAO European Region Action Plan for the language proficiency requirements implementation* on a regular basis. The updated version of this Recommended Action Plan is at the **Appendix K** to this report. In this respect the following Conclusion was adopted:

EANPG Conclusion 51/20 – Recommended ICAO EUR Action Plan

That the ICAO Regional Director, Europe and North Atlantic:

a) ensure the continuous update of the Recommended ICAO European Region Action Plan for the language proficiency requirements implementation based on the input from States;

b) encourage States to use the updated version of the Recommended ICAO European Region Action Plan for the language proficiency requirements implementation and to report any difficulties in implementation to the EUR/NAT Office of ICAO;

c) provide assistance to those States who unable to timely implement the language proficiency requirements; and

d) monitor the implementation of the Recommended ICAO European Region Action Plan for the language proficiency requirements implementation and provide regular updates to EANPG.

4.6 AERONAUTICAL INFORMATION SERVICES - AERONAUTICAL INFORMATION MANAGEMENT

AIS/MAP activities in the Eastern Part of the European Region

4.6.1 The EANPG noted that the COG/AIM TF/17 meeting, which was held in Tallinn, Estonia, from 13 to 15 May 2009, reviewed and updated the status of implementation of the required AIS/MAP facilities and services in the States of the Eastern part of the European Region. The list of air navigation deficiencies in the AIS/MAP field was updated accordingly.

4.6.2 With regard to WGS-84 implementation, it was noted with concern that no progress has been achieved in the implementation of WGS-84 in Tajikistan, Turkmenistan and Uzbekistan. However, the EANPG noted with satisfaction the progress achieved by the Russian Federation and Ukraine in the implementation of WGS-84. The EANPG noted also that a WGS-84 Seminar was held in Minsk, 1-2 April 2009 with a view to provide a forum for the exchange of information and sharing of experience (best practices) on WGS-84 implementation.

4.6.3 The EANPG re-iterated Conclusion 50/25 and urged those States that have not yet done so to comply with this Conclusion, in order to complete the implementation of WGS-84 as soon as possible. It was agreed that the ICAO EUR/NAT Office follow-up the subject with State letter, especially with those States that do not attend regularly the COG/AIM TF Meetings. The EANPG noted that the COG/AIM TF/17 meeting further agreed to make a proposal to Interstate Aviation Committee (IAC), which is responsible for the certification of aerodromes in some States of the East-European Region, to include the implementation of WGS-84 in the list of minimum requirements for the certification of aerodromes.

4.6.4 The EANPG noted that the COG/AIM TF/17 meeting raised concern about the level of implementation of ICAO Annex 4 and Doc 8168 (PANS-OPS) provisions in the Eastern Part of the EUR Region. In this regard, it was highlighted that the SIDs, STARs and Instrument Approach Charts published by Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russian Federation, Tajikistan, Turkmenistan and Uzbekistan are not fully compliant with ICAO provisions. In addition, eight (8) States of the Region (Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan and Uzbekistan) have not yet published the required VFR charts. Accordingly, the EANPG noted that COG/45, through Decision 45/13, agreed that the COG/AIM Task Force monitor the progress achieved by the States of the

Eastern Part of the European Region in the implementation of ICAO Annex 4 and Doc 8168 (PANS-OPS) provisions related to aeronautical charts and flight instrument procedures and propose an update to the list of air navigation deficiencies, accordingly.

4.6.5 The EANPG reviewed the status of implementation of Quality Management System (QMS) for the AIS/MAP services, as updated by the COG/AIM TF/17 meeting. It was recalled that as a follow up action to the EANPG Conclusion 50/26, the EUR/NAT Office sent a State Letter on 10 February 2009 to concerned States requesting them to inform the Paris Office about their need for assistance in the implementation of QMS for their AIS. The EANPG noted that six (6) States have replied to the State Letter and that the Chairman of the COG/AIM TF has initiated coordination with EUROCONTROL in order to conduct a QMS Workshop in the Eastern Part of the European Region. Accordingly, the EANPG agreed to the following Conclusion:

EANPG Conclusion 51/21 - QMS implementation in the Eastern Part of the EUR Region

That, the ICAO Regional Director Europe and North Atlantic, in accordance with EANPG Conclusion 50/26 and with a view to assist States of the Eastern Part of the EUR Region in the implementation of Quality Management System (QMS) for their AISs, invite:

a) Eurocontrol to provide assistance in the conduct of a QMS Workshop in the Eastern Part of EUR Region in 2010; and

b) States to participate actively in this Workshop.

Electronic Terrain and Obstacle Data (eTOD)

4.6.6 The EANPG noted the requirements and latest developments related to the provision of electronic Terrain and Obstacle Data (eTOD), as well as the challenges States were facing to comply with the requirements. In particular, reference was made to the Draft Amendment 36 to Annex 15 (para. 10.2.3) as reflected in State Letter Ref.: AN 2/2.2-09/13 dated 23 April 2009, the EANPG noted with concern that "*Area 2 data shall be provided for all aerodromes regularly used by international civil aviation*".

4.6.7 In this regard, the EANPG recalled that several comments received from States sought clarification regarding the aerodromes for which Area 2 data needed to be provided. Taking into consideration, the high cost associated with the provision of Area 2 data, the EANPG recognized that the requirement for area 2 should not apply systematically to all international aerodromes but only to those that are likely to benefit from this data, with a view to improve safety of air navigation, on the basis of a business and safety case. The EANPG agreed that the determination of those aerodromes might be done in coordination with other States and Users Organizations via the coordination process in place for the maintenance of the ICAO Air Navigation Plan (PIRGs) using the eTOD FASID Table at **Appendix L** to the Report. However, the EANPG noted that the applications listed in paragraph 10.1 of Annex 15 that could be supported by the provision of eTOD could not be considered as the only criteria for the determination of those aerodromes for which the provision of Area 2 data will be mandatory. Accordingly, it was recognized that there's a need to develop more guidance material in this respect.

4.6.8 Based on the above and taking into account the date of the final review of Draft Amendment 36 to Annex 15 by the ANC (November 2009), the EANPG noted that COG/45 agreed to the following Conclusion:

COG Conclusion 45/2 - Provision of eTOD Area 2 data

That, the ICAO Regional Director Europe and North Atlantic, invite ICAO HQ:

a) to consider the following proposal during the final review of Draft Amendment 36 to Annex 15:

"Area 2 data shall be provided only for ~~all~~ those aerodromes regularly used by international civil aviation as determined by regional air navigation agreement and listed as such in the ICAO Regional Air Navigation Plans"; and

b) based on a) above, to develop guidance material related to the criteria to be used for the identification of aerodromes for which the provision of Area 2 data is mandatory.

4.6.9 The EANPG noted that on 19 November 2009, at the eleventh meeting of its 182nd Session, the Air Navigation Commission reviewed AN-WP/8416 and related Addendum No.1 and Discussion Paper No. 1, which presented the results of a consultation with States and international organizations on Amendment 36 to Annex 15. It was highlighted that the ANC agreed to the proposed amendments to Annex 15 with minor editorial changes, except for the parts of the amendment related to eTOD, which would be reconsidered after an eTOD briefing/presentation by the Secretariat and EUROCONTROL on 2 December 2009 and reviewed again for approval by the Commission at the beginning of its 183rd Session which starts on 11 January 2010.

4.6.10 Therefore the EANPG agreed to the following Conclusion:

EANPG Conclusion 51/22 - Draft eTOD FASID Table

That, ICAO Regional Director Europe and North Atlantic, invite States to:

a) use the Draft FASID Table at **Appendix L** to this report as a planning tool setting the requirements for the implementation of eTOD in the European Region; and

b) complete the Draft FASID Table and send it back to the ICAO EUR/NAT Office prior to 30 June 2010, with a view to consolidate a Draft Proposal for Amendment to the EUR FASID.

4.6.11 The EANPG noted that, in accordance with Conclusion 50/30, EUROCONTROL has established an Institutional Focus Group (IFG) to help progress work on institutional issues. Two meetings of the IFG have been held, so far. The EANPG noted that, taking into account that agreement has been reached on the change proposals to Annex 15 related to eTOD in Europe, work on implementation has begun, in particular for Areas 1 and 4, which have an effective date of 20 November 2008. The EANPG further noted that EUROCONTROL is running three Awareness Workshops, the first one was held in November 2009, and two are planned for 2010. Training Workshops have also been considered and will be held, if required by States.

Aeronautical Information Management (AIM)

4.6.12 The EANPG was apprised of the latest developments related to AIM and reiterated the need for a strategic and harmonized transition from AIS to AIM. It was recalled that the Air Navigation Commission noted the Roadmap for the transition from AIS to AIM which is available at: http://www.icao.int/anb/AIM/. In this regard, it was highlighted that the Roadmap is intended as a high-level document to provide a framework for States in their evolution towards AIM, and to clarify the purpose and scope of the transition. The Roadmap identifies the major milestones towards a uniform global evolution to AIM and indicates specific steps and timelines for implementation. The EANPG noted the three phases of the Roadmap with its 21 steps and associated timelines.

4.6.13 It was recalled that the EANPG/50 through Conclusion 50/27 invited States to follow-up closely the activities of the AIS-AIMSG and to ensure that input be coordinated through the ICAO EUR/NAT Regional Office. As a follow-up Action the ICAO EUR/NAT Office issued State Letter Ref.: 09-0221 dated 28 April 2009 requesting States to provide their comments/inputs on the Roadmap for the transition from AIS to AIM and associated deliverables as well as an indication about their national plan for the transition from AIS to AIM. It was noted that six (6) replies were received from States showing general support to the ICAO Roadmap.

4.6.14 The EANPG noted that the Roadmap should be seen as a structured framework for States to plan and to monitor their progress with reference to other States in the same Region and across Regions and supports regional and national plans to implement the transition to AIM. In this regard, the need for the development of ANP materials related to the transition from AIS to AIM was underlined. Accordingly, the EANPG agreed to the following Conclusions:

EANPG Conclusion 51/23 - National Plans for the Transition from AIS to AIM

That, the ICAO Regional Director Europe and North Atlantic invite States to provide the ICAO EUR/NAT Office with their national plans related to the transition from AIS to AIM or, as a minimum, a status report against the 21 steps of the ICAO Roadmap for the transition from AIS to AIM, prior to 30 September 2010.

EANPG Conclusion 51/24 - ANP Materials related to the Transition from AIS to AIM

That, the ICAO Regional Director Europe and North Atlantic, on behalf of the EANPG, invite Eurocontrol and the COG/AIM TF to develop necessary planning material related to the transition from AIS to AIM for inclusion in the EUR Basic ANP and FASID.

4.6.15 The EANPG noted that, *inter-alia*, the AIS-AIM SG/1 meeting discussed the restructuring of Annex 15 to accommodate the introduction of AIM. It was suggested that Annex 15 be divided into two parts, one dealing with the existing provisions and the other with the future AIM provisions. This would align with the consolidation phase of the Roadmap. Another option considered was to group all existing and future data quality requirements into a new chapter while all current AIS documents would be regrouped into a single chapter. A new chapter for AIM digital services would be developed. It was agreed that these options be considered by an ad-hoc group.

4.6.16 The EANPG noted that the AIS-AIM SG/2 meeting was held in Montreal from 10 to 13 November 2009. It was highlighted that the AIS-AIM SG/2 meeting agreed, in particular, that:

- a number of definitions should be included both in Annex 15 and in the Roadmap for the transition from AIS to AIM in order to better define the differences between AIS and AIM and to clearly define information management and system wide information management (SWIM) and their relationship to AIM. Furthermore, it was agreed that the terms “data”, “information”, “product”, and “service” needed to be further clarified in Annex 15;
- guidance material on the aeronautical information exchange model (AIXM) would be included in Doc 8126 through Amendment 3 along with a CD-ROM containing complete AIXM 5 documentation, but the AIXM 5 would be described as a possible means of compliance;
- guidance material on eAIP would be included in Amendment No. 3 to Doc 8126;
- draft proposals related to the restructuring of Annex 15 would be presented to the AIS-AIM SG/3 meeting to introduce the notion of services and separate data from publication. In this regard it was highlighted that the main objective of the MET/AIM Divisional Meeting planned for 2014 would be to present a restructured Annex 15.

4.7 METEOROLOGY

Outcome of the Nineteenth Meeting of the Meteorology Group of the EANPG

4.7.1 The EANPG noted that the Nineteenth Meeting of the Meteorology Group of the European Air Navigation Planning Group (METG/19) was held at the European and North Atlantic Office of ICAO, Paris, from 21 to 25 September 2009. METG/19 was attended by 67 experts from 35 European States, Iceland, the United States, and two international organizations (IATA and EUROCONTROL).

4.7.2 The EANPG was apprised of recent and planned developments of the World Area Forecast System (WAFS) and the Satellite Distribution System for information related to air navigation (SADIS). In view of the development of training material to foster the future implementation of the new gridded WAFS forecasts for icing, turbulence and cumulonimbus (CB) clouds, the EANPG formulated the following Conclusion:

EANPG Conclusion 51/25 – Training on the intended use of new gridded WAFS forecasts for icing, turbulence and CB clouds

That the ICAO Regional Director, Europe and North Atlantic, in order to facilitate the implementation of the new gridded World Area Forecast System (WAFS) forecasts for icing, turbulence and cumulonimbus (CB) clouds, invite the WAFC Provider States, in coordination with the World Meteorological Organisation (WMO), to organise cost effective training (i.e. regional training seminars or distance-learning packages) in 2011 or 2012 for WAFS users and States in the EUR Region on the intended use of these new forecasts.

4.7.3 In view of the importance of WAFS and SADIS developments for all WAFS users, and to increase awareness, the EANPG agreed that the information provided by the WAFC London should be circulated to all States in the EUR Region, and formulated the following Conclusion accordingly:

EANPG Conclusion 51/26 – Information on recent and forthcoming developments to the WAFS and SADIS

That the ICAO Regional Director, Europe and North Atlantic, in order to increase the regional awareness on the planned developments of the World Area Forecast System (WAFS) and the Satellite Distribution System for Information Related to Air Navigation (SADIS), circulate to EUR States the information provided by the WAFC Provider States and SADIS Provider State, as shown in **Appendix M** to this report.

4.7.4 The EANPG noted discussions within METG/19 that, in the event of the presence of runway(s) contaminated with volcanic ash, it was unclear whether the runway state group of an aerodrome routine meteorological report (METAR) or aerodrome special meteorological report (SPECI) would adequately represent the deposits, since it was not reported in World Meteorological Organisation (WMO) Table 0919. The EANPG concurred with the view of METG that the matter required further consideration by ICAO at a global level, since it may go beyond a pure coding issue – e.g. capability of automated weather observing systems to report such deposits. Accordingly, the EANPG formulated the following Conclusion:

EANPG Conclusion 51/27 – Proposal for volcanic ash fall out present weather descriptor

That the ICAO Regional Director, Europe and North Atlantic, invite ICAO Headquarters to consider:

a) the need to include in aerodrome routine and special meteorological reports (METAR and SPECI) a new present weather descriptor:

i) "VAFO" to identify volcanic ash fall out; and

ii) "REVAFO" to identify recent volcanic ash fall out as supplementary information;

and, if needed,

b) an amendment to Annex 3 Table A3-2 to provide, as supplementary information, a runway state group with the specific purpose of reporting volcanic ash deposition.

4.7.5 The attention of the EANPG was drawn to the fact that since the adoption of Amendment 74 to ICAO Annex 3 – *Meteorological Service for International Air Navigation* – only one type of aerodrome forecast (TAF) was permissible per aerodrome at any one time. Accordingly, based on the user requirement, each State would decide which type of TAF would be provided – a 9-hour validity short-TAF, or a 24- or 30-hour validity long-TAF. EANPG noted views expressed by IATA at METG/19 that, since the adoption of Amendment 74 to Annex 3, the current provision of 9-hour TAF did not meet the operational need in some States. Accordingly, IATA invited the States concerned to consider revised requirements for 24-hour TAF (for Aerodrome Operational Planning (AOP) and non-AOP aerodromes) and 30-hour TAF (for AOP-aerodromes).

4.7.6 The EANPG recalled that the provision of TAF for AOP aerodromes was subject to regional air navigation agreement, with consensus expected to be reached between IATA, IFALPA and States concerned; whilst the provision of TAF for non-AOP aerodromes was entirely at the discretion of the State concerned. Having noted the revised TAF requirements of IATA, and noting that it would be necessary for States to consider the local user requirement and potential cost implications of providing long-TAF in place of short-TAF, the EANPG agreed to formulate the following Conclusion:

EANPG Conclusion 51/28 — Provision of TAF in the EUR region

That the ICAO Regional Director, Europe and North Atlantic, invite the States in the ICAO European Region to issue, where feasible after local consultations:

a) 24-hour aerodrome forecast (TAF) for all Aerodrome Operational Planning (AOP) aerodromes and at a minimum for those aerodromes listed in **Appendix N** to this report; and/or

b) 30-hour TAF for those aerodromes listed in **Appendix N** to this report.

4.7.7 The EANPG noted that METG/19 had reviewed a proposal calling for the need for i) TAF issuance every 3 hours, including long-TAF; ii) elimination of TAF amendment provisions; and iii) extension to trend forecast (TREND) provisions from 2 hours to 3 hours. Current Annex 3 provisions (Amendment 74) caters for a short-TAF (9-hour validity) to be issued every 3 hours, and a long-TAF (24- or 30-hour validity) every 6 hours. In addition, current ICAO provisions state that TAF shall be amended, and TREND were valid for 2 hours.

4.7.8 The EANPG supported the consensus of opinion expressed at METG/19, that only proposal i) merited further consideration by ICAO at the global level. Proposals ii) and iii) could not be supported, not least due to the implications on a States ability to operate an effective quality management system if such measures were to be introduced. Accordingly, the EANPG formulated the following Conclusion:

EANPG Conclusion 51/29 – Increase the frequency of issuance of long-TAF from 6-hours to 3-hours

That the ICAO Regional Director, Europe and North Atlantic, invite ICAO Headquarters to consider the need to increase the frequency of issuance of 24- and 30-hour validity aerodrome forecasts (long-TAF) from 6-hours to 3-hours.

4.7.9 The EANPG noted METG/19 concerns that there appeared to be a lack of definitions concerning the reporting of some elements in METAR and SPECI, and in local routine (MET REPORT) and local special (SPECIAL) reports. In particular, terms such as "vicinity" and "approach area" appeared to require clarification. The EANPG was informed that the issue had been raised within the Aerodrome Meteorological Observation and Forecast Study Group (AMOF SG) as recently as 2008, and noted METG reservations that there needed to be a degree of flexibility in any specifications proposed, since any specification may apply at some aerodromes but not others. The Secretariat outlined that the term "approximately" had been introduced in ICAO provisions for this very reason. In being advised that the matter is expected to be considered further by AMOF SG, the EANPG nevertheless agreed that it merited clarification, and accordingly formulated the following Conclusion:

EANPG Conclusion 51/30 – Definitions pertaining to the terms 'vicinity' and 'approach area' in meteorological reports

That the ICAO Regional Director, Europe and North Atlantic, invite ICAO Headquarters to consider the need to clarify the definition of the terms "vicinity" and "approach area" in the context of aerodrome routine and special meteorological reports (METAR and SPECI), and local routine and special reports (MET REPORT and SPECIAL), in consultation with the Aerodrome Meteorological Observation and Forecast Study Group (AMOF SG).

4.7.10 In view of the above, the EANPG concurred that there was a need for ICAO to ensure consistency in definitions and terminology across all Annexes and documents.

4.7.11 In returning to considering volcanic ash related matters, the EANPG was informed of recent discussions within the EUR/NAT Volcanic Ash Exercises Steering Group (of the EANPG COG) related to the generation and promulgation of volcanic ash activity messages such as ASHTAM and NOTAM. There was a need to clarify which headers should be used to send NOTAM and which NOTAM series should be used. In some publications, the identifier "NW" should be used instead of "NO" to send NOTAM to the MET community. Following thorough review of ICAO and WMO documentation, as well as other guidance material, a number of inconsistencies had been identified.

4.7.12 Also, there appeared to be a need to consider the introduction of an ASHTAM provision in Annex 10 – *Aeronautical Telecommunications* – Volume II. An ASHTAM is a special series NOTAM notifying, by means of a specific format, changes in activity of a volcano, a volcanic eruption and/or volcanic ash cloud that is of significance to aircraft operations. Annex 15 – *Aeronautical Information Services* – Appendix 5 outlined that ASHTAM can be used to differentiate between NOTAM (letter "N"), SNOWTAM (letter "S") and ASHTAM (letter "V"), when used as the fifth character of an addressee indicator (e.g. LFZZVxxX); however, there was no such reference to ASHTAM in Annex 10 Volume II.

4.7.13 The EANPG considered a proposal put to METG/19 calling for the introduction of an AIRMET provision related to the conveyance of information about "weak" volcanic ash activity impacting low-level traffic. It was considered that the presence of continuous SIGMET for such weaker events, such as in the case of Mt Etna eruptions, could lead to inappropriate reaction by users, and therefore an AIRMET may be more appropriate. The EANPG concurred with remarks made to METG/19 that *all* volcanic ash was considered to be hazardous to aviation – i.e. there was no distinction between a weak volcanic event and a more significant event. Nevertheless, the concerns expressed were understood when continuous SIGMETs were in force for less significant volcanic events.

4.7.14 In view of the above discussion, the EANPG formulated the following Conclusion:

EANPG Conclusion 51/31 – Volcanic Ash activity messages

That the ICAO Regional Director, Europe and North Atlantic, invite the International Airways Volcano Watch Operations Group (IAVWOPSG) to consider:

a) in coordination with the World Meteorological Organisation (WMO), whether:

   i) in Annex 10, the ASHTAM and subsequent use of the letter "V" should be indicated as the fifth letter to be used in the predetermined AFTN addresses, in order to be consistent with Annex 15; and

   ii) in Annex 15, the use of a WMO header for ASHTAM and Volcanic Ash NOTAM would be useful;

   and,

b) the inclusion of a provision in Appendix 6 (Table A6-1) to Annex 3, permitting the use of AIRMET to convey information about "weak" volcanic ash activity.

4.7.15 Next, the EANPG reviewed three proposals for amendment to the EUR Air Navigation Plan (Doc 7754), related to:

i) meteorological observations and reports from offshore structures;

ii) meteorological provisions for low-level flights; and

iii) reporting of the state of the runway.

4.7.16 The EANPG was informed that whilst the EUR Basic ANP stated clearly that the reporting of sea surface temperature and the state of the sea should be included in the MET reports from offshore structures (paragraph 11 of Part VI of the Basic Air Navigation Plan refers), no provisions currently existed in the associated facilities and services implementation document (FASID). The EANPG recalled earlier discussions when considering this oversight, and noted that a new Table MET 1C had been recommended for inclusion on the EUR FASID. The EANPG agreed that a proposal for amendment to the EUR Basic ANP and FASID was necessary in this regard and noted that the Secretariat was in the final stages of collating the requisite information from all the States with responsibility for providing MET data from offshore structures in the North Sea (namely Denmark, Netherlands, Norway and the United Kingdom).

4.7.17 In addition, the EANPG noted that the project team on regional harmonisation of the provision of meteorological service for low-level flights (PT/LLF) of the METG, in undertaking an analysis of responses to a regional questionnaire on MET service provision in the EUR region, had determined that Part VI of the Basic ANP should be amended to better reflect regional practices. A proposal for amendment to the EUR Basic ANP had been prepared accordingly.

4.7.18 The EANPG was informed of an inconsistency in the coding of runway state group in regional provisions. EUR ANP Volume II (FASID) Part III (AOP) Attachment A appeared inconsistent with ICAO global provisions. The reporting of the state of the runway group should be included in METAR and SPECI as supplementary information, subject the regional air navigation agreement (Annex 3 Appendix 3 paragraph 4.8.1.5 b) refers). The EANPG concurred with the expressed views of METG/19 that the EUR ANP should be updated in this regard.

4.7.19 In view of the foregoing, the EANPG formulated the following Conclusion:

EANPG Conclusion 51/32 – Proposal for amendment and update to the EUR ANP related to MET provision

That the ICAO Regional Director, Europe and North Atlantic, undertake the necessary action to:

a) amend Part VI (MET) of the EUR Air Navigation Plan Volume I (Basic ANP) and Volume II (FASID), as given in **Appendix O** to this report, to reflect MET observations and reports from offshore structures;

b) amend Part VI (MET) of the EUR Basic ANP, as given in **Appendix P** to this report, to better reflect MET provisions for low-level flights; and

c) update EUR ANP Volume II (FASID) Part III (AOP) Attachment A with regards to the reporting of state of the runway to align with provisions in Annex 3, Annex 14 Volume I, and World Meteorological Organisation Manual on Codes (No. 306).

4.7.20 The EANPG was informed that METG/19 had undertaken a review of the work programmes of its sub-groups and proposed updates thereto, as necessary. The revised work programmes had been included in the final report of METG/19. In view of the upgrading of quality management system principles from a recommended practice to a Standard as part of Amendment 75 to Annex 3, and to foster the future implementation of QMS, the EANPG noted a need had been identified for a training event to support implementation of QMS for MET amongst States in the Eastern part of the EUR Region. The EANPG supported this proposal, and formulated the following Conclusion accordingly:

EANPG Conclusion 51/33 – Fostering the implementation of QMS for the provision of meteorological service for international air navigation

That the ICAO Regional Director, Europe and North Atlantic, invite ICAO Headquarters, in coordination with the World Meteorological Organisation, to organise a training event on the Quality Management System (QMS) for MET Service Providers in the Eastern part of the EUR Region in 2010.

Update to EUR SIGMET Guide (EUR Doc 014)

4.7.21 The EANPG reviewed an amendment proposal to the *EUR SIGMET Guide* (EUR Doc 014) and noted that the document now included rules for the preparation of AIRMET, consistency regarding the availability and transmission of SIGMET and AIRMET to aircraft in flight with the provisions in the BORPC, and the elimination of reference to SIGMET corrections.

4.7.22 In addition, the EANPG noted recently prepared material detailing further minor editorials to the text and an update to Appendix B of the document. The changes to Appendix B were necessary in view of recent re-organisation of meteorological services within the Russian Federation due to a consolidation of flight information regions.

4.7.23 Having reviewed the material, the EANPG formulated the following Decision:

EANPG Decision 51/6 – Revised ICAO EUR Doc 014

That the ICAO Regional Director, Europe and North Atlantic, take the necessary actions to publish the revised EUR Doc 014 (re-titled *EUR SIGMET and AIRMET Guide*) as provided at **Appendix Q** to this report.

Activities of the meteorological/air traffic management task force of the EANPG COG (MET/ATM TF)

4.7.24 The EANPG noted that the first meeting of the Meteorological/Air Traffic Management Task Force of the European Air Navigation Planning Group Coordinating Group (METATM TF/1) was held at the European and North Atlantic Office of ICAO, Paris, from 26 to 28 August 2009. The meeting was attended by 26 experts from 15 European States, one expert from EUROCONTROL and one expert from the European Commission.

4.7.25 The EANPG was informed that the MET/ATM TF had completed an initial update to the "*MET Strategy in supporting the Global ATM Operation Concept in the EUR Region*" to better reflect ATM developments such as SESAR and NEXTGEN. It was noted that in order to increase the awareness of the MET Strategy within the ATM community, the MET/ATM TF had published the latest version of the document as a working draft on the ICAO Regional Office website via URL: http://www.paris.icao.int/Met/Met_ATM/index.htm. The EANPG also noted that the MET/ATM TF had reviewed and proposed an update the Terms of Reference of the Task Force, which had been consequently endorsed by EANPG COG Decision 45/9.

4.7.26 The EANPG noted concerns expressed by the MET/ATM TF members that the Task Force was lacking input from the ATM community. Whilst the MET/ATM TF had a MET view on what was appropriate, it required ATM input to determine whether these views were accurate. The circulation amongst the ATM community of the working draft of the MET Strategy should assist in this regard in order to:

i) better reflect ATM requirements for MET information;

ii) identify omissions, and

iii) highlight current or planned MET contributions to ATM within States that may contribute to the development of best practices and guidance material.

4.7.27 The EANPG was informed that two "MET support for ATM" workshops had been organised and hosted by EUROCONTROL during 2009, and that further activities in this context were expected in 2010. In addition, the EANPG noted that the next meeting of the MET/ATM TF was scheduled for 21 and 22 January 2010 at the ICAO EUR/NAT Office.

Activities of the EUR/NAT Volcanic Ash Exercises Steering Group of the EANPG COG (VOLCEX/SG)

4.7.28 The EANPG was informed of the recent activities of the VOLCEX/SG of the EANPG COG, noting that it had conducted two international volcanic ash exercises, held two meetings of the Steering Group, and convened a European Aviation Volcanic Ash Awareness Workshop during the past 12 months.

4.7.29 In addition, it was noted that the VOLCEX/SG had prepared revisions to the EUR and NAT regional volcanic ash contingency plans. The revisions to both plans, with only minor further modification, were endorsed by the Forty-Fifth meeting of the EANPG Programme Coordinating Group (EANPG COG/45) and the Thirty-Fifth meeting of the NAT Implementation Management Group (NAT IMG/35) respectively.

4.7.30 The EANPG noted the future work programme of the VOLCEX/SG (covering a period up to and including 2011), and acknowledged that the programme included four regional volcanic ash exercises (two in the EUR region and two in the NAT region) and two meetings of the VOLCEX/SG.

4.7.31 The EANPG was informed that the VOLCEX/SG intended to conduct the second volcanic ash exercise of 2010 (VOLCEX10/02) across two days. The first day would afford stakeholders in north-west Europe the opportunity to test their volcanic ash contingency measures based on an Icelandic eruption, whilst the second day would be an opportunity for Central and Eastern European stakeholders to test their

contingency procedures as the simulated ash plume drifted south-eastwards from its point of origin. In an attempt to increase the awareness of volcanic ash as a hazard to aviation amongst Central and Eastern European States, the EANPG was informed that the VOLCEX/SG was considering hosting a further volcanic ash awareness event in 2010 targeted at this part of Europe, and noted that the COG/45 meeting had supported this proposal.

Update to EUR Doc 019 (EUR Volcanic Ash Contingency Plan)

4.7.32 The EANPG was informed that the third and fourth meetings of the VOLCEX/SG (held January and June 2009 respectively) had concluded that amendments were necessary to the *EUR volcanic ash contingency plan* (EUR Doc 019), to take into account:

i) editorial changes – for example, paragraph renumbering;

ii) factual changes – for example, referring to "CFMU" instead of "the appropriate ATFM unit", and the fact that CFMU will only ever issue an AIM, not a NOTAM; and

iii) alignment with the NAT volcanic ask contingency plan during the alerting, reactive and proactive phases.

4.7.33 The EANPG recognised that COG/45 had reviewed and endorsed the proposed amendment to the EUR Doc 019, by way of COG Decision 45/10, and was informed that the revised document had recently been published on the ICAO EUR/NAT website at http://www.paris.icao.int/documents_open/ and http://www.paris.icao.int/Met/Volc_Ash/index.htm.

4.8 IMPLEMENTATION OF THE NEW CONTENTS OF THE FPL IN 2012

Inter-regional coordination on implementation of 2012 FPL format

4.8.1 The EANPG was informed that the ICAO Secretariat had undertaken coordination with other ICAO Regional Offices in order to obtain a progress report on the status of implementation of the new ICAO Flight Plan (FPL) form on 15 November 2012 in other ICAO regions. The EANPG reviewed summaries highlighting he actions by the Asia Pacific, Middle East, South American, Caribbean, Eastern, Western and Central African Regions to implement the new provisions as per Amendment 1 to PANS-ATM 15th Edition by 15 November 2012. The EANPG noted the information and was informed that this coordination process would continue. This information, and subsequent updates, would be provided to the 2012 FPL Task Force to facilitate a harmonized and smooth implementation of the new provisions related to the ICAO FPL.

Implementation of flight plan amendments for 2012

4.8.2 The EANPG was informed on the steps being undertaken by EUROCONTROL to respond to the invitation from the ICAO Regional Director, Europe and North Atlantic, for EUROCONTROL to develop an "Implementation Plan of the new contents to the ICAO FPL" (Plan) for the ICAO EUR Region, and to monitor and coordinate the progress of the Plan to ensure its timely implementation (EANPG Conclusion 50/40 refers).

4.8.3 The EANPG was also informed that following COG44, the ICAO Regional Director, Europe and North Atlantic, requested all States within the EUR Region to provide points of contact and impact statements. EUROCONTROL had made the same request to its Member States, and there had been a frequent and fruitful exchange of information between EUROCONTROL and the ICAO EUR/NAT Regional Office concerning the results of these actions. Notwithstanding the foregoing, the EANPG noted with concern that the current version of the EUR Region Implementation Plan contained many gaps, because information which had not yet been received from a significant number of States. It was expected that the Plan would

evolve until at least mid-2010 and probably beyond as plans developed and further information became available from States.

4.8.4 In order to ensure that States were aware of the urgent need to plan for the implementation of the changes by 15 November 2012, the EANPG agreed to the following Conclusion:

EANPG Conclusion 51/34 – FPL 2012 Awareness Workshops

> That the ICAO Regional Director, Europe and North Atlantic, organise joint ICAO/EUROCONTROL Awareness Workshops by the second quarter of 2010 for States in the Eastern part of the ICAO EUR Region and the North African States concerned with a view to increase awareness of the urgency for implementation of the changes to the ICAO FPL format by 15 November 2012.

4.8.5 EUROCONTROL advised the EANPG that it was willing to provide a translation function in the IFPS from new FPL contents to old FPL contents, up to April/May 2013, to assist any ANSPs who may not be ready with the required changes to their Flight Data Processing Systems (FDPSs) by the Amendment applicability date of 15 November 2012, bearing in mind that the translation function would inevitably involve dilution of some information which was provided in the new FPL because the new FPL could carry considerably more information about a flight than the current FPL.

4.8.6 The EANPG was informed that, according to the analysis done by EUROCONTROL on the contents of Amendment 1 to PANS ATM, some of the detailed requirements were unclear, and may contain inconsistencies. It was requested that these issues be raised with ICAO Headquarters for clarification and resolution where necessary.

4.8.7 The EANPG discussed the possibility of making new changes to PANS-ATM to address existing European requirements. On this subject the Secretariat explained that Amendment 1 stemmed from the work of the Flight Plan Study Group and that the nature and scope of the amendment was to update the ICAO model flight plan form in order to meet the needs of aircraft with advanced capabilities and the evolving requirements of automated air traffic management (ATM) systems, while taking into account compatibility with existing systems, human factors, training, cost and transition aspects.

4.8.8 The Secretariat also informed that any technical change to the amendment at this point in time to address regional issues could jeopardize the implementation as planned for 2012 and would view with considerable concern any proposal to change the amendment, considering that some Regions and States had already started the roll out phase of the new provisions. However, the EANPG recognised that it has to find appropriate solutions for these regional issues.

4.8.9 The EANPG was informed that to help to clarify any issues related to the new provisions and at the same time to help States with the implementation, ICAO had developed the Flight Plan Implementation Tracking System (FITS). It was explained that this is a web based tool where the entire aviation community could track the implementation in all FIRs around the world; at the same time FITS provided a place where issues could be discussed and solved by subject matter experts. The Secretariat briefly introduced the tool, advising that updates to the information in the databases would be provided by the respective Regional Offices. Once sufficient data had been introduced, the system would be made available for public consultation and publicised via State Letter early in 2010.

4.8.10 Based on the foregoing the EANPG concluded that:

EANPG Conclusion 51/35 – EUR Region requests regarding FPL 2012 issues

That the ICAO Regional Director, Europe and North Atlantic:

a) urge States that have not yet provided their implementation plans, points of contact and impact statements to provide them not later than 1 February 2010 in order for EUROCONTROL to advance the regional implementation plan;

b) request ICAO Headquarters to provide clarifications concerning the issues arising from Amendment 1 to the 15th Edition of PANS-ATM, as detailed in **Appendix R** to this report;

c) request ICAO Headquarters to provide information confirming the implementation and purpose of a website showing the transition status of States to the new FPL format; and

d) request ICAO Headquarters to consider the inclusion of the transition status of the Initial Flight Plan Processing System (IFPS) on the above-referenced ICAO website.

5. MONITORING

European Regional Monitoring Agency (EUR RMA)

5.1 The EANPG was presented with the 2009 Safety Monitoring Report prepared by the European Regional Monitoring Agency (EUR RMA) for the reduced vertical separation minimum (RVSM) airspace in the EUR Region. The EANPG was satisfied that the RVSM operations in the EUR Region met the safety objectives for the year 2008. The EANPG agreed on the following statement and conclusion:

EANPG Statement 51/1 – RVSM Safety objectives for 2008

The EANPG, noting the report provided by the European Regional Monitoring Agency, is satisfied that Reduced Vertical Separation Minimum (RVSM) operations in the ICAO European region met the safety objectives for the year 2008.

EANPG Conclusion 51/36 – RVSM Safety Monitoring

That:

a) the European Regional Monitoring Agency, as a matter of priority,

   i) provide assistance to Russian Federation and other States in the ICAO European region in the creation of the EURASIA RVSM area;

   ii) provide interim guidance on Altitude Deviation Reports in order to improve the consistency of reporting within the EUR Region;

and

b) the ICAO Regional Director, Europe and North Atlantic invite ICAO Headquarters:

   i) to provide information on the Altitude Deviation Reporting mechanisms that are in place in other Regions; and

   ii) in order to ensure consistent reporting, develop appropriate guidance material or amendments to the relevant documentation (Annex 11, RVSM Manual (Doc 9574) and/or the RMA handbook).

6. DEFICIENCIES

Review of the deficiencies

6.1 The EANPG noted the developments related to the air navigation deficiencies in EUR Region that took place after the EANPG/50 meeting. On 18 May 2009, the ICAO Regional Director sent a State letter to all States in the ICAO EUR/NAT area of accreditation requesting an update on the progress with the corrective action undertaken to resolve the deficiencies listed. The EANPG noted the positive trend towards a reduction of the total number of deficiencies.

6.2 With respect to the deficiencies related to non-provision of airspace safety monitoring data to the RMA, replies to the State letter have been received from 6 States. Further, confirmation from the EUR RMA has been received with a total of 21 States to be removed from the list and one State (Algeria) to be added to the list. Ukraine indicated that they would be able to provide such data. The database has been consolidated accordingly. Even though, the number of non-reporting States has now been reduced significantly, the EANPG agreed that the ICAO Regional Director should write specifically to the States concerned, pointing out the safety critical importance of providing the airspace safety monitoring data to the EUR RMA and that States should now urgently fulfil their obligations in this respect. To this end, the EANPG agreed on the following Conclusion:

EANPG Conclusion 51/37 – Provision of airspace safety monitoring data

> That the ICAO Regional Director, Europe and North Atlantic, urge those States not providing airspace safety monitoring data to report the required data to the European Regional Monitoring Agency.

6.3 With respect to the Deficiencies related to non-implementation of WGS-84, Uzbekistan reported a new target date for implementation of 2010 and the Russian Federation reported recent progress achieved. Those elements were recorded in the Deficiencies database.

6.4 With respect to the deficiencies related to the implementation of QMS in AIS, 5 States have been added to the list based on the review of the status of implementation of the required AIS/MAP facilities and services in the ECAC member states (COG/45 – WP/04 refers).

6.5 With respect to the deficiencies related to a non-ICAO SARPS compliant flight level system, 6 States are concerned. Uzbekistan revised the CAP Target date from 2005 to ASAP. Further, the EANPG noted the recent progress of the EURASIA RVSM Implementation Project and the corresponding note was added in the CAP Description of all States concerned.

6.6 With respect to the deficiencies related to ATS coordination procedures in the Northern part of Nicosia FIR, the EANPG noted the addition of a second note to the EUR-ATM-03-02 deficiency. Turkey, in cooperation with Eurocontrol, the European Commission and ICAO, was working in order to find ways to improve safety of air navigation in the north east part of the Mediterranean Sea. Turkey believd that technical solutions could be found, without prejudice to the political and legal positions of the parties concerned. In this spirit, in 2009, Turkey hosted four meetings on the subject and one meeting was held in Brussels. Turkey tabled a technical solution regarding communications between neighbouring ACCs based on a Eurocontrol draft. Additional solutions regarding emergencies had also been identified. The next meeting on the issue was to be held in Ankara on 11 December 2009.

6.7 With respect to the deficiencies reported by IFALPA, the EANPG noted the good cooperation from the States reacting exhaustively and positively to the requests made by the ICAO EUR/NAT Office.

6.8 With respect to the future update of the List of Deficiencies, the EANPG recalled that it was agreed to present to EANPG/51meeting, for its consideration, a proposal to enable COG to review and approve the deletion from the List of those deficiencies considered as rectified. The additions of new deficiencies to the List would still remain only within the EANPG's remits. Therefore, the EANPG agreed to the following Decision:

EANPG Decision 51/7 – Update of Air Navigation Deficiencies Database in the EUR Region.

That, the EANPG Programme Coordinating Group, be mandated to

a) review and approve, as appropriate, deletions and/or updates to the Air Navigation Deficiencies database in the EUR Region; and

b) review and propose to EANPG new entries to the Air Navigation Deficiencies database in the EUR Region.

Updated List of Deficiencies

6.9 With respect to the updated List of Deficiencies, the EANPG endorsed the updated List of Deficiencies as presented at **Appendix S**.

7. WORK PROGRAMME

7.1 The EANPG reviewed the proposed new working schedule for the second half of 2010 with a view to accommodate EANPG/52 during the second half of November. This would enable enough time for the ICAO Secretariat to complete follow up work from EANPG/52 in time to introduce the EANPG Conclusions to the Air Navigation Commission at its first session of the year. If this was successful, the same working arrangements would be used for future EANPG meetings.

8. ANY OTHER BUSINESS

Expected cooperation between SESAR and NEXGEN from the NAT Region perspective

8.1 The Chairman of the NAT SPG addressed the EANPG with respect to the expected cooperation between SESAR and NextGen from the NAT Region perspective. It was highlighted that the NAT Region, geographically positioned between Europe and North America, accommodates a significant amount of traffic traversing between the two continents. In this respect, the NAT has identified the need to pay particular attention to ensure the two programs (SESAR and NextGen), are appropriately coordinated and harmonized to the maximum extent possible, in order to avoid unnecessary costs to the operators.

8.2 The Representative from the European Commission confirmed that discussions have been underway between the European Commission and the United States of America in order to conclude a memorandum of understanding on the cooperation between the two programs. The goal of the agreement is to ensure interoperability between the European Region and the United States.

8.3 In addition, it was noted that all cooperative programs need to consider their impact in a global perspective. The NAT, is encouraging the EUR to look towards their eastern regions to ensure that these discussions and agreements are also carried to those parts. The United States, commented that they are working closely with the ASIAPAC to harmonize oceanic requirements and technical capabilities.The Chairman of the NAT SPG addressed the EANPG with respect to the Expected cooperation between SESAR

and NEXGEN from the NAT Region perspective. It was highlighted that the NAT Region was geographically positioned between Europe and North America, accommodating a significant amount of traffic linking the two continents. In this respect, due attention should be taken to ensure that the two programmes (SESAR and NEXGEN) be coordinated and harmonised at the maximum extent possible in order to avoid unnecessary costs to the operators.

Retirement of Regional Officer ATM Jacques Vanier

8.4 A fond farewell was bid to Mr Jacques Vanier, who would retire from the post of EUR/NAT Regional ATM Officer as of 31 December 2009. Jacques had been well known within the European region for his significant contributions to, among other initiatives, the implementation of RVSM and the work required to realise the goal of Single European rules of the air. His many contributions, wisdom and particular character will be missed.

Workshops and Seminars

8.5 Traditionally the Czech Republic informed the EANPG that the three international aviation safety training events would take place in Prague in April and May 2010, namely Aircraft Accident Investigation course (19 – 30 April 2010), Safety Management Systems workshop (3 – 7 May 2010) and Human Factors in Aviation Maintenance course (10 – 12 May 2010). Detailed information for these events can be found at the following website address www.scsi-inc.com.

8.6 It was noted by the EANPG Chairman that the aviation safety training events organised by the Czech Republic in all fairness gained a very high reputation within the international aviation community.

Next meeting

8.7 The Group agreed to convene its Fifty-Second Meeting in the EUR/NAT Office of ICAO, Paris from 23 to 25 November 2010.

Appendix A - List of Participants

(Paragraph 0.2 refers)

CHAIRMAN
Phil ROBERTS

ALGERIA
Nazim CHENNAOUI
Lakhdar DAOUD

ARMENIA
Eduard PILOSYAN

BELARUS
Leanid CHURO
Tatiana PANACHEVNAYA

CYPRUS
Stelios MAKRIYIANNIS
Nicos NICOLAOU

CZECH REPUBLIC
Ladislav MIKA *(EANPG Vice Chairman)*

DENMARK
Kirsten SONDERBY

FRANCE
Thierry LEMPEREUR
Denis LEMARCHAND
Emmanuel SIEBERT
Bertrand HURON
Luc ANTOON

GEORGIA
Giorgi KARBELASHVILI
Tea GADABADZE
Tamara ARCHUADZE
Natali ASLAMADZE
Igor GORDIENKO
Levan KARANADZE
Nina KVASKHVADZE

GERMANY
Thomas BURLAGE
Bernd RANDECKER

GREECE
Vasileios TAGKALOS

ICELAND
Ásgeir PÁLSSON #
(NAT SPG Chairman)

IRELAND
Malcolm CAMPBELL

ITALY
Alessandro GHILARI
Pierluigi D'ALOIA

LITHUANIA
Algimantas RAŠČIUS
Kazimieras JAKAS

MOROCCO
Mohamed SABBARI
Nabil MASSALI

NETHERLANDS, KINGDOM OF THE
Robin VALKENBURCHT

POLAND
Wieslaw BACZEWSKI
Katarzyna MARKS

PORTUGAL
Carlos ALVES

ROMANIA
Liviu BUNESCU
Traian COMSA
Dan NICU

RUSSIAN FEDERATION
Dmitriy SAVITSKIY
Vasily TOPCHIEV
Galina SAVINA
Elena GRACHEVA
Elena STEPANOVA
Yury TOKAREV

SERBIA
Srdjan COKORILO
Branislava CULAJEVIC

SLOVAKIA
Ľudovít GÁBRIŠ

SPAIN
Ricardo ALONSO GONZALEZ

SWITZERLAND
Julien SUBILIA
Thomas BUCHANAN

TUNISIA
Somrani CHAHINE
Mohamed HJAIEJ

TURKEY
Kerem ALP
Yusuf BOZDOGAN
Gaye Betül DOGAN
Ayhan ÖZTEKİN

UKRAINE
Oleg NOVAK
Volodymyr CHALYK
Vitaliy SIMAK

UNITED KINGDOM
Gordon REID

UNITED STATES
Daniel VACA

INTERNATIONAL ORGANISATIONS

EUROCONTROL
Istvan BOZSA
Kim BREIVIK#
Richard FARNWORTH#
Andy LEWIS#
Tony LICU#
David MARTEN#
Gerry McAULEY#

EUROPEAN COMMISSION
Alfonso ARROYO
Sven HALLE

IAC
Oleg ERMOLOV

IATA
Peter SORENSEN

IBAC
Patrick EXPERTON

IFALPA
Heinz FRÜHWIRTH

IFATCA
Patrik PETERS

NATMC
Giorgio CIONI#
Istvan TALLA#

 # part time

Appendix B1 - Proposal For Amendment To Doc 7754, EUR ANP, Volume I, Basic ANP

(Paragraph 4.2.9 refers)

Part V
AIR TRAFFIC MANAGEMENT (ATM) - Part V.I
AIRSPACE MANAGEMENT (ASM)

Editorial Note: Amendments are arranged to show deleted text using strikeout (~~text to be deleted~~), and added text with grey shading (text to be inserted).

1. Controlled airspace should be established so as to encompass the climb to cruising level of departing aircraft, the cruising levels on ATS routes normally used by IFR flights and the descent from such levels of arriving aircraft, except in those cases where the type and density of traffic clearly do not justify the establishment of controlled airspace. Provisions should be made to ensure that SST aircraft are able to conduct the transonic and supersonic phases of their flights within controlled airspace, regardless of density of traffic.
[Annex 11, Chapter 2]

Note.— Detailed provisions regarding the type of air traffic service required are highlighted in 1 to 7 of Part V.II — ATS.

2. The lower limit of controlled airspace should be established so that:

a) IFR flights requiring the provision of air traffic control service can remain within controlled airspace during the entire duration of their flight; and

b) flights not requiring ATC services are not unnecessarily restricted.

In the vicinity of aerodromes, the establishment of the lower limit of controlled airspace should also take into account those portions of the airspace which may be required by ATC in order to vector aircraft by radar.
[Annex 11, 2.9.3]

3. Controlled airspace should be established in the upper airspace up to flight level 460 and throughout the whole control area whenever area type air traffic control service is provided.
[EUM/VI, Rec 8/13]

4. Airspace restrictions and/or temporary airspace reservations for specific users or purposes should only be imposed when the intended purpose cannot be met by other arrangements. If established, such restrictions and/or reservations should be kept to the minimum, both in extent and duration consistent with the purpose they serve and should be withdrawn as soon as possible. In addition, any restricted and/or reserved airspace should be made available for general use whenever the activities having led to their establishment are temporarily suspended, e.g. during weekends, at night, etc. (18, Part II — GEN also refers).
[Annex 11, 2.17]

5. Where users have specific requirements in portions of the airspace extending over the territory of a number of States and/or over the high seas, arrangements should be made between States concerned for the coordinated use of airspace, facilities and procedures in order to ensure maximum uniformity.

CIVIL/MILITARY COORDINATION

~~[Annex 11, 2.16 and 2.17; *Air Traffic Services Planning Manual* (Doc 9426), Part II, Section 1, Chapter 2]~~

Note 1 - Annex 11 contains provisions on civil- military coordination and Annex 15 contains provisions for the promulgation of the relevant AIS by the competent authority responsible for the provision of ATS in the area within which the operations will take place.

Note 2 - The application of the FUA over the high seas is without prejudice to the rights and duties of States regarding access to high seas airspace under the Chicago Convention. Articles 3 a) and d) to the Chicago Convention apply.

Note 3 - The FUA provisions are not mandatory for application by States. They are intended to be a method to ensure maximum harmonisation of the application of the FUA in the EUR Region.

6. States should aim at the creation of one single integrated system catering to both civil and military requirements. The related organization of the airspace should satisfy the requirements of all users in an optimum way.

7. States should establish civil/military coordination bodies to ensure, at all levels, the coordination of decisions relating to civil and military problems and airspace and traffic management (paragraph 4 above refers).

8. States should arrange for close liaison and coordination between civil ATS units and relevant military operational control and/or air defence units in order to ensure integration of civil and military air traffic or its segregation, if required. Such arrangements would also contribute to the reduction or elimination of the need for interception of strayed or unidentified aircraft.

9. Military exercises likely to affect civil flight operations should be scheduled, whenever possible, so as not to coincide with peak periods of civil air traffic and/or not to affect areas where a high density of civil air traffic occurs.

FLEXIBLE USE OF AIRSPACE (FUA)

10. Airspace should not be designated as either purely civil or purely military airspace, but should rather be considered as one continuum in which all users' requirements have to be accommodated to the maximum extent possible.

11. States should apply the flexible use of airspace concept whenever:

a) activities require the reservation of a volume of airspace for their exclusive or specific use for determined periods due to the characteristics of their flight profile or their potential hazards and the need to ensure effective and safe separation from non-participating air traffic;

b) different types of aviation activities occur in the same airspace but with different requirements. Their coordination should seek to achieve both the safe conduct of flights and the optimum use of available airspace;

c) accuracy of information on airspace status and on specific air traffic situations, and timely distribution of this information to civil and military controllers and controlling military units has a direct impact on the safety and efficiency of operations; and

d) timely access to up-to-date information on airspace status is essential for all parties wishing to take advantage of airspace structures made available when planning their flights.

FLEXIBLE USE OF AIRSPACE OVER THE HIGH SEAS

12. The flexible use of airspace concept also covers airspace over the high seas. Its application should therefore be without prejudice to the rights and duties of States under the Convention on International Civil Aviation (Chicago Convention) and its annexes, or the 1982 UN Convention on the Law of the Sea (UNCLOS).[1]

~~10.~~13. Regulations governing flights of State aircraft over the high seas should, to the maximum extent practicable, comply with the relevant provisions of Annex 2. Where this is not possible due to the nature of the operations involved, measures should be taken to ensure that other aircraft are not endangered by such operations. These should preferably be established in coordination with the State responsible for the provision of air traffic services over that part of the high seas affected by such operations.

. . .

[1] Turkey is not a signatory to the UNCLOS and their position is well known and remains unchanged.

Appendix B2 - Proposal For Amendment To Doc 7754, EUR ANP, Volume II, FASID

(Paragraph 4.2.9 refers)

Part V
AIR TRAFFIC MANAGEMENT (ATM)
PART V.I - AIRSPACE MANAGEMENT (ASM)

Editorial Note: Amendments are arranged to show deleted text using strikeout (~~text to be deleted~~), and added text with grey shading (text to be inserted).

INTRODUCTION

1. The material in this part complements that contained in Part I — BORPC and Part V.I — ASM of the Basic ANP and should be taken into consideration in the overall planning processes for the EUR region.

2. This part contains the details of the facilities and/or services to be provided to fulfil the basic requirements of the plan and/or as agreed between the provider and user States concerned. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified. This element of the FASID, in conjunction with the EUR Basic ANP, is kept under constant review by the EANPG in accordance with its schedule of management, in consultation with user and provider States and with the assistance of the ICAO EUR/NAT Regional Office.

AIRSPACE MANAGEMENT

3. States requiring a vertical division in part or all of their airspace should select a level that:

a) would allow for maximum ATC flexibility and capacity;

b) would, to the greatest extent possible, allow for the use of optimum flight profiles;

c) keeps ATC coordination requirements and cockpit workload to a minimum; and

d) as much as possible, coincides with a level already used in any adjacent State or elsewhere in the region by other States in a similar situation.

CIVIL/MILITARY COORDINATION

4. Prior to and during the conduct of military exercises, measures should be taken to ensure that both civil and military aircraft are able to conduct their operations without risk of dangerous incidents and without restricting each other unnecessarily. Particular attention should be given to the need for reducing to the minimum the time periods during which civil flight operations will have to be restricted.

5. Penetration of controlled airspace by military aircraft not under the control of the appropriate civil ATC unit should be avoided. If this is not possible, such penetrations should take place only on condition that:

a) they have been made the subject of a specific letter of agreement between the civil ATC and the military units concerned;

b) direct speech communications exist between that civil ATC and the military units concerned; and

c) they are carried out under radar surveillance by the military unit in question, applying at least the applicable ICAO separation minima.

FLEXIBLE USE OF AIRSPACE (FUA)

6. Flexible use of airspace (FUA) in the EUR region should be provided, when applicable, in accordance with the procedures outlined in Attachments A, B and C.

7. The flexible use of airspace should be governed by the following principles:

a) coordination between civil and military authorities should be organised at the strategic, pre-tactical and tactical levels of airspace management. Agreements and procedures should be established in order to increase safety and airspace capacity, and to improve the efficiency and flexibility of aircraft operations;

b) consistency between airspace management, air traffic flow management and air traffic services should be ensured and maintained at the three levels of airspace management described below in order to ensure, for the benefit of all users, efficiency in airspace planning, allocation and use; and

c) an airspace reservation for exclusive or specific use of categories of users should be of a temporary nature, applied only during limited periods of time based on actual use, and released as soon as the activity having caused its establishment ceases.

Strategic airspace management (level 1)

8. States should:

a) ensure the overall application of the flexible use of airspace at a strategic, pre-tactical and tactical level;

b) regularly review users' requirements;

c) approve the activities which require airspace reservation or restriction;

d) define temporary airspace structures and procedures to offer multiple airspace reservation and route options;

e) establish criteria and procedures providing for the creation and use of adjustable lateral and vertical limits of the airspace required for accommodating diverse variations of flight paths and short-term changes of flights;

f) assess the national airspace structures and route network with the aim of planning for flexible airspace structures and procedures;

g) define the specific conditions under which the responsibility for separation between civil and military flights rests on the ATS units or controlling military units;

h) develop cross-border airspace use with neighbouring States where needed to accommodate traffic flows and users' activities;

i) coordinate their airspace management policy with those of neighbouring States to jointly address use of airspace across national borders and/or boundaries of flight information regions;

j) establish and make airspace structures available to users in close cooperation and coordination with neighbouring States where the airspace structures concerned have a significant impact on the traffic across national borders and/or boundaries of flight information regions, with a view to ensuring optimum use of airspace for all users;

k) establish with neighbouring States one common set of standards for separation between civil and military flights engaged in cross-border activities;

l) set up consultation mechanisms between all relevant partners and organisations to ensure that users' requirements are properly addressed;

m) assess and review airspace procedures and performance of flexible use of airspace operations; and

n) establish mechanisms to archive data on the requests, allocation and actual use of airspace structures for further analysis and planning activities.

9. In those States where both civil and military authorities are responsible for or involved in airspace management, the tasks set out in paragraph 8 should be performed through a joint civil-military process.

Pre-tactical airspace management (level 2)

10. States should establish an airspace management cell to allocate airspace in accordance with the conditions and procedures defined in paragraph 8 above. In those States where both civil and military authorities are responsible for, or involved in airspace management, this cell should take the form of a joint civil/military cell.

Note.– Two or more States may establish a joint airspace management cell.

11. States should ensure that adequate supporting systems are put in place to enable the airspace management cell to manage airspace allocation and to disseminate the information relating to airspace apportionment to all affected in a timely fashion.

Tactical airspace management (level 3)

12. States should establish civil/military coordination procedures and communication facilities between appropriate ATS units and controlling military units permitting mutual provision of airspace data to allow real-time activation, deactivation or reallocation of the airspace allocated at pre-tactical level.

13. States should ensure that the relevant controlling military units and ATS units exchange information on any modifications to the planned activation of airspace in a timely and effective manner, and notify all affected users of the current status of the airspace.

14. States should establish coordination procedures and supporting systems between ATS units and controlling military units in order to ensure safety when managing interactions between civil and military flights.

15. States should establish coordination procedures between civil and military ATS units so as to permit direct communication of relevant information to resolve specific traffic situations where civil and military controllers are providing services in the same airspace. This information should be made available, in particular where it is required for safety reasons, to civil and military controllers and controlling military units through a timely exchange of flight data, including the position and flight intention of aircraft.

APPLICATION OF FLEXIBLE USE OF AIRSPACE (FUA) OVER THE HIGH SEAS

16. States which have accepted the responsibility to provide air traffic services over the high seas should ensure that danger areas established over the high seas are of a temporary nature and should include mechanisms which promote access by all airspace users to the fullest extent possible.

17. States which have accepted the responsibility to provide air traffic services over the high seas should lay down the necessary guidelines to reflect the status of the airspace coordination process over the high seas, and should ensure that, the airspace management cell established by the State which has accepted the responsibility to provide air traffic services in airspace over the high seas is the focal point for all airspace requests over that airspace.

18 Access to high seas airspace cannot be denied nor can State aircraft be "forced" to participate in the application of an FUA concept. Any procedure or agreement developed must not give the operators of State aircraft the perception that their operations would be restricted in any way. Therefore, the procedures and/or agreements must also acknowledge that negotiating the use of the airspace was the ideal; without prejudice to Articles 3a and 3d of the Chicago Convention, there may be exceptional circumstances when[1]:

- only notification of operation would be possible; or
- operational considerations may preclude either negotiation or notification.

19. Provider States should take into account the benefits of the establishment of joint AMCs, which might enhance the cooperation among the user and provider States.

Note: - Guidelines regarding coordination between military authorities and ATS authorities are contained in the ICAO Manual Concerning Safety Measures Relating to Military Activities Potentially Hazardous to Civil Aircraft Operations (Doc 9554).

[1] Greece maintains that notification of operations must be secured under any circumstances.

Attachment A

EXPLANATION OF TERMS USED IN FLEXIBLE USE OF AIRSPACE (FUA)

Ad hoc structures. Airspace structures, whether routes or areas, required in order to meet operational needs at shorter notice than Level 1 process. The establishment of such ad hoc structures at Level 2 or Level 3 follows the general design and safety management criteria.

Airspace management. A planning function with the primary objective of maximising the utilisation of available airspace by dynamic time-sharing and, at times, the segregation of airspace among various categories of airspace users on the basis of short-term needs.

Airspace management cell (AMC). A cell responsible for the day-to-day management of the airspace under the responsibility of one or more States.

Airspace reservation. A defined volume of airspace temporarily reserved for exclusive or specific use by categories of users.

Air traffic control clearance. Authorization for an aircraft to proceed under the conditions specified by an air traffic control Unit.

Air traffic flow management (ATFM). A service established with the objective of contributing to a safe, orderly and expeditious flow of air traffic by ensuring that ATC capacity is utilised to the maximum extent possible, and that the traffic volume is compatible with the capacities declared by the appropriate ATS authority.

Civil-military coordination. The coordination between civil and military parties authorised to make decisions and agree a course of action.

Conditional route (CDR). ATS route that is only available for use and flight planning under specified conditions. A conditional route may be of more than one category, and those categories may change at specified times:

Category 1 conditional route (CDR1)

CDR1 routes are available for flight planning during times published in the relevant Aeronautical Information Publication (AIP).

Category 2 conditional route (CDR2)

CDR2 routes may be available for flight planning. Flights may only be planned on a CDR2 in accordance with conditions published daily in the conditional route availability message.

Category 3 conditional route (CDR3)

CDR3 routes are not available for flight planning. Flights must not be planned on these routes but ATC units may issue tactical clearances on such route segments.

Note: - Over the high seas, CDRs form part of the regional ATS route network and are therefore subject to the Council approved procedure for the amendment of Council approved ANPs. The designation of ATS routes as CDRs is the prerogative of the State concerned.

Conditional route availability message (CRAM). A special consolidated ASM message issued daily by the centralised airspace data function (CADF) to promulgate in one message, on behalf of the States, the AMC decisions on conditional routes availability notified by the airspace use plans for the ECAC area. The CRAM is used by aircraft operators for flight planning purposes.

Controlling military unit. Any fixed or mobile military unit handling military air traffic and/or pursuing other activities which, owing to their specific nature, may require an airspace reservation.

Cross border area (CBA). An airspace reservation established over international boundaries for specific operational requirements. This may take the form of a temporary airspace reservation.

Cross border Operations (CBO). Cross border/FIR boundary operations is a process which encompasses activities conducted by one or more States, within an area established across international boundaries or entirely within the airspace under the jurisdiction of a State.

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

Flight intention. The flight path and associated flight data describing the planned trajectory of a flight to its destination, as updated at any moment.

Flight plan. Specified information provided to air traffic services units, relative to an intended flight or portion of the flight of an aircraft.

Sector. Part of a control area and/or a flight information region/upper flight information region.

Attachment B

OBJECTIVES, ORGANIZATION AND OPERATION OF THE FLEXIBLE USE OF AIRSPACE

GENERAL REQUIREMENTS

1. When applying the FUA, the States should:

   a) maintain and actively seek to improve the safe and effective management of the airspace and its supporting infrastructure;

   b) exercise fair and effective regulation of the airspace organisation and management;

   c) build confidence and respect between airspace regulators and all other stakeholders through consultation and cooperation;

   d) maintain and improve standards of service through effective planning and monitoring of key processes and activities;

   e) accommodate shared use of national airspace by all user groups;

   f) harmonise airspace management procedures with neighbouring States;

   g) conduct regular monitoring of compliance with the FUA regulations at each level.

2. In particular, States should:

   a) ensure that a commonly agreed airspace policy is formulated (e.g. a national airspace charter);

   b) ensure that agreed priority rules and negotiation procedures for airspace allocation at ASM Level 2 and ASM Level 3 are clearly defined and implemented;

   c) ensure the ongoing (at least yearly) re-assessment of national airspace with regard to effective application of FUA;

   d) ensure the progressive establishment of new flexible airspace structures, where appropriate;

   e) establish framework agreements between civil and military authorities to facilitate the application of FUA;

   f) ensure the introduction of procedures for the allocation of flexible airspace structures on a day-by-day basis;

   g) ensure that appropriate national legislation is in place and amended as necessary;

   h) ensure that coordination processes between all levels of ASM are established;

   i) ensure that adequate real-time civil/military co-ordination facilities and procedures are established;

j) ensure that civil and military terms and definitions applicable to the principles governing the FUA are harmonised;

k) ensure that at any one time the total volume of airspace reservations are kept to a minimum while ensuring safety and satisfying national operational requirements;

l) ensure that a commonly agreed airspace policy for certain portions of airspace of two or more States involved, is formulated; and

m) ensure the regular (at least yearly) re-assessment of the joint airspace of two or more States where appropriate.

3. The State should ensure that a framework is established for effective coordination between ATS, ASM and ATFM at the three ASM Levels in a collaborative manner, and ensure the establishment of coordination agreements defining clear and unambiguous operational procedures at ASM Level 2 and 3.

4. States should ensure and monitor that any airspace reservations applicable to ASM are of a temporary nature, and should ensure:

a) that rules are established for the timely activation and release of reserved airspace, based on actual use;

b) that coordination and interaction procedures are established concerning the release and extended activation of reserved airspace different from the reserved timeframe, where appropriate; and

c) that written agreements are drawn up between parties involved.

5. States should establish consultation mechanisms with all relevant partners and organisations, and should:

a) ensure that consultations with airspace users, service providers and other relevant bodies are conducted with the aim of obtaining consensus, wherever possible, before making changes in the planning or design of airspace arrangements; and

b) ensure that the functional responsibilities of the persons/authorities are defined.

6. States should define priority criteria for airspace allocation, and should:

a) ensure that the civil and military operational needs, without affording preferential treatment to either, and ensure that airspace planning takes into account all users requirements are reconciled;

b) ensure that the coordination procedures for joint civil-military airspace allocation and review process are defined; and

c) approve and enforce national policies for an effective airspace allocation and review process, taking into account:

i) the needs of all stakeholders;

ii) national security and defence needs;

iii) environmental issues; and

iv) network effects.

7. States should ensure that civil and military systems are interoperable with respect to supporting the timely sharing of correct and consistent information.

8. States should ensure that ASM supporting tools and data are available to facilitate airspace planning and allocation. This should include:

a) exchange of airspace data and information;

b) civil/military airspace planning and ATS coordination and booking tool;

c) link between ASM, ATFM and ATS functions; and

d) automation of manual tasks.

9. States should ensure that communication means between all participating units at ASM Level 2 and 3 are available to facilitate timely transmission and receipt of airspace management cell decisions.

10. Direct and reliable communication facilities between all units involved should be established.

STRATEGIC AIRSPACE MANAGEMENT REQUIREMENTS (ASM Level 1)

11. When States apply airspace planning principles and criteria for ASM Level 1, they should ensure that:

a) the effective sharing of airspace and its efficient use by civil and military users stemming from the application of FUA is realised through joint civil/military strategic planning and pre-tactical airspace allocation;

b) written agreements or arrangements are put in place between the competent civil and military units, based on timely data processing for airspace allocation, to enable them to take into account the activation and deactivation of temporary structures;

c) efficient operations at ASM Level 3 are put in place including the establishment of coordination procedures between civil and military ATS units, and between them and military controlling units to support a process exploiting the airspace capacity in a dynamic manner;

d) in particular:

i) written agreements between the competent civil and military authorities should be in place;

ii) clearly defined LoAs should be agreed and implemented, containing agreed priority rules and coordination procedures for airspace allocation and use at ASM Levels 2 and 3;

iii) where required, airspace re-allocation, as close as practical to the time of operations to accommodate short-term changes in traffic situation and/or users requirements should be enabled.

12. Where appropriate, States should conclude agreements with neighbouring States to enable cross border/FIR boundary operations within agreed areas established across international borders or entirely within airspace under the jurisdiction of a State, to include:

a) the allocation and shared use of common cross border areas (CBAs);

b) the allocation and shared use of national areas entirely established within the airspace under the jurisdiction of one of the Contracting States;

c) delegation of responsibility for the provision of air traffic services in designated airspace from one to the other Contracting State(s), if appropriate.

13. States should authorise their competent agencies such as military controlling units, approved agencies, AMCs and ATS units to negotiate and conclude necessary written agreements that could contain specific operational and technical aspects related to pre-tactical and tactical airspace management, and arrangements for the provision of ATS, if and where applicable.

14. Such agreements should include all relevant legal, operational and technical issues for cooperation and interaction covering all relevant civil and military issues (e.g. defence, operations, environment and search and rescue), and the following;

a) designation of the responsibility for the provision of ATS;

b) designation of competent civil and military authorities involved in ASM activities;

c) determination of responsibility for allocation of the areas concerned based on the principle of delegation of responsibility to a lead, co-located or integrated multinational AMC as appropriate;

d) air defence coordination and notification procedures;

e) priority allocation rules, time based parameters and reservation assurance processes;

f) coordination procedures and interaction rules concerning the activation and release of the cross-border airspace reservation;

g) services in the area(s) concerned following the principle of delegation of responsibility, where applicable;

h) contingency procedures;

i) other operational issues pertinent to cross border/FIR boundary operations as appropriate; and

j) compatibility of communication and flight data exchange systems between civil and military parties, including usage of technical enablers (e.g. ASM/ATFM tool).

15. States should ensure the:

a) shared use of airspace in respect of all users;

b) establishment of working structures for ASM Levels 2 and 3, together with the appropriate authority required to carry out the tasks; and

c) establishment of a joint civil and military process for the effective application of the flexible use of airspace concept at a strategic, pre-tactical and tactical level, to include:

i) priority rules;

ii) negotiation procedures;

iii) coordination procedures; and

iv) contingency procedures, where appropriate.

16. States should conduct regular assessments of their national airspace and ATS route network in order to monitor the application of FUA. In particular, States should ensure:

a) the establishment of procedures for timely and appropriate real-time activation, deactivation or real-time reallocation of airspace along with resolution of specific airspace problems;

b) that timely data exchange is supported by technical enablers (e.g. ASM/ATFM tool) for airspace allocation closer to the day of operation;

c) that compatible communication and flight data exchange system between civil and military units, including usage of technical enablers (ASM/ATFM tool) are in place; and

d) that dynamic airspace management is considered as a key enabler to exploit optimum airspace capacity.

17. States should:

a) define mechanisms and establish processes to regularly review civil and military airspace requirements, with the aim of reconciling their operational needs;

b) ensure the consistency between mechanisms; and

c) establish processes to regularly review civil and military airspace requirements.

18. States should establish policies, define mechanisms and processes to assess and approve activities which require airspace reservations and should:

a) draw up a list of approved civil and military activities requiring airspace reservations planned at national and international level;

b) ensure that the approved activities on the list are related to the minimum needs in terms of space and time and the conditions of execution of such activities; and

c) perform regular revisions of the list of the approved activities and elaboration of new ones.

19. States should ensure that airspace structures for temporary use in response to users' specific needs, including the possibility for subdividing these airspace structures, are defined and established, and should:

a) establish and publish procedures for airspace allocation and use for activities which require an airspace reservation;

b) ensure that these procedures provide for multiple choice of airspace reservations and related route segments taking into account the network effect;

c) ensure that procedures are in place to promulgate airspace reservations;

d) make provisions for dynamic airspace management processes, at national ASM Level 2 and 3;

e) define and establish processes allowing ASM Levels 2 and 3 to create and operationally use additional ad hoc structures; and

f) establish procedures for airspace allocation and use for activities which require a mobile airspace reservation, where appropriate.

20. States should ensure that the principles for adjusting lateral and vertical limits of airspace structures including the subdividing of airspace reservations into elementary modules on ASM Levels 2 & 3 are defined, and should:

a) define criteria for designing airspace to enable for adjustable lateral and vertical limits of airspace structures, including the subdividing of airspace reservations into elementary modules;

b) define criteria for adjusting the lateral and vertical dimensions of airspace structures based on subdivided airspace reservations into elementary modules on ASM Levels 2 & 3; and

c) establish procedures for adjusting the lateral and vertical dimensions based on subdivided airspace reservations into elementary modules on ASM Levels 2 & 3.

21. States should ensure that processes for periodic assessment and analysis of existing airspace structures and ATS route network based on balanced consideration of civil and military requirements are in place with the aim of planning for flexible airspace structures and procedures. The assessment processes include:

a) identification of need;

b) analysis of the potential impact;

c) decision to proceed;

d) consultation;

e) approval; and

f) publication.

22. States should define the circumstances when an ATS unit or controlling military unit is responsible for separation between civil and military flights, e.g. in case of a shared portion of airspace, tactical crossing of ATS routes and tactical crossing of temporary reserved areas, and:

a) determine the conditions under which the responsibility for separation between civil and military flights may rest on the air traffic services units or controlling military units;

b) define the criteria for determining the responsibility for providing separation between civil and military flights; and

c) ensure that the conditions and criteria for the responsibility for separation between civil and military flights are contained in written agreements or other appropriate arrangements.

PRE-TACTICAL AIRSPACE MANAGEMENT REQUIREMENTS (ASM Level 2)

23. When States apply airspace allocation at ASM Level 2, they should:

a) appoint a focal point, or establish and authorise airspace management cells, or joint civil and military airspace management cells;

b) authorise AMC to conduct airspace allocation and management in a decisive, timely and efficient manner and resolve conflicting airspace requirements;

c) ensure that staff is adequately trained in the knowledge and operation of the airspace allocation process and use of supporting systems;

d) ensure that AMCs collect and analyse all airspace requests and decide the daily airspace allocation taking into account user requirements, available capacity and the effect on the network; and

e) make AMCs responsible for the conduct of day-to-day Level 2 airspace allocation and management.

24. In particular, the airspace management cells should:

a) act as the day-to-day focal point for ASM Level 2 coordination;

b) collect and analyse all airspace requests which may require a temporary airspace reservation , including airspace allocation decisions taken at ASM Level 1 in respect of major military exercises, air shows etc;

c) analyse the CDR availability requests together with the traffic demand, anticipated ATC capacity problems and expected delay information received from the FMP;

d) resolve conflicting requests for airspace reservations and CDRs utilising all relevant information;

e) resolve conflicts between incompatible or conflicting airspace requests by the application of approved priorities, re-negotiation and rescheduling;

f) coordinate with adjacent AMC the harmonised availability of “cross-border” CDRs;

g) respond to any additional request for assistance by the CFMU, the ACC/FMPs and other approved agencies on matters arising from inconsistencies in supplied data, decisions or unexpected events;

h) decide on the allocation of airspace reservations and CBAs, after completion of the collation, coordination, analysis, negotiation and resolution process;

i) activate CDR 2 in accordance with established procedures and for a minimum time of two hours, but with no limit when it concerns the extension of the availability of the same route with CDR 1 status;

j) decide in accordance with criteria established at Level 1 on the provisional closure of CDRs 1 to be handled in real-time at ASM Level 3 in conjunction with the notification of activity in associated airspace reservations;

k) promulgate the airspace allocation by transmitting the Airspace Use Plan (AUP) to adjacent AMCs and ATFM Unit(s);

l) after the AUP distribution, provide clarification to ATFM Unit(s), if needed, and cross-check the "Draft CRAM" upon reception;

m) collect and analyse more up-to-date information on the day of operations f concerning the cancellation of airspace reservations already published in the current AUP;

n) promulgate on the day of operation, if necessary, Updated Airspace Use Plans (UUPs) containing additional reservations a during the period of validity of the current AUP;

o) participate in a post analysis of airspace allocation;

p) develop a reporting process which will deliver a view on the optimisation of the availability and utilisation of shared airspace; and

q) conduct, where authorised, some Level 3 coordination tasks.

TACTICAL AIRSPACE MANAGEMENT REQUIREMENTS (ASM Level 3)

25. When carrying out real time civil/military coordination, States should ensure:

a) the definition, agreement and enforcement of coordination procedures between civil and military ATS units and between them and controlling military units, vested with agreements, to facilitate real-time activation, de-activation, re-allocation or modification of the airspace allocated at pre-tactical level;

b) that the determination of these coordination procedures and communication facilities takes into account the network effect;

c) that the procedures for timely exchange of any modification of airspace status between all affected civil and military units are properly addressed in written agreements;

d) that any modifications of planned activation of airspace are notified to users in a timely and effective manner, in order to facilitate safe, efficient and economic operations; and

e) the provision of data at network level subject to national security requirements.

26. States should ensure that coordination procedures between civil and military ATS units/controlling military units are defined and agreed and operated to ensure safety when managing interactions between civil and military flights.

27. States should also ensure:

a) that coordination procedures permitting and enabling direct communication between civil and military air traffic service units are properly addressed in written agreements in order to facilitate the safety resolution of specific traffic situations;

b) that the coordination procedures facilitate the availability of relevant information through the timely exchange of flight data, including the position and flight intention of aircraft; and

c) the application of a commonly agreed radar data format, direct controller to controller voice communication and timely exchange of flight data, ideally through automatic data exchange.

CROSS-BORDER OPERATIONS AND COORDINATION REQUIREMENTS

ASM Level 1 cross-border operations and coordination

28. States should establish, where appropriate, a joint airspace management policy to facilitate cross border/FIR boundary operations addressing legal and institutional aspects such as sovereignty, liability, defence, environment, search and rescue and other issues of common interest.

29. Where appropriate, States should ensure that:

a) the operational requirements for cross-border/FIR boundary operations stemming from the assessment of national airspace structures and ATS route network are defined, to encompass activities conducted by more than one State, within an area established across international borders or entirely within the airspace under the jurisdiction of a State;

b) written agreements are concluded to create a framework for cross border and FIR boundary operations, addressing legal and institutional aspects while respecting sovereignty, defence, environment, search and rescue and other issues of common interest; and

c) a joint concept of operation for cross border activities are drawn up as appropriate to take into account the European ATM Network (EATMN).

30. States should:

a) coordinate their airspace management policy with neighbouring States with the objective of harmonising the airspace management and use of airspace in respect of cross border and/or boundaries of flight information regions, and:

b) conduct regular joint assessments and reviews of airspace structures and ATS route network, and their use across national borders and/or the boundaries of flight information regions with the States concerned.

31. States should, where CBOs are in place, ensure that airspace structures on either side of national borders are coordinated and implemented to provide for the optimum use of the airspace for all users.

32. States should, within the scope of the framework agreement, ensure that competent agencies, AMCs, ATS and military controlling units negotiate and conclude written agreements defining the CBO process. These agreements should encompass operational and technical aspects and activities conducted

by one or more than one State, within an area established across international boundaries or entirely within the airspace under the jurisdiction of one State.

33. States should jointly define and approve one clear and unambiguous set of separation minima and coordination procedures to be applied between civil and military flights, and

a) define the process for determining, in the case of shared portion of airspace, tactical crossing of routes or tactical crossing of areas airspace reservations; and

b) appoint the unit responsible for separation between transit flights and the users of the active airspace reservation.

ASM Level 2 cross-border operations and coordination

34. Where States have agreed on the establishment of CBOs, States should appoint a lead AMC and ensure that the lead, joint or multi-national AMC has the responsibility for airspace management on ASM Level 2 on both sides of the international border.

35. States should ensure that, where a joint or multinational AMC is established, written agreements are concluded covering relevant operational, technical, procedures and personnel issues, taking into account the following:

a) search and rescue responsibility;

b) ATS procedures and common language;

c) SSR code allocation;

d) type of flight (VFR or IFR);

e) maximum number of participating aircraft;

f) harmonised coordination procedures and flight plan data exchange;

g) communications;

h) air defence notification procedures;

i) common AMC procedures;

j) planning/scheduling procedures, relationship with AMC(s) concerned;

k) activation/de-activation procedures, relationship with ACC(s) concerned;

l) priority rules;

m) ATS occurrences reporting procedures; and

n) environmental issues.

ASM Level 3 cross-border operations and coordination

36. States should ensure:

a) application of agreed separation minima between transit flights and the users of the active airspace reservation; and

b) application of the agreed minima for spacing between aircraft inside and outside cross border airspace reservations.

37. States should ensure:

a) that a common set of procedures to exchange information about real time airspace status and its actual use are defined, agreed between ATS units involved, and between them and controlling military units, where cross-border activities take place; and

b) that these common procedures address the safe management of specific traffic situations, including:

i) responsibility and liability;

ii) ATC procedures;

iii) coordination and phraseology;

iv) air defence notification and related control procedures;

v) other operational issues;

vi) personnel issues including qualifications and training;

vii) technical issues; and

viii) contingency plans.

38. States should further ensure that these common sets of procedures are laid down in written agreements.

Attachment C

OBJECTIVES, ORGANIZATION AND OPERATION OF THE FLEXIBLE USE OF AIRSPACE OVER THE HIGH SEAS

General requirements

1. In accordance with Annex 11, 2.1.2, the portions of airspace over the high seas where air traffic services will be provided shall be determined on the basis of regional navigation agreements. A Contracting State having accepted the responsibility to provide air traffic services in such portions of airspace shall arrange for the services to be established and provided in accordance with the provisions of Annex 11. Furthermore, in accordance with Annex 11, the Foreword and Note 2 to paragraph 2.1.2, a State which has accepted such responsibility may apply the Standards and Recommended Practices in a manner consistent with that adopted for airspace under its jurisdiction.

2. As regards airspace reservations, over the high seas only danger areas may be established in accordance with Annex 2. In this context it should be noted that the establishment of such areas shall be without prejudice to the rights and duties of States under the Convention on International Civil Aviation (Chicago Convention) and its Annexes, or the 1982 UN Convention on the Law of the Sea[2].

Principles

3. The flexible use of airspace may be employed over the high seas in accordance with the principles used for airspace of sovereign territory, as described in Doc 7754 – V.I Basic ANP and V.I FASID, which should be applied with the exception that State aircraft of all other States can exercise their right to fly in any airspace over the high seas under the principle of "due regard" as described in the Chicago Convention, Article 3 a) and d). However, State aircraft should comply with the ICAO provisions to the extent possible.

4. Civil aircraft and State aircraft operating in accordance with ICAO provisions are required to apply the provisions of Annex 2 which apply without exception over the high seas. In particular, the provisions of Annex 2, paragraph 3.6.1.1 regarding the requirement to obtain a clearance before operating as a controlled flight and paragraph 3.6.5.1 regarding the requirement to establish two-way communication with the unit providing air traffic control service are to be observed.

5. In order to provide added airspace capacity and to improve efficiency and flexibility of aircraft operations, States should establish agreements and procedures providing for a flexible use of airspace including that reserved for military or other special activities in accordance with the ICAO provisions. The agreements and procedures should permit all airspace users to have safe access to such airspace. When applicable, such agreements and procedures should be established on the basis of a regional air navigation agreement.

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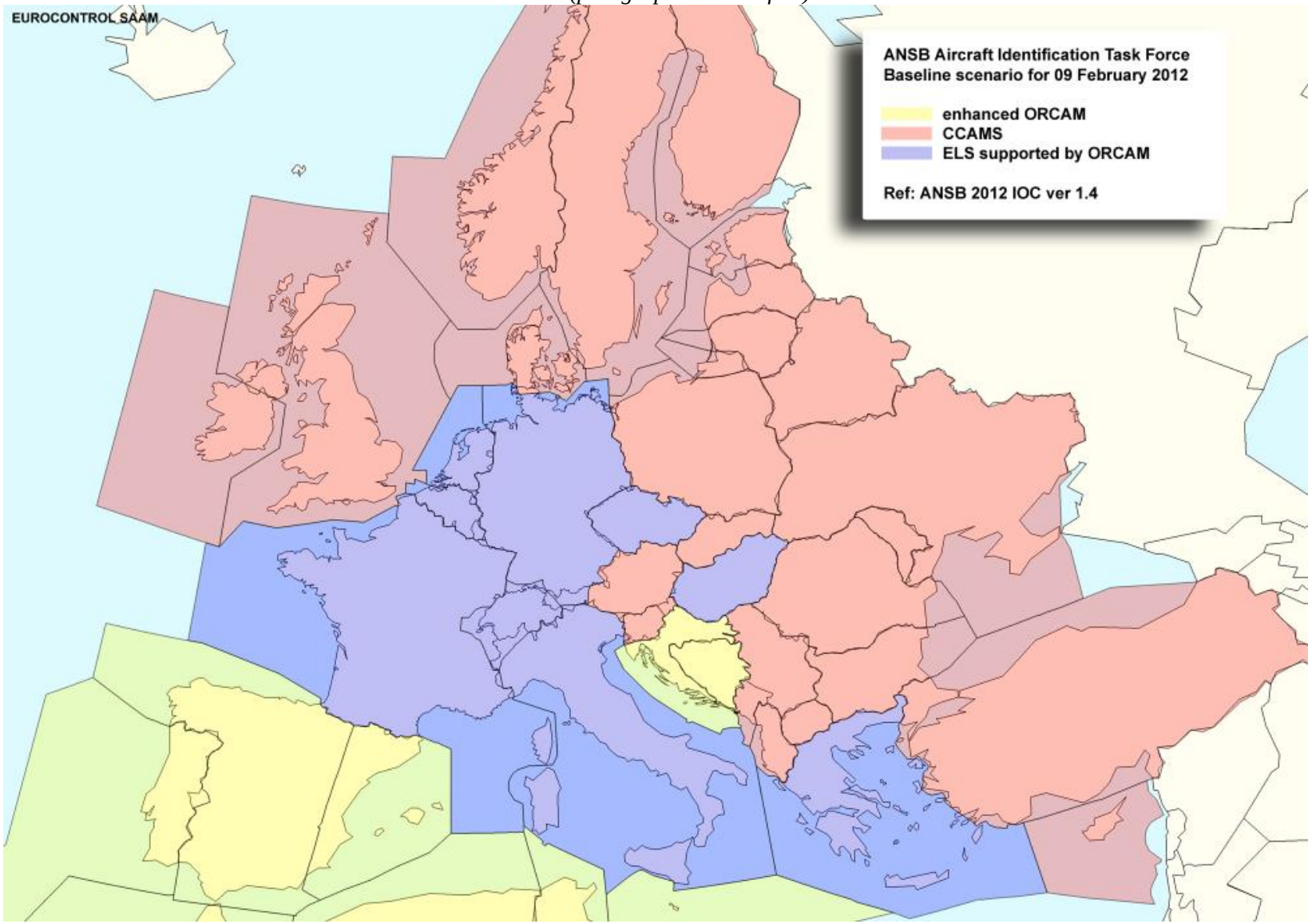
[2] Turkey is not a signatory to the UNCLOS and their position is well known and remains unchanged.

Appendix C - ORCAM/CCAMS/ eORCAM Areas

(paragraph 4.2.27 refers)



Appendix D - Removal of OPC Channels

(Paragraph 4.4.7 refers)

STAT	CTY	ASGNBR	FREQ	LOCATION	OLYGO	SERVICE	DOC	COORD	OP	REMARKS
R	F	845	136.975	NATIONAL AERODROMES		OPC	U-0/0	484300N 022300E	NOP	VDL 2 DEVELOPMENT UNTIL 2003
R	IRL	1878	136.975	SHANNON ACC		OPC	U-0/0	524200N 085500W	NOP	SIT TEMP UNTIL END 2003
R	IRL	1879	136.975	CORK/CORK		OPC	U-0/0	515000N 082900W	NOP	SIT TEMP UNTIL END 2003
R	E	2171	136.975	MADRID/BARAJAS		OPC	U-0/0	402800N 033400W	NOP	VDL 2 UNTIL 31/12/03
R	E	2173	136.975	BARCELONA/BARCELONA		OPC	U-0/0	411800N 020500E	NOP	VDL 2 UNTIL 31/12/03
R	FIN	2727	136.950	HELSINKI/HEL. VANTAA		AS	U-0/0	602000N 245900E	NOP	VDL4 UNTIL 31/12/2004
R	TUR	4034	136.950	DIYARBAKIR/UNAL ERKAN		TWR	C-25/40	375600N 401700E	NOP	
R	E	2174	136.950	NATIONAL AERODROMES	37	A/G	U-0/0	402800N 033400W	NOP	DATA LINK UNTIL 31/12/03
R	AUT	2203	136.950	WIEN/SCHWECHAT		A/G	U-0/0	480700N 163400E	NOP	NUP TRIAL
R	S	2729	136.950	NATIONAL AERODROMES		A/G	U-0/350	593500N 175600E	NOP	VDL4 UNTIL 31/12/2004
R	AUT	2202	136.950	INNSBRUCK/INNSBRUCK		A/G	U-0/0	471600N 112100E	NOP	NUP TRIAL
R	DNK	2833	136.925	KOBENHAVN/KASTRUP		A/G	U-0/350	553700N 123900E	NOP	VDL MODE 4 DATALINK FROM 01/10
R	E	1866	136.925	BARCELONA/BARCELONA		OPC	U-0/0	411800N 020500E	NOP	ARINC UNTIL 31/12/03
R	E	1867	136.925	MADRID/BARAJAS		OPC	U-0/0	402800N 033400W	NOP	ARINC UNTIL 31/12/03
R	S	1565	136.925	MALMO		OPC	U-0/0	553500N 125600E	NOP	PETAL2 - ACARS -UNTIL 31/12/01
R	S	41	136.925	NATIONAL AERODROMES	18	A/G	A-450	600000N 150000E	NOP	$TBC(SECTOR) VDL4 ADS-B
R	E	1868	136.925	PALMA DE MALLORCA		OPC	U-0/0	393300N 014400E	NOP	ARINC UNTIL 31/12/03
R	E	1869	136.925	MALAGA/MALAGA		OPC	U-0/0	364000N 043000W	NOP	ARINC UNTIL 31/12/03
R	AUT	43	136.925	NATIONAL AERODROMES	20	A/G	A-450	480700N 163200E	NOP	$TBC(SECTOR) VDL 4
R	POL	1358	136.925	KRAKOW/BALICE		OPC	U-0/0	500400N 194800E	NOP	TEMP. UNTIL 2003 NON-OPERATION
R	MRC	1751	136.925	CASABLANCA/MOHAMED V		OPC	U-0/0	332200N 073400W	NOP	ARINC UNTIL 31/12/03
R	MRC	1750	136.925	MARRAKECH/MENARA		OPC	U-0/0	313600N 080200W	NOP	ARINC UNTIL 31/12/03
R	AUT	2888	136.925	WIEN/SCHWECHAT		OPC	U-0/0	480700N 163400E	NOP	ARINC UNTIL 30/09/04
R	AUT	2886	136.925	INNSBRUCK/INNSBRUCK		OPC	U-0/0	471600N 112100E	NOP	ARINC UNTIL 30/09/04
R	LVA	2988	136.925	RIGA		A/G	U-0/0	565500N 235800E	OP	IMPL ACCORDING TO EUR VDL FREQ
R	POL	1359	136.925	SZCZECIN/GOLENIOW		OPC	U-0/0	533500N 145400E	NOP	TEMP. UNTILL 2003 NON-OPERATIO
R	POL	1355	136.925	WARSZAWA/OKECIE		OPC	U-0/0	521000N 205800E	NOP	TEMP. UNTIL 2003 NON-OPERATION
R	POL	1356	136.925	GDANSK/REBIECHOWO		OPC	U-0/0	542400N 183800E	NOP	TEMP. UNTIL 2003 NON-OPERATION
R	POL	1357	136.925	POZNAN/LAWICA		OPC	U-0/0	522000N 165000E	NOP	TEMP. UNTIL 2003 NON-OPERATION
R	E	1865	136.900	BARCELONA/BARCELONA		OPC	U-0/0	411800N 020500E	NOP	SITA UNTIL 31/12/03
R	E	1863	136.900	MADRID/BARAJAS		OPC	U-0/0	402800N 033400W	NOP	SITA UNTIL 31/12/03
R	D	12285	136.875	BRAUNSCHWEIG/BRAUNSC		OPC	U-0/0	521900N 103300E	NOP	VDL 2
R	TUR	4729	136.825	ANTALYA		OPC	U-0/0	365300N 304800E	NOP	CAI
R	TUR	11983	136.825	ISTANBUL/ATATURK		OPC	U-0/0	405900N 284900E	NOP	ANKAIR
R	TUR	4728	136.800	ANTALYA		OPC	U-0/0	365400N 304700E	NOP	SXS
R	G	1823	136.800	GATWICK		OPC	U-0/0	510800N 001100W	NOP	AIRTOURS
R	F	10688	136.800	PARIS/CH.DE GAULLE		OPC	U-0/0	490100N 022300E	NOP	OPC AFR
R	TUR	4730	136.800	IZMIR/ADNAN-MENDERES		OPC	U-0/0	381700N 270900E	NOP	SXS
R	S	3310	136.800	TROLLHATTAN		OPC	U-0/0	581900N 122100E	NOP	
R	IRL	1311	136.800	SHANNON/SHANNON		OPC	U-0/0	524200N 085500W	NOP	UPS
R	IRL	1494	136.800	DUBLIN/DUBLIN		OPC	U-0/0	532600N 061500W	NOP	UPS
R	RUS	2011	136.750	NATIONAL AERODROMES	423+ 424	A/G	A-450	444700N 384800E	NOP	
R -	RUS	2660	136.750	SOCHI		A/G	C-80/450	435000N 394500E	NOP	
R -	RUS	2659	136.700	KRASNODAR	594	ACC	A-450	450200N 383900E	NOP	
R	LBY	5976	136.700	SEBHA/SEBHA		OPC	U-0/0	270100N 142700E	NOP	

Appendix E - Harmonisation of LVP provisions
(EANPG Conclusion 51/12)

(Paragraph 4.4.28 refers)

Specific areas for global LVP harmonisation:

a) The equipment failure table. There are differences in description of the effects of equipment failure on aircraft operations between ICAO, European Aviation Safety Agency (EASA) and the United States Federal Aviation Administration (FAA);

b) An LVP entry in the Aeronautical Information Publication (AIP). A standardised AIP entry for LVP is desirable;

c) Note: A standardised format has been recommended by EANPG Conclusion 44/19 but has not yet been implemented.

d) The ground charts to include reference to LVP specific items (provision of lighting, location of stopbars etc) and it is recommended to minimise the use of notes where possible;

e) As highlighted by airspace users, the LVP provisions should be simplified and globally harmonised;

f) Advanced - Surface Movement Guidance and Control Systems (A-SMGCS) procedures should be based on the latest ICAO EUR Regional Supplementary Procedures (SUPPS) (Doc 7030) amendment (July 2009);

g) Standardised transponder operating procedures for A-SMGCS should be globally adopted;

h) The future PANS-Aerodromes needs to be harmonised for LVP; and

i) A global guidance material on the management of critical and sensitive areas is required.

Appendix F -
Transition key issues for the introduction and application of non-visual aids to AWO in EUR Region
(Paragraph 4.4.33 refers)

Companion Document to ICAO EUR DOC 017

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Identified Transition Key Issues for the introduction and application of non-visual aids to all-weather operations in the European Region of ICAO

– ~~First~~ Second Edition –

2009~~5~~

PREPARED BY THE EUROPEAN AND NORTH ATLANTIC OFFICE OF ICAO ~~JANUARY~~ JULY 2009~~5~~

The designations and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.

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VERSION MANAGEMENT

Edition	*Comments*	*Date*
1.0	proposed for AWOG approval by correspondence	April 2005
1.1	Update based on AWOG PT Road comments received by correspondence	July 2009

ACRONYMS

AAIM	Aircraft Autonomous Integrity Monitoring
ACP	Aeronautical Communications Panel (ICAO)
ACP/WG-F	Working Group F of ACP
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Services
AIS/MAP	Aeronautical Information Services/Aeronautical Maps and Charts
AMCP	Former Aeronautical Mobile Communications Panel (ICAO)
AM((R)R)S	Aeronautical Mobile (Route) System
ANC	Air Navigation Commission (ICAO)
AOP	Aerodrome Operations
AOPG	Former Aerodrome Operations Group of the EANPG
APP	Approach
APV	Approach and Landing operations with vertical guidance
ARNS	Aeronautical Radio Navigation Service
A-SMGCS	Advanced SMGCS
ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
ATS	Air Traffic Services
AWO	All-Weather Operations
AWOG	All-Weather Operations Group of the EANPG
AWOP	Former ICAO All-Weather Operations Panel
B-RNAV	Basic Area Navigation
BRA	Building Restricted Areas
CAT	Category (of precision approach)
CNS/ATM	Communications, Navigation, Surveillance / Air Traffic Management
CN&TSG	Conventional Navaids and Testing Sub Group of ICAO NSP
CS AWO	EASA Certification Specifications for All Weather Operations
COG	EANPG Programme Coordinating Group
COM	Communications
CRM	Collision Risk Model
CVS	Combined Vision System
DFS	Deutsche Flugsicherung, (German Air Navigation Services)
DME	Distance Measuring Equipment
DME/P	Precision Distance Measuring Equipment
DO	Document (in RTCA references)
EAD	European Aeronautical Database
EASA	European Aeronautical Safety Agency
EANPG	European Air Navigation Planning Group
EC DGVII	Former European Commission Directorate General VII
ECAC	European Civil Aviation Conference
ED	EUROCAE Document
EGNOS	European Geostationary Navigation Overlay Service
ESA	European Space Agency
ESDP	EGNOS Signal and Data Provider
ESSP	European Satellite Services Provider
EU OPS	European Operational Specifications
EUR	ICAO European Region
EUROCAE	European Organisation for Civil Aviation Equipment
EUR RAN	European Regional Air Navigation
EVS	Enhanced Visual Displayion System
FAA	Federal Aviation Administration of the United States
FM	Frequency Modulation
FMG	Frequency Management Group of the EANPG
GBAS	Ground Based Augmentation System
GJU	Galileo Joint Undertaking

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2002

GLONASS	Global Orbiting Navigation Satellite System
GNSS	Global Navigation Satellite System
GNSSP	Former ICAO Global Navigation Satellite System Panel
GPS	US Global Positioning System
GSA	Galileo Supervisory Authority
HUD	Head-Up Display
IAR	Institutional Arrangements
ICAO	International Civil Aviation Organization
ILS	Instrument Landing System
IMTEG	Instrument Landing System/Microwave Landing System Transition Group
IOP	Initial Operational Phase
ITU	International Telecommunications Union
JAA	Joint Aviation Authorities
JAR	Joint Aviation Requirements
JAR OPS	Joint Aviation Requirements – Operations
LTEP	ICAO Legal and Technical Experts Panel
LVP	Low Visibility Procedures
MASPS	Minimum Avionics System Performance Specification
MLS	Microwave Landing System
MMR	Multi-Mode Receiver
MOPS	Minimum Operational Performance Specification Standards
MRD	Mission Requirements Document
MTBO	Mean Time Between Outages
NATS	National Air Traffic Services (UK)
NOTAM	Notice To Airmen: A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations
NPA	Non-Precision Approach
NSP	Navigation Systems Panel (ICAO)
NSP/SSG	NSP Spectrum Subgroup
OCP	ICAO Obstacle Clearance Panel
OCR	Operational and Certification Requirements (EUROCONTROL Task Force)
OFZ	Obstacle Free Zone
OPS	Operations
ORR	Operational Readiness Review
PANS-ATM	Procedures for Air Navigation Services, Air Traffic Management
PANS-OPS	Procedures for Air Navigation Services, Design of Instrument Procedures and their Operations
PAR	Precision Approach Radar
PT/BRA	AWOG Project Team on the Building Restriction Areas
PT/LVP	AWOG Project Team on the Low Visibility Procedures
PT/Road	AWOG Project Team on the Road Map
~~Qn~~	~~Quarter n (of a year)~~
R&D	Research and Development
RAIM	Receiver Autonomous Integrity Monitoring
RCM	Operational Requirements, Criteria and Method of application
RNAV	Area Navigation
RNP	Required Navigation Performance
ROT	Runway Occupancy Time
RTCA	Radio Technical Commission for Aeronautical Telecommunication Committee
SARPs	Standards and Recommended Practices
SBAS	Satellite Based Augmentation System
SESAR	Single European Sky ATM Research Programme
SIS	Signal-in-Space
SMGCS	Surface Movement Guidance and Control Systems
SOIRSG	ICAO Study Group on Simultaneous Operations on parallel and Near Parallel Instrument Runways
SUPPs	Supplementary Procedures
SVS	Synthetic Vision System

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TBD	To be determined
TKI	Transition Key Issue
TMA	Terminal Control Area
TRNSG	ICAO Study Group for Testing of Radio Navigation Aids
TSO	Technical Standard Order (FAA)
US	United States of America
VAP	ICAO Visual Aids Panel
VHF	Very High Frequency
VOR	VHF Omni-directional Radio Range
WG	Working Group
WGS-84	World Geodetic System 1984
WRC	ITU World Radio Conference
XLS	Any Landing system (e.g; ILS, MLS, GLS…)

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1. INTRODUCTION

1.1 Background

1.1.1 The Transition Key Issues (TKIs) were developed during the initiation of the AWOG. IMTEG, the predecessor of the AWOG had identified in an early stage which issues - technical, institutional and operational - needed to be solved before a successful transition from ILS to new navigation aids for approach and landing could be made. This information was forwarded to the EANPG during the preparation of the EUR RAN Meeting of 1994. The EANPG endorsed this information and forwarded this to the AWOG.

1.1.2 Based on the ICAO Global Strategy adopted by the 11th Air Navigation Conference in September 2003, the purpose of the Transition Methodology described in ICAO Doc 017 is to enable a smooth introduction and application of non-visual aids to AWO in the EUR Region. The identification of critical obstacles to this process is essential to achieve this objective. Therefore, the AWOG developed an extensive list of TKIs for the transition phase. The list is detailed in Section 2. This information is essential for provider States and users when planning AWO based on current or new technologies. From this list of TKIs, the obstacles for planning are identified as the critical planning issues.

1.1.3 The information provided hereafter is not static but dynamic. The status of the TKIs changes when new information becomes available or technology evolves. Therefore, the list of TKIs and its corresponding tasks will be reviewed by AWOG on a regular basis.

1.2 Scope

1.2.1 In order to provide a complete overview of the activities necessary to guarantee the availability of AWO to the highest level of service (including safety aspects) in Europe, the possible obstacles on the introduction of new or the maintainability of existing non-visual aids have been identified. Therefore, TKIs have been defined in Section 2 for the following subjects with the accompanying objectives according to the global strategy:

a) **ILS,** the planning aims to maintain ILS to the highest level of service as long as economically beneficial and operationally acceptable;

b) **MLS,** the planning aims to enable introduction for precision approach operations where operationally required and economically beneficial;

c) **GNSS,** the planning aims to enable introduction for non-precision and precision approach operations where operationally required and economically beneficial;

d) **Auxiliary,** to identify TKIs on operational issues and the potential use of alternative navigation aids.

1.3 Format of the Transition Key Issues (TKIs)

1.3.1 For each TKI, background and rationale are provided in order to explain the relation to other developments. A clear and unambiguous statement of the objective of each TKI is provided. Also an action programme has been developed, assigning different tasks which must be completed in order to solve the overall TKI, which means removing the obstacle. The definition of the different tasks includes the identification of the responsible bodies and appropriate target dates for completion. These target dates are estimates based on publicly available information. Some of the responsible bodies have confirmed the tasks assigned to them including the associated target date. The results of completed tasks will be referred to.

1.3.2 Therefore, each TKI is structured in the following format:

title;

background and rationale (describing the current and expected situation, its magnitude and impact);

objective;

milestones and tasks (with an associated action programme);

comments; and

reference documents.

1.4 Identification of the relation between the different tasks

1.4.1 It is essential for planning a transition for non-visual aids supporting AWO at an aerodrome to identify the issues to be resolved before a certain navigation system may be approved for a specific type of operation, e.g. the use of GNSS for CAT I operations. Therefore, each TKI is clearly defined.~~, split into dD~~ifferent tasks to be performed are identified and these tasks are related in order to identify possible dependencies. The identification of different relations between the tasks is important. Several tasks can be performed sequentially (see Figure 1-4), e.g. Tasks B & C, however certain tasks may be performed in parallel, e.g. Tasks A & B to meet the objective. When tasks are sequential, this means that e.g. Task C cannot be performed without the result of Task B; for parallel tasks in the example the final objective is met when both Task A and Task C have been taken into account.

1.4.2 Possible delays in the execution of a task may impact the estimated time of meeting a specific objective. Therefore it is important that the target dates are confirmed by the responsible bodies to enable the development of a detailed planning of the tasks showing the expected timelines and the end date for meeting the objectives.

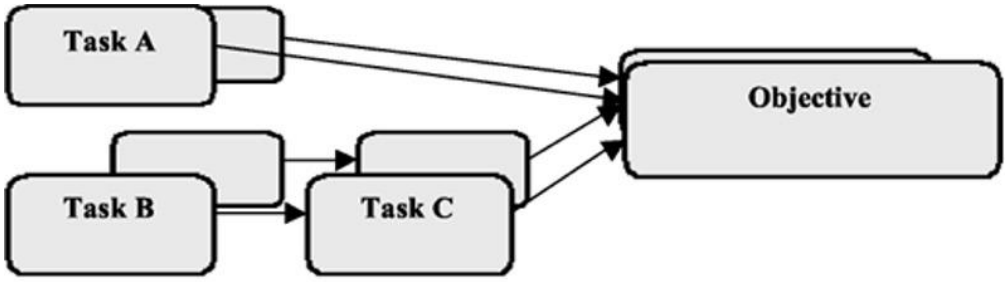


Figure 1-4: Example of relations.

1.5 Maintenance of the Transition Key Issues (TKIs) Companion Document

1.5.1 The TKIs are a living part of the Transition Methodology for AWO in the EUR Region (ICAO Doc 017). Due to their dynamic nature, the TKIs will be continuously reviewed in co-ordination with the appropriate working groups and bodies. In this context, some TKIs may be deleted when superseded, while new ones may be added when appropriate. As a consequence this document needs to be updated on a regular basis by the AWOG.

2. TRANSITION KEY ISSUES – MLS

2.1 Ground equipment

2.1.1 *MLS frequency protection*

Background and Rationale: The MLS frequency band 5030 – 5150 MHz is currently allocated to the Aeronautical Radio Navigation Service (ARNS) and thus protected for use by aviation. However at the WRC 2007 an allocation to the AM(R)S in the band 5 091-5 150 MHz (MLS extension band), limited to airport surface operations was agreed. This is a shared allocation with the aeronautical radio navigation service (MLS), fixed satellite service (FSS), aeronautical mobile telemetry (AMT) and an Aeronautical Security (AS) application intended for the provision of radiocommunication used in response to unlawful interruption of aircraft operations. The ARNS (MLS) and the new AM(R)S allocation have the same status and a precedence over other uses.. ~~the use of the MLS upper (extension) band will be discussed under agenda item 1.6 for potential allocation to AM(R)S and agenda item 1.5 for potential allocation to aeronautical telecontrol. The civil aviation community must ensure proper preparation for this meeting if it desires to ensure in this band the shared use between MLS and AM(R)S. It must be recognized that these bands (5030 – 5090 and 5090 – 5150 MHz) are allocated to ARNS and the priority of assignment to MLS should be maintained in the future~~.

Objective: To ensure that ~~the MLS~~ sufficient ~~frequency~~ frequencies ~~bands~~ will be maintained for MLS applications.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) review/confirm plans for the implementation of MLS;	States	as necessary
b) ensure protection and allocation of MLS bands to ARNS ~~and ensure that priority of assignment remains to MLS in the future~~ [1]	States	before 2011~~07~~
c) re-plan the MLS/DME channel requirements, including ILS/MLS/DME triple pairing requirements	FMG / ACP/WG-F	~~before 2007~~completed [2]

Comments: Simulations to assess MLS/DME and ILS/MLS/DME channel requirements, including triple pairing constraints, were performed by FMG in the past, but were based on old information contained in the COM-3 tables.
For the WRC 2011 there is an attempt to allocate communications for UAS in the band 5 GHz. Therefore protection of MLS deployment needs to be supported.

Reference documents:

[1] ICAO Position for WRC2007

[2] FMG meeting Autumn 2007

2.1.2 *Potential sources of interference likely to affect the MLS*

Background and Rationale: Although the MLS signal quality is less threatened by multipath and other interference mechanisms (e.g.: radio interference, signal reflections, military radiation) than ILS, the quality of the signal cannot be guaranteed in all conditions. Especially

during advanced procedures, the signal of both MLS and Distance Measuring Equipment (DME) may suffer from multipath interference. Guidance material should be developed for the proper identification of threats to the signal quality.

Objective: Operational Requirements, Criteria and Method of application (RCM) available to detect and predict interference threats to MLS and DME signals and apply this information.

Milestones and Tasks:	Responsibility	Target Dates:
a) identify the potential of interference mechanisms for straight-in MLS operations-.	PT/BRA	completed [1]
b) develop harmonised provisions for BRA to protect for MLS straight-in operations	PT/BRA	completed [1]
c) identify the potential of interference mechanisms for advanced MLS operations	PT/BRAAWOG	As Necessaryas necessary

Comments: ICAO has adopted propagation models. Although there is no plan to develop MLS curved approaches there is still some provision in ANNEX 10 Attachment G 14.3 on MLS curved path procedures.

Reference documents:

[1] ICAO EUR DOC015 – European Guidance Material on Managing the Building Restricted Areas

2.1.3 *Certification of MLS Ground Stations*

Background and Rationale: Before a new landing aid is approved for operations, the navigation-ground stations need to be certified by the –appropriate authorities. This process must be carried out for both CAT I and for CAT II/III operations.

Objective: Certification of MLS Ground stations for the full range of AWO.

Milestones and Tasks:	Responsibility	Target Dates:
a) MOPS for MLS ground stations	EUROCAE	completed [1], [2]
b) certification of MLS ground stations for CAT I	States	completed
c) certification of MLS ground stations for CAT II/III	States	cCompleted [3];[4] - Q2/2005

Comments: Certification of the ground stations is a normal part of the implementation process. The certification is a site specific issue that still needs to be carried out each time. "completed" means here that at least one aerodrome in Europe has accomplished this task.The dates given are valid for at least one aerodrome in Europe. Certification of MLS ground stations for CAT III was achieved at London Heathrow- in March 2009.

Reference documents:

[1] EUROCAE ED-53A MOPS for MLS Ground Stations

[2] ICAO Annex 10, Volume 1 - Radio-navigation Aids, MLS MTBO requirements

[3] ICAO EUR Doc 012: European Guidance Material on Continuity of Service Evaluation In Support of the Certification of ILS & MLS Ground Systems

[4] ICAO EUR Doc 016: European Guidance Material on Integrity Demonstration In Support of the Certification of ILS & MLS Systems

2.2 Airborne equipment

2.2.1 *Airborne certification process for MLS operations*

Background and Rationale: The demand for CAT III operations is growing in Europe. However, the continuation of ILS based CAT III operations can not be guaranteed at some locations. Furthermore, at some aerodromes, GNSS based CAT III operations are not foreseen to be available in the appropriate time frame, which leaves MLS as the only option for the safe continuation of CAT III operations. Due to the necessity of interoperability between Regions and States, the Global Strategy identified the ultimate need for a multi-modal airborne landing capability. Therefore the availability of the MMR needs to be ensured.

If required, activities to support the implementation of advanced operations could be undertaken after the certification for straight-in operations is completed.

Objective: To develop both MLS CAT III receivers and the appropriate certification criteria for MLS operations as well as to ensure the availability of the MMR with MLS-capability.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) MOPS for the MLS receiver	EUROCAE	completed [1,4,5]
b) development of certification requirements for the MLS installations (incl. MMR)	JAA	completed [2]
c) certification for MLS/ MMR equipment	avionics manufacturers, States	Completed [1,4,5,6]~~Q2/2005~~
d) develop operational certification requirements for MLS operations	JAA	completed [3]
e) operational approval of the aircraft for CAT I/II/III MLS autoland operations	aircraft manufacturers, operators, States	completed~~Q4/2005~~
f) develop certification requirements for MLS installations to support advanced approach operations, when required;	EASA / States	as necessary
g) certification of the MLS installation (incl. MMR) to support advanced operations, when required.	aircraft manufacturers, operators, States	as necessary
h) operational approval of the aircraft for CAT I/II/III advanced operations, when required	aircraft manufacturers, operators, States	as necessary

Comments: Certification MLS/MMR airborne equipment achieved October 2007 for straight in approaches. Operational approval for CAT III MLS autoland operations achieved March 2009. There is currently no plan to develop MLS curved approaches but there remains provisions in ANNX10 for such operations.

Reference documents:

[1] EUROCAE ED-~~36A~~ 36B MOPS for MLS stand-alone airborne receiving equipment

[2] CS AWO - Certification Specifications for All Weather Operations –subpart 1 and AMC to subpart 1

[3] EU OPS (Council **Regulation** (EEC) No. 3922/91 Annex III)

[4] EUROCAE ED-74 MOPS for Combined ILS and MLS Airborne Receiving Equipment

[5] EUROCAE ED-88 MOPS for MMR including ILS, MLS and GPS used for supplemental means of navigation~~GNSS~~

[6] EASA list of ETSO authorisations 2nd June 2009

2.3 ATS Procedures

2.3.1 *Definition of ATS procedures for MLS straight-in operations*

Background and Rationale: New technology prevents the use of new ATS procedures due to the changed criteria for the operations. Enhanced capacity and new ATS techniques must be based on ICAO SARPs and PANS. Potential new criteria for longitudinal spacing with MLS and adequate separation need to be developed. Objective: To provide users, providers and regulators a set of ATS procedures for the conduct of MLS operations.

Objective: To provide users, providers and regulators a set of ATS procedures for the conduct of MLS operations.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) define ~~confirmation of~~ MLS sensitive and critical areas for straight-in operations;	AWOP	completed [~~1~~2]
b) elaborate EUR SUPPs (Doc. 7030) for development of MLS-based ATS procedures for straight-in ILS look-alike operations	States	TBD
c) develop ATS procedures for MLS CAT I straight-in operations	States	as necessary [1]
d) develop ATS procedures for MLS CAT II/III straight-in operations	States	as necessary [3]

Comments: The basis for the short term MLS operations are ILS look-alike procedures. It is assumed that just a few airports will install MLS. These airports shall play a leading part in the development of operational procedures. Initiatives with respect to this issue are already foreseen. The results shall be forwarded to the AWOG for further initiatives with respect to the development of SARPs. MLS CAT I and MLS CAT II/III operations are being undertaken at London Heathrow and this experience has been used in the development of the guidance material for MLS procedures [3]. ~~The same applies for GNSS operations, however the application of these operations is foreseen in a broader region.~~

Reference documents:

[1] ICAO PANS-ATM Doc. 4444

[2] ICAO Annex 10, Volume 1 - Radio-navigation Aids

[3] ICAO EUR Doc 013 - European Guidance Material on Aerodrome Operations under Limited Visibility Conditions

2.3.2 *Evaluation of the extent to which traffic flow / longitudinal spacing / runway capacity can be improved by MLS*

Background and Rationale: The introduction of MLS could have an impact on the longitudinal spacing standards between aircraft in the approach phase of flight as, amongst others, the MLS signal will not be interfered by aircraft which are leaving the runway. To obtain the full benefit of MLS, for instance the Obstacle Free Zone (OFZ), graded area and landing clearance delivery point must be assessed. This could have a positive impact on the maximum runway capacity and the total traffic flow~~.~~

Objective: Evaluation of the impact of the introduction of MLS on the longitudinal spacing, the runway capacity and the traffic flow in general, whilst maintaining an acceptable level of safety.~~l~~.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) determination of the effect of the introduction of MLS on the minimum longitudinal spacing	PT/LVP	completed [1]
b) identify the need for early inclusion of Regional Provisions in Doc 7030	States	as necessary
c) inclusion of ICAO provisions for implementing improved capacity ~~longitudinal spacing~~ in Procedures for Air Navigation Services, Air Traffic Management (PANS- ATM) Doc 4444	ICAO ANC	TBD
d) reassessment of OFZ due to current fleet capability	EUROCONTROL	~~2006~~completed [2]
e) safety assessment of optimised low visibility operations	EUROCONTROL	2009 [2]

Comments: ~~PJ suggests that Sylvie add a comment here about the Eurocontrol work to support optimised operations.~~The maximum capacity gain when replacing ILS with MLS requires new procedures such as the trigger line concept described in ICAO EUR Doc 013. It has to be proven however that while maximising the capacity in low visibility conditions the level of safety remains acceptable notably compared to current operations

Reference documents:

[1] Assessment of the impact of MLS implementation on CAT II/III runway's capacity in low visibility conditions, European Commission Directorate General VII (EC DGVII), Transport Research/Air Transport, ISBN-92-827-5837-0, Luxembourg, 1996.

[2] Preliminary Safety Case for Optimised operations under Low Visibility conditions - Draft

~~**2.3.3*Potential of MLS advanced operations***~~

~~**Background and Rationale**: With the introduction of MLS many additional advanced operations arise which can not be provided by ILS (e.g. computed centre line approaches, interception techniques, airborne capability levels, curved approaches, and use of data link). The purpose of this TKI is to identify these applications, the related benefits and the associated ATS and airborne procedures to allow early usage of such applications.~~

~~**Objective**: Determine the advanced operations of MLS, their potential benefits and the associated ATS and airborne procedures.~~

~~**Milestones and Tasks:**~~	~~**Responsibility**~~	~~**Target Dates:**~~
~~a) determine the potential MLS advanced operations~~	~~AWOG~~	~~as necessary~~
~~b) assess the related benefits of MLS advanced OPS;~~	~~States~~	~~as necessary~~
~~c) development of harmonised BRAs for MLS advanced operations;~~	~~AWOG~~	~~as necessary~~
~~d) confirmation of MLS sensitive and critical for advanced procedures;~~	~~ICAO ANC~~	~~as necessary~~
~~e) identify the need and consequently elaborate EUR SUPPs (Doc. 7030) for development of MLS based ATS procedures for advanced AWO during approach and landing~~	~~PT/LVP~~	~~as necessary~~
~~f) develop ATS procedures for MLS CAT I advanced operations~~	~~States~~	~~as necessary~~
~~g) develop ATS procedures for MLS CAT II/III advanced operations~~	~~States~~	~~as necessary~~
~~h) develop regional provisions for minimum parallel runway separation standards using MLS;~~	~~PT/LVP~~	~~as necessary~~

~~**Comments**: AWOP did some work in this field., Hhowever the PT/LVP should identify any relevant advanced application with MLS and the potential benefits. Thereafter inclusion of the related ATS procedures into the PANS ATM (Doc. 4444) must be initiated.~~

~~**Reference documents**:~~

~~[1] PANS ATM (Doc. 4444)~~

3. TRANSITION KEY ISSUES – GNSS

3.1 General issues

3.1.1 *Institutional arrangements for provision of GNSS*

Background and Rationale: The introduction of satellite based technologies provoked a new way of thinking about division of the responsibilities between users, providers and regulators.

The responsibilities need to be addressed and agreement must be reached with all parties concerned, before operations, based on the use of satellite technology can be implemented.

Objective: To reach agreement on responsibilities of States and other parties concerned. To guarantee the safe and expeditious flow of traffic based on satellite technology to ensure the long term provision of GNSS services.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) development of a GNSS Legal Framework to elaborate States' and operators responsibilities	ICAO Legal Committee	ongoing
b) reach agreement over institutional arrangements for the full range of GNSS operations	States	as necessary
c) develop an EGNOS operation approval mechanism	EC/States	on going

Comments: Some attempts have been made by EUROCONTROL in the Institutional Arrangement (IAR) Task Force and the ICAO Legal and Technical Experts Panel (LTEP).

The successor of the IAR Task Force, since January 1998, is the GNSS Legal Task Force which is chaired by the Head of Legal Service, EUROCONTROL. Its mandate is to co-ordinate the European contribution to ICAO on the global GNSS legal framework and to develop proposals for a European legal framework on GNSS. With regard to ICAO the Task Force is currently participating as a member of the ICAO Study Group on legal issues. With regard to Galileo/EGNOS, the Task Force has prepared several submissions to the EC on the proposed legal and institutional framework and attended the EC Task Force meeting to put forward aviation's position.

At the ICAO General Assembly (28 Sept – 8 Oct'04) an important breakthrough has been achieved regarding the legal aspects of GNSS. Through a co-ordinated effort by European States and EUROCONTROL, the need for a GNSS Legal Framework has now been formally recognised and maintained with the highest priority on the legal programme of the ICAO Legal Committee. The Assembly directed the Secretary General to monitor and where appropriate, assist in the development of contractual frameworks on the basis, inter alia, of the structure and model proposed by EUROCONTROL and the ECAC States. This contractual framework is considered an initial step towards an International convention on GNSS. T~~t~~he European proposal for a CNS/ATM Contractual Framework has been drawn up to set out conditions for implementation and operation. The regulatory aspects will cover legal liability aspects of the use of GNSS, including GPS and Galileo, which is an important pre-requisite for the evolution towards a more GNSS based Air Navigation System and safety related matters.

The GNSS Legal Task Force is assessing how to apply the contractual framework to EGNOS in view of the service provision phase in the short term.

Reference documents:

[1] ICAO Doc 9750 - Global Air Navigation Plan for CNS/ATM Systems (includes LTEP~~/1 Report~~Recommendations)

[2] EUROCONTROL IAR Reports

[3] ICAO General Assembly (28 Sept – 8 Oct 2004) Resolution A35-3

3.1.2 *Implementation of Galileo*

Background and Rationale: Currently the European Union, in co-operation with ESA, is developing a European satellite navigation system (Galileo) independent from GPS. Galileo will improve availability and continuity of service of current satellite based navigation system by providing a European civil satellite system inter-operable with the US GPS and the Russian GLONASS. Apart from the improved performance this may also solve some specific institutional issues related with using GPS for operations in Europe. There are still many issues to be solved such as the Galileo definition (service definition, the standardisation and architecture definition), for which the Galileo Mission Requirements Document (MRD) is the basis. An important issue is the integration of EGNOS in Galileo.

Objective: Development of Galileo to ~~support~~ improve overall GNSS ~~sole service operations~~performance and robustness.

~~**Milestones and Tasks:**~~	~~**Responsibility**~~	~~**Target Dates:**~~
~~a) Galileo definition [MRD]~~	~~EU~~	~~2005~~
~~b) Galileo frequency allocation~~	~~EU / ITU~~	~~completed~~
~~c) Galileo development and in-orbit validation~~	~~EU / ESA~~	~~2005~~
~~d) Galileo full deployment~~	~~EU / ESA~~	~~2008~~
~~e) Galileo operational~~	~~EU / ESA~~	~~2008~~
~~f) Galileo operational validation~~	~~States, EUROCONTROL~~	~~2010~~

Milestones and Tasks:	Responsibility	Target Dates:
a)Galileo definition [MRD]	EU/ESA	completed [1]
b)Galileo frequency allocation	EU / ITU	completed [2]
c)Galileo development and in-orbit validation	EU / ESA	2010
d)Galileo full deployment	EU / ESA	2013
e)Galileo operational	EU / ESA	2013
f)Galileo operational validation	States, Eurocontrol	2015

Comments: The additional constellation provides the necessary availability for GNSS precision approaches. At the ITU World Radio Conference in 2000 (WRC-2000) radio frequencies have been allocated to Galileo.

The Galileo Mission Requirements Document (MRD) contains the functional and performance requirements of the Galileo satellite navigation system.

During 2009 ESA and EC are negotiating with industry the Galileo FOC procurement in parallel with a Galileo mission consolidation. It is expected that by early 2010, more

consolidated information on the Galileo performances and dates will be available. ~~, and is developed and regularly updated by the Galileo Joint Undertaking (GJU). The GJU has requested EUROCONTROL, as focal point for European aviation GNSS requirements, to provide aviation community feedback on the document, so as to ensure that Galileo can support aviation GNSS applications. Similar feedback is sought from other potential user communities (e.g. maritime).~~

Reference documents:

~~[1] Resolution of the 2480th Council Meeting (Doc: 7282/02) – March'02~~

~~[2] Council Regulation (EC) No 876/2002 – Joint Undertaking.~~

[~~3~~1] Galileo Mission Requirements Document [MRD], EU/ESA version 6, 2005

[2] ITU World Radio Conference Report (WRC-2000)

3.1.3 ~~*Implement World Geodetic System 1984 (WGS-84) coordinates*~~*Data Quality*

Background and Rationale: Operations based on GNSS will rely on a database of waypoints identifying the flight path to be followed. All necessary position fixes to support GNSS operations must be available in the WGS-84 standard reference frame. Relevant ICAO SARPs require States to publish charts with inter-alia the locations of navigation aids and ground facilities based on WGS-84 co-ordinates. In the ECAC area, EUROCONTROL coordinates the implementation of WGS-84.

Additionally data integrity requirements remain a key issue.

Objective: States to publish waypoint information in the WGS-84 co-ordinate system.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) implementation of horizontal component of WGS84	States	completed [1], [3]
b) implementation of vertical component of WGS84	States, EUROCONTROL	TBD [1], [2], [3]
c) verification of complete and proper implementation of WGS-84	EUROCONTROL/ States	ongoing
d) Data Quality EC mandate	EC	2013
e)Identify Terrain and Obstacle data requirements for annex 15 amendment	ICAO	2012
f)FAS data block support tool to implementation	States/ EUROCONTROL	As Necessary

Comments: The implementation of the WGS-84 is formally completed since 1 January 1998. However from the implementation and some database checks it appears to be necessary to verify the complete and proper implementation of the WGS-84. Moreover some specific issues remain with respect to the definition of future parking positions and taxiway in relation to SMGCS.

A survey of all ECAC AIP's by EUROCONTROL, shows that not all States comply to WGS-84 yet.

Annex 10 provides the FAS data block description; for APV approaches Annex 4 provides FAS data block charting requirements. There remains the need to harmonise the FAS data block production process and maintenance.

~~A survey of all ECAC AIP's by EUROCONTROL, shows that not all States comply to WGS-84 yet.~~

Reference documents:

[1] National AIP's.

[2] ICAO Annex 15 and Annex 4

[3] ICAO WGS-84 Manual Doc 9674

3.1.4 *Develop SARPs for ~~the identified elements~~GNSS based approach systems*

Background and Rationale: To ensure international interoperability and standardisation of GNSS based approach systems SARPs must be developed.

Objective: To produce SARPs for GNSS

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) develop SARPs for GPS L1	GNSSP	completed [1]
b) develop SARPs for GLONASS	GNSSP	completed [1]
c) develop SARPs for SBAS L1	GNSSP	completed [1]
d) develop SARPs for GBAS for CAT. I	GNSSP	completed [1]
e) develop SARPs for GBAS for CAT. II/III based on L1	NSP	2010 ~~7~~
f) applicability date of GNSS SARPs for all operations down to CAT I	ICAO ANC	completed [1]
g) Galileo standardisation (SARPS)	NSP	2010/11[1] ~~2007~~
h) standardization of GPS L5 signal (SARPS)	NSP	2010/11[2] ~~2006~~ [2]
i) standardization of GLONASS L3 signal	NSP	TBD
j) standardization of SBAS L5 signal	NSP	TBD
k) standardization of combined used of GNSS signals	NSP	TBD

[1] This tentative date will be consolidated during NSP work plan update. These dates corresponds to SARPS preparation process. Official publication in Annex 10 will depend on constellation deployment schedule and related SARPS validation activities.

[2] As note 1

e) develop SARPs for GBAS for CAT. II/III based on multi GNSS	NSP	2018

Comments: After GNSSP/3 the standards for GNSS CAT I service have formally been validated and recommended for inclusion in ICAO Annex 10, Volume 1 - Radio-navigation Aids. Amendment 85 and 86 of the SARPS will contain few changes required following notably GBAS CAT I initial implementation feedback.

~~The~~ NSP decided to develop ~~GNSS~~ GBAS SARPs for CAT II/III operations initially based on GPS/L1 only. Work is currently progressed in ICAO NSP CAT III Sub Group (CSG° , key issues in current discussion are the integrity concept and Time To alert as well as continuity. A conceptual framework document (technical concept) has been developed to help support the understanding of the new concept proposed that diverts from ILS look alike.

For the long term perspective a multi GNSS GBAS CAT II/III SARPS is envisioned.

The implementation of Galileo (TKI 3.1.9) or another stable core constellation is a determining factor to the availability of GBAS multi GNSS CAT II/III operations. ~~are scheduled in the work programme of NSP (successor of GNSSP). GNSS CAT II/III Standards should be available for adoption by 2007.~~

Reference documents:

[1] ICAO Annex 10, Volume 1 - Radio-navigation Aids

[2] RTCA DO 261 NAVSTAR GPS L5 Signal Specification

3.1.5 *GPS to support NPA*

Background and Rationale: Non-Precision Approach (NPA) requirements may be supported by ABAS [3] based on GPS, possibly including additional elements such as GLONASS~~,~~ or other aircraft sensors. ~~RAIM and/or Aircraft Autonomous Integrity Monitoring (AAIM).~~ If States wish to develop approvals for the introduction of NPA, the proposed navigation system elements must be identified.

Objective: Approval for GPS based NPA.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) identify architectures to support GPS NPA operations	AWOG	completed
b) implement architecture to support GPS NPA operations	States / operators	completed [1]; [2]
c) safety case for GPS based NPA operations	States	continuous
d) GPS approved for non-precision operations	States	continuous

Comments: JAA established the baseline requirements for the application of GPS for NPA operations [1]. In the near future EASA AMC 20-27 will be the basis for RNP APCH (i.e. GPS NPA) approval. It is up to the States to apply sufficient safety management in their decision of the application of GPS to support NPA operations.

Reference documents:

[1] ~~J~~AMC 20-5 AIRWORTHINESS APPROVAL AND OPERATIONAL CRITERIA FOR THE USE OF THE NAVSTAR GLOBAL POSITIONING SYSTEM (GPS)

[2] AMC 20-27 AIRWORTHINESS APPROVAL AND OPERATIONAL CRITERIA FOR RNP Approach (RNP APCH) operations including APV Baro VNAV operations

[3] ICAO Annex 10, Volume 1 - Radio-navigation Aids

~~***3.1.6 AA-TGL 3 Interim Guidance Material on Airworthiness Approval and Operational Criteria for the Use of NAVSTAR GPS***~~

~~3.1.7~~3.1.6 ***SBAS operations***

Background and Rationale: The European implementation of SBAS is covered in the EGNOS programme. States need all relevant information on EGNOS based APV operations before they can decide upon the best option (compared to Baro-based APV operations) for a transition from NPA operations at aerodromes in the EUR Region. An operational validation of EGNOS will need to take place after technical delivery of the SBAS system by the manufacturer.

Objective: To implement EGNOS for APV operations in the EUR-Region and to approve its use.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) identify GNSS architectures to support APV operations	States	completed [1]
b) EGNOS available (Signal in Space) *	~~ESA~~EC ~~/ ESSP~~	201005
c) ~~c)~~ EGNOS Operational Validation *	EC ~~/ ESSP~~ ~~EUROCONTROL~~ States	Q2/~~2006~~2010
d) generic safety argument in support of APV operations based on EGNOS	EUROCONTROL	~~2006~~2009
e) EGNOS approved to support APV operations *	EC ~~/ ESSP~~ States	Q2/~~2007~~2010

(*): *as part of the ESSP certification by the French NSA and with the support of the other European NSAs*

Comments: ~~In 2005~~ EUROCONTROL ~~will~~ started in 2005 the validation of the EGNOS signal and data against the requirements for aviation applications. Since April 1st 2009 the EGNOS System Service Provider (ESSP) ~~In the meantime the EGNOS Signal and Data Provider (ESDP) will be~~ established by ~~ESA~~ the European Commission is gradually handing over ~~for the~~ operations and maintenance of ~~the system~~EGNOS. The setting up of the ~~ESDP~~ESSP~~, the EGNOS validation activities,~~ and its certification according to the Single European Sky legislation, including EGNOS validation activities and related work by EUROCONTROL on EGNOS aviation applications such as EGNOS-based APV are expected to enable aviation use of EGNOS for safety critical applications by mid ~~2007~~2010.

Reference documents:

[1] ICAO Annex 10, Volume 1 - Radio-navigation Aids

[2] Civil aviation requirements for EGNOS, OCR/DP/157, EUROCONTROL Operational and Certification Requirements task force, October 15, 1999 (issue 3.0).

~~3.1.8~~3.1.7 *GBAS to support CAT I operations*

Background and Rationale: States need all relevant information on GBAS CAT I operations before they can decide upon the possible successor of ILS for AWO in the EUR Region.

The introduction of GBAS to support CAT I requires additional effort in terms of siting criteria and frequency planning. If States wish to develop approvals for the introduction of CAT I services, the proposed navigation system elements must be identified.

Objective: To decide upon the technical and operational options for the introduction of GBAS CAT I operations in the EUR Region and to approve its use.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) identify GBAS architectures to support CAT I operations	GNSSP	completed [1]
b) assess the availability of frequencies for GBAS uplink facilities	GNSSP	completed [2]
c) ~~.~~develop siting criteria for locating GBAS ground stations for CAT I operations	ICAO	completed [~~3~~3], [4] [5]
d) generic safety argument for GBAS based CAT I operations	EUROCONTROL	~~ongoing~~2009
e) generic safety argument for GBAS based CAT I operations on parallel runways for independent operation	EUROCONTROL	ongoing
f) GBAS CAT I ground station certification	States	2010 [3]; [7]~~TBD~~
g) GBAS approved to support CAT I operations;	States	as necessary
h) GBAS approved to support CAT I operations on parallel runways	States	as necessary
i) GBAS eligible to support lower than CAT I operations	EASA	2009 [6]
j) Update of Doc 013 to include lower than Standard CAT I operations	ICAO AWOG	2010??

Comments: Current ICAO EUR Doc 015 provides GBAS protection criteria for building application; Doc 015 does not currently address new GBAS installation but only provides the protections to be applied when building close to a GBAS Ground station. These criteria were established on early GBAS installations and thus are very conservative. This leads to significant GBAS siting constraints and thus can prevent GBAS installation at a number of Airports.. Nevertheless ICAO EUR Doc 015 is the only document that provides GBAS protection criteria; as such it is currently used by regulators. Therefore there is a need to assess the GBAS protection criteria when installing a new ground station based on GBAS Standards and taking

account of the new antenna characteristics. EUROCAE WG28 should be tasked to assess the required protection criteria.

~~Specific GBAS siting criteria need to be developed in relation with obstacle clearance criteria.~~

Reference documents:

[1 ICAO Annex 10, Volume 1 - Radio-navigation Aids

[2] ICAO GNSSP WG-B, WP12 June 2000; and GNSSP WG-D, WP50 Sept 1997

[3] ED-114 - MOPS for a GBAS ground facility to support CAT I approach and landing

~~[3] ICAO Annex 10, Volume 1 - Radio-navigation Aids~~

[4] ICAO EUR Doc 015 – European Guidance Material on Managing the Building Restricted Areas

[5] FAA LAA Ground Facility Siting criteria

[6] EASA IR OPS

[7] ICAO Doc 8071: Manual on testing of radio navigation aids

~~3.1.9~~3.1.8 *GBAS to support CAT II/III operations*

Background and Rationale: States need all relevant information on GBAS CAT II/III operations before they can decide upon the possible successor of ILS CAT II/III operations in the ICAO ~~EUR~~EUR Region. The CAT II/III requirements may be supported by a number of possible architectures including a combination of GNSS elements. The addition of the GPS L5 frequency would greatly benefit the robustness of GNSS CAT II/III operations. If States wish to develop approvals for the introduction of CAT II/III services, the proposed navigation system elements must be identified.

Objective: To decide upon the technical and operational options for the introduction of GBAS CAT II/III operations in the EUR Region and to approve its use.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) identify architectures and requirements to support GBAS CAT II/III operations	NSP	~~2007~~2010
b) develop siting criteria for locating differential ground stations for CAT II/III operations	NSP/SSG	~~2007~~TBD
c) consider the necessity and develop harmonised building restriction areas for GBAS CAT II/III operations	AWOG	~~2008~~2010
d) full availability of GPS L5 signal	US	~~2008 (TBC~~2018~~)~~
e) safety case for GBAS L1 CAT II/III operations	EUROCONTROL States	2015
f) Implement architecture for GBAS L1 CAT II/III operations	States	2015

g) ~~GNSS~~ GBAS L1 approved as navigation aid for CAT II/III operations	States	2015
h) Update GBAS CAT II/III safety case to include multi GNSS capability	EUROCONTROL States	2015
i) Implement GBAS ground subsystem to support CAT II/III operations based on multi GNSS	States	2020
j) GBAS multi GNSS approved as navigation aid for CAT II/III operations	States	2020
k)Investigate GBAS L1 in support to other than standard CAT II operations	EASA	As necessary

Comments: New operations named Other than Standard CAT II have been introduced recently in EU OPS and have been proposed for inclusion in EASA IR OPS, but are not recognised so far by ICAO. These operations offer more flexibility for the operators especially at airports where full CAT I or CAT II lighting would not be available. However these new operations identify a number of ATM requirements that would need to be captured and documented in guidance material such as ICAO EUR Doc 013

j) includes maintenance, testing, operational concept and procedures.

~~The development of SARPs for GBAS CAT II/III operations will start after the validation of the SARPs for CAT I operations have been completed. NSP expects to produce SARPs for CAT II/III operations by 2007. Currently there are two different approaches with regard to CAT II/III GNSS: the US position (RTCA) and the European position (EUROCAE). Coordination is on-going to achieve harmonisation.~~

~~The implementation of Galileo (TKI 3.1.9) will contribute to the availability and continuity of GNSS CAT II/III operations.~~

~~3.1.10~~3.1.9 *GNSS ~~frequency~~ interference protection*

Background and Rationale: The potential interference mechanisms, both radio interference and ~~multipath risks~~atmospheric distortions for GNSS, need to be identified and assessed to maintain the safety in AWO. Multipath vulnerabilities are considered to be mitigated through the design of the GNSS augmentation service, in particular the GBAS ground facility. In respect to the use of GNSS as a future means of navigation for all phases of flight (including AWO) it is essential that the GNSS frequency band be adequately protected against interference.

Objective: To define aviation requirements for the protection of the GNSS frequencies and to get international acceptance of these maximum allowable interference levels.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) identify potential radio frequency interference mechanisms for GNSS	GNSSP	Completed [1~~2~~], [2], [3], [4]

b) develop protection levels against interference of the GNSS frequency band	GNSSP	completed [52], [6]
c) international acceptance of the developed protection levels against radio frequency interference	States/ITU	completed [37], [48]
d) define compatibility of DME – GNSS signals	States/ICAO/ ITU	2003 completed [3], [4], [5]
e) assess interference to GNSS from ionospheric distortions	ICAO NSP	Completed [9]

Comments: At the WRC 2000 international acceptance on the adequate protection of GNSS satellite signals have been reached through co-ordination with regional frequency management bodies, ICAO and States. One item left from the meeting that needs to be considered is the mutual interference between GNSS and DME in the DME band (GPS L5 and Galileo E5 signals). The compatibility requirements between DME and GNSS signals have been defined and were accepted at WRC 2003.

While not located in the GNSS frequency bands, the GBAS VHF Data Broadcast (VDB) forms an integral part of GBAS augmentation. Currently, no allocations are foreseen in the lower part of the navigation band, e.g., 108 to 112 MHz. However, should VDB allocations be extended to this band, current criteria to protect ILS from FM Broadcast interference (primarily intermodulation) may need to be revalidated for the GBAS VDB.

Reference documents:

[1] ICAO Doc 9849 – GNSS Manual

[2] RTCA DO235B – Assessment of Radio Frequency Interference Relevant to the GNSS L1 Frequency Band

[3] RTCA DO292 – Assessment of Radio Frequency Interference Relevant to the GNSS L5 / E5A Frequency Band

[4] Protection of GNSS operating in the band 1559 to 1610 MHz against unwanted emissions from Mobile Earth Stations operating in the band 1610 to 1626.5 MHz, ITU Attachment 9 to the Report of the First Meeting of the 8D-SRG (see Addendum 2 to Circular Letter 8/LCCE/40), ICAO, April 2 1997.

[5] ICAO Annex 10 Vol 1, Radio Navigation Aids

[62] ICAO GNSSP Report, 23rd April 1999, Montreal.

[73] EANPG conclusions 40/4, 40/56.

[84] ICAO Doc 9718 - Handbook of Radio frequency spectrum requirements for civil aviation, including statement of approved ICAO policies.

[9] ICAO Navigation Systems Panel: Ionospheric Effects on GNSS Aviation Operations, December 2006

[5] ICAO Doc 9750 - Global Air Navigation Plan for CNS/ATM Systems

3.1.113.1.10 *Data collection ~~objectives and related requirements~~activities ~~for~~to support operational approvals ~~data collection programmes~~ and associated recording*

Background and Rationale: To support the introduction and certification of GNSS based operations, data on ~~the onboard~~ performance of satellite navigation needs to be collected to support operational approval of satellite navigation.

Objective: GNSS data collection ~~as input for~~to support GNSS system operational approvals (from En route~~ICAO OCP for development of~~ to CAT III)~~a CRM~~.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) data collection on GNSS capability of onboard integrity monitoring (SAPPHIRE)	EUROCONTROL	Completed [1], [2], [3]
b) data collection on GNSS capability to support precision approach operations	EUROCONTROL States	ongoing
c) GBAS CAT I and EGNOS Validation tool development and qualification (PEGASUS)	EUROCONTROL States	~~2006~~completed [4]
d) GBAS CAT II/III Validation Tool development and qualification (PEGASUS)	EUROCONTROL States	2010
e) EGNOS Data collection to support EGNOS approval	ESSP	2010
f) EGNOS Data collection to support EGNOS approval (PEGASUS)	EUROCONTROL	2010

Reference documents:

[1] SAPPHIRE - First Results; EEC Report 330, 1998 (http://www.eurocontrol.int/eec/publications/eecreports/1998/330.htm)

[2] Investigation of Multipath Effects in the Vicinity of an Aircraft ~~depenedent~~dependent on different Flight Profiles; EEC Report 357, 2000 (http://www.eurocontrol.int/eec/publications/eecreports/2000/357.htm)

[3] RAIM Study and SAPPHIRE RAIM Algorithms Validation; EEC Note 16, 2001 (http://www.eurocontrol.int/eec/publications/eecnotes/2001/16.htm)

[4] PEGASUS version 4.5.0.1

3.2 Airborne equipment ~~and aircraft/crew~~

3.2.1 *Standardisation and certification of ~~integrated/combined airborne receivers~~airborne equipment ~~and aircraft/crew~~ for GNSS~~-based~~ NPA operations*

Background and Rationale: Standards for airborne GNSS equipment are an essential element to enable certification and interoperability. Due to the necessity of interoperability between Regions and States, the ICAO Global Strategy identified the ultimate need for a Multi Mode Airborne Capability with GNSS elements. The availability of this equipment and stand alone

equipment and ~~its~~ their certification onboard aircraft needs to be ensured to support GNSS based NPA operations.

Objective: Development of MOPS and Minimum Avionics System Performance Specification (MASPS) for GNSS Avionics Equipment using the MMR or stand alone equipment with GNSS NPA capability.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) MOPS for GPS receiver for NPA	EUROCAE	completed [1]
b) MOPS for GPS element of MMR for NPA	EUROCAE	completed [1], [2]
c) MOPS for SBAS for NPA	RTCA / EUROCAE	completed [4], [5]
d) certification of GPS receivers for NPA	JAA/ States	completed [3]
e) certification of EGNOS receivers for NPA	EASA/ States	~~2006~~2010completed [5]
f) certification of aircraft for GPS based NPA	~~JAA~~EASA/ States	Completed [6] ~~2009 [7]~~
~~g) certification of aircraft for EGNOS based NPA~~	~~EASA/ States~~	~~2005~~

Comments: It is assumed that the outcome of some tasks will possibly have an influence on other tasks (i.e. MOPS for CAT I versus CAT II/III). This means that all ~~the~~ individual tasks are possibly related.

However to maintain a total overview of tasks, NPA, APV, CAT I and CAT II/III are split in individual tasks. For the application of GNSS based NPA operations critical question is whether or not a satellite ~~and/~~or aircraft based augmentation system needs to be available to fulfil all the operational requirements.

Similar tasks will have to be repeated for receivers using GALILEO signals..

Reference documents:

[1] EUROCAE ED-72A MOPS for airborne GPS receiving equipment used for supplemental means of navigation.

[2] EUROCAE ED88 MOPS for MMR including ILS, MLS and GPS used for Supplemental Means of Navigation

[3] ~~JAA TGL 3 (No : according to~~ ETSO C129a~~)~~

[4] RTCA DO-229D, MOPS for Global Positioning System/Wide Area Augmentation System Airborne Equipment

~~[4] RTCA DO 229C MOPS for for global positioning system/wide area augmentation system airborne equipment~~

[5] ~~FAA TSO C 129B (No : according to~~ ETSO C145/146~~)~~

3.2.2 *Standardisation and certification of airborne equipment for APV Baro operations*

Background and Rationale: The implementation of APV Baro is now a solution to comply with ICAO 36th assembly resolution on PBN implementation. Therefore standardisation of airborne receiver requirements and subsequent certification should be undertaken.

Objective: Ensure certification of airborne equipments to support APV Baro operations

Milestones and Tasks:	**Responsibility**	**Target Dates:**
b) certification of airborne equipment for APV Baro	EASA	2009 [1]
g) certification of aircraft for APV Baro operations	EASA/ States	2010 [1]

Reference documents:

[1] EASA AMC 20-27 AIRWORTHINESS APPROVAL AND OPERATIONAL CRITERIA FOR RNP Approach (RNP APCH) operations including APV Baro VNAV operations

~~[6] *according to national rules*~~

~~[7] *according to EASA AMC 20-27 when published by EASA in 2009. Draft AMC 20-27 is available under NPA 2008-20 since 28th May 2008*~~

~~3.2.2~~3.2.3 *Standardisation and certification of ~~integrated/combined~~ airborne ~~receivers~~ equipment ~~and aircraft./crew~~ for APV SBAS operations*

Background and Rationale: The implementation of SBAS is ongoing. Therefore standardisation of airborne receiver requirements and subsequent certification should be undertaken. Moreover at the GNSSP/3 the APV has been introduced. For this reason, the MOPS have to be adapted to accommodate this change.

Objective: Ensure certification of SBAS operations and adapt industry standards to incorporate the APV operations.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) adapt MOPS for SBAS to include APV and CAT I capability	RTCA	Completed [1]
b) certification of EGNOS receivers for APV	EASA	~~2006~~2010 [2]

Reference documents:

[1] RTCA DO-229D, MOPS for Global Positioning System/Wide Area Augmentation System Airborne Equipment

~~RTCA DO-229C MOPS for Global positioning system/wide area augmentation system airborne equipment~~

[2] ~~*according to EASA AMC 20-28.*~~ *EASA AMC 20-28 is planned to be published in ~~Q2~~ 2010. Draft AMC 20-28 is available under NPA 2009-04 since 23rd March 2009.*

~~***Standardisation and certification of airborne equipment and aircraft/crew for APV Baro operations***~~

~~**Background and Rationale**: The implementation of APV Baro is now a solution to comply with ICAO 36th assembly resolution on PBN implementation. Therefore standardisation of airborne receiver requirements and subsequent certification should be undertaken.~~

~~**Objective**: Ensure certification of airborne equipments to support APV Baro operations~~

~~**Milestones and Tasks:**~~	~~**Responsibility**~~	~~**Target Dates:**~~
~~b) certification of airborne equipment for APV Baro~~	~~EASA~~	~~2009 [1]~~
~~g) certification of aircraft for APV Baro operations~~	~~EASA/ States~~	~~2010 [1]~~

~~**Reference documents:**~~

~~[1] *according to EASA AMC 20-2 when published by EASA in 2009. Draft AMC 20-27 is available under NPA 2008-20 since 28th May 2008*~~

~~3.2.3~~3.2.4 ***Standardisation and certification of integrated/combined airborne receivers for GBAS CAT I operations***

Background and Rationale: Standards for airborne GNSS equipment are an essential element to enable certification and interoperability. Due to the necessity of interoperability between Regions and States, the ICAO Global Strategy identified the ultimate need for a Multi Mode Airborne Capability with GNSS elements to cover all precision approach systems (ILS, MLS and GBAS).. The availability of this equipment and its certification onboard aircraft needs to be ensured to support GBAS CAT I operations.

Objective: Development of MOPS and MASPS for GNSS Avionics Equipment and certification of the MMR with GBAS CAT I capability.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) MOPS for GBAS for CAT I	RTCA / EUROCAE	completed [1], [2], [3], [4],[5]
b) certification of GBAS receivers for CAT I	EASA / States	~~2005~~completed
c) ~~certification of~~ Approval of ~~the aircraft for~~ straight-in GBAS CAT I operations	~~EASA / States~~States	~~2005~~2010
d) certification of GBAS CAT I system with autoland	EASA	2012

Comments: It is assumed that the outcome of some tasks will possibly have an influence on other tasks (i.e. MOPS for CAT I versus CAT II/III). Some aircraft are already certified for GBAS CAT I autoland (e.g.: A380)

Reference documents:

[1] RTCA DO-245 – MASPS for Local Area Augmentation System (LAAS)

[2] EUROCAE ED-~~-~~144 HIGH-LEVEL PERFORMANCE REQUIREMENTS FOR A GLOBAL NAVIGATION SATELLITE SYSTEM / GROUND BASED AUGMENTATION SYSTEM TO SUPPORT PRECISION APPROACH OPERATIONS, October 2007

~~95 MASPS for a Global Navigation Satellite System GBAS to support CAT1 Operations (1999)~~

[3] EUROCAE ED-88~~A~~ Minimum Operational Performance Specification for Multi-Mode Airborne Receiver (MMR) including ILS, MLS and GPS used for Supplemental Means of Navigation; Note: ED-88A including GBAS CAT I is in final draft stage ~~GNSS~~

[4] RTCA DO-253C[3] Minimum Operational Performance Standards for GPS Local Area Augmentation System Airborne Equipment

[5] ETSO-C161 Ground Based Augmentation System (GBAS) Positioning and Navigation Equipment

~~[4] RTCA DO-253A Minimum Operational Performance Standards for GPS Local Area Augmentation System Airborne Equipment~~

~~3.2.4~~3.2.5 *Standardisation and certification of integrated/combined airborne receivers for GBAS CAT II/III operations*

Background and rationale: Standards for GBAS equipment are an essential element to enable certification and interoperability of CAT II/III operations. The availability of this equipment and its certification onboard aircraft needs to be ensured to support GNSS based CAT II/III operations.

Objective: Development of MOPS and MASPS for GNSS Avionics Equipment and certification of the MMR with GNSS CAT II/III capability.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) MOPS for GBAS L1 system for CAT II/III	~~EUROCAE~~RTCA	~~2012~~completed[3]
b) Update of MMR MOPS (ED-88) to include GBAS L1element for CAT II/III~~MOPS for GBAS element of MMR for CAT II/III~~	EUROCAE	2012
~~c) certification of GBAS for CAT II/III~~	~~EASA/ States~~	~~2013~~
c~~d~~)certification of the MMR for GBAS L1 system for CAT II/III -straight in operations	EASA/ States	2013
~~e) certification of GNSS autoland~~	~~EASA/ States~~	~~2015~~
d~~f~~) certification of the aircraft for GBAS L1 CAT II/III for straight-in operations	EASA/ States	2015
~~g) certification of GNSS receivers for CAT II/III advanced approach~~	~~EASA/ States~~	~~as necessary~~

[3] B version is the one relevant for CAT I – use of C version is subject to restriction mentioned in its foreword.

~~h) certification of the aircraft for CAT II/III advanced operations~~	~~EASA/ States~~	~~as necessary~~
e) MOPS for GBAS multi GNSS for CAT II/III	EUROCAE	TBD
f) Update of MMR MOPS (ED-88) to include multi-GNSS CAT II/III	EUROCAE	TBD
g) certification of GBAS multi GNSS for CAT II/III operations	EASA/ States	TBD
h) certification of the MMR for GBAS CAT II/III multi GNSS straight in operations	EASA/ States	TBD
i) certification of the aircraft for GBAS multi GNSS CAT II/III for straight-in operations	EASA/ States	TBD

Comments: SARPs are essential to complete these tasks (TKI 2.2.1.4 refers). It is assumed that when SARPs are available, MASPS are not necessary (beyond the content of ED-144 or its update) for the development of the GNSS receiver. It is also assumed that the outcome of some tasks will possibly have an influence on other tasks (i.e. MOPS for CAT I versus CAT II/III).

GBAS multi GNSS CAT II/III operations development will depend strongly on multi frequency and multi constellation availability.

EUROCAE is not planning to develop GBAS L1 CAT II/III MASPS – beyond the contents of [2] - refer to [1] (obsolete) for LAAS MASPS if needed.

Reference documents:

[1] RTCA DO-245A – MASPS for Local Area Augmentation System (LAAS)

[2] EUROCAE ED-144 - High-Level Performance Requirements for a global Navigation Satellite System/Ground Based Augmentation System to support Precision Approach Operations

[3] RTCA DO 253C: LAAS MOPS

~~3.2.5~~3.2.6 *Ensure waypoint database integrity*

Background and Rationale: Approach procedures making use of GNSS will require a database of waypoints to define the approach path. The integrity of onboard databases can only be assured to a certain level which may not be adequate for precision approach operations. The actual integrity of information provided by onboard databases must be quantified and other possibilities investigated such as up-linking waypoints from the ground. The latter leads to the requirement to assess the integrity of the ground based database.

Objective: Quantify the integrity of information carried in onboard databases and assess the performance of other methods of providing the waypoints to the aircraft.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) publish the data integrity requirements in ICAO Annexes 4, 11,	ICAO	completed [1], [2]

14 and 15		
b) determine the integrity of airborne database information	EUROCONTROL	ongoing
c) determine the integrity of the GBAS Ground database information	EUROCAE	~~2002~~ completed [1], [2]
d) ensure the data integrity as specified in Annex 15	States, aerodromes, manufacturers, operators	continuous [1], [2]
f) implementation of European Aeronautical Database (EAD)	States, EUROCONTROL	2004 [1], [2]

Comments: The quantification of the data integrity is the responsibility of States, database providers, aircraft manufacturers and aircraft operators. Combined RTCA/EUROCAE WGs have tackled the issues and the resulting requirements for database integrity are published in RTCA DO-200A/EUROCAE ED-76 and DO-201A/ED-77. EUROCAE DO-201A specifies the integrity and accuracy requirements for each waypoint~~s~~. DO-200A describes the quality assurance procedures required around the establishment and the updating process for the database. Nevertheless the database integrity will have to be certified against these integrity values and this task is not closed, specifically for precision approach operations.

Preliminary studies by EUROCONTROL demonstrated that the RNAV database integrity requirements are not met. A comprehensive assessment has started to compare different commercial databases, to verify national AIPs and compare AIPs with the databases.

The introduction of a European Aeronautical Database may prove an essential improvement in maintaining the integrity of aeronautical data.

Reference documents:

[1] EUROCAE ED-76 / RTCA DO-200A Standards for Processing Aeronautical Data

[2] EUROCAE ED-77 / RTCA DO-201A Standards for Aeronautical Information

[3] ICAO Annex 4 – Aeronautical Charts

[4] ICAO Annex 11 – Air Traffic Services

[5] ICAO Annex 14 – Aerodromes

[6] ICAO Annex 15 – Aeronautical Information Services

3.3 ATS Procedures

3.3.1 *Develop Instrument Flight Procedures using GNSS*

Background and Rationale: Due to the foreseen pressure to continue ILS-based AWO and to introduce new technologies for AWO at the same time, the proper, safe introduction of new technology, based on known criteria, should be safeguarded. This is especially true for the most critical operations known in aviation, (i.~~-~~e. CAT II/III operations). Criteria to design aircraft operations shall be developed and agreed.

Objective: Develop criteria to safeguard the continuation of safe AWO, based on new technologies, in CAT I, II and III conditions.

Milestones and Tasks:	Responsibility	Target Dates:
a) development of a specific CRM for GNSS operations	~~OCP~~IFPP	as necessary
b) develop criteria for designing GNSS NPA procedures	OCP	completed
c) develop criteria for designing APV-I procedures	OCP	~~2005~~completed [1]
d) develop criteria for designing APV-II procedures	OCP	~~2005~~completed [1]
e) develop criteria for designing SBAS CAT I procedures	~~OCP~~IFPP	~~TBD~~2010
f) develop criteria for designing GBAS CAT I procedures	OCP	completed
g) develop criteria for designing GBAS CAT II/III procedures	~~OCP~~IFPP	~~200~~TBD~~7~~
h) design GNSS NPA procedures	States	ongoing
i) design GNSS APV procedures (either APV SBAS or APV Baro)	States	as necessary
j) design GNSS CAT I procedures	States	as necessary
k) design GNSS CAT II/III procedures	States	as necessary

Comments: In the GNSS SARPs requirements will be stated on the signal-in-space performance. No guidance will be published in Annex 10 for the development of criteria for ATS procedures. Most probably, the ILS CRM can be the basis for approval of GNSS operations. However the ILS CRM might be more conservative than a GNSS CRM. Therefore continuation of the development of a specific GNSS CRM is recommended, due to the specific architecture and related safety requirements. For the purpose of GBAS CAT I criteria a"Correlation study" was performed in 2003 showing that no separate CRM was needed for GBAS CAT I. Such work needs to be reconducted for GBAS CAT II/III once prototype systems are available

Depending on the progress of the GBAS CAT II/III SARPS the corresponding criteria are currently considered for inclusion in IFPP future work programme.

Specific safety requirements for parallel approaches supported by GBAS are currently under investigation in IFPP.

~~The development of a CRM can be initiated upon approval of GNSS CAT. I operations to gather the relevant data. The same data will also be applicable for the CRM for CAT. II/III operations.~~

~~EUROCONTROL has started a data collection programme which will provide input to the ICAO OCP. The OCP has confirmed that it will accept the CRM task when required by the States.~~

Reference documents:

[1] ICAO Doc 8168 - PANS-OPS

3.3.2 *Definition of ATS procedures for GNSS*

Background and Rationale: Introduction of new technology provokes a new way of operating in the ATS environment. R&D and trials should focus on the operational aspects, especially for issues such as SBAS/GBAS transition, range of Signal in Space (SIS) requirements for availability and continuity, ATC and flight crew training, GNSS information by Notice to Airmen (NOTAM)~~)s~~, etc. This information should result in ICAO provisions for AWO based on these technologies.

Objective: To gain knowledge for the safe and efficient AWO based on GNSS technologies.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) ICAO global provisions including ATS procedures supporting instrument approaches based on GNSS;	ICAO ANC	ongoing [1], [2]
b) identify the need for and if necessary propose EUR SUPPs (Doc.7030) for operations supported by GNSS	AWOG/States	as necessary
c) APV SBAS and APV Baro Operational Concepts	ICAO, Eurocontrol	ongoing
d) GBAS CAT I Operational Concept	ICAO, Eurocontrol	Completed [3]
e) GBAS CAT II/III Operational Concept	ICAO, Eurocontrol	~~ongoing~~completed [3]

Comments: Global provisions in PANS ATM are under review, in particular with regard to NOTAM requirements (e.g.: predicted RAIM holes). Operational concepts have to be developed in order to assess the impacts of GNSS technology on the existing operations and new operations such as APV. On the basis that GNSS should be used globally, it is not recommended to provide specific developments of Doc 7030.

Reference documents:

[1] ICAO Doc. 8168 – PANS-OPS

[2] ICAO Doc. 4444 – PANS-ATM

[3] EUROCONTROL GBAS Concept of Operation

3.3.3 *Revised requirements for visual aids related to the introduction of GNSS*

Background and Rationale: The provisions of visual aids (marking and lighting) on and around aerodromes are governed by ICAO SARPs (Annex 14). The growing number of operations, the implementation of Advanced Surface Movement Guidance and Control Systems (A-SMGCS) and the use of new technologies (GNSS) may call for new or revised provisions. Especially the minimum lighting requirements associated with the introduction of APV, needs to be considered by ICAO.

Before certain technology and possible corresponding procedures are implemented or decommissioned and in order to facilitate the ~~instalation~~installation of equipment and training of the users, sufficient lead time must be taken into account.

Objective: To identify the need for new or revised ICAO provisions on visual aids (marking and lighting) for AWO, and develop such material. To identify the minimum lead time for users, providers and regulators for implementation/decommissioning of visual aids.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) identify the need for new or revised visual aids for AWO due to the introduction of GNSS	GNSSP/3	completed [1]
b) development and inclusion of new requirements on visual aids in Annex 14	ICAO Visual Aids Panel	~~ongoing~~TBD

Comment: As a consequence an impact assessment of any identified change in Airfield Ground Lighting requirement due to GNSS operations on A-SMGCS Level 2 Safety Nets should be conducted.

Reference documents:

[1] GNSSP/3 ~~Rport~~Report

[2] ICAO Annex 14 – Aerodromes

3.3.4 *Potential of advanced operations of GNSS*

Background and Rationale: With the introduction of GNSS many additional advanced operations arise which can not be provided by ILS (e.g. computed centre-line approaches, interception techniques, airborne capability levels, curved approaches, and use of data link). The purpose of this TKI is to identify these applications, the related benefits and the associated ATS and airborne procedures to allow the early use of such applications.

Objective: Determine the advanced applications of GNSS, their potential benefits and the associated ATS and airborne procedures.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) determine the advanced applications of GNSS	ICAO NSP	as necessary
b) assess the related benefits of advanced applications of GNSS	ICAO NSP	as necessary
c) ICAO global provisions for GNSS advanced operations included in PANS-ATM (Doc. 4444)	ICAO NSP	as necessary
d) identify the need for and if necessary EUR SUPPs (Doc. 7030) for GNSS advanced operations	AWOG	as necessary
e) revise the advanced minimum parallel runway separation standards for GNSS and include them in the PANS-ATM (Doc. 4444)	ICAO SOIRSG	~~2005~~TBD

f) develop criteria for RNP transition to XLS operations	SESAR	2011

Comments: See also TKI 3.3.2
Specific safety assessment to address GNSS continuity risk when supporting parallel operations is needed (ref to PANS OPS). An alternative would be to reassess the NTZ size taking full account of multiple simultaneous missed approaches.

4. TRANSITION KEY ISSUES – AUXILIARY

4.1 Alternate navigation aids

4.1.1 *Impact of new technologies on AOP*

Background and Rationale: New technologies (other than MLS and GNSS e.g. Enhanced Visual Display (EVS), Head-Up Display (HUD)) could have a certain impact on AOP. These could have an effect on the approach and landing phase of a flight as well as for the ground operations. For the development of AWO in the EUR Region it is essential to make an inventory of these technical options and their potential impact on all operations, including ground operations.

Objective: To obtain knowledge on the impact of new technologies (other than MLS and GNSS) for the optimisation of AOP.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) gain knowledge on the potential impact of new technologies (other than MLS and GNSS) on AWO.	ICAO AWOG	as necessary
b) EVS MASPs	EUROCAE	Completed [1]
c) EVS operations	EASA	Completed[3]
d) CVS MASPs	EUROCAE	2010

Comments: This task is partly related to the development of A-SMGCS as it addresses notably the onboard capability required for taxiing on the airport. There will be a need to ensure compatibility/interoperability between on-board equipment and information/data received from third (Aerodrome/ATS) systems e.g. automated lighting systems to provide guidance and/or control. As far as development of technical and operational requirements for the approach and landing phases of flights are concerned the AWOG is the appropriate body.

IR OPS introduces also EVS operation.RTCA SC213 and EUROCAE WG 79 have been progressing EVS standard. EVS MASPs has been published in 2008 reflecting the current existing system and taking due account of its limitations. The same working groups are currently developing the CVS (combined Visual system) MASPS [2]. CVS is a system that combines the information of the two systems:: EVS and SVS, thus providing increased integrity and situation awareness for guiding the pilot. CVS would allow for AWO including CAT III C and removing the need of autoland capability for such operations.

The operational approval of E(F)VS is still not published as some remaining key issues are still pending.

Reference document:

[1] ED-179: MASPS for Enhanced Vision Systems, Synthetic Vision Systems, Combined Vision Systems and Enhanced Flight Vision Systems.
[2] ED-180: MASPS for Enhanced, Synthetic and Combined Vision Systems with operational credit (other than NPA OPS 41) 41, reference ED-180 **(due date: June 2010)**
[3] IR OPS – NPA 02b
[4] EASA **Temporary** Guidance Leaflet (TGL) 42 has been created to support **the operational approval of E(F)VS (with airworthiness appendix) – (pending)**

4.2 ATS Procedures

4.2.1 *Inventory of optimum wake turbulence separation for use in Low Visibility Procedures (LVP)*

Background and Rationale: According to ICAO provisions on separation capacity is decreasing during LVP to ensure the required level of safety. Therefore, wake turbulences are not an issue within current provisions. ~~Safety and capacity in LVP are strongly related to wake turbulence separation during approach and landing.~~ Further refinement of the current criteria may be necessary to manage the risks attached to LVP's, especially when new technologies may improve the landing capacity based on other protection requirements of the ground systems. ~~In particular, the use of a~~Autoland ~~during LVP may be affected by wake turbulence~~. W~~w~~ith reduction of separation minima due to the use of new technologies it should be considered if the existing wake turbulence criteria are still appropriate ~~sufficient~~ for LVP conditions.

Objective: Determination of optimum wake turbulence separations in LVP.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) assess, in consultation with States and international organisations, if existing wake turbulence separations are appropriate for use in LVP	AWOG, PT/LVP	TBD
b) develop new wake turbulence separations and inclusion in PANS-ATM (Doc. 4444) and in the AWO-Manual as appropriate.	AWOG, ICAO ANC	TBD

Comments: An R&D programme may be necessary. Wake Turbulence research is being conducted by EUROCONTROL, which may contribute to this programme.

4.2.2 *Aeronautical Information Service (AIS) issues specific to AWO, including units of measurement*

Background and Rationale: Publication of Charts for AWO, and their contents, are governed by ICAO provisions contained in Annex 4, ~~4~~ 15 and Doc. 8168. The implementation of WGS-84, as well as the advent of new Technologies and new Types of AWO procedures (e.g. Steep final, curved APP, RNAV), ~~may~~ have called for the development of new/or revised ICAO provisions.

Objective: To prepare provisions for Charts and Maps to allow operations based on new technology.

Milestones and Tasks:	Responsibility	Target Dates:
a) assess the current ICAO provisions	ICAO ANC	completed
b) identify the need for new revised provisions	ICAO OCP	~~Q4/2003~~Completed
c) include new provisions in Annex ~~4~~15 and 4	ICAO ANC	~~2002~~Completed [1][2]
d) identify the need for (Regional) Provisions on AIS/MAPs	AWOG, EUROCONTROL	~~2002~~As Necessary

Comments: ~~States have identified the need for a new waypoint naming convention in the TMA, which may be applied at a regional level. Other issues may be identified as experience with new technologies increases.~~ The MDA/DA charting and operational issue is still under discussion. Annex 4 amendment 54 includes definitions and introduction of new provisions concerning the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic). Minimum en-route altitudes, minimum obstacle clearance altitudes, logon address, ATS surveillance system terminology, aeronautical database requirements, approach fixes and points, aeronautical data quality requirements for gradients and angles, steep angle approach cautionary note, hot spot and intermediate holding, position including new symbols.~~As a result of the AIS/MAP Divisional Meeting in the spring of 1998, a proposal for amendment of Annex 4 is developed and sent out to States for approval.~~

Reference documents:

[1] ~~Proposal for amendment to Annex 4~~Annex 15 Amendment 33

[2] Annex 4 Amendment 54.

4.3 Mixed Mode operations

4.3.1 *Procedures for aircraft in sequence using different types of landing aids*

Background and Rationale: It is foreseen that ILS will co-exist for a long time beside MLS and GNSS. This will urge the need for appropriate ATS procedures to enable early benefits in a random mixture of ILS, MLS and GNSS traffic (e.g.: MLS-ILS-MLS to a single runway). A random mixture of ILS and MLS/GNSS traffic may cause substantial effects on the stability of the ATS operations. A new set of separation criteria could be the direct effect. R&D is necessary to substantiate the effects and to suggest operational, acceptable solutions. The immediate need is to manage a mix of ILS and MLS aircraft. Experience gained can later be applied to other mixes of traffic (e.g. ILS/GNSS or MLS/GNSS) as well.

Objective: Provide ATS procedures for the optimisation of a random mixture of ILS and MLS/GNSS traffic to a single runway.

Milestones and Tasks:	Responsibility	Target Dates:
a) development of ATS procedures to use in a random mixture of ILS and MLS traffic to a single runway in LVP	AWOG, PT/LVP	completed~~2005~~ [1]
b) inclusion of general provisions for mixed MLS/GNSS and	ICAO ANC	as necessary

ILS/GNSS operations in PANS/ATM Doc. 4444		
c) identify the need for and if necessary develop proposed Regional Provisions (Doc. 7030) for mixed MLS/GNSS and ILS/GNSS	AWOG, PT/LVP, States	as necessary

Comments: States have the obligation to start R&D to develop these procedures to allow early benefits and forward the results to the ICAO ANC for incorporation in the relevant ICAO documentation. The AWOG shall follow these developments and focus on Regional Provisions in this field. There is a strong dependency between this issue and TKI 2.3.2~~2.1.3.3~~. Additional work on Optimised Operations will allow capacity benefits to be achieved following the implementation of MLS and GNSS.

Currently material in mixed landing mode operations is only available in EUR DOC 013. ~~,~~

Reference documents:

[1] ICAO EUR Doc 013 – European Guidance Material on Aerodrome Operations under Limited Visibility Conditions

4.4 Aerodrome operations (AOP)

4.4.1 *Specific AOP*

Background and Rationale: With the increasing demand for optimised runway(s) utilisation and the increasing environmental constraints, providers, regulators and users should focus on new techniques for approach and landing. These techniques could potentially improve the capacity of aerodrome and reduce the negative impact on the environment (e.g. Intersection Take-Off; Multiple Touch-Down points; Reduced TO/LDG distances; Mixed operations; Noise alleviation; Operations on converging/intersecting runways).

Objective: Optimise AWO planning in the EUR Region by applying new ATS techniques for approach and landing.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) inclusion of ~~PANS for~~ improved runway operations on parallel and near-parallel runways in PANS ~~/RAC~~ ATM Doc. 4444	~~SOIR SG~~ICAO	completed [1]
b) inclusion of PANS for advanced operations (e.g.: curved approaches, computed centreline, continuous descent) using MLS/GNSS in PANS-ATM Doc. 4444	ICAO ANC	~~TBD~~as necessary
c) development of SUPPs on improved RWY operations (intersection take-offs, multiple line-ups, visual approaches/departures)	EUROCONTROL ADTMA	~~TBD~~Completed [2]
d) development of PANS / SUPPs on converging/ intersecting RWYs	EUROCONTROL ADTMA, ICAO ANC	~~TBD~~Completed [2]

Comments: Several tasks related to the optimisation of AOP were identified in the ECAC/APATSI programme. Some elements are being considered by the appropriate ICAO bodies for approval. Other elements are already being taken care of within ~~OCP~~ IFPP~~and SOIR~~

~~SG~~. It should nevertheless be emphasised that there is no appropriate ICAO body studying these subjects. OCP and GNSSP stated that the separation aspects will not be taken into account in their work programme. The EUROCONTROL Working Group on Aerodrome and TMA operations is currently taking action in these directions.

Reference documents:

[1] ICAO Doc 4444 – PANS-~~RAC~~ ATM

[2] ICAO EUR Doc 7030

4.4.2 ***Non-visual aids to support ground operations during low visibility conditions - ASMGCS***

Background and Rationale: With the planning of AWO due account should be given to navigation requirements (related to situational awareness and guidance) in support of A-SMGCS. Special attention is necessary on the interface of landing and ground operations. This could eventually be improved by the introduction of new non-visual aids. The coordination of requirements for non-visual aids both for the approach and landing phase and for the guidance functionality on the ground is strongly recommended.

Objective: Streamlining the developments in the approach and landing phase of a flight with the developments in the field of Ground operations.

Milestones and Tasks:	**Responsibility**	**Target Dates:**
a) publication of initial ICAO operational requirements for A-SMGCS	ICAO ANC	completed [1]
b) determination of need for Regional Provisions for A-SMGCS in Doc 7030	EANPG	TBD
c) validation of operational requirements for A-SMGCS	EUROCONTROL States	TBD
d) identify the requirements on the navigation system from the A-SMGCS operational requirements	EANPG, EUROCONTROL States	TBD
e) activities on Level 1/2 A-SMGCS	EUROCONTROL	~~2006~~on going

Reference documents:

[1] ICAO Doc 9830 – Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual

[2] EUROCAE ED-116 MOPS for Surface Movement Radar Sensor Systems for Use in A-SMGCS

[2] EUROCAE ED-117 MOPS for Mode S Multilateration Systems for Use in A-SMGCS

[3] EUROCAE ED-128 - Guidelines for Surveillance Data Fusion in Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Levels 1 and 2

4.5 GNSS legal recording requirement

Objective: To support post accident/incident investigation.

Milestones and Tasks:	Responsibility	Target Dates:
a) Implement equipment or arrangements to meet legal recording requirements	States	Upon implementation

Reference documents:

[1] ICAO ANNEX 10

European and North Atlantic Office

Appendix G -

Proposal for Amendment
of the EUR Guidance material on building restricted areas
ICAO EUR (Doc 015)

(paragraph 4.4.35 refers)

(Serial No.: Doc 015 09/01)

a) Regional Guidance Material:

ICAO EUR Doc 015

b) Proposed by:

All-Weather Operations Group (AWOG)

c) Proposed amendment:

Editorial Note: Amendments are arranged to show deleted text using strikeout (~~text to be deleted~~), and added text with underlining (text to be inserted).

1.

Modify text as follows:

"6.4 It is recommended that buildings such as ~~windmills,~~ skyscrapers, large excavating works, TV towers and other high towers should be assessed at all times even outside the BRA for omni-directional facilities. Particular attention should be paid to clusters of buildings ~~such as wind farms~~ and overhead power lines. For surveillance and communication facilities it is recommended that wind turbine(s) should be assessed at all times even outside the BRA for omni-directional facilities. -Additional guidance on the assessment of wind turbine developments for navigational facilities is given in Appendix 4.

"

End of modified text

2.

Modify text as follows:

[Delete the existing Figure 2 and replace it with Figure 2.1 and Figure 2.2 shown below.]

Figure 2.1: Omni - Directional BRA Shape (three dimensional representation)

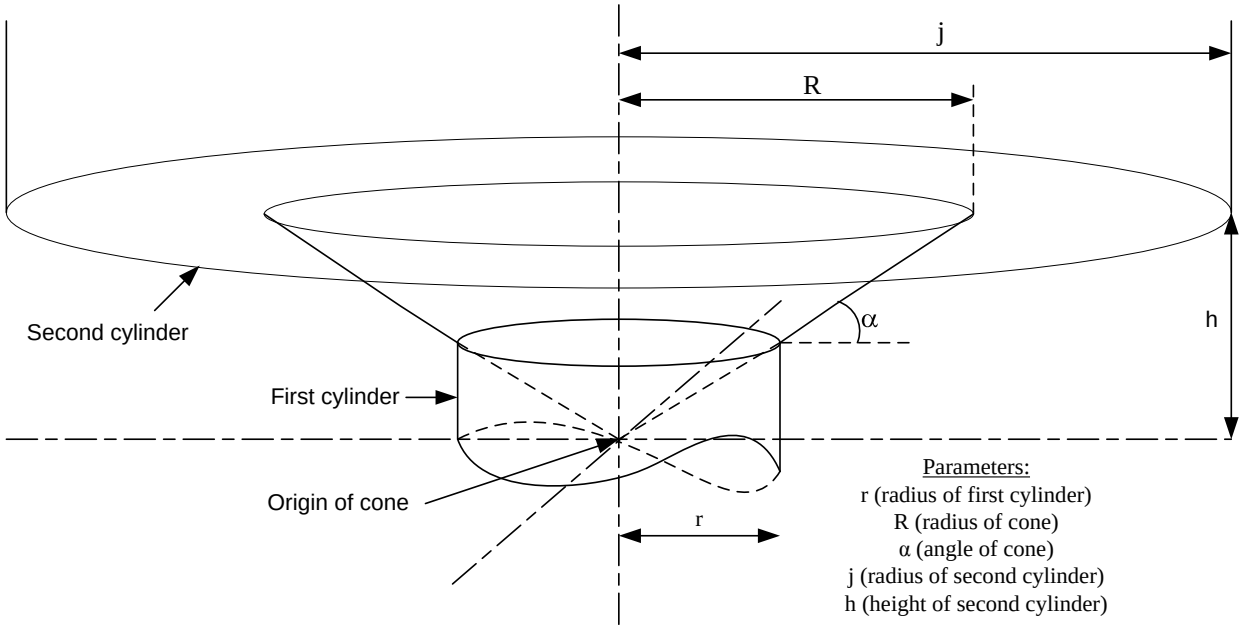
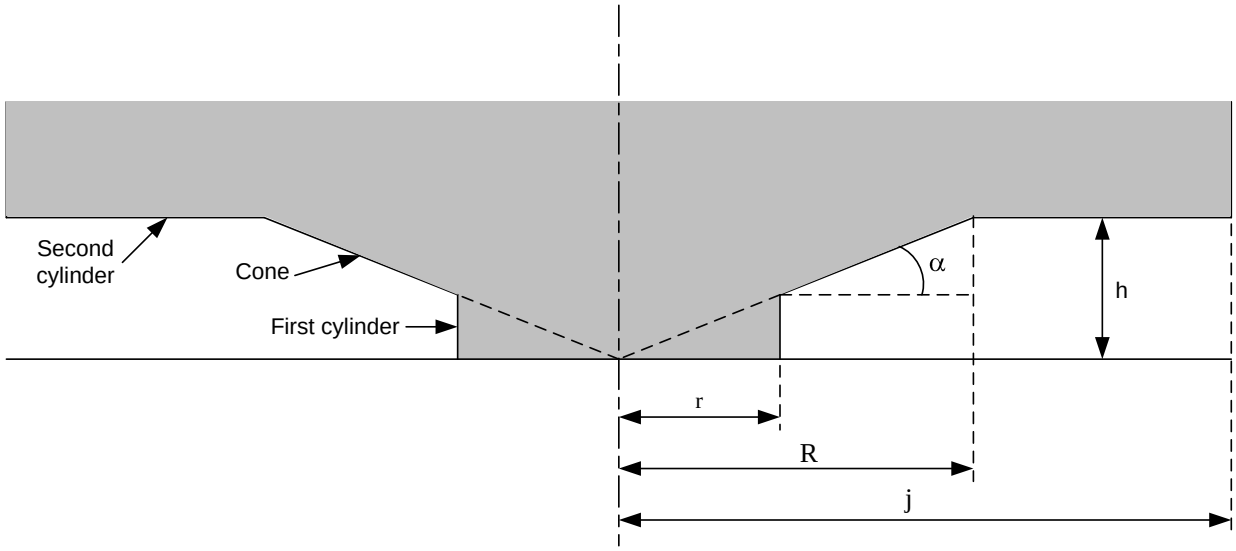


Figure 2.2: Omni - Directional BRA Shape (side elevation view)



End of new text

3.

Modify text as follows:

"7.7 It is recommended that buildings such as ~~windmills,~~ skyscrapers, large excavating works, TV towers and other high towers should be assessed at all times even outside the BRA for directional facilities. Particular attention should be paid to clusters of buildings ~~such as wind farms~~ and overhead power lines. Additional guidance on the assessment of wind turbine developments for navigational facilities is given in Appendix 4."

End of modified text

4.

Modify text as follows:

"

APPENDIX 1 – Navigational facilities

Table 1: Harmonised guidance figures for the omni-directional navigational facilities in accordance with ~~Figure 2~~ Figures 2.1 and 2.2

Type of navigation facilities	*Radius (r – Cylinder) (m)*	*Alpha (α – cone) (°)*	*Radius (R-Cone) (m)*	*Radius (j – Cylinder) (m) Wind turbine(s) only*	*Height of cylinder j (h -height) (m) Wind turbine(s) only*	*Origin of cone and axis of cylinders*
DME N	300	1.0	3000	N/A	N/A	Base of antenna at ground level
VOR	600	1.0	3000	15000	52	Centre of antenna system at ground level
Direction Finder (DF)	500	1.0	3000	10000	52	Base of antenna at ground level
Markers	50	20.0	200	N/A	N/A	Base of antenna at ground level
NDB	200	5.0	1000	N/A	N/A	Base of antenna at ground level
GBAS ground Reference receiver	400	3.0	3000	N/A	N/A	Base of antenna at ground level
GBAS VDB station	300	0.9	3000	N/A	N/A	Base of antenna at ground level
VDB station monitoring station	400	3.0	3000	N/A	N/A	Base of antenna at ground level

- The heights and surfaces specified for wind turbine(s) apply to the tip of the turbine blade when vertical. Where the terrain cannot be considered to be flat, for example in the case of sloping terrain, then all wind turbine proposals should be assessed out to the full radius of cylinder j or the BRA adapted to the actual terrain.

"

End of modified text

5.

Add new text as follows:

"**APPENDIX 4 – Wind-Turbine(s) Assessment for Navigational Facilities**

The guidance figures given in Appendix 1 Table 2, together with the application of ICAO Annex 14 surfaces, should provide sufficient protection for all directional facilities. The guidance figures given in Appendix 1 Table 1 should provide sufficient protection for all omni-directional facilities. The Step 2 "Specialist engineering analysis" process for VOR and Direction Finders (DF) is discussed in more detail below:

VOR

The impact of wind turbine(s) on VOR is difficult to assess for several reasons, including:

a) the worst case errors may be experienced when the turbine blades are stationary (due to either high or low wind speeds). The actual error is a function of the orientation of the turbine and position of the turbine blades when stationary.
b) the worst case error is due to the cumulative effect of a number of turbines, each of which may be acceptable individually. The cumulative effect at any position in the coverage volume is very sensitive to the exact location and orientation of the individual turbines.
c) the largest errors are likely to be experienced at the limit of coverage and at low elevation angles.
d) it is unlikely that the worst case errors can be confirmed by flight inspection due to the factors listed above.

Proposed wind turbine developments should be assessed to a distance of 15 km from the facility. Further assessment is required for any turbines within 600 m, or if any turbines infringe a 1 degree slope from the centre of the antenna at ground level to a distance of 3 km, or if they infringe a 52 m horizontal surface from a distance of 3 km to 15 km. Where the terrain cannot be considered to be flat, for example in the case of sloping terrain, then all wind turbine proposals should be assessed out to 15 km or the BRA adapted to the actual terrain.

In most cases single wind turbine developments are acceptable at distances greater than 5 km from the facility, and developments of less than 6 wind turbines are acceptable at distances greater than 10 km from the facility. However if VOR performance is already marginal this may not be acceptable. In cases where there are existing wind turbine(s) within the 15 km zone the assessment of new proposals needs to consider the cumulative affect of all the turbines, bearing in mind that the worst case error due to the existing wind turbine(s) is unlikely to have been measured by flight inspection.

Computer simulations can be used to assess the effect of wind turbine(s) on VOR using worst case assumptions as outlined above. In determining the acceptability of proposed wind turbine developments it is necessary to consider how much degradation of performance can be allowed. This requires consideration of the VOR error budget. The VOR bearing error at the output of the airborne receiver is made up of three main components. These are ground system errors, errors due to multipath, and airborne receiver errors. The ground system error is specified in ICAO Annex 10 to be within plus or minus 2°. The Annex 10 standards do not specify the other error components but the guidance material states that a radial signal error of plus or minus 3° (95% probability) is achievable in practice. The material in ICAO Annex 11 – Attachment A "Material relating to a method of establishing ATS routes defined by VOR", makes the assumption that the VOR accuracy is as stated in this Annex 10 guidance material. Further guidance on flight inspection of VOR given in ICAO Doc 8071 states that the displacement of the course by a bend should not exceed 3.5° from either the correct magnetic azimuth or on the course average as provided by the facility. Since the 3.5° tolerance applies to the displacement from the correct magnetic azimuth this tolerance includes ground system errors as well as multipath errors.

To determine an appropriate tolerance for wind turbine developments it is necessary to take account of the flight inspection tolerances described above as well as the maximum radial alignment errors due to the ground station, including any north alignment errors due to changes in the magnetic variation. The existing bearing errors due to other sources of multipath, and the operational use of the facility in the sector affected also need to be considered. In assessing simulation results it is also appropriate to include a margin to allow for any uncertainty in the fidelity of the model. Taking all these factors into account it is clear that it would not be appropriate to allow a proposed development to cause a bend as large as 3.5°. For example some engineering authorities have used a tolerance of 1° when assessing the acceptability of proposed developments using computer simulation. This is also consistent with the use of VOR to support RNAV operations.

While the BRA is the same for conventional and Doppler VOR, the Doppler VOR is less susceptible to multipath interference.

Direction Finders (DF)

The impact of wind turbine(s) on DF is difficult to assess for the reasons given above for VOR.

Proposed wind turbine developments should be assessed to a distance of 10 km from the facility. Further assessment is required for any turbines within 500 m, or if any turbines infringe a 1 degree slope from the base of the antenna at ground level to a distance of 3 km, or if they infringe a 52 m horizontal surface from a distance of 3 km to 10 km. Where the terrain cannot be considered to be flat, for example in the case of sloping terrain, then all wind turbine proposals should be assessed out to 10 km or the BRA adapted to the actual terrain.

In most cases single wind turbine developments are acceptable at distances greater than 3 km from the facility, and developments of less than 6 wind turbines are acceptable at distances greater than 6 km from the facility. However if DF performance is already marginal this may not be acceptable. In cases where there are existing wind turbine(s) within the 10 km zone the assessment of new proposals needs to consider the cumulative effect of all the turbines, bearing in mind that the worst case error due to the existing wind turbine(s) is unlikely to have been measured by flight inspection.

Computer simulations can be used to assess the effect of wind turbine(s) on DF using worst case assumptions as outlined above. In determining the acceptability of proposed wind turbine developments it is necessary to consider how much degradation of performance can be allowed. The existing bearing errors due to other sources of multipath, and the operational use of the facility in the sector affected also need to be considered. In assessing simulation results it is also appropriate to include a margin to allow for any uncertainty in the fidelity of the model.

”

End of next text

d) Date when proposal received:

16 September 2009

Appendix H – Proposal for Amendment to Doc 7754 regarding CNS

(paragraph 4.4.43 refers)

WORKING DRAFT OF

EUR ANP, VOLUME I, BASIC ANP

PART IV

COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

RECORD OF AMENDMENTS

Note: A consolidated text of this section, containing the following approved amendments to the EUR ANP, will be officially disseminated on an annual basis. This document is produced solely as reference material to assist States in the preparation of proposals for amendment to the EUR ANP.

AMENDMENTS

P. f. Amdt. Serial No.	Originator	Date Approved	Date Entered
05/20-CNS	EANPG	06/11/05	10/05/06
04/02-CNS	EANPG	27/12/06	05/03/07
06/11-CNS	EANPG	01/08/07	09/08/07

P. f. Amdt. Serial No.	Originator	Date Approved	Date Entered

Part IV

COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

GENERAL

1. Communications, Navigation and Surveillance (CNS)~~The telecommunication~~ facilities and services should meet the requirements of those other components of the air navigation system which they are intended to serve.

2. In planning for those other components, economy and efficiency should be taken into account in order to ensure that the requirements for the provision of CNS~~telecommunication~~ facilities and services can be kept to a minimum.

3. CNS~~3. Telecommunication~~ facilities and services should fulfil multiple functions whenever this is feasible.

COMMUNICATIONS

AERONAUTICAL FIXED SERVICE (AFS)

Basic requirements

4. The Aeronautical Fixed Service~~aeronautical fixed service~~ (AFS) should satisfy the communication requirements of Air Traffic Services (ATS), Air Traffic Flow Management (~~,~~ ATFM), Aeronautical Information Services (~~,~~ AIS), Meteorology (~~,~~ MET) and Search and Rescue (SAR)~~,~~ including specific requirements in terms of system reliability, message integrity and transit times, with respect to printed as well as digital data and speech communications. If need be, it should, following agreement between individual States and aircraft operators, satisfy the requirements for aeronautical~~airline~~ operational control.
[Annex 3, 11.1; Annex 11, 6.2; Annex 12, 2.4; Annex 15, Chapter 9; Annex 10, Volume II, Chapter 4]

5. 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. This network is hereafter referred as the ~~-~~EUR-ATN Network.
[Annex 10, Volume III, Part I]

Existing network

6. Pending future development of the EUR AFS, the current requirements should be met by the use of:

a) the Aeronautical Fixed Telecommunication Network~~aeronautical fixed telecommunication network~~ (AFTN);

b) the Common ICAO Data Interchange Network (CIDIN) and ~~the~~ CIDIN COM centres;

c) the ATS message handling systems (AMHS), ~~the~~ AMHS COM centres and ~~the~~ AMHS gateways;

d) the dedicated networks of ATS providers;

e) the operational meteorological information (OPMET) circuits and centres;

f) the ATS speech networks and circuits;

g) the ATS computer-to-computer data networks and circuits; and

h) The Satellite~~the satellite~~ distribution system for information relating to air navigation (SADIS).

7. 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.

8. Emergency procedures should be developed to ensure that, in case of a centre breakdown, all the parties concerned are promptly informed of the prevailing situation.

9. AFS planning should permit flexibility in detailed development and implementation.

The EUR~~TheEUR~~-ATN network

10. The- EUR-ATN Network should have sufficient capacity to meet the basic requirements for data communications for the services mentioned in 4. above.

11. The EUR-ATN Network should be able to:

a) support applications carried by the existing network as listed in 6 above;

b) support gateways enabling inter-operation with existing networks; and

c) support ground communications traffic associated with air-ground data link applications.

Note. — A requirement for the –EUR-ATN Network to carry digital speech may have to be considered- as and when this becomes practicable and cost effective.

12. The- EUR-ATN Network should make optimum use of dedicated bilateral aeronautical links and other- communication means commensurate with the operational quality of service (QoS) requirements.

13. The plan for the implementation of the EUR-ATN Network should take into account the need for cost-effective evolution in terms of network capacity and allow for a progressive transition from existing ground communication networks and services to a uniform, harmonised and integrated communications infrastructure.

14. In case means other than dedicated bilateral links are used by the EUR-ATN Network, implementation priority, high availability, priority in restoration of service and appropriate levels of security should be ensured.

15. The- EUR-ATN Network should provide for interregional connections to support data exchange and mobile routing within the global ATN.

~~16. States in the EUR Region are responsible for ensuring interoperability of the EUR ATN Network with SARPs compliant implementations in other States or Regions.~~

17. In planning the- EUR-ATN Network, provisions should be made, where required, for interfacing with other international networks.

Network services

18. The Transmission Control Protocol/Internet Protocol (TCP/IP) communication protocol should be used for the initial implementation of AMHS.
[EANPG 44/45].

19. The migration of flight data exchange (OLDI) from X.25 to TCP/IP should be planned.

1.

20. The migration of international or regional ground networks to the EUR-ATN network based on internet protocol (IP) to support AFS communication requirements, while reducing costs, should be planned.

Network management

21. A centralised off-line network management service is provided to participating AFTN/CIDIN/AMHS centres in the EUR Region.
[EANPG 45/10].

Specific ATS requirements

22. 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.

23. Special provisions should be made to ensure a rapid restoration of ATS speech circuits in case of outage.

24. The direct access speech capability provided between ATS units should permit contact to be established as rapidly as necessary commensurate with the functions of the unit concerned.
[Annex 11, 6.2]

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

26. The OLDI application, which provides functionalities equivalent to ATS Interfacility Data Communication (AIDC), is used for automated exchange of flight data between ATS units.

Specific MET requirements

27. In the transmission of operational meteorological information on the EUR-ATN Network the specified transit times should be met on at least 95 per cent of occasions.
[Annex 3, 11.1.11]

28. The increasing use of the GRIB and BUFR code forms for the dissemination of the upper wind and temperature and significant weather forecasts and the planned transition to the BUFR code form (or table driven code form) for the dissemination of OPMET data should be taken into account in the planning process of the EUR-ATN Network.

29. In planning the EUR-ATN Network, 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.

Multinational System Addressing

30. The EU addressing indicator is reserved in ICAO Doc 7910 for use by multinational systems in the European Region to allow multinational systems to retain the same addressing indicator, irrespective of which State or States the service is operated from. This enables the physical location of the service to be independent of the address used. The ICAO EUR/NAT Regional Director is the focal point for proposals for changes to the EU entry in Doc 7910.

31. The use of the EU indicator needs to be carefully managed to ensure that the primary purpose of the addressing indicator, which is to enable the AFTN addressing system, is not compromised. Therefore, the following basic rules should be applied:

i) only State groupings within the EUR Region that are providing multinational services can be considered as being eligible to use EU;

ii) there must be clear operational and/or institutional needs for an allocation;

iii) there must be an assessment of implications, and

iv) assignments are to be formulated in accordance with the requirements of Doc 7910. The 3rd and 4th letters of an EU allocation will identify the function of the system. The 5th to 8th letters will be assigned in accordance with the requirements of Doc 8585, in close co-ordination with the EANPG COG.

32. The ICAO Regional Director of the EUR/NAT Office should consider a request for an EU allocation in ICAO Doc 7910 only when the above requirements are met.

Note. — Specific requirements concerning ATFM and AIS have still to be developed.

AERONAUTICAL MOBILE SERVICE (AMS)

33. Air-ground communications facilities should meet the agreed communication requirements of the air traffic services, as well as all other types of communications which are acceptable on the AMS to the extent that the latter types of communications can be accommodated.

34. 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.
~~(Doc 9705)~~

35. Whenever required, use of suitable techniques on VHF or higher frequencies should be made.

36. Operation on HF should only be employed when use of VHF is not feasible. When HF is used, the single side-band technique should be employed.
[Annex 10, Volume III, Part II, Chapter 2.]

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

Air-ground communications for ATS

38. Air-ground communications for ATS purposes should be so designed that they require the least number of frequency and channel changes for aircraft in flight compatible with the provision of the required service. They should also provide for the minimum amount of coordination between ATS units and for optimum economy in the frequency spectrum used for this purpose. Basic elements for the determination of the need for air-ground communication channels and their economic use are given in Attachment A to Part V.II – ATS of the EUR FASID.
[Annex 11, 6.1 and Attachment B]

3939. In addition, uniform values of designated operational range and height of VHF air-ground communication channels should be used for identical ATS functions in accordance with the table contained in Attachment B to Part V.I – ATS of the EUR FASID. Deviations from these values at specific locations or for specific functions should only be made in those cases where adequate operational justification for such a deviation is provided by the State(s) concerned.
[Annex 11, 6.1 and Attachment B]

40. In order to achieve optimum economy in the use of the radio frequency spectrum used commonly for inter-national and national ATS air-ground communications (VHF), the above criteria should also be applied to national planning in the field of VHF air-ground communications.

Air-Ground Data Link Communications

40. The following Strategy was developed for the harmonised implementation of the data link ~~-~~ ~~ground~~ communications in the ICAO EUR Region (Conclusions EANPG 50/18 and 49/19 refer): ~~for ATS~~

a) Any additional aircraft implementation of Automatic Dependent Surveillance - Contract (ADS-C) should either;

i) utilise without change the existing DO-258A/ED-100A[1] (FANS-1/A) ADS-C, or

ii) move to the full implementation of the internationally agreed common technical definition that will be defined based on relevant provisions and guidance material (*Manual of Air Traffic Services Data Link Applications* (Doc 9694)) developed by ICAO and its technical bodies

1.1 Partial or divergent aircraft data link evolutions should not be pursued, as they will continue to promote divergent paths to the detriment to the broader community. 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.

b) Any additional aircraft implementation of Controller-Pilot Data Link Communications (CPDLC) should either;

i) utilise without change the existing DO-258A/ED-100A (FANS-1/A) or DO-280B/ED-110B[2] (ATN) CPDLC for ACM/ACL/AMC[3] data link services, or

ii) move to the full implementation of the internationally agreed common technical definition, based on *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444), and other operational material as appropriate

1.2 Partial or divergent aircraft data link evolutions that result in excluding messages from aircraft systems should not be pursued, as they will continue to promote divergent paths to the detriment to the broader community. 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.

Harmonization of operational procedures for implementation of the above packages is considered essential. States, planning and implementation regional groups, air navigation services providers and other ATS coordinating groups should adopt common procedures to support seamless ATS provision across flight

[1] *RTCA/EUROCAE Interoperability Requirements for ATS Applications Using ARINC 622 Data Communications (FANS 1/A INTEROP Standard)*

[2] *RTCA/EUROCAE Interoperability Requirements Standard For ATN Baseline 1 (ATN B1 INTEROP Standard)*

[3] Air traffic control communications management/Air traffic control clearances and information/Air traffic control microphone check.

information region boundaries, rather than each State or Region developing and promulgating unique procedures for common functions.

41. Controller Pilot Data Link Communications (CPDLC) based on ATN VDL2 implementation is an agreed strategy for deployment of air-ground data link communications in the ICAO EUR Region.

Required Communication Performance (RCP)

2.

42. The RCP concept characterizing the performance required for communication capabilities that support ATM functions without reference to any specific technology should be applied wherever possible.

43. The States should determine, prescribe and monitor the implementation of the RCP in line with the provisions laid down in the ICAO RCP Manual (Doc 9869).

~~41. Ground-ground communications between ATS units, including ATS voice communication links and computer-to-computer links, should be so designed that they provide for optimum coordination between ATS units required to exchange flight data and execute coordination of air traffic directly between each other. Where necessary, the voice communication links should also be designed to permit conference-type communications between more than two ATS units if this is justified in order to resolve air traffic control problems.~~

~~**2.**~~

~~*Note. — Requirements for ground-ground communications between ATS units will be met by the integrated aeronautical fixed services network currently being developed."*~~

~~**3.**~~

~~**4.**~~

~~**AERONAUTICAL RADIO**~~ **NAVIGATION** ~~**SERVICE**~~

~~42. Radio navigation aids should meet, in a reliable manner, the agreed air navigation requirements as outlined in Parts III (AOP) and IV (CNS) of the EUR FASID.~~

~~**FREQUENCY ASSIGNMENT PLANNING**~~

General

44. Planning of navigation services associated with the ATS route network should be done on a total system basis, taking full account of the navigation capabilities as well as cost effectiveness. The total system composed by station-referenced navigation aids, satellite based navigation systems and airborne capabilities should meet the performance based requirements for navigation guidance of all aircraft using the system and should form an adequate basis for the provision of positioning, guidance and air traffic services.

45. Account should be taken of the fact that certain aircraft may be able to meet their long-range and short-range navigation needs by means of self-contained aids, thus eliminating the need for the provision of station-referenced aids along routes used by such aircraft, as well as the need to carry on board excessive redundancies.

46. The Global ATM Operational Concept, endorsed by ICAO 11th Air Navigation Conference (AN-Conf/11) and published as ICAO Doc 9854, provides the framework for the development of all regional ATM concepts. AN-Conf/11 also endorsed a number of technical recommendations affecting navigation, including the harmonization of air navigation systems between regions, frequency planning, the transition to satellite based air navigation, curved RNAV procedures, and the use of multiple GNSS signals and the rapid implementation of approaches with vertical guidance.

47. The ICAO Performance Based Navigation (PBN) Manual was developed in direct response to an AN-Conf/11 recommendation.

48. In September 2007, the ICAO 36th General Assembly issued Resolution 36-23 urging States to:

a) Complete PBN implementation plans by 2009,

b) Implement RNAV and RNP operations (where required) for en route and terminal areas and

c) Implement approach procedures with vertical guidance (APV) (Baro-VNAV and/or augmented GNSS) for all instrument runway ends, either as the primary approach or as a back-up for precision approaches, by 2016 (with 30 per cent by 2010 and 70 per cent by 2014).

49. The following PBN Implementation Roadmap addresses and supports this Resolution whereby States and Planning and Implementation Regional Groups (PIRGs) should complete a PBN implementation plan by 2009.

THE EUR PBN IMPLEMENTATION ROADMAP

50. Recognizing the benefits to be derived from PBN concept, the EUR Region States shall ensure that all RNAV and RNP operations and procedures are in accordance with the PBN concept as detailed in ICAO Doc 9613 thereby ensuring a globally harmonized and coordinated transition to PBN avoiding unnecessary costs to operators in achieving certification and operational approvals for worldwide navigation application.

51. The EUR PBN Regional Roadmap is designed to provide guidance to air navigation service providers, airspace operators and users, regulating agencies, and international organizations, on the expected evolution of navigation system in order to allow planning of airspace changes and the enabling ATM systems and aircraft equipage.

52. The PBN Implementation Roadmap for the European Region exists within the context of the EUR region operating environment. This includes the Navigation Application and Infrastructure Planning Strategy for the EUR.

53. Given the requirement for interoperability this Roadmap represents the parent source of the strategic regional planning context and strong links are forged at a Pan-European level with the SESAR ATM Master Plan.

54. The following are key navigation enablers and driving factors to the development and further evolution of the Roadmap:

a) SBAS (Satellite-Based Augmentation System) becomes available for suitably equipped aircraft to enable increased access to medium and smaller airports in the time frame until about 2013;

b) GBAS (Ground-Based Augmentation System) becomes available using GPS L1 for some users in particular operating environments in the time frame until about 2013;

c) 4D contract is foreseen beyond 2020;

d) The requirement for Advanced RNP with an initial Required Time of Arrival (RTA) capability is a step towards 4D trajectory management;

e) Extended use of RNAV1/P-RNAV for approach as a means of transitioning from permanent routes through Conditional Routes to 4D Business/Mission Trajectories;

f) Move towards GNSS becoming the prime positioning source for all phases of flight using Galileo/GPS/GLONASS, GBAS and SBAS;

g) A mandate for the carriage of GNSS is envisioned for application in certain parts of the EUR in the 2015 period;

h) The continued provision of DME as a backup to GNSS is consistent with safety targets;

i) Replacement of Conventional Non-Precision Approaches by approaches with vertical guidance up to 2016;

j) Evolution of improved low visibility operations using GBAS to support CAT II and III operations with GPS L1 then with multi constellation GNSS in the period up to 2015;~~43.~~

k) The progressive decommissioning of VORs and NDBs made possible by the use of GNSS;

Principles of PBN Implementation

55. The broad principles for PBN Implementation derived from the operational requirements of the EUR Region and the concepts and strategies discussed above are:

a) The Navigation Application and Infrastructure Strategy are required to support the requirements detailed in the ICAO Global ATM Operational Concept. As such, the Roadmap lays the foundations for achieving the long term goals of User Preferred Trajectories (RNAV, 3D-RNP and 4D-RNP applications) together with improved access, safety and all weather operations through application of xLS;

b) GNSS will become the primary, and potentially a sole means of navigation, to the degree that this can be demonstrated to be safe and cost effective;

c) Meet the environmental policies. In this context, it is necessary to coordinate the development of navigation avionics; and

d) Given the need for satellite-based Navigation to increasingly co-exist with satellite-based Surveillance and Communication services, the Roadmap takes due account of enablers that will be required by communications and surveillance.

56. The application of these principles shall:

a) identify, and evolve from, the needs and priorities of both users and providers of the navigation systems and/or services;

b) provide tangible and early benefits for the users;

c) safeguard capital investments, necessary to maintain the existing Infrastructure, in future rationalisation plans;

d) take due account of sub-regional institutional arrangements and legal regulations;

e) accommodate geographical differences in capabilities, performance requirements, and in the existing and required infrastructure;

f) enable coherent development plans to be made within EUR region and ensure an appropriate interface to the adjacent regions; and

g) Accept the continued operations of aircraft with lower navigation capabilities for as long as operationally feasible.

Benefits

57. The following are the benefits expected to be derived by implementation of PBN:

a) Improved safety through the implementation of continuous and stabilized descent procedures using vertical guidance accompanied by the gradual elimination of Non-Precision Approaches by 2016 thereby reducing the potential for Controlled Flight into Terrain;

b) Implementation of more flexible and precise approach, departure, and arrival paths that will reduce dispersion and will enable improved airspace design fostering increased capacity;

c) Flight efficiency by the extension of RNAV application where the existing route structure is defined around ground based navigation aids and to all airspace by the use of optimised trajectories enabled by RNP and 4D contract;

d) Increased capacity in those parts of the EUR region where RNAV carriage is not a requirement today through the implementation of additional parallel routes and additional arrival and departure points in terminal areas;

e) Increase capacity by the reduction of lateral and longitudinal separation enabled by RNAV and RNP;

f) Reduced environmental impact resulting from savings in fuel and through noise reduction by the improved placement of routes using RNAV and RNP;

g) Mission effectiveness (improved through the accommodation of aircraft with lower navigation capability for as long as operationally feasible);

h) Improved airport access through the more generalised availability of Cat I/II/III precision approach (e.g. improved ILS operations, MLS and GBAS/GLS) and the provision of LPV and RNP APCH giving lower weather minima;

i) Decrease ATC and pilot workload by utilizing RNAV/RNP procedures and airborne capability and reduce the needs for ATC-Pilot communications and radar vectoring; and

j) Interoperability with other ICAO regions.

PBN APPLICATIONS

En-Route Operations

58. For En-Route operations the application of RNAV 5 is mandated in designated parts of the ICAO EUR.

[ICAO EUR SUPPs Doc 7030 refers]

59. Considering the traffic characteristics and CNS/ATM capability in the EUR region that includes both Continental and Remote continental operations, it is expected that a single RNAV or RNP navigation specification will not be applicable throughout the region.

60. Therefore different implementations of RNAV and RNP navigation application and associated specifications may be applied by different homogeneous ATM areas.

TMA Operations

61. Requirements for TMA operations have their own characteristics, taking into account the applicable separation minima between aircraft and between aircraft and obstacles. It also involves the diversity of aircraft, including low-performance aircraft flying in the lower airspace and conducting arrival and departure procedures on the same path or close to the paths of high-performance aircraft.

62. The mix of traffic differs remarkably between airports. This together with airspace restrictions which can prevent the introduction of special RNAV/RNP routes is likely to result in the capability of an airport to introduce RNAV or RNP operations being constrained by the lower capability of aircraft using that airport. It is consequently possible that airports within a single TMA could have differing capability for introduction of PBN operations.

63. As a result, the States should develop their own national plans for the implementation of PBN in TMAs, based on the PBN Manual, seeking the harmonization of the application of PBN and avoiding the need for multiple operational approvals for intra- and inter-regional operations, and the applicable aircraft separation criteria.

64. The following strategy was agreed for Performance Based Navigation Implementation Harmonisation and Implementation in the ICAO EUR Region by ICAO EANPG/50:

a) Implementation of any RNAV or RNP application shall be in compliance with ICAO PBN Manual (Doc 9613);

b) Recognizing that B-RNAV/P-RNAV can be regarded as equivalent to RNAV5/RNAV1, as defined in the ICAO PBN Manual, their use will be continued for en-route and terminal applications at least until 2015;

c) The target date for the completion of implementation for the Approach procedures with vertical guidance (APV) (APV/Baro-VNAV and/or APV/SBAS) for all instrument runway ends is 2016;

d) Replacement of RNAV5/RNAV1 (B-RNAV/P-RNAV) specification by RNP specifications (e.g. Basic RNP-1 and advanced-RNP) for the use in the en-route and terminal airspace to commence by 2015.

e) ICAO PBN Manual compliant terms, e.g. RNAV 1 and RNAV 5, shall be implemented for all new aeronautical information publications and as an update to existing publications until 2014.

Instrument Approaches

65. States should introduce PBN approaches that provide Vertical Guidance to enhance safety. These should be based on APV Baro-VNAV and Space Based augmentation Systems (SBAS) where possible. Conventional approach procedures and conventional navigation aids should be maintained to support non-equipped aircraft during the transitional period.

66. With the expected reduction and subsequent removal of VOR and NDB it is expected that conventional NPAs will have to be withdrawn from 2015 to 2025. The States should make clear their own individual plans in order ot assist operators in their planning for the transition to PBN.

NAVIGATION INFRASTRUCTURE

67. The Navigation Infrastructure requirements address all phases of flight from take off to final approach and also the precision approach and landing.

En route and TMA

2010-2015

68. Transition to a total RNAV environment takes place that requires enhancing DME coverage and/or ensuring the safety of GNSS signals in space and improving the quality of service for en route and terminal operations. This should be achieved mainly by deploying additional DMEs and certifying GNSS service providers in part of the Region. Repositioning some of the existing facilities might be required, as enabled by decommissioning of VOR.

69. RNAV infrastructure assessment guidance material is available at http://www.paris.icao.int/documents_open/subcategory.php?id=48 and can be used to aid in assessment of DME-DME network requirements.

70. Decommissioning of NDBs and reduction of VOR takes place due to a progressive reduction of conventional routes and procedures, while leaving a sufficient backbone of conventional navigation aids to continue supporting a reducing non-RNAV route structure at lower flight levels and supporting remaining conventional approach procedures and their associated missed approaches, and enable ATC to re-route aircraft in the event of individual aircraft RNAV failure

71. In the European Union the European Aviation Safety Agency (EASA) is expected to become competent for oversight of the providers of GNSS signals in space. Equipped aircraft will be authorized to take advantage of European Geostationary Navigation Overlay Service (EGNOS), after the certification of the relevant Navigation Service Provider (NSP), within its area of coverage and within the limits of its declared performance.

2015-2020

72. The transition to a total RNAV environment requires generalised use of GNSS in those areas where suitable DME coverage cannot be achieved, such as low flight levels in terrain constrained areas.

73. GNSS Sensors might be required for all General Air Traffic (GAT) operations. Dual RNAV with DME/DME and GNSS sensors, or other solutions ensuring a level of safety commensurate to the type of operations, may be foreseen to overcome loss of GNSS signal in order to meet the operational requirements in respect of the risk of loss of navigation capability on Air Transport operations. Alternate equipage using ground based navigation aids could be planned.

74. Galileo and enhanced GPS should start to become available in the 2015-2020 timeframe allowing increased reliance on GNSS once dual constellation and dual frequency equipment is installed in aircraft and experience is built up on Galileo operation.

75. The existence of a total RNAV environment should allow further removal of VOR and NDB, as well as further removal of avionics no longer necessary.

Post 2020

76. In this time frame, it is expected to have a multi-constellation and multi frequency GNSS environment that will provide an adequate level of GNSS service in terms of robustness and performance.

77. These GNSS enhancements should reduce significantly the probability of having a GNSS failure and would reduce the extent of an alternative reversion, allowing for a reduced DME network to support the back-up requirement.

78. The existence of a total RNAV environment should allow an almost total removal of any remaining VOR.

Approach and Landing

2010-2015

79. Instrument Landing System (ILS) remains the prime source of guidance for precision approaches and landings in the EUR and continue to support all categories of airspace users.

80. Cat I GLS (GBAS/GPS) may become available. ILS will probably remain the only means for Cat II/III operations. However, toward the end of the period, depending on Research and Development results, there may be a limited availability of Cat II/III GLS capability (using a GPS/GBAS capability augmented by on-board systems) at runways with Cat II/III lighting. This might increase the rate of take up of GBAS based landing as a back up to ILS to cater for maintenance/system failures.

81. The gradual elimination of NPAs (both conventional and RNAV) should take place in accordance with the decisions of the 36th ICAO Assembly to be replaced by Approaches with Vertical Guidance (APV) either based on SBAS or Baro-VNAV. This is expected to be completed early in the period 2015-2020 with the provision of APV to all IFR runway ends, including those mainly used by general aviation.

82. Runways presently not equipped with Precision Approach and Landing system may consider SBAS (e.g. LPV down to 200 ft DH) or Cat I GLS (GBAS/GPS) systems with airport lighting system upgrades as needed.

83. Some CAT I ILSs may be replaced by SBAS APV or CAT I GLS. Business case for such changes depends upon the certification of the EGNOS NSP, number of procedures published in AIP, nature of traffic, capability of SBAS to serve multiple runway directions at a single aerodrome and availability of aircraft with certified GNSS based approach and landing systems.

84. Where a business case can be made (e.g. improved capacity for Low visibility procedures (LVP) or where the ILS modifications cannot overcome multipath) MLS Cat II/III may be equipped as a alternative or replacement to ILS.

2015-2020

85. ILS remains the prime source of guidance for precision approaches and landings in the EUR. MLS, Cat I GLS and LPV 200 continue to be introduced or maintained where required.

86. As Cat II/III GLS (GBAS/Multi-constellation Dual Frequency) becomes available and with the increased equipage of aerodromes with GBAS ground station and aircraft with GLS capability, GLS procedures should be increasingly used.

87. Users not approved for RNP APCH/LPV approaches, may suffer operational limitations when conventional NPA procedures are removed and associated navigation aids are decommissioned. RNP AR APCH should have increasing application where RNP operations cannot be undertaken using RNP APCH procedures.

BEYOND 2020

88. ILS should remain a significant source of guidance for precision approaches and landings in Cat II/III.

89. MLS, Cat I GLS and LPV 200 should continue to be introduced where required.

90. Increased equipage of GLS aircraft capability together with the provision of GLS GBAS procedures (Cat I/II/III) at more airports should take place. This is expected to be accompanied by extensive decommissioning of ILS CAT I systems, where the Business and Safety Case can be established.

91. ILS Cat II/III should be retained to provide backup to GLS to address GLS availability issues (deliberate jamming and solar activity) where and when justified.

92. Requirement for RNP APCH/LPV/GBAS for RNAV approach should be established if ILS is not available.

93. Increased equipage of aircraft with combined GPS/Galileo/SBAS reception will lead to the introduction of LPV procedures to all IFR runway ends, including for use by general aviation.

94. RNP AR APCH should continue to have increasing application where RNP operations cannot be undertaken with RNP APCH procedures.

Transition Strategy

95. During transition to PBN, sufficient ground infrastructure for conventional navigation systems must 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 equivalent PBN-based navigation performance. States should approach removal of existing ground infrastructure with caution to ensure that safety is not compromised, such as by performance of safety assessment, consultation with users through the EANPG and other Regional and area planning process.

96. States should coordinate to ensure that harmonized separation standards and procedures are developed and introduced concurrently in all flight information regions along major traffic flows to allow for a seamless transition towards PBN.

97. States should cooperate on a multinational basis to implement PBN in order to facilitate seamless and inter-operable systems and undertake coordinated R&D programs on PBN implementation and operation.

98. States are encouraged to consider catering for traffic according to navigation capability and granting benefits to aircraft with better navigation performance, taking due consideration of the needs of State/Military aircraft.

99. States should encourage operators and other airspace users to equip with PBN-capable avionics. This can be achieved through early introductions of RNP approaches, preferably those with vertical guidance.

Safety Documentation & Monitoring Requirements

Need for a safety documentation

100. To ensure that the introduction of PBN applications are undertaken in a safe manner, in accordance with relevant ICAO provisions, implementation shall only take place following conduct of a safetydocumentation that would demonstrate that an acceptable level of safety will be met. Additionally, ongoing periodic safety reviews should be undertaken where required in order to establish that operations continue to meet the target levels of safety.

Undertaking a safety documentation

101. To demonstrate that the system is safe it will be necessary that the implementing State or group of States - ensures that a safety documentation and, where required, ongoing monitoring of the PBN implementation are undertaken.

Use of specific navigation aids

102. 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 internationally agreed and ICAO Annex 10 compliant systems.

103. States should ensure and oversee that Navigation Service Providers (i.e. providers of the navigation signals in space) take appropriate corrective measures promptly whenever a significant degradation in the accuracy of navigation aids (either space based or ground based or both) is detected.

SURVEILLANCE

Planning Considerations

104. The ICAO European Region is currently characterized by the use of the following surveillance systems:

a) • Secondary Surveillance Radars (SSR) Mode A, C and S in terminal and en-route continental airspace;

b) • Primary Surveillance Radars (PSR) primarily in terminal airspace;

c) • Automatic Dependent Surveillance – Broadcast (ADS-B) and Wide Area Multilateration (WAM) in some parts.

Automatic Dependent Surveillance – Contract (ADS-C) in some parts of the oceanic and remote continental airspace.

105. In order to meet the anticipated future operational requirements by 2020 in an evolutionary manner, the following guiding principles to the development of surveillance infrastructure were agreed in the EUR Region:

a) An independent surveillance system to track non-cooperative targets where and when required. This will be provided by PSR unless and until an alternative solution is required and developed.;
b) An independent surveillance system to track co-operative targets. This can be enabled by SSR Mode A/C or SSR Mode S or Wide Area Multilateration.;
c) Dependant co-operative surveillance based upon ADS-B providing positional data of suitable quality. The common, internationally agreed technical enabler for this type of surveillance is 1090 MHz Extended Squitter based ADS-B data link;
d) Since aircraft will have the necessary Mode S and ADS-B equipage, the choice of Cooperative surveillance technology (Mode S, ADS-B, Multilateration) remains flexible, with the service provider determining the best solution for their particular operating environment, based on cost and performance;
e) Usage of ADS-C in remote and oceanic areas only;
f) An increasing use of ADS-B and/or Airport Multilateration at aerodromes is also foreseen and, particularly, the use of the Advanced Surface Movement Guidance and Control System (A-SMGCS). Surface Movement Radars will provide the Independent Non-Cooperative airport surveillance;
g) The increasing use of surveillance data onboard of 'ADS-B In' equipped aircraft to support Air Traffic Situational Awareness (ATSAW) and spacing applications and later separation applications. This also allows for increased delegation of responsibility for separation to the flight crew.

FREQUENCY MANAGEMENT
Planning Considerations

General

106. Frequency assignment planning in the EUR region should be carried out in accordance with the provisions of Annex 10 supplemented, as necessary, by regional recommendations and technical criteria developed for this purpose. Detailed guidance on frequency assignment planning for AMS and radio navigation aids are contained in ICAO EUR Frequency Management Manual Doc 011~~Part IV (CNS) of the EUR FASID~~.

AMS

107.~~44.~~ Frequencies should be assigned to all VHF AMS facilities, taking into account:

a) ~~a)~~ agreed geographical separation criteria based on 8.33 kHz interleaving between channels for the area where this channel spacing is applicable;

b) ~~b)~~ agreed geographical separation criteria based on 25 kHz interleaving between channels;
c) agreed geogra[hical separation criteria for the implementation of VDL services;

d) ~~c)~~ the need for maximum economy in frequency demands and in radio spectrum utilization; and

A

e) ~~d)~~ ~~a~~ deployment of frequencies which ensures that international services are planned to be free of harmful interference from other services using the same band.

10845. The priority order to be followed in the assignment of frequencies to service is:

a) ~~a)~~ ATS channels serving international services (ACC, APP, TWR, FIS);

b) ~~b)~~ ATS channels serving national purposes;

c) ~~e)~~ channels serving international VOLMET services;

d) ~~d)~~ channels serving ATIS and PAR; and

National

e) ~~e) national~~ channels used for other than ATS purposes.

109. ~~46.~~ 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 of national VHF AMS facilities.

110. ~~47. A number of principles and criteria applicable to the practical conduct of frequency assignment are given in Part IV — CNS of the EUR FASID.~~

~~48. Assignment of frequencies to satisfy airline operational control communication requirements should be made in accordance with the criteria and method shown in Part IV — CNS of the EUR FASID.~~

~~49.~~ Special provisions should be made, by agreement between the States concerned, for the sharing and the application of reduced protection of non-ATC frequencies in the national sub-bands, so as to obtain a more economical use of the available frequency spectrum consistent with operational requirements.

111. ~~50.~~ It should be ensured that no air/ground frequency is utilized outside its designated operational coverage.

112. ~~51.~~ It should be ensured 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

113 ~~52~~. Frequencies should be assigned to all radio navigation facilities taking into account:

a) ~~a)~~ agreed geographical separation criteria based on assignments of 50 kHz-spaced frequencies to ILS localizer and VOR, ~~and~~ X and Y channels to DME and 25 KHz space frequencies to GBAS;

b) ~~b)~~ the need for maximum economy in frequency demands and in radio spectrum utilization; and

A

c) ~~c)~~ ~~a~~ deployment of frequencies which ensures that international services are planned to be free of harmful interference from other services using the same band.

~~53. Principles and criteria applicable to the practical conduct of frequency assignment to VHF/UHF aids are given in Part IV — CNS of the EUR FASID.~~
~~[Annex 10, Volume I, Attachment C]~~

~~55. Principles and criteria applicable to the practical conduct of frequency assignment to LF/MF aids are given in Part IV — CNS of the EUR FASID.~~
~~[Annex 10, Volume V, Attachment B]~~

~~56.~~ 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.

116. ~~57.~~ The following planning criteria for MLS frequency planning in the EUR region should be applied, aimed at allowing the maximum number of MLS-associated DME frequencies on X and Y channels so as to minimize the possible use of W and Z channels:

a) ~~a)~~ the height above which guidance signal need not be protected should be 10 000 feet;

Note ~~.~~ Signal protection to a height greater than 10 000 ft to meet special operational requirements shall be met on a case-by-case basis through technical (frequency) coordination among those States affected.

b) ~~b)~~ double channel pairing of ILS and MLS with the same DME channel (frequency tripling) is not required; and

The

c) ~~c) the~~ same channel (frequency) may exceptionally be assigned to both approach directions of a dually equipped runway in those cases where this is operationally acceptable.

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PROVISION OF NAVIGATION MEANS

General

58. Planning of navigation aids associated with the ATS route network should be done on a system basis, taking full account of the navigation capabilities as well as cost effectiveness. The system of station-referenced navigation aids should meet the needs for navigation guidance of all aircraft using the system and should form an adequate basis for the provision of air traffic services. The system should:

a) provide flight crews with information to enable them to maintain their planned or cleared track with the required accuracy and to effect any corrections or changes required to complete the flight;

b) provide flight crews with information of sufficient accuracy to enable them to remain clear of areas prohibited to all civil aircraft and areas in which civil flight is not permitted without special authorization with the aim of reducing or eliminating the need for interception;

c) meet a level of availability and reliability of performance consistent with the requirement for safety and efficiency; and

d) provide for reporting and transfer of control points commensurate with the justified requirements of air traffic services units.

Account should be taken of the fact that certain aircraft may be able to meet their long-range and short-range navigation needs by means of self-contained aids, thus eliminating the need for the provision of station-referenced aids along routes used by such aircraft.
[Annex 6, Part I, Chapter 7; Annex 6, Part II, Chapter 7; Annex 6, Part III, Section II, Chapter 5 and Section III, Chapter 5]

Note. — The radio navigation aids associated with the basic ATS route network and TMA procedures are shown in Table CNS 4 of the EUR FASID.

59. 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, if possible, be located and aligned so as to provide for full compatibility of navigational guidance with that derived from the internationally agreed system. This applies particularly within controlled airspace. (Criteria No.1 and 2 in Attachment J, Part IV — CNS of the EUR FASID refer.)

60. Individual station-referenced navigation aids should meet a level of accuracy and reliability consistent with the role the aid concerned plays in the overall navigation system. (Criterion No. 3 in Attachment J, Part IV — CNS of the EUR FASID refers.)

61. These aids should be operated continuously unless the frequency, type and nature of flight operations using such aids make this clearly unnecessary.

62. States should take appropriate corrective measures promptly whenever a significant degradation in the accuracy of navigation aids is detected.

~~VOR/DME~~

~~63. The primary station-referenced aid for en-route navigation on the agreed ATS route network should be the VOR. (Criteria Nos. 4, 5 and 9 in Attachment J to Part IV — CNS of the EUR FASID refer.) This should be supplemented by DME only where this additional aid is required to enhance the efficiency and the accuracy of the navigation system. (Criteria Nos. 11 to 13 of Attachment J to Part IV — CNS of the EUR FASID refer.)~~
~~[Annex 10, Volume I, 2.2.2]~~

~~64. Where DME is required it should, if practicable, be collocated with VOR.~~

~~65. Annex 11, Attachment A provides guidance on the airspace requirements for VOR defined routes. Normally the 95 per cent criteria can be used. In specific cases, to ensure that a higher proportion of traffic will remain within the boundaries prescribed, the width of the protected airspace should be increased as indicated in that guidance material.~~
~~[Annex 10, Volume I, Attachment C, 3.7.3; Annex 11, Attachment A]~~

~~66. The use in specific cases of lower values for the width of protected airspace along VOR defined ATS routes should be agreed between States and operators concerned. These can be based on an assessment of the actual VOR performance instead of the 3 degree VOR radial signal error value assumed.~~
~~[Annex 10, Volume I, Attachment C, 3.7.3.7; Annex 11, Attachment A]~~

~~67. Where traffic, terrain and airspace considerations permit, it may also be helpful to consider increasing the width of those portions of ATS routes where the distance from navigation aids and the overall system accuracy would otherwise be incompatible.~~

~~68. The designated operational range and height for each aid should be determined taking into account:~~

~~a) the navigation guidance required, including an overlap in coverage with adjacent aids; and~~

~~b) the need to make best use of the available frequency spectrum.~~

~~Because of the many factors influencing the practical day-to-day service of a particular aid, it should be realised that its actual performance may not always correspond with the assigned designated operational range and/or height. (Explanation of Terms and Criteria Nos. 6 to 8 of Attachment J to Part IV — CNS of the EUR FASID refer.)~~

~~NDB~~

~~69. LF/MF en-route radio aids should only be provided where there is an operational requirement which cannot otherwise be met.~~

~~70. NDB or locators may be provided for specific groups or categories of users (e.g. IGA, helicopters) where it has been determined that this will meet their requirements for navigational guidance.~~
~~[Annex 10, Volume I, 2.3.1]~~

~~71. An NDB may be provided temporarily in place of a VOR, either because the VOR concerned has not yet been implemented or because it has to be taken out of service for technical reasons and for a substantial period of time.~~

~~72. A continuous review of the requirements for LF/MF radio aids should be undertaken in order to plan the orderly withdrawal of those aids which are not required in accordance with 59 to 61.~~

Navigation aids in TMAs

73. Radio aids in terminal areas should permit navigation during departure, holding and approach, with the required accuracy. VORs used for this purpose should be so located that they provide optimum navigational guidance along those departure and approach routes most frequently used. A collocated DME should be provided for such VOR when necessary to enhance ATC flexibility in the routing of air traffic and when improved accuracy in navigation is required. NDB should only be installed when the provision of VOR is not practicable.
[PANS-OPS, Volume II, Part III, Chapter 2]

74. Whenever possible, VORs should be located and operated so that they can serve the requirements for both en-route and terminal navigation guidance. However, NDB provided specifically for terminal navigation should not be planned to serve en-route navigation purposes except as specified in 59 to 62 above.

AREA NAVIGATION (RNAV)

75. Where practicable and when justified by the number of aircraft with area navigation (RNAV) capability, RNAV routes should be provided.

Note. — RNAV is defined as a method of navigation which permits aircraft operation on any desired flight path within the coverage of station-referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

76. RNAV routes should normally be provided for aircraft meeting the basic RNAV level of navigational accuracy. Where airspace and/or other requirements preclude such provision, consideration should be given to the establishment of routes for use only by aircraft with the precision RNAV level of navigational accuracy.

77. The introduction and use of RNAV routes should not disadvantage aircraft without RNAV capability operating on ATS routes aligned on point source navigation aids.

78. The specific types of RNAV routes/routings for the EUR region are defined below.

Fixed RNAV routes

79. Fixed RNAV routes are permanent, published routes for use by aircraft with RNAV capability.

Note. — Fixed RNAV routes might typically be established in areas where the track guidance provided by point source navigation aids is insufficient to establish the same route for aircraft without RNAV capability.

Contingency RNAV routes

80. Contingency RNAV routes are published and established for specific, limited time periods (hours, days, seasons) as necessary to meet unusual, temporary requirements arising at short notice.

Note. — One typical application of contingency RNAV routes might be in the case where the unserviceability of a navigation aid on a conventional ATS route would otherwise require closure of a segment of that route to all traffic due to insufficient navigational guidance. The establishment of a

~~*contingency RNAV route in these circumstances would allow suitably equipped aircraft to continue to use the affected route segment.*~~

~~Random RNAV routings~~

~~81. Random RNAV routings are unpublished tracks, within designated and published areas (Random RNAV areas, as described below) which can be flight planned by operators for use by aircraft with RNAV capability.~~

~~Random RNAV areas~~

~~82. Wherever possible, random RNAV areas should be established, laterally defined by geographical coordinates, within which random RNAV routings may be flight planned by operators and subsequently flown under radar monitoring when required.~~

~~83. The availability of random RNAV areas may be limited to specific flight level bands and/or time periods depending on ATC workload, traffic conditions and other related factors. Other relevant conditions are as follows:~~

~~a) random RNAV areas should have adequate air/ground communications and, depending on traffic density, ATS radar coverage;~~

~~b) flights operating through random RNAV areas should commence from and terminate at specified significant points;~~

~~c) these points, as well as other significant points en route within random RNAV areas, defined in geographical co-ordinates or name codes as appropriate, should be indicated in the flight plan as required; and~~

~~d) the operator/pilot is responsible for ensuring that the flight is planned and operated clear of airspace reservations and within the boundaries of the random RNAV area by at least 4.6 km (2.5 NM) (or other margin specified by the State concerned) after making full allowance for the navigational accuracy of the type of RNAV equipment carried.~~

~~Example~~

~~A basic RNAV aircraft (accuracy plus or minus 9.3 km (5NM)) should be planned to operate not closer than 14 km (7.5 NM) from the delineations given above. In this respect, reliance must not be placed upon radar vectoring.~~

WORKING DRAFT OF

EUR ANP, VOLUME II, FASID

PART IV

COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

RECORD OF AMENDMENTS

Note: A consolidated text of this section, containing the following approved amendments to the EUR ANP, will be officially disseminated on an annual basis. This document is produced solely as reference material to assist States in the preparation of proposals for amendment to the EUR ANP.

AMENDMENTS

P. f. Amdt. Serial No.	Originator	Date of Approval letter	Date Entered
F04/26-CNS	Eurocontrol	04/02/05	08/03/05
F05/21-CNS	EANPG	21/11/05	10/05/06
F06/12-CNS	EANPG	09/08/07	09/08/07

P. f. Amdt. Serial No.	Originator	Date of Approval letter	Date Entered

INTRODUCTION

1. The material in this part complements that contained in Part I — BORPC and Part IV — CNS of the Basic ANP and should be taken into consideration in the overall planning processes for the EUR region.

2. This part contains the details of the facilities and/or services to be provided to fulfil~~fulfill~~ the basic requirements of the plan and/or as agreed between the provider and user States concerned. Such agreement indicates a commitment on the part of the States concerned to implement the requirements specified. This element of the FASID, in conjunction with the EUR Basic ANP, is kept under constant review by the EANPG in accordance with its schedule of management, in consultation with user and provider States and with the assistance of the ICAO EUR/NAT Regional Office.

~~**OPERATIONAL CONDITIONS — RNAV**~~

~~3. For the establishment of fixed and contingency RNAV routes, the availability of ATS radar should not necessarily constitute a prerequisite. On such routes, separation minima applied by ATC would be in accordance with the prevailing operational environment (i.e. radar or non-radar).~~

~~**ROUTE WIDTH IN RELATION TO TRACK-KEEPING ACCURACY — RNAV**~~

~~4. The assumed navigational performance of aircraft with RNAV capability is described in Part II — GEN, 32 of the EUR Basic ANP and envisages two levels of navigational accuracy (basic and precision). From these accuracy levels,the following values of RNAV route width are derived:~~

~~a) for the basic category of RNAV operations, aircraft will be contained in a total route width of 18.5 km (10 NM) for 95 per cent of the flight time of all aircraft using basic RNAV equipment;~~

~~b) for the precision category of RNAV operations, the specific navigation accuracy is still under evaluation but it is expected to be compatible with total route widths of less than 11 km (6 NM).~~

~~*Note. — Trials are planned to validate the basic criteria and to develop the precision criteria into a recommended route width. These criteria will then be expressed in terms similar to that used for basic RNAV.*~~

~~5. In both cases, aircraft operators should bear the responsibility for ensuring that the RNAV equipment maintains the required level of accuracy by means of prescribed procedures on the part of flight crews and, where the equipment is continuously updated automatically, by the provision in the software of integrity/reliability checks which can detect and reject spurious fixing inputs before the accuracy of the aircraft position can be degraded.~~

~~**DESIGNATORS FOR RNAV ROUTES**~~

~~6. RNAV routes should be assigned suitable route designators in accordance with the provisions of Annex 11 (L, M, N or P for those that form part of the regional network of ATS routes and Q, T, Y or Z for those that are not part of the regional network). The designators "P" and "Q" should be reserved for allocation of RNAV routes of the precision category. [Annex 11, Appendix 1]~~

~~**STATION-REFERENCED NAVIGATION AIDS**~~

~~7. To ensure compatibility in planning and to make the best use of the commonly shared frequency spectrum, requirements for station-referenced aids serving national purposes only should be determined in accordance with the provisions stated for aids serving international purposes.~~

~~8. It is the responsibility of pilots to inform ATS whenever they are unable to navigate in accordance with the clearance or advice received. Having regard to all relevant factors, including those mentioned in 56 of Part IV CNS of the EUR Basic ANP, ground services should not be held responsible for the actual conduct of flights and more especially their navigation performance.~~

AERONAUTICAL FIXED SERVICE (AFS)

~~9.~~3. The Regional AFTN/CIDIN/AMHS Plan is maintained in the ATS Messaging Management Centre (AMC). The plan is updated dynamically (AIRAC cycle) depending on network inventory data input in the AMC database by the Co-operating COM Centre (CCC) operators. The CCC operators in the EUR Region access the plan along with other AMC functions via Internet using the World-Wide Web. The plan is also electronically disseminated to other interested users (e.g. Regional Offices, States outside EUR) by the AMC operator, upon request.

Note1~~Note~~.- Further information on the ATS Messaging Management Centre (AMC) may be found on the EUROCONTROL website at "http://www.eurocontrol.int/amc~~eatmp/cidin~~".

Note 2. - Connectivity details concerning AFTN/CIDIN/AMHS are shown in Supplement Table AFS- 1 of Part IV CNS.

3.

4. Regional ATS On Line Data Interchange (OLDI) planning information is maintained in the EUROCONTROL Flight Message Transport Protocol (FMTP) Database. The FMTP database may be accessed through a web based user interface providing States with a comprehensive and secured tool for updating and querying.

*Note 1. - Further information on the FMTP database may be found on the EUROCONTROL website at "*http://www.eurocontrol.int/communications*".*
Note 2. - Connectivity details concerning OLDI are shown in Supplement Table AFS-2 of Part IV CNS.

5. Regional ATS Direct Speech planning information is maintained in the EUROCONTROL ATM Ground Voice Network Database (AGVN) Database. The AGVN database may be accessed through a web based user interface providing States with a comprehensive and secured tool for updating and querying.

Note 1. - Further information on the AGVN database may be found on the EUROCONTROL website at "http://www.eurocontrol.int/communications".
Note 2. - Connectivity details concerning ATS Direct Speech are shown in Supplement Table AFS-3 of Part IV CNS."

~~10.~~ Use of means other than dedicated bilateral links may be made to meet data communication requirements in cases where performance, availability and cost effectiveness of such means are demonstrably equivalent or superior. ~~The use of means other than dedicated bilateral links to meet data communication requirements should be limited to the following cases:~~

~~a) to overcome temporary disruption of dedicated circuits;~~

~~b) when the traffic does not justify the use of dedicated circuits; and~~

~~c) where performance, availability and cost effectiveness of the means other than dedicated bilateral links are demonstrably equivalent or superior.~~

AERONAUTICAL MOBILE SERVICE (AMS)

Supplement [Tables CNS 1, CNS 2 and CNS 3]

6. Tables CNS 1, 2 and 3 contain detailed information on the provision of aeronautical mobile services for HF and VHF general purpose (GP) requirements, aerodrome and approach control service (VHF), and flight information and area control service (VHF) in the EUR region. Tables CNS1-3 are regularly updated (usually semi-annually) and made available on the following URL - http://www.paris.icao.int/documents_open/files.php?subcategory_id=36

~~11. SELCAL should be provided on GP communication channels using HF or VHF.~~

~~12.~~7. Considerations for reducing requirements for air-ground communications are found in Attachment B~~F~~ to this part.

AERONAUTICAL RADIO NAVIGATION SERVICE

Supplement ~~[~~Table CNS 4]

~~13.~~8. Table CNS 4 lists, in alphabetical order by State, radio navigation aids that are required for navigation on the ATS route network described in Part V.II — ATS of the Basic ANP and/or to support terminal area in the EUR region.~~.and/or instrument approach procedures in the EUR region. A more detailed description of required NAVAID services is given in the explanation of Table CNS 4.~~
9. Supplement Table CNS 4b lists, in alphabetical order by State, procedures and associated facilities that are required for non-precision and precision approaches in the EUR region. Tables CNS4a and 4b are regularly updated (usually semi-annually) and made available on the following URL - http://www.paris.icao.int/documents_open/files.php?subcategory_id=36

~~14.~~10.States should publish information relating to the designated operational coverage of individual radio navigation aids in the appropriate parts of their Aeronautical Information Publications (AIP) and users should be requested not to use aids beyond the coverage specified in such publications.

~~15.~~11.States should accept that the designated operational coverage of en-route navigation aids published in this part (Supplement Table CNS 4), while consistent with the stated operational requirements for support of the ATS routes contained in Part V.II — ATS may, for national reasons, be different from that indicated.

~~16. States should take necessary measures to ensure the continued reliable operation of radio navigation aids once these have been accepted for operational use (30 to 32 refer).~~

FREQUENCY ASSIGNMENT PLANNING FOR AMS

~~17.~~12.In order to avoid restrictions on frequency assignment possibilities due to adjacent channel interference on VHF, States that do not yet have a requirement to implement 8.33~~25~~ kHz channel spacing in the VHF aeronautical mobile service but that are located within air-to-air interference range of another State that has to employ that channel spacing, should provide their ground stations with equipment that, even if it operates on channels spaced by 25~~50 or 100~~ kHz, nevertheless has frequency stability and selectivity appropriate to 8.33~~25~~ kHz channel spacing operation. In addition, States should ensure that any aircraft flying over or within air-to-air interference range of States where 8.33~~25~~ kHz channel spacing is employed in the VHF aeronautical mobile service is fitted with airborne equipment having frequency stability and selectivity appropriate to 8.33 kHz channel spacing operation. ~~25 kHz channel spacing operation. Similar measures should be undertaken by those States that do not yet have a requirement to implement 8.33 kHz channel spacing but that are located within air-to-air interference range of another State that has to employ that channel spacing.~~

~~18.~~13.A number of principles and criteria applicable to the practical conduct of frequency assignment are found in the EUR Frequency Management Manual (EUR Doc 011).

~~19.~~14.Assignment of frequencies to satisfy aeronautical~~airline~~ operational control communication requirements should be made in accordance with the criteria and method shown in the EUR Frequency Management Manual (EUR Doc 011).

15. Coordination of frequency assignments in the ICAO EUR Region is carried out via on-line coordination and registration tool (ref www.paris.icao.int.safire). An outcome of this process is reflected in the FASID Supplement COM2 Table.

~~20.~~16.To ensure adequate operational flexibility, the designated operational coverage of an air/ground channel promulgated for specific ACC sectors should take into account any intended combination of control sectors, notably during slack hours.

FREQUENCY ASSIGNMENT PLANNING FOR RADIO NAVIGATION AIDS

~~21.~~17.Principles and criteria applicable to the practical conduct of frequency assignment to VHF/UHF/SHF aids are found in the EUR Frequency Management Manual (EUR Doc 011).

~~22.~~18.Principles and criteria applicable to the practical conduct of frequency assignment to LF/MF aids are found in the EUR Frequency Management Manual (EUR Doc 011).

~~23.~~19.Coordination of frequency assignments in the ICAO EUR Region is carried out via on-line coordination and registration tool (ref www.paris.icao.int.safire). An outcome of this process is reflected in the FASID Supplement COM3 and COM4 Tables .

20. Tables COM2, COM3 and COM4 are regularly updated (usually semi-annually) and made available at the following URL - http://www.paris.icao.int/documents_open/files.php?subcategory_id=36

~~24. All possible measures should be taken, particularly in cases where frequency congestion exists, to accelerate the replacement of existing VOR equipments that are not in conformity with Annex 10 specifications for the 10 kHz sub-carrier harmonics level, in order to facilitate the implementation of new required 50 kHz spaced VORs.~~
~~[Annex 10, Volume I, Chapter 3, 3.3.5.7 and Attachment C]~~

~~HOLDING~~

~~25. Procedure construction and obstacle clearance criteria for holding patterns should be in accordance with the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part IV.~~

~~ESTABLISHMENT AND IDENTIFICATION OF SIGNIFICANT POINTS~~

~~26. Significant points should be established and identified in accordance with Annex 11. Particular attention should be given to the difficulties that may arise in the spelling and pronouncing of the names by those required to refer to these points whose mother tongue not that of the State that established and named the point.~~
~~[Annex 11, Appendix 2]~~

SIGNIFICANT POINTS MARKED BY A RADIO NAVIGATION AID

~~27.~~21.Designators for significant points serving international and national purposes and marked by a radio navigation aid should be coordinated with the ICAO EUR/NAT Regional Office in order to facilitate selection of the appropriate designators in accordance with the criteria regarding their repetition. [Annex 11, Appendix 2, 2]

22. On-line coordination tool for designators is provided via the following URL: http://www.eurocontrol.int/icard/public/subsite_homepage/homepage.html

SIGNIFICANT POINTS NOT MARKED BY THE SITE OF A RADIO NAVIGATION AID

~~28.~~23.Significant points not marked by the site of a radio navigation aid and serving international and national purposes should only be identified by a five-letter name-code if such points will be required in flight plans or in air-ground communications in order to clearly identify the route to be followed by an

aircraft. These name-codes should be coordinated with the ICAO EUR/NAT Regional Office in order to facilitate the selection of appropriate designators in accordance with the criteria regarding their repetition. [Annex 11, Appendix 2, 3]

24. On-line coordination tool for name-codes is provided via the following URL: http://www.eurocontrol.int/icard/public/subsite_homepage/homepage.html

~~29.~~25. In all other cases, the identification chosen should only be subject to local, or if required, bilateral coordination between the ATC units concerned.

~~**FLIGHT TESTING AND MAINTENANCE OF RADIO NAVIGATION AIDS**~~

~~30. Operational and technical ground services should ensure that flight testing and routine maintenance of those elements of the radio navigation service that affect the safety and regularity of flight operations are, to the extent possible, conducted outside those periods when air traffic depends more than usual on the aids concerned. (See also Attachment E to Part III AOP for Category I installations.)~~

~~31. To avoid duplication of effort and material and to keep costs within acceptable limits, cooperative arrangements regarding flight testing of radio navigation aids should, whenever possible, be concluded between interested States.~~

~~32. The frequency of flight testing should as far as possible be reduced by the use of suitable ground monitoring techniques.~~

~~PRIMARY AND SECONDARY~~ SURVEILLANCE SYSTEMS~~RADAR~~

26. Detailed information and guidance related to the provision of surveilance systems~~primary and secondary radar~~ may be found in Attachments C, D, E and G of this part.

~~33.~~27. Supplement Table~~Chart~~ CNS 5 provides information on surveillance systems used in~~4 shows the requirements for primary and secondary radar coverage for~~ the ICAO EUR region.

28. Supplement Table CNS 6 lists SSR Mode-S IC allocations for the ICAO EUR Region.

29. Supplement Table CNS 7 lists SSR Code Allocations for the ICAO EUR Region.

30. These Tables are regularly updated (usually semi-annually) and made available on the following URL - http://www.paris.icao.int/documents_open/files.php?subcategory_id=36

- END -

European and North Atlantic Office

Appendix I – Proposal for Amendment to Doc 7030 regarding PBN
(paragraph 4.4.43 refers)

PROPOSAL FOR AMENDMENT OF THE REGIONAL SUPPLEMENTARY PROCEDURES, NAT REGION (Doc 7030/5)

(Serial No.:)

a) Regional Supplementary Procedures:

Doc 7030/5 – EUR SUPPs

b) Proposed by:

EANPG

c) Proposed amendment:

Editorial Note: Amendments are arranged to show deleted text using strikeout (), and added text with grey shading (text to be inserted).

1. **Insert** the following in EUR SUPPs, Glossary

Insert new text as follows:

B-RNAV	basic area navigation, also referred to as RNAV 5
PBN	Performance Based Navigation
P-RNAV	precision area navigation, also referred to as RNAV 1
RNAV-5	Area navigation using a 95% containment of 5 NM, also referred to as B-RNAV in the EUR
RNAV-1	Area navigation using a 95% containment of 1 NM, also referred to as P-RNAV in the EUR

End of new text

2. **Insert** the following in EUR SUPPs, Chapter 1 – Flight Rules, paragraph 1.2 – Instrument Flight Rules (IFR)

Insert new text as follows:

Note 1.— Throughout the entire document reference is made to RNAV-5 and to RNAV-1. RNAV-5 is considered as requiring the same containments as B-RNAV and RNAV-1 as P-RNAV. It has to be noted that with the implementation of PBN applications on a world-wide basis, the naming of all systems and certification requirements will be harmonised.

End of new text

3. **Delete** the following in NAT SUPPs, Chapter 2 – Flight plans, paragraph 2.1.2 – Area Navigation (RNAV) Specification and replace by "Nil".

4. **Insert** the following in EUR SUPPs, Chapter 4 – Navigation, paragraph 4.1.1.2. – RNAV 5

Insert new text as follows:

4.1.1.2.1 RNAV 5

Area of applicability

4.1.1.2.1.1 The following RNAV 5 provisions shall apply to operations conducted under IFR on designated RNAV 5 routes within the following FIRs:

Amman, Beirut, Cairo, Damascus and Tel Aviv.

Means of compliance

4.1.1.2.1.2 Within the FIRs specified in 4.1.1.2.1.1, only RNAV-equipped aircraft having a navigation accuracy meeting RNAV 5 may plan for operations under IFR on those ATS routes and within those level bands which have been specified as requiring RNAV 5 in the relevant State AIP or NOTAM.

4.1.1.2.1.3 Aircraft operating under IFR on designated RNAV 5 routes shall be equipped with, as a minimum, RNAV equipment meeting the requirements laid down in *EASA AMC 20-4, entitled Guidance Material On Airworthiness Approval And Operational Criteria For The Use Of Navigation Systems In European Airspace Designated For Basic RNAV Operations*.

4.1.1.2.1.4 Conformance to the navigation requirement shall be verified by the State of Registry or the State of the Operator, as appropriate.

Note.— Guidance material concerning navigation accuracy requirements is contained in the Performance-based Navigation Manual *(Doc 9613).*[*]

Area of applicability

4.1.1.2.1.5 The provisions in respect of RNAV-5(B-RNAV) en-route operations shall apply to all such operations conducted under IFR on the entire ATS route network as notified by the appropriate authorities in the following flight information regions (FIRs)/upper flight information regions (UIRs):

Amsterdam, Ankara, Athinai, Baku, Barcelona, Bodø, Bordeaux, Bratislava, Bremen, Brest, Brindisi, Bruxelles, Bucuresti, Budapest, Canarias (AFI area of applicability), Casablanca, Chisinau, France, Hannover, Istanbul, Kharkiv, København, Kyiv, Langen, Lisboa, Ljubljana, London, L'viv, Madrid, Malta, Marseille, Milano, München, Nicosia, Odessa, Oslo, Paris, Praha, Reims, Rhein, Riga, Roma, Rovaniemi, Scottish, Shannon, Simferopol, Skopje, Sofia, Stavanger, Sweden, Switzerland, Tallinn, Tampere, Tbilisi, Tirana, Trondheim, Tunis, Varna, Vilnius, Warszawa, Wien, Yerevan, Zagreb.

Means of compliance

4.1.1.2.1.6 Conformance to the navigation requirement shall be verified by the State of Registry or the State of the Operator, as appropriate.

Note.— Guidance material concerning navigation requirements associated with RNAV-5 (B-RNAV) operations is contained in EASA AMC 20-4, entitled Guidance Material On Airworthiness Approval And Operational Criteria For The Use Of Navigation Systems In European Airspace Designated For Basic RNAV Operations

End of new text

5. Insert the following in EUR SUPPs, Chapter 4 – Navigation, paragraph 4.1.1.4. – RNAV 1

Insert new text as follows:

Area of applicability

4.1.1.4.1 The provisions in respect of RNAV-1 (P-RNAV) may be applied whenever RNAV terminal control area (TMA) procedures, excluding the final and missed approach segments, are used.

Note.— The carriage of RNAV-1 equipment has not been mandated in the EUR Region.

Means of compliance

4.1.1.4.2 Conformance to the navigation requirement shall be verified by the State of Registry or the State of the Operator, as appropriate.

Note.— Guidance material concerning navigation requirements associated with RNAV-1 (P-RNAV) operations are contained in the JAA Temporary Guidance Leaflet (TGL) No. 10rev1.

End of new text

6. Delete the following in EUR SUPPs, Chapter 4 – Navigation, paragraph 4.1.1.5. – pre-PBN navigation specifications

4.1.1.5.1 and 4.1.1.5.2 with all sub-paragraphs and replace by "Nil"

d) Proposer's reason for amendment:

Harmonise the EUR SUPPs provisions with the ICAO PBN Manual (Doc 9613) and ICAO Assembly Resolution 36-23.

e) Proposed implementation date of the amendment:

Upon approval by the Council.

f) Proposal circulated to the following States and international organizations:

The proposal has been circulated to the following States and International Organizations:

g) Secretariat comments:

None

- END -

Appendix J -

Questionnaire on the progress of ICAO Assembly Resolution 36-23 implementation

(paragraph 4.4.48)

Please provide the status of implementation of ICAO Assembly Resolution 36-23on PBN objectives in your State in the following areas:

- ***Implement RNAV/RNP operations in line with ICAO PBN Manual (Doc 9613)***

Response – Implemented or Planned by XX/XX/201X

- ***Implement APV.***

Response –

Percentage to be achieved by 2014 – XX%

Percentage to be achieved by 2016 – XX%

Appendix K – LPR Implementation Plans

(paragraph 4.5.8)

IMPLEMENTING AND MAINTAINING THE ICAO LANGUAGE PROFICIENCY REQUIREMENTS

(RECOMMENDED ACTION PLAN 2008 - 2011)

Note: State – national legal and/or regulatory authority responsible for adoption and implementation of ICAO Standards (Annex 1).

ANSP (Air Navigation Service Provider) – organization or entity responsible for the provision of air traffic services (Annex 11).

AO (Airline Operator) – airline or company responsible for flight operations (Annex 6).

N	ACTIVITY - IMPLEMENTATION	RESPONSIBLE BODY/*DATE*	REMARKS
	For States that have failed to meet the Language Proficiency Requirements by 5 March 2008		
1.	Notify ICAO and all other Contracting States of any differences to language proficiency requirements.	States. *As soon as possible if not already done.*	Publish in national AIP and on the ICAO FSIX website (http://www.icao.int/fsix)/.
2.	Develop and publish a national language proficiency implementation plan.	States. *As soon as possible if not already done.*	See Attachment B to State letter AN 12/44.6-07/68: Guidelines for the development of a language proficiency implementation plan, and Note 2 below.
3.	The plan should be updated at least once a year.	States.	
4.	Select test(s) to meet ICAO language proficiency requirements. • Obtain certification and/or accreditation of selected test(s) from national supervisory authority • Select and train personnel to administer and conduct the test and rate candidate performance • Obtain certification and/or accreditation of selected and trained personnel involved in testing • Familiarize pilots and controllers with the format of the test(s) and procedures for administration of the test.	States, ANSPs, AOs. *As soon as possible.*	ICAO Doc 9835. ICAO Circular 318. See Notes 1and 3a and 3b below.
5.	Conduct English language training for pilots and controllers appropriate to reach ICAO level 4 (Operational) proficiency.	ANSPs, AOs. *Before 05 March 2011.*	Applies equally to other languages used in aeronautical communication.

N	ACTIVITY - IMPLEMENTATION	RESPONSIBLE BODY/*DATE*	REMARKS
6.	Implement a schedule of regular testing of pilots and controllers.	States, ANSPs, AOs. *As soon as possible if not already done*	ICAO recommendations: at least every 3 years for a level 4 proficiency and at least every 6 years for a level 5 proficiency.
7.	Conduct qualification testing of pilots and controllers.	States, ANSPs, AOs, test providers. *On-going process.*	The first round to be completed by 05 March 2011 if not already done.
8.	Ensure annual refresher training for raters and interlocutors.	States, test providers	To maintain testing standards.
9.	Develop and implement a schedule of language refresher training to maintain language proficiency	States, ANSPs, AOs. *As soon as possible if not already done.* .	Ensure that current level 4 is not eroded.
10.	Implement procedures to deal with pilots and controllers who fail to meet the ICAO language proficiency requirements (Level 4 Operational)	States, ANSPs, AOs. *As soon as possible if not already done.* .	Address social issues (e.g. suspension/loss of license)
11.	Implement language awareness programmes to ensure that native and expert speakers of English communicate in a manner that is easily understandable to non-native speakers of English proficient at ICAO level 4.	States, ANSPs, AOs. *As soon as possible if not already done.*	Applies equally to other languages used in aeronautical communication.
	For States that are in compliance with the Language Proficiency Requirements		
12.	Implement a schedule for regular testing of pilots and controllers.	States, ANSPs, AOs. *As soon as possible if not already done.*	ICAO recommendations: at least every 3 years for level 4 proficiency and at least every 6 years for level 5 proficiency.
13.	Ensure annual refresher training for raters and interlocutors.	States, test providers	To maintain testing standards
14.	Develop and implement a schedule of language refresher training to maintain language proficiency	States, ANSPs, AOs. *As soon as possible if not already done*.	Ensure that current level 4 is not eroded.
15.	Implement procedures to deal with pilots and controllers who fail to meet level 4 of the ICAO language proficiency requirements	States, ANSPs, AOs. *As soon as possible if not already done*. .	Address social issues (e.g. suspension/loss of license).
16.	Implement language awareness programmes to ensure that native and expert speakers of English communicate in a manner that is easily understandable to non-native speakers of English proficient at ICAO level 4.	States, ANSPs, AOs. *As soon as possible if not already done.*	Applies equally to other languages used in aeronautical communication.

***Note** 1: ICAO Doc 9835 First Edition – "Manual on Implementation of ICAO Language Proficiency Requirements" and ICAO Circular 318 – "Language Testing Criteria for Global Harmonization" provide guideline material and valuable information on preparing training and testing programmes.*

***Note 2**: The national language proficiency implementation plan (referring to ICAO Resolution A36-11 – Proficiency in the English Language used for radiotelephony communication) should include the following:*
a)a timeline for adoption of the language proficiency requirements into national regulations;
b)a timeline for establishment of language training and assessment capabilities;
c) a description of a risk-based prioritization system;
d) a procedure for endorsing licences to indicate the holders' language proficiency level;
e) designation of a national focal point on language proficiency requirements implementation.

Attachment B to State letter AN 12/44.6-07/68: Guidelines for the development of a language proficiency implementation plan with some recommendations and instructions on how to work out a plan can be found on the ICAO Flight Safety Information Exchange (FSIX) Website at http://www.icao.int/fsix/.

***Note 3a**: Recommended qualifications for raters and interlocutors (ref.: www.paris.icao.int)*

***Administrator** – a person familiar with the preparation and conduct of tests/examinations e.g. logistics, security, candidate briefing .*

***Rater** – a person with a level of proficiency in the English language sufficient to evaluate performance up to level 5 in compliance with the holistic descriptors and the ICAO Language Proficiency Rating Scale;*
For details see the EANPG48 Report Appendix J – Recommended qualifications for raters of tests to meet the ICAO language proficiency requirements.

***Interlocutor** - a person with a level of proficiency in the English language sufficient to conduct the selected oral test (tests);*
For details see the EANPG48 Report Appendix K – Recommended qualifications for interlocutors of tests to meet the ICAO language proficiency
requirements.

***Note 3b**: Recommended practices to select (or develop) a language proficiency test to meet the ICAO requirements (ref.: www.paris.icao.int)*

– END –

Appendix L – Draft eTOD FASID Table

(Paragraph 4.6.10 refers)

FASID TABLE AIS-X — eTOD REQUIREMENTS

EXPLANATION OF THE TABLE

Column

1 Name of the State, territory or aerodrome for which electronic Terrain and Obstacle Data (eTOD) are required with the designation of the aerodrome use:

RS — international scheduled air transport, regular use
RNS — international non-scheduled air transport, regular use
RG — international general aviation, regular use
AS — international scheduled air transport, alternate use

2 Runway designation numbers

3 Type of each of the runways to be provided. The types of runways, as defined in Annex 14, Volume 1, Chapter I, 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.

4 Requirement for the provision of Terrain data for Area 1, shown by an ‘‘X’’ against the State or territory to be covered.

5 Requirement for the provision of Terrain data for Area 2 (TMA), shown by an ‘‘X’’ against the aerodrome to be covered.

6 Requirement for the provision of Terrain data for Area 2 (45 Km radius from the ARP), shown by an ‘‘X’’ against the aerodrome to be covered.

7 Requirement for the provision of Terrain data for Area 3, shown by an ‘‘X’’ against the aerodrome to be covered.

8 Requirement for the provision of Terrain data for Area 4, shown by an ‘‘X’’ against the runway threshold to be covered.

9 Requirement for the provision of Obstacle data for Area 1, shown by an ‘‘X’’ against the State or territory to be covered.

10 Requirement for the provision of Obstacle data for Area 2 (TMA), shown by an ‘‘X’’ against the aerodrome to be covered.

11 Requirement for the provision of Obstacle data for Area 2 (45 Km radius from the ARP), shown by an ‘‘X’’ against the aerodrome to be covered.

12 Requirement for the provision of Obstacle data for Area 3, shown by an ‘‘X’’ against the aerodrome to be covered.

13 Requirement for the provision of Obstacle data for Area 4, shown by an ‘‘X’’ against the runway threshold to be covered.

14 Remarks (timetable for implementation)

Note: For Columns 4 to 13 use the following symbols:

X- Required but not implemented
XI- Required and implemented

eTOD Requirements (EUR FASID Table AIS-X)

STATE, TERRITORY OR AERODROME FOR WHICH eTOD IS REQUIRED			TERRAIN DATA REQUIRED					OBSTACLE DATA REQUIRED					REMARKS
CITY/AERODROME	RWY No	RWY TYPE	Area 1	Area 2		Area 3	Area 4	Area 1	Area 2		Area 3	Area 4	
				TMA	45 Km				TMA	45 Km			
1	2	3	4	5	6	7	8	9	10	11	12	13	14

-END-

Appendix M – WAFS and SADIS developments

(Paragraph 4.7.3 refers)

WAFS AND SADIS DEVELOPMENTS

IMPORTANT NOTE: In view of the decisions and conclusions of WAFSOPSG/5 (held 16 to 18 September 2009), some of the forthcoming developments to the WAFS expressed below have been modified or are no longer expected (notably paragraph 2.2 of section D.1 below). Users are therefore encouraged to visit the WAFSOPSG website (www.icao.int/anb/wafsopsg/) for a full transcript of the WAFSOPSG/5 report.

A.1 WAFS DEVELOPMENTS SINCE METG/18

1. Recent Developments

1.1 Development of WAFS upper-air data in the GRIB 2 code form

1.1.1 WAFSOPSG/4 endorsed the WAFC Provider States to continue with the development of WAFS upper-air forecasts in the GRIB 2 code form, including new forecasts for icing, turbulence and CB cloud. The two WAFCs have been coordinating their development efforts to ensure that these gridded forecasts are harmonised with respect to content, encoding and compression algorithms. Coordination activities have included a science co-ordination meeting in Washington DC in April 2009.

1.1.2 GRIB 2 WAFS data benefits from higher spatial and temporal resolution, and additional fields, compared to its GRIB 1 predecessor – for example, the GRIB 2 WAFS data is based on a regular 1.25*1.25 degree (unthinned) grid, T+6 to T+36 at 3-hourly time intervals, and includes additional flight level information at FL270, FL320 and FL360 and icing, turbulence and CB cloud forecasts.

1.1.3. The WAFCs have provided a progress report to the WAFSOPSG/5 meeting (September 2009) outlining the steps taken towards delivery of GRIB 2 WAFS data. The progress report includes a summary of verification that both WAFCs have conducted with respect to icing, turbulence and CB cloud forecasts. In addition, the WAFC Provider States have prepared a general guidance document on the intended use of the gridded WAFS forecasts for icing, turbulence and CB cloud.

1.1.4. WAFSOPSG/5 will be expected to review the status of development of the GRIB 2 forecasts and determine their future operational implementation.

Suggested action: Review discussions at WAFSOPSG and associated guidance material.

1.2 Coordination between the WAFCs and the TCACs

1.2.1 In response to WAFSOPSG Conclusion 4/8, the WAFC Provider States have conducted a coordination trial with the Tropical Cyclone Advisory Centres, with a view to determining the feasibility of, and benefits for the WAFS from, establishing and maintaining contact with the TCACs in order the harmonise the information on TC in the WAFS SIGWX forecasts and the TCAC advisories.

1.2.2 The findings from the web-based trial will be presented to the WAFSOPSG/5 meeting in order to determine whether such coordination activities should become standard practice.

Suggested action: Note this information only.

1.3 WAFC backup tests

1.3.1 The WAFC Provider States have continued to test their SIGWX backup procedures in the event that one WAFC was unable to produce SIGWX forecasts in the BUFR-code and PNG-chart format. Routine backup tests are conducted quarterly, with the results posted on the WAFSOPSG website at URL:
http://www.icao.int/anb/wafsopsg/Recent%20Chronology%20of%20WAFC%20Backup%20Tests.pdf
Tests over the last 12 months have been largely successful, and transparent for the overwhelming majority of WAFS users.

1.3.2 Forthcoming backup tests are outlined at URL:
http://www.icao.int/anb/wafsopsg/Forthcoming%20WAFC%20Backup%20Tests.pdf.
Notification of WAFC backup tests is promulgated on the SADIS broadcasts in advance, by way of administrative messages.

1.3.3. In addition, WAFC backup procedures are outlined at:
http://www.icao.int/anb/wafsopsg/backup.pdf.

Suggested action: Note this information and consider visiting the WAFSOPSG website to obtain information pertaining to WAFC backup tests and procedures.

2. Forthcoming developments

2.1 Corrections to WAFS SIGWX forecasts

2.1.1 WAFSOPSG/4 endorsed the WAFC Provider States to introduce a practical and minimal procedure to handle corrections to WAFS SIGWX forecasts (in BUFR code and/or PNG chart form). The procedure would involve the issuance of a plain text administrative message drawing users attention to the identified error. The BUFR data and/or PNG charts themselves, which contain erroneous data, would not be re-issued due to downstream implications detailed in the WAFSOPSG/4 report.

2.1.2 In view of concerns expressed by the 12th meeting of the CNS/MET sub-group of the APANPIRG, implementation of WAFS SIGWX corrections in 2008 was deferred. General guidance on how an operator may wish to handle the receipt of such administrative messages has been drafted by the WAFCs for WAFSOPSG/5. Subject to endorsement by WAFSOPSG/5, corrections to WAFS SIGWX may be introduced before the end of 2009.

2.1.3 The WAFCs intend to use the following WMO bulletin headers to issue the plain text administrative messages: FXUK65 EGRR (for corrections to WAFC London SIGWX) and FXUS65 KKCI (for corrections to WAFC Washington SIGWX). Implementation will be communicated via the WAFS Change Implementation Notice Board at URL:
http://www.icao.int/anb/wafsopsg/WAFS%20change%20notice%20board.pdf.

Suggested action: Monitor the progress towards corrections to WAFS SIGWX through the WAFSOPSG and WAFS Change Notice Board.

2.2 Development of WAFS web-based server

2.2.1 In addition to the endorsement of the development of GRIB 2 WAFS data, outlined above, WAFSOPSG/4 also endorsed the development by the WAFC Provider States of a web-based distribution of WAFS forecasts for the intended use in flight documentation for improved access and visualisation of WAFS forecasts (WAFSOPSG Conclusion 4/20 refers).

2.2.2 This new offering from the WAFCs will deliver a minimum set of WAFS charts, providing objective gridded forecasts of icing, turbulence and CB cloud derived from GRIB 2 formatted data. The web service, one from each WAFC, will be targeted primarily at the least developed countries which may not be in a position to convert the GRIB and/or BUFR coded SIGWX forecasts into chart form.

2.2.3 A progress report on the development of the WAFC web services has been submitted to WAFSOPSG/5. The WAFCs expect this new service offering to be available in 2010 or 2011.
Suggested action: Monitor the development of the web-based distribution of WAFS forecasts through the WAFSOPSG.

2.3 Workshop on the gridded WAFS forecasts for icing, turbulence and CB cloud

2.3.1 In order to facilitate the implementation of the gridded forecasts for icing, turbulence and CB cloud, the WAFC Provider States, in co-ordination with ICAO and WMO, convened a two-day workshop on the intended use and visualisation of these new products.

2.3.2 The workshop took place at the ICAO Regional Office in Paris on 14 and 15 September 2009, immediately prior to WAFSOPSG/5.

Suggested action: Consider participating in the workshop, where resources allow.

2.4 Training for States on the use and visualisation of new gridded WAFS forecasts

2.4.1 In addition to the WAFS workshop, outlined above, the WAFC Provider States have been tasked to design training for States on the use and visualisation of the gridded forecasts for icing, turbulence and CB cloud.

2.4.2 A training proposal in the form of web-based interactive tutorials will be presented by the WAFCs at WAFSOPSG/5. Subject to endorsement, the training material should become available in 2010 or 2011.

Suggested action: Consider what training needs your State will have regarding the use and visualisation the new gridded products.

2.5 Improved visualisation of WAFS forecasts

2.5.1 An ad-hoc group of the WAFSOPSG (China as Rapporteur) has been studying how the visualisation of WAFS forecasts could be improved to ensure that the most relevant WAFS forecasts be presented in terms of space and time in flight documentation. These improvements to visualisation are expected to better serve the needs of the long-haul community.

2.5.2 Initial findings were presented to WAFSOPSG/4 (February 2008), with further proposals made at WAFSOPSG/5 (September 2009). The proposals are likely to include the concatenation of charts based on the gridded WAFS forecasts for icing, turbulence and CB cloud.

Suggested action: Monitor the progress of developing concatenated WAFS forecasts through the WAFSOPSG.

2.6 WAFS output performance indicators

2.6.1 WAFSOPSG/4 invited the WAFC Provider States to assess the possibility of providing additional WAFS output performance indicators. This invitation included wind and temperature

performance indicators for the WMO defined area covering Australia and New Zealand, as well as globally for all standard forecast levels (in digital and chart form).

2.6.2 Wind and temperature performance indicators for Australia and New Zealand were added to the WAFCs websites during 2008. WAFC London data can be viewed at http://www.metoffice.gov.uk/icao/index.html and WAFC Washington data at http://www.emc.ncep.noaa.gov/gmb/icao/ncep_scores.html.

2.6.3 WAFC Washington has added performance indicators for the 850, 700, 500, 400, 300, 275, 225, 200, 150 and 100hPa standard levels, whilst WAFSOPSG/5 will be expected to endorse corresponding levels be added to the WAFC London web site.

2.6.4 The WAFCs have studied the cost and feasibility of providing global performance indicators in digital and chart format. The findings of this study will be presented to WAFSOPSG/5 in order for the group to determine whether such an undertaking should be pursued.

Suggested action: Access the output performance indicator websites of the two WAFCs and monitor the further development of these products through the WAFSOPSG.

A.2 SADIS DEVELOPMENTS SINCE METG/18

1. Recent developments

1.1 Cessation of the SADIS 1G satellite broadcast

1.1.1 In accordance with SADISOPSG Conclusion 9/15 and 13/24, the SADIS first-generation (SADIS 1G) satellite broadcast was withdrawn from service on 05 January 2009. Any SADIS 1G user yet to migrate to a SADIS second-generation (SADIS 2G) VSAT reception system can obtain procurement guidelines within the SADIS User Guide (URL: http://www.icao.int/anb/sadisopsg/sug/) and via the Met Office SADIS homepage (URL: http://www.metoffice.gov.uk/sadis/index.html).

Suggested action: Note this information only.

1.2 Update to the SADIS User Guide

1.2.1 A Fourth Edition of the SADIS User Guide (SUG) was endorsed by SADISOPSG/13. Extensive amendments to the SUG were necessary to take into account the phasing out of the SADIS 1G broadcast, Amendment 74 to Annex 3, and the agreement by the IAVWOPSG to use PNG chart form instead of T4 charts for the volcanic ash advisories in graphical form. No paper copies of the SUG will be distributed by ICAO. Instead, users are encouraged to visit URL: http://www.icao.int/anb/sadisopsg/sug/ to obtain the latest version and associated Annexes 1 to 4.

Suggested action: Visit URL: http://www.icao.int/anb/sadisopsg/sug/ to obtain the latest SADIS User Guide, Annexes 1 to 4.

1.3 Development of alternative SADIS 2G hardware

1.3.1 The SADIS Provider has completed acceptance tests of the NetSys SADIS Transcoder (NST) as an alternative SADIS 2G reception unit. The NST is available only as part of a complete NetSys SADIS 2G package, and presents data as a UDP-multicast output. Further information on the NST can be obtained direct from the supplier via URL: http://www.netsys.co.za/ or email: info@netsys.co.za.

1.3.2 In addition, the SADIS Provider has completed acceptance tests of a VADOS VadEDGE 4100-series router for SADIS 2G. In view of a market trend away from the X.25 protocol, VADOS

Systems developed the 4100 as an entry-level IP-only router that is compatible with SADIS 2G reception systems. The VadEDGE 4100 presents data as TCP/IP or UDP-multicast. Further information on the VadEDGE 4100 can be obtained direct from the supplier at URL: http://www.vados.com/new/index.php or email: sadis2g@vados.com.

1.3.3 Details of the NetSys SADIS Transcoder and the VADOS VadEDGE 4100 are contained within the SADIS User Guide.

Suggested action: Consider whether your SADIS reception system could benefit from these new service offerings and contact the vendors directly for further assistance.

1.4 Initial phase of enhancements to the SADIS FTP service

1.4.1 In April 2009, SADIS Provider implemented an initial phase of enhancements to the SADIS FTP service. The SADIS FTP service now resides on virtual server hardware and benefits from cross-hall IT resilience. These enhancements were transparent to users, with existing usernames, passwords, IP/host address and directory/file structure remaining unchanged.

Suggested action: Note this information only.

1.5 Procurement of SADIS 2G data backup arrangement

1.5.1 The SADIS Provider State is continuing with the development of a SADIS 2G data backup arrangement with the US NWS Telecommunications Gateway (NWSTG) and the SADIS OPMET Gateway (NATS).

1.5.2 Once configured and tested, an ISDN data backup link would be instigated in the event that the UK Met Office was unable to pass SADIS data from Exeter to the satellite uplink facility at Whitehill. WAFS data would be routed from the NWSTG to the SADIS Gateway over ISDN, then onward routed to Whitehill for dissemination across the SADIS 2G satellite broadcast.

1.5.3 The SADIS Provider State expects this data backup capability to be available operationally in 2009.

Suggested action: Note this information only.

1.6 SADIS workstation software evaluations

1.6.1 At the request of SADISOPSG/13, the SADIS Provider has conducted a third round of SADIS workstation software evaluations. The assessments were necessary in light of changes to the SADIS broadcast since the previous round of evaluations in 2005/2006, notably the adoption of Amendment 74 to Annex 3 and the cessation of the SADIS 1G broadcast.

1.6.2 By May 2009, the SADIS Provider had conducted 8 SADIS workstation software evaluations, with 7 of the packages available fulfilling the software requirements of SADISOPSG/13. The results of these evaluations will be presented to SADISOPSG/14 and are also available to view at URL: http://www.metoffice.gov.uk/sadis/software/index.html.

1.6.3 It remains the responsibility of the user to ensure that procured software meets their full requirements. It is not intended that the software evaluations fulfil this task. The results from the software evaluations may be used as one additional source of information to aid any procurement process but should not be viewed in isolation of other important procurement requirements.

Suggested action: Consider whether your workstation software continues to fulfil your local user needs and the requirements of the SADISOPSG. If not, consider consulting you workstation provider directly.

1.7 GRIB 2 WAFS data trial on SADIS 2G

1.7.1 To facilitate the implementation of WAFS upper-air forecasts in GRIB 2 code form, the SADIS Provider has conducted initial trials using test data on the SADIS 2G satellite broadcast aimed at determining the likely transmission performance of this new data set.

1.7.2 In April 2009, the SADIS Provider disseminated two uncompressed GRIB 2 data volumes to a small number of SADIS 2G users. These initial trials demonstrated that a 50MB data volume (uncompressed GRIB 2 WAFS data) would take almost 2 hours to disseminate across the existing SADIS 2G infrastructure. Compare this is an existing GRIB 1 WAFS data set, amounting to 10MB (uncompressed), which takes in the region of 20-25 minutes to broadcast across SADIS 2G.

1.7.3 Further dissemination trials are planned in late 2009 pending availability of compressed GRIB 2 trial data from WAFC London. The WAFCs expect to achieve a compression ratio of around 2:1, thus allowing the 50MB data volume to fall to around 25MB, with a envisaged fall in transmission time on SADIS 2G to less than 1 hour. The results of the dissemination trials will be discussed within the SADISOPSG and WAFSOPSG in order to determine the future implementation of the GRIB 2 data, and any changes that may be necessary to accommodate the new data on the SADIS 2G service.

Suggested action: Review discussions at SADISOPSG and WAFSOPSG.

2. Forthcoming developments

2.1 Further enhancements to the SADIS FTP service

2.1.1 The SADIS Provider has received endorsement from SADISOPSG/14 (July 2009) to progress with the development of a second phase of SADIS FTP enhancements. This second phase will be aimed at delivering a SADIS FTP Secure service in 2010. Some of the technology utilised to deliver the initial phase of developments (outlined above) will be used to deliver the phase two enhancements – e.g. virtual server environment.

2.1.2 Once operational, the SADIS FTP Secure service will be provided in parallel with the existing SADIS FTP service for a period of at least 12 months, to allow users the opportunity to migrate to the new (more secure) service. Existing usernames/passwords and IP/host address will change in order to access the new SADIS FTP Secure service.

Suggested action: Monitor the development of a SADIS FTP Secure service through the SADISOPSG.

2.2 Distribution of GRIB 2 WAFS data on SADIS

2.2.1 Further to the discussion above relating to the development of GRIB 2 WAFS data and the likely transmission performance of this data on the SADIS 2G satellite broadcast, the SADIS Provider is expected to make the new data available (initially) on the SADIS FTP service in early 2010.

2.2.2 The SADISOPSG will be expected to determine whether any changes are necessary to the existing SADIS 2G infrastructure in order to accommodate GRIB 2 WAFS data via satellite.

Suggested action: Access the GRIB 2 data on SADIS FTP (when available) and monitor discussions at SADISOPSG relating to the availability of the gridded data via SADIS 2G.

Appendix N - IATA requirements for TAF

(Paragraph 4.7.6 refers)

B.1 24-hour TAF requirements AOP aerodromes

EDHI	FINKENWERDER	Germany
EDHL	LUEBECK-BLANKENSEE	Germany
EDLP	PADERBORN-LIPPSTADT	Germany
EDLW	DORTMUND/WICKEDE	Germany
EDNY	FRIEDRICHSHAFEN	Germany
EDRZ	ZWEIBRUECKEN	Germany
EDSB	KARLSRUHE/BADEN-BADEN	Germany
EGPE	INVERNESS	United Kingdom
EPBY	BYDGOSZCZ/SZWEREDOWO	Poland
EPLL	LODZ/LUBLINEK	Poland
EPWR	WROCLAW	Poland
ESDF	RONNEBY	Sweden
ESOW	VAESTERAS	Sweden
ESSV	VISBY	Sweden
ETNL	ROSTOCK-LAAGE	Germany
LBBG	BOURGAS	Bulgaria
LDOS	OSIJEK/KLISA	Croatia
LDZA	ZAGREB/PLESO	Croatia
LEAM	ALMERIA	Spain
LEBB	BILBAO	Spain
LECO	LA CORUNA	Spain
LEGR	GRANADA	Spain
LEIB	IBIZA	Spain
LEJR	JEREZ	Spain
LELC	MURCIA	Spain
LEMH	MENORCA	Spain
LERS	REUS	Spain
LEVD	VALLADOLID/VILLANUBLA	Spain
LEVT	VITORIA/FORONDA	Spain
LEVX	VIGO	Spain
LEXJ	SANTANDER	Spain
LEZL	SEVILLA/SAN PABLO	Spain
LFMH	SAINT ETIENNE	France
LFTW	NIMES	France
LGAL	ALEXANDROUPOLIS/DIMOKRITOS	Greece
LGKP	KARPATHOS	Greece
LGKV	KAVALA	Greece
LGLM	LIMNOS	Greece
LGMK	MIKONOS	Greece
LGRX	ARAXOS	Greece
LGSR	SANTORINI	Greece
LGZA	ZAKINTHOS	Greece
LIBD	BARI/PALESE MACCHIE	Italy
LIBP	PESCARA	Italy
LIBR	BRINDISI	Italy
LICA	LAMEZIA TERME	Italy

LICT	TRAPANI	Italy
LIEA	ALGHERO	Italy
LIEE	CAGLIARI	Italy
LIPH	TREVISO	Italy
LIPK	FORLI	Italy
LIPR	RIMINI/MIRAMARE	Italy
LIPX	VERONA/VILLAFRANCA	Italy
LJLJ	LJUBLJANA	Slovenia
LJMB	MARIBOR	Slovenia
LRBS	BUCHAREST/BANEASA	Romania
LRCK	CONSTANTA/KOGALNICEANU	Romania
LRSB	SIBIU	Romania
LRTR	TIMISOARA/GIARMATA	Romania
LTFJ	ISTANBUL SABIHA GOEKCEN	Turkey
LZKZ	KOSICE	Slovakia
UAKK	KARAGANDA	Kazakhstan
UKHH	KHARKOV	Ukraine
UKLR	RIVNE	Ukraine

B.2 24-hour TAF requirements non-AOP aerodromes

EGAC	BELFAST CITY	United Kingdom
EGBE	COVENTRY	United Kingdom
EGHH	BOURNEMOUTH	United Kingdom
EGNH	BLACKPOOL	United Kingdom
EGNM	LEEDS BRADFORD	United Kingdom
EGNV	DURHAM TEES VALLEY	United Kingdom
EGTE	EXETER	United Kingdom
EPKS	POZNAN KRZESINY	Poland
LBPD	PLOVDIV	Bulgaria
LEAS	ASTURIAS	Spain
	BADAJOZ/TALAVERA LA	
LEBZ	REAL	Spain
LFSD	DIJON/LONGVIC	France
LHSM	SARMELLEK/BALATON	Hungary

B.3 30-hour TAF requirements AOP aerodromes

EDDL	DUSSELDORF	Germany
EGBB	BIRMINGHAM	United Kingdom
EGNT	NEWCASTLE	United Kingdom
LCLK	LARNACA	Cyprus
LGAV	ATHENS	Greece
LIMC	MILAN	Italy
LIPZ	VENICE	Italy
LIRF	ROME FIUMICINO	Italy
LMML	MALTA	Malta
LTBA	ISTANBUL	Turkey
UUDD	MOSCOW DOMODEDOVO	Russian Federation

**Appendix O - Proposal for Amendment to EUR ANP –
Meteorological Reports from Offshore Structures**

(Paragraph 4.7.19 refers)

C.1. Amendment proposal to the EUR Basic ANP (Part VI)

...

METEOROLOGICAL OBSERVATIONS AND REPORTS
[EANPG conclusion 49/14]
(FASID Table MET 1C)
[EANPG conclusion 51/..]

...

11. States under whose jurisdiction off-shore structure or other points of significance in support of off-shore helicopter operations are located should, in consultation with the appropriate operators, establish or arrange for the establishment of aeronautical meteorological observing stations at suitable locations. Information of the state of the sea and sea surface temperature should be included in all METAR and SPECI from those stations. The offshore structures providing information on the state of the sea and/or sea surface temperature in METAR and SPECI are listed in FASID Table MET 1C.

C.2 Amendment proposal to the EUR FASID (Part VI)

...

FASID Table MET 1C. METEOROLOGICAL OBSERVATIONS AND REPORTS FROM OFFSHORE STRUCTURES

EXPLANATION OF THE TABLE

Column

1	Name of State providing meteorological observations and reports from offshore structure(s) in METAR and SPECI
2	Name of offshore structure
3	ICAO location indicator of offshore structure
4	Latitude of offshore structure (in the form nnnnN)
5	Longitude of offshore structure (in the form nnnnnE or nnnnnW)
6	State availability of sea surface temperature supplementary information (Y = yes or N = no)
7	State availability of state of the sea supplementary information (Y = yes or N = no)

State	Offshore structure				Availability of supplementary information in METAR and SPECI	
	Installation name	ICAO location indicator	Latitude	Longitude	Sea Surface Temperature	State of the Sea
1	2	3	4	5	7	8
...	...	...	...	...	...	...

Appendix P - Proposal for Amendment to EUR ANP – Meteorological Provisions for Low-Level Flights

(Paragraph 4.7.19 refers)

PROPOSAL FOR AMENDMENT TO EUR ANP – METEOROLOGICAL PROVISIONS FOR LOW-LEVEL FLIGHTS

D.1. Amendment proposal to the EUR Basic ANP (Part VI)

...

19. When the area forecast for low-level flights is issued as a GAMET, the following regional procedures should be followed:

a) the term "widespread" should be used to indicate a spatial coverage of more than 75 per cent of the area concerned;

b) section II of the GAMET area forecast should include the following information in addition to the provisions in Annex 3:

1) short description of ~~air mass characteristics~~ general weather situation in addition to the description of pressure centres and fronts;

2) information about mean surface wind speed also for values less than 60 km/h (30kt);

3) upper wind and temperature in mountainous areas for altitude 15000ft, or higher if necessary;

~~2)~~4) representative upper wind and temperature information for points not separated by more than 500km;

~~3)~~5) information about widespread surface visibility of 5000 m or more together with the weather phenomena (if any) causing a reduction of visibility and inserted between the upper wind and cloud information; and

6) state of the sea and sea surface temperature (see note);

~~4)~~7) an outlook concerning expected hazardous weather phenomena during the following validity period;

Note: With regards 19 b) 6) above, States under whose jurisdiction off-shore structure or other points of significance in support of off-shore helicopter operations are located should, in consultation with the appropriate operators, establish or arrange for the information on the state of the sea and sea surface temperature to be included in all low-level area forecasts.

c) the visibility and cloud base information in section II may be complemented in the form of visibility/cloud base categories (paragraphs 18 and 19 refer).

...

22. Area forecasts for low-level flights exchanged between meteorological offices in support of the issuance of AIRMET information should be ~~issued for 6 hour periods commencing at 0600 and 1200 UTC with additional periods as necessary to cover the hours of operation and be available for pre-flight planning purposes~~ prepared as GAMET and issued at least one ~~three~~ hour~~s~~ prior to the beginning of their validity period.

23. Low-level forecasts should be amended where and when required. The amended forecast should also be supplied on automatic briefing facilities where these are available. In the case that the AIRMET/~~GAMET~~low-level forecast concept is not fully implemented, the criteria for amendments should as a minimum include the weather phenomena hazardous for low-level flights, which constitute the criteria for the issue of AIRMET. ~~When visibility/cloud base categories are used, an amended forecast should be issued when the forecasted change of visibility and/or cloud base means that the visibility/cloud base category will change.~~

24. When low-level forecast is issued as a SIGWX chart or as a wind and temperature (W+T)chart, it should, as appropriate, include the information as described in paragraph 19.

...

...

INFORMATION FOR OPERATORS AND FLIGHT CREW MEMBERS
[EANPG conclusion 46/26]

~~28.~~ 29. As far as possible, English should be among the languages used in meteorological briefing and consultation.

~~29.~~30. Meteorological information for pre-flight planning by operators of helicopters flying to offshore structures should include data covering the layers from sea level to FL 100. Particular mention should be made of the expected surface visibility, the amount, type (where available), base and tops of cloud below FL 100, sea state and sea surface temperature, mean sea level pressure and the occurrence or expected occurrence of turbulence and icing.

31. The low-level forecast prepared in support of AIRMET information should be part of pre-flight documentation for low-level flights. The documentation prepared should include low-level SIGWX forecasts and appropriate wind and temperature (W+T) forecasts for the entire route.

~~30.~~ 32. Where feasible and cost-effective, automated MET/AIS systems should be used for the combined provision of MET and AIS information for pre-flight planning, flight documentation, briefing and consultation.

Note:- Further guidance is provided in the ICAO EUR Handbook "Harmonized Access to AIS and MET Services related to pre-flight planning" (ICAO EUR Doc 010)

Appendix Q - ICAO EUR DOC 014
(Paragraph 4.7.23 refers)

ICAO EUR DOC 014

INTERNATIONAL CIVIL AVIATION ORGANIZATION

EUR SIGMET AND AIRMET GUIDE

FIRST EDITION
2009

PREPARED BY THE EUROPEAN AND NORTH ATLANTIC OFFICE OF ICAO

First Edition
December 2009

RECORD OF AMENDMENTS AND CORRIGENDA

Amendments			
No.	Date of issue	Date entered	Entered by

Corrigenda			
No.	Date of issue	Date entered	Entered by

TABLE OF CONTENTS

PART 1. INTRODUCTION

1.1 The main purpose of this document is to provide guidance for standardization and harmonization of the procedures and formats related to the occurrence or expected occurrence of specified hazardous en-route weather conditions which may affect the safety of aircraft and low-level aircraft operations, known as SIGMET and AIRMET information. The guidance is complementary to the Annex 3 standards and recommended practices (SARPS) regarding SIGMET and AIRMET, and to the SIGMET and AIRMET related provisions of the EUR ANP/FASID (ICAO Doc 7754).

1.2 In respect of SIGMET messages, this document only includes guidance concerning SIGMET messages for significant en-route weather phenomena and volcanic ash SIGMET messages. The third type, tropical cyclone SIGMET messages, are excluded as this phenomenon does not occur in the EUR Region.

1.3 ICAO provisions concerning the issuance and dissemination of SIGMET information are contained in:

- Annex 3 - *Meteorological Service for International Air Navigation*, Part I, Chapter 3, paragraphs 3.4 – 3.7, Chapter 7, paragraphs 7.1 – 7.2, and Part II, Appendix 6.

- EUR Basic ANP, Part VI and FASID Table MET 1B , MET 2B and MET 3B.

- Annex 11 - *Air Traffic Services*, Chapter 4, paragraph 4.2.1 and Chapter 7, paragraph 7.1.

- PANS – *Air Traffic Management*, Doc 4444, Chapter 9, paragraph 9.1.3.2.

- EUR Regional Supplementary Procedures, Doc 7030, Part 1, paragraph 2.2.

Additional guidance on the SIGMET procedures is contained in the *Manual of Aeronautical Meteorological Practice*, Doc 8896, and *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services*, Doc 9377.

1.4 AIRMET information is issued by a meteorological watch office (MWO) concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of low-level aircraft operations and which was not already included in the forecast issued for low-level flights in the flight information region concerned or sub-area thereof.

1.5 ICAO provisions concerning the issuance and dissemination of AIRMET information are contained in:

- Annex 3 - *Meteorological Service for International Air Navigation*, Part I, Chapter 3 paragraph 3.4, Chapter 6 paragraph 6.5, Chapter 7 paragraphs 7.2, and Part II, Appendix 6.

- EUR Basic ANP, Part VI and FASID Table MET 1B, MET 2B and MET 3B.

- Annex 11 - *Air Traffic Services*, Chapter 4 paragraph 4.2.1.

- PANS – *Air Traffic Management*, Doc 4444, Chapter 9 paragraph 9.1.3.2.

Additional guidance on the SIGMET procedures is contained in the *Manual of Aeronautical Meteorological Practice*, Doc 8896, and *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services*, Doc 9377.

1.6 The SIGMET and AIRMET Guide is intended mainly to assist the meteorological watch offices (MWOs) in the EUR Region in preparing and disseminating SIGMET and AIRMET information. It provides

detailed information on the format of SIGMET and AIRMET messages as specified by Annex 3. The explanations of the format are accompanied by a number of examples based on region-specific meteorological phenomena. The guide also provides information regarding the necessary coordination between the MWOs, the ATS units and the pilots, and their respective responsibilities.

1.7 This document is prepared by the ICAO EUR/NAT Regional Office and is a successor to the EUR SIGMET Guide. EUR Doc 014 is published on the website at URL: http://www.paris.icao.int/documents_open/subcategory.php?id=48. It should be reviewed and updated regularly in order to be kept in line with the ICAO SARPs and regional procedures.

PART 2. RESPONSIBILITIES AND COORDINATION

2.1 General

2.1.1 SIGMET and AIRMET are warning information, hence they are of highest priority among other types of OPMET information provided to aviation users. The primary purpose of SIGMET and AIRMET is for in-flight service, which requires timely transmission of the SIGMET and, where available, AIRMET messages to pilots by the ATS units and/or through VOLMET and D-VOLMET.

2.1.2 Airlines are the main users of the SIGMET and AIRMET information. Pilots contribute to the effectiveness of the SIGMET and AIRMET service through issuance of (routine and special) air-reports to the ATS units. Such air-reports are among the most valuable sources of information for the Meteorological Watch Offices (MWO) in the preparation of SIGMET and AIRMET. The ATS units receiving (routine and special) air-reports should forward them to the associated MWOs without delay.

2.1.3 As seen from the above, the SIGMET and AIRMET service involves MET, ATS and pilots. In order for the SIGMET and AIRMET service to be effective, close coordination between these parties, as well as mutual understanding of the needs and responsibilities, should be maintained.

2.1.4 For the special case of SIGMET for volcanic ash, the MWOs are provided with advisories from the volcanic ash advisory centres (VAAC) designated in the Regional ANP.

2.1.5 SIGMET is also used for the flight planning. This requires global dissemination of SIGMET through the international OPMET data banks and the satellite broadcasts: ISCS and SADIS. SIGMET should also be distributed to the World Area Forecast Centres (WAFC) London and Washington for use in the preparation of the significant weather (SIGWX) forecasts.

2.1.6 AIRMET is used for pre-flight planning also. Such messages should be disseminated to meteorological watch offices in adjacent flight information regions and to other meteorological offices, as agreed by the meteorological authorities concerned. In addition, AIRMET messages should be transmitted to international operational meteorological databanks and the centres designated by regional air navigation agreement for the operation of aeronautical fixed service satellite distribution systems, in accordance with regional air navigation agreement.

2.1.7 In the next paragraphs, the main responsibilities and coordination links between MET, ATS and pilots are described.

2.2 Meteorological Watch Office - responsibilities and procedures related to SIGMET and AIRMET

2.2.1 SIGMET and AIRMET information is issued by the MWO in order to provide timely warning for the occurrence or expected occurrence of specified en-route weather phenomena, affecting the safety of the flight operations in the MWO's area of responsibility (AOR). SIGMET and AIRMET provides information concerning the location, extent, intensity and expected evolution of the specified phenomena.

2.2.2 Information about the provision of SIGMET and AIRMET service, including details on the designated MWO(s), should be included in the State's Aeronautical Information Publication (AIP) as specified in Annex 15, Aeronautical Information Service, Appendix 1, GEN 3.5.8.

2.2.3 All designated MWOs in the EUR Region are listed in the FASID Table MET 1B of the EUR FASID.

2.2.4 If, for some reason, a MWO is not able to meet its obligations, including the provision of SIGMET and AIRMET, arrangements have to be made by the meteorological authority concerned, that another MWO takes over these responsibilities for a certain period of time. Such delegation of responsibilities has to be notified by a NOTAM and a letter to the ICAO Regional Office.

2.2.5 Since the MWO is normally not a separate administrative unit, but part of the functions of an aerodrome meteorological office or another meteorological office, the meteorological authority concerned should ensure that the MWO obligations and responsibilities are clearly defined and assigned to the unit designated to serve as MWO. The corresponding operational procedures have to be established and the meteorological staff should be trained accordingly.

2.2.6 In preparing SIGMET and AIRMET information, the MWOs have to strictly follow the format determined in Annex 3 (detailed format description is provided in Appendix 6, Table A6-1 of Annex 3). SIGMET and AIRMET should be issued only for those weather phenomena listed in Annex 3 and only when specified criteria for intensity and spatial extent are met.

Note: MWOs should not issue SIGMET and AIRMET for weather phenomena of lower intensity or of such transient nature or smaller scale, which do not affect significantly the flight safety, and their transmission to users may lead to unnecessary precautionary measures.

2.2.7 The MWOs should be adequately equipped in order to identify, analyse and forecast (to the extent required) those phenomena for which SIGMET and AIRMET is required. The MWO should make use of all available sources of information, such as special air-reports, information from meteorological satellites and weather radars, numerical predictions, etc.

2.2.8 On receipt of a special air-report from the associated ACC or FIC, the MWO should :

a) issue the corresponding SIGMET and AIRMET information; or

b) send the special air-report for on-ward transmission in case that the issuance of SIGMET information is not warranted (e.g., the phenomenon reported is of transient nature).

2.2.9 Appropriate telecommunication means have to be available at the MWO in order to ensure timely dissemination of SIGMET [and, subject to regional air navigation agreement, AIRMET] according to a dissemination scheme, which includes transmission to:

- local ATS users;
- aeronautical MET offices within the AOR;
- other MWOs concerned (it should be ensured that SIGMET [AIRMET] is sent to all MWOs whose AORs are, at least partly, within the 925 km (500 NM) range from the reported phenomenon);
- centres designated for transmission of VOLMET or D-VOLMET where SIGMET [AIRMET] is required for transmission;
- the responsible MOTNE centre and international EUR OPMET data banks (it should be arranged through the MOTNE scheme, that SIGMET [AIRMET] are sent to the designated OPMET data banks in other ICAO Regions, to the WAFCs and to the uplink stations of SADIS and ISCS);
- responsible VAAC (if applicable); and
- Vienna MOTNE centre (LOZZMMSS), especially for WV SIGMETs, for further

dissemination within the EUR Region.

2.2.10 In issuing SIGMET for volcanic ash, the MWOs have to include as appropriate the advisory information received from the responsible VAAC. In addition to the information received from the VAAC, the MWOs may use available complementary information from other reliable sources. In such a case the responsibility for this additional information would lie completely on the MWO concerned.

2.3 Responsibilities of ATS units

2.3.1 Close coordination should be established between the MWO and the corresponding ATS unit (ACC or FIC), including arrangements in order to ensure:

- receipt without delay and display at the relevant ATS units of SIGMET [AIRMET] issued by the associated MWO;

- receipt and display at the ATS unit of SIGMET [AIRMET] issued by MWOs responsible for the neighbouring FIRs /ACCs if these SIGMET [AIRMET] are required according to paragraph 2.3.4 below ; and

- transmission without delay of special air-reports received through voice communication to the associated MWO.

2.3.2 SIGMET [AIRMET] information should be transmitted to aircraft with the least possible delay on the initiative of the responsible ATS unit, by the preferred method of direct transmission followed by acknowledgement or by a general call when the number of aircraft would render the preferred method impracticable.

2.3.3 SIGMET [AIRMET] information passed to aircraft should cover a portion of the route up to a flying time of two hours ahead of the aircraft.

2.3.4 Air traffic controllers should ascertain whether any of the currently valid SIGMETs may affect any of the aircraft they are controlling, either within or outside their AOR up to a flying time of two hours ahead of the current position of the aircraft. If this is the case, the controllers should transmit the SIGMET promptly to the aircraft-in-flight likely to be affected.

2.3.5 The ATS units have to transmit to the concerned aircraft-in-flight the special air reports received, for which SIGMET has not been issued. Once a SIGMET for the weather phenomenon reported in the special air report is made available, this obligation of the ATS unit expires.

2.4 Responsibilities of pilots

2.4.1 Timely issuance of SIGMET [AIRMET] information is largely dependent on the prompt receipt by MWOs of special air reports. That is why, it is essential that pilots prepare and transmit such reports to the ATS units whenever any of the specified en-route conditions are encountered or observed.

2.4.2 It should be emphasized that, even when automatic dependent surveillance (ADS) is being used for routine air reports, pilots should continue to make special air reports.

2.5 Coordination between MWOs and the VAACs

2.5.1 Amongst the phenomena for which SIGMET information is required, the volcanic ash clouds are of particular importance for the planning of long-haul flights.

2.5.2 Since the identification, analysis and forecasting of volcanic ash require considerable technical and human resources, normally not available at each MWO, a number of Volcanic Ash Advisory Centres (VAACs) have been designated to provided VA advisories to the users and assist MWOs in the preparation of the SIGMET for volcanic ash. Close coordination should be established between the MWO and the responsible VAAC.

2.5.3 Information regarding the VAACs serving the EUR Region with their corresponding areas of responsibility and lists of MWOs to which advisories are to be sent is provided in the EUR FASID Table MET 3B.

PART 3. RULES FOR PREPARATION OF SIGMET INFORMATION

3.1 General

3.1.1 SIGMET information is prepared in abbreviated plain language using approved ICAO abbreviations, a limited number of non-abbreviated words, geographical names and numerical values of self-explanatory nature. All abbreviations and words to be used in SIGMET are given in **Appendix A.**

3.1.2 The increasing use of automated systems for handling MET information by the MET offices and the aviation users makes it essential that all types of OPMET information, including SIGMET, are prepared and transmitted in the prescribed standardized formats. Therefore, the structure and format of the SIGMET message, as specified in Annex 3, Part II, Appendix 6, should be followed strictly by the MWOs. Appendix 6 provides detailed information regarding the content and order of elements in the SIGMET message.

3.1.3 SIGMET is intended for transmission to aircraft in flight either by ATC or by VOLMET or D-VOLMET. Therefore, SIGMET messages should be kept short and clear, without additional descriptive text other than that prescribed in Annex 3.

3.1.4 After issuing a SIGMET, the MWO maintain watch over the evolution of the phenomenon for which the SIGMET has been issued and issue a new updated SIGMET when necessary. VA SIGMETs have to be updated at least every 6 hours.

3.1.5 SIGMETs should be promptly cancelled when the phenomenon is no longer occurring or no longer expected to occur in the MWO's area of responsibility. The SIGMET is understood to cancel itself automatically at the end of its validity period. If the phenomenon persists a new SIGMET message for a further period of validity has to be issued.

3.2 Types of SIGMET

3.2.1 Although Annex 3 provides one general SIGMET format, which encompasses all weather phenomena, it is convenient when describing the structure and format of the messages to distinguish between three types of SIGMET, as follows:

- SIGMET for en-route weather phenomena other than volcanic ash or tropical cyclones (this includes: TS, TURB, ICE, MTW, DS and SS); this SIGMET will be referred as WS SIGMET;
- SIGMET for volcanic ash (VA SIGMET) (to be referred also as WV SIGMET)
- SIGMET for tropical cyclones (TC SIGMET), not described in this document.

3.2.2 The type of SIGMET can be identified through the data type designator included in the WMO abbreviated heading of the SIGMET message, as explained in the following paragraphs.

3.3 Structure of the SIGMET message

3.3.1 A SIGMET message consists of:

- *WMO heading* – all SIGMETs are preceded by an appropriate WMO heading;
- *First line*, containing location indicators of the relevant ATS unit and MWO, sequential number and period of validity;
- *Meteorological part*, containing meteorological information concerning the phenomenon for which the SIGMET is issued;

3.3.2 The first two parts of the SIGMET message are common for all types of SIGMETs. The content and format of the meteorological part is different depending on the type of SIGMET. Therefore, in the following paragraphs, the meteorological part of the WS and WV types of SIGMET is described separately.

3.4 Format of SIGMET

Note: In the following text, square brackets - [ ] - are used to indicate an optional or conditional element, and angled brackets - < > - for symbolic representation of a variable element, which in the real SIGMETs accepts concrete numerical values.

3.4.1 WMO Header

$T_1T_2A_1A_2$ii CCCC YYGGgg [CCx]

3.4.1.1 The group **$T_1T_2A_1A_2$ii** is the bulletin identification for the SIGMET message. It is constructed in the following way:

T_1T_2	Data type designator	**WS** – for SIGMET **WC** – for SIGMET for tropical cyclone **WV** – for SIGMET for volcanic ash
A_1A_2	Country or territory designators	Assigned according to Table C1, Part II of Manual on the Global Telecommunication System, Vol I – Global Aspects (WMO - No. 386)
ii	Bulletin number	Assigned on national level according to paragraph 2.3.2.2, Part II of Manual on the Global Telecommunication System, Vol I – Global Aspects (WMO - No. 386)

3.4.1.2 **CCCC** is the ICAO location indicator of the communication centre disseminating the message (could be the same as the MWO).

3.4.1.3 **YYGGgg** is the date/time group, where YY is the date and GGgg is the time in hours and minutes UTC, of the transmission of the SIGMET (normally this is the time assigned by the AFTN centre which disseminates the message).

3.4.1.4 It is recommended to assign a unique WMO header for each SIGMET bulletin per FIR, CTA or UIR. The distinction between different SIGMET bulletins issued by the State's MWOs should be through the respective data type designator (T_1T_2) and bulletin number (ii), as for example in Germany:

```
"WSDL31 EDZB" and "WVDL31 EDZB" for EDBB BERLIN FIR
"WSDL31 EDZE" and "WVDL31 EDZE" for EDLL DUSSELDORF FIR
"WSDL31 EDZF" and "WVDL31 EDZF" for EDFF FRANKFURT FIR
"WSDL31 EDZH" and "WVDL31 EDZH" for EDWW BREMEN FIR
"WSDL31 EDZM" and "WVDL31 EDZM" for EDMM MUNCHEN FIR
"WSDL32 EDZB" and "WVDL32 EDZB" for EDBB BERLIN UIR
"WSDL32 EDZF" and "WVDL32 EDZF" for EDUU RHEIN UIR
"WSDL32 EDZH" and "WVDL32 EDZH" for EDYY HANNOVER UIR
```

Examples:

WSDL32 EDZF 121200
WVJP01 RJTD 010230
WCNG21 AYPY 100600

*Note: A table with WMO SIGMET headers used by the EUR Meteorological Watch Offices is included in **Appendix B***

3.4.2 First line of SIGMET

CCCC SIGMET [nn]n VALID YYGGgg/YYGGgg CCCC-

3.4.2.1 The meaning of the groups in the first line of the SIGMET is as follows:

CCCC	ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET refers
SIGMET	Message identifier
[nn]n	Daily sequence number (see paragraph 3.4.2.2)
VALID	Period of validity indicator
YYGGgg/YYGGgg	Validity period of the SIGMET given by date/time group of the beginning and date/time group of the end of the period (see paragraph 3.4.2.3)
CCCC-	ICAO location indicator of the MWO originating the message and – (hyphen, without space, to separate the preamble from the text)

3.4.2.2 The numbering of SIGMETs should start every day at 0001 UTC. The sequence number should consist of up to three symbols and may be a combination of letters and numbers, such as:

- 1, 2, …
- 01, 02, …
- A01, A02, …

Examples:

EDBB SIGMET 3 VALID 121100/121500 EDZB-
VHHK SIGMET A04 VALID 202230/210230 VHHH-

Note 1: No other combinations should be used, like "CHARLIE 05" or "NR7".

Note 2: Correct numbering of SIGMET is very important since the number is used for reference in the communication between ATC and pilots and in VOLMET and D-VOLMET.

3.4.2.3 The following has to be considered when determining the validity period:

- the period of validity of WS SIGMET should not exceed 4 hours;
- the period of validity of VA SIGMET should be up to 6 hours;
- in case of a SIGMET for an observed phenomenon the filing time (date/time group in the WMO heading) should be same or close to the date/time group indicating the start of the SIGMET validity period;
- when the SIGMET is issued for an expected phenomenon:
    - the beginning of validity period should be the time of expected commencement (occurrence) of the phenomenon;
    - the lead time (the time of issuance of the SIGMET) should be not more than 4 hours before the start of validity period (i.e., expected time of occurrence of the phenomenon); and
    - for VA SIGMETs the lead time may be up to 12 hours.

3.4.2.4 The period of validity is the period during which the SIGMET is valid for transmission to aircraft in flight.

Examples:

1. SIGMET for an observed phenomenon:

WSIE31 EIDB 241120
EIDB SIGMET 3 VALID 241120/241500 EINN-

2. SIGMET for a forecast phenomenon (expected time of occurrence 1530)

WSSG31 WSSC 251130
WSSA SIGMET 1 VALID 251530/251930 WSSM-

3.4.3 *Format of the meteorological part of SIGMET messages for weather phenomena other than VA*

3.4.3.1 The meteorological part of a SIGMET consists of eight elements as shown in the table below.

Start of the second line of the message

1	2	3	4	5	6
Location indicator of the FIR/UIR or CTA	Name of the FIR or UIR or FIR/UIR or CTA	Description of the phenomenon	Observed or forecast	Location	Level
<CCCC>	<name> FIR [UIR, FIR/UIR, CTA]	<Phenomenon>	OBS [AT <GGggZ>] FCST	Geographical location of the phenomenon given by coordinates, or geographical objects, or location indicators	FL<nnn> FL<nnn/nnn> [TOP, ABV, BLW]

7	8
Movement or expected movement	Changes in intensity
MOV <direction, speed> KMH[KT], or STNR	INTSF or WKN or NC

3.4.3.1.1 Location indicator and name of the FIR, UIR, FIR/UIR or CTA

location indicator <name> FIR
or
location indicator <name> UIR
or
location indictor <name> FIR/UIR
or
location indicator <name> CTA

Example:

EDBB BERLIN FIR

3.4.3.1.2 Phenomenon

The description of the phenomenon consists of a qualifier and a phenomenon abbreviation. SIGMET shall be issued only for the following phenomena (with only one phenomenon in each SIGMET):

at cruising levels (irrespective of altitude):

- thunderstorms – if they are OBSC, EMBD, FRQ or SQL with or without hail;
- turbulence – only SEV
- icing – only SEV with or without FZRA
- mountain waves – only SEV
- dust storm – only HVY
- sand storm – only HVY
- radioactive cloud – RDOACT CLD

The appropriate abbreviations and combinations thereof, and their meaning are given in **Appendix C**.

3.4.3.1.3 Indication if the phenomenon is observed or forecast

OBS [AT <GGggZ>]
or
FCST

The indication whether the information is observed or forecast is given by the abbreviations OBS and FCST. OBS is optionally followed by a time group in the form AT GGggZ, where GGgg is the time of the observation in hours and minutes UTC. If the exact time of the observation is not known the time is not included. When FCST is used, it is assumed that the time of occurrence or commencement of the phenomenon coincides with the beginning of the period of validity included in the first line of the SIGMET.

Examples:

OBS AT 0140Z
FCST

3.4.3.1.4 Location of the phenomenon

The location of the phenomenon is given with reference to geographical coordinates (latitude and longitude) or with reference to geographical features well known internationally. The MWOs should try to be as specific as possible in reporting the location of the phenomenon and, at the same time, to avoid overwhelming geographical information, which may be difficult to process or perceive.

The following are the most common ways to describe the location of the phenomenon:

- Indication of a part of the FIR with reference to latitude:
  N OF or S OF <Nnn[nn]> or <Snn[nn]>

- indication of a part of the FIR with reference to a longitude:
  E OF or W OF <Ennn[nn]> or <Wnnn[nn]>

- indication of a part of the FIR with reference to a latitude and longitude:
  any combination of the above two cases;

- with reference to a location with ICAO location indicator CCCC (normally, this should be the case in a SIGMET based on a special air-report in which the reported phenomenon is given with reference to an airport or another object with an ICAO location indicator CCCC), or

- with reference to geographical features well known internationally.

More details on reporting of the location of the phenomenon are given in Appendix 6 to Annex 3 and in **Appendix E** to this Guide.

3.4.3.1.5 Flight level and extent

FL<nnn>
or FL<nnn/nnn>
or TOP FL<nnn>
or [TOP] ABV FL<nnn>
or [TOP] BLW FL<nnn>

The location or extent of the phenomenon in the vertical is given by one or more of the above abbreviations, as follows:

- reporting of single level – **FL<nnn>**
- reporting a layer – **FL<nnn/nnn>**, where the lower level is reported first; this is used particularly in reporting turbulence and icing;
- reporting a level or layer with reference to one FL using ABV or BLW
- reporting the level of the tops of the TS clouds using the abbreviation TOP.

Examples:

EMBD TS … TOP ABV FL340
SEV TURB … FL180/210
SEV ICE … BLW FL150
SEV MTW … FL090

3.4.3.1.6 Movement

MOV <direction> <speed> KMH[KT]
or
STNR

Direction of movement is given with reference to one of the eight points of compass. Speed is given in KMH or KT. The abbreviation STNR is used if no significant movement is expected.

Examples:

MOV NW 30KMH
MOV E 25KT

3.4.3.1.7 Expected changes in intensity

The expected evolution of the phenomenon's intensity is indicated by one of the following abbreviations:

INTSF – intensifying
WKN – weakening
NC – no change

3.4.4 Structure of the meteorological part of VA SIGMET

3.4.4.1 The general structure of the meteorological part of the SIGMET message is given in the table below:

Start of the second line of the message

1	2	3			4
Location indicator of the FIR/UIR or CTA	Name of the FIR or UIR or FIR/UIR or CTA	Phenomenon	Volcano		Volcanic ash cloud
			Name	Location	
<CCCC>	<name> FIR [UIR, FIR/UIR, CTA]	VA	[ERUPTION] [MT <name>]	[LOC <location>]	VA CLD OBS AT <GGggZ> VA CLD FCST

5			6
Extent of the cloud			Expected movement
Vertical	Horizontal	Position	
FL <nnn/nnn>	APRX <nnn> BY <nnn> KM	<lat,lon> - <lat,lon> - …	MOV <direction> <speed>

7	
Volcanic ash cloud forecast at the end of the period of validity	
FCST time	Position
FCST <GGggZ>	VA CLD APRX [FL<nnn/nnn>] <lat,lon> - <lat,lon> - …

3.4.4.2 Name and location of the volcano and/or indicator for VA cloud

VA [ERUPTION] [MT <name>] [LOC <lat,lon>] VA CLD
or
VA CLD

3.4.4.2.1 The description of the volcano injecting volcanic ash consists of the following elements:

- starts with the abbreviation **VA** – volcanic ash;
- the word **ERUPTION** is used when the SIGMET is issued for a known volcanic eruption;
- geographical/location information:
  i. if the name of the volcano is known, it is given by the abbreviation **MT** – mountain, followed by the name;
  e.g., **MT RABAUL**
  ii. location of the volcano is given by the abbreviation **LOC** – location, followed by the latitude and longitude in degrees and minutes;
  e.g., **LOC N3520 E09040**
- this section of the message ends with the abbreviation **VA CLD** – volcanic ash cloud.

3.4.4.2.2 If the FIR is affected by a VA cloud with no information about the volcanic eruption which generated the cloud, only the abbreviation **VA CLD** shall be included in the SIGMET.

3.4.4.3 Time of observation or expected commencement of the VA CLD

VA CLD OBS AT <GGgg>Z
or
VA CLD FCST

The time of observation is taken from the source of the observation – satellite image, special air- report, report from a ground volcano logical station, etc. If the VA cloud is not yet observed over the FIR

but the volcanic ash advisory received from the responsible VAAC indicates that the cloud is affecting the FIR after certain time, SIGMET shall be issued, and the abbreviation VA CLD FCST shall be used.

Examples:

VA CLD OBS AT 0100Z
VA CLD FCST

3.4.4.4 Level and extent of the volcanic ash cloud

FL<nnn/nnn> [APRX <nnn>KM BY <nnn>KM] <P1(lat,lon) - P2(lat,lon) - … >
or
FL<nnn/nnn> [APRX <nnn>NM BY <nnn>NM] <P1(lat,lon) - P2(lat,lon) - … >

FL<nnn/nnn>	The layer of the atmosphere where the VA cloud is situated, given by two flight levels from the lower to the upper boundary of the cloud
[APRX <nnn>KM BY <nnn>KM] or [APRX <nnn>NM BY <nnn>NM]	Approximate horizontal extent of the VA cloud in KM or NM
<P1(lat,lon) – P2(lat,lon) - … >	Approximate description of the VA cloud by a number of points given with their geographical coordinates[1]; the points shall be separated by hyphen

If the VA cloud spreads over more than one FIR, separate SIGMETs shall be issued by all MWOs whose FIRs are affected. In such a case, the description of the volcanic ash cloud by each MWO should encompass the part of the cloud, which lies over the MWO's area of responsibility. The MWOs should try to keep the description of the volcanic ash clouds consistent by checking the SIGMET messages received from the neighbouring MWOs.

Examples:

FL100/180 APRX 10KM BY 50KM N0100 E09530 – N1215 E11045
FL 150/210 S0530 E09300 – N0100 E09530 – N1215 E11045

3.4.4.5 Movement or expected movement of the VA cloud

MOV <direction> <speed>

The direction of movement is given by the abbreviation **MOV** – moving, followed by one of compass: N, NE, E, SE, S, SW, W, NW. The speed of movement is given in KMH or KT.

Examples:

MOV E 35 KMH
MOV SW 20 KT

3.4.4.6 Forecast position of the VA cloud at the end of the validity period of the SIGMET message

FCST <GGggZ> VA CLD <P1(lat,lon) - P2(lat,lon) - … >

[1] The format of geographical coordinates reporting in SIGMET is given in **Appendix D.**

3.4.4.6.1 The **GGggZ** group should indicate the end of the validity period given in the first line of the SIGMET message. The description of the expected position of the volcanic ash cloud is given by a number of points forming a simplified geometrical approximation of the cloud.

3.4.4.6.2 In describing the VA cloud, up to four different layers can be used, indicated by flight levels in the form FL<nnn/nnn>. The use of more than one level is necessary when the wind direction changes with height which causes the VA cloud to spread into different directions at different heights.

3.4.5 ***Cancellation of SIGMET***

3.4.5.1 If, during the validity period of a SIGMET, the phenomenon for which the SIGMET had been issued is no longer occurring or no longer expected, this SIGMET should be cancelled by the issuing MWO.

Note – If it is expected (or confirmed from observation) that the phenomenon for which SIGMET had been issued will change (or has changed) significantly from the original message content, the current SIGMET message should be cancelled and a new SIGMET message should be issued as appropriate.

The cancellation is done by issuing the same type of SIGMET with the following structure:

- WMO heading with the same data type designator;
- first line, including the next sequence number followed by a new validity period, and
- second line, which contains the location indicator and name of the FIR or CTA, the combination CNL SIGMET, followed by the sequential number of the original SIGMET and its validity period.

Examples:

1. Cancellation of a SIGWX SIGMET with the following first line

WSXY31 YUSO 101200
YUDD SIGMET 5 VALID 101200/101600 YUSO-
YUDD SHANLON FIR …

Cancellation SIGMET:

WSXY31 YUSO 101430
YUDD SIGMET 6 VALID 101430/101600 YUSO-
YUDD SHANLON FIR CNL SIGMET 5 101200/101600=

2. Cancellation of a VA SIGMET

WVXY31 YUSO 131518
YUDD SIGMET 03 VALID 131515/132115 YUSO-
YUDD SHANLON FIR …

Cancellation SIGMET:

WVXY31 YUSO 132000
YUDD SIGMET 04 VALID 132000/132115 YUSO-
YUDD SHANLON FIR CNL SIGMET 03 13151500/132115 VA MOV TO YUDO FIR=

PART 4. RULES FOR PREPARATION OF AIRMET INFORMATION

Note: This guidance is developed as a follow-up of EANPG Conclusion 49/42.

4.1 General

4.1.1 AIRMET should be issued by MWOs in accordance with the regional air navigation agreement. According to the EUR Air Navigation Plan, Volume I, Basic ANP (Doc 7754), AIRMET information should be issued by a MWO if agreed on between the users and the meteorological authority concerned. The requirement for the issuance of AIRMET should be reflected in FASID Table MET 1B. The decision of a meteorological authority for issuance of AIRMET should also be based on an assessment of the density of air traffic operating below flight level 100 (or flight level 150 or higher in mountainous areas).

4.1.2 AIRMET is issued for a flight information region (FIR); where necessary, the FIR should be divided in sub-areas and separate AIRMET issued for each sub-area.

4.1.3 When issuing AIRMET information, MWOs should pay attention on the related products, such as, GAMET and SIGMET, in order to avoid duplication.

4.1.4 AIRMET information is prepared in abbreviated plain language using approved ICAO abbreviations, a limited number of non-abbreviated words, geographical names and numerical values of self-explanatory nature. All abbreviations and words to be used in AIRMET are given in **Appendix A.**

4.1.5 The increasing use of automated systems for handling MET information by the MET offices and the aviation users makes it essential that all types of OPMET information, including AIRMET, are prepared and transmitted in the prescribed standardized formats. Therefore, the structure and format of the AIRMET message, as specified in Annex 3, Part II, Appendix 6, should be followed strictly by the MWOs. Annex 3 Appendix 6 Table A6-1 provides detailed information regarding the content and order of elements in the AIRMET message.

4.1.6 AIRMET messages should be kept short and clear, without additional descriptive text other than that prescribed in Annex 3.

4.1.7 After issuing an AIRMET, the MWO should maintain watch over the evolution of the phenomenon for which the AIRMET has been issued and issue a new updated AIRMET when necessary.

4.1.8 AIRMETs should be cancelled promptly when the phenomenon is no longer occurring or no longer expected to occur in the MWO's area of responsibility. The AIRMET is understood to cancel itself automatically at the end of its validity period. If the phenomenon persists a new AIRMET message for a further period of validity has to be issued.

4.2 Structure of the AIRMET message

4.2.1 An AIRMET message consists of:

- *WMO heading* – all AIRMETs are preceded by an appropriate WMO heading;
- *First line*, containing location indicators of the relevant ATS unit and MWO, sequential number and period of validity;
- *Meteorological part*, containing meteorological information concerning the phenomenon for which the AIRMET is issued.

4.3 Format of AIRMET

Note: In the following text, square brackets - [ ] - are used to indicate an optional or conditional element, and angled brackets - < > - for symbolic representation of a variable element, which in the real AIRMETs accepts concrete numerical values.

*4.3.1 **WMO Header***

$T_1T_2A_1A_2$ii CCCC YYGGgg [CCx]

4.3.1.1 The group **$T_1T_2A_1A_2$ii** is the bulletin identification for the AIRMET message. It is constructed in the following way:

T_1T_2	Data type designator	**WA**
A_1A_2	Country or territory designators	Assigned according to Table C1, Part II of Manual on the Global Telecommunication System, Vol I – Global Aspects (WMO - No. 386)
ii	Bulletin number	Assigned on national level according to paragraph 2.3.2.2, Part II of Manual on the Global Telecommunication System, Vol I – Global Aspects (WMO - No. 386)

4.3.1.2 **CCCC** is the ICAO location indicator of the communication centre disseminating the message (could be the same as the MWO).

4.3.1.3 **YYGGgg** is the date/time group, where YY is the date and GGgg is the time in hours and minutes UTC, of the transmission of the AIRMET (normally this is the time assigned by the AFTN centre which disseminates the message).

4.3.1.4 A unique WMO header should be assigned for each AIRMET bulletin issued for an FIR, or part of an FIR. The distinction between different AIRMET bulletins issued by the State's MWOs should be through the bulletin number (ii) as, for example:

WABX31 EBBR 061752 *[Example from Belgium]*

WAPL31 EPWA 061534 *[Example from Poland]*

*Note: A table with WMO SIGMET and AIRMET headers used by the EUR Meteorological Watch Offices is included in **Appendix B***

*4.3.2 **First line of AIRMET***

CCCC AIRMET [nn]n VALID YYGGgg/YYGGgg CCCC-

4.3.2.1 The meaning of the groups in the first line of the AIRMET is as follows:

CCCC	ICAO location indicator of the ATS unit serving the FIR to which the AIRMET refers
AIRMET	Message identifier
[nn]n	Daily sequence number (see paragraph 3.4.2.2)
VALID	Period of validity indicator
YYGGgg/YYGGgg	Validity period of the AIRMET given by date/time group of the beginning and date/time group of the end of the period (see paragraph 3.4.2.3)
CCCC-	ICAO location indicator of the MWO originating the message and – (hyphen**,** without space, to separate the preamble from the text)

4.3.2.2 The numbering of the AIRMETs should start every day at 0001 UTC. The sequence number should consist of up to three symbols and may be a combination of letters and numbers, such as:

- 1, 2, …
- 01, 02, …
- A01, A02, …

Examples:

EDBB AIRMET 3 VALID 121100/121500 EDZB-

EPWW AIRMET 5 VALID 061535/061935 EPWA-

4.3.2.3 The following has to be considered when determining the validity period:

- the period of validity of AIRMET shall not exceed 4 hours;
- in case of a AIRMET for an observed phenomenon the filing time (date/time group in the WMO heading) should be same or close to the date/time group indicating the start of the AIRMET validity period;
- when the AIRMET is issued for an expected phenomenon:
    - the beginning of validity period should be the time of expected commencement (occurrence) of the phenomenon;
    - the lead time (the time of issuance of the AIRMET) should be not more than 4 hours before the start of validity period (i.e., expected time of occurrence of the phenomenon); and

4.3.2.4 The period of validity is the period during which the AIRMET is valid for transmission to aircraft in flight.

Examples:

1. AIRMET for an observed phenomenon:

WADL41 EDZF 070015
EDGG AIRMET 01 VALID 070015/070300 EDZF-
EDGG LANGEN FIR ISOL TS OBS N OF N49 TOP FL330 MOV E WKN=

2. AIRMET for a forecast phenomenon:

WASW41 LSSW 061758
LSAS AIRMET 5 VALID 061800/062100 LSZH-
LSAS SWITZERLAND FIR MOD TURB FCST ALPS BLW FL160 STNR NC=

4.3.3 ***Format of the meteorological part of AIRMET messages***

4.3.3.1 The meteorological part of an AIRMET consists of eight elements as shown in the table below.

Start of the second line of the message

1	2	3	4	5	6
Location indicator of the FIR or CTA	Name of the FIR or CTA	Description of the phenomenon	Observed or forecast	Location	Level
<CCCC>	<name> FIR	<Phenomenon>	OBS [AT <GGggZ>] FCST	Geographical location of the phenomenon given by coordinates, or geographical objects, or location indicators	FL<nnn> FL<nnn/nnn> [TOP, ABV, BLW]

7	8
Movement or expected movement	Changes in intensity
MOV <direction, speed> KMH[KT], or STNR	INTSF or WKN or NC

4.3.3.1.1 Location indicator and name of the FIR

location indicator <name> FIR

Example:

EBBU BRUSSELS FIR

4.3.3.1.2 Phenomenon

The description of the phenomenon consists of a qualifier and a phenomenon abbreviation. AIRMET shall be issued only for the following phenomena (with only one phenomenon in each AIRMET):

at cruising levels below FL100 (FL150 or higher for mountainous areas, where necessary):

- surface wind speed
- surface visibility
- thunderstorms
- mountain obscuration
- cloud
- icing
- turbulence
- mountain wave

The appropriate abbreviations and combinations thereof, and their meaning are given in **Appendix D**.

4.3.3.1.3 Indication if the phenomenon is observed or forecast

OBS [AT <GGggZ>]
or
FCST

The indication whether the information is observed or forecast is given by the abbreviations OBS and FCST. OBS is optionally followed by a time group in the form AT GGggZ, where GGgg is the time of the observation in hours and minutes UTC. If the exact time of the observation is not known, the time is not included. When FCST is used, it is assumed that the time of occurrence or commencement of the phenomenon coincides with the beginning of the period of validity included in the first line of the AIRMET.

Examples:

OBS AT 0140Z
FCST

4.3.3.1.4 Location of the phenomenon

The location of the phenomenon is given with reference to geographical coordinates (latitude and longitude) or with reference to geographical features well known internationally. The MWOs should try to be as specific as possible in reporting the location of the phenomenon and, at the same time, to avoid overwhelming geographical information, which may be difficult to process or perceive.

The following are the most common ways to describe the location of the phenomenon:

- Indication of a part of the FIR with reference to latitude:

N OF or S OF <Nnn[nn]> or <Snn[nn]>

- indication of a part of the FIR with reference to a longitude:

E OF or W OF <Ennn[nn]> or <Wnnn[nn]>

- indication of a part of the FIR with reference to a latitude and longitude:

any combination of the above two cases;

- with reference to a location with ICAO location indicator CCCC (normally, this should be the case in a SIGMET based on a special air-report in which the reported phenomenon is given with reference to an airport or another object with an ICAO location indicator CCCC), or

- with reference to geographical features well known internationally.

More details on reporting of the location of the phenomenon are given in Appendix 6 to Annex 3 and in **Appendix E** to this Guide.

4.3.3.1.5 Flight level and extent

FL<nnn>
or FL<nnn/nnn>
or TOP FL<nnn>
or [TOP] ABV FL<nnn>
or [TOP] BLW FL<nnn>

The location or extent of the phenomenon in the vertical is given by one or more of the above abbreviations, as follows :

- reporting of single level – **FL<nnn>**

- reporting a layer – **FL<nnn/nnn>**, where the lower level is reported first; this is used particularly in reporting turbulence and icing;

- reporting a level or layer with reference to one FL using ABV or BLW

- reporting the level of the tops of the TS clouds using the abbreviation TOP.

Examples:

ISOL CB … TOP ABV FL100
MOD TURB … FL050/080
MOD ICE … BLW FL090
MOD MTW … FL060

Note that the flight levels reported should be up to FL100 (FL150 or higher for mountainous areas, where necessary).

4.3.3.1.6 Movement

MOV <direction> <speed> KMH[KT]
or
STNR

Direction of movement is given with reference to one of the eight points of compass. Speed is given in KMH or KT. The abbreviation STNR is used if no significant movement is expected.

Examples:

MOV NW 30KMH
MOV E 25KT

4.3.3.1.7 Expected changes in intensity

The expected evolution of the phenomenon's intensity is indicated by one of the following abbreviations:

INTSF – intensifying
WKN – weakening
NC – no change

4.3.4 Cancellation of AIRMET

4.3.4.1 If, during the validity period of an AIRMET, the phenomenon for which the AIRMET had been issued is no longer occurring or no longer expected, this AIRMET should be cancelled by the issuing MWO.

Note – If it is expected (or confirmed from observation) that the phenomenon for which AIRMET had been issued will change (or has changed) significantly from the original message content, the current AIRMET message should be cancelled and a new AIRMET message should be issued as appropriate.

The cancellation is done by issuing the same type of AIRMET with the following structure:

- WMO heading with the same data type designator;

- first line, including the next sequence number followed by a new validity period, and

second line, which contains the location indicator and name of the FIR, the combination CNL AIRMET, followed by the sequential number of the original AIRMET and its validity period.

Examples:

Cancellation of AIRMET with the following first line:

WAXY31 YUSO 151520
YUDD AIRMET 1 VALID 151520/151800 YUSO-
YUDD SHANLON FIR …

Cancellation AIRMET:

WAXY31 YUSO 151430
YUDD AIRMET 2 VALID 151650/151800 YUSO-
YUDD SHANLON FIR CNL AIRMET 1 151520/151800=

APPENDIX A

List of the abbreviations and decode used in SIGMET and AIRMET

Abbreviation	Decode
ABV	Above
AIRMET	AIRMET Information
AND*	And
APRX	Approximate or approximately
AT	At *(followed by time)*
BLW	Below
BKN	Broken
BR	Mist
BY*	By
CB	Cumulonimbus
CENTRE*	Centre *(used to indicate tropical cyclone centre)*
CLD	Cloud
CNL	Cancel *or* cancelled
CTA	Control area
DS	Duststorm
DU	Dust
DZ	Drizzle
E	East *or* eastern longitude
ERUPTION*	Eruption *(used to indicate volcanic eruption)*
EMBD	Embedded in layer *(to indicate CB embedded in layers of other clouds)*
FCST	Forecast
FG	Fog
FIR	Flight information region
FL	Flight level
FRQ	Frequent
FU	Smoke
FZRA	Freezing rain
GR	Hail
GS	Small hail and/or snow pellets
HVY	Heavy *(used to indicate intensity of weather phenomena)*
HZ	Haze
IC	Ice crystals
ICE	Icing
INTSF	Intensify *or* intensifying
ISOL	Isolated
KM	Kilometres
KMH	Kilometres per hour
KT	Knots
LINE*	Line
MOD	Moderate *(used to indicate intensity of weather phenomena)*
MOV	Move *or* moving *or* movement
MT	Mountain
MTW	Mountain waves
N	North *or* northern latitude
NC	No change
NE	North-east
NM	Nautical miles
NW	North-west

Abbreviation	Decode
OBS	Observe *or* observed *or* observation
OBSC	Obscure *or* obscured *or* obscuring
OCNL	Occasional *or* occasionally
OF*	Of … *(place)*
OVC	Overcast
PL	Ice pellets
PO	Dust/sand whirls
RA	Rain
RDOACT*	Radioactive
S	South *or* southern latitude
SA	Sand
SE	South-east
SEV	Severe *(used e.g. to qualify icing and turbulence reports)*
SG	Snow grains
SIGMET	Information concerning en-route weather phenomena which may affect the safety of aircraft operations
SN	Snow
SQ	Squalls
SQL	Squall line
SS	Sandstorm
STNR	Stationary
SW	South-west
TC	Tropical cyclone
TCU	Towering Cumulus
TO	To … *(place)*
TOP	Cloud top
TS	Thunderstorm
TSGR	Thunderstorm with hail
TURB	Turbulence
UIR	Upper flight information region
VA	Volcanic ash
VALID*	Valid
VIS	Visibility
W	West *or* western longitude
WI	Within
WID	Width
Z	Coordinated Universal Time *(used in meteorological messages)*

** not in the ICAO Doc 8400, ICAO Abbreviations and Codes*

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APPENDIX B

List of EUR SIGMET (WS, WV) and AIRMET (WA) headers

State	MWO Loc	MWO name	WS AHL	WV AHL	WA AHL	ATSU Ind	FIR Ind	FIR Name
Albania	LATI	Tirana/Tirana	WSAB31 LATI			LATI	LATI	Tirana
Armenia	UGEE	Yerevan	WSEE31 UGEE			UGEZ	UGEZ	Yerevan
Austria	LOWW	Wien/Schwechat	WSOS31 LOWW	WVOS31 LOWW	WAOS41 LOWW	LOVV	LOVV	Wien
Azerbaijan	UBBB	Baku			WAAJ31 UBBB		UBBB	Baku/Heydar Aliyev
Belarus	UMMM	Minsk	WSBY31 UMMS			UMMV	UMMV	Minsk
Belgium	EBBR	Brussels/National	WSBX31 EBBR	WVBX31 EBBR	WABX31 EBBR	EBBU	EBBU	Brussels(ACC-FIC)
Bosnia And Herzegovina	LYBE	Beograd/Surcin	WSQB32 LYBM	WVQB32 LYBM	N/A	LYBA	LQSB	Sarajevo (E)
Bosnia And Herzegovina	LDZA	Zagreb/Pleso	WSQB31 LDZM	WVQB31 LDZM	N/A	LDZO	LQSB	Sarajevo (W)
Bulgaria	LBSF	Sofia/Vrajbedebna	WSBU31 LBSM	WVBU31 LBSM	N/A	LBSR	LBSR	Sofia
Croatia	LDZA	Zagreb/Pleso	WSRH31 LDZM	WVRH31 LDZM	WARH31 LDZM	LDZO	LDZO	Zagreb
Cyprus	LCLK	Larnaca/Larnaca	WSCY31 LCLK			LCCC	LCCC	Nicosia
Czech Republic	LKPW	Praha/Ruzyne	WSCZ31 LKPW	WVCZ31 LKPW	WACZ41 LKPW	LKAA	LKAA	Praha
Denmark	EKMI	Kobenhavn	WSDN31 EKCH	WVDN31 EKCH	N/A	EKDK	EKDK	Kobenhavn
Estonia	EEMH	Tallinn	WSEO31 EETN	WVEO31 EETN		EETT	EETT	Tallinn
Finland	EFHK	Helsinki-Vantaa	WSFI31 EFHK	WVFI31 EFHK		EFES	EFIN	Finland (S part)
Finland	EFRO	Rovaniemi	WSFI32 EFHK	WVFI32 EFHK		EFPS	EFIN	Finland (N part)
France	LFML	Aix	WSFR34 LFPW	WVFR34 LFPW		LFMM	LFMM	Marseille
France	LFBD	Bordeaux	WSFR32 LFPW	WVFR32 LFPW		LFBB	LFBB	Bordeaux
France	LFPS	Paris	WSFR31 LFPW	WVFR31 LFPW		LFFF	LFFF	Paris
France	LFRN	Rennes	WSFR35 LFPW	WVFR35 LFPW		LFRR	LFRR	Brest
France	LFST	Strasbourg	WSFR33 LFPW	WVFR33 LFPW		LFEE	LFEE	Reims
France	LFPW	Toulouse	WSFR31 LFPW	WVFR31 LFPW		LFEE	LFEE	France UIR
			WSFR31 LFPW	WVFR31 LFPW		LFFF	LFFF	France UIR
			WSFR31 LFPW	WVFR31 LFPW		LFMM	LFMM	France UIR
			WSFR31 LFPW	WVFR31 LFPW		LFRR	LFRR	France UIR

State	MWO Loc	MWO name	WS AHL	WV AHL	WA AHL	ATSU Ind	FIR Ind	FIR Name
			WSFR31 LFPW	WVFR31 LFPW		LFBB	LFBB	France UIR
Georgia	UGTB	Tbilisi	WSGG31 UGTB			UGGG	UGGG	Tblisi
Germany	EDZB	Berlin	WSDL32 EDZB	WVDL32 EDZB		EDBB	EDBB	Berlin UIR
			WSDL31 EDZB	WVDL31 EDZB		EDBB	EDBB	Berlin
Germany	EDZE	Essen	WSDL31 EDZE	WVDL31 EDZE		EDLL	EDLL	Dusseldorf
Germany	EDZH	Hamburg	WSDL32 EDZH	WVDL32 EDZH		EDYY	EDYY	Hannover UIR
			WSDL31 EDZH	WVDL31 EDZH	WADL41 EDZH	EDWW	EDWW	Bremen
Germany	EDZM	Munchen	WSDL31 EDZM	WVDL31 EDZM	WADL41 EDZM	EDMM	EDMM	Munchen
Germany	EDZF	Frankfurt	WSDL32 EDZF	WVDL32 EDZF		EDUU	EDUU	Rhein UIR
			WSDL31 EDZF	WVDL31 EDZF	WADL41 EDZF	EDFF	EDFF	Frankfurt
Greece	LGAT	Athinai	WSGR31 LGAT	WVGR31 LGAT	N/A	LGGG	LGGG	Athinai
Hungary	LHBP	Budapest	WSHU31 LHBM	WVHU31 LHBM	WAHU41 LHBM	LHCC	LHCC	Budapest
			WSHU41 LHBM			LHCC	LHCC	Budapest
Ireland	EINN	Shannon	WSIE31 EIDB	WVIE31 EIDB	N/A	EIDB	EISN	Shannon
Italy	LIBR	Brindisi	WSIY31 LIIB	WVIY31 LIIB		LIBB	LIBB	Brindisi
			WSIY31 LIIB	WVEU31 LIBB		LIBB	LIBB	Italia UIR
Italy	LIMM	Milano	WSIY31 LIIB			LIMM	LIMM	Italia UIR
			WSIY31 LIIB	WVIY31 LIIB WVEU31 LIBB		LIMM	LIMM	Milano
Italy	LIIB	Roma	WSIY31 LIIB			LIRR	LIRR	Italia UIR
			WSIY31 LIIB	WVIY31 LIIB WVEU31 LIBB		LIRR	LIRR	Roma
Kazakhstan	UATE	Aktau				UATE	UATE	Aktau
Kazakhstan	UATT	Aktyubinsk	WSRA31 UAAA			UATT	UATT	Aktyubinsk
Kazakhstan	UAAA	Almaty	WSRA31 UAAA	WVRA31 UAAA		UAAA	UAAA	Almaty
Kazakhstan	UACC	Astana	WSRA41 UACC			UACC	UACC	Astana
Kazakhstan	UATG	Atyrau				UATG	UATG	Atyrau
Kazakhstan	UAUU	Kostanay				UAUU	UAUU	Kustanay/Kostanay
Kazakhstan	UAOO	Kyzylorda				UAOO	UAOO	Kyzylorda
Kazakhstan	UASS	Semipalatinsk				UASS	UASS	Semipalatinsk
Kazakhstan	UAII	Shymkent				UAII	UAII	Shymkent
Kazakhstan	UARR	Uralsk				UARR	UARR	Uralsk

State	MWO Loc	MWO name	WS AHL	WV AHL	WA AHL	ATSU Ind	FIR Ind	FIR Name
Kazakhstan	UAKD	Zhezkazgan				UAKD	UAKD	Zhezkazgan
Kyrgyzstan	UAFM	Bishkek	WSKG41 UAFM			UAFM	UAFM	Bishkek/Manas
Latvia	EVRA	Riga	WSLV31 EVRA	WVLV31 EVRA	WALV31 EVRA	EVRR	EVRR	Riga
Lithuania	EYVI	Vilnuis	WSLT31 EYVI	WVLT31 EYVI		EYVL	EYVL	Vilnius
Malta	LMML	Malta/Luqa	WSMP31 LMMM	WVMP31 LMMM		LMMM	LMMM	Malta
Netherlands	EHDB	De Bilt	WSNL31 EHDB	WVNL31 EHDB	WANL31 EHDB	EHAA	EHAA	Amsterdam
Norway	ENMI	Oslo	WSNO31 ENMI	WVNO31 ENMI	N/A	ENOR	ENOR	Norway
Norway	ENVN	Tromsoe	WSNO36 ENMI	WVNO36 ENMI	N/A	ENOB	ENOB	Bodo Oceanic
Poland	EPWA	Warszawa/Okecie	WSPL31 EPWA	WVPL31 EPWA	WAPL31 EPWA	EPWW	EPWW	Waszawa
Portugal	LPPT	Lisboa	WSAZ31 LPMG	WVNT32 LPMG		LPPO	LPPO	Santa Maria Oceanic
Portugal	LPPT	Lisboa	WSPO31 LPMG	WVPO31 LPMG		LPPC	LPPC	Lisboa
Republic of Moldova	LUKK	Chisinau	WSRM31 LUKK	WVRM31 LUKK		LUUU	LUUU	Chisinau
Romania	LROM	Bucresti/Otopeni	WSRO31 LROM	WVRO31 LROM		LRBB	LRBB	Bucresti
Russian Federation	ULDD	Amderma	WSRA31 RUAM	WVRA31 RUAM	N/A	ULDD	ULDD	Amderma
Russian Federation	UHMA	Anadyr	WSRA32 RUPV	WVRA32 RUPV	N/A	UHMA	UHMA	Anadyr
				WVRA33 RUPV		UHMI	UHMI	Shmidta cape
Russian Federation	ULAA	Arkhangelsk/ Talagi	WSRS31 RUAA	WVRS31 RUAA	N/A	ULAA	ULAA	Arkhangelsk/Talagi
			WSRS37 RUAA	WVRS37 RUAA		ULAM	ULAM	Naryan-Mar
Russian Federation	UHWW	Artiom	WSRA31 RUVV	WVRA31 RUVV	N/A	UHWW	UHWW	Vladivostok
Russian Federation	UNBB	Barnaul	WSRA33 RUNW			UNBB	UNBB	Barnaul
Russian Federation	UHBB	Blagoveshchensk	WSRA33 RUHB	WVRA33 RUHB	N/A	UHBB	UHBB	Blagoveshchensk
Russian Federation	USCC	Chelyabinsk	WSRA33 RUEK	WVRA33 RUEK	N/A	USCC	USCC	Chelyabinsk
Russian Federation	UESS	Chersky	WSRA34 RUYK	WVRA34 RUYK	N/A	USCC	UESS	Chersky
Russian Federation	UIAA	Chita/Kadala	WSRA31 RUCH	WVRA31 RUCH	N/A	UIAA	UIAA	Chita
Russian Federation	UESO	Chokurdakh	WSRA35 RUYK	WVRA35 RUYK	N/A	UESO	UESO	Chokurdakh

State	MWO Loc	MWO name	WS AHL	WV AHL	WA AHL	ATSU Ind	FIR Ind	FIR Name
Russian Federation	UELL	Chulman/Neryungri	WSRA32 RUYK	WVRA32 RUYK	N/A	UELL	UELL	Chulman
Russian Federation	UIII	Irkutsk	WSRA31 RUIR	WVRA31 RUIR	N/A	UIII	UIII	Irkutsk
Russian Federation	UMKK	Kaliningrad	WSRS31 RUKG	WVRS31 RUKG	N/A	UMKK	UMKK	Kaliningrad
Russian Federation	USDK	Kamenny cape	WSRA32 RUAM		N/A	USDK	USDK	Kamenny cape
Russian Federation	UWKD	Kazan	WSRS31 RUKZ	WVRS31 RUKZ	N/A	UWKD	UWKD	Kazan
Russian Federation	UHHH	Khabarovsk/Novy	WSRA31 RUHB	WVRA31 RUHB	N/A	UHHH	UHHH	Khabarovsk
Russian Federation	USHH	Khanty-Mansiysk	WSRA33 RUOM		N/A	USHH	USHH	Khanty-Mansiysk
Russian Federation	USKK	Kirov	WSRS31 RUNN	WVRS31 RUNN	N/A	USKK	USKK	Kirov
Russian Federation	ULKK	Kotlas	WSRA33 RUAA	WVRA33 RUAA	N/A	ULKK	ULKK	Kotlas
Russian Federation	UNKL	Krasnoyarsk/ Yemelyanovo	WSRA31 RUKR		N/A	UNKL	UNKL	Krasnoyarsk
Russian Federation	UHMM	Magadan	WSRA31 RUMG	WVRA31 RUMG	N/A	UHMM	UHMM	Magadan
Russian Federation	UERR	Mirny	WSRA33 RUYK		N/A	UERR	UERR	Mirny
Russian Federation	UUWV	Moscow	WSRS31 RUMA		N/A	UUWV	UUWV	Moskcow
Russian Federation	ULMM	Murmansk	WSRS31 RUMU	WVRS31 RUMU	N/A	ULMM	ULMM	Murmansk
Russian Federation	UOOO	Norilsk	WSRA32 RUKR		N/A	UOOO	UOOO	Norilsk
Russian Federation	UNNT	Novosibirsk	WSRA31 RUNW		N/A	UNNT	UNNT	Novosibirsk
Russian Federation	UNOO	Omsk	WSRA31 RUOM		N/A	UNOO	UNOO	Omsk
Russian Federation	UWOO	Orenburg/ Tsentralny	WSRS32 RUSM	WVRS32 RUSM	N/A	UWOO	UWOO	Orenburg

State	MWO Loc	MWO name	WS AHL	WV AHL	WA AHL	ATSU Ind	FIR Ind	FIR Name
Russian Federation	UWPP	Penza	WSRS33 RUSM	WVRS33 RUSM	N/A	UWPP	UWPP	Penza
Russian Federation	USPP	Perm/Bolshoe Savino	WSRA32 RUEK	WVRA32 RUEK	N/A	USPP	USPP	Perm
Russian Federation	UHPP	Petropavlovsk-Kamchatsky/ Yelizovo	WSRA31 RUPK	WVRA31 RUPK	N/A	UHPP	UHPP	Petropavlovsk-Kamchatsky
			WSRA33 RUPV		N/A	UHMI	UHMI	Shmidta cape
Russian Federation	ULLI	Pulkovo	WSRS31 RUSP	WVRS31 RUSP	N/A	ULLL	ULLL	Saint-Petersburg
			WSRS33 RUSP	WVRS33 RUSP	N/A	ULPB	ULPB	Petrozavodsk
Russian Federation	USTR	Roshchino	WSRA32 RUOM		N/A	USTT	USTT	Tyumen
Russian Federation	URRV	Rostov-on-Don	WSRS31 RURD	WVRS31 RURD		URRV	URRV	Rostov
Russian Federation	USDD	Salekhard	WSRA37 RUOM		N/A	USDD	USDD	Salekhard
Russian Federation	UWWW	Samara/Kurumoch	WSRS31 RUSM	WVRS31 RUSM	N/A	UWWW	UWWW	Samara
Russian Federation	USRR	Surgut	WSRA35 RUOM		N/A	USRR	USRR	Surgut
Russian Federation	UUYY	Syktyvkar	WSRA32 RUAA	WVRA32 RUAA	N/A	UUYY	UUYY	Syktyvkar
Russian Federation	USDS	Tarko-Sale	WSRA34 RUOM		N/A	USDS	USDS	Tarko-Sale
Russian Federation	UEST	Tiksi	WSRA38 RUYK	WVRA38 RUYK	N/A	UEST	UEST	Tiksi
Russian Federation	UOTT	Turukhansk	WSRA33 RUKR		N/A	UOTT	UOTT	Turukhansk
Russian Federation	UWUU	Ufa	WSRA31 RUUF	WVRA31 RUUF	N/A	UWUU	UWUU	Ufa
Russian Federation	USSK	Uktus	WSRA31 RUEK	WVRA31 RUEK	N/A	USSS	USSS	Yekaterinburg
Russian Federation	ULOL	Velikie Luki	WSRS32 RUSP	WVRS32 RUSP	N/A	ULOL	ULOL	Velikie Luki
Russian Federation	ULWW	Vologda	WSRA34 RUAA	WVRA34 RUAA	N/A	ULWW	ULWW	Vologda

State	MWO Loc	MWO name	WS AHL	WV AHL	WA AHL	ATSU Ind	FIR Ind	FIR Name
Russian Federation	UUYW	Vorkuta	WSRS36 RUAA	WVRS36 RUAA	N/A	UUYW	UUYW	Vorkuta
Russian Federation	UEEE	Yakutsk	WSRA31 RUYK		N/A	UEEE	UEEE	Yakutsk
			WSRA39 RUYK			UEVV	UEVV	Zhigansk
Russian Federation	USSS	Yekaterinburg/ Koltosovo	WSRA31 RUEK	WVRA31 RUEK	N/A	USSS	USSS	Yekaterinburg
Russian Federation	UHSS	Yuzhno-Sakhalinsk	WSRA31 RUVV	WVRA31 RUSH	N/A	UHSS	UHSS	Yuzhno-Sakhalinsk
Russian Federation	UESU	Zyryanka	WSRA37 RUYK	WVRA37 RUYK	N/A	UESU	UESU	Zyryanka
Serbia	LYBE	Beograd/Surcin	WSYG31 LYBM		WAYG31 LYBM	LYBA	LYBA	Beograd
Slovakia	LZIB	Bratislava	WSSQ31 LZIB	WVSQ31 LZIB	WASQ41 LZIB	LZBB	LZBB	Bratislava
Slovenia	LJLJ	Ljubljana/Brnik	WSLJ31 LJLJ	WVLJ31 LJLJ	WALJ31 LJLJ	LJLA	LJLA	Ljubljana
Spain	GCGC	Las Palmas	WSEW33 LEMM	WVEW33 LEMM	WAEW43 LEMM	GCCC	GCCC	Canarias
Spain	LEMM	Madrid	WSEW32 LEMM	WVEW32 LEMM	WAEW42 LEMM	LECB	LECB	Barcelona
			WSEW31 LEMM	WVEW31 LEMM	WAEW40 LEMM	LECM	LECM	Madrid
					WAEW41 LEMM	LECS	LECS	Madrid FIR South Subzone (See Spain AIP)
Sweden	ESSA	Stockholm/Arlanda	WSSN31 ESWI	WVSN31 ESWI	N/A	ESAA	ESAA	Sweden
Sweden	ESNN	Sundsvall/Harnosand	WSSN32 ESWI		N/A	ESAA	ESAA	Sweden
Switzerland	LSSW	Zurich	WSSW31 LSSW	WVSW31 LSSW	WASW41 LSSW	LSAS	LSAS	Zurich/Geneve
Macedonia, The FYRO	LWSK	Skopje	WSMJ31 LWSK	WVMJ31 LWSK	N/A	LWSS	LWSS	Skopje
Tajikistan	UTDD	Dushanbe					UTDD	Dushanbe
Turkey	LTAC	Ankara/Esenboga	WSTU31 LTAC	WVTU31 LTAC	WATU31 LTAC	LTAA	LTAA	Ankara
Turkey	LTBA	Istanbul/Ataturk	WSTU31 LTBA	WVTU31 LTBA	WATU31 LTBA	LTBB	LTBB	Istanbul
Turkmenistan	UTAA	Askhabad	WSTR31 RUMS			UTAA	UTAA	Askhbad
Ukraine	UKBB	Borispil	WSUR31 UKBB	WVUR31 UKBB	WAUR31 UKBB	UKBV	UKBB	Kyiv
Ukraine	UKHH	Kharkiv	WSUR35 UKHH	WVUR35 UKHH	WAUR35 UKHH	UKHV	UKHH	Kharkiv
Ukraine	UKLL	L'viv	WSUR32 UKLL	WSUR32 UKLL	WAUR32 UKLL	UKLV	UKLL	L'viv
Ukraine	UKOO	Odessa	WSUR33 UKOO	WVUR33 UKOO	WAUR33 UKOO	UKOV	UKOO	Odessa
Ukraine	UKFF	Simferopol	WSUR34 UKFF	WVUR34 UKFF	WAUR34 UKFF	UKFV	UKFF	Simferopol

State	MWO Loc	MWO name	WS AHL	WV AHL	WA AHL	ATSU Ind	FIR Ind	FIR Name
United Kingdom	EGRR	London/Exeter	WSUK31 EGRR	WVUK31 EGRR	N/A	EGTT	EGTT	London
			WSUK33 EGGY	WVUK33 EGRR		EGPX	EGPX	Scottish
			WSNT21 EGRR	WVNT21 EGRR		EGGX	EGGX	Shanwick Oceanic
United Kingdom	EGJJ	Jersey	WSUK32 EGJJ	WVUK32 EGJJ	N/A	EGJJ	EGJJ	Jersey
Uzbekistan	UTSS	Samarkand	WSUZ31 UTNN		N/A	UTNN	UTNN	Nukus
			WSUZ31 UTSS			UTSS	UTSS	Samarkand
Uzbekistan	UTTT	Tashkent/Yuzhny	WSUZ31 UTTT		N/A	UTTT	UTTT	Tashkent/Yuzhny

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APPENDIX C

Meteorological phenomena to be reported by SIGMET

Phenomenon	Description	Meaning
Thunderstorm (TS)	OBSC[2] TS EMBD[3] TS FRQ[4] TS SQL[5] TS OBSC TSGR EMBD TSGR FRQ TSGR SQL TSGR	Obscured thunderstorm(s) Embedded thunderstorm(s) Frequent thunderstorm(s) Squall line thunderstorm(s) Obscured thunderstorm(s) with hail Embedded thunderstorm(s) with hail Frequent thunderstorm(s) with hail Squall line thunderstorm(s) with hail
Tropical cyclone (TC)	TC (+ TC name)	Tropical cyclone (+ TC name)
Turbulence (TURB)	SEV TURB[6]	Severe turbulence
Icing (ICE)	SEV ICE SEV ICE (FZRA)	Severe icing Severe icing due to freezing rain
Mountain wave (MTW)	SEV MTW[7]	Severe mountain wave
Duststorm (DS)	HVY DS	Heavy duststorm
Sandstorm (SS)	HVY SS	Heavy sandstorm
Volcanic ash cloud (VA)	VA (+ volcano name, if known)	Volcanic ash (+ volcano name)
Radioactive cloud	RDOACT CLD	Radioactive cloud

Notes:

1. Only one of the weather phenomena listed should be selected and included in each SIGMET

*2. Obscured (**OBSC**) indicates that the thunderstorm is obscured by haze or smoke or cannot be readily seen due to darkness*

*3. Embedded (**EMBD**) – indicates that the thunderstorm is embedded within cloud layers and cannot be readily recognized*

*4. Frequent (**FRQ**) indicates an area of thunderstorms within which there is little or no separation between adjacent thunderstorms with a maximum spatial coverage greater than 75% of the area affected, or forecasts to be affected, by the phenomenon (at a fixed time or during the period of validity)*

*5. Squall line (**SQL**) indicates thunderstorms along a line with little or no space between individual clouds*

*6. Severe (**SEV**) turbulence (**TURB**) refers only to:*
- *low-level turbulence associated with strong surface winds;*
- *rotor streaming;*
- *turbulence whether in cloud or not in cloud (CAT) near to jet streams.*
- *Turbulence is considered severe whenever the peak value of the cube root of the eddy dissipation rate (EDR) exceeds 0.7.*

*7. A mountain wave (**MTW**) is considered:*
- *severe – whenever an accompanying downdraft of 3.0 m/s (600 ft/min) or more and/or severe turbulence is observed or forecasted..*

APPENDIX D

Meteorological phenomena to be reported by AIRMET

Phenomenon[1]	**Description**	**Meaning**
Surface wind speed	SFC WIND (+wind speed and units)	Widespread mean surface wind speed above 60 km/h (30 kt)
Surface visibility	SFC VIS (+visibility) (+ one of the weather phenomena causing the reduction of visibility)	Widespread areas affected by reduction of visibility to less than 5 000 m, including the weather phenomenon causing the reduction of visibility
Thunderstorm	ISOL[2] TS OCNL[3] TS ISOL[2] TSGR OCNL[3] TSGR	Isolated thunderstorm(s) Occasional thunderstorm(s) Isolated thunderstorm(s) with hail Occasional thunderstorm(s) with hail
Mountain obscuration	MT OBSC	Mountains obscured
Cloud	BKN CLD (+height) OVC CLD (+height) ISOL[2] CB OCNL[3] CB FRQ[4] CB ISOL[2] TCU OCNL[3] TCU FRQ[4] TCU	Broken cloud Overcast cloud Isolated CB Occasional CB Frequent CB Isolated TCU Occasional TCU Frequent TCU
Icing	MOD[5] ICE	Moderate icing (except for icing in convective clouds)
Turbulence	MOD[6] TURB	Moderate turbulence
Mountain wave	MOD[7] MTW	Moderate mountain wave

Notes:

1. Only one of the weather phenomena listed should be selected and included in each AIRMET

*2. Isolated (**ISOL**) indicates that an area of thunderstorms, or cumulonimbus cloud, or towering cumulus cloud, consists of individual features which affect, or are forecast to affect, an area with a maximum spatial coverage less than 50 per cent of the area concerned (at a fixed time or during the period of validity)*

*3. Occasional (**OCNL**) indicates that an area of thunderstorms, or cumulonimbus cloud, or towering cumulus cloud, consists of well-separated features which affect, or are forecast to affect, an area with a maximum spatial coverage between 50 and 75 per cent of the area concerned (at a fixed time or during the period of validity)*

*4. Frequent (**FRQ**) indicates an area of cumulonimbus cloud or towering cumulus cloud, within which there is little or no separation between adjacent CB or TCU clouds, with a maximum spatial coverage greater than 75% of the area affected, or forecasts to be affected, by the phenomenon (at a fixed time or during the period of validity)*

*5. Moderate (**MOD**) icing (**ICE**) should refer to icing in other than convective clouds.*

*6. Moderate (**MOD**) turbulence (**TURB**) refers only to:*

- *low-level turbulence associated with strong surface winds;*
- *rotor streaming;*
- *turbulence whether in cloud or not in cloud (CAT);*
- *Turbulence is considered moderate whenever the peak value of the cube root of the eddy dissipation rate (EDR) is above 0.4 and below or equal to 0.7.*

*7. A mountain wave (**MTW**) is considered moderate (**MOD**) whenever an accompanying downdraft of 1.75–3.0 m/s (350–600 ft/min) and/or moderate turbulence is observed or forecast.*

APPENDIX E

Guidelines for reporting geographical coordinates in SIGMET and AIRMET

When reporting geographical coordinates of points in SIGMET the following should apply:

1. Each point is represented by latitude/longitude coordinates in whole degrees or degrees and minutes in the form:

N(S)nn[nn] W(E)nnn[nn]

Note: There is a space between the latitude and longitude value.

Examples: **N3623 W04515**
S1530 E12500
N42 E023

2. In describing lines or polygons, the latitude, longitude coordinates of the respective points are separated by the combination space-hyphen-space, as in the following examples:

S0530 E09300 – N0100 E09530 – N1215 E11045 – S0820 E10330

S05 E093 – N01 E095 – N12 E110 – S08 E103

Note: It is not necessary to repeat the first point when describing a polygon.

3. When describing a volcanic ash cloud approximate form and position, a limited number of points, which form a simplified geometric figure (a line, or a triangle, or quadrangle, etc.) should be used in order to allow for a straightforward interpretation by the user.

– END –

Appendix R - Issues arising from Amendment 1 to ICAO PANS-ATM (Doc 4444)

(Paragraph 4.7.23 refers)

1. Appendix 2, Item 15. The indication of a 'significant' point as 2 to 11 characters is misleading and inconsistent with Annex 11, 2.14.2. Appendix 2 gives the impression that a point defined by Latitude and Longitude in degrees and minutes, i.e. 11 characters or by bearing and distance, can be considered as a 'significant' point. As a result, the modification to indicate that a bearing and distance can be provided from a significant point would appear to introduce a cyclic description of significant point, i.e. a bearing and distance from a significant point which can be provided by bearing and distance!

2. Appendix 2, Item 10a, has no specified limit other than the total set of indicators prescribed i.e. a theoretical 63 characters in total. As an indication containing every possibility is almost certainly unrealistic and in an effort to reduce the length of message and clarify the data processing requirements, a limit of 50 characters is proposed.

3. Appendix 3, Field 10b, definition - the indicator 'N' seems to have been removed which is inconsistent with Appendix 2, Item 10.

4. Appendix 3, Field 17, definition is inconsistent. The *Note* would seem to suggest that part (c) has been removed in favour of a Field 18 indication. However, Item 18 makes no reference to the ability to indicate an arrival aerodrome. In addition, the example ARR message provided in 2.3.6.3 of Appendix 3 includes part (c) while omitting the 'ZZZZ' indication. It is suggested that part (c) be re-instated, the note pointing to Field 18 be removed and ZZZZ inserted in the example in 2.3.6.3, i.e. (ARR-HHE13-EHAM-ZZZZ1030 DEN HELDER).

5. In Appendix 3, Field 16 definition - the table showing previous and following fields is missing the RQP message. This is applicable to the current document as well as the future changes.

6. In Appendix 3, Field 13b, the text refers to a list of messages 'transmitted before departure' which is not logical for an ARR or RQS message. It is suggested to remove 'transmitted before departure'.

7. In Appendix 3, 2.3.6.2 and 2.3.6.3, the example messages do not include Field 13b.

8. More clarity is needed concerning the use of the DOF/. It needs to be made clear that the DOF is related to the EOBT and therefore refers to the Estimated Off Block Date. Therefore, when included within associated messages such as DLA, DEP, etc., it should contain the last specified Off Block Date, not the new date in case of a delay over midnight and not the departure date for a delayed departure over midnight.

9. The indication of a point via bearing and distance allows reference to degrees true in northern latitudes where reference to magnetic is deemed by the appropriate authority to be impractical. However, this ability to use degrees true is not consistently applied throughout the document. Appendix 3, 1.6.3 e) and within the ‘Rules for the Composition of Messages’ there is no mention of degrees true.
   In addition, it is far from clear how an automated system (or a person!) is supposed to know that a particular reference is given to degrees true rather than magnetic.

Issues arising from ICAO Guidance Material
*(State letter AN 13/2.1 – 09/9 on **Guidance for implementation of flight plan information to support Amendment 1 of the PANS-ATM**)*

1. In the table of conversion, the 'new' Field 18 DAT/ indicator can contain free text and therefore cannot be converted into the 'current' DAT/ which is limited to the characters 'S', 'H', 'V', 'M'.

2. The translation of the Field 10a descriptors E1-E3 indicates use of the 'J' in Field 10a with a DAT/ indication in Field 18. As the 'current' DAT/ element is limited to 'S', 'H', 'V', 'M' this approach doesn't seem appropriate.

REPORTING FORM ON
AIR NAVIGATION DEFICIENCIES IN THE EUR REGION

DEF ID	DEF Priority	State	DEF Type	DEF Req - ICAO Doc	DEF Req - Detail	DEF Descr	Reported by	Date Reported	DEF Rmk	Cor Act Recom ICAO	CAP Submited	CAP Description	CAP Exec Body	CAP Target Date
Remark: According to the Uniform Methodology, deficiencies are prioritized with regard to their implications on the safety or regularity and eficiency, as follows: **U priority** = Urgent requirements having a direct impact on safety and requiring immediate corrective actions. **A priority** = Top priority requirements necessary for air navigation safety. **B priority** = Intermediate requirements necessary for air navigation regularity and efficiency.														
EUR-AIS-01-02	A	Kazakhstan	WGS-84	An 15	Par. 3.7.1, 3.7.2	WGS-84 - Not Implemented	COG/ AIM TF	01/12/2004	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	N	Draft order for implementation of WGS-84 submitted for approval by the Ministry of Transport and Ministry of Defence	Kazakhstan CAA	2010
EUR-AIS-01-03	A	Kyrgyzstan	WGS-84	An 15	Par. 3.7.1, 3.7.2	WGS-84 - Not implemented	COG/ AIM TF	01/12/2004	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	Y	Government Resolution of 8 August 2007 on WGS-84 implementation; CAA developed national implementation programme which is being coordinated.	Kyrgyzstan CAA	2010
EUR-AIS-01-04	A	Russian Federation	WGS-84	An 15	Par. 3.7.1, 3.7.2	PZ-90 - Not fully implemented	COG/ AIM TF	15/05/2009	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84 / PZ-90	N	Implementation on-going up to 2012. *Coordinate's conversion matrix PZ-90.02 <--> WGS-84 published in AIP.*	Russian Federation CAA	2012
EUR-AIS-01-05	A	Tajikistan	WGS-84	An 15	Par. 3.7.1, 3.7.2	WGS-84 - Not implemented	COG/ AIM TF	01/12/2004	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	N		Tajikistan CAA	ASAP
EUR-AIS-01-06	A	Turkmenistan	WGS-84	An 15	Par. 3.7.1, 3.7.2	WGS-84 - Not implemented	COG/ AIM TF	01/12/2004	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	N		Turkmenistan CAA	ASAP

REPORTING FORM ON
AIR NAVIGATION DEFICIENCIES IN THE EUR REGION

DEF ID	DEF Priority	State	DEF Type	DEF Req - ICAO Doc	DEF Req - Detail	DEF Descr	Reported by	Date Reported	DEF Rmk	Cor Act Recom ICAO	CAP Submited	CAP Description	CAP Exec Body	CAP Target Date
EUR-AIS-01-07	A	Uzbekistan	WGS-84	An 15	Par. 3.7.1, 3.7.2	WGS-84 - Not implemented	COG/ AIM TF	01/12/2004	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	N		Uzbekistan CAA	2010
EUR-AIS-01-08	A	Belarus	WGS-84	An 15	Par. 3.7.1, 3.7.2	WGS-84 - Not implemented	COG/ AIM TF	15/05/2008	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	N		Belarus CAA	2009
EUR-AIS-01-09	A	Azerbaijan	WGS-84	An 15	Par. 3.7.1, 3.7.2	WGS-84 - Not fully implemented	COG/ AIM TF	15/05/2008		Complete implementation of WGS-84 (Baku Airport)	N	The implementation of WGS-84 has been initiated and a plan has been established for the full implementation by 2010	Azerbaijan CAA	2010
EUR-AIS-01-10	A	Ukraine	WGS-84	An 15	Par. 3.7.1, 3.7.2	WGS-84 - Not fully implemented	COG/ AIM TF	15/05/2008		Complete implementation of WGS-84	Y	WGS-84 implementation initiated in 1999 with a Government Resolution. WGS-84 has been implemented for 22 aerodromes	Ukraine CAA	2009
EUR-AIS-02-01	A	Azerbaijan	QMS for AIS	An 15	Par. 3.2	QMS not implemented	COG/ AIM TF	15/05/2008		Implement QMS for AIS	N		Azerbaijan CAA	ASAP
EUR-AIS-02-02	A	Belarus	QMS for AIS	An 15	Par. 3.2	QMS not implemented	COG/ AIM TF	15/05/2008		Implement QMS for AIS	N		Belarus CAA	ASAP
EUR-AIS-02-03	A	Georgia	QMS for AIS	An 15	Par. 3.2	QMS not implemented	COG/ AIM TF	15/05/2008		Implement QMS for AIS	N		Georgia CAA	ASAP
EUR-AIS-02-04	A	Kazakhstan	QMS for AIS	An 15	Par. 3.2	QMS not implemented	COG/ AIM TF	15/05/2008		Implement QMS for AIS	N		Kazakhstan CAA	ASAP
EUR-AIS-02-05	A	Kyrgyzstan	QMS for AIS	An 15	Par. 3.2	QMS not implemented	COG/ AIM TF	15/05/2008		Implement QMS for AIS	N		Kyrgyzstan CAA	ASAP
EUR-AIS-02-06	A	Moldova	QMS for AIS	An 15	Par. 3.2	QMS not implemented	COG/ AIM TF	15/05/2008		Implement QMS for AIS	N		Moldova CAA	ASAP

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EUR-AIS-02-08	A	Tajikistan	QMS for AIS	An 15	Par. 3.2	QMS not implemented	COG/ AIM TF	15/05/2008		Implement QMS for AIS	N		Tajikistan CAA	ASAP
EUR-AIS-02-09	A	Tukmenistan	QMS for AIS	An 15	Par. 3.2	QMS not implemented	COG/ AIM TF	15/05/2008		Implement QMS for AIS	N		Tukmenistan CAA	ASAP
EUR-AIS-02-10	A	Uzbekistan	QMS for AIS	An 15	Par. 3.2	QMS not implemented	COG/ AIM TF	15/05/2008		Implement QMS for AIS	N		Uzbekistan CAA	2011
EUR-AIS-02-11	A	Bosnia& Herzegovina	QMS for AIS	An 15	Par. 3.2	QMS not implemented	Eurocontrol / COG	20/10/2009		Implement QMS for AIS	N			
EUR-AIS-02-12	A	Greece	QMS for AIS	An 15	Par. 3.2	QMS not implemented	Eurocontrol / COG	20/10/2009		Implement QMS for AIS	N			
EUR-AIS-02-13	A	Malta	QMS for AIS	An 15	Par. 3.2	QMS not implemented	Eurocontrol / COG	20/10/2009		Implement QMS for AIS	N			
EUR-AIS-02-14	A	Serbia	QMS for AIS	An 15	Par. 3.2	QMS not implemented	Eurocontrol / COG	20/10/2009		Implement QMS for AIS	N			
EUR-AIS-02-15	A	FYROM	QMS for AIS	An 15	Par. 3.2	QMS not implemented	Eurocontrol / COG	20/10/2009		Implement QMS for AIS	N			
EUR-ATM-02-01	A	Kazakhstan	Harmonization of flight levels	An 15	Par. 3.6.4	Non-ICAO SARPS compliant flight level system		01/12/2003	The lack of harmonization of flight levels in accordance with ICAO SARPS slows down the implementation of ICAO strategic objectives and global initiatives.	Implement flight levels system in accordance with ICAO SARPs	N	EURASIA RVSM Implementation Project on-going	Kazakhstan CAA	Nov 2011
EUR-ATM-02-02	A	Kyrgyzstan	Harmonization of flight levels	An 15	Par. 3.6.4	Non-ICAO SARPS compliant flight level system		01/12/2003	The lack of harmonization of flight levels in accordance with ICAO SARPS slows down the implementation of ICAO strategic objectives and global initiatives.	Implement flight levels system in accordance with ICAO SARPs	N	EURASIA RVSM Implementation Project on-going	Kyrgyzstan CAA	Nov 2011
EUR-ATM-02-03	A	Russian Federation	Harmonization of flight levels	ANP	Part II, Table ATS 3D	Non-ICAO SARPS compliant flight level system		01/12/2003	The lack of harmonization of flight levels in accordance with ICAO SARPS slows down the implementation of ICAO strategic objectives and global initiatives.	Implement flight levels system in accordance with ICAO SARPs	N	EURASIA RVSM Implementation Project on-going	Russian Federation CAA	Nov 2011

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EUR-ATM-02-04	A	Tajikistan	Harmoni-zation of flight levels	An 11	Par. 2.6	Non-ICAO SARPS compliant flight level system		01/12/2003	The lack of harmonization of flight levels in accordance with ICAO SARPS slows down the implementation of ICAO strategic objectives and global initiatives.	Implement flight levels system in accordance with ICAO SARPs	N	EURASIA RVSM Implementation Project on-going	Tajikistan CAA	Nov 2011
EUR-ATM-02-05	A	Turkmenistan	Harmoni-zation of flight levels	An 11	Par. 2.6	Non-ICAO SARPS compliant flight level system		01/12/2003	The lack of harmonization of flight levels in accordance with ICAO SARPS slows down the implementation of ICAO strategic objectives and global initiatives.	Implement flight levels system in accordance with ICAO SARPs	N	EURASIA RVSM Implementation Project on-going	Turkmenistan CAA	Nov 2011
EUR-ATM-02-06	A	Uzbekistan	Harmoni-zation of flight levels	An 11	Par. 2.6	Non-ICAO SARPS compliant flight level system		01/12/2003	The lack of harmonization of flight levels in accordance with ICAO SARPS slows down the implementation of ICAO strategic objectives and global initiatives.	Implement flight levels system in accordance with ICAO SARPs	N	EURASIA RVSM Implementation Project on-going	Uzbekistan CAA	Nov 2011
EUR-ATM-03-01	A	Cyprus	ATS coordination procedures	An 11, EUR ANP	SARPs and reg. procedures related to coordination between ACCs	Safety deficiencies in the N part of Nikosia FIR			Long lasting issue. Any solution envisaged requires political agreement between the parties involved		N		Cyprus	ASAP
EUR-ATM-03-02*,**	A	Turkey	ATS coordination procedures	An 11, EUR ANP	SARPs and reg. procedures related to coordination between ACCs	Safety deficiencies in the N part of Nikosia FIR			Long lasting issue. Any solution envisaged requires political agreement between the parties involved		N		Turkey	ASAP

*Note: Turkey expressed disagreement with deficiency (paragraph 6.12 of the EANPG/49 report refers). **Note: CAP under development. On-going negociations facilitated by EC, Eurocontrol and ICAO.

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EUR-ATM-04-01	U	Albania	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	ASAP
EUR-ATM-04-10	U	Moldova Republic	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	ASAP
EUR-ATM-04-11	U	Morocco	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	ASAP
EUR-ATM-04-14	U	Slovenia	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	ASAP
EUR-ATM-04-17	U	Ukraine	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	ASAP

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EUR-ATM-04-21	U	Bulgaria	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	ASAP
EUR-ATM-04-26	U	Hungary	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	ASAP
EUR-ATM-04-31	U	Algeria	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concerned does not report the required data to the RMA	EUR RMA	12/10/2009	THE EUR air space SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	ASAP