INTERNATIONAL CIVIL AVIATION ORGANIZATION

REPORT OF

THE FORTY-SIXTH MEETING OF

THE EUROPEAN AIR NAVIGATION PLANNING GROUP

(Paris, 30 November to 2 December 2004)

PREPARED BY THE EUROPEAN AND NORTH ATLANTIC OFFICE OF ICAO DECEMBER 2004

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.

TABLE OF CONTENTS

LIST OF CONCLUSIONS

LIST OF DECISIONS

0. INTRODUCTION

Place and Duration

0.1. The Forty-Sixth Meeting of the European Air Navigation Planning Group (EANPG/46) was held in the European and North Atlantic Office of ICAO from 30 November to 2 December 2004.

Attendance

0.2. The Meeting was attended by 91 Members and representatives of 44 States and by observers from 8 international organisations. A list of participants is given at **Appendix A**.

Officers and Secretariat

0.3. Mr Dirk Nitschke, the new 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 Robert Kruger, Deputy Director, Mr Herman Pretorius from Headquarters, Mr George Firican, Mr Björn Hellroth, Mr Victor Kourenkov, Mr Jacques Vanier, Mrs Nikki Goldschmid and Mrs Patricia Cuff from the European and North Atlantic Office.

Working languages

0.4. Because of the difficult financial situation that ICAO was facing, the Organization was not able to provide the meeting with interpretation. However, interpretation for part of the meeting between English and Russian was kindly provided by the Delegations of Belarus and the Russian Federation. Documentation was issued in English. Selected documentation of specific importance was also issued in Russian.

Conclusions and Decisions

0.5. The EANPG records its action in the form of Conclusions and Decisions 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.

Agenda

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

- Item 1: Election of Chairman
- Item 2: Review of significant developments
- Item 3: Previous EANPG follow-up
- Item 4: Implementation programmes
- Item 5: Air Navigation Issues
- Item 6: Performance Monitoring and Safety Issues
- Item 7: Administrative and Organisational Issues
- Item 8: Any Other Business

1. ELECTION OF CHAIRMAN

1.1. The Group was informed that as a result of his appointment to succeed Mr. Christian Eigl as ICAO Regional Director Europe and North Atlantic with effect from 4 November 2004, its previous Chairman, Mr. Karsten Theil, would now serve as its Secretary. Therefore, it would be necessary to elect a new Chairman.

1.2. Following a nomination by Mr. Ladislav Mika, the Member for the Czech Republic, the Group unanimously elected Mr. Dirk Nitschke, from the delegation of Germany, as its Chairman.

1.3. When taking the Chair, Mr. Dirk Nitschke expressed the Group's appreciation of the services rendered to the Group through a number of years by Mr. Christian Eigl as its Secretary and by Mr. Karsten Theil as its Chairman.

2. REVIEW OF SIGNIFICANT DEVELOPMENTS

2.1 Membership of EANPG

2.1.1 The Group was informed that the Council of ICAO had approved an application from Ireland to become member of the EANPG. The Group welcomed Mr. Donie Mooney as its new Member and ensured him of its full cooperation and support in the future.

2.2 Resources available to the EUR/NAT Office

2.2.1 The Group was informed that at its 35th Session which was concluded in Montréal in October 2004, the ICAO Assembly approved a Regular Programme Budget for the 2005-2007 triennium which necessitates post and staff reduction. As a consequence, 8 posts in the EUR/NAT Office would not be funded in the future and would be abolished with effect from 1 January 2005.

2.2.2 The Group noted information from the Regional Director that the EUR/NAT Office continued to be committed to the enhancement of the safety, security and efficiency of international civil aviation and would therefore provide full services to States and international organisations and the execution of its essential core functions, also after the reduction of resources available to it. Work had been initiated in two areas already:

- Internally, all working procedures and routines had been scrutinised in order to identify areas where the effectiveness could possibly be increased. A number of actions had been taken already, involving, inter alia, redistribution of tasks and responsibilities between staff members and increased use of office automation. These efforts would be continued.

- In close co-ordination with ICAO Headquarters, a thorough analysis of the assistance and services that the EUR/NAT Office renders to the States to which it is accredited and to the international organisations had been initiated by the Regional Director, and on the basis of the analysis, a business plan for the EUR/NAT Office, including a rigid prioritising of core tasks in accordance with the plan, would be implemented. In this context, further redistribution of tasks and responsibilities would be considered together with possible adjustment of the expertise available to the EUR/NAT Office.

2.3 Outcome of the 35th Session of the Assembly

ICAO Universal Safety Oversight Audit Programme (USOAP)

2.3.1 The Group was informed that the Assembly endorsed the expansion of the Programme from personnel licensing, operation and airworthiness of aircraft to all safety-related ICAO Standards, beginning 1 January 2005. The Group was also informed that airports, air traffic control and other key components of the air transport system will be included in the oversight area. In addition full audit reports will be shared by States instead of summary reports. The Group noted that the results of USOAP underscored the need for a shift in focus from developing new Standards to facilitating the implementation of existing ones.

Aviation Security

2.3.2 The Group was informed that the Assembly emphasized that aviation security should continue to be treated as a matter of highest priority and urged ICAO and Contracting States, through increased global cooperation, to increase their efforts to safeguard international civil aviation from unlawful interference.

The Environment

2.3.3 The Group was informed that the Assembly recognized the considerable progress made on the reduction of noise and gas emissions since the 2001 Assembly and emphasized ICAO's leadership role in all matters related to aviation and the protection of the environment. The Group was also informed that substantive guidance material was produced to assist States in the implementation of a "balanced approach" to noise management, comprising four principal elements: reduction of noise at the source; land-use planning and management; noise abatement operational procedures; and operating restrictions on aircraft. The Group was informed that, on the complex and difficult issue of market-based measures to limit or reduce the environmental impact of aircraft engine emissions, the Assembly welcomed progress on both voluntary measures and emissions trading.

Technical Co-operation

2.3.4 With regard to the sustained growth of the Technical Co-operation Programme, the Group was informed of the trend to privatisation of some elements of the air transport system and the urgency of funding for remedial action required for deficiencies identified under the Universal Safety Oversight Audit Programme (USOAP). In addition, the Assembly resolved that ICAO should expand the Programme to non-State entities (public or private). This expansion would require that these new partners be involved in civil aviation projects, undertaken in ICAO Contracting States, designed to enhance the safety, security and efficiency of international civil aviation.

Council

2.3.5 The Assembly elected a new 36-member Council, the governing body of the Organization, for a three-year term. In a related development, the Group was informed of the unanimous re-election of Dr. Assad Kotaite for an eleventh consecutive three-year term as President of the Council.

2.4 Review process of the EANPG Report

2.4.1 The group was informed that, in 1986, the Air Navigation Commission (ANC) had undertaken a study on the future role of the EANPG and its working arrangements. In its report thereon, contained in C-WP/8336, the Commission had indicated that specific consideration of EANPG reports by the Council or the ANC should not be an automatic requirement. The Council supported (C-Min 119/13 and 119/14) this course of action. At that time, the Council agreed that the process to be followed with the

EANPG report would be that the President of the Council would circulate the report to Council Members and Air Navigation Commissioners under cover of a memorandum and would indicate that, if a request to have the report tabled before the Council or Commission were transmitted to the President, the necessary action would be taken. If no such request were received, the Council would be so informed and the Report would then be accorded official status for follow-up action.

2.4.2 The Commission, during its review of the EANPG/45 Report, and in light of recent major developments in the European Region and their global impact, expressed the view that a full review process, similar to that of reports of other planning and implementation regional groups (PIRGs), would be beneficial and recommended that the Council revisit its previous action taken on the review process of EANPG reports. After revisiting its previous decision, the Council took the action recommended by the ANC and agreed that, in future, the ANC and Council would review the EANPG reports in a manner similar to other PIRG reports.

2.5 Changes to the ICAO provisions concerning the mandatory carriage of Emergency Locator Transmitters (ELT)

2.5.1 The Group was informed that the requirements concerning the mandatory carriage of ELTs in all aircraft would become applicable on 1 January 2005. Of importance was that, in accordance with Annex 10, all ELTs would be required to operate on 406 MHz and 121.5 MHz simultaneously. In addition, there was a mandatory requirement for the carriage of at least one automatic ELT when operating long-range over-water flights, as defined in Annex 6 (Annex 6, Part 1, paragraph 6.5.3). States could also designate land-masses where the carriage of one automatic ELT would be mandatory. As regards all international commercial air transport aeroplanes operated on long-range over-water flights, Annex 6, Part I, paragraph 6.17.3 would require at least two ELTs operating on 121.5/406 MHz from 1 January 2005, of which one ELT must be automatically activated. In addition, since 1994, a Standard had been in place requiring States to make the necessary arrangements to establish a 406 MHz register to be immediately available to Search and Rescue (SAR) authorities.

2.5.2 The Group was informed that, with few exceptions, carriers operating under United States FAR 121 and JAR OPS 1 are currently not required to be equipped with automatic ELTs. It was also recalled that many operators were unable to meet the requirements of the Annex 6 provisions. In some instances, it was pointed out that national regulations were not yet in place. Although the Group agreed that it was not the correct forum to discuss exemption policies to ICAO Standards and Recommended Practices (SARPs), which was the remit of States themselves, it could nevertheless propose a plan for implementation that would facilitate the transition. It was therefore agreed that all States should promulgate in their National Aeronautical Information Publications (AIP) any plans that they may have concerning the mandatory carriage of Emergency Locator Transmitters (ELT), both over sovereign territory and the High Seas.

EANPG CONCLUSION 46/1 – TRANSITION PLAN FOR THE IMPLEMENTATION OF NEW GENERATION ELT

That:

a) States publish their regulations and/or requirements for the transition to the mandatory carriage of new generation Emergency Locator Transmitters (ELTs) specified in the Annex 6 provisions that come into force on 1 January 2005, applicable in both sovereign and High Seas airspace, in their National Aeronautical Information Publication (AIP) and notify their differences to the ICAO Standards and Recommended Practices (SARPs) accordingly;

b) prior to implementing the provisions of Annex 6 in respect of the mandatory carriage of ELTs within their territory, States were urged to consider the difficulties associated with equipping aircraft by 1 January 2005 and to evaluate alternative solutions; and

c) the ICAO Regional Director bring this matter to the attention of States.

2.6 Other significant developments

2.6.1 The Group was informed that the implementation of reduced vertical separation minimum (RVSM) in the Caribbean and South American (CAR/SAM) Regions, in conjunction with its planned implementation in the North American (NAM) Region, will take effect on 20 January 2005.

3. PREVIOUS EANPG FOLLOW-UP

3.1 Follow-up of EANPG/45 Conclusions and Decisions

3.1.1 The Group was updated on the status of follow-up on the Decisions and Conclusions of EANPG/45. It was reported that actions on a large number of issues were either completed or subject of working papers that would be considered later in the course of the meeting.

3.1.2 It was highlighted that the issues addressed in Conclusions 45/1 (Harmonization of the Work Programmes of the PIRGs) and 45/30 (Global RVSM Monitoring Requirements) would be taken up at the ALLPIRG/5 meeting. With regard to the other outstanding Conclusions and Decisions, the Secretariat affirmed that efforts would continue to be made to resolve them.

3.1.3 The Group noted with satisfaction the report from Poland concerning developments in follow-up of Conclusion 42/2 (Common Upper Flight Information Region over part(s) of the High Seas area of the Baltic Sea and/or other Type of Cooperation) regarding the Baltic Sea cooperation initiative. The EANPG noted that a Memorandum of Cooperation had been signed between the civil aviation authorities of Lithuania and Poland and that other States in the area would be invited to join in the activities of this initiative.

3.2 Regional Monitoring Agency (RMA) Handbook

3.2.1 In response to a question of the status of the draft Regional Monitoring Agency (RMA) Handbook, the Group was informed that the Separation and Airspace Safety Panel (SASP) had reviewed the document and that it was now with Headquarters. It was not possible to provide a publication date but the draft Handbook was being used by the RMAs.

4. IMPLEMENTATION PROGRAMMES

4.1 Reduced Vertical Separation Minimum (RVSM) Airspace

4.1.1 The Group was informed that, pursuant to EANPG Conclusion 45/31 *Resolution of operational problems in RVSM transitional airspace* and Conclusion 45/33 *Co-ordination Meeting on the interface issues over the Black Sea* ICAO convened a co-ordination meeting of States to address interface issues in the Eastern part of the ICAO EUR Region related to the implementation of RVSM. The meeting, which was attended by 42 participants from ten States and three international organizations, took place in Moscow from 10 to 11 March 2004.

4.1.2 The interface meeting looked at two specific aspects, namely the application of different Tables of Cruising Levels and ATC procedures in the transition areas and actions required to eliminate or mitigate interface problems; and the application of Tables of Cruising Levels over the High Seas portions of the Black Sea. In addition, the meeting determined a mutually acceptable implementation date for RVSM in the Caucasus corridor. The Group noted that:

a) the Russian Federation had implemented the Table of Cruising Levels, as shown in Annex 2, Appendix 3, within the High Seas portion of Rostov FIR on 10 November 2004;

b) Georgia, the Russian Federation, Turkey and Ukraine would amend the Letters of Agreement between the ATS units involved; and

c) Armenia, Azerbaijan and Georgia would postpone the implementation of RVSM in their respective FIRs until 17 March 2005.

4.1.3 The Group was informed that the 30th Meeting of the COG took initial action on the report of the interface meeting. It was noted that the COG had agreed that, in order to meet the agreed implementation date, a co-ordination meeting should be convened in order to address pending issues related to the implementation of RVSM including the adjustment of the ATS route network. The meeting would take place in Paris from 6 to 8 December 2004. With the above in mind, the Group endorsed the proposal that RVSM be implemented in Baku, Tbilisi, and Yerevan FIRs as well as the High Seas portion of Rostov FIR on 17 March 2005. The Group noted that the Russian Federation intended to further expand the implementation of RVSM but that no concrete plans were in place.

4.1.4 The Group was also informed that, as a pre-requisite to implementing RVSM, it was necessary to amend the EUR *Regional Supplementary Procedures* (SUPPs) (Doc 7030) in order to include the FIRs concerned as well as to make adjustments to the transition areas. Accordingly, the Group endorsed a draft proposal for amendment and requested the Regional Director of the ICAO EUR/NAT Office to process the proposal for amendment on behalf of the EANPG.

EANPG CONCLUSION 46/2 - IMPLEMENTATION OF RVSM IN THE SOUTH CAUCASUS AND HIGH SEAS PORTION OF ROSTOV FIR

That Armenia, Azerbaijan, Georgia and the Russian Federation implement reduced vertical separation minimum (RVSM) in the South Caucasus and the High Seas portion of Rostov Flight Information Region (FIR) on 17 March 2005.

EANPG CONCLUSION 46/3 - AMEND THE EUROPEAN REGION PROVISIONS REGARDING THE AREA OF APPLICATION OF RVSM

That the ICAO Regional Director, on behalf of the EANPG, initiate a proposal for amendment to the EUR Regional Supplementary Procedures to expand the area of application of reduced vertical separation minimum (RVSM) to include Baku, Tbilisi, Yerevan, and the High Seas portion of Rostov Flight Information Region (FIR).

4.1.5 The observer from IFALPA expressed the Federation's appreciation of the implementation of the ICAO Table of cruising levels in the High Seas portion of Rostov FIR, thus improving safety.

4.2 Expansion of 8.33 kHz airspace

4.2.1 The 8.33 kHz horizontal expansion (HEX) programme had already provided 54 of the planned 71 conversions, with a further 19 possible conversion still to be confirmed. The next phase of 8.33 kHz expansion would be vertical expansion above flight level 195 and expected to provide a further 39 conversions. The implementation date for the vertical expansion programme was March 2007.

4.2.2 The total 8.33 kHz programme had enabled about 130 ATS channels to be converted from 25 kHz to the more efficient 8.33 kHz channel spacing. This had provided 215 ATS 8.33 kHz allocations, giving a net gain of 85 new allocations. Approximately 40 non-ATS 8.33 kHz allocations had also been

made. The number of conversions was the key indicator for the extent of 8.33 kHz implementation. The 130 conversions out of a list of 7,000 allocations within the States that had implemented 8.33 kHz channel spacing, indicated that the programme had achieved only about 2% of its total potential.

4.2.3 A new digital communications system with a much greater spectrum efficiency, would eventually replace the current system. There were however no firm developments, or any significant progress to report. Given the normal time necessary for a new system to reach the required level of maturity to satisfy aviation requirements, it was evident that 8.33 kHz was the only system available to satisfy the expected voice communications demand for the foreseeable future.

4.2.4 By the time of the planned implementation date for the vertical expansion of 8.33 kHz in March 2007, the growth in demand would exceed the supply of new frequencies that it was expected to deliver. This indicated the urgency, with which a much more comprehensive implementation programme must be developed, to ensure that the outstanding unsatisfied requirements and future growth in demand for VHF communications channels could be satisfied. A shortage of communications channels would be a serious constraint to future growth for aviation in Europe.

EANPG CONCLUSION 46 /4 - THE NEED FOR THE EXPANSION OF 8.33 KHZ AIRSPACE

That, States and relevant organizations be informed of the need for a more comprehensive 8.33 kHz implementation programme, with firm steps and dates, in order to satisfy the outstanding requirements and keep pace with the future growth in demand for VHF assignments, so as to prevent communications capacity from becoming a more serious constraint to growth for aviation in Europe.

4.2.5 In response to the shortage of communications capacity, the EUROCONTROL ATM/CNS Consultancy Group (ACG) agreed at its 24th meeting in September 2004 to conduct a workshop on '8.33 below FL195' at the beginning of 2005. The EANPG agreed that this would be a very important event and that the COG should follow-up the issue and report to EANPG/47 with proposals for an 8.33 kHz implementation programme that would satisfy VHF voice communications demands for the next 10 to 20 years.

EANPG CONCLUSION 46/5 – PLANNING FOR 8.33 KHZ EXPANSION

That the EANPG, in recognising the importance of the EUROCONTROL initiative to hold a workshop dedicated to 8.33 kHz expansion below FL 195 in the beginning of 2005 task:

a) the ICAO European and North Atlantic Office to take an active part in the preparation of this workshop; and

b) the COG to present in December 2005 to the EANPG the proposal of a precise planning and airspace identification for the expansion of 8.33 kHz below FL 195.

4.2.6 States were urged to continue to allocate a high priority to maximising the number of 25 to 8.33 kHz conversions. The COG/FMG has integrated the planning for 8.33 kHz conversions into block planning meeting process, to facilitate the earliest possible results for the above FL 195 implementation programme.

UHF Coverage for State Aircraft

4.2.7 Adequate UHF coverage was an important factor in enabling non 8.33 State aircraft to operate in 8.33 kHz airspace. The lack of co-ordination for UHF allocations outside the NATO area was reported as causing serious problems in Romania. It was agreed that the matter be brought to the attention of the EANPG.

EANPG CONCLUSION 46/6 - UHF COVERAGE FOR STATE AIRCRAFT

That States and organizations take the necessary steps to ensure sufficient ultra-high frequency (UHF) coverage for state aircraft, where needed in 8.33 kHz airspace.

VDL Implementation Plan

4.2.8 The VDL Implementation Plan was a four step programme to create 4 VDL 2 and 2 VDL 4 European region-wide datalink channels frequency allocations. Step one, which would provide fully protected frequency allocations for one VDL 2 and one VDL 4 channel was almost completed.

4.2.9 In considering the severe shortage of VHF channels in Europe, the requirement for a region-wide VDL 4 allocation was questioned. The group agreed that until the need for VDL 4 channels had been confirmed, no planning was to be undertaken for the additional VDL 4 channel.

4.3 Single European Sky

4.3.1 The Group noted that the European Union Member States, through the Single European Sky Regulations, had set up the necessary legislative package for the further development of an Air Traffic Management network that would be harmonised and economically managed while providing high safety standards. The European Commission informed the Group on the activities in order to implement the Single European Sky Regulations within a demanding timescale and reported inter alia:

- that EUROCONTROL had been mandated by the European Commission to carry out most of the technical work associated with the development of implementing rules, initially in the areas of airspace regulation and interoperability requirements;

- that the Single Sky Committee had been established, composed of civil and military representatives of the European Union Member States, to assist the European Commission in the implementation. When relevant and appropriate, the ICAO EUR/NAT Office would be invited to participate in the work of the Single Sky Committee with status as observer;

- that the Industry Consultative Body had been established, composed of representatives of all aspects of aviation industry in order to provide the European Commission with a forum for consultations on implementing rules; and

- that the implementation programme included the establishment of one single European Upper Flight Information Region, encompassing the upper airspace falling under the responsibility of the European Union Member States and as appropriate including airspace of European countries non-members of the European Union.

4.3.2 The Group noted that several items on the European Commission's implementation programme would imply amendments to the European Air Navigation Plan (ANP) and possibly also to the Regional Supplementary Procedures. The Group considered it would be unfortunate if the ICAO amendment procedures resulted in unforeseen delays in the European Commission implementation programme and therefore invited the European Commission to recognise the necessary processes inside ICAO and the time needed for them and therefore to involve, through the ICAO EUR/NAT Office, the EANPG as soon as appropriate.

5. AIR NAVIGATION PLANNING

5.1 Air Traffic Management

Outcome of the ICAO Olympics Preparation Meetings (OLIMP)

5.1.1 The Secretariat presented the meeting with the outcome of the ICAO Olympics Preparation Meetings (OLIMP). The Group was recalled that in September 2001, ICAO identified the need for preparatory activities preceding the Olympic Games which would be held in Athens, Greece in Summer 2004. Based on the very positive reaction received from States, the first ICAO Olympics Preparation Meeting (OLIMP/1) was held in September 2002 identifying the directions to be followed. These directions formed the basis of the "OLIMP Action Plan for 2002 – 2004". At that time, the necessity to revise the existing ATS route structure in South-Eastern Europe was also identified in order to cope with the expected increased demand before, during and after the event. In this respect, it was decided that a special forum was required and the OLIMP Airspace Organization Working Group (OLIMP/AOG) was created for this purpose.

5.1.2 The preparation work continued during the next OLIMP and OLIMP/AOG meetings, further refining the operational and technical aspects of the improvements required in the area, culminating with an historical agreement of the new ATS route package being reached on 27 August 2003, with a target date of implementation of 25 December 2003 (two months in advance of the initially expected date of implementation of February 2004). Another important milestone was reached on 10 December 2003 when, under the auspices of ICAO and with the support of EUROCONTROL, the first Letters of Agreement had been signed between the concerned ATC units of Greece and Turkey, enabling the full implementation of the ATS route package at the date agreed (25 December 2003).

Achievements of OLIMP meetings

5.1.3 The ICAO Olympics Preparation Meetings (OLIMP) allowed for a complex series of improvements on the technical, operational and human resources. As reported at EANPG/45, significant improvement of the ATS route network in South East Europe was envisaged to be made following the approval and implementation of a Proposal for Amendment of the ICAO EUR Air Navigation Plan (Doc 7754). This proposal, which contained a package of ATS routes in South East Europe, introduced 13 new ATS routes and modified 2 existing ones to meet the requirements of international civil aviation and airspace users as well as the specific national and international needs of the States concerned. With this achievement, the long-standing issue of the full implementation of G18/UG18, which had been a subject of contention since 1985, was also resolved.

5.1.4 It was also aimed at providing additional links, in particular, to meet the expected high traffic demands related to the 2004 Summer Olympic Games hosted by Greece whilst complementing the existing ATS route network. This package was implemented smoothly on 25 December 2003 by Albania, Bulgaria, Croatia, Cyprus, Greece, Italy, Malta, Romania, Serbia and Montenegro, The former Yugoslav Republic of Macedonia and Turkey.

5.1.5 Between 25 December 2003 and 18 March 2004, a further set of route network changes, in particular of the States 'upstream' to South East Europe, was approved and implemented. The States involved included Albania, Bulgaria, Cyprus, Greece, Hungary, Italy, Moldova, Poland, Romania, Serbia and Montenegro, Slovakia, The former Yugoslav Republic of Macedonia, Turkey and Ukraine. The exercise entailed modifications to 37 existing routes and the introduction of 12 new ATS routes. The improved route structure now channels traffic to and from as far North as Scandinavia.

5.1.6 In an effort to ameliorate the traffic flows between the South East European Region with that of the Middle East, another proposal was developed during the Spring of 2004 aiming to ensure a better link between Europe and Middle East destinations. The proposed changes pertained to the creation of 4 new ATS routes and the upgrade of two temporary routes to permanent ones. Greece and Cyprus implemented the approved route proposal on 8 July 2004 without any additional operational problems being generated for the ATC units concerned.

5.1.7 The overall traffic in the area recorded a constant growth after the implementation of the new ATS route structure in December 2003. A traffic analysis performed in over the first eight months of 2004 in Athinai FIR showed a significant increase compared to 2003 (a constant traffic growth of up to 49.8% recorded in July 2004 compared with July 2003).

5.1.8 In addition to the ATS route structure most of the identified technical and operational aspects (radar data exchange arrangements, improvement of the VHF radio coverage, establishment of OLDI links, establishment of MFC links, revision of the ATM procedures and letters of agreement, contingency planning, civil – military co-ordination etc) required to improve the system in the area had been successfully achieved prior to the Summer Olympic Games 2004. The only unsolved issue was the reopening of the Kosovo airspace which was unfortunately beyond the power of the OLIMP meetings.

5.1.9 The EANPG noted with satisfaction the very positive results of the OLIMP meetings and congratulated all States and International Organisations that contributed to the success of its work; it was underlined that any success was made possible due to the excellent cooperative spirit shown by all the members of the OLIMP and the extensive preparatory work done by the States concerned, ICAO, IATA and EUROCONTROL.

5.1.10 IFATCA and IATA expressed their thanks to ICAO and all parties involved in the work of OLIMP for the recorded results and benefits for the flying public, appreciated as beyond any expectations. Special thanks were also extended to Greece for the excellent preparation activities and conduct of all activities before and during the event. The EANPG expressed their wish that further work be done in order to improve the overall civil aviation activities in the area and encouraged all States and International Organisations to continue with the same cooperative spirit and goodwill shown during the OLIMP meetings.

Language proficiency

5.1.11 In order to support States' efforts to comply with the strengthened provisions for language proficiency (Annex 1, Annex 6, Annex 10, Annex 11, PANS-ATM, Doc 4444 refer) that would become applicable on 5 March 2008, and taking into account that the implementation of these provisions would be challenging for some States, particularly for the States from the Eastern part of the ICAO EUR Region, the Group agreed that assistance to States in this respect was required.

5.1.12 To facilitate the implementation of these new Standards, it was agreed that the ICAO Regional Director organise a Workshop on implementation of language proficiency requirements for the EUR States centred on the recent ICAO SARPs, the reason why they were adopted and the implementation schedule. The Workshop would also address the issue related to language testing and how to establish a reliable and robust language testing service, as well as the important question of maintaining acquired language proficiency over time.

5.1.13 To obtain maximum benefit from this Workshop, States should arrange for participation by senior officials of the civil aviation authorities, accompanied by officials from the airlines, ATM service provider organisations and training institutions. The results of this Workshop would demonstrate the need and ways for further assistance to the States concerned.

EANPG CONCLUSION 46/7 - ASSISTANCE TO EUR STATES IN IMPLEMENTING THE PRESCRIBED LANGUAGE PROFICIENCY REQUIREMENTS

That:

a) the ICAO Regional Director, in co-ordination with IFATCA, organise as soon as possible a Workshop on implementation of Language Proficiency Requirements for the EUR States;

b) to obtain maximum benefit from this Workshop, States arrange for participation by senior officials of the civil aviation authorities accompanied by officials from the airlines, ATM service provider organizations and training institutions; and

c) ICAO develop a plan of actions to assist States to meet the ICAO language proficiency requirements by 2008.

Harmonization of training

5.1.14 The Group was informed that following the EANPG Conclusion 45/6, the ICAO Regional Director organized a special workshop in order to familiarize the States from the Eastern part of the ICAO European Region (non-ECAC States) with the EUROCONTROL safety regulatory requirements training standards and guidelines (ESARR5). Based on the outcome of this workshop, follow-up study and consultations with the States concerned it was agreed that the ESARR5 requirements cover basic content needed for an air traffic controller both in knowledge and skills terms. The material has been recognised as providing a good basis for any air traffic controllers' training programme.

5.1.15 The Group was informed that the application of ESARR5 provisions by non-EU States would facilitate the possible recognition of air traffic controller licences under the proposed European directive for a community licensing scheme.

5.1.16 The Group recommended that practical assistance should be provided to the States concerned on the use of ESARR5 and associated material. In this respect the Interstate Aviation Committee agreed to provide assistance to the CIS countries in adapting the ESARR5 requirements upon request from States.

5.1.17 The Group agreed that the competence of ATM personnel is a fundamental element of safety achievement, and therefore of safety management, in the provision of ATM services.

EANPG CONCLUSION 46/8 - HARMONISATION OF TRAINING STANDARDS AND GUIDELINES IN THE STATES FROM THE EASTERN PART OF THE ICAO EUR REGION

That:

a) in order to harmonise safety requirements, training standards and guidelines, the States from the Eastern part of the ICAO EUR Region be encouraged and recommended, if practicable for the States, to apply the EUROCONTROL Safety Regulatory Requirements 5 (ESARR5 – ATM Services Personnel);

b) ICAO provide assistance to the States concerned on the matter;

c) EUROCONTROL provide advice on ESARR5 requirements as appropriate; and

d) the Interstate Aviation Committee (IAC), in co-ordination with the ICAO European and North Atlantic Office, provide additional assistance in adapting the ESARR5 requirements upon request to civil aviation administrations of the States signatories of the Intergovernmental Agreement on Civil Aviation and Airspace Use of 30 December 1991.

Unmanned Aerial Vehicles (UAV)

5.1.18 EUROCONTROL provided the Group with an update on activities related to UAVs, which included work being carried out by the Joint Aviation Authorities (JAA), the European Commission (EC) and the North Atlantic Treaty Organisation (NATO). The Group recalled that it had been addressing this issue since EANPG/42 and that the Air Navigation Commission (ANC) had included this matter on its work programme. The Group was informed that much of the work on UAVs related to airworthiness issues had been carried out within the framework of the Joint JAA-EUROCONTROL UAV Task Force.

5.1.19 The Group noted that the European Aviation Safety Agency (EASA) was planning to define European specifications for UAV airworthiness and operational approval criteria, which could provide substantive input for related ICAO developments associated with Annexes 6, 8 and 10. In this connection, it was pointed out that it would bee beneficial if States that were already developing material related to UAV operations could provide it to ICAO. The Group agree that development of additional ATM regulatory material, which should be done in close co-ordination between ICAO and EUROCONTROL, was urgently needed the ICAO Contracting. It was pointed out that the emerging IFATCA policy on this matter was that for ATC purposes the treatment of UAVs should not be different from other aircraft.

5.1.20 The Group was informed that, in preparation for the International Telecommunication Union (ITU) World Radio Conference (WRC) 2007 (Agenda Item 1.5), ICAO was proposing that spectrum be allocated for use by UAVs. The Group was also informed that the operation of UAVs was taken into account in the ATM Concept of Operations, which was agreed to by the 11th Air Navigation Conference and subsequently approved by the ANC.

5.1.21 With above in mind, the Group recalled that the issue of UAV operations in a mixed environment had been addressed EANPG/42 December 2000 (Conclusion 42/26 refers). Through that Conclusion, ICAO had been requested to include UAVs in its work programme as a matter of urgency.

5.1.22 It was further recalled that the issue of UAVs had also been addressed at EANPG/43 (Decision 43/40 refers) and EANPG 44, December 2002 (Decision 44/48 refers). The Group agreed, that international aviation operational requirements for UAVs should be clearly defined. In addition Article 8 of the Convention on International Civil Aviation ("Pilotless aircraft") was underlined as a cornerstone in the development of any provisions on the subject.

5.1.23 Considering that international UAV flights were becoming common practice, the Group agreed to re-emphasise its previous Conclusion on this matter.

EANPG CONCLUSION 46/9 – INTERNATIONAL OPERATION OF UAV

That ICAO consider developing provisions for international operation of Unmanned Aerial Vehicles (UAV), including operations over the High Seas, particularly to assure harmonised application of the requirements and the thrust of Article 8 of the Convention on International Civil Aviation.

Provisions for definition and content for initial call

5.1.24 The Group was presented with proposal to amendment the PANS ATM (Doc 4444) to provide an appropriate definition for the content of the first voice message from a pilot to ATC when changing from one communications channel to another. It was noted that the current provisions of Doc 4444 do not provide a definition for initial call. The initial call represents the means for the pilot to make the first voice transmission to ATC, subsequent to a change of an air-ground voice communication channel.

5.1.25 The Group noted the proposal to and agreed that the material should be used as the basis to develop ICAO provisions concerning information to be included when initial contact was made. It was therefore agreed to request the Regional Director of the ICAO EUR/NAT Office, in co-ordination with EUROCONTROL, to process the proposal on behalf of the EANPG.

EANPG CONCLUSION 46/10 – AMEND THE ICAO PROVISIONS REGARDING INITIAL CONTACT

That the ICAO Regional Director, on behalf of the EANPG, initiate a proposal for amendment to the ICAO provisions to define the content of initial calls when a change of communication channel takes place.

Amendment to the EUR SUPPs – removal of RVSM airspace entry/exit flight planning requirements

5.1.26 The Group recalled that, prior to the implementation of RVSM on 24 January 2002, some States designated compulsory reporting points at the lateral limits of their RVSM airspace as EUR RVSM Entry/Exit points. These points were so designated and published in order to clarify the ICAO flight plan form Item 15 requirements for operators intending to fly to, from and/or through EUR RVSM airspace, and to facilitate flight plan conformance checking by the EUROCONTROL Central Flow Management Unit Integrated Initial Flight Plan Processing System (CFMU IFPS).

5.1.27 The flight plan requirements for operation in EUR RVSM airspace, including the requirement to insert EUR RVSM Entry/Exit points in Item 15 of the ICAO flight plan form, where applicable, were added to the ICAO Regional Supplementary Procedures for Europe by way of Amendment No. 200 dated 12 December 2000. However, the next CFMU IFPS software release, would enhance the IFPS flight plan conformance checking capability with regard to flights intending to operate to, from and/or through EUR RVSM airspace without dependence on published 'EUR RVSM Entry/Exit points'.

5.1.28 It was noted that, although the present reporting points at the lateral limits of the EUR RVSM airspace should be retained for other operational reasons, following the implementation of the next CFMU IFPS software release, there would no longer be a requirement to designate these reporting points as EUR RVSM Entry/Exit points. Accordingly, the Group endorsed the draft amendment proposal to the ICAO EUR SUPPs, which would remove all references to these points as 'EUR RVSM Entry/Exit points' and requested the Regional Director of the ICAO EUR/NAT Office to process the draft proposal for amendment on behalf of the EANPG.

EANPG CONCLUSION 46/11 – ENTRY/EXIT POINTS FOR EUR RVSM AIRSPACE

That the ICAO Regional Director, on behalf of the EANPG, initiate a proposal for amendment to the European Regional Supplementary Procedures to remove the requirement for European Reduced Vertical Separation Minimum (RVSM) entry/exit points.

Alternative means of communication - Telephone

5.1.29 The Group was informed that EUROCONTROL had determined that making ATS unit telephone numbers available to flight crews, by publishing them in national Aeronautical Information Publications (AIPs), could be beneficial in the event of a communication failure. The use of these telephone numbers would be restricted to air-ground radio communication failures. The Group was also informed that, in other ICAO Regions, where the use of an aircraft telephone was permitted during air-ground radio communication failure, such use was limited to passing the intentions of the flight crew to the appropriate ATS unit. It was also pointed out that ICAO was in the process of amending Annex 2 to include "all other available means" as an additional method to be used in the event of a communication failure.

5.1.30 The Group felt that the use of telephones during an air-ground radio communication failure could be a viable option to inform ATC of the pilot's intentions and that a draft proposal for amendment to the ICAO Regional Supplementary Procedures should be developed. The proposal for amendment should be based on the following and should take account of security issues and the proposed amendment to Annex 2:

a) the use of a telephone during air-ground radio communication failure would not in any way affect the "communication failure" status of the aircraft and the requirement for a pilot to comply with the appropriate radio communication failure procedures would not be affected;

b) the use of a telephone could only be for the purpose of exchanging information with the appropriate ATS unit (such as confirmation of the pilot's intentions) during air-ground radio communication failure, and not for exchange of clearances or instructions; and

c) it would be up to the discretion of the pilot to decide what constituted a "suitable" telephone.

5.1.31 Based on the fact that the use of a suitable telephone during air-ground radio communication failure would not in any way affect the "communication failure" status of the aircraft, but that it would provide another means of determining the intentions of the pilot, the Group endorsed the suggestion that telephones be used during a communication failure and agreed that the Regional Director of the ICAO EUR/NAT Office be requested to initiate an amendment proposal to the EUR SUPPs on behalf of the EANPG. It was also agreed that States should promulgate a telephone number in their national AIP to be used by pilots that experience a communication failure.

EANPG CONCLUSION 46/12 – AMEND THE EUROPEAN REGION PROVISIONS REGARDING COMMUNICATION FAILURE PROCEDURES

That:

a) the ICAO Regional Director, on behalf of the EANPG, initiate a proposal for amendment to the EUR Regional Supplementary Procedures to include the use of telephones when experiencing a communication failure; and

b) States promulgate a telephone number in their national Aeronautical Information Publications for use by aircraft experiencing a communication failure.

Increased vertical separation in EUR RVSM airspace during radio communication failure

5.1.32 The Group recalled that, in order to enable the implementation of RVSM on 24 January 2002, ICAO Doc 7030/4 EUR was amended [Amendment No. 200 dated 12 December 2000] in order to include the RVSM-related procedures, phraseologies and flight planning requirements, including the following provision:

"8.4.2 ATC shall provide a minimum vertical separation of 600 m (2 000 ft) between an aircraft experiencing a communication failure in flight and any other aircraft when both aircraft are operating within the EUR RVSM airspace"

5.1.33 The application of this procedure was considered as an additional safety measure to safeguard against the possibility of an aircraft losing its height-keeping capability required for operation in RVSM airspace and simultaneously experiencing communication failure. Europe was the first Region to introduce RVSM in complex continental airspace, and this procedure was considered, at the time, as an initiative that was contributing to the overall level of safety in EUR RVSM airspace. However, operational feedback has shown that the above wording was creating some difficulty. ATC's ability to increase vertical separation between aircraft at any particular point in time was dependant upon the real-time dynamics of the situation, especially the overall air traffic situation and co-ordination requirements.

5.1.34 It was pointed out that none of the other ICAO Regions applying RVSM had implemented this procedure and that it was not intentioned to do so when the North American Region implements RVSM in January 2005.

5.1.35 The Group was informed that, on the basis of the above, an assessment of the implications for the EUR RVSM safety case by the removal of this procedure had been undertaken. The results of this assessment had shown that, because of the extremely remote frequency of an aircraft simultaneously losing its height-keeping capability and experiencing a communication failure, the impact of removing this particular procedure from the EUR SUPPs was considered to be, from a safety perspective, negligible.

5.1.36 The Group therefore agreed that, as soon as the relevant assessments and State consultations have been completed, a proposal for amendment to the EUR Region SUPPs, that would remove paragraph 8.4.2, should be prepared. Subsequently, the proposal for amendment should be processed on behalf of the EANPG.

EANPG CONCLUSION 46/13 – COMMUNICATION FAILURE PROCEDURES IN RVSM AIRSPACE

That the ICAO Regional Director, subject to a successful review of the safety case by EUROCONTROL, initiate on behalf of the EANPG, a proposal for amendment to the European Regional Supplementary Procedures (EUR SUPPs) to remove the requirement to apply 2000 ft separation (EUR SUPPs, paragraph 8.4.2 refers) when experiencing a communication failure in Reduced Vertical Separation Minimum (RVSM) airspace.

Originating Region Code Assignment Method (ORCAM)

5.1.37 EUROCONTROL presented the EANPG with a working paper recalling on the developments of the Originating Region Code Assignment Method (ORCAM) Users Group work and the future availability of SSR codes. The 32nd Meeting of the EUROCONTROL Airspace and Navigation Team (ANT/32; October 2003) set up a multidisciplinary group - the ORCAM Improvement Focus Group (OIFG) - for assessing, analysing the feasibility of, and to propose an operational and/or technical solution to be pursued in order to prevent future SSR code shortages. OIFG identified three options: a) create a Centralized Code Assignment and Management System (CCAMS); b) increase in the efficiency of the current usage of SSR codes; and c) improvements of the local FDPS. These three options have been assessed and analysed from different aspects including cost, benefits, perspectives, etc.

5.1.38 The OIFG took into account of the implementation of SSR Mode S initially scheduled for operational introduction in March 2005. In examining the code saving benefits from the implementation of Mode S, it was determined that by mid 2005, only very limited relief of Mode A code usage could be expected. Moreover, the bulk of any savings would be restricted to city pair flights where domestic or super

domestic SSR codes were already being used rather than the transit codes, for which savings are urgently required. The most likely date that Mode S could make an effective contribution to the saving of Mode A transit codes would seem to be around mid to late 2007. The implementation area concerned would encompass only the Benelux countries, Eastern and Northern France, Germany and Switzerland. On current planning, the Southern part of the United Kingdom would follow some 2 to 3 years later.

5.1.39 This assessment has been based on a relaxation of the requirement for aircraft to report automatically Aircraft Identification (flight identity) by permitting operators to delay retrofits until 30 March 2007. In addition, account has been taken of expected State readiness to handle flight identity in the ground flight plan correlation process. In addressing the effective contribution of Mode S to the savings of Mode A/3 codes, the fact that there were no definite commitment from States implementing Mode S to release their allocated SSR code series was also considered. If the existing allocation of SSR codes could not be improved, the situation would remain unchanged with respect to the requirements for additional SSR transit codes.

5.1.40 Based on their findings, OIFG retained the development of a Centralised SSR Code Assignment and Management System (CCAMS) as the only medium/long term solution able to provide the appropriate number of SSR codes to meet the expected increase in traffic demands. Taking account of existing capabilities of national FDPSs, the CCAMS was considered fully complementary to Mode S implementation.

5.1.41 EANPG endorsed the Originating Region Code Assignment Method (ORCAM) Improvement Focus Group views that in order to meet the short term demands on SSR codes, the existing local ATS systems capabilities needed to be maximised, together with a stringent demand to release some of the domestic SSR code series for directional assignment. It was also recognised that an in-depth study should be conducted to define all required specifications for a Centralized Code Assignment and Management System (CCAMS), including a cost benefit analysis. This study, that started late 2004, would evaluate the impact of the CCAMS on ATM systems and CFMU, would identify suitable communications means between the CCAMS and the ATS units responsible for assigning SSR codes to aircraft and evaluate the costs pertaining to implementing the communication means to support the CCAMS. A final report on the study was expected by 31 May 2005.

5.1.42 Considering the reports from several European States on code shortage experienced during the summer period of 2004 and the concerns expressed that SSR code shortage situations would become common from 2007 and beyond, EANPG recognised the requirement that all possible effort should be spent in order to expedite the development and implementation of corrective solutions.

5.1.43 The EANPG endorsed the required actions concerning the future development of CCAMS, in line with the considerations presented by EUROCONTROL. The EANPG was expecting that the study that would include a cost/benefit analysis would be prepared by EUROCONTROL by the middle of 2005. This study should respond to the various questions raised on, *inter-alia*, the impact of the CCAMS on ATM systems and CFMU and the associated costs and would support an EANPG decision.

5.1.44 The EANPG also invited the relevant ICAO Offices to urgently coordinate the required actions in order to improve the code allocation interface between the ICAO EUR and MID Regions.

EANPG CONCLUSION 46/14 - IMPROVED USAGE OF SSR CODES

That, in order to prevent short term shortages in the Secondary Surveillance Radar (SSR) codes availability, all States are requested to

a) continue to improve their Air Traffic Services system capabilities;

b) rationalise the use of the SSR codes allocated for the local applications (civil or/and military) in order to release part of them for directional assignment;

c) fully comply with the current Originating Region Code Assignment Method (ORCAM) system requirements.

5.2 Communications, Navigation and Surveillance

Draft ICAO Position for WRC 2007

5.2.1 The ICAO position was developed in 2003/2004 by working group F of the Aeronautical Communications Panel (ACP) and was reviewed by the Air Navigation Commission (ANC) in October 2004. Following the review by the ANC, it would be submitted to ICAO Contracting States and international organizations for comments. After final review of the ICAO position and the comments received by the ANC, the ICAO Council would approve it. It was expected that, during the course of the preparatory activities for the WRC-2007 further updates to the ICAO position may become necessary. States and international organizations in their preparatory activities for the WRC-2007 at the national level, in the activities of the regional telecommunication organizations and in the relevant meetings of the ITU were requested to make use of the ICAO position, to the maximum extent possible.

Spectrum requirements of Ground-based augmentation system (GBAS)

5.2.2 GBAS was a ground based system that transmits supplementary GNSS information to enable precision approach requirements to be met. A GBAS capability of CAT 1 was already included in ICAO SARPs. It should be noted however that because of the shortage of spectrum for VHF navigation aids, frequency allocations for GBAS in some areas of Europe would not be possible before VOR and/or ILS decommissioning had commenced.

EANPG CONCLUSION 46/15 – SPECTRUM REQUIREMENTS FOR GBAS

That, European Provider States and relevant international organisations take into account that, despite information to the contrary from the Global Navigation Satellite System Panel (GNSSP), in some areas of Western Europe, frequency congestion would prevent frequency allocations being made for ground based augmentation systems (GBAS) implementation before VHF Omnidirectional Range (VOR) and/or Instrument Landing System (ILS) decommissioning had commenced.

ICAO Aeronautical Communications Panel (ACP) Work Programme

5.2.3 Europe had been for some time facing a shortage of air-ground-air communications capacity. In order to alleviate the situation Europe first proposed the adoption of 12.5 kHz channel spacing and then, following opposition to this original proposal from the United States of America, proposed the use of 8.33 kHz channel spacing. Standards and Recommended Practices for 8.33 kHz channel spacing were adopted as an interim measure.

5.2.4 Since then 8.33 kHz channel spacing had been implemented in upper airspace and there are currently plans for the migration of 8.33 kHz into lower airspace. Predictions vary drastically as to how long, given the current growth rate, 8.33 kHz channel spacing would last within Europe. All of these predictions are based on a continuation in the use of voice as the main means of air traffic control and that air traffic control methods are unlikely to change in the foreseeable future. Where they do vary was in the assumptions on the amount of airspace in which 8.33 kHz was mandated.

5.2.5 Given the timescales involved in the development, approval and implementation of any new system within aviation even the most optimistic prediction would mean that unless air traffic control methodologies changed, work on a future communications system would need to start immediately. The issue of a lack of communications capacity within Europe and the need for work to start on a future communications system were addressed at the 2003 ICAO Air Navigation Conference.

5.2.6 The decisions taken by the Air Navigation Conference to address the shortage of air-ground-air communications spectrum was to agree on the need for the development of a future digital communications solution. This was considered an important measure to address European requirements, so the EANPG agreed that the ANC be made aware of the importance of this issue for the European Region, and that a date of availability of the new system for regional planning purposes be provided.

EANPG CONCLUSION 46/16 – AVAILABILITY DATE FOR NEW DIGITAL COMMUNICATIONS SYSTEM

That, ICAO provide an availability date for the future digital communications system that can be used for regional implementation planning purposes.

European Aeronautical Spectrum - High Level Brief

5.2.7 The Spectrum Frequency Consultation Group (SFCG) was an independent body with a wide representation of stakeholders (Member States, EUROCONTROL, ICAO, European Commission, NATO, IATA and air navigation service providers (ANSPs)). Among other things, the SFCG develops the European Aeronautical Spectrum Strategy and the European Aeronautical Common Position for the World Radiocommunication Conferences (WRC)s.

5.2.8 The spectrum strategy would be published in three tiers, the top level being the European Aeronautical Spectrum High Level Brief for use by CEOs and senior managers. The second level would be the Technical Brief, which would identify the action needed at senior technical levels. The base level would be the Spectrum Strategy handbook which would assist the Group in developing the higher level documents. The High Level Brief developed by the SFCG is included as **Appendix B** to this report. The Group agreed to the following:

EANPG CONCLUSION 46/17 – EUROPEAN AERONAUTICAL SPECTRUM - HIGH LEVEL BRIEF

That, States and air navigation planning organisations take account of the European Aeronautical Spectrum - High Level Brief in the conduct of their planning activities.

Migration to BUFR Coded OPMET Messages

5.2.9 In response to the World Meteorological Organization (WMO) decision to migrate to Binary Universal Form (BUFR) for the Representation of meteorological data for Coded Meteorological Messages, EANPG/45 decided an early start was of considerable importance to identifying the issues (Decision 45/13). Issues to be addressed include MET operational implications and the communications infrastructure requirements.

5.2.10 The Group concluded that BUFR did offer some useful benefits, in particular a guarantee of correctly formatted data, but this was more a side effect that could also be achieved in a number of other ways. The full transition to BUFR OPMET messages would require the total global implementation of ATS Message Handling System (ATSMHS). SARPs had been developed for the Basic ATSMHS, which cannot support binary data, and for the Extended ATSMHS that can. Further SARPs development was still ongoing

with respect to detailed implementation, e.g. the development of functional profiles. The full transition would also require that many end systems that require access to OPMET data for presentation to human users would need to be upgraded to provide the capability of translating BUFR coded messages into the Traditional Alphanumeric Codes (TACs).

5.2.11 Although a number of European States were planning Basic ATSMHS implementation, this is in the context of technology driven 'future proofing' of systems that were due for replacement anyway. There were no regional plans for ATSMHS implementation because there were no established operational requirements.

5.2.12 As the benefits of BUFR coded OPMET were of limited value for the aviation community, it was difficult to see how the considerable expense of upgrading the total global aeronautical fixed service (AFS) communications infrastructure could be justified for BUFR implementation only. In the absence of operationally driven implementation plans, it seems most unlikely that ATSMHS would be available either regionally, or globally, before the end of the WMO BUFR transition time frame of 2007 to 2015.

5.2.13 Without a BUFR capable ATSMHS AFS network, it would be necessary to develop BUFR/TAC converters and detailed regional plans to interface between systems that were generating OPMET messages in BUFR and the aeronautical fixed services network. There would also be a requirement for TAC/BUFR converters in order to allow States to generate BUFR compliant data for distribution whilst legacy systems were still being used to produce OPMET data . After the transition to full generation of all OPMET in BUFR and the necessary ATSMHS capability in the AFS, BUFR/TAC converters would still be required to allow information generated and transmitted in BUFR to be used by legacy end systems.

5.2.14 Some BUFR and TAC conversion software was available, but it needed to be developed further to do the complete conversion. Any such software should be built to a standard defined by specifications developed by the WMO and ICAO to ensure correct and consistent operation of the conversion process. ICAO should also consider how the compliance of such software is best demonstrated. These specifications should be subject to detailed review by representative expert groups before their adoption. The Group agreed to the following.

EANPG CONCLUSION 46/18 – CONVERSION SOFTWARE FOR BUFR CODED OPMET MESSAGES

That, ICAO, in co-ordination with World Meteorological Organization (WMO), develop the necessary specifications to ensure that a consistent presentation format is provided for Traditional Alphanumeric Codes (TAC) and that the mapping between Binary Universal Form (BUFR) and TAC is complete and unambiguous.

EANPG DECISION 46/19 – REGIONAL PLANNING FOR MIGRATION TO BUFR CODED OPMET MESSAGES

That, the EANPG Programme Co-ordinating Group (COG) :

a) develop Regional plans to provide an orderly and efficient deployment of Binary Universal Form for the Representation of meteorological data/Traditional Alphanumeric Codes (BUFR/TAC) and TAC/BUFR converters to accommodate BUFR over the aeronautical fixed service (AFS) network until global Air Traffic Services Message Handling System (ATSMHS) is available and to also allow the use of legacy data production and end systems, to ensure that data can be presented to human end users in a familiar and consistent form; and

b) in undertaking the above, ensure there is no significant financial impact to end users as a result of the transition to BUFR coded OPMET messages.

AFS Network Security

5.2.15 The following steps were used in the development of a set of guidelines for AFTN/CIDIN security measures.

- definition of the essential assets that are to be protected and their associated value;
- definition of the threats that might endanger these assets and assessment of the level of damage (impact) that can be provoked to these assets;
- definition of safeguards that can be implemented to prevent the occurrence of damage to the assets due to the above threats;
- formulation of recommendations on AFS Security Practices.

5.2.16 The resulting guidelines, included as **Appendix C** to this report, were recommended to States for use in the establishment and review of security measures for AFS facilities. Meanwhile, the draft guidelines would be refined and re-formatted for their future publication as a draft ICAO EUR document.

EANPG CONCLUSION 46/20 - AFS SECURITY GUIDELINES

That:

a) States utilize the draft guidelines included in Appendix C to the report and provide comments on their use to the ICAO European and North Atlantic Office for the establishment and review of aeronautical fixed service (AFS) security measures;

b) the EANPG Programme Coordinating Group (COG)

i) collate and analyse aeronautical fixed service (AFS) security incident reports and report to the EANPG where such action is warranted; and

ii) approve the publication of the refined and reformatted guidelines as a EUR Document.

Data link harmonisation

5.2.17 The Group recalled that the problems associated with the divergence arising from the implementation of two data link technologies (ATN based and FANS based) had been recognized by various Planning and Implementation Regional Groups (PIRGs). Divergence could result in different operating methods for aircrew and ATC, the carriage of different types of equipment on board aircraft and differences in ground-system Human-Machine Interfaces (HMI). For these reasons the aviation industry has been discussing for many years the need for convergence between technologies with the aim of global harmonization.

5.2.18 Bearing in mind the factors that have been identified, both the EANPG and the NAT Systems Planning Group (NAT SPG) had agreed that it was important that the EUR and NAT Regions initiate a dialogue, at an early stage of developments and implementation, in order to ensure harmonisation. This dialogue should include the user community and should have as an objective the need to achieve a harmonised data link service that would meet the operational requirements of both busy continental and busy

oceanic airspace. It had therefore been agreed that a steering group comprising representation from the EANPG, the NAT SPG, EUROCONTROL, the user community and industry should be established in order to initiate this task (NAT SPG Conclusion 40/7 refers). In this connection, it was recalled that the EANPG had used the correspondence procedure to agree to the following conclusion, which is similar to the one adopted by the NAT SPG:

EANPG CONCLUSION 46/21 - DEVELOP HARMONISED DATA LINK SERVICE

That the ICAO Regional Director make the necessary arrangements to establish a joint European and North Atlantic Data Link Requirements Steering Group with the following mandate and composition:

a) mandate: develop a harmonised data link service;

b) composition: representation from the European Air Navigation Planning Group (EANPG) and the North Atlantic Systems Planning Group (NAT SPG), EUROCONTROL, airspace user organisations and, as required, industry.

5.2.19 In response to the mandate for the Steering Group to develop a harmonized data link service (Conclusion 46/21 above refers), the Group agreed that the Data Link Steering Group should produce a high level plan for the implementation of ATM services that utilize data link, starting with the current situation and covering the next 15-20 years. It was also agreed that convergence should be based on operational requirements rather than technology. It was further agreed that, thereafter any existing differences in the data link technologies to be used, needed to be converged into a harmonized long-term solution that addressed the requirements of the ATM services for both busy continental and oceanic airspace. The Group noted that the NAT SPG would be informed of the foregoing.

5.2.20 The Group was presented with the plan that EUROCONTROL had developed to ensure convergence between the EUR Region data link implementation plans and the one for the NAT Region. It was noted that the proposed convergence plan was in line with the NAT SPG decision as well as the decision to establish a steering group.

EANPG CONCLUSION 46/22 - DATA LINK SERVICE HARMONIZATION – HIGH LEVEL PLANS

That, the European and North Atlantic Data Link Requirements Steering Group, chaired by the ICAO Regional Director, develop a high level plan for the:

a) implementation of Air Traffic Management (ATM) services that utilize data link, starting with the current situation and covering the next 15-20 years;

b) convergence of any existing differences in the data link technologies to be used, into a harmonized long-term solution that addresses the requirements of the ATM services plan.

5.2.21 The Group endorsed the proposal that the ICAO EUR/NAT Office should hold a Symposium in early March 2005 in order to address the convergence of the data link programmes. States, organizations and manufacturers, with data link experience, would be invited to provide speakers on current and future operational requirements as well as current and future technical solutions. The important objective was to establish a clear understanding of the operational requirements before any technology issues could be addressed. It was noted that the foregoing would be taken into account when preparing the agenda and the list of presenters for the symposium. The Group stressed the importance of having ICAO Headquarters participation in the Symposium so as to have a global view of activities.

EANPG CONCLUSION 46/23 - DATA LINK SERVICE HARMONIZATION SYMPOSIUM

That, the ICAO Regional Director conduct a Data Link Harmonization Symposium in Paris in March 2005.

5.2.22 The Group was provided with an overview of the EUROCONTROL Link 2000+ programme. In particular, the Group noted the plan to mandate data link equipage in the future and that plans were being prepared to develop such a mandate.

5.3 Meteorology

Review the term MET Authority in the context of service provider and regulator functions and identify any clarification that might be necessary

5.3.1 Based on observations from a MET Cost Recovery Workshop in Moscow 4-7 November 2003, it had been found that the definition of "Meteorological authority" in Annex 3 was not uniformly interpreted among the participants from States in the Eastern and Central parts of the EUR Region. The issue was therefore raised by the Secretariat at EANPG/45, which however agreed that it should be brought to the EANPG Programme Coordinating Group (COG) for further consideration, which subsequently asked the METG to consider the issue.

5.3.2 It should be noted that the word "authority" in many States relates to the functions of a regulatory body, while the Annex 3 definition reads "The authority providing or arranging for the provision of meteorological service for international air navigation on behalf of a Contracting State". This means that in many States the National Meteorological Service is the designated meteorological authority, while in other States it is the Ministry of Transport or the Civil Aviation Authority which has this role.

5.3.3 Further on, in the European Commission "Single European Sky" constitution, the "Meteorological authority" is considered to be an entity outside the scope of a MET service provider (i.e. State/Regulator/National Supervisory Authority) and this is why there would be a requirement to separate the "Meteorological authority" from the MET service provider in all the States concerned. In this case, the requirement to separate the "authority" from the service provider is based on the same principle as applied on other air navigation services in the States concerned.

5.3.4 Based on these observations, the METG discussed the need for a review of the current definition of "Meteorological authority" in Annex 3, taking into account the possible need to define the roles as MET regulator and MET service provider. The Group however agreed that there was no need for a revision, as the current definition allowed for a flexible implementation which was considered as a benefit.

SADIS developments

5.3.5 The EANPG was reminded of the cessation of the T4 products on 1 July 2005. Information was provided concerning the result of assessment of SADIS visualisation software packages for the provision of SIGWX charts from the BUFR code, as performed by the SADIS Provider State. Given the current non-compliance of some of the visualisation software, and the limited time available for States to purchase software and implement the procedures to accommodate the cessation of T4 charts on 1 July 2005, the EANPG agreed on the following conclusion.

EANPG CONCLUSION 46/24 - EXTENSION OF THE AVAILABILITY OF WAFS FORECASTS IN CHART FORM

That, the World Area Forecast System Operations Group (WAFSOPSG) be invited to consider, as a matter of urgency, the continuation of the issuance of WAFS Significant Weather (SIGWX) forecasts in chart form, for a limited period of time until the appropriate software have been made available to all users , to give the WAFS users more time to prepare for operational use of Binary Universal Form (BUFR) coded WAFS products in SIGWX chart production.

IATA new requirements on aerodrome forecasts(TAF) for very long haul operations

5.3.6 With the current increased operational flight times, i.e. 18 hours or even more (e.g. Manila-Paris, Santiago-Frankfurt), the IATA requirements for TAF validity period have changed. For the very long haul operations 18-hour or 24-hour TAF coverage would not be sufficient for the flight planning phase, which occurs 3 to 5 hours prior to departure. Some operators have indicated a requirement for 30-hour TAFs. It was recognized that the current Annex 3 provisions for TAF validity period did not allow for forecasts longer than 24 hours. The provisions for issuance and validity period of TAFs would therefore have to be changed to meet the current operational requirements.

5.3.7 Furthermore, IATA did not require two different types of TAFs for any aerodrome, depending on use and operational hours of an aerodrome, either 9-hour or 24/30-hour should be issued, not both.

5.3.8 IFALPA however pointed out that the provision of both short and long TAF for departure and destination aerodromes could be useful, particularly in cases of short stop overs (4-6 hours) at the destination. In such a case the pilot may be required to calculate extra fuel for the return flight based on costs and would use the long TAF for that calculation.

5.3.9 The EANPG supported the IATA proposal that ICAO should review the whole TAF production concept to meet the changed operational requirements, and to establish harmonised provisions for TAF preparation in all ICAO regions and agreed on the following conclusion.

EANPG CONCLUSION 46/25 - ANNEX 3 PROVISIONS FOR ISSUANCE OF AERODROME FORECASTS FOR VERY LONG HAUL FLIGHTS

That ICAO consider a review of the Annex 3 provisions on the issuance and validity time for aerodrome forecasts (TAF) in order to meet new operational requirements for very long haul flights.

5.3.10 In the EUR Region, in order to find a fast solution to meet the requirements for very long haul flights, IATA however saw a possibility to extend the current validity period of the 18-hour TAFs to cover 24 hours and to retain the current lead time and updating interval of 6 hours, which together with the 9-hour TAFs would actually meet the IATA requirement for EUR airports without any changes of Annex 3. The IATA proposal had been supported by the METG and included in the draft MET amendment proposal to the EUR ANP/FASID (Paragraph 2.11 refers).

IATA requirements for TREND forecasts

5.3.11 IATA expressed its concern of the numerous new requirements for landing forecasts (TREND) in some EUR States (as indicated in the draft MET amendment proposal to the EUR ANP/FASID) and referred to the draft amendment to the Basic Operational Requirements And Planning Criteria (BORPC)

section of the ANP: "The determination of the aerodromes at which landing forecasts are required should take into consideration relevant operational and climatological factors, including the weekly number of flights requiring those forecasts and the incidence of adverse weather conditions." IATA strongly supported this provision. and could not support any requirement for TREND forecasts unless they are based on the BORPC quoted above.

Draft proposal for amendment of Part VI - MET of EUR ANP and EUR FASID

5.3.12 The Secretariat had performed a complete review of the EUR ANP/FASID Part VI Meteorology. The intent had been to, to the extent possible, align the MET Part with the current standard structure of the ANP/FASID, applicable for all ICAO Regions and also to bring it up to date to include the current requirements in the EUR Region. The EANPG had previously endorsed a first draft for further processing by ICAO. Since then, several amendments had been included and the METG had made a final review. The updated draft proposal for amendment, as presented to the Meeting, was endorsed by the EANPG, for further processing following the formal procedure for an amendment proposal to the ANP/FASID.

EANPG CONCLUSION 46/26 - AMENDMENT PROPOSAL TO THE ANP CONCERNING MET

That ICAO Regional Director, on behalf of the EANPG, initiate an amendment proposal to the European Air Navigation Plan in order to update the meteorological regional requirements.

MET Strategy document supporting the CNS/ATM concept for the EUR Region 15 years ahead

5.3.13 The strategic objectives identified in the MET strategy were presented as the backbone of the document giving clear directions for future action. Additionally, the current knowledge, facts and trends available to the METG Project Team required the first version of the strategy to be limited to high level user needs with an overview of the current MET services for ATM and the drivers for change. This would constitute the background for the future editions, where it was expected that, throughout its life cycle, the strategy would be improved as new inputs become available, through new requirements and technology and regular stakeholders review. The Strategy is at **Appendix D** to this report.

5.3.14 Recently, the EUROCONTROL Performance Review Commission had formally reported on the cost of MET to the aviation community, including a recommendation to EUROCONTROL "to explore to what extent MET services and products could be employed to improve European ATM performance". Their recommendations on the subject gave a positive direction and this had been taken into consideration in drafting the proposals for future actions within the context of the MET Strategy.

5.3.15 The Meeting considered the Strategy as a well prepared high quality document for the EUR Region and it was also considered to be a valuable contribution to development of the global MET requirements and strategies related to the ATM concept.

5.3.16 The Meeting recognized however an obvious need to raise the awareness of the impact of MET on the ATM system within the ATM community (including airspace users) through its active participation in the future developments. This active participation would enable a confirmation by the ATM community of the problem statements already identified in the MET Strategy and to identify and quantify the value of the expected benefits (via establishing a cost benefit analysis or a business case), prioritise efforts to achieve maximum and early benefits and define the best way ahead. The means to achieve this would be by the organisation of a workshop on the impact of MET on the ATM system. It was agreed that this should be the responsibility of ICAO in co-ordination with EUROCONTROL and WMO. As the USA through FAA had similar experience within their ATM community it was agreed that FAA should be invited to participate in

such a workshop. The next step would then be to supplement the high level user needs with firm validated regional ATM requirements for dedicated MET services and products.

5.3.17 The Russian Federation suggested that a workshop on the regional aspects of the MET Strategy supporting the CNS/ATM concept for the EUR Region be held in the Russian Federation during 2005.

5.3.18 The Meeting endorsed the MET Strategy in supporting the CNS/ATM concept for the EUR Region as a basis for further development of regional ATM requirements for dedicated MET services and products and agreed on the following conclusion:

EANPG CONCLUSION 46/27 - MET STRATEGY IN SUPPORTING THE CNS/ATM CONCEPT FOR THE EUR REGION

That :

a) ICAO invite EUROCONTROL WMO and the United States to support in the development of regional ATM requirements for dedicated MET services and products;

b) ICAO, in co-ordination with EUROCONTROL , WMO and the United States, organize a workshop on the impact of MET on the ATM system, and

c) ICAO consider the EUR MET strategy as a contribution to development of the global strategy and ATM related requirements on MET.

5.3.19 The task of the METG Project Team (PT/METATM) was completed and had consequently been disbanded. The EANPG expressed its high appreciation of the dedicated pioneer work performed by the team and in particular by the Rapporteur, Mr Visoiu from Romania.

Inconsistencies in Annex 3 and Annex 11 concerning meteorological information for Air Traffic Services

5.3.20 During the secretarial support of the PT/METATM a detailed review had been performed of the current provisions in Annexes 3 and 11 concerning the meteorological information for ATS and some inconsistencies had been identified between the relevant parts of Annexes 3 and 11.

5.3.21 It was recognized that, to get a complete picture of the requirements of meteorological information for ATS, it was currently necessary to carefully read both Annexes 3 and 11. Bearing in mind that the ATS and MET service providers in most cases belong to different organisations which only are familiar with the Annex valid for their own service, the current situation might cause confusion and misunderstanding. Consequently, the EANPG agreed on the need for a review of the relevant parts of Annexes 3 and 11 in order to eliminate the current inconsistencies.

EANPG CONCLUSION 46/28 - REVIEW OF ANNEX 3 AND ANNEX 11 CONCERNING MET INFORMATION FOR ATS

That ICAO consider a review of Annex 3 and Annex 11 concerning meteorological information for air traffic services (ATS) to ensure that both Annexes are coordinated and current inconsistencies eliminated.

Implementation of MET services in the Eastern part of the EUR Region

5.3.22 In accordance with its work programme, the METG had considered consolidated information about existing differences in national practices of meteorological service for international aviation from

standards and recommended practices in Annex 3, taking into account its importance for air navigation safety and status of priority for elimination and by using the ICAO guidance material concerning reporting and classification of deficiencies in the field of MET. The information presented by States was however not sufficient and the work had to continue on this issue.

5.3.23 One area of special importance was recognized to be the introduction of quality assurance (QA) in MET and a need was identified for assistance in the implementation of QA through a workshop tailored for the Eastern part of the EUR Region.

EANPG CONCLUSION 46/29 - TRAINING IN QUALITY ASSURANCE FOR PROVISION OF METEOROLOGICAL SERVICE

That ICAO invite the World Meteorological Organization (WMO) to arrange, in co-ordination with ICAO, training on quality assurance for provision of meteorological service for aviation in the Eastern part of the European Region.

5.3.24 In this context information was made available concerning the development and implementation of new MET facilities in the Russian Federation.

SADIS Internet-based FTP service

5.3.25 The Meeting noted the executive summary of the report of the ninth meeting of the SADISOPSG (Dakar, 1 to 4 June 2004), which had formulated one draft conclusion to the attention of all the PIRGs served by SADIS, related to the SADIS Internet-based FTP service.

5.3.26 The Meeting recalled that the SADIS Provider State offered a fully operational SADIS Internet-based FTP service to all authorized SADIS and International Satellite Communication System (ISCS) users, which had been introduced as a back-up to the SADIS broadcast and that, until now, the back-up service was provided free-of-charge to the authorized SADIS users. The SADISOPSG was of the opinion that the time had come to include the components of the SADIS FTP service in the SADIS inventory, with the understanding that the users of the FTP service would continue to be considered SADIS users and would have to contribute to the mandatory cost recovery. The Meeting noted that the SADIS Provider State would not recover any of the initial capital costs associated with establishing the FTP service; only the costs associated with providing an on-going operational service was proposed for inclusion in the SADIS inventory, as of 1 July 2005. In order to formalize the role of the SADIS Internet-based FTP service, the EANPG was invited to approve that, in parallel with the satellite broadcast, the SADIS Provider State be invited, as of 1 July 2005, to make WAFS forecasts and OPMET data available, as a primary component of the SADIS service, in accordance with the SADIS User Guide through the Internet-based FTP service.

5.3.27 Concern was however expressed by several delegates concerning the introduction of the FTP service as a primary component of the SADIS service, mainly due to the following:

a) the cost implications for users who would prefer to use internet as the prime component and the satellite distribution as the back up and anyway would be obliged to pay for both components of the SADIS system in line with the SADIS cost recovery scheme;

b) the risk for undermining the basis for the SADIS service as a whole by the recognition of the SADIS internet based FTP service as a prime component.

5.3.28 Concern was also expressed about the late availability of information concerning the official guidelines for the use of internet for aviation applications, as recently endorsed by ICAO and would be made available on the ICAO web-site.

5.3.29 The Meeting consequently did not support the proposal from the SADISOPSG and agreed on the following Conclusion:

EANPG CONCLUSION 46/30 - SADIS INTERNET BASED FTP SERVICE

That the Satellite distribution system for information relating to air navigation Operations Group (SADISOPSG) reconsider the introduction of the Internet-based FTP service as a primary component of the SADIS service.

5.3.30 The Meeting also agreed that issues addressed by the SADISOPSG to the EANPG in the future, should be prepared by the METG for the COG to insure the maturity before being presented to the EANPG.

5.4 Aerodrome Operational Planning

Advanced Surface Movement Guidance and Control Systems (A-SMGCS)

5.4.1 The Group was provided with a joint presentation of the EUROCONTROL/European Commission (EC) activities and developments, including tests and procedure validation, in the field of A-SMGCS. The concept of A-SMGCS has been developed to help improve upon current systems, procedures and practices in the face of increasing traffic levels, airport complexity and the need to maintain the highest level of service at all times.

5.4.2 Many major European airports were implementing basic surveillance functions for controllers and control functions for runways. The routing and guidance functions, as well as complete surveillance and control functions, were the subject of research and development activities. Within Europe, EUROCONTROL (short term projects) and the European Commission (medium term projects) were undertaking complementary A-SMGCS activities for the purpose of facilitating the harmonised implementation of A-SMGCS and ensuring that the operational concepts, systems and procedures necessary for A-SMGCS would be feasible and would reach a sufficient level of maturity for implementation. The results from the European Commission and EUROCONTROL projects were meant to deliver a common set of operational concepts and ATC procedures for A-SMGCS Level 1 and Level 2 that could be considered by ICAO during the further development of global provisions in this area.

5.4.3 The Group welcomed the co-ordination and cooperation of EUROCONTROL and the European Commission in the field of A-SMGCS and congratulated them for the significant work and achievements. The Group acknowledged the integrated approach and encouraged the harmonised implementation of A-SMGCS Levels 1 & 2 in Europe and noted as well the complimentary A-SMCGS activities undertaken by EUROCONTROL and the European Commission for the purpose of the introduction of routing, automatic guidance and planning functions (Levels 3 & 4).

5.4.4 The Group noted that work on A-SMGCS was already included in the ICAO Technical Work Programme (TWP) and assigned to the ATM section. On the other hand, a newly formed Aerodromes Panel has been created for the purpose of furthering work on AGA and Annex 14 provisions. The Operations Panel and the ATM Section, within the Secretariat, would deal with the aircraft operations and their interface with ATM on and in the vicinity of aerodromes. In this respect, the Group recommended that the common EUROCONTROL/European Commission work and achievements dealing with A-SMGCS be brought to the attention of ICAO for consideration and for inclusion into the work programme of the newly formed Aerodrome Panel for further development of global provisions in this area.

EANPG CONCLUSION 46/31 – DEVELOPMENT OF GLOBAL PROVISIONS FOR A-SMGCS

That ICAO consider the joint EUROCONTROL/European Commission work on Advanced-Surface Movement Guidance And Control Systems (A-SMGCS) during the further development of global provisions in this area.

Building Restricted Areas

5.4.5 The Group endorsed the final version of the "*European Guidance Material on Managing the Building Restricting Areas*" and approved the publication as the EUR Doc 015. The Group recognised the document's possible worldwide value and agreed that it be transmitted to ICAO HQ for further consideration vis-à-vis its possible global application.

EANPG CONCLUSION 46/32 - APPROVAL OF THE EUROPEAN GUIDANCE MATERIAL ON MANAGING BUILDING RESTRICTED AREAS

That, the ICAO Regional Director, on behalf of the EANPG:

a) publish the "European Guidance Material on Managing the Building Restricted Areas" as Guidance Material for European Region (EUR Doc 015);

b) inform States on the availability of the Document; and

c) encourage States to use its provisions for new building construction.

Certification of Navaids

5.4.6 The Group agreed that the document "*European Guidance Material on Integrity Demonstration in Support of Certification of ILS and MLS Ground Systems"* was mature enough and should therefore be published as document as the EUR Doc 16. Furthermore, it was recognised that the document could have worldwide value and therefore agreed that it be transmitted to ICAO HQ for further consideration vis-à-vis its global implementation.

EANPG CONCLUSION 46/33 – GUIDANCE MATERIAL FOR CERTIFICATION OF ILS AND MLS GROUND SYSTEMS

That, the ICAO Regional Director, on behalf of the EANPG:

a) publish the "European Guidance Material on Integrity Demonstration in Support of Certification of Instrument Landing System (ILS) and Microwave Landing System (MLS) Ground Systems" as Guidance Material for the European Region (EUR Doc 016); and

b) encourage States to use its provisions.

Guidance Material on Aerodrome Operations under Limited Visibility Conditions

5.4.7 The Group recalled that the first edition of the *"European Guidance Material on Aerodrome Operations under Limited Visibility Conditions"* (EUR Doc 013) had been approved by the EANPG via the correspondence procedure and published on the EUR/NAT regional web pages in March 2003.

5.4.8 A draft of the second edition of the Guidance Material had been prepared to take into account updates, comments and clarifications that became available since the publication of the first edition.

In commenting on the second edition, the need for an additional careful review of the document in respect of consistency with the existing provisions in the ICAO Standards and Recommended Practices (SARPs) had been highlighted.

5.4.9 Accordingly, it was decided to postpone the issue of the Second Edition of the EUR Doc 013 in order to incorporate all necessary corrections and it was agreed to finalise the document by first quarter of 2005. In order to expedite its availability, the Group agreed to delegate to the COG the responsibility of approving the Second Edition of the document for publication and distribution.

EANPG DECISION 46/34 – GUIDANCE MATERIAL ON AERODROME OPERATIONS UNDER LIMITED VISIBILITY CONDITIONS

That the EANPG Programme Coordinating Group (COG) be delegated the responsibility of approving the Second Edition of the "European Guidance Material on Aerodrome Operations under Limited Visibility Conditions" (EUR Doc 013) for publication and distribution.

Outcome of the joint ICAO/EUROCONTROL Workshop on LVP operations

5.4.10 In order to raise awareness of the document *"European Guidance Material on Aerodrome Operations under Limited Visibility Conditions"* (EUR Doc 013) among airlines, airport operators, air navigation service providers and safety regulators, the Group had agreed to support a workshop to be held for the benefit of all concerned (EANPG Conclusion 45/21 refers). In this respect, a joint ICAO/EUROCONTROL Workshop on Low Visibility Procedures (LVP) was successfully organised at the EUROCONTROL Headquarters in Brussels on 21–22 June 2004. The workshop was attended by 160 representatives of airports, airlines, air navigation service providers, regulators and International Organisations. Based on the presentations and on the lively discussion sessions, the Workshop developed a number of conclusions and recommendations. Accordingly, it was agreed that ICAO and EUROCONTROL should identify relevant tasks to be considered, based on the findings of the Workshop.

EANPG CONCLUSION 46/35 – RAISE THE AWARENESS ON LVP OPERATIONS

That:

a) EUROCONTROL investigate the possibility of setting-up and maintaining a web-site on Low Visibility Procedures (LVP) issues; and

b) the ICAO Regional Director and EUROCONTROL evaluate the need for the organisation of a second workshop on LVP, during 2005.

The use of Precision Approach Path Indicator (PAPI) and strobe lighting in LVP

5.4.11 The Group noted that there were various practices related to the use of the PAPI and the strobe lighting in low visibility conditions. A series of States reported maintaining the use of PAPI and strobe light regardless the visibility conditions, while other States considered their use as not beneficial to the safety of operations in low visibility conditions due to the dispersion of light. The Member for France, in underlining the existing disparities at the European level, stressed the requirement that urgent action should be taken, at global level, to clarify and unify the procedures.

5.4.12 In view of the above, the Group invited ICAO to investigate, at the worldwide level, the benefits and the safety related aspects of the usage/non-usage of PAPI and strobe lighting in low visibility conditions, develop guidance material and review the global provisions regarding their operations.

EANPG CONCLUSION 46/36 – USE OF PAPI AND STROBE LIGHTING IN LOW VISIBILITY CONDITIONS

That ICAO investigate, at the worldwide level, the benefits and the safety related aspects of the usage/non-usage of Precision Approach Path Indicator (PAPI) and strobe lighting in low visibility conditions, develop guidance material and review the global provisions regarding their operation.

New/revised ICAO provisions for LVP affecting manoeuvring areas

5.4.13 The Group noted that the ICAO/Eurocontrol Workshop on LVP operations had identified that the procedures contained in the ICAO PANS-ATM (Doc 4444) that should apply whenever conditions were such that all or part of the manoeuvring area could not be visually monitored from the control tower, were not sufficiently elaborated on. In this respect the Group invited ICAO to consider the need for additional, more detailed procedures to be developed and incorporated in the PANS-ATM document (amend section 7.10.1 accordingly).

EANPG CONCLUSION 46/37 – LOW VISIBILITY PROCEDURES AFFECTING THE MANOEUVRING AREA

That ICAO consider the need for the inclusion in the Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM) additional provisions and procedures to be applied when part of the manoeuvring area cannot be visually monitored from the control tower due to cases of low visibility.

Future work on LVP

5.4.14 The Group updated the COG task list on LVP to address the following issues:

a) ensure the continued currency of the EUR Doc 013 with regard to the on-going EUR and world-wide developments and requirements;

b) further develop the provision of MLS operations in a mixed environment taking into account the experience obtained at Heathrow airport;

c) in co-ordination/cooperation with METG, review the MET forecast and reporting criteria for LVP;

d) identify in a timely manner the necessary amendments/updates to the ICAO LVP provisions; and

e) monitor developments regarding the potential safety impact of the wake turbulence vis-à-vis the separation minima in LVP operations in MLS or GNSS environment.

Road Map for All-Weather Operations

5.4.15 The Group noted the Road Map on All Weather Operations and further noted that it had been split into two parts (a "*Transition Methodology*" – the main part – and a "*Transition Key Issues"* (TKI) part – with respect to planning of all weather operations in the EUR Region). The first part, more stable in content, would require little regular updating whereas the second part, more dynamic, would require regular updates, preferably once a year, to reflect the progress achieved with the various tasks. It was agreed that the two parts be reviewed individually towards finalisation.

5.4.16 The Transition Methodology was developed to enable the Member States to implement the ICAO Global Strategy for AWO, adopted as the EUR Regional Strategy by the EANPG (Conclusion 38/2 refers). The ICAO Global Strategy was reviewed by the 11th Air Navigation Conference of ICAO in September 2003 and it was noted that the revised version would be published in Annex 10 in the next amendment. It was agreed that the revised ICAO Global Strategy for AWO would be considered as the basis for the revision of the Transition Methodology part.

5.4.17 The Group recognised the need for the EUR Region States to adopt the revised ICAO Global Strategy for AWO in a similar manner as the previous version. It also re-emphasised the need for consistency in terms and content of various strategies developed in the ICAO EUR Region and the required co-ordination amongst various bodies in order to avoid duplication of work. Finally, the Group agreed that the COG should be tasked with finalising the Road Map.

EANPG CONCLUSION 46/38 – EUR REGIONAL STRATEGY ON ALL WEATHER OPERATIONS

That:

a) European States adopt the ICAO "Strategy for introduction and application of non-visual aids to approach and landing" (Annex 10, Volume I, Attachment B refers) in its entirety, as developed by the 11th Air Navigation Conference of ICAO (September 2003), and approved through the amendment process, as the EUR Regional Strategy on all weather operations (AWO); and

b) ICAO, the European Civil Aviation Conference (ECAC) and EUROCONTROL ensure, to the maximum extent possible, the required consistency amongst various developed strategies and on-going activities and avoid duplication of work.

EANPG DECISION 46/39 – PUBLICATION OF EUR ALL WEATHER OPERATIONS ROAD MAP DOCUMENT

That the EANPG Programme Coordinating Group (COG) be delegated the responsibility of approving the First Edition of the European All Weather Operations road map material ("*Transition Methodology*" and "*Transition Key Issues*") for publication and distribution.

Lost aircraft

5.4.18 EUROCONTROL presented the Group with information concerning the need to develop some provisions regarding aircraft/vehicles uncertain of their position on the airport manoeuvring area. In the work performed by the European Initiative on Prevention of Runway Incursions, it was recognised that there was a need for the development of ICAO procedures applicable if an aircraft or vehicle becomes lost on the aerodrome manoeuvring area. The implementation of such procedures was seen to provide the necessary means to be able to assist in enhancing runway safety.

5.4.19 In this regard, EUROCONTROL, had developed a set of provisions constituting the basis for a proposed amendment to the ICAO PANS-ATM, Doc 4444 ATM/501. The proposed text provided an appropriate set of procedures to be applied by pilots and vehicle drivers, as well as providing adequate guidance to aerodrome controllers. The Group endorsed the proposed set of provisions and invited ICAO to take appropriate action to amend the PANS – ATM (Doc 4444), as shown in **Appendix E** to this report.

EANPG CONCLUSION 46/40 – PROVISIONS REGARDING THE UNCERTAINTY OF AIRCRAFT/VEHICLES POSITION ON THE MANOEUVRING AREA

That ICAO, take action to amend the *Procedures for Air Navigation Services - Air Traffic Management* (PANS-ATM) (Doc 4444) with respect to the provisions regarding the uncertainty of aircraft/vehicles position on the airport manoeuvring area, based on the proposed text presented at Appendix E to the report.

5.5 Aeronautical Information Services

Draft proposal for amendment of the EUR ANP/FASID and Regional Supplementary Procedures concerning EAD operations

5.5.1 A draft amendment proposal to the EUR Regional documentation on provisions on AIS automation had been developed by EUROCONTROL, in co-ordination with the Secretariat, to highlight recent developments in the European AIS environment, particularly, the operations of the European AIS Database (EAD). The proposed amendments did not introduce new requirements into the EUR ANP/FASID and SUPPs and therefore were understood as not being mandatory for all European States. The prime intention was to publish the most recent facts on EAD operations both for reasons of clarification and awareness to users.

5.5.2 The draft proposal for amendment, as presented to the Meeting, was endorsed for further processing following the formal procedure for amendment proposals to ANP/FASID and SUPPs.

EANPG CONCLUSION 46/41 – UPDATE OF EUROPEAN PROVISIONS TO INCLUDE THE EAD OPERATIONS

That the ICAO Regional Director, on behalf of the EANPG, initiate proposals for amendment to the EUR Regional documentation relating to the European AIS Database (EAD) operations.

WGS-84 implementation

5.5.3 Implementation support of AIS/MAP services in the Eastern Part of the EUR Region had focused on WGS-84 and been provided through the regular COG Project Team for AIS/MAP and through a Special Implementation Project (SIP) WGS-84 Workshop in October, 2004. Although WGS-84 implementation should have been completed since 1998, the States in the Eastern part of the ICAO EUR Region, were encountering certain difficulties related to WGS-84 Implementation.

5.5.4 It had been found useful to consider WGS-84 implementation with reference to four main issues:

- adjustment of aviation law concerning WGS-84 implementation;
- obtaining of the required WGS-84 coordinates/data;
- application of the WGS-84 data for en-route/terminal instrument flight procedures design based on PANS-OPS criteria and requirements, and
- publication of information/data in AIPs in accordance with the standards in Annex 4 and Annex 15.

5.5.5 Considering the role and importance of aeronautical information/data for the safety of aviation, the Meeting agreed to appeal to the States to undertake additional measures in order to eliminate current limitations in the publishing of WGS-84 coordinates and the need for ICAO to continuously monitor the completion of the transition process to be coordinated by the Interstate Aviation Committee (IAC).

EANPG CONCLUSION 46/42 – IMPLEMENTATION OF WGS-84 IN THE CIS STATES

That, the EANPG:

a) urge Aviation Authorities of the States to undertake additional measures in order to eliminate limitations in publishing of WGS-84 coordinates to meet the requirements of international civil aviation;

b) invite the States to nominate focal points for WGS-84 implementation and involved in the following four main tasks:

i) adjustment of aviation law concerning WGS-84 implementation;

ii) obtaining of the required WGS-84 coordinates/data and provision of the relevant services;

iii) application of the WGS-84 data for en-route/terminal instrument flight procedures design based on PANS-OPS criteria and requirements;

iv) publication of information/data in AIP in accordance with the international standards.

c) invite the Interstate Aviation Committee (IAC) to coordinate the WGS-84 Implementation by:

i) supporting the implementation in the CIS States by means of consultations and workshops held on a regular basis up to the completion of the WGS-84 transition process, and

ii) regularly reporting the progress to the EANPG.

6. PERFORMANCE MONITORING AND SAFETY ISSUES

6.1 Safety in Air Navigation Services

6.1.1 The EANPG was presented with a working paper giving an overview of the actions to be taken by States to enhance the safety in air navigation services. It also proposed that activities related to a systematic approach regarding the establishment of the safety management programme in the provision of air navigation services be conducted at the regional level.

6.1.2 The EANPG recalled that in reviewing the ICAO Global Aviation Safety Plan (GASP), the 35th Assembly noted the need of a standardized global model for the implementation of safety management systems. It also noted that Recommendations 2/1 and 2/2 of the Eleventh Air Navigation Conference which addressed the need for establishment of a framework for system safety and implementation of ATS safety management programmes respectively. In this regard, ICAO was pursuing the work required through several panels of the Air Navigation Commission and the Secretariat. It was also noted that the Secretariat had established an internal project team to pursue harmonization of ICAO provisions related to safety management.

6.1.3 The EANPG welcomed the agreement reached by the Technical Commission stating that ICAO should make recommendations for the achievement of global harmonization in the uniform application of ICAO provisions for ATM safety management and that informal regional and interregional groups should be encouraged to carry out complementary work, the results of which may prove valuable to ICAO in its work. The Assembly agreed that, as the work of ICAO and such informal groups matured, it would be appropriate to convene a global meeting to adopt a standardized safety management model for States to use in the implementation of safety management systems.

6.1.4 The EANPG recognised that the implementation of safety regulation would be a new task for many States. With the introduction of requirements for safety management, the establishment of a safety regulatory function assumed even greater importance. For a safety oversight system to be effective, it must have adequate resources. Therefore EANPG strongly encouraged States to establish ANS safety oversight capabilities and procedures by implementing, inter-alia, the required changes to their legislation and regulations (including provisions to enable the establishment and functioning of a non-punitive or just culture safety occurrences reporting system) and to ensure that the necessary resources to perform the tasks, including an adequate number of competent staff, are provided.

EANPG CONCLUSION 46/43 – ENFORCEMENT OF THE STATE SAFETY REGULATORY FUNCTIONS

That the States be strongly invited to:

a) adapt their legislation to enable the implementation of an efficient safety regulatory function;

b) take appropriate action to enable the establishment of a non-punitive or just culture safety occurrences reporting system;

c) fully participate within the scope of the unified strategy to resolve safety-related deficiencies as described in Resolution A35 – 7 of the 35th Assembly; and

d) ensure that the necessary resources to perform the tasks, including an adequate number of competent staff, are provided.

6.1.5 With the above in mind, EANPG tasked the EANPG Programme Coordinating Group (COG) to develop a regional work programme meant to ensure the implementation of safety requirements in the provision of air navigation services.

EANPG DECISION 46/44 – ESTABLISHMENT OF REGIONAL WORK PROGRAMME IN THE PROVISION OF SAFETY IN THE AIR NAVIGATION SERVICES

That the EANPG Programme Coordinating Group (COG) develop a work programme to carry out the regional actions as shown in Appendix F to this report, taking good care to avoid any duplication of work with other organisations and report to the EANPG in December 2005.

Follow-up of Überlingen accident

6.1.6 The EANPG was presented with a working paper, jointly presented by Germany, Switzerland and EUROCONTROL that constituted a follow-up on the report of the German Federal Bureau of Accident Investigation (BFU) on the mid-air collision on 1 July 2002 near Überlingen and a review of the recommendations including necessary action from a particular viewpoint of the ICAO EUR Region.

6.1.7 The Secretariat informed the EANPG that in light of these recommendations, the Air Navigation Commission (ANC) during its 167th Session on 19 October 2004, considered proposal for the amendment of Annex 2, Annex 11 and Annex 13 and authorised their transmission to Contracting States and appropriate international organisations for comment (State Letter expected to be sent on 30 November 2004).

6.1.8 Two of the safety recommendations were similar in nature and relate to Annex 2, Annex 6 and the *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS, Doc 8168). It was recommended by the BFU that ICAO introduce a Standard that would require pilots to follow an airborne collision avoidance system (ACAS) resolution advisory (RA), even if contrary to air traffic control instructions. Furthermore, it was recommended that rules and procedures regarding ACAS be uniform, clear and unambiguous, and that compliance be assured by ICAO.

6.1.9 The ANC noted that the intent of the two safety recommendations above had been largely fulfilled by Amendment 12 to the PANS-OPS which became applicable on 27 November 2003, and clarified and substantially strengthened operating procedures relating to ACAS. Nevertheless, a proposal for amendment of Annex 2 was agreed to by the Commission, which would emphasize the responsibility of the pilot-in-command in respect of the avoidance of collisions.

6.1.10 The Group appreciated the actions taken by the ANC with respect to the safety recommendations concerning the mid-air collision on 1 July 2002 near Überlingen. However, the Group felt that, in order to reflect and further reinforce the content and intention of the above recommendations dealing with ACAS RAs, Annex 2 should contain detailed provisions on this matter.

EANPG CONCLUSION 46/45 - REINFORCEMENT OF SAFETY RECOMMENDATIONS ISSUED AFTER THE ÜBERLINGEN ACCIDENT

That ICAO include in Annex 2 detailed provisions regarding the use of Airborne Collision Avoidance System (ACAS) resolution advisory (RA) to fully reflect the safety recommendations made by the German Federal Bureau of Accident Investigation (BFU) after the mid-air collision on 1 July 2002 near Überlingen.

6.1.11 The Group noted the recommendation to develop worldwide guidance material concerning surveillance system update rates. It was pointed out that the update rate was a function of the area to be covered and the separation minima to be applied. It was also pointed out that ICAO was developing material concerning Required Surveillance Performance. It was agreed that this guidance was required and that ICAO should be requested to progress work on this issue without delay.

EANPG CONCLUSION 46/46 - PROGRESS WORK ON REQUIRED SURVEILLANCE PERFORMANCE

That ICAO progress work on developing worldwide provisions or guidance material related to Required Surveillance Performance.

6.1.12 The Group was informed that an international course on aircraft accident prevention and investigation had been held in Prague, Czech Republic from 19 to 30 April 2004. The impetus for the two-week course was ICAO Assembly resolution urging member States to provide support for the ICAO Global Aviation Safety Plan (GASP) which had been set up in 1997 to reduce the worldwide accident rate by undertaking effective safety initiatives. The reaction had been very positive and it was planned to conduct three courses in April 2005 on the following subjects and additional information was available on the website www.scsi-inc.com:

a) operational risk management, Prague, 4-8 April 2005;

b) Air Traffic Services accident investigation Prague, 11-15 April 2005. This will be the first course oriented on conducting accident investigations involving Air Traffic Control Services, concentrating on Human Factors in ATC, procedures for investigation, and writing an investigation report; and

c) aircraft accident prevention and investigation, Prague, 18-29 April 2005.

6.2 Performance Assessments

The EUR Region RVSM safety monitoring report

6.2.1 The Group was presented with the EUR RVSM safety monitoring report for 2004, which had been prepared by EUROCONTROL, acting as the European Regional Monitoring Agency (RMA), on behalf of the EANPG. The main changes in this report, with respect to the previous years, was that it contained two years of post-RVSM implementation height keeping monitoring data and new operational error data obtained over a four-month period.

6.2.2 The Group noted that the European RMA's role was not only assessing safety within the RVSM airspace on a continuous basis, but was also to continue funding the aircraft height-keeping performance monitoring programme, including the infrastructure. The outcome of this monitoring programme was an essential element in order to ensure that a small technical risk value was being maintained.

6.2.3 The Group was informed that each of the four safety objectives that had been identified (EANPG Conclusion 42/23 refers) were still valid and, in so far as available data permitted, the four safety objectives continued to be met, albeit with some concern in certain areas.

> Safety Objective #1 – the vertical collision risk in RVSM airspace due solely to technical height-keeping performance meets the ICAO Target Level of Safety (TLS) of 2.5×10^{-9} fatal accidents per flight hour.

6.2.4 The Group noted that the computed vertical collision risk due to technical height-keeping performance only had been 0.03×10^{-9}, which met the agreed TLS of 2.5×10^{-9} fatal accidents per flight hour. This was almost four times smaller than the risk estimated in the 2003 safety monitoring report, which had been 1.12×10^{-9}. This was explained because a larger amount of data had been available, therefore permitting a better estimation of the tails of the distribution, which have a large influence on this figure. This was supplemented by actions taken by operators and manufacturers to correct aircraft not meeting requirements. In addition, it was noted that most monitoring classifications were showing compliance with technical height keeping requirements and the quality of the height-monitoring data was satisfactory.

> Safety Objective #2 – the risk of a mid-air collision in the vertical dimension in RVSM airspace meets the ICAO overall TLS of 5×10^{-9} fatal accidents per flight hour.

6.2.5 The overall vertical collision risk, which varied from 8.13×10^{-10} to 1.97×10^{-9} met the ICAO overall TLS of 5×10^{-9} fatal accidents per flight hour. It was pointed out that the same Collision Risk Model (CRM) used in the 2003 safety monitoring report was used for this report.

6.2.6 The Group noted that, although available operational error data was still not as complete as desired; however, the increased availability of data gave rise to some differences with respect to the 2003 operational risk estimates. To take account of these differences, estimates were made for a range of values of operational vertical risk, from 7.84×10^{-10} to 1.87×10^{-9}, thus resulting in an estimate of maximum and

minimum overall vertical collision risk. The highest overall vertical risk value amounted to more than three times the overall vertical risk estimated in 2003. An increase in the number of States providing data during the sampling period and the increase in the number of vertical deviations, higher than or equal to 1000 ft being reported, could explain this.

> Safety Objective #3 – the continuous operation of RVSM has not adversely affected the overall risk of en-route mid-air collision.

6.2.7 Operational validated information, based on Altitude Deviation Reports sent by some States during the sampling period, had shown that there was no significant difference in safety in those States, compared to pre-RVSM implementation. Although the frequency with which different types of errors occurred had decreased, in general, there was no significant difference before and after implementation.

> Safety Objective #4 – all issues that were active when the 2002 Safety Monitoring Report was issued have been addressed satisfactorily.

6.2.8 The Group noted with appreciation that all of the outstanding issues, which existed when the 2003 RVSM Safety Monitoring Report had been released, had either been resolved or were ongoing within a defined programme.

6.2.9 The Group noted the following major concerns that had been identified by the RMA. The operational vertical risk had been calculated with new operational error data sent by States during a 4-month sampling period. Despite the short period, the data had shown an increased trend of the operational risk value. Several reasons had been identified such as the increased number of States providing Altitude Deviation Reports during the sampling period, an increase in the number of vertical deviations that were higher than or equal to 1000 ft and the limitations of the CRM. As a consequence, the overall vertical risk in the system indicated an increasing trend.

6.2.10 The Group noted that, by comparing the number of RVSM-related incidents in RVSM airspace at different periods over two years of RVSM implementation, a clear distinction between RVSM-related and non RVSM-related incidents no longer existed. Moreover, extrapolation of the limits of the operational error data was not possible due to the limitations and uncertainties inherent in the current CRM, as well as the continuing under-reporting of operational errors.

6.2.11 The Group agreed that in order to cope with the concerns and shortcomings identified by the RMA, action should be taken with and incorporated in the 2005 report. It was agreed that a new operational error data collection sample be launched, starting November 2004 until June 2005, in order to allow a comparison and an assessment of the operational vertical risk trend. Furthermore, an electronic format of Altitude Deviation Reports should be implemented in order to facilitate the collection of operational errors and the collection of data should be extended to any type of vertical incident. This would allow the RMA to determine whether the error was RVSM-related or not and how it should be included in the analysis.

6.2.12 In concluding its review of the RVSM safety monitoring report, the Group noted that the risk assessment results obtained from the available information and considering the limited new operational error data, **the operation of RVSM in EUR airspace could be considered to be tolerably safe**. However, in the light of the concerns and shortcomings raised, confidence in current operational performance cannot be fully guaranteed at a high statistical level of certainty. Finally, long-term monitoring activities were necessary to ensure that aircraft were performing according to the specifications and, in case of problems, these were identified and follow-up action was taken in order to solve potential safety issues.

EANPG DECISION 46/47 – RECOMMENDATIONS TO THE EUROPEAN RMA

That, the EANPG, noting that the safety monitoring report had shown that EUR reduced vertical separation minimum (RVSM) airspace was tolerably safe, request the European Regional Monitoring Agency (RMA) to:

a) carry out a new operational error data collection sample between November 2004 until June 2005 in order to allow comparison and assessment of the operational vertical risk trend;

b) establish an electronic format of Altitude Deviation Report to be implemented in order to facilitate the collection of operational errors;

c) review the current collision risk model to provide better modelling to take account of different scenarios and under reporting or nil reporting of operational errors and report to EANPG in December 2005 using the old as well as the new CRM; and

d) identify the mechanism to extend the safety assessment to include any type of vertical incident regardless of whether being RVSM-related or not.

6.2.13 The Group was presented with information regarding the application of strategic lateral offsets in enroute (oceanic and remote continental) airspace, as contained in ICAO State Letter AN 13/11.6-04/85 of 27 August 2004. It was pointed out that the main intent of the use of the strategic lateral offsets was to reduce risk resulting from the increased accuracy of lateral navigation. The implementation of the strategic lateral offset procedure would provide an immediate safety benefit that might even contribute to meeting the TLS for RVSM. The Group agreed that the COG should examine the potential use of the procedure in the EUR Region and report to EANPG in December 2005.

EANPG DECISION 46/48 – EXAMINE THE USE OF STRATEGIC LATERAL OFFSETS IN THE EUR REGION

That the EANPG Programme Coordinating Group (COG) examine the feasibility of implementing strategic lateral offsets in enroute oceanic and remote continental airspace in the European Region and report to EANPG in December 2005.

Spectrum Requirements for aviation

6.2.14 Radio spectrum of sufficient quality and quantity was essential for a safe and efficient aviation industry. It was also a very scarce resource, which demanded careful management. The updated frequency utilization chart, included as an **Appendix G** to this report, provided an overall picture to indicate the present and future utilization of the frequency. The chart was developed to assist in the spectrum management process by providing an executive summary of the total aviation spectrum situation in the European and North Atlantic Regions.

6.2.15 The legends included in the table provided a visual indication of the expectation of the degree to which aviation requirements can be satisfied in each band for each year. Up to the current year (2004) the information was historic and the future dates show the forecast requirements, based on information available from a range of sources.

6.2.16 The chart showed critical shortage of frequency recourses in the high frequencies (HF) communications, very high frequency (VHF) navigation and VHF communications bands. The most pressing issue for Europe was the VHF communications band. The implementation of 8.33 kHz channel spacing has the potential to satisfy the demand for voice communications for approximately the next 20 years, but the implementation programme was not keeping up with the demand. This issue was also considered under the

heading of the 8.33 kHz implementation programme and a draft conclusion had been proposed to address the problem.

6.2.17 VHF navigation band congestion was a little less pressing than the communications band, but had serious implications for the future in Europe. Further consideration was given to the issue, including a draft conclusion, under the topic of ground-based augmentation system (GBAS).

Harmful interference for AIRBUS A-320 aircraft

6.2.18 In July 2004, the Swiss air navigation service provider, Skyguide, had reported harmful interference occurrences on VHF COM channel 135.985 MHz. This interference was evident only on Airbus A320 aircraft and the effect was unacceptably poor reception on board the aircraft. Flights of SWR, EDW, AZA, VLE, AFR, among others, had been affected. As a direct consequence, in August 2004, about four months after it began, operational use of 135.985 MHz had to be discontinued for safety reasons.

6.2.19 The problem had been submitted to Airbus who advised that the problem was not new and that a solution was available. An Airbus Technical Follow Up (TFU) document of 1996 provided a description of the problem and its solution. Unfortunately, there were still a significant number of aircraft affected by the interference. The loss of one ACC channel was a major problem for Europe.

Obstacle collision avoidance System (OCAS)

6.2.20 An obstacle collision avoidance System (OCAS) was being actively promoted by commercial interests in a number of European States. The OCAS system had the potential to interfere with VHF COM and Radar frequencies. In the case of VHF COM it would broadcast simultaneously on 720 channels when activated.

6.2.21 There were serious technical and institutional problems, from a frequency management perspective, that needed first to be addressed before any testing or operation of the system could be allowed. This was especially important in high-density airspace.

Policy for frequency shift management

6.2.22 The EANPG recognized that the mechanism of shifting the location of allocated frequencies, a measure that is necessary to squeeze the last possible improvements in frequency planning because of the severe shortage of VHF channels, is often stalled by lack of the cooperation or timely action that is necessary from all the parties involved.

6.2.23 It was considered that a policy statement from the EANPG, that would address the issues associated with frequency shifts, would be of benefit. Such a policy could include the time to be allowed to achieve a shift when there was no technical blocking point, along with the time that must be allowed before a subsequent shift was required.

6.2.24 The Group agreed to request the SFCG to consider developing such a policy and to report any progress in time to COG in June 2005.

EANPG CONCLUSION 46/49 – POLICY FOR FREQUENCY SHIFT MANAGEMENT

That the EANPG, in recognising the necessity to improve the efficiency of frequency shifts to optimise the use of very high frequency (VHF) spectrum, request the Spectrum Frequency Consultation Group (SFCG) to consider developing a policy proposal in time to be considered at EANPG in December 2005.

6.3 Air Navigation Deficiencies

Effects of volcanic ash clouds on the EUR Region

6.3.1 The Group was presented with information concerning the lessons learnt as a result of the eruption of that Grimsvötn volcano in Iceland on 2 November 2004. The Group was informed that the NAT Region had developed a volcanic ash contingency plan, which had been put in effect and had proven to be effective. However, some shortcomings had been identified and initial efforts had been taken to review the lessons learnt. Because of the direction of the prevailing upper winds, much of the ash cloud was forecasted to enter the EUR Region, which led to some significant operational problems. The Group was informed that, in follow up, the ICAO EUR/NAT Office had established an ad hoc working group to be composed of ATM and MET representation from the EUR and NAT Regions and representation from IATA. The outcome from the working group would be presented to the International Airways Volcano Watch Operations Group (IAVWOPSG) for their consideration and a progress report would be presented to COG in June 2005.

Outcome of the EUR Volcanic Ash SIGMET test

6.3.2 As a response to a recommendation by the MET Divisional Meeting 2002 to review the implementation of the information concerning en-route weather phenomena which may affect the safety of aircraft operations (SIGMET) requirements concerning volcanic ash, a regional test had subsequently been performed on 24 May 2004, during which the Volcanic Ash Advisory Centres (VAACs) London and Toulouse had produced a Volcanic Ash (VA) Advisory with a fictitious volcanic ash cloud covering some EUR States.

6.3.3 Only 10 VA SIGMETs out of expected 21 had actually been issued. Furthermore, in the issued VA SIGMETs, the text of the VA Advisories had mostly been simply reproduced, and not adapted for the concerned FIR. Some problems had also been encountered concerning the "headers" for VA SIGMETs. This demonstrated the need for such tests and the difficulty to maintain seldom used procedures. The preliminary findings even proved that the procedure itself had not been clearly defined (and tested) in some States. The main reason seemed to be that the probability of the occurrence of a volcanic ash cloud spreading over these States was felt unlikely, although the active Icelandic volcanoes could easily threaten the continental EUR airspace during unfavourable upper winds.

6.3.4 The need for follow-up actions on this safety related issue was recognized and the Meeting agreed on the following Conclusion:

EANPG CONCLUSION 46/50 - EUR VOLCANIC ASH SIGMET PROCEDURES

That, the ICAO Regional Director:

a) issue a revised version of the European information concerning en-route weather phenomena which may affect the safety of aircraft operations (SIGMET) guide, including a list of Volcanic Ash SIGMET headers and invite the European States to implement the volcanic ash SIGMET procedures as a matter of urgency, and

b) invite Volcanic Ash Advisory Centres (VAAC) London and Toulouse to carry out another test.

6.3.5 The Meeting was informed by the Secretariat about a similar test of the Volcanic Ash SIGMET procedures planned for the most Eastern part of the Russian Federation in the area of responsibility of the Tokyo VAAC.

Lack of consistency of SIGMET information for adjacent FIRs

6.3.6 The Group noted that IATA had expressed their concern of the lack of co-ordination of SIGMET information for adjacent FIRs, based on the fact that weather phenomena very seldom are limited by the borders of one FIR, but instead generally extend to areas beyond. Operators had noticed inconsistencies in case of SIGMETs received from more than one MWO and related to the same weather phenomenon. This was causing confusion, especially when SIGMETs were received in the cockpit by data-link through the operator's MET data bank.

6.3.7 The Group considered that the lack of consistency of SIGMET information issued for adjacent FIRs was a problem with possible safety implications, which should be addressed through improved co-ordination amongst the MWOs. The Group consequently agreed that the ICAO Regional Director should invite the EUR States to improve co-ordination amongst Meteorological Watch Offices to ensure the consistency of SIGMET information issued for adjacent FIRs.

EANPG CONCLUSION 46/51 - CONSISTENCY OF SIGMET INFORMATION ISSUED FOR ADJACENT FIRS

That, the ICAO Regional Director invite States to improve the coordination amongst meteorological watch offices to ensure consistency of information concerning en-route weather phenomena which may affect the safety of aircraft operations (SIGMET) information issued for adjacent flight information regions (FIR).

Publication of charts in AIP

6.3.8 The Group noted that during an ICAO PANS-OPS Training Special Implementation Project for CIS States 2003-2004, the SID, STAR and APPROACH charts, as contained in the AIPs of some States in the Eastern Part of the EUR Region, had been analysed and found to include errors affecting safety.

6.3.9 The charts contained typical errors which might be grouped into the following categories:

i) deviation from SARPs contained in Annex 4 - Aeronautical charts (Appendix 2, ICAO Chart Symbols), and from the sample charts contained in Doc 8697);

ii) amalgamation of STAR and APPROACH charts;

iii) termination of STAR in Final Approach Point (FAP) or Final Approach Fix (FAF);

iv) deviation from the entry into the reversal procedure regulation (Doc 8168, Part III, chapter 4, paragraph 4.5.3).

6.3.10 In view of the possible safety implications, the Group recognized the need for all EUR States to revise the publication of charts in their AIPs and agreed that the ICAO Regional Director should invite the States to revise the charts published in the AIP as a matter of urgency and to report back accordingly.

EANPG CONCLUSION 46/52 - UPDATE THE PUBLICATION OF CERTAIN CHARTS IN AIPS

That, the ICAO Regional Director invite States concerned to revise the publication of certain charts in their national Aeronautical Information Publication (AIP).

7. ADMINISTRATION AND ORGANISATIONAL ISSUES

7.1 EANPG Work programme

7.1.1 The Group agreed to its work programme for 2005, as shown in the **Appendix H** to this Report.

7.1.2 The Group noted that the two sub-groups that were established by the COG in order to carry out the work programme agreed by EANPG/45, namely the Route Development Group - Eastern Part of the ICAO EUR Region (RDGE) and the Air Traffic Management Group - Eastern Part of the ICAO EUR Region (ATMGE), until now had held only one meeting each and therefore might need guidance on how to progress their work. This was particularly the case with the RDGE which had been established to continue the work that was previously carried out by the Meeting for the Planning and Co-ordination of Implementation of ATS Routes through the airspace of the Eastern Part of the ICAO European Region including Middle Asia (TARTAR), the ICAO ATM Co-ordination Meeting - Europe East and Middle Asia (FLOE) and the EANPG Working Group for Air Traffic Management in the Eastern Part of the ICAO European Region, including Middle Asia (GATE) in the area of development of ATS route network, an area which the Group considered to be of high importance. The Group noted with appreciation that the EUR/NAT Office would take action to ensure the effectiveness and efficiency of RDGE and ATMGE.

7.2 Next EANPG Meeting

7.2.1 It was agreed that the EANPG/47 Meeting would be held from 29 November to 1 December 2005 in the ICAO European and North Atlantic Office.

8. ANY OTHER BUSINESS

8.1 Real time provision of AIS data

8.1.1 Following a request from the Member of Spain, the Group was informed that ICAO had entered into a Memorandum of Understanding with Jeppesen in order to explore if cooperative efforts should be pursued to improve the aeronautical data quality globally. The aim would be to facilitate the provision in real-time of quality aeronautical information of any user, any time, anywhere, as required by the ATM community.

APPENDIX A – LIST OF PARTICIPANTS

(Paragraph 0.2 refers)

CHAIRMAN
Mr Dirk NITSCHKE

***BALTIC STATES (Estonia, Latvia, Lithuania)**
Mr Maris CERNONOKS*
Mr Vadims TUMARKINS

***BELARUS**
Mr Nikolai Maximovich KUZMENKOV
Mr Ivan SHYMANETS
Mrs Tatiana PANACHEVNAYA

***BENELUX**

BELGIUM
Mr Roland MOINEAU

BOSNIA AND HERZEGOVINA
Mr Marinko SIMUNOVIC
Ms Ivana BUSIC

BULGARIA
Mr Dimitar TODOROV
Mr Plamen Ivanov TASEV

***CAUCASIAN STATES (Armenia, Azerbaijan, Georgia)**

ARMENIA
Mr Eduard PILOSYAN

GEORGIA
Mr David GVENETADZE
Mr Vladimir GOGASHVILI

***CENTRAL ASIAN STATES (Kazahkstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan)**

KAZAKHSTAN
Mr Viktor MIKHAILOV

KYRGYZSTAN
Mr Erkin BAYAZOV

UZBEKISTAN
Mr Anatoly INDIN
Mr Maksim SULEYMANOV

CYPRUS
Mr Nicos NICOLAOU
Mr Stavros HATZIYIANNIS

***CZECH REPUBLIC**
Mr Ladislav MIKA* *(EANPG Vice-Chairman)*

***FRANCE**
Mr Raymond ROSSO*
Mr Denis LEMARCHAND
Mr Gilles FARTEK#
Mr Olivier MROWICKI#
Mme Geneviève EYDALEINE#
Mr Denis LAMBERGEON#
Mr Alain GRANDCLAUDE#

***GERMANY**
Mr Martin RADUSCH*
Mr Bernd RANDECKER
Mr Erland LORENZEN

***GREECE**
Mr Stavros STABEKIS

HUNGARY
Mr Istvan MUDRA

***IRELAND**
Mr Donie MOONEY*

***ITALY**
Mr Pierluigi D'ALOIA*

MOROCCO
Mr Mohamed LEBIED

***NORDIC STATES (Denmark, Finland, Norway, Sweden)**
Ms Ann-Katrin ECKERBERT*
Mr Jorma ALAKOSKI

POLAND
Mr Witold KAMOCKI

***PORTUGAL**
Mr Carlos MONTEIRO*
Mr Abel PARAIBA

* *Member*
\# *part time*

REPUBLIC OF MOLDOVA
Mr Valerian VARTIC

ROMANIA
Mr Adrian SERBAN
Ms Aura MARCULESCU
Mr Mihal NECULA
Mr Traian COMSA
Mr Razvan IONESCU
Mr Bogdan BONDOR

***RUSSIAN FEDERATION**
Mr Dmitriy SAVITSKIY*
Mr Vasily TOPCHIEV
Mr Alexey BUEVICH
Mrs Elena STEPANOVA
Mr Oleg ALEXEEV
Mr Victor KRIVONOSOV
Ms Elena GLUKHOVSKAYA
Mr Mikhail PARNEV
Mr Boris KISELEV
Mrs Marina PETROVA
Mr Petr INOZEMTSEV
Mr Auri VERESCHAGIN

SLOVAK REPUBLIC
Mr Miloslav DANIHELIK
Mr Marian MIHALUS

***SPAIN**
Mr Juan de Mata MORALES LOPEZ
Mr Angel MARTINEZ CASTRO

***SWITZERLAND**
Mr Bernard SCHWENDIMANN

THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA
Mr Toni PRGOMET

TUNISIA
Mr Mohamed Ali BEN ALAYA
Mr Ridha DRIDI

TURKEY
Mr Baris KALKAVAN

***UKRAINE**
Mr Volodymyr CHALYK
Mr Vitaliy SIMAK
Mr Oleksandr ZUBAREV

***UNITED KINGDOM**
Mr Phil ROBERTS*
Mr Roger BUDGEN

UNITED STATES
Mr Gerald RICHARD

International Organizations/Organisations internationales

ECAC
Mr Jude MARIADASSOU

EUROCONTROL
Mr Eamon F. CERASI
Mr Istvan BOZSA
Mr Roland RAWLINGS #
Mr Paul ADAMSON #
Mr Martin ADNAMS #
Mr Arthur LIEUWEN #
Mr Anders HALLGREN #

EUROPEAN COMMISSION
Mr Cesare BERNABEI

IAC
Mr Oleg K. ERMOLOV

IATA
Mr Cees GRESNIGT
Mr Suesat MANOCH

IBAC
Mr Patrick EXPERTON

IFALPA
Mr Chrys HADJICHRYSANTHOU
Mr Heinz FRUHWIRTH

IFATCA
Mr Nicolas Y. LYRAKIDES

** Member*
 # part time

SPECTRUM FREQUENCY CONSULTATION GROUP (SFCG)

European Aeronautical Spectrum

HIGH LEVEL BRIEF

(Paragraph 5.2.8 refers)

Objective

To ensure that European aviation has the radio spectrum it requires to operate safely and efficiently; to ensure the successful implementation of the Single European Sky programme and to meet traffic growth in the region. This is critical to guarantee the future viability of all aviation sectors.

Current Issues

Future air traffic operations are threatened by the lack of adequate spectrum to support communications, navigation and surveillance facilities.

- **The aeronautical radio bands supporting safety and regularity of flight are already experiencing capacity and congestion problems**.
- **Proposed sharing of spectrum used by aviation with non-aeronautical systems could jeopardise the integrity of the aviation systems.**
- **There is a growing trend of interference from unauthorised/unintended spectrum users.**

If these issues are not resolved, Europe could be facing serious consequential economic and capacity penalties.

Background

Air traffic in Europe is forecast to grow steadily in the coming years, providing significant social and economic benefits to the region. Total scheduled passenger traffic to, from and within Europe is expected to rise by 4% per year with total flights handled in the region increasing by between 3% and 7% per year to 2010. Growth is also expected to affect all other aviation sectors. It is important to consider the increased needs of all airspace users when preparing for and responding to the growth in the European region.

Enhanced air traffic management, more productive use of the airspace over Europe and implementation of new technologies are all prerequisites to be able to safely and effectively manage this evolution.

Timely access to appropriate, suitably protected radio spectrum to support these initiatives must be guaranteed.

In an effort to streamline European operations, the Single European Sky (SES) programme is being implemented to create a unified airspace over Europe. The objectives of the SES are to improve and to reinforce safety, to restructure European airspace as a function of air traffic flow, rather than according to national borders, to create additional capacity and to increase the overall efficiency of the air traffic management.

Radio Spectrum used by Aviation

The success of many of the SES and other long-term initiatives will depend on protection of aeronautical spectrum already in use and access in the future to secure radio spectrum supporting new systems and procedures, including satellite-based systems.

Aviation uses radio spectrum for communications, navigation and surveillance; all three are essential to safe, efficient flight and increasingly to reinforcing security. The global nature of aviation demands worldwide compatibility and harmonization.

There is a range of radio systems onboard an aircraft as well as extensive ground-based systems that are all used for the integrity of flight. Examples include very high frequency (VHF) data and voice communications links, the Instrument Landing System (ILS) used for all weather operations, surveillance radar systems used to maintain safe separation between aircraft and Distance Measuring Equipment (DME) for navigation purposes.

The Case of Europe

Europe has some very specific concerns including but not limited to the following:

- The VHF communications band supporting safety and regularity of flight is already experiencing capacity and congestion problems. This problem is severe and, with the predicted growth in traffic movements, is expected to become worse. Some interim measures such as the 8.33 KHz channel spacing programme are expected to buy time in the short to medium term, however the scope of the 8.33 kHz implementation programme will need to be accelerated and expanded in order to catch up with the short and medium term demand. In the longer term a new system is necessary.

- Other bands such as that used for DME are also under pressure to maintain the existing standards of service. At the same time, a portion of the DME band to accommodate Global Navigation Satellite Systems (GNSS)[1] has been allocated in accordance with conditions in the ITU Radio Regulations.

- A more general concern for European aviation is the protection of safety of life services from interference by unauthorised spectrum users or unintended interference from other systems, e.g. cable TV. In some instances they have rendered portions of some of the most congested aeronautical spectrum unusable in a number of countries.

- Emerging mass-market systems, such as Ultra Wide Band (UWB) devices have the potential, if not properly controlled, to cause harmful interference to aviation systems.

- New applications will require additional aeronautical spectrum.

Aviation cannot and will not compromise on safety. If the concerns above are not properly addressed, the integrity of aeronautical systems could be affected. Depending on how and which services are affected, in order to ensure safety, capacity may need to be reduced, which would have serious economic consequences.

[1] GPS , GLONASS and GALILEO

Increasing Competition for Spectrum

Radio spectrum is a finite and scarce resource. With the sustained growth of mobile telecommunications, commercial users are looking for global spectrum and therefore, existing global allocations, including those for aviation, are seen as attractive.

It is not easy for aviation to compete for spectrum. The worldwide nature of its business requires global allocations. Moreover, aviation's equipment, systems and procedures meet high safety standards before they are put into use; standards that are set by the International Civil Aviation Organization (ICAO) and enforced directly by States. As a result, it can take at least 15 years for aviation to implement a new technology.

WRC Spectrum Allocation - an International Commitment

The allocation of all radio spectrum is decided by States at the ITU World Radiocommunication Conferences (WRCs) that take place every 3-4 years. The outcomes, the ITU Radio Regulations (RR), have the status of international treaties.

WRCs search for common ground and trade offs between very different socio-economic and political interests. The month long WRC with over 2500 delegates provides a global framework for finalising negotiations between States since the previous conference.

International aviation organisations have an observer status in these negotiations and are obliged to lobby for their interests through regional blocks of states such as the Conférence Européenne des Administrations des Postes et des Télécommunications (CEPT). It is therefore important for the aviation position to be taken into account in each State's position. Aviation representatives within a State can be part of national delegations and such participation is critical in order to influence States support of aviation positions.

The aviation community's position generally follows that of the International Civil Aviation Organisation but may have specific emphasis in different regions.

Managing European Aeronautical Spectrum - The Future

Realising the need to more effectively ensure radio spectrum and frequency requirements in Europe, ECAC Ministers of Transport requested EUROCONTROL, ICAO and States to "develop a strong mechanism for the management, assignment and audit of the use of aviation spectrum". The EUROCONTROL Provisional Council subsequently adopted the resulting "New Mechanism" in 2002.

The independent Spectrum Frequency Consultation Group (SFCG) with a wide representation of stakeholders (Member States, ICAO, European Commission, NATO, IATA and air navigation service providers (ANSPs)), plays a key role of the New Mechanism. Among other things, the SFCG develops the European Aeronautical Spectrum Strategy and Common Positions for WRCs.

Conclusion

European aviation is a major contributor to the economic and cultural well being of the region. Its sustained growth depends on advanced technologies and systems that require specific radio spectrum to operate. Addressing the concerns raised in this paper will ensure that aviation has the protected spectrum it needs today and tomorrow. The entire industry must unite to provide a strong, compelling case to secure its spectrum needs.

Political Action required

To enable the economic growth, retain the highest level of safety standards and ensure that European aviation has the spectrum it needs to move into the future, European aviation stakeholders are urged to support the objective described in this High Level Brief.

It is essential that States and organizations cooperate in a coordinated, consistent manner to:

- make timely and firm decisions on the future requirements for aviation radio systems; so that operations can commence before situations becomes critical,
- address the specific European radio spectrum issues in a timely manner by actively participating in the work of relevant European bodies dealing with telecommunications,
- support the aviation position in preparation for future WRCs, and
- Contribute, through submissions and active participation in regional preparations, ITU groups and States delegations at the WRCs in order to achieve aviations goals.

APPENDIX C - AFS SECURITY GUIDELINES

(paragraph 5.2.16 refers)

1. INTRODUCTION

1.1 The point-to-point AFS network is evolving to a complex web of interconnected networks (now AFTN/CIDIN, in the future AMHS). These networks are supported by commercial network services, gateways, etc. resulting in a more efficient but vulnerable network.

1.2 The objective of establishment of a security policy and specific security measures is to guarantee the following characteristics of the AFS:

- Availability (prevention of unauthorised or accidental withholding of information or system resources)
- Integrity (protection from unauthorised amendment or deletion)
- Confidentiality (prevention of unauthorised access or disclosure)
- Continuity

1.3 The standard accepted general method to define a security policy consists of a number of steps:

- first it is essential to define the essential assets that are to be protected, and to define their value,
- a further step consists of the definition of threats that can endanger these assets, and to assess the level of damage (impact) that can be provoked to theses assets,
- the third step consists of the definition of safeguards that can be implemented to prevent the occurrence of damage to the assets caused by these threats,
- when the value in money of these essential assets is known, as well as the frequency of the threats occurring and the cost and efficiency of the safeguards, the optimum implementation of safeguards can be calculated. If this calculation is performed properly, the cost of implemented safeguards should be less than the cost of the foreseen damages.

1.4 In the CIDIN environment it is very difficult to make this kind of calculations for several reasons:

- As the CIDIN is operated by several independent operators, for which CIDIN is a small but important part of their activities, it is virtually impossible to define common “essential assets” especially if the definition of their financial equivalent is required.
- It is also very difficult to estimate the frequency at which threats are expected to occur. Currently there has been only a limited number of events, on which it is very difficult to base statistics.
- For the same reason it is very difficult to assess the average damage per occurred threat, which may widely vary.
- Although it is relatively easy to calculate the cost of safeguards, it is much less easy to calculate the efficiency, that is, the factor by which they reduce the occurrence of successful attacks.
- A further complicating factor is the fact that threats occurring on a specific location might cause damage on the location of remote CIDIN user.
- On the other hand, one should realise that already now several precautions and/or safeguards have been implemented.

1.5 When observing the current situation, it is not considered achievable to have a common CIDIN Security policy, which is formally accepted by all organisations participating in CIDIN. Therefore a solution has to be found wherein an adequate degree of protection and prevention is achieved without administrative effort. Therefore it is necessary that the delimitation of responsibility for the network be described unambiguously.

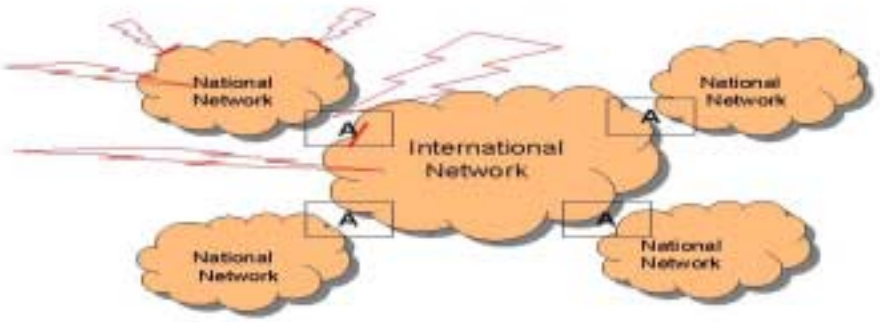
1.5.1 The delimitation of responsibility as proposed for the CIDIN Network is the following:

- Each international CIDIN node is responsible for:

  a) Its own equipment, the operations under his responsibility and the protection thereof
  b) All connections to and from its national subscribers that access to the CIDIN through his centre
  c) The national part of the international links that is under its responsibility (that is which he is paying for or otherwise providing,

- All relations with partners listed under b. and c. should be detailed in Service Level Agreements.

1.5.2 The delimitation of the responsibility is shown in the figure below.



2. SECURITY ANALYSIS

In order to perform a systematic security analysis for the AFS the following elements must be considered:

ASSETS – THREATS – VULNERABILITIES– IMPACT – RISKS – SAFEGUARDS

2.1 Assets

An asset is any item, which may require protection. Such an item may be tangible (premises, equipment) or intangible (information, goodwill).

The AFS network is composed of nodes and connections. The operation of the network is performed through systems, personnel and procedures. The purpose of the network is to transfer aeronautical messages between end-users. Among the above components, the most significant AFS assets are AFS nodes (hardware and software).

2.2 Threats

A threat is an event or a group of similar events, which may damage one or more assets.

The following are considered as threats to the AFS:

- Flooding of information
- Passive interception of information
- Active interception of information
- Modification of system configuration
- Destruction of system configuration
- Denial of Service

Threats	Assessment	Remark
Flooding of information	Medium	The incorrect usage from user could generate flooding of information
Passive interception of information	Low	The information nature decreases the possibility that this type of threats happens.
Active interception of information	Low	The information nature decreases the possibility that this type of threats happens.
Modification of system configuration	Low	The high technical level required decreases the possibility that this type of threats happens.
Destruction of system configuration	Medium	The high technical level required, although lower than modification, decreases the possibility that this type of threats happens (only a possible sabotage without benefit to a third part, for example “hacker”).

2.3 Vulnerabilities

Vulnerability is an inherent weakness of an asset, which may be exploited in an attack.
The weak points of the current AFS network are mainly identified in the network nodes, the main AFS vulnerability being the unauthorized access to the HW and/or SW of nodes.

The following potential sources of unauthorized access have been identified:

- Physical access
- Access via the X.25
- Access via the TCP/IP
- Maintenance access
- Break in via a public network (telephone, telex, data)
- Break in via PTT leased lines

2.4 Impact

Impact is an assessment of the level of damage that would be caused by a threat event (accident or attack) occurring.

The levels of Impact to the AFS are defined as follows:

H	High	Denial of Service
M	Medium	Loss of Efficiency
L	Low	Without Loss of Efficiency
N	Null	No impact at all

2.5 Risk

Risk is the probability of occurrence of an attack.
The levels of Risk are defined as follows:

H	High	Safeguards not applied
M	Medium	Safeguards applied partially
L	Low	Safeguards applied fully

The AFS Risk must be low once the safeguards have been implemented.

2.6 Safeguards

Safeguards are those system components and procedures, which reduce vulnerabilities.
Various Safeguards are proposed depending on the different weak point of the AFS.

2.6.1 Physical access

The equipment and operator room shall be locked and protected by security control and/or automated systems. In case of such access to the operating system, a security policy of login and password shall be implemented (authentication code required).

2.6.2 Access via the X.25

The access via X.25 offers the security of the PVC where the adjacent node is well known; In case SVCs are used, addressing aspects need to be considered. Detailed guidance on security measures when using SVCs can be found in Appendix F of the EUR CIDIN Manual. In case of such access to the operating system, the option of login and password shall be removed/disabled.

2.6.3 Access via TCP/IP

The access to equipment shall be through a firewall. The equipment shall belong to a stand alone LAN (of the office network and another network). The firewall creates a secure gateway between networks, provides a single entry point to the network that can be closely monitored and manages the flow of information on behalf of one of the networks. The security policy shall check valid source and destination addresses, type of traffic (specific ports, etc.), login and password (authentication code required).

2.6.4 Maintenance access

Maintenance access is considered necessary but it is a potential weak point. In case of such access to the operating system, the remote access shall be enabled (or call back applied) from a local position and the access shall be limited in time and login and password protected (authentication code required).

2.6.5 Break-in via a public network (telephone, telex, data)

In case access to the application level is possible from a public network, protection measures shall be installed, for example password protection or call back procedures. In case such access to the operating system is possible, the option of login and password shall be removed/disabled.

2.6.6 Break-in via PTT leased lines

In case access to the application level is possible from PPT leased lines, safeguards shall be agreed with the service provider. In case such access to the operating system is possible, the option of login and password shall be removed/disabled.

2.6.7 Access Control

The previous safeguards have one common point – Access Control. Therefore Access Control Policies must be defined which:

- provide mechanisms that restrict access to specified components (Access Control Arrangements);
- ensure that all users are authorised (User Authorisation);
- provide authorised users with access privileges which are sufficient to enable them to perform their duties but do not permit them to exceed their authority (Access Privileges);
- ensure that users follow a rigorous sign-on process and are authenticated before they can gain access to information (Sign-on Process, User Authentication);
- ensure individual accountability for managing incidents, such as access violations, to be investigated and resolved (Access Logging).

3. AFS SECURITY PRACTICES

3.1 General

3.1.1 The AFS network supports the safety and regularity of ATS and as such, it must guarantee sufficiently secure communications between various Air Navigation Applications through a robust network design.

3.1.2 The issue of unauthorised access to the AFS network has become important because of the various existing access possibilities (network interconnections, gateways, third party users etc.).

3.1.3 The following measures constitute a practical approach for ensuring AFS security, particularly at the node level, which is considered to be the most vulnerable point of the AFS. The "national entry centre" in particular is considered to the border point to the network where protection against intrusion must be ensured.

3.1.4 Due to the collaborative nature of the network, it is assumed that ATSOs implement equivalent security measures at international nodes, in order to provide a secure end-to-end communication service according to operational requirements.

3.1.5 In general, the security policy within an administration will contain a coherent set of measures to achieve the security level required. It is not the intention of the measures proposed below to interfere with the national security policy. These measures should only define an agreed minimum level of security over the whole area.

3.2 Recommended Practices

3.2.1 Hazard Protection

Hazard Protection should prevent denial of service of the AFS network node as a result of natural hazards. All AFS network nodes should be protected against fire, flood, and other foreseeable environmental and natural hazards.

AFS network node should be:

- sited in locations that have a low risk of fire, flood, explosion, civil unrest and damage from neighbouring activities or natural disasters;
- located in rooms that are free from intrinsic fire hazards (such as paper or chemicals), protected against the spread of fire and fitted with fire detection and suppression systems.

Furthermore, the impact of hazards should be minimised by:

- training staff in the use of fire extinguishers (which should be located nearby) and other emergency / safety equipment;
- establishing and testing emergency evacuation procedures;
- monitoring, periodically testing and servicing fire alarms in accordance with manufacturer specifications.

3.2.2 Power Supplies

Redundant power supplies including UPS and backup generators should be used to prevent denial of service by loss of power to the AFS network node.

Power cables within the computer installation should be protected by concealed installation, locked inspection / termination points, alternative feeds or routing and avoidance of routes through public areas.

3.2.3 Physical Protection

Physical controls should be provided to protect the AFS network node against unauthorised access and to prevent denial of service by loss of or damage to equipment or facilities

Physical access to the AFS network node should be restricted to authorised personnel, by:

- fitting intruder alarms and locks activated by key,
- requiring personnel to have visible identification,
- recording the arrival / departure of visitors and supervising them at all times,
- employing security guards and providing video surveillance,
- issuing authorisations for physical access in accordance with formal standards / procedures, reviewing them periodically and revoking them when no longer needed, for example when staff leave the organisation.

3.2.4 Access Control

3.2.4.1 General provisions

AFTN/CIDIN should be a network that offers access to users only via agreed entry points.

Access Control should ensure that only authorised individuals gain access to the AFS network node with a defined policy and that individual accountability is assured

Access to the capabilities of the AFS network node should be restricted to authorised individuals

Users of the AFS network node should be restricted:

- according to a defined policy, such as on a ‘need to know’ or ‘need to restrict’ basis;
- limiting access privileges only to those required for a user’s individual role;
- using automated access control mechanisms.

Each user’s access privileges should be authorised by the AFS network node manager. User privileges should be promptly removed when they are no longer entitled to use them

Prior to being granted access to the application, users should be authenticated. High- risk users, such as those with access to powerful access privileges / utilities or sensitive information should be subject to strong authentication.

3.2.4.2 Access Control Arrangements

Access control arrangements should provide technical mechanisms to:

- restrict the system capabilities that can be accessed, for example by limiting restricted areas;
- prevent users from gaining access to system prompts;
- prevent misuse of passwords by using encryption, one- time passwords or stronger authentication, such as token- based authentication;
- minimise the need for special access privileges. High- level administration activities should be limited to the system console only.

3.2.4.3 User Authorization

User Authorization should ensure that all users of AFS network node are authorised according to a sound process

The process for authorising users should:

- be formally defined, controlled by one or more designated individuals and applied to all users;
- associate access privileges with defined users, for example with UserIDs rather than passwords;
- issue default access privileges of 'none';
- ensure redundant UserIDs are not re- issued for use.

3.2.4.4 Access Privileges

Access privileges should provide authorised users with access privileges which are sufficient to enable them to perform their duties but do not permit them to exceed their authority

All users of the node should be assigned a set of access privileges to allow them to read or change particular information or systems. Before access privileges come into effect:

- authorisations should be checked to confirm access privileges are appropriate,
- users should be advised of their access privileges and associated conditions and required to confirm their understanding of those conditions.

Access privileges should not be assigned collectively.

Additional controls should be applied to special access privileges, including high- level privileges, powerful utilities and privileges that provide access to sensitive application capabilities. These controls should include:

- specifying the purpose of special access privileges,
- restricting the use of special access privileges to narrowly defined circumstances and requiring individual approval for their use,
- requiring users with special access privileges to sign-on using identification codes or tokens that differ from those used in normal circumstances.

3.2.4.5 User Authentication

User authentication should ensure that all users are identified and authenticated before they can gain access to any information or systems within AFS network node

All users should be authenticated, either by using UserIDs and passwords or by stronger authentication such as smartcards or biometric devices (in case of physical access)

Strong authentication, such as token-based authentication, should be applied to users with access to critical areas of AFS network node or with access privileges

3.2.4.6 Logging Process

The process for access logging should:

- limit the number of unsuccessful sign-on attempts (for example a re-try limit of three) and disconnect users after the limit is reached;
- record all unsuccessful sign-on attempts;
- not store authentication details in clear text, such as in scripts, macros or cache memory;
- record information to identify users, access paths, patterns of access etc.

3.2.4.7 External Connections

The AFS network node has some type of external connections such as X.25, TCP/IP, Public network (telephone, telex, data), and PTT leased lines. Those connections that made use of a network protocol should use the security features supported by the protocols such as Closed User Groups in X.25 or firewall in TCP/IP.

The security of connections that are not otherwise protected should be managed by the AFS application.

Unauthorised connections should be identified by:

- performing manual audits of the node to identify discrepancies with records of known external connections;
- employing diagnostic tools.

3.2.5 Protection from Malicious Code

Although the probability of infection is low, protection from malicious code should be provided to protect the AFS network node by using anti- virus software, where available.

The anti-virus software should be run at continuously in the node and the use of automatic update mechanisms for anti-virus software, applied at least on a weekly basis a formal process to help users deal with virus attacks, warning them to stop processing, note symptoms and identify the source.

3.2.6 Protection from network flooding

The probability to flood the network with traffic leading to excessive message delays, saturation and finally overloading and crashing of nodes should be minimised through monitoring of the type, acceptability and level of traffic at the entry node.

3.2.7 Security management

3.2.7.1 Security Monitoring

Security monitoring should check the performance of the AFS network node, reduce the likelihood of system overload and detect potential or actual unauthorised connections.

Monitoring activities should include:

- monitoring service levels against agreed targets,
- recording current volumes of traffic, utilisation of systems facilities and any potential bottlenecks or overloads,
- scanning for known vulnerabilities and known attack characteristics caused by control weaknesses,
- checking whether powerful utilities / commands have been disabled,
- provision of alerts when suspicious activity is detected,
- recording threats from accidents and deliberate acts.

3.2.7.2 Incident management

Security monitoring should provide to top management an accurate, comprehensive and coherent assessment of the security conditions of the AFS network node in order to perform incident management. Incident management should identify and minimise the impact and reduce the risk of similar incidents occurring

The incident management process should:

- specify requirements for the recording and reporting of incidents;
- include categorising incidents by type and prioritising them according to their impact / risk;
- define procedures for dealing with incidents (including investigation, planning of remedial action, resolution, communication with users, supervising activity and documenting actions taken);
- define patterns of incidents (including number and frequency) to diagnose common problems and to minimise their recurrence;

3.2.7.3 Security management for the AFS network also calls for some high-level practices to be applied such as:

- establishing a security policy;
- maintaining security awareness of staff through training, periodic checks etc.;
- specifying appropriate QoS values in SLAs with telecommunication service providers (PTTs);
- making appropriate provisions in user contracts with external users;
- ensuring that appropriate security measures are also applied through-out national AFS networks and ATS user systems.

APPENDIX D - MET STRATEGY

(Paragraph 5.3.13 refers)

European and North
Atlantic Office

MET Strategy in supporting the CNS/ATM concept for the EUR Region

Prepared by the EANPG METG Project Team on MET in the CNS/ATM concept for EUR Region (PT/METATM)

August 2004

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.

MET STRATEGY

EXCLUSION OF LIABILITY

A printed or electronic copy of this Document, plus any associated documentation, is provided to the recipient as is and without any warranties as to its description, condition, quality, fitness for purpose or functionality and for use by the recipient solely for guidance only. Any implied conditions terms or warranties as to the description, condition, quality, fitness for purpose or functionality of the software and associated documentation are hereby excluded.

ICAO does not accept any and hereby excludes all liability for any loss or damage (whether direct or indirect) suffered or incurred by the recipient due to any of the following:

- from defects errors or faults or omissions in the printed or electronic copy of this Document and any of its associated documentation.
- from defects errors or faults or omissions as a result of reproducing/copying the printed or electronic version of this Manual and any of its associated documentation.
- from the recipient's use of the printed or electronic copy of this Document and any of its associated documentation.

There is no objection to the reproduction of extracts of information contained in this Document if the source is acknowledged.

EUROPEAN AND NORTH ATLANTIC OFFICE OF ICAO

E-mail : icaoeurnat@paris.icao.int
Internet : www.icao.int
Fax : +33 1 46 41 85 00
Mail : ICAO/OACI
European and North Atlantic Office
3 bis, Villa Emile Bergerat
92522, Neuilly-sur-Seine, CEDEX
FRANCE

MET STRATEGY

DOCUMENT CHANGE RECORD

The following table records the complete history of the successive editions of the present document

EDITION	DATE	REASON FOR CHANGE	SECTIONS PAGES AFFECTED
0.0	Dec. 2001	Invalidated parts of document as they have been provided by the authors and missing chapters	All
0.1	April 2002		
0.2	June 2002	Modified as a result of 6th meeting of METATM	All
0.3	Nov. 2002	Modified as a result of the METG/12 actions	All
0.4	Nov. 2002	Modified during ad-hoc meeting	All
0.5	April 2003	Modified during the METATM Drafting Group Meeting	All
0.6	June 2003	Modified as a result of the 7th meeting of METATM	All
0.7	November 2003	Modified as a result of the 8th meeting of METATM	All
0.8	March 2004	Modified as a result of the 9th meeting of METATM	All
0.9	June 2004	Modified as a result of the 10th meeting of METATM	All
1.0	July 2004	The second modification as a result of the 10th meeting of METATM	All
1.1	August 2004	The third modification as a result of a review by correspondence before METG/14	All

MET STRATEGY

TABLE OF CONTENTS

MET STRATEGY

FOREWORD

The expected expansion in air traffic volumes in Europe will increase demands on finite airspace and airport capacities and will impose constraints on the ability of Air Navigation Service providers and airlines to accommodate growth whilst simultaneously improving safety and efficiency. Consequently, there is a need to make significant changes to the ICAO European Region (EUR) Air Traffic Management system (ATM) to meet this expected growth.

The ICAO tenth Air Navigation Conference endorsed the CNS/ATM concept. This was further developed by the eleventh Air Navigation Conference in 2003, which endorsed the global ATM Operational Concept. The Global ATM Operational Concept should be the global framework and be used as guidance for the further development of ICAO CNS/ATM related provisions.

The importance of timely , accurate and easily available information, including meteorological information, for decision support is emphasized in the Global ATM Operational Concept.

In the follow-up to the tenth Air Navigation Conference, the ICAO Council re-emphasised the important role of regions and States with regard to the planning, implementation and transition to CNS/ATM systems.

In response, the Meteorology Group (METG) of the European Air Navigation Planning Group (EANPG) was given the task in 1999 to monitor the activities in the CNS/ATM field, with particular focus on the development of the relevant parts of the EUR Air Navigation Plan (ANP). The METG subsequently established a project team (PT/METATM) to draft a strategy for the evolution of MET in the EUR CNS/ATM concept for the period to 2015 and beyond. It was agreed that the strategy should take the form of a road map which would outline the future needs and time-scales to meet the needs of EUR.

The PT/ METATM was comprised of MET experts assisted by the ICAO Secretariat and Eurocontrol. The information provided in this document is based on the relevant ICAO and Eurocontrol documents and the national practices, experience and developments in EUR and other Regions.

MET STRATEGY

EXECUTIVE SUMMARY

The future European Air Traffic Management (ATM) system will continue to be subject to the same vagaries of weather phenomena that affect air transport today. Historically, aviation weather services have mainly addressed safety issues. Now within the context of the future ATM system, the considerable impact of weather on safety, capacity and efficiency and its potential to mitigate some of the environment impact of aviation must be considered as well.

Aeronautical Meteorology (MET) is faced with great challenges in the provision of information to satisfy the needs of ATM on a scale not previously encountered and in a timely way. The response must be proactive. The agreed developments must be linked to clearly identified and validated improvements and to time-scales within which they will be delivered.

As the future ATM system evolves, the demands on MET will require improved or new systems, information and products to support it. It is essential that a strategic plan, a roadmap for change, is established to ensure a harmonised and cost effective European approach to interoperability.

The aim for the strategic plan is to "ensure the timely, accurate, and complete availability of tailored aeronautical meteorological information within the framework of system-wide information management for all phases of flight". To achieve this aim, the following strategic objectives have been identified:

1. Define the scope, content, quality and timeliness of MET information to support the key enabling objectives of ATM in a cost-effective manner;
2. Define standards to ensure:
   - harmonisation of an (the) open exchange model of MET data formatted for ATM use;
   - harmonisation of MET systems supporting ATM;
   - accessibility of MET information during all phases of flight.
3. Improve the quality of MET information to respond to the ATM (safety) requirements through the application of Quality Management processes;
4. Further improve the provision and use of MET information within the ATM system;
5. Resolve institutional, organisational, regulatory, financial and intellectual property issues associated with the provision of MET information to ATM;
6. Encourage the further integration of MET within the ATM system
7. Improve contribution to the mitigation of the environmental impact of air traffic.

MET STRATEGY

1. INTRODUCTION

1.1 Background

1.1.1 The future Air Traffic Management (ATM) system will continue to be subject to the same vagaries of weather phenomena that affect air transport today. Historically, aviation weather services have mainly addressed safety issues. Now within the context of the future ATM system, the impact of weather on capacity, efficiency and the environment must be considered as well.

1.1.2 In its Performance Review Report 7 (PRR 7) published in May 2004, the Eurocontrol Performance Review Commission (PRC) stated that approximately 35 percent of ATFM delays at airports were attributable to "bad weather", mainly meaning poor visibility or strong winds. The PRC specifically addressed the importance of better integration of weather forecasts into the ATM decision making process to mitigate the adverse effects of "bad weather".

1.1.3 The meteorological community is faced with great challenges in the provision of information to satisfy the needs of ATM in a timely, economic way, and on a scale not previously encountered. The response must be proactive and the agreed developments should be associated with clearly identified improvements and time-scales within which they will be delivered.

1.2 Why a MET Strategy for Europe?

1.2.1 Traditionally, the ATM connection with MET was essentially limited to ensure a link between the MET services and the flight crews and the provision of Flight Information Services as regulated by Annex 11. Yet meteorological conditions represent one of the most important elements of the physical environment for the execution of a flight. Therefore MET must be considered an integral element in the development of a new, medium and long term strategy for ATM.

1.2.2 As the future ATM system evolves, the demands put on MET will increase the need for improved or new systems and products to satisfy them. It is essential that a strategic plan is developed to ensure a harmonised European approach to interoperability. This approach will be based on the existing capabilities within the international meteorological community for the provision of high quality meteorological information that can better support a high level collaborative decision-making process.

1.2.3. A MET Strategy should identify the means by which current meteorological information and system capabilities could be fully exploited to deliver the right information to the right place and at the right time in the new ATM context.

1.3 Scope

1.3.1 The geographical scope of the MET Strategy is the ICAO European (EUR) Region. Nevertheless, in writing this strategy, due regard has been given to the global nature of MET.

1.3.2 It is recognised that the needs of various sectors of ATM differ from one another and that an evolutionary portfolio of service levels (from simple to complex) should meet specific needs. Consequential recommendations for amendments to the EUR ANP/FASID and ICAO Annexes may be necessary.

1.3.3 The needs for all user groups should be addressed for all phases of flight activity: from planning (up to 6 months or more ahead of the date of flight), through execution, to post flight activities (Figure 1 refers) .

Fig. 1

Phases of Flight activity embraced by this Strategy

1.3.4 As part of the European CNS/ATM Transition Plan, the current stage of the MET Strategy identifies the MET strategic objectives for the next fifteen years and beyond.

1.4 MET Strategy Development Methodology

1.4.1 Context

The MET Strategy should be seen as a dynamic and living document**.** As it evolves it will refine the required deliverables and the associated target dates, together with the bodies that are responsible for their definition and/or implementation.

In the development of the MET Strategy, due consideration was given to:

a. Differences between the MET infrastructure of EUR States – The ICAO EUR Region is a heterogeneous area with regard to the level of sophistication, the level of performance of the MET services dedicated to the ATM and the economic resources made available by each State to sustain the transition to an enhanced navigation infrastructure.

b. The economic impact of Weather on aviation - A comprehensive baseline which quantifies the economic impact of "bad weather" during various phases of flight, particularly on capacity and efficiency is not available. (an analysis of airport delays attributed to "bad weather" has been undertaken by the Performance Review Commission of Eurocontrol – paragraph 1.1.2 refers). Business case decisions on appropriate investments in the development or enhancement of aviation weather systems will be possible only if reliable economic data and pertinent analysis of the baseline costs implications of weather in the ATM systems will be made available

c. Potential of the current MET capabilities – The current capabilities of MET systems and the results of advanced research in the domain are not fully exploited in the EUR Region. Considerable progress has been made by the scientific community in developing a better understanding of the meteorological factors that affect aviation. As a result, MET service providers have made significant investments in computing technology, and better products and services have been introduced. The European ATM community could greatly benefit in the short term and at relatively low cost through an improved dialogue and co-ordination between the MET providers and the users of their services. The exploitation of the great potential offered by the down-linking of in-flight meteorological data, the use of output of the numeric weather predictions (NWP) and advanced MET detection techniques are only some examples of the aimed goals.

d. Cost/benefits of weather technology - Despite the significant progress achieved, weather still remains difficult to predict with a high degree of certainty. Supporting technology is expensive to develop and implement. Small gains may be achieved at high costs and therefore new investments should only be undertaken when justified by tangible benefits to the users.

e. Role of the Industry – Equipment manufacturers will play a major role in developing suitable ATC, Avionics, MET and other related equipment and facilities of the future ATM environment. Incoherent planning have resulted in a lack of harmonisation of current systems allowing for a multiplicity of choices and the absence of an agreed way forward. As a result, Industry has had little incentive to invest in harmonised technology and product development in a timely way. Gaining the confidence and the support from the Industry *vis-a-vis* the agreed way forward is essential for the development of the future MET system; therefore, appropriate objectives, which address Industry involvement, should be identified.

f. Role of the human factor – The extensive use of the expert systems envisaged within the future ATM infrastructure does not exclude the human from the decision making loop. The increasing role of MET in system wide information management (SWIM) in support of Collaborative Decision Making (CDM) has to be reflected through appropriate arrangements between all the actors involved The need for a new staff profile to reflect the evolving role of the meteorologist within the ATM environment should be recognised**.**

1.4.2 Process description

The introduction of a new ATM system for the EUR Region will require the full support and commitment of all the aviation stakeholders. A successful evolution will only be achieved through the collaborative efforts of the many members of the aviation community and in an environment in which diverse interests are taken care of and equitable balanced. While it is possible to identify some strong trends in the way ATM might develop, a number of uncertainties inherent in longer-term planning still remain. It is recognised that choices from various development paths to follow shall be made on business case analysis. To facilitate any future decisional process, the following principles should be considered:

a. Evaluate current MET systems and identify existing shortcomings.

b. Ensure that any proposed strategic objective supporting the EUR Air Navigation System is in line with the Global Plan and meets both the economic and performance criteria of the full range of ATM requirements.

c. Check that the proposed MET developments are in tune with the appropriate developments in ATM systems in terms of technical and operational requirements, implementation schedule and will contribute to the expected benefits.

d. Choose an evolutionary implementation for the new developments proposed in MET. A graduate approach will allow to accumulate essential and timely experience on the new systems and gain confidence in the way forward.

e. Establish priorities in terms of time scales, paying due attention to:

- identified constraints and user requirements, and

- systems and areas of applicability in which immediate benefits could be provided or early implementation may be most likely.

MET STRATEGY

2. FUTURE ATM

2.1 The future ATM system : Drivers for Change

2.1.1 The ATM environment, like so many other environments today, is "driven by safety and increasingly by commercial of personal outcome expectations" (the OCD refers). While there are standards in place for global interoperability, many States' systems have evolved to levels that are able to sustain their individual requirements; however, they now struggle or fail to meet the ever-growing user expectations of global harmonisation and interoperability. Currently, a range of factors, including cost, efficiency, safety and national interests are driving the change in the ATM system. However, the catalyst for change must be ATM user expectations, within a framework of safety case, cost/benefit analysis and business case.

2.1.2 The success of the future ATM system will be reliant on effective planning and management. Flow and capacity management will be a significant means of ensuring flight punctuality and efficiency.

2.1.3 Based on forecast traffic volumes and orientations, and on weather predictions, Air Traffic Flow Management (ATFM) will originate and control the daily airspace utilisation plan and will apply any refinements to accommodate real-time events. The need to adapt the original plan may also result from forecast significant weather phenomena that are monitored on a continuous basis.

2.1.4 A key change will be the evolution of the interface between the airlines, flight-crews and the ATM network in determining the optimum profiles for the airline’s flight. The Airline Operations Centres (AOC) will examine the requirements for a flight and the current and predicted air situation, such as weather, airspace structure, en-route capacity, airport capacity and environmental considerations so as to select the optimum flight trajectory. The collected real-time weather data will be collated and analysed to assess the cost-benefit of alternative routes and aircraft may be re-planned whilst in flight.

2.1.5 The development of air and ground-based automated systems, in association with new procedures and working arrangements in ATM, will permit the dynamic management of airspace and the tactical routing of aircraft to provide significant operational benefits (economy, flexibility, improved regularity, and environmental impact mitigation) for users.

2.1.6 Certain weather patterns (e.g. poor visibility conditions, strong winds, thunderstorms) and weather induced runway contamination can restrict airport capacity. Each airport is affected by local weather conditions which impact on their individual actual capacity. Although new means to accommodate adverse weather conditions are expected to become available, the key to the minimisation of disruption will be the intelligent use of increasingly accurate forecasting of weather events. Improvements are also needed in the terminal area short-term forecasting / nowcasting. (e.g. departure and approach wind profiles to maximise runway throughput by incorporation of such data into algorithms to provide time-based separation and reduced wake-vortex separation minima tools for controller use.)

2.1.7 The key to the future is interoperability within the ATM environment enabled by advanced communications systems and by standard information exchange models. Aeronautical information will be transmitted in digital format(s) through terrestrial, airborne and satellite data links.

2.1.8 Common situational awareness between MET providers and other partners of the ATM system will improve traffic predictability and operational flexibility.

2.2 Key changes

2.2.1 This strategy outlines a range of conceptual changes that will evolve through the planning horizon. Key to the philosophy adopted within the MET strategy (the same as the one adopted within the ATM operational concept) is the notion of global utilisation, management and interchange of information. This will enable in an evolutionary way, significant changes in the roles of all participants within the ATM system, thereby facilitating enhancement in safety, economy and efficiency across the system. This philosophy should be supported by evolution to a holistic, cooperative and collaborative decision-making

environment, where the diverging expectations and interests of all members of the ATM community are balanced to achieve equity and access.

Proactive versus reactive

2.2.2 A major factor in decision making is the accuracy, timeliness and completeness of the information on which the decisions are based. Currently, a reactive rather than proactive approach to decision making is the norm, as the perceived level of associated risk is considerably lower than in the proactive alternative. To change this norm, it is clear that a significantly higher degree of understanding and cooperation between the user and supplier communities is required in order to identify the key data attributes required for a proper decision making.

Improved means for forecast

2.2.3 In addition to the traditional requirements for MET as specified in Annex 3, improved means to forecast and report windshear, low level turbulence, wake vortex, low visibility procedure conditions, winter conditions, severe weather phenomena and similar occurrences are required.

Better utilisation of already available data

2.2.4 Advances in observation and forecasting techniques have raised the levels of accuracy of the predicted information, but the use of these products by the ATM community appears to be low. The reasons for this underutilisation are far from clear. There is circumstantial evidence that a lack of awareness is a significant cause contributing to this situation. To correct this, a major effort is required from the MET service providers in order to improve the level of understanding and confidence within the ATM community.

2.2.5 Nevertheless, it is recognised that action by the MET community alone is insufficient to enable change. An engaged and continued dialogue between ATM and MET providing for better understanding of needs and capabilities is required. Therefore the early identification of the key MET data attributes and associated quality requirements (accuracy, timeliness, level of confidence, etc.) to support the various decision making entities within the ATM system (ATS, ATFM, AOP, AOC, etc.) is essential to provide a foundation for future investments for the development of MET.

Need for harmonisation

2.2.6 A 2002 survey conducted by ICAO (EUR/NAT) found that the majority of EUR States were in compliance with the requirements stated in Annexes 3 and 11 in respect of MET serving the ATS needs. It also found that implementation varies significantly between the EUR States. Some States have found it necessary to provide MET services and products for ATS in addition to those specified in Annexes 3 and 11. It would appear that some of the MET provisions for ATS in Annexes 3 and 11 need to be reviewed and that new categories of services and products may be required at the national, regional, and global levels. The need for an harmonised EUR approach to define up-to-date services and products is clearly evident, while the requirements to reflect local conditions should also be addressed.

2.3 High Level requirements

2.3.1 High level ATM requirements from MET

2.3.1.1 **Full compliance** with the ICAO Standards and, as far as possible, with ICAO recommendations.

2.3.1.2 **Harmonisation** of MET within the entire EUR Region, through common regulation, procedures and services.

MET STRATEGY

2.3.1..3 **Availability** of timely, accurate, complete, up-to-date and tailored MET information to the aviation community; this requirement will be achieved through:

a) appropriate tools and means for distribution, integration and display of MET information;

b) provision of appropriate MET facilities at airports, including improved instruments for local weather observation, data processing and communication;

c) high quality MET information in the calculation of flight trajectories for the pre-flight and in flight phases ;

d) better local weather and wake vortex forecasting;

e) development and implementation of a common, platform independent means to exchange MET information between expert and non-expert systems, and

f) provision of efficient HMI and tools to access, understand, and use MET information.

2.3.1.4 **Integration** and interoperability of ATS, ATFM, airports, AIS, MET, AOCs and aircraft into an interactive system to provide complete, relevant and timely information, enabling an effective management decision process. This requirement will be achieved through the establishment of a virtual information pool, an essential component of the System-Wide Management of Information (SWIM). This will provide an harmonised access for airspace users to integrated flight information such as AIS, MET, etc. The means to facilitate interoperability may be provided through the adoption of a common data exchange model to facilitate platform independent inter system communication and machine readability of forecast and real-time MET data to ground-based and airborne applications, the latter through datalink.

2.3.1.5 **Efficiency** of MET within the entire EUR Region through:

a) a more customer-oriented approach in providing the MET services and products to the ATM community;

b) better use of the national and international infrastructure in provision of MET services and products to avoid duplication;

c) increased automation and rationalisation.

2.3.1.6 **Quality Assurance** of the MET information, through:

a) establishment and implementation of properly organized Quality Management Systems for MET in the EUR States. The ISO 9001 series certification is recommended in accordance with Annex 3;
b) development of harmonised (EUR) key performance indicators (KPI's) for the provision of MET.

2.3.1.7 MET will evolve to satisfy the present and future needs of ATM. The spatial resolution for real-time and forecast data, the levels of accuracy for each specific MET parameter of importance (real-time and forecast) and the extent, duration and level of intensity of severe weather phenomena affecting flight operations will be determined. The information will be provided in a format suitable for ingestion into ATM system(s), particularly into automated support tools.

MET STRATEGY

3. STRATEGIC AIM AND OBJECTIVES

3.1 Vision Statement

"To ensure the timely, accurate and complete availability of tailored aeronautical meteorological information within the framework of system-wide information management for all phases of flight".

3.2 Strategic objectives

Objective 1:
Define the scope, content, quality and timeliness of MET information to support the key enabling objectives of ATM in a cost effective manner.

Currently, the scope of the meteorological products provided to the aviation community is dominated by the requirements of pilots and airline operators for pre-flight briefing material and in-flight warnings. In general, most ICAO Annex 3 requirements (in terms of products and services) are currently aimed at providing pilots with briefing information and warnings for safe and cost effective flights. Although future ATM systems will continue to make use of this information, there will be requirements from other parts of the ATM system for more specialised information for all the phases of flight activity (as indicated in figure 1).

The current CNS/ATM concept for the EUR Region identifies only high level requirements for aeronautical meteorological information: to improve efficiency and to promote safety. It implies that timely, accurate, complete, and up to date aeronautical meteorological information have to be available to meet users needs. Nevertheless, these needs are not explicitly listed nor how that information will be generated.

Objective 2:
Define standards to ensure:
- **harmonisation of open exchange models of MET data for ATM use;**
- **harmonisation of MET systems supporting ATM;**
- **accessibility of MET information during all phases of flight.**

Interoperability is essential for the efficient operation and management of the emerging and future ATM system. A key element of this is the exchange of aeronautical information (MET, AIS, etc), in system independent and open architecture format(s). In the ECAC AIS Domain, extensive work has been undertaken in the development of an Aeronautical Information Exchange Model (AIXM), which together with the adoption of Extensible Markup Language (XML) has provided a conceptual means to provide a follow-on to the traditional Notice to Airmen (NOTAM) for the provision of change information. This concept, known as the xNOTAM, has the capability of providing the means to change a single data bit or a data string in a database in the air or on the ground in near-real time, regardless of system or platform as long as the information is provided in a common exchange model.

It is recognised that the meteorological community has developed and currently uses highly efficient information formats to provide system-to-system exchange, but these may not be suitable to fit within the ATM concept. Consideration will be given to the provision of a suitable means of open system information exchange, ranging from modification of existing data exchange formats to the development of a new exchange model suitable for the transmission of MET information to ATM (air and ground) systems.

MET STRATEGY

Objective 3:
Improve the quality of MET information to respond to the ATM (safety) requirements through the application of Quality Management processes.

The provision of meteorological products and services will remain highly scientific and technical. Nevertheless, the weather will remain impossible to predict with 100% confidence. Whilst numerous aviation met providers are present across Europe, there will be potential for varying levels of service and reliability. To minimise this variability and to ensure a high level of service and accuracy to ATM as possible, it will be necessary to ensure that appropriate safety and quality management systems (QMS) are in place. Annex 3 recommends QMS to be implemented. A roadmap should be established to ensure the implementation in the EUR region.

Objective 4:

Further improve the provision and use of MET information within the ATM system.

In line with the ATM development, MET has to respond adequately to the ATM specific needs, current and foreseen, in terms of tailored quality products, available at the right place and at the right time. Further improvement in the provision and use of meteorological information within the ATM system means optimum exploitation of the facilities offered by the current MET systems, at low costs and high benefits in terms of safety, regularity and efficiency, as well as efforts to identify new capabilities for increasing the quality and cost/benefit of the meteorological information. The Strategy should propose ways and means for improving the provision and use of meteorological information within the ATM system, with priorities and emphases on those tasks with immediate benefits.

Extensive investment in the provision of global and local meteorological information and infrastructure to meet the needs of all user communities (government, defence, aviation, marine etc.) has resulted in the development of high performance numerical weather prediction models and observing systems (such as radar, satellite, and laser based systems such as LIDAR etc). One of the goals for ATM should be to take advantage of these general investments to meet clearly defined and validated user needs.

All investments should be measurable against the clearly defined criteria of improvements in safety, efficiency, capacity, cost-effectiveness, security, uniformity and harmonisation. Key areas of focus for development are considered to be: the development of high resolution models, enhancement of nowcasting services, remote sensing techniques on ground and via satellite, site specific developments, and other areas as required.

Objective 5:

Resolve institutional, organisational, regulatory, financial and intellectual property issues associated with the provision of MET information to ATM

Different models exist for organising the MET structure for aviation in the EUR Region. The process of corporatizing of MET service providers is ongoing in some European states. Most importantly, the European Commission “Single Sky” initiative includes the requirement for separation of MET service provision and the regulatory functions and common requirements for certification of air navigation service providers, including MET. This will impose new approaches to institutional, organisational, financial and intellectual property issues and that is why, very early proposals for institutional arrangements need to be developed.

MET STRATEGY

Objective 6:

Encourage the further integration of MET within the ATM system in order to optimise the use of information systems supporting ATM

The ATM system has a finite capacity, despite infrastructure and/or technical developments. However, it is recognised that inefficiencies in the system result in the loss of capacity. A critical enabler for the absorption of the predicted traffic growth is improved efficiency to exploit this unused potential. Tactical, short-term, medium term and strategic planning will all play their part. The key is the availability, amalgamation and intelligent use of aeronautical information in its broadest sense. MET has a critical role to play. Traditionally, it has been considered in relative isolation, but once incorporated into (collaborative) decision making algorithms, it will become a major influencing factor in the efficient, focussed and effective management of airspace and airport capacities.

Further improvements in MET facilities, applications, supporting infrastructure and quality of services are expected to lead to greater harmonisation, integration and rationalisation of existing or new support systems and services and to the further introduction of improved MET products tailored to user requirements.

Though the employment of MET expert systems within the CDM will increase, the Meteorologist will continue to add cognitive value in the provision of appropriate information and this should be further developed in accordance with human factor principles.

Obiective 7:

Further improve contribution to the mitigation of the environmental impact of air traffic

MET has a significant and proven effect on the environmental (ENV) performance and sustainability of ATM (fuel consumption, track miles, holding, diversion, etc.) and on the environmental impact of air transport in general. Instances of the latter include reduced local air quality and noise footprint shapes and dispersions in the vicinity of an airport, sub-optimal runway configurations, and growing instances of aircraft contrail induced persistent cirrus which is contributing significantly to global warming. Moreover, studies have shown that in addition to the cirrus effect, aviation has major impact on Climate change.

Together, the adverse effects of environmental impact and Climate change are likely to result in additional regulation which will impact capacity through the imposition of operational constraints, and the introduction of environmental charges which will increase air operator's costs. (Presently, there has been limited international study into the MET-ATM-ENV-Climate change paradigm, and such initiatives are clearly required).

4. GUIDELINES FOR EVOLUTION

It is recognised that the guidelines for the further evolution of a harmonized, responsive, and cost effective MET should be:

a) The exploitation of current capabilities and performance offered by numerical weather prediction in forecasting the weather, particularly adverse weather, to allow its impact to be managed in an effective way;

b) The effective use of available technologies (radar, satellite, wind profiler etc.) to improve safety margins, support increased capacity and enhance operating efficiency;

c) The improvement of MET facilities and applications, supporting infrastructure and quality of services required to support the rationalisation, integration and harmonisation of existing and new air navigation systems and services;

d) The introduction of new or improved MET products tailored to users' requirements to exploit capacity, particularly for Terminal airspace and airport use;

e) The identification and implementation of new and/or innovative ways for the provision of meteorological information, enabled by emerging technologies. Priority should be given to the enhancement of less capable MET systems or their early replacement by new systems;

f) The definition of the nature, intent, content, format and presentation of MET information provided to the pilot, air traffic controller and other end-users and their associated systems;

g) The identification of human factors issues associated with the role of MET within the ATM system with specific focus on enabling Collaborative Decision Making and the associated staff training requirements;

h) The definition, agreement and introduction of specific key performance indicators (KPI's) for MET services and products, necessary for performance monitoring and the building of users' confidence.

5. EXPECTED BENEFITS

5.1 The provision of meteorological information will be an integrated function of the ATM system. The information will be tailored to meet the ATM requirements in terms of content, format and timeliness.

5.2 The main benefits of the meteorological information for the ATM system identified by the ICAO ATM Operational Concept Document are related to the following:

a) improved accuracy and timeliness of meteorological information will be used to optimize the flight trajectory planning and prediction, thus improving safety and efficiency of the ATM system;

b) increased availability of shared meteorological information on board the aircraft will allow the preferred trajectory to be refined in real-time;

c) better identification, prediction and presentation of adverse weather will allow the management of its effects more efficiently, thereby improving safety and flexibility, for example, by providing accurate and timely information on the need for diversion or rerouting;

d) improved aerodrome reports and forecasts will facilitate the optimum use of available aerodrome capacity;

e) increased availability of meteorological information (air reports) from on board meteorological sensors will contribute to improve forecast meteorological information and the display of real-time information, and

f) meteorological information will contribute to minimizing the environmental impact of air traffic.

5.3 Performance management will be an important part of the quality assurance of meteorological information.

MET STRATEGY

6. WAY AHEAD

6.1 Future capabilities of MET services

6.1.1 Significant advances have been made over the last decade in atmospheric science, expert systems, and the computing power used by MET services. It is highly likely that the speed of technological advance will continue in, at least, the short term. Therefore, it is expected that those existing or foreseen requirements of ATM that presently can not be met will progressively be satisfied during the lifetime of this strategy.

6.1.2 The foreseen ATM oriented capabilities of MET are indicated in Appendix 1.

6.2 Roadmap for the way ahead

6.2.1 The attainment of the Strategic Objectives outlined in section 3 will be demanding. The cost, complexity and global nature of the foreseen evolution of MET requires a phased, managed and harmonised approach. A roadmap for change is clearly required. Section 3 provides for the initial rationale of the strategic objectives that are required to "ensure the timely, accurate and complete availability of tailored aeronautical meteorological information within the framework of system-wide information management for all phases of flight".

6.2.2 In the EUR Region, a harmonised and managed approach to the implementation of modified or new requirements, systems and processes could be based on the same principles as the Eurocontrol European Convergence and Implementation Planning (ECIP) objectives. These objectives must be directly linked to clearly defined operational improvements. This process would provide a basis for the evolution of the provision of MET in the EUR CNS/ATM transition plan and also for the identification of needs to amend ICAO SARPS (mainly Annexes 3 & 11).

MET STRATEGY

Appendix 1

Foreseen ATM oriented capabilities of MET

Expected Capabilities	Phases of Flight that will Benefit							Comments
	strategic planning	pretactical planning	tactical planning	departure	Inflight	Arrival	post-flight	
Increased resolution of WAFS GRIB data			X	X	X			Horizontal resolution 40km 15 levels in the vertical Time interval 3 hrs Time period T+3 – T+48
BUFR coded data and charts			X	X	X	X		Greater flexibility in creating route specific charts and route specific data time series
Increased resolution of global models			X	X	X	X		Horizontal resolution 10km 50 levels in the vertical Time interval 1 hr Time period T+0 – T+144
Increased resolution of mesoscale models			X	X	X	X		Horizontal resolution 1km 70 levels in the vertical Time interval 15 mins Time period T+0 – T+48

MET STRATEGY

Expected Capabilities	Phases of Flight that will Benefit							Comments
	strategic planning	pretactical planning	tactical planning	departure	Inflight	Arrival	post-flight	
Improved ensemble modelling Probably developed by a consortium of European countries using distributed super computing facilities			X	X	X	X		Provision of probabilistic forecasts Horizontal resolution 10km 50 levels in the vertical Time interval 1hr Time period T+0 – T+336
Single site models using local forcing to modify either glodal or mesoscale model predicitions			X	X	X	X		50 levels in the vertical Time interval 15 mins Time period T+0 – T+120
Improved Nowcasting Use of high resolution observational data such as weather radar and satellite imagery for improved short term forecasts for airlines, airports, and ATC including: (a) movement and evolution of precipitating systems (b) convective activity (c) vertical profiles of winds in the terminal area (d) lightning risk (e) cloud (f) surface visibility			X	X	X	X		Horizontal resolution 1 km 50 levels in the vertical Time interval 5 mins Time period T+0 – T+6

MET STRATEGY

Expected Capabilities	Phases of Flight that will Benefit							Comments
	strategic planning	pretactical planning	tactical planning	departure	Inflight	Arrival	post-flight	
Meteosat Second Generation products Improved instrumentation on a geostationary satellite that includes Europe in its footprint			X	X	X	X		Improved measurements of remotely derived atmospheric profiles of temperature and humidity. Improved, cloud, wind speed, wind direction, and chemistry measurements
MetOp products Improved instrumentation on polar orbitng satellites that will cover Europe			X	X	X	X		Improved measurements of remotely derviced atmospheric profiles of temperature, humidity, wind speed, and wind direction.
Improved atmospheric profiles using GNSS techniques e.g. (a) total water column measurements with ground based receivers (b) profiles of refractivity using horizon occultation techniques using aircraft based receivers			X	X	X	X		Wider coverage of atmospheric profiles for input into numerical weather prediction models, which will increase the accuracy of their predictions

MET STRATEGY

Expected Capabilities	Phases of Flight that will Benefit							Comments
	strategic planning	pretactical planning	tactical planning	departure	Inflight	Arrival	post-flight	
Improved volcanic eruption detection			X	X	X	X		Improved satellite imagery over Europe and improved algorithms for automatically analysing satellite pictures will lead to better automatic eruption detection.
Improved volcanic ash detection			X	X	X	X		Improved satellite imagery over Europe and improved algorithms for automatically analysing satellite pictures e.g. detecting SO_2 will lead to better detection of volcanic ash once the eruption has taken place.
Improved volcanic ash dispersion modelling			X	X	X	X		Improved dispersion modelling will enable more accurate prediction of where ash clouds will be advected to once an eruption has taken place.
High frequency automatic observations				X	X	X		Automatic Weather Stations provide high frequency observations. These can be displayed in the control tower at present but will become more widely available e.g. for uplinking to aircraft on approach to the airfield

MET STRATEGY

Expected Capabilities	Phases of Flight that will Benefit							Comments
	strategic planning	pretactical planning	tactical planning	departure	Inflight	Arrival	post-flight	
Improved understanding of Climate Change and the effect of aircraft on Climate change	X	X						The Inter Governmental Panel on Climate Change is driving forward further research into climate change, including the affect of aircraft on the climate. This will lead to a better understanding of how climate will change in the future.
Easier access to climate statistics	X	X						More climate data bases will become available and easier to access. These data bases could include statistical analysis on such things as: (a) threshold wind speed/direction (b) RVR (c) CAT I, II, III frequencies (d) Mean cross/head wind (e) Mean cross wind when runway is dry/wet

MET STRATEGY

Expected Capabilities	Phases of Flight that will Benefit							Comments
	strategic planning	pretactical planning	tactical planning	departure	Inflight	Arrival	post-flight	
Improved aircraft met measurements				X	X	X	X	More accurate in flight meaurements of temperature, humidity, pressure, turbulence, icing, wind speed and wind direction
Improved products for uplinking to the aircraft cockpit				X	X	X		Met products will become available for uplinking and display in the aircraft cockpit. These will include: (a) charts of sigwx e.g. short term predictions of CAT (b) high frequency ground based observations e.g weather radar, lightning observations (c) short term forecasts of wind on the approach and take off for automatic integration into the FMS (d) updates on enroute winds and optimum route

MET STRATEGY

Appendix 2

Glossary and Definitions

A. Glossary

AIS	Aeronautical Information Services
ANP	Air Navigation Plan
AOC	Airline Operations Centre
ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
ATS	Air Traffic Services
BUFR	Binary Universal Form for the Representation of Meteorological Data
CAT	Clear Air Turbulence
CDM	Collaborative Decision Making
CNS/ATM	Communication, Navigation, Surveillance/Air Traffic Management
EANPG	European Air Navigation Planning Group
EATMP	European Air Traffic Management Programme
ECAC	European Civil Aviation Conference
EUR	European Region / The European Region in ICAO term
EUROCONTROL	European Organisation for the Safety of Air Navigation
FASID	Facilities and Systems Implementation Document
FL	Flight level
FPL	Flight Plan Message (ICAO format)
GRIB	Gridded Binary data
HMI	Human-Machine Interface
ICAO	International Civil Aviation Organisation
IR	Infra-Red
KPI	Key Performance Indicators
LIDAR	Light Detection And Ranging
MET	Aeronautical Meteorology
METEOSAT	Meteorological Satellite
METG	Meteorology Group
NOTAM	Notices to Airmen
OCD	Operational Concept Document
PRC	EUROCONTROL Performance Review Commission
PT/METATM	Project Team / MET in the CNS/ ATM concept for the EUR Region
QMS	Quality Management System
RADAR	Radio Detection and Ranging
R&D	Research and Development
SARPS	(ICAO) Standards and Recommended Practices
SES	Single European Sky
SWIM	System Wide Information Management
WAFS	World Area Forecast System
WMO	World Meteorological Organization
XML	Extensible Markup Language

MET STRATEGY

B. Definitions

Air traffic management (ATM):

The dynamic, integrated management of air traffic and airspace — safely, economically, and efficiently — through the provision of facilities and seamless services in collaboration with all parties.

Air traffic management system:

A system that provides ATM through the collaborative integration of humans, information, technology, facilities and services, supported by air, ground and/or space-based communications, navigation and surveillance.

BUFR	Binary Universal Form for the Representation of Meteorological Data (a WMO standard for point data designed to convey meteorological data)
GRIB	The WMO format for the storage of weather information and theexchange of weather product messages in gridded binary form
Nowcasting	An observation-intensive approach to local, very short-term weather forecasting. In the strictest sense it applies to the detailed description of the current weather combined with forecasts for up to 2 hours ahead, these being obtained by simple extrapolations of the existing situation or by more sophisticated methods.

Note 1: ICAO definitions are used or else if stated otherwise.

Note 2: The ICAO definition contained in the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444) for ATM and ATM systems are different from above definitions that are used in the ICAO ATM Operational Concept document.

MET STRATEGY

Appendix 3

Bibliography

- ICAO – Annex 3 to the Convention on International Civil Aviation, Meteorological Service for International Air Navigation
- ICAO - Global Air Navigation Plan for CNS/ATM systems
- ICAO – ATM Operational Concept
- ICAO – Doc 9377 AN/915, Manual on Co-ordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services
- EUROCONTROL – EATMP Operational Concept document, ATM Strategy 2000+, EATMP Work Programme)
- WPs presented at Workshop on the MET in CNS/ATM (Brussels, 5 April 2001)
- A survey of future aviation MET requirements – HELIOS Technology
- **Regulation (EC) No /2003 of the European Parliament and of the Council of the European Union** on the provision of air navigation services in the Single European Sky ("the service provision Regulation")
- **Regulation (EC) No /2003 of the European Parliament and of the Council of the European Union** on the interoperability of the European Air Traffic Management network ("the interoperability Regulation")

APPENDIX E - PROVISIONS FOR

AIRCRAFT/VEHICLES UNCERTAIN OF THEIR POSITION ON THE MANEUVERING AREA

(Paragraph 5.4.19 refers)

7.3.1.5 UNCERTAINTY OF POSITION on the MANOEUVERING AREA.

7.3.1.5.1 Except as provided for in para. 7.3.1.5.2 below, a pilot in doubt as to the position of the aircraft with respect to the manoeuvring area shall immediately:

a) Stop the aircraft; and simultaneously,

b) Notify the appropriate ATS unit of the circumstances (including the last known position).

7.3.1.5.2 In those situations where a pilot is in doubt as to the position of the aircraft with respect to the manoeuvring area, but recognises that the aircraft is on a runway, the pilot shall immediately:

a) Notify the appropriate ATS unit of the circumstances (including the last known position); and simultaneously,

b) If able to locate a nearby suitable taxiway, vacate the runway as expeditiously as possible, unless otherwise instructed; and then,

c) Stop the aircraft.

7.3.1.5.3 A vehicle driver in doubt as to the position of the vehicle with respect to the manoeuvring area shall immediately:

a) Notify the appropriate ATS unit of the circumstances (including the last known position); and

b) Simultaneously, unless otherwise instructed, vacate the landing area, taxiway, or other part of the manoeuvring area, to a safe distance as expeditiously as possible; and then,

c) Stop the vehicle.

7.3.1.5.4 In the event the aerodrome controller becomes aware of an aircraft or vehicle that is lost or uncertain of its position on the manoeuvring area, appropriate action shall be taken immediately to safeguard operations and assist the aircraft or vehicle concerned to determine its position.

1) Renumber the remaining paragraphs in Chapter 7.

APPENDIX F – SAFETY IN AIR NAVIGATION SERVICES –

REGIONAL ACTIONS

(Paragraph 6.1.5 refers)

In order to fulfil a systematic establishment of safety management in the provision of air navigation services several actions have to be implemented in parallel, at the EANPG, ICAO Secretariat and State level.

Actions to be taken at EANPG and ICAO Secretariat level:

1. Urgent actions:

   a) develop a Regional safety policy statement, defining the scope and objectives;

   b) raise the awareness on the importance that all organizations develop a positive safety culture;

   c) identify and promote actions to remove all impediments to the reporting of safety occurrences (legal, managerial, cultural etc).

2. Priority actions (to be taken together with other relevant organizations):

   a) adopt harmonised safety indicators to be used across the aviation system;

   b) propose for adoption a suitable mechanism for collecting and monitoring safety data;

   c) agree on guidance material that will provide for harmonised safety regulatory requirements implementation and acceptable means of compliance;

   d) develop guidelines concerning the way in which accountability for safety should be addressed within an organization and the need for documentation of safety-related decisions;

   e) develop guidelines for determining the acceptable level of safety for particular system components and appropriate metrics for expressing this;

   f) assess the possibility of adopting minimum acceptable target levels of safety for the system as a whole.

Actions to be taken at State level:

3. Establish a safety regulation function (a State responsibility to ensure that the services provided meet minimum levels of safety in the public interest) with the following fundamental processes:

   a) setting safety regulatory objectives and requirements;

   b) initial safety regulatory approval of organisations, operations and individuals;

   c) continue safety oversight.

4. The prerequisite for such a requirement is the establishment of a national or sub-regional safety regulatory framework for air navigation services. The role of a national framework is to provide a clear statement to all involved parties on which ANS safety regulations will be undertaken. These parties include:

a) the ANS service-provider(s);

b) national government;

c) safety regulator;

d) entire aviation community;

e) general public.

5. The framework will originate from the legal or political powers and directives given to the safety regulator. There is a need for the basic aviation legislation to allow the implementation of international standards and requirements such as ICAO SARPS (and Eurocontrol ESARRs, with a view to regional harmonisation) be effected under the rule of law/regulations promulgated in that State or by groups of States.

6. Establishment of the safety management function/system (within the air navigation service providers) with the following fundamental processes:

a) setting organisational safety policies and standards;

b) ensure the means of measuring safety achievements;

c) ensure the means of correcting deficiencies.

APPENDIX G – FREQUENCY UTILISATION CHART

(Paragraph 6.2.14 refers)

ICAO Paris - Capacity Projections for Aviation Frequency Bands in EUR/NAT Regions

last update 30/09/04 by EANPG Frequency Management Group

Legend	
1	all known requirements are satisfied
2	outstanding requirements in areas of saturation can only be accommodated with great difficulty
3	OUTSTANDING UNSATISFIED REQUIREMENTS in areas of saturation
?	insufficient data available to make an assessment

			Previous 4 years					Projections for next 20 years															
Band	**Service**	***Notes***	2000	2001	2002	2003	**2004**	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
90 -110 kHz	LORAN-C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
130 – 526.5 kHz	NDB		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1800 – 2000 kHz	LORAN - A		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2850 – 22000 kHz	HF COM		3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	1	1	1
74.8 – 75.2 MHz	Marker Beacon		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
108 – 111.975 MHz	ILS LOC/VOR + [GBAS]	*1*	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	?	?	?
111.975 - 117.975	VOR + [GBAS]	*1*	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	?	?	?
117.975 – 137 MHz	VHF COM	*2 ?*	2	2	3	3	3	3	3	3	3	3	2	2	3 ?	3 ?	3 ?	3 ?	3 ?	3 ?	3 ?	3 ?	3 ?
328.6 – 335.4 MHz	ILS GP		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
406 – 406.1 MHz	ELT		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
960 – 1215 MHz	DME/GNSS	*1*	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1030 - 1031 MHz	SSR GA/ACAS		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1088 - 1093 MHz	SSR AG/ACAS		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1215 – 1260 MHz	GNSS		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1260 – 1400 MHz	Pri RADAR		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1525 – 1559 MHz	SAT COM	*2*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1559 – 1626.5 MHz	GNSS		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1626.5 – 1660.5 MHz	SAT COM	*2*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2700 – 3300 MHz	Radar (Pri Surviellance)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4200 – 4400 MHz	RadioAlt		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5000 – 5250 MHz	MLS	*1*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5350 – 5470 MHz	Radar (weather)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8750 – 8850 MHz	Radar (doppler)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9000 – 9500 MHz	ASDE		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13.25 – 13.4 GHz	Radar (doppler)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15.4 – 16.6 GHz	ASDE		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	?	?	?	?	?
31.8 – 33.4 GHz	ASDE		?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?

Note 1 The pairing arrangement that links ILS, VOR, DME and MLS frequency allocations reduces the flexibility and effeciency of frequency allocations in those bar

Note 2 ? Full implementation of 8.33 kHz in all airspace (controlled and un controlled) will probably meet aviation needs in the 117.975 - 137 MHz AM(R)S band until however the current agreed partial implementation plans will not catch up with the full demand.

Note 3 Low aviation utilization, but there are problems in getting more access due to non aviation users operating in the band

APPENDIX H – EANPG WORK PROGRAMME FOR 2005

(Paragraph 7.1.1 refers)

N°	Reference	Action by	Deliverable	Target
1			**AIR NAVIGATION ISSUES – ATM**	
1-02	EANPG/45	COG (ATMGE)	Safety Management Programme for Air Traffic Services. – progress report. [*to be conducted in coordination with associated action in task 8-1*]	COG - October 2005
1-03	EANPG/45	COG (ATMGE)	Incident reporting and data exchange mechanism. – progress report	COG - October 2005
1-04	EANPG/45	COG (ATMGE)	Proposed updates to relevant sections of the CNS/ATM Transition Plan.	Ongoing
1-05	EANPG/45	COG (RDGE)	A list of follow-up actions to be undertaken in the field of ATM by States in the Eastern part of the ICAO European Region.	Ongoing
1-06	EANPG/45	COG (RDGE)	For the Eastern part of the Region develop and maintain procedures and an ATS Route Catalogue reflecting new routes for easy reference and coordination between States as well as with other International organisations and ICAO regions.	Ongoing
1-07	EANPG/45	COG (RDGE)	For the Eastern part of the Region develop and maintain efficient ATS Route network to accommodate major traffic flows through the entire ICAO EUR Region.	Ongoing
1-08	EANPG/45	COG (RDGE)	For the Eastern part of the Region provide a coordination mechanism to enable States to develop and refine their proposals for amendment to the Table ATS1 of ANP. (Doc 7754) without the need for approval by the EANPG.	Ongoing
1-09		COG (TF)	ATM Training, progress report	COG - October 2005
1-10		COG	Examine the value of using strategic lateral off-set in the EUR Region	COG - October 2005
1-11		COG (TF)	Assistance to States for implementation of new language proficiency requirements	2008

N°	Reference	Action by	Deliverable	Target
2			**AIR NAVIGATION ISSUES – CNS**	
2-01	AFSG/6 tasks 1-7, 15	COG (AFSG)	Perform oversight of the CIDIN Management Centre (CMC) operations, as determined in the CIDIN Management Manual; and provide a reporting mechanism to address and resolve short term problems in network operations	Ongoing
2-02	AFSG/6 task 9	COG (AFSG)	Draft Regional manual of guidelines for minimum security standards for access (physical & system) to the AFTN/CIDIN network.	COG - June 2005
2-03	AFSG/6 tasks 12, 13, 17	COG (AFSG)	a) Draft update/amendment material for the Regional ANP and other relevant ICAO documentation, including that necessary for AMHS implementation. b) Draft EUR AMHS Manual – progress report c) [Draft Regional Transition Strategy for ATN] (*action suspended because there are no agreed operational requirements to guide implementation planning*)	COG - October 2005
2-04	AFSG/6 task 11	COG (AFSG)	a) Communications systems measurement tools b) Proposal for a standard method to measure • switching capacity for a centre • capacity requirements to accommodate a particular future traffic demand scenario	COG - October 2005
2-05	AFSG/6 task 16	COG (AFSG)	a) AFS Network performance reporting b) Draft plans for implementation of a reporting mechanism to indicate AFS network performance with respect to corruption, loss and delay of messages.	COG - October 2005
2-06	FMG/7 task 1	COG (FMG)	Monitor and report to the EANPG the status of available capacity in the various aviation bands	ongoing
2-07	FMG/7 task 2	COG (FMG)	Ensure the effective operation of the coordination process for the necessary agreement to make new frequency assignments	ongoing
2-08	FMG/7 task 3	COG (FMG/ EUROCONTROL)	Coordinated activities for the conduct of the 'block planning' process to provide for new frequency requirements which can only be satisfied the relocation of existing assignments	ongoing
2-09	FMG/7 task 4, 9	COG (FMG/ EUROCONTROL)	Co-ordinated activities for i) the implementation of 8.33 in OPC sub-band; ii) relocation of OPC allocations from upper to lower OPC band and iii) release of frequencies for data link usage	COG - October 2005
2-10	FMG/8	COG (FMG)	In coordination with Eurocontrol implement the SAFIRE tool for electronic exchange of coordination data for updating of COM table	COG - October 2005

N°	Reference	Action by	Deliverable	Target
2-11	FMG/8	COG (FMG)	In addition to general fostering of 8.33 implementation, conduct as much pre-planning as possible ahead of the FL 195 implementation date in order to expedite conversions	Q1 2007
2-12		COG	particpate in Eurocontrol 8.33 expansion workshop and prepare a proposal for expansion of 8.33 airspace for consideration by EANPG/47	COG - October 2005
2-13		COG	determine the region wide requirements for VDL/4 COM frequency allocations	COG - October 2005
3			**AIR NAVIGATION ISSUES – MET**	
3-01	METG/14 task 1	COG (METG)	EUR OPMET Update procedure and data monitoring, reporting and development, progress report	COG - October 2005
3-02	METG/14 task 5	COG (METG)	Second test of of the issuance and reception of SIGMETs for Volcanic Ash	COG - October 2005
3-03	METG/14 task 4	COG(METG)	EUR OPMET Data Management Handbook	COG - October 2005
3-04	METG/14 task 8	COG (METG)	Airport Capacity MET Forecast development, progress report	COG - October 2005
3-05	METG/14 task 10	COG (METG)	Implementation of MET services in the Eastern part of the EUR Region, analysis of deficiencies	COG - October 2005
3-06	COG/30	COG (METG)	Revisit the item concerning Quality and Safety Management of MET	COG - October 2005
4			**AIR NAVIGATION ISSUES – AOP**	
4-01	EANPG/44 Con 44/23 Con 44/26	COG (AWOG)	Low visibility operations: a) Draft European Guidance Material on ILS/MLS mixed mode operations b) Review of MET forecasting and reporting criteria for low visibility operations (in cooperation with MET Group); c) Identification of necessary amendments/updates to LVP provisions d) Further development of the European Guidance Material on Aerodrome Operations under Limited Visibility Conditions;	Progress Report at COG - October 2005
4-02	COG/24-04	COG (AWOG)	Finalized Road Map for All Weather Operations	COG - October 2005

N°	Reference	Action by	Deliverable	Target
4-03	COG/24-05	Eurocontrol	a) Identify feasible capacity-enhancing ATM procedures –progress report b) Implementation planning for procedures that are possible in the near term.	ongoing
4-04	EANPG/44 Con 44/21	Eurocontrol	Harmonization of alternative parallel taxi routes and development of proposal for global provisions.	COG - October 2005
5			**AIR NAVIGATION ISSUES – AIS**	
5-01	COG/AIS/MAP	COG (AIS/MAP)	Implementation of AIS/MAP services in the Eastern part of the EUR Region, progress report	COG - October 2005
6			**MANAGEMENT OF AIR NAVIGATION DOCUMENTATION FOR THE ICAO EUR REGION**	
6-01	AFSG/5 task 10	COG (AFSG)	a) Draft update/amendment material for the Regional ANP and other relevant ICAO documentation, including that necessary for AMHS implementation. b) Draft EUR AMHS Manual – progress report. c) [Draft Regional Transition Strategy for ATN] (*action suspended because there are no operational requirements to guide implementation planning*)	COG - October 2005
7			**IMPLEMENTATION ISSUES**	
7-01	FMG/7 task 8	COG (FMG/ Eurocontrol)	Take the necessary steps and report on the progress for the implementation of the FMG/Eurocontrol VDL frequency plan, progress report	COG - October 2005
7-02	EANPG/45	COG	Identify the ICAO documentation issues associated with the Link 2000 VDL-2 programme	COG - June 2005
7-03	EANPG/45	COG	Identify, at a very basic level, the ICAO documentation issues associated with EGNOS implementation, to determine if a more comprehensive work item is warranted.	COG - June 2005
7-04	EANPG/45	COG	develop plans to accomodate BUFR OPMET transmission within the constraints of the EUR AFS network	COG - October 2005
8			**SAFETY MANAGEMENT**	
8-1	EANPG/45	**COG**	develop a regional work programme for safety in air navigation services for EANPG/47	COG - October 2005

– END –