

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**



**REPORT OF**

**THE FORTY-NINTH MEETING OF**

**THE EUROPEAN AIR NAVIGATION PLANNING GROUP**

*(Paris, 27 to 29 November 2007)*

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## 0. INTRODUCTION

### *Place and Duration*

0.1 The Forty-Ninth Meeting of the European Air Navigation Planning Group (EANPG/49) was held in the European and North Atlantic Office of ICAO from 27 November to 29 November 2007.

### *Attendance*

0.2 The Meeting was attended by 90 Members and representatives of 41 States and by observers from 7 international organisations. The Group welcomed the attendance, for the first time, of the Chairman of NATO Air Traffic Management Committee (NATMC), Mr Javier Criado. A list of participants is given at **Appendix A** of this report.

### *Officers and Secretariat*

0.3 Mr Dirk Nitschke, the Chairman of the EANPG, presided over the meeting throughout its duration. Due to the sudden unavailability for part of the meeting of Mr Karsten Theil, ICAO Regional Director, Europe and North Atlantic, Mr George Firican, Deputy Director, was formally nominated as Acting Secretary to the EANPG; Mr Firican was assisted by Mr Herman Pretorius from Headquarters, Mr Mohamed Smaoui from the MID Office, Mr Michel Beland, Mr Dimitar Ivanov, Mr Victor Kourenkov, Mr Elkhan Nahmadov, Mr Jacques Vanier, Mrs Nikki Goldschmid and Mrs Patricia Cuff from the European and North Atlantic Office..

### *Conclusions and Decisions*

0.4 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*

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

- Agenda Item 1: Review of significant international aviation developments
- Agenda Item 2: Previous EANPG follow up
- Agenda Item 3: Aviation safety
- Agenda Item 4: Planning and implementation issues
- Agenda Item 5: Monitoring
- Agenda Item 6: Deficiencies
- Agenda Item 7: Any other business



## 1. REVIEW OF SIGNIFICANT DEVELOPMENTS

### *Election of the President of the ICAO Council*

1.1 The Meeting noted with satisfaction that Mr. Roberto Kobeh González was unanimously re-elected on 19 November 2007 for a full three-year term, as President of the Council of the International Civil Aviation Organization and requested the Secretariat to convey to him their best wishes and full support.

### *Action by the Air Navigation Commission and the Council on the EANPG/48 Report*

1.2 The meeting reviewed the actions taken by the ANC (hereafter referred to as the Commission) on the Report of EANPG/48, which was held in Paris, France, from 28 to 30 November 2006.

### *Increasing the efficiency of PIRGs*

1.3 The Group was informed about the ongoing work on a revision of the Terms of Reference and reporting method of the Planning and Implementation Regional Groups (PIRGs). It was noted that it had not been possible to table a report to Council and that the guidelines and rules of procedure (i.e. handbook) of each PIRG, including the status of observers and members, would have to be amended accordingly when new Terms of Reference would be approved by the Council.

1.4 The Group instructed the Secretariat to develop an Action Plan based on the approved EANPG Report and to submit the required issue forms for formal consideration by the Commission.

### *Comprehensive Regional Implementation Plan for Aviation Safety in Africa*

1.5 The Meeting noted that the Comprehensive Regional Implementation Plan for Aviation Safety in Africa (the AFI Plan), was developed by ICAO in close cooperation with stakeholders and aimed at sustained improvements in aviation safety throughout the continent. It was recalled that the AFI Plan reflects ICAO's overall strategy, as described in the Strategic Objectives and further detailed in the methodology of the Global Aviation Safety Plan (GASP). The Group noted that the AFI Plan will be built upon tangible implementation initiatives already occurring in the AFI Region.

1.6 The Group was informed that the High-level Meeting on a Comprehensive Regional Implementation Plan for Aviation Safety in Africa was convened on 17 September 2007 at ICAO Headquarters and was attended by 289 participants from 73 Contracting States and 28 international and other organizations.

1.7 The Meeting noted with satisfaction that the deliberations on the AFI Plan clearly demonstrated a strong willingness to work in partnership for its effective implementation. It was recalled that the AFI Plan, which is a cooperative venture, required a firm commitment from African States and tangible expressions of support from other States, industry and other major players to succeed.

1.8 The Group noted that the AFI Plan will be managed under the supervision of the Senior Regional Director in Africa (Programme Leader) and in close coordination with Regional Directors accredited to States in Africa. It was noted that a Programme Manager will be appointed specifically to assist the Programme Leader, in this task. The Group was informed that a Steering Committee will be established and prepare a work programme for the implementation of the Plan.

## **EANPG Conclusion 49/1 - Comprehensive Regional Implementation Plan For Aviation Safety In Africa**

That:

- a) States support the implementation of the AFI Plan and closely coordinate their efforts with ICAO in order to ensure optimum benefits to aviation safety in Africa and to reduce duplication of effort; and
- b) the ICAO Regional Director EUR/NAT, participate in close coordination with the Regional Offices accredited to States in Africa and specifically the Regional Director ESAF, in the development and implementation of the work programme and activities of the Programme Manager and Steering Committee.

### *Special AFI RAN Meeting*

1.9 The Meeting noted that the Council agreed on the convening of the next AFI RAN meeting in 2008. It was recalled that this Special RAN Meeting, focussing on areas of concern, will also serve as a checkpoint for implementation in the AFI region. The Group was informed that South Africa has formally indicated willingness to host this important event.

### *ICAO 36th Assembly*

1.10 The Group was informed on highlights of the ICAO's 36th Assembly (Montreal, 18 – 28 September 2007). Concerning language proficiency requirements, which would come in force on 5 March 2008, the Group was informed that the 36th Assembly decided that the ICAO Council should provide guidelines to States on the development of implementation plans and that no extension to the applicability date beyond 5 March 2008 was envisaged.

1.11 The Group noted that a new Group on International Aviation and Climate Change composed of senior government officials was created with a mandate to recommend an aggressive ICAO Programme of Action on International Aviation and Climate Change that would formulate an "implementation framework" consisting of strategies and measures that Contracting States of ICAO can use to achieve emissions reductions.

1.12 In terms of Performance based navigation (PBN) implementation, the Assembly decided on various issues, including the need for familiarization seminars and training in all ICAO regions, the establishment of task forces under the Planning and Implementation Regional Groups (PIRG) framework, the development of tools to assist States with implementation of PBN, the development of ICAO provisions and guidance material. In this context, the Group was also informed on trials in progress related to Continuous Descent Approaches (CDA) at several airports in Europe. The Group noted that further information on seminars can be obtained from the ICAO Headquarters' website at <http://www.icao.int/pbn>.

1.13 The EANPG noted that a proposal for amendment to Annex 2 provisions regarding the Table of Cruising Levels had been presented to the 36th Assembly and that ICAO would take the necessary actions to process this amendment. The expected applicability date of the amendment would be November 2009.

### *Developments in the EUR/NAT Office*

1.14 The Group noted several other activities that took place at the ICAO EUR/NAT Office, including the significant number of Safety Management System training courses and workshops that had been performed by the ICAO EUR/NAT Office all over the Region. It was noted that more than 400 national experts participated in this training exercise.

*Proposal for a Fifth Edition of Doc 7030*

1.15 The Group was informed that the Fifth Edition of the Regional Supplementary Procedures (SUPPS) (Doc 7030) was in preparation. Work had been completed on re-formatting the document along similar lines as the Procedures for Air Navigation Services (PANS ATM) Doc 4444. The document would be structured in such a way that it would be easier to manage amendments and therefore ensure consistency across the ICAO planning regions. It would also be possible to identify, at an early stage, material that should be moved to more global documents. This initial draft did not introduce or remove any new or old material; it did however include changes to correct errors that occurred as a consequence to Amendment 4 to the PANS ATM.

*SATCOM Data Link performance issues*

1.16 The Meeting was informed on the latest developments taking place in the ICAO NAT Region in connection with a degradation in the performance capabilities of the data link infrastructure. The performance degradation was related to the unilateral actions taken by the ground earth stations service providers to shut down numerous ground earth stations, thus leading to the reduced redundancy in the system. The decision to shut down these stations was dictated by pure economical considerations of the service providers that were totally independent private entities. These actions would have a chain effect on the sustainability of the further NAT Region development in terms of increased airspace capacity, HF infrastructure regression and other development programmes. The Meeting noted that two task forces were formed by the NAT SPG Special meeting in order to address this problem and recommend further actions for the NAT SPG in 2008. The Meeting noted that the issue would have broader implications and an impact on other Regions as well.

## **2. PREVIOUS EANPG FOLLOW UP**

2.1 The Secretariat introduced to the Group a working paper inventorying the progress recorded with the previous EANPG Conclusions and Decisions. It was noted that this approach that was firstly presented to the COG/39, enabled for an easy follow-up of the valid Conclusions and Decisions. The Group noted the following status of the listed 50 Conclusions and Decisions:

- i) 29 marked as “completed”;
- ii) 7 marked as “on-going” and under States’ responsibility;
- iii) 10 marked as “on-going” and under ICAO HQ responsibility;
- iv) 4 marked as “on-going” and under COG/EUROCONTROL/ICAO EUR/NAT Office responsibility.

2.2 The ICAO Secretariat would continue to update the follow-up list of valid EANPG Conclusions and Decisions with the progress. The Group noted that several “on-going” Conclusions, under the responsibility of ICAO HQ were related to various amendments to the *Regional Supplementary Procedures* (SUPPS) (Doc 7030). In this regard, the Group was informed that the Fifth Edition of the *Regional Supplementary Procedures* (SUPPS) (Doc 7030) was still in preparation and the pending amendments would be included in this edition (additional information on the status of the work was presented at paragraph 1.15). It was expected that the new Fifth Edition would become available and be published in electronic format early 2008.

### 3. AVIATION SAFETY

#### *ATM safety framework monitoring*

3.1 The group reviewed a working paper presenting the ATM maturity surveys aimed at monitoring the ATM safety frameworks in ECAC States undertaken by EUROCONTROL since 2002. The paper was supported by a PowerPoint presentation outlining the progress made in the ECAC States and illustrating the results of the first survey conducted in eight additional ICAO EUR region States during 2007. It also presented the progress made, and it included information concerning eight additional ICAO EUR region States included in the 2007 survey. The presentation and the report outlined the objectives of the survey, the methodology used and the results of the level of maturity achieved by Air Navigation Service Providers and Regulators.

3.2 The meeting expressed support for EUROCONTROL to continue monitoring ECAC States ATM safety frameworks for at least the next two years, with the expectation that subject to resolution of the administrative difficulties experienced during 2007 all of the additional eight ICAO EUR Region States will also be included in the 2008 report. The Group agreed to the following:

#### **EANPG Conclusion 49/2 – Safety maturity survey**

That the ICAO Regional Director:

- a) urge States and Air Navigation Service Providers (ANSPs) to participate in the survey and report as requested in order to support a proper basis for continuous improvement to aviation safety;
- b) invite EUROCONTROL to provide appropriate assistance to those States and Air Navigation Service Providers (ANSPs) experiencing difficulties in raising their overall Safety Maturity Level; and
- c) invite Algeria, Morocco and Tunisia to consider participating in the survey.

#### *Reporting and analysis system*

3.3 The meeting considered a working paper introduced by EUROCONTROL, through two presentations addressing the needs, the benefits and the existing tools developed by EUROCONTROL to support establishment of national harmonised reporting and investigation systems. In particular, the working paper emphasised the usage of a unique Taxonomy (i.e. ICAO ADREP2000) and of a harmonised safety occurrence analysis process supported by compatible software tools, thus avoiding duplication but ensuring consistency.

3.4 The paper and presentations outlined the need for a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training. It was also pointed out that gross negligence, wilful violations and destructive acts were not to be tolerated under such culture.

3.5 It was pointed out to the meeting that since the ultimate goal was to exchange and aggregate data, there was a strong need for harmonised processes. This in turn implied that methods, recognised for their robustness, were being implemented and that all actions taken were aligned with the EC regulations and directives. Amongst the various tools they had developed, EUROCONTROL highlighted the “Skybrary”, an electronic encyclopaedia for ATM and aviation safety, which had been developed in partnership with ICAO and Flight Safety Foundation.

3.6 The meeting supported the initiative taken by EUROCONTROL in the development of a harmonised safety occurrence analysis process supported by compatible software tools and agreed to the following:

**EANPG Conclusion 49/3 – Reporting and analysis system**

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

- a) invite States to adopt the following enabler elements, to make best use of existing mandatory and voluntary data flows whilst, strengthening the “just culture” within their legal and organizational environments:
  - i) a unique aviation taxonomy (ADREP 2000) including ATM elements (HEIDI);
  - ii) a harmonised safety reporting and investigation process;
  - iii) software tools capable to support a systemic analysis and to allow the sharing of safety intelligence. and
- b) invite EUROCONTROL to provide a progress report to EANPG/50

*ATM safety – double regulation in some ICAO EUR Region States*

3.7 EUROCONTROL, introducing working paper with a PowerPoint presentation, explained to the meeting the situation faced by EUROCONTROL member States who are also subject to the European Union regulatory provisions. Those States were expected to comply with EU regulations and to implement at the same time the EUROCONTROL Safety Regulatory Requirement (ESARR). Unfortunately, it was found that there was a duplication of scope in some of the provisions and sometimes diverging approaches.

3.8 At the request of some of its member States, EUROCONTROL established the Double Regulation Ad-Hoc Group (DRAHG) to identify the differences between the ESARRs and the corresponding EC provisions and to propose pragmatic actions to establish a realistic timescale for bringing the two sets of Regulations into line.

3.9 The presentation outlined the main points of the DRAHG report indicating that the European ATM safety regulatory framework will have to evolve further in the coming years, notably as the EU expands the role of EASA in this area. While aiming for a single set of regulations in the future, DRAHG produced a set of recommendations to identify a pragmatic, realistic and feasible way forward in order to remove, or mitigate as much as possible, double regulation at this stage. The DRAHG report has been and endorsed by the EUROCONTROL Provisional Council’s November Session.

3.10 Ukraine drew the attention of the meeting that the problem associated with double regulation extended beyond the European Union – EUROCONTROL membership framework. As some non EU States, while being members of EUROCONTROL, may have incorporated some elements of European regulations into their national regulatory framework, they therefore will have de-facto also incorporated the double regulation problem. Ukraine also indicated that those States in the ICAO European Region being neither EU nor EUROCONTROL members may also have incorporated ESARRS and EC regulations, fully or partially, thereby inadvertently incorporating the problem as well. Ukraine expressed concerns over the fact that the double regulation issue has not been addressed outside of the /EU framework and asked whether the meeting could support a recommendation to invite EUROCONTROL to consider the status of ATM safety regulations in non EU EUROCONTROL member States in order to harmonize the ATM safety regulatory requirements..

3.11 The chairman indicated that, generally speaking, States have the right instruments at hand to address the issue of double regulation through their national regulations. He added that States who have contributed to the development of ESARRs and EC regulations, may have contributed to the emergence of

double regulations. DRAHG was established as an attempt to correct areas where transposition of ESARRs into EU law has inconsistencies. Concluding his summary, the chairman indicated that State regulators have the responsibility to take necessary action to investigate differences existing between the different legislations or guidance material they have opted to use and to determine whether their current situation creates conflict or not.

3.12 The meeting noted the issue raised by Ukraine and accepted the summary provided by the chairman. The meeting also concurred with EUROCONTROL that the ICAO EUR Region States would benefit from moving towards the agreement of a single set of requirements for both EU States and the wider region ATM safety regulation, which can only be achieved by removing the current problem. To that end, the meeting agreed to the following:

#### **EANPG Conclusion 49/4 – ATM safety double regulation**

That the ICAO Regional Director:

- a) continue to support the work being undertaken by EUROCONTROL and the European Commission to remove the double ATM safety regulation that exists in some ICAO EUR Region States, and
- b) continue to encourage ICAO EUR Region States who are not members of EUROCONTROL to use ESARRs as guidance.

## **4. PLANNING AND IMPLEMENTATION ISSUES**

### **PROPOSALS FOR AMENDMENTS OF ICAO PROVISIONS**

#### *Mandatory guarding of emergency channel 121.5 MHz*

4.1 The Meeting recalled that the requirements for aircraft to keep watch on the emergency channel 121.5 MHz was governed by the provisions of ICAO Annex 10 – *Aeronautical Telecommunications*, Volume II – *Communication Procedures Including those with PANS Status*, paragraphs 5.2.2.1.1 to 5.2.2.1.1.4. In this context, it was noted that there is no firm requirement for aircraft to guard 121.5 MHz, except in designated areas, on long over-water flights and in areas where there is a risk for interception. However, Annex 10 contains a recommendation that all aircraft should guard 121.5 MHz, to the extent possible.

4.2 The Meeting noted that a substantial number of prolonged loss of communication (PLOC) incidents had been registered in the previous years that resulted in increased workload for controllers, security concerns and, in the event of interception, safety concerns.

4.3 The continuous guarding of the emergency channel would be capable of significantly reducing the number of PLOC incidents. However it was recognized that the ability of flight crews to keep watch on 121.5 MHz at all times would be dependent on the on-board equipment as well as other requirements for communication. The numerous examples of misuse of the emergency channel were also brought to the Meeting's attention.

4.4 In order to ensure, to the greatest extent possible, that pilots keep watch on the emergency channel 121.5 MHz, it was considered necessary that the provisions in Annex 10 Volume II relating to watch keeping on the emergency channel be strengthened.

4.5 Therefore, it was proposed that the emergency channel be guarded continuously, except for those periods when aircraft are carrying out communications on other VHF channels or when airborne equipment limitations or cockpit duties do not permit simultaneous guarding of two channels

4.6 The Meeting noted that the proposal was supported by the International Federation of Air Line Pilots' Association (IFALPA) and was discussed, agreed and proposed for submission to ICAO by the 44<sup>th</sup> meeting of the EUROCONTROL EATM Airspace and Navigation Team (ANT/44).

**EANPG Conclusion 49/5 – Proposal for amendment to Annex 10, Volume II, on mandatory guarding of emergency channel 121.5 MHz**

That the ICAO Regional Director on behalf of EANPG, process, in accordance with the standard procedure, the draft proposal for amendment to Annex 10, Volume II on the subject of Mandatory guarding of emergency channel 121.5 MHz, presented in **Appendix B** to this report.

*Use of SSR code A2000 and the carriage and operation of SSR mode S airborne equipment*

4.7 The Group recalled that the specific requirements of the use of SSR discrete codes during the transition from the eastern portion of the EUR Region to the MID/ASIA Region was addressed through the development of an amendment to ICAO Doc 7030/4 EUR (effective on 15 October 2004) and a consequent amendment to the ICAO PANS-ATM (Doc 4444) (proposed by EANPG) that was approved in June 2007 by the President of the Council for application on 22 November 2007.

4.8 Consequently, the current provisions on the use of SSR code A2000 in the EUR SUPPs were no longer required, since the global provisions (ICAO PANS-ATM, Doc 4444, paragraph 8.5.2.2.7 refers) clarified the circumstances of its usage. In this respect, the provisions of the ICAO Doc 7030/4 EUR should be revised through a proposal for amendment (presented in Appendix C to this report). The proposed amendment had been reviewed and modified taking into account the comments and suggestions of COG/39.

**EANPG Conclusion 49/6 – Proposal for amendment of the EUR SUPPs Doc 7030 on use of SSR A2000 Code**

That the ICAO Regional Director, on behalf of the EANPG, process, in accordance with the standard procedure, the draft proposal for amendment to the EUR SUPPs, Doc 7030/4, concerning the Use of SSR Code A2000, presented in **Appendix C** to this report.

*Use of discrete codes to maintain individual aircraft identification*

4.9 The Group noted that the operational introduction of the Mode S Elementary Surveillance (ELS) in European Mode S notified airspace allowed for the substitution of assigned discrete SSR codes with a single Mode A “conspicuity” code, in accordance with ATC procedures established for that purpose.

4.10 The ICAO Doc 4444 – *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM), Chapter 8 – Radar Services, SSR Code Management, paragraph 8.5.2.2.7 stipulated that:

*“Where there is a need for individual aircraft identification, each aircraft shall be assigned a discrete code which should, whenever possible, be retained throughout the flight.”*

4.11 The paragraph 8.6.2.2.1 of the same document stipulates that:

*“Where SSR is used, aircraft may be identified by one or more of the following procedures:*

.....

*c) Direct recognition of the aircraft identification of a Mode S-equipped aircraft in a radar label;*

.....

*Note.- The aircraft identification feature available in Mode S transponders provides the means to identify directly individual aircraft on radar displays and thus offers the potential to eliminate ultimately the recourse to Mode A discrete codes for individual identification. This elimination will only be achieved in a progressive manner depending on the state of deployment of suitable ground and airborne installations."*

4.12 Although the paragraph 8.6.2.2.1 stipulated that there was no need for a discrete SSR code for individual aircraft identification when Mode S was used, and that the paragraph 8.5.2.2.7 was dealing with SSR code management, it was considered that the paragraph 8.5.2.2.7 should be amended in order to avoid any misinterpretation, as follows:

*"Where there is a need for individual aircraft identification, each aircraft shall be assigned a discrete code, except where identification is based solely on Mode S. Whenever possible, a discrete code should be retained throughout the flight."*

4.13 The EANPG/49 agreed that the ICAO Regional Director, on the behalf of the EANPG, process the proposal for amendment presented in **Appendix D** to this report.

**EANPG Conclusion 49/7 – Proposal for amendment of PANS-ATM, Doc 4444 on Use of SSR Codes in Mode S environment**

That the ICAO Regional Director, on behalf of the EANPG, process, in accordance with the standard procedure, the draft proposal for amendment to PANS-ATM, Doc 4444, on the subject of Use of Discrete Codes to Maintain Individual Aircraft Identification, presented in **Appendix D** to this report.

*Carriage and operation of SSR Mode-S airborne equipment*

4.14 The Meeting was presented a proposal for amendment to the ICAO EUR *Regional Supplementary Procedures* (SUPPS) (Doc 7030) related to the carriage and operation of SSR Mode-S airborne equipment.

4.15 It was recalled that the original implementation programme, the Initial Implementation of Mode-S Enhanced Surveillance (IIMSES), was radically changed in 2001. This was to allow for an Elementary Surveillance Mode-S capability to be deployed in a central area of the ICAO EUR Region, with a follow-on introduction of Enhanced Surveillance in those States that had an operational requirement to utilise such data.

4.16 The Group agreed that the EUR SUPPS, Doc 7030/4, paragraph 9.5, *Carriage and operation of SSR Mode S Airborne Equipment*, be reviewed and amended in order to reflect the current status of the requirements as agreed by the States implementing Mode-S and also to allow for the extension of Mode-S surveillance services in other areas of the ICAO EUR Region where planning for a Mode-S infrastructure was currently ongoing.

4.17 The Meeting noted that the proposed amendment had been modified, taking into account the comments and suggestions of COG/39 and the ANT/44.

**EANPG Conclusion 49/8 – Proposal for amendment of the EUR SUPPS on carriage and operation of SSR Mode-S airborne equipment**

That the ICAO Regional Director, on behalf of the EANPG, process, in accordance with the standard procedure, the draft proposal for amendment to the ICAO EUR SUPPS, Doc 7030/4,



concerning the Carriage and operation of SSR Mode-S airborne equipment, presented in **Appendix E** to this report.

#### *24 bit aircraft address in the flight plan*

4.18 The Meeting reviewed the proposal for amendment to the ICAO *EUR Regional Supplementary Procedures* (SUPPS) (Doc 7030) related to the inclusion of 24-bit aircraft address in the ICAO flight plan (FPL). It was noted that for the correct operation of the controller-pilot data link communications (CPDLC) between an air traffic services (ATS) unit and a specific aircraft, it was essential that the specified aircraft was correlated with the corresponding flight plan available for the ATS unit. This is achieved during the log-on process where the ATS system compares the aircraft identification, aerodrome of departure (ADEP) and aerodrome of destination (ADES) received from the aircraft with the aircraft identification, ADEP and ADES from the flight plan.

4.19 However, it was found that this combination of parameters may not always be unique and thus does not guarantee unambiguous association with the corresponding flight plan. The use of a second independent parameter set for the FPL association and message distribution processes was therefore recommended.

4.20 The aircraft address is considered independent because it is specific to the aircraft and normally is not changed. The aircraft address is hard wired in the aircraft equipment and therefore not subject to flight crew or aircraft software processing errors.

4.21 The Meeting noted that the following issues had been examined when the proposed draft amendment proposal was prepared:

- a) existence of invalid aircraft addresses;
- b) entry of aircraft address in the Flight Plan is prone to errors;
- c) late change of aircraft; and
- d) Repetitive Flight Plan submissions.

4.22 The Meeting also noted the possible alternatives to using the aircraft address which had been reviewed, (i.e. use of the Estimated off block time (EOBT), Aircraft registration (REG) and 24-bit aircraft address derived from Mode-S/ADS-B systems), and the reasons why they had not been considered feasible.

4.23 The Meeting noted that the LINK2000+ Programme Steering Group had agreed and Central Flow Management Unit (CFMU), EUROCONTROL Safety Regulation Commission (SRC), European Aviation Safety Agency (EASA), and pioneer airlines have supported the use of 24-bit aircraft address as the second independent parameter. It was also noted that the proposed amendment had been agreed and proposed for submission to ICAO by the EUROCONTROL EATM Air Navigation Team (ANT).

#### **EANPG Conclusion 49/9 – Proposal for amendment of the EUR SUPPS on 24-bit aircraft address in the Flight Plan**

That the ICAO Regional Director, on behalf of the EANPG, process, in accordance with the standard procedure, the draft proposal for amendment to the EUR SUPPS, Doc 7030, concerning the 24-bit aircraft address in the flight plan, presented in **Appendix F** of this report.

#### *Formation flights in the EUR RVSM airspace*

4.24 The Group recalled that formation flights of civil aircraft were not allowed in RVSM airspace; however, State aircraft could be authorised. A close examination of the provisions in the EUR SUPPS concerning formation flights had shown that an inconsistency existed. Essentially, paragraph 6.1.2

stated that no formation flights were allowed whereas paragraph 7.3.1 stated that State aircraft could operate in EUR RVSM airspace under certain conditions. The Group therefore agreed to request that the Regional Director, on behalf of the EANPG, take the necessary measures to correct the contradiction in the EUR SUPPs.

**EANPG Conclusion 49/10 – Proposal for amendment of the EUR SUPPs on formation flights in the EUR RVSM airspace**

That the ICAO Regional Director, on behalf of the EANPG, process, in accordance with the standard procedure, a proposal for amendment to the EUR Regional Supplementary Procedures (SUPPs) (Doc 7030), on the subject of Formation flights in the EUR RVSM airspace as follows:

*“6.1.2 With the exception of State aircraft, ATC clearance into the EUR RVSM airspace shall not be issued to formation flights of aircraft.”*

*Flexible Use of Airspace*

4.25 The Group was presented with a proposal to extend the concept of the Flexible Use of Airspace (FUA) over the High Seas. To do so, it would be necessary to extend the concept of Temporary Reserved Areas (TRA) and Temporary Segregated Areas (TSA) to the High Seas. To support this implementation, the ICAO provisions relating to the application of the FUA would need to be amended.

4.26 It was recalled that Annex 11, Recommendation 2.17.6, states that “In order to provide added airspace capacity and to improve efficiency and flexibility of aircraft operations, States should establish procedures providing for a flexible use of airspace reserved for military or other special activities. The procedures should permit all airspace users to have safe access to such reserved airspace”. The subject of flexible use of airspace was also addressed in the PANS-ATM, while airspace restrictions and reservations are covered in the Air Traffic Services Planning Manual (ATSPM, Doc 9426), Part II. However, in accordance with Annex 2, paragraph 3.1.10 “Aircraft shall not be flown in a prohibited area, or in a restricted area, the particulars of which have been duly published, except in accordance with the conditions of the restrictions or by permission of the State over whose territory the areas are established.” This indicates that Prohibited and Restricted Areas can only be established over sovereign territory and that over the High Seas, it is only possible to publish Danger Areas; therefore, the Annex 2 restriction above regarding access to airspace would not apply.

4.27 As indicated in paragraph 4.25 above, it had been suggested that the concept of the TSA/TRAs would need to be implemented over the High Seas to implement an effective FUA in the EUR Region. In order to utilise a TRA or TSA for civil traffic, it would be necessary to classify such airspace as controlled airspace, even over the High Seas, in order to control the entry of all civil flights into a TSA/TRA, including VFR flights. This would appear to be in conflict with the Annex 2 provisions regarding access to airspace.

4.28 The necessary changes to the ICAO provisions could be made to support the extension of the FUA concept over the High Seas through amendments to the EUR SUPPs and other related ICAO documents. However, a critical condition to be able to amend the SUPPs was that the proposed amendment did not contravene the related PANS or SARPS provisions. The Group recognised that it may indeed be possible to extend the concept of the FUA over the High Seas but it also recognised that some legal issues would need to be clarified before proceeding with any amendment. The Group agreed that improved efficiency of the airspace should be pursued wherever possible and that the FUA was a very useful tool to move towards that goal.

4.29 Mindful of the above and taking into account that considerable experience with the use of the FUA existed in the EUR Region and the work done in this respect by EUROCONTROL, the Group agreed to request the ICAO Regional Director of the European and North Atlantic Regions to establish a task force to develop provisions to support the expansion of the FUA in such a way that they could be used globally

and be in line with the ICAO provisions related to the High Seas. The task force should be composed of State representatives from the European and North Atlantic Regions as well as participants from EUROCONTROL and the European Commission. In order to facilitate the development work, the ICAO Regional Director was requested to associate ICAO Headquarters with this task. Finally, it was agreed that the COG should present EANPG/50 with draft proposals for amendment as required.

**EANPG Conclusion 49/11 - Development of ICAO provisions to support the expansion of the Flexible Use of Airspace (FUA)**

That:

- a) the ICAO Regional Director establish a task force to develop ICAO provisions regarding the expansion of the FUA concept to the High Seas, taking account of the legal constraints. The task force be composed of:
  - i) State representatives from the European and North Atlantic Regions; and
  - ii) EUROCONTROL and the European Commission for their technical expertise; and
- b) ICAO Headquarters to be invited to participate in the work of the task force; and
- c) the task force present the results of its work to EANPG/50.

*Proposal for amendment to Annex 15*

4.30 The meeting was apprised of the outcome of the EUROCONTROL Annex 15 Change Proposals Focus Group, which was approved by the AIS Team. The meeting was informed that the Focus Group was established mainly to consolidate change proposals to ICAO Annex 15 emanating from the EUROCONTROL AIM and NAV domains and CHAIN programme, with a view to improve Annex 15 and remove some inconsistencies. The meeting noted also that the Focus Group concentrated on short-term changes that could be processed as part of Amendment 35 to Annex 15. The proposed changes concern essentially:

- the introduction of new definitions: major changes and next intended user;
- Quality Management System: it is proposed that the scope of the mandated quality system be expanded to encompass all organisations involved in the data processing chain, from the point of origin/survey, through AIS to the next intended user;
- Data Integrity: it includes the adoption of a clearly defined 32-bit algorithm for all integrity classifications in the interest of harmonization;
- AIS automation: with manual provision of NOTAM and pre-flight information services, it is becoming impossible to meet user requirements and to comply with Annex 15 provisions. Automation in AIS is therefore proposed to be made a standard (“shall”) rather than a recommendation (“should”);
- Human Factors: the action of humans within the data chain is known to be one of the major causes of a loss of data integrity. It is also recognized that automation of the data chain will never remove the need for human processes. As a result it is considered necessary that States should be mandated to give due consideration to human factors issues and to take steps to mitigate any risks identified; and
- Metadata: the provision of metadata is necessary to support the existing traceability requirements.

4.31 The meeting was of view that the proposed changes to Annex 15 needed to be further fine-tuned before they could be presented to ICAO for processing, in accordance with standard procedure, as a proposal for amendment to Annex 15. Accordingly, the meeting developed the following Decision:

**EANPG Decision 49/1 – Proposed changes to ICAO Annex 15**

That COG, on behalf of the EANPG:

- a) in coordination with EUROCONTROL, review the proposed changes to ICAO Annex 15 developed by the Annex 15 Change Proposals Focus Group, with a view to develop a formal proposal for amendment to Annex 15; and
- b) be delegated the authority to submit to ICAO through the ICAO Regional Director, the final version of the proposal for amendment to Annex 15, for processing in accordance with standard procedure.

*Short term conflict alert (STCA) procedures*

4.32 The Group was informed that during the drafting of the EUROCONTROL Specification for Short Term Conflict Alert (STCA) document, some differences with the ICAO Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444) had been identified. The Group agreed that the EUROCONTROL and ICAO documentation needed be in harmony to the highest degree possible. The differences between the EUROCONTROL Specification for STCA and the text in the PANS-ATM should therefore be reconciled. These differences could be summarised as follows:

- a) the EUROCONTROL Specification allows a sub-set of the STCA functionality (some alerts) to be selectively inhibited whereas the ICAO provisions state that STCA only could be selectively inhibited; and
- b) the EUROCONTROL Specification provides some leeway for the air traffic controller when to take action in the event of an alert and is more specific regarding what data ought to be recorded or retained.

4.33 The Group supported the need to harmonise the application of STCA and agreed that the PANS-ATM should be amended. The Group therefore requested that the ICAO Regional Director initiate, on behalf of the EANPG, action to ensure consistency between the EUROCONTROL Specification and the ICAO provisions.

**EANPG Conclusion 49/12 – Proposal for amendment of the PANS-ATM, Doc 4444, on STCA procedures**

That the ICAO Regional Director, on behalf of the EANPG, process, in accordance with the standard procedure, the proposal for amendment to the *Procedures for Air Navigation Services Air Traffic Management* (PANS-ATM, Doc 4444), related to Short-Term Conflict Alert (STCA), presented in **Appendix G** to this report.

*Tactical parallel offset*

4.34 The Group was presented with a proposal to implement the use of ATC-initiated tactical parallel offsets in the EUR Region. In introducing the proposal, it was stressed that tactical parallel offsets were not a separation method, but a technique to achieve lateral distance in order to apply radar separation. Contrary to strategic lateral offsets, which were initiated by pilots and used in oceanic or remote areas, tactical parallel offsets shall be used on instruction from ATC only.

4.35 The Group was informed that the tactical parallel offset procedure could contribute to increases in capacity and reductions in controller workload by:

- a) facilitating uninterrupted climb/descend;
- b) facilitating situations with overtaking aircraft;
- c) creating temporary tracks to solve specific ATC-situations;
- d) reduction in R/T as compared with radar vectoring therefore reducing communications congestion; and
- e) reducing the amount of controller intervention as compared with radar vectoring.

4.36 The Group was also informed that, although ICAO uses the term ‘lateral’ offset for the strategic procedure instead of ‘parallel’, it was proposed to use the phrase ‘parallel offset’ as this was the phrase used in ICAO Doc 9613 – *Manual on Required Navigation Performance and the Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM, Doc 4444); in addition, it would provide a hint of the difference between the two procedures.

4.37 The Group noted that, as a result of the data collection regarding airborne capability, which had been carried out to determine the feasibility of using tactical parallel offsets, it had been established that more than 75 per cent of the flights in the western part of the ICAO EUR Region could perform automatic parallel offsets during the en route phase. This figure was expected to rise as the aircraft fleet continued to be renewed over the coming years. The Group also noted that, during the development of the proposal, a number of concerns had been addressed. These included issues related to:

- a) terrain clearance;
- b) communication failure;
- c) definition of tactical parallel offset in ICAO documentation;
- d) differences in onboard capability;
- e) additional phraseology;
- f) explicit ICAO provision for the use of tactical parallel offset in the EUR Region; and
- g) safety assessment.

4.38 The Group was informed that a safety assessment of procedures to be used for tactical parallel offsets had been conducted and the findings and recommendations from the assessment had been taken into account when developing the proposed procedures. The safety assessment had identified the mitigation means to alleviate the identified concerns and how the safety requirements should be addressed. Furthermore, the safety assessment identified two main hazards, namely the:

- a) incorrect use of the procedure by ATC; and
- b) incorrect use of the procedure by flight crews.

4.39 To take account of the two hazards, it had been agreed that a training and awareness package should be developed to accompany the implementation of the new procedure once it was approved.

4.40 The Group was informed that, in the absence of clear ICAO global provisions concerning the use of tactical parallel offsets, an amendment to the EUR SUPPs, Doc 7030, would be required before implementation. Considering the information presented and noting the operational and efficiency advantages that could be derived from using the procedure, the Group endorsed the proposal to implement ATC initiated tactical parallel offsets and agreed that the EUR SUPPs should be amended accordingly. During the examination of the proposed amendment, it was suggested and accepted that a reference be added to the first note to highlight that this procedure had no effect on the pilot-initiated strategic lateral offset procedure which was already contained in the PANS-ATM.

4.41 When endorsing the proposal for amendment, the Group was cognisant that the proposal for amendment addressed the safety requirements and concerns that had been identified during the safety assessment. Furthermore, the development of a comprehensive training and awareness package should ensure a smooth implementation of the tactical parallel offset procedure.

**EANPG Conclusion 49/13 – Proposal for amendment of the EUR SUPPS on Air Traffic Control initiated tactical parallel offset procedure**

That the ICAO Regional Director, on behalf of the EANPG, process, in accordance with the standard procedure, a proposal for amendment to the EUR Regional Supplementary Procedures (SUPPS) (Doc 7030), on the subject Air Traffic Control initiated tactical parallel offset procedures, presented in **Appendix H** to this report.

*Proposal for amendment to Part VI – Meteorology of the EUR Basic Air Navigation Plan*

4.42 The Group noted the amendment proposal for Part VI – Meteorology of the *EUR Basic ANP*, (Doc 7754, Volume I), which had been agreed by the METG/17 Meeting (September 2007). The amendment was aimed at aligning the Basic ANP with Amendment 74 to Annex 3 (applicable from 7 November 2007 and, for some parts, on 5 November 2008). Other changes to the regional procedures had been proposed by the WAFS Operations Group (ref., WAFSOPSG/3 Conclusion 3/2) and by the IAVW Operations Group (ref., IAVWOPSG Conclusion 3/2).

**EANPG Conclusion 49/14 - Proposal for amendment to Part VI – MET of the EUR Air Navigation Plan, Volume I, Basic ANP**

That ICAO Regional Office, on behalf of the EANPG, initiate an amendment proposal to the EUR Basic ANP, as provided in Appendix I to this Report, according to the established procedure.

COMMUNICATIONS, NAVIGATION AND SURVEILLANCE

*Communication roadmap*

4.43 The Group was presented with a chart (**Appendix J** refers) providing an overall picture of the present and future utilization of the aviation frequency spectrum. This chart was intended to assist States in the spectrum management process by providing a snapshot of the total aviation spectrum situation in the ICAO European Region. The chart illustrated that the congestion in 108-111.975MHz, 111.975-117.975MHz, 117.975-137MHz and 960-1215MHz frequency bands remained of the major concern for aviation in respect of the spectrum availability. Furthermore, the subject was expanded to outline a future roadmap for the ICAO EUR Region in order to cope with outstanding VHF frequency spectrum congestion in short, medium and long term time frame.

4.44 A summary of several programmes under implementation in the ICAO EUR Region that have an impact on the aeronautical frequency bands capacity was introduced to the Meeting. This summary included the 8.33 kHz channel spacing implementation programme, considered as a key element to mitigate

the frequency spectrum congestion in the VHF band in the short to medium term. The full implementation of 8,33 kHz in all airspace would most probably meet aviation needs in the VHF-COM band until about 2020. However, the current partial implementation plans would not satisfy the projected demand.

4.45 An improved Spectrum and Frequency Information Resource (SAFIRE) coordination tool was seen as a means capable to provide some spectrum congestion alleviation in the short term. SAFIRE would allow for an easy on-line access to the aviation frequency assignment database in the ICAO EUR Region and would enable for a sophisticated frequency coordination mechanism and an increased accuracy and integrity of the data used to manage VHF assignments. The use of the information resource provided by the SAFIRE would also help States to review and optimise the current aeronautical frequency assignments that could lead to some relaxation until the full benefits of 8.33 kHz implementation would be achieved.

4.46 It was expected that the Controller Pilot Data Link Communications (CPDLC) large-scale implementation would reduce routine communications requirements. However, the data link services implementation in the ICAO EUR Region was aiming at 2015 as a start of mandatory carriage of the data link capable equipment in the European Union (EU) member States airspace. Therefore, considerable benefits could be expected in 2015-2020 timeframe only. Moreover, the magnitude of the data link implementation impact on the frequency spectrum was not completely determined yet.

4.47 It was recognised that the roll out of the Future Communications Systems (FCS) should solve the aviation frequency spectrum congestion in the long term and studies were currently conducted by a joint FAA and EUROCONTROL group and reviewed by the ICAO Aeronautical Communication Panel (ACP). The main activity areas covered by the group consisted in the identification of requirements and operating concepts, the investigation of new mobile communication technologies, the development of a Future Communications Roadmap and improvements to maximize utilization of the current radio spectrum.

4.48 However, even the initial implementation of such systems was not foreseen before 2020. As such a change would be usually coupled with a long and expensive transition period, it was not anticipated that the future communication systems would bring any significant spectrum release earlier than 2020-2025.

4.49 The Group agreed that every programme described above had its own merits, timeframes and constraints. However, the major impact was seen to be achieved by the full implementation of 8.33 kHz channel spacing in the short to medium term and the roll out of the future communications systems in the long run. In the short term, every possible solution that may provide for a fully optimized utilization of the radio spectrum shall be investigated.

4.50 The Meeting acknowledged that there was a need for an agreed roadmap in the ICAO EUR Region to cope with the aviation frequency spectrum congestion in the short, medium and long term, as outlined in the following Conclusion.

#### **EANPG Conclusion 49/15 – Roadmap to address aeronautical frequency spectrum congestion**

That:

- a) States proceed with the full implementation of 8.33 kHz channel spacing in line with the EANPG Conclusion 48/29;
- b) EUROCONTROL and EANPG FMG implement the SAFIRE frequency assignments coordination tool by 20 December 2007;
- c) States, in coordination with EUROCONTROL and EANPG/FMG, review internally their VHF assignments and take necessary actions to ensure an efficient spectrum utilization and report back to EANPG/50 through FMG; and

- d) States continue the implementation of the Controller Pilot Data Link Communications application to be achieved by 2015.

#### *Implementation of 8.33 kHz channel spacing*

4.51 The Group reviewed the progress of the 8.33 kHz Programme. The mandatory carriage above FL195 was currently enforced in all States that previously introduced the 8.33 kHz channel spacing above FL245, with the addition of Albania and Greece, but with the exception of Spain and Portugal.

4.52 The mandatory carriage of 8.33 kHz equipment enabled the set-up of a homogeneous area of operations, an important prerequisite to precede with the ground radio conversions to 8.33 kHz. An analysis of the flight plan data performed by the EUROCONTROL Central Flow Management Unit (CFMU) indicated that the 8.33 kHz aircraft equipage rate above FL195 was 99.67%. A Post-Implementation Safety Case (PoISC) was under development, taking into account factors such as aircraft equipage rates and operational feedback and using State action reports.

4.53 The frequency planning benefits that could be derived from the 8.33 kHz programme would be influenced by the number of 25 to 8.33 kHz channel conversions and their successful coordination in the ICAO EUR ANP FASID Supplement Table COM-2. The conversions concluded by the States were currently progressing well; 78 more conversions were planned to be implemented by July 2008.

4.54 The Group noted that the European Commission Regulation (EC) No 1265/2007 of 26 October 2007, laying down the requirements on air-ground voice channel spacing for the single European sky was published in the Official Journal of the European Union (L283 pages 25-36) on the 27<sup>th</sup> October 2007 with entry into force 20 days thereafter. The implementation rule identified the following transitional arrangements and implementation dates:

- a) by 15 March 2008, EU States which have not already enforced 8.33kHz mandatory carriage above FL195 would be required to do so;
- b) by July 2008, air navigation service providers would be required to implement ground radio conversions subject to constraints such as climax and sector lower-limits.
- c) regarding the accommodation of 8.33 kHz equipage of state aircraft, dates and transitional arrangements have been identified.

4.55 In following-up the EANPG Conclusion 48/29 on 8.33 kHz implementation below FL195, the Business Case was currently under revision, taking into account the potential for other measures to satisfy VHF demand, the impact of any FCS on aircraft equipage, the effective utilisation of VHF assignments and the numbers/costs affecting the State aircraft. The Implementation Plan was under development to address items such as the operational scenario for a phased implementation, scope and timescales for conversions of ground-based radio equipment and the scope and timescales for the equipage of civil and State aircraft.

4.56 The Meeting expressed its concern that the planning for 8.33 kHz implementation below FL195 has not progressing as it was expected. It was indicated that it would be difficult to progress the 8.33 kHz implementation below FL195, until the concerns about the frequency usage would be properly addressed. However, the Meeting agreed that studies on the efficiency of the frequency usage should not delay the progress of the 8.33kHz implementation programme. The Group agreed the following conclusion:



**EANPG Conclusion 49/16 – 8.33 kHz implementation progress**

That:

- a) States ensure that the dates set out in the 8,33KHz implementation programme above FL195 are met;
- b) States and all affected stakeholders actively participate in the preparatory work on 8.33 kHz implementation below FL195; and
- c) EUROCONTROL finalise and present to COG/41 the Implementation Plan and Business case for 8.33kHz below FL195.

*Implementation of SAFIRE*

4.57 The Group was informed on the status of the implementation of the SAFIRE frequency coordination tool. It was noted that the system availability was 99.79% with the application availability of 100%. Since December 2006, 40 States and organizations registered for participation in the SAFIRE. There were currently eleven States not enrolled with SAFIRE, namely: Albania, Algeria, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Uzbekistan.

4.58 As part of the requirements to support the implementation, several courses for frequency managers took place at the EUROCONTROL Institute of Air Navigation Services (IANS). Three courses have been held in June 2006 and October 2006 in Luxembourg, followed by an additional briefing provided for a smaller group in March 2007 in Brussels.

4.59 The Group noted that any further delay in the SAFIRE implementation was acknowledged as highly undesirable since current parallel operation of the AFTN and SAFIRE based frequency coordination tool was placing significant burden on States in terms of time and resource consumption. Therefore it was recognised that, as SAFIRE was technically ready to go operational, the main objective would be to conclude on firm milestones and actions to ensure a smooth and safe transition from the AFTN based coordination tool to SAFIRE.

4.60 The Meeting considered that an agreement setting the performance requirements and the availability of future upgrades should be concluded without further delay between EUROCONTROL and ICAO.

**EANPG Conclusion 49/17 - SAFIRE implementation**

That,

- a) the ICAO Regional Director, on behalf of the EANPG, invite:
  - i) EUROCONTROL to ensure the entering into operation of SAFIRE as of 20 December 2007, based on decision of the FMG BPM/SG meeting (18-20 December 2007);
  - ii) EUROCONTROL to ensure that SAFIRE system is ready to accommodate EUR FASID Supplement COM3 & 4 Tables for test and evaluation by 1 May 2008 ICAO and
- b) ICAO and EUROCONTROL conclude an agreement to cover the performance requirements and the future availability of SAFIRE upgrades and report its conclusion to COG/41.

*Data link services implementation*

4.61 The Meeting was informed about the progress of the Single European Sky (SES) interoperability implementing rule on the Data Link Services (DLS). The Final Report for the Draft Implementing Rule on DLS was circulated on 23 October 2007. Presentation and discussions at the Single Sky Committee (SSC) would take place early 2008 and would be followed by formal discussions in the SSC and adoption by the EC.

4.62 The implementing rule specified the mandatory features for the provision and use of data link services with the following points:

- a) Subject matter and scope (stating in particular, the aircraft categories including State aircraft required to carry mandatory data link equipment and the airspace in which data link services can be used);
- b) Data link services;
- c) Associated procedures for the provision and use of data link services.
- d) Data Link Communications;
- e) Safety requirements;
- f) Conformity or suitability for use of constituents;
- g) Verification of systems;
- h) Additional requirements;
- i) Requirements defining the conditions and criteria of temporary exemptions applicable to aircraft; and
- j) Implementation conditions in particular timescale for ground and aircraft implementation.

4.63 The Regulation laid down requirements for the coordinated introduction of data link services based on air-ground point-to-point data communications applicable to:

- a) Flight data processing systems, their constituents and associated procedures and human machine interface systems, their constituents and associated procedures serving air traffic control units providing services to the general air traffic; and
- b) Air-ground communication systems, their constituents and associated procedures.

4.64 The Final Report for the Draft Implementing Rule on Data Link Services suggested that the implementing rule should apply to all flights operating as general air traffic in accordance with instrumental flight rules within:

- a) The airspace above FL285 from 7 February 2013 within the following Flight Information Regions (FIR) and Upper Flight Information Regions (UIR):
  - i) Amsterdam FIR, Wien FIR, Barcelona UIR, Brussels UIR, Canarias UIR, France UIR, Hannover UIR, Lisboa UIR, London UIR, Madrid UIR, Milano UIR, Rhein UIR, Roma UIR, Scottish UIR and Shannon UIR

- b) The airspace above FL285 from 5 February 2015 within the following Flight Information Regions (FIR) and Upper Flight Information Regions (UIR):
  - i) Bratislava FIR, Bucuresti FIR, Budapest FIR, Kobenhavn FIR, Ljubljana FIR, Nicosia FIR, Praha FIR, Sofia FIR, Warszawa FIR, Finland UIR south of 61°30', Hellas UIR, Malta UIR, Riga UIR, Sweden UIR south of 61°30', Tallinn UIR, Varna FIR, Vilnius UIR

4.65 Operators should ensure that all aircraft with an individual certificate of airworthiness first issued on or after 1 January 2011 and operating in the airspace concerned would have the capability to operate the data link services as defined in Annex II of the DLS IR. Operators shall ensure that all aircraft with an individual certificate of airworthiness first issued before 1 January 2011 and operating in the airspace concerned would have the capability to operate the data link services as from 5 February 2015.

4.66 The above paragraph provisions would not be applicable to aircraft with an individual certificate of airworthiness first issued before 1 January 2014 and fitted with data link equipment certified against Eurocae requirements. These provisions would also not be applicable to aircraft with a certificate of airworthiness first issued before 21 December 1997 and which would cease operation in the referred airspace before 31 December 2017. These provisions would not apply to State aircraft and to aircraft flying for testing, delivery and for maintenance purpose.

4.67 Member States which decided to equip new transport type State aircraft entering into service after 1 January 2014 with data link capability relying upon standards not specific to military operational requirements, should ensure that these aircraft would have the capability to operate the data link services defined in Annex II of the DLS IR.

4.68 The regulation would apply to the ground European Air Traffic Management Network (EATMN) and constituents in line with paragraph 4.64 and article 1.3 of the DLS IR.

4.69 The Meeting recognised that the DLS Implementing Rule would necessitate an amendment to the EUR *Regional Supplementary Procedures* (SUPPS) (Doc 7030) to reflect the mandatory carriage requirements. Therefore to meet the Implementing rule deadlines the ICAO process should start as early as possible. In this regard the Group agreed the following conclusion:

#### **EANPG Decision 49/2 – SUPPS PFA ATN/VDL2 mandatory carriage**

That the EANPG COG be mandated to initiate a Proposal for Amendment to the Regional Supplementary Procedures (SUPPS) (Doc 7030) with respect to the mandatory carriage of ATN/VDL2 equipment, capable of supporting the applications prescribed in the EC Implementing Rule on Data Link Services, in the ICAO EUR region.

#### *VHF Data Link sub-band*

4.70 The Group noted that the implementation of the Data Link Services in the ICAO EUR Region would require the availability of 25 kHz-frequency channels located inside the aeronautical VHF band. The Meeting was presented with an update on the VHF data link frequency sub-band reassignment programme developed by that EANPG Frequency Management Group (FMG). This programme was meant to enable the provision of several frequency channels for the deployment of the ATN/VDL2 data link in the ICAO EUR Region.

4.71 The programme proposed a progressive deployment from 2002 onwards with a target date for the provision of four VDL2 channels and two VDL4 channels by 2010. The programme also required that other services, such as airlines operational control (OPC), should be removed from the sub-band currently planned for the VHF data link deployment. At the current stage, the step initially foreseen for 2004

was almost achieved. One VDL2 channel was established and protected, nearly all VDL4 pre-operational services were migrated from 136.950 MHz to 136.925 MHz and all other services on that frequency had been cleared. However, it was noted that Step 2 of the plan, which envisaged that all OPC services above 136.800 be removed and two VDL 2 protected channels be established, was not currently achieved.

4.72 The Meeting noted that VDL2 traffic was constantly rising and a steeper increase was anticipated in connection with the Data Link Services Implementing Rule in the 2009-2015 timeframe. This trend would require a second protected VDL2 channel to become available from 2009 onward. If the second VDL2 frequency channel would not be established and protected by 2009, it would represent a significant capacity limiting factor for the data link services implementation in the ICAO EUR Region.

4.73 Therefore, in order to enable the timely implementation of the data link services in the ICAO EUR Region, the Group agreed that the remaining users of the involved frequency sub-band should confirm the progress and completion of “Step 1” and rapidly progress towards “Step 2” of the VDL sub-band reassignment programme.

#### **EANPG Conclusion 49/18 - VDL sub-band assignments**

That ICAO Regional Director, on behalf of the EANPG, invite States to review and remove their assignments, such as OPC, in VHF data link sub-band and update EUR FASID Supplement COM2 Table content accordingly.

#### *Data Link Steering Group (DLSG) report*

4.74 A summary of the activities of the Data Link Steering Group (DLSG) since EANPG/48 and its major deliverables were presented to the Meeting.

4.75 The EANPG noted that the DLSG was created in response to the EANPG and the NAT SPG Conclusions with the main objective to halt divergence and define a path for a future converged data link solution. Of particular concern was to investigate issues that prevented to accommodate the Aeronautical Telecommunication Network (ATN) equipped aircraft in the Future Air Navigation System (FANS) environment. However, on the later stages, DLSG terms of reference were expanded to cover the revision of the ICAO Doc9694 Part III, related to Automated Dependent Surveillance-Contract (ADS-C) application.

4.76 The EANPG reviewed 3 major deliverables of the DLSG:

- a) A Table listing the identified operational/technical and institutional/business-case issues preventing the ATN accommodation in a FANS environment and proposed solutions to overcome it (**Appendix K** to this report refers);
- b) Draft changes to the *Manual of Air Traffic Services Data Link Applications (ICAO Doc9694, Part III. ADS-C)*. (**Appendix L** to this report refers); and
- c) A Data Link Harmonisation Strategy (**Appendix M** to this report refers).

4.77 The Meeting noted that in follow up of the DLSG/3 Conclusions, the ICAO Secretariat circulated a State Letter (Reference: MTG/OGM/DLSG -07-0157) on 22 May 2007, inviting States to comment whether the implementation of the proposed draft harmonisation strategy for ADS-C or/and controller-pilot data link communications (CPDLC) would prove difficult. The DLSG/3 Conclusions were also made available to the NAT SPG/43 and to the APANPIRG meetings.

4.78 It was outlined that in discussing the DLSG/3 outcome, the NAT SPG/43 and APANPIRG meetings supported the need for a single convergent step rather than several and possible divergent interim steps. The replies received from States also indicated the concordance with the DLSG draft data link harmonisation strategy. Therefore the Meeting agreed the following Conclusion.

### EANPG Conclusion 49/19 – Data Link Harmonisation Strategy

That the ICAO Regional Director, on behalf of the EANPG, takes the necessary action to include the following planning strategy in the ICAO EUR ANP:

“When planning for data link implementation in the ICAO EUR Region, the following strategy shall be used:

With respect to any additional Automatic Dependent Surveillance-Contract (ADS-C) implementation:

- i) utilise, without change, the existing Future Air Navigation Systems (FANS 1/A) DO-258A/ED-100A ADS-C, or
- ii) move to the full implementation of the common technical definition that will be defined based on relevant provisions and guidance material (*Manual of Air Traffic Services Data Link Applications (Doc 9694)*) developed by ICAO and its technical bodies.

Note: Partial or divergent ADS-C evolutions should not be pursued, as this would continue to promote divergent paths to the detriment to the broader community.

With respect to any additional Controller Pilot Data Link Communications (CPDLC) implementation:

- i) utilise, without change, the existing FANS 1/A (DO-258A/ED-100A) or ATN (DO-280B/ED-110B CPDLC for ACM/ACL/AMC data link services), or
- ii) move to the full implementation of the internationally agreed common technical definition, based on *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444), and other operational material as appropriate. A common technical definition might be the technical provisions for the CPDLC application (*Manual on detailed technical specifications for the aeronautical telecommunications network (ATN) based on ISO/OSI standards and protocols* (Doc 9880, First edition).

*Note: Partial or divergent CPDLC evolutions that result in excluding messages from aircraft systems should not be pursued, as they will continue to promote divergent paths to the detriment to the broader community.*

Common procedures for the implementation of the ADS-C and CPDLC packages are considered to be essential. Regional and other implementation groups should harmonise and adopt common guidance material, rather than each region develops and promulgates their specific procedures with respect for common functions.”

#### *Digital broadcast/Aeronautical systems immunity*

4.79 The Meeting was informed of the Digital broadcast (DB) transmissions currently under implementation in Europe, in the frequency band below 108 MHz. These transmissions, using reportedly high compression rate and high power emissions, would require a higher level of protection than conventional analogue Frequency Modulation (FM) broadcasting transmitters in order to prevent any harmful interference that may affect the safe operations of flight systems.

4.80 The Meeting noted that the compatibility between analogue sound-broadcasting services in the band 87 to 108 MHz and Aeronautical Services in the band 108 to 137 MHz was specified in the International Telecommunication Union (ITU) ITU-R Recommendation SM.1009-1 (“Compatibility Between The Sound-Broadcasting Service in the Band of About 87-108 MHz and The Aeronautical Services In The Band 108-137 MHz”). Pertaining susceptibility test procedures were contained in ITU-R Recommendation

IS.1140. The ITU Resolution 413 also identified the need for studies to address compatibility issues between aeronautical and broadcast services that might arise from the introduction of new systems in either service.

4.81 The Meeting agreed that the studies within ITU needed to be completed to enable the digital broadcast transmissions without any harmful interference to the safety critical aeronautical services. The Group agreed with the opinion of IATA stating that the introduction of the new broadcasting services should not cause any changes in the existing FM immunity requirements in order to avoid any modification needs on board aircraft.

#### **EANPG Conclusion 49/20 - DB/FM/ILS/VOR/GBAS immunity issue**

That the ICAO Regional Director, on behalf of the EANPG, invites States to:

- a) monitor closely the evolvement of the Digital Broadcasting (DB) systems within their territories and notify the ICAO EUR/NAT Office and adjacent States about any developments in this respect; and
- b) alert their National Radio Regulatory Authorities, if necessary, on the need to complete ITU compatibility studies (in accordance with the ITU Resolution 413) prior to allow any DB deployment and/or operational testing in order to ensure the interference protection of the safety critical aeronautical services.

#### *Aviation spectrum pricing*

4.82 The Meeting was presented with the latest trends taking place in the international telecommunication arena that could influence the allocation of the current and future frequency spectrum. Such trends, which could affect the availability of adequate and protected spectrum for aviation, included:

- a) An increased role of the private sector in the work of the ITU;
- b) An increased economic value of spectrum for certain applications;
- c) An increased availability of radio devices that do not require licensing by radio communication authorities; and
- d) An increased pressure for sharing aeronautical spectrum with non-aeronautical services.

4.83 The increased role of the private sector in the ITU had an adverse impact on the influence of inter-governmental bodies such as ICAO. The economic value of the radio spectrum allocated to the certain applications could exceed by far the economic value of the aeronautical applications of the same spectrum. This had been demonstrated by the results of the “spectrum auctions” carried out in several countries to support future commercial mobile systems.

4.84 The Meeting noted the information related to studies currently conducted in the United Kingdom that were intended to provide an economic incentive to promote improved efficiency in the aeronautical spectrum management and suggest that airspace users shall be subject to the frequency spectrum utilization charges when in the United Kingdom airspace.

4.85 The UK Office of Communications (Ofcom) published aeronautical frequency spectrum valuations (reference <http://www.ofcom.org.uk/research/radiocomms/reports/spectrumbaip/>) as a result of preliminary feasibility studies. These studies introduce the notion of Administered Incentive Pricing based on an opportunity cost of the spectrum in question. Opportunity cost is derived from a perceived market price of the spectrum, its current utilization and the existing demand.

4.86 The public consultations on this issue would be held in the United Kingdom in order to collect public views. Of importance for Civil Aviation was that the process is closely monitored by the European Commission and the International Telecommunication Union. Should the aeronautical frequency spectrum pricing be implemented in the United Kingdom then it's probable that others will follow the same path recognizing the potential financial benefits.

4.87 Therefore the Meeting has considered important that the ICAO Planning and Implementation Regional Group (PIRG)s and the Contracting States closely monitor if similar intentions are proliferating and if required, take consolidated and unified actions to ensure that the aeronautical community needs are considered.

4.88 The Meeting has also noted the strong opposition from the IATA to the potential introduction of the aeronautical frequency spectrum charging.

#### **EANPG Conclusion 49/21 – Aeronautical spectrum pricing**

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

- a) Inform States on the ongoing aeronautical spectrum pricing studies;
- b) Invite States to inform the EANPG on any further developments; and
- c) Invite the ANC to consider the issue and provide advice.

#### *AMHS address register*

4.89 The Meeting reviewed the progress made in following up the EANPG Conclusion 48/24, inviting ICAO to consider the necessary actions to enable a global ATS Message Handling System (AMHS) addresses registration and coordination mechanism.

4.90 The preliminary ICAO AMHS Management domain (MD) register was developed and placed on the ICAO Aeronautical Communication Panel (ACP) website. It was recognised as a positive step forward, although not fully responding to the raised concerns (namely that a truly effective global AMHS address registration and coordination mechanism should encompass all its elements, including address registration, coordination and change control).

4.91 The Group recognised that the AMHS was already used operationally in Europe and was expected to expand considerably in the following 2-3 years. As other Regions were expected to deploy AMHS in the foreseeable future, it was important to implement a globally harmonised addressing mechanism without any delay, otherwise diverse solutions and practices would evolve causing serious consequences on the operation of the AMHS.

4.92 The European ATS Messaging Management Centre together with its management procedures was a solution readily available and capable to meet outstanding AMHS address registration and coordination requirements to support AMHS deployment in the interim period. Although other management options could be envisaged for the medium or long term, it would be impossible to meet short term requirements if the ATS Messaging Management Centre would not be utilized on an interregional basis.

4.93 It was noted that the ICAO ASIA/PAC Regions and the FAA expressed support towards the early use of the European ATS Messaging Management Centre and already started to use it along with the States in the EUR Region.

4.94 It was noted that there were two registers currently available. The preliminary ICAO AMHS MD Register addressed the institutional aspects and the need for an official publication by ICAO. The ATS Messaging Management Centre was complementing the ICAO AMHS MD Register and it was currently

agreed and used by States in the ICAO EUR and ASIA/PAC Regions, as well as by the U.S. FAA for operational purposes in the short term.

4.95 However, it was felt that there was still a need for further work to ensure that information contained in the ICAO AMHS MD Register and the ATS Messaging Management Centre was synchronised and kept up to date. In order to respond to this need, experts from France, Germany, Greece, Spain, Switzerland, the United Kingdom, and EUROCONTROL, agreed to provide appropriate expertise to form an Inter-regional Coordination Team (IRCT), which would be coordinated by the ICAO EUR/NAT Office. The IRC team would develop procedures, recommendations and guidance material to support the AMHS implementation and management as described in the Terms of Reference (ToR) endorsed by EANPG/49 (**Appendix N** to this report refers)

4.96 In order to progress the work, the IRCT developed the short-term working procedures to enable synchronisation of the ICAO AMHS MD Register with the data contained in the operational ATS Messaging Management Centre (**Appendix O** to this report refers). The overall goal of this procedure would be to ensure that global AMHS address management is performed in a consistent manner, both from an operational and an official (institutional) viewpoint.

#### **EANPG Conclusion 49/22 – AMHS interregional coordination team (IRCT)**

That:

- a) France, Germany, Greece, Spain, Switzerland, the United Kingdom and EUROCONTROL provide experts and resources to address inter-regional AMHS issues ; and
- b) The ICAO EUR/NAT Office coordinates the activities of the team.

#### **EANPG Conclusion 49/23 – AMHS address coordination**

That ICAO be invited to utilise the European ATS Messaging Management Centre facility at the earliest opportunity, in support of the initial AMHS implementation and based on the proposed draft AMHS address coordination procedures between the ICAO AMHS MD Register and the ATS Messaging Management Centre.

4.97 For practical realisation of the proposed concept, users outside of the ICAO EUR Region would have to make use of the ATS Messaging Management Centre external user functionality. Therefore, it was important that States in other ICAO Regions be informed on the AMHS Management Centre and invited to participate in the ATS Messaging Management Centre operation as External COM Centre Operators.

4.98 Access for the nominated ATS Messaging Management Centre Users would be granted by filling in the registration form available from the following website:

**[https://extranet.eurocontrol.int/http:/chow.mis.eurocontrol.be:8095/elsh\\_live/elsh/registerNewUserForApplication.do?eurocontrolresourceid=amc\\_users](https://extranet.eurocontrol.int/http:/chow.mis.eurocontrol.be:8095/elsh_live/elsh/registerNewUserForApplication.do?eurocontrolresourceid=amc_users)**

#### **EANPG Conclusion 49/24 – ATS Messaging Management Centre Users**

That ICAO be invited to address States outside the ICAO EUR Region to register with the ATS Messaging Management Centre as external COM centre operators, as soon as possible.

#### *AFS location indicator*

4.99 The Meeting was made aware of several issues raised within the EANPG Aeronautical Fixed Services (AFS) Group related to the entries in the current EUR ATS Message Handling System (AMHS) Private Management Domain (PRMD) Names and Addressing Plan Registry. It was observed that some



Common AMHS Addressing Scheme (CAAS) tables submitted by States did not include the designator \*\*ZZ (where \*\* is the 2-letter state indicator). It had also been observed that there were inconsistencies among the indicators in the PRMD registry and the indicators listed in the ICAO Doc7910.

4.100 It was recognised that these issues would become particularly acute when AFS network in the ICAO EUR Region transitioned to AMHS. Therefore, additional mitigation measures were required to ensure smooth transition and improve message delivery reliability.

4.101 The Meeting noted that in an AFTN environment, it was sufficient not to have to reference the first 4 letters of the State predetermined distribution addressee indicators (PDAI) in ICAO Doc 7910. With AMHS some communication centres were using the entries in Doc 7910 to define their Common AMHS Addressing Scheme (CAAS tables and 8-letter PDAI would be replicated in Distribution Lists (DL) located at each and every communication centre). In order for an AFTN message to be routed from any AFTN/AMHS Gateway into the AMHS environment and onwards to the appropriate communication centre hosting that DL (once that State has transitioned from AFTN to AMHS), it was essential that the first 4 letters of the PDAI be defined in the AFTN/AMHS Address Translation Tables to ensure correct address conversion.

4.102 In order to reduce the possibility of incomplete CAAS tables being submitted by States and non-delivery of data following introduction into service, the Meeting agreed that PDAI root designators (i.e. the first 4 letters) be registered with ICAO and inserted explicitly in Doc 7910. Recognizing that the current provisions of the ICAO Doc 7910 did not require the insertion of the PDAI root designators a proposal for amendment to the Doc 7910 was supported by the Meeting.

#### **EANPG Conclusion 49/25 – Registration of PDAIs**

That:

- a) ICAO Regional Director, on behalf of the EANPG, invite States in the ICAO EUR Region to ensure that the PDAI root designators (i.e. the first 4 letters), if in use, are registered with ICAO and inserted explicitly in Doc 7910; and
- b) ICAO HQ be invited to:
  - i) provide similar guidance as in the above paragraph a) to the States outside of the ICAO EUR Region.
  - ii) initiate an update to the Foreword to the ICAO Doc 7910 as described in **Appendix P** to this report.

4.103 In order to reduce the possibility of incomplete CAAS tables being submitted by States and non-delivery of data following introduction into service, the Meeting agreed that State authorities responsible for allocation of Location Indicators, should ensure that arrangements be put place with their communications service providers responsible for the AFS nodes to co-ordinate the Location Indicator allocations. These arrangements should facilitate the accurate AMHS CAAS Address tables for the State concerned. It was also agreed that States should ensure that entries in the AIP and CAAS tables be also reflected in Doc 7910.

#### **EANPG Conclusion 49/26 – Location Indicators**

That:

- a) the ICAO Regional Director, on behalf of the EANPG, invite States in the EUR Region to ensure that:

- i) arrangements are in place to co-ordinate the location indicator allocations, so as to facilitate the accuracy of AMHS CAAS Address Tables; and
  - ii) all entries in the AIP and CAAS Tables are also reflected in Doc 7910; and
- b) ICAO HQ be invited to provide similar guidelines to the States outside the ICAO EUR Region.

*AFS training, documentation and development study issues*

4.104 The Meeting highlighted that as Aeronautical Fixed Services (AFS) in the ICAO EUR Region evolved towards a wide scale deployment of the ATS Message Handling System (AMHS), as an element of the global and integrated Aeronautical Telecommunication Network (ATN), it would necessitate that training and documentation matters would be timely and diligently addressed to ensure smooth and safe transition.

4.105 In light of the imminent AFS transition to AMHS in the ICAO EUR Region and with a view on the need for increased awareness on transition issues, the Meeting agreed that an AMHS workshop be organised in the beginning of 2008 under the ICAO EUR/NAT auspices. Such workshop would support States in their ongoing AMHS transition, assist in the AMHS transition related hazards identification, the risk assessment and mitigation, and ensure the Regional coordination and harmonisation in the planning and implementation activities.

**EANPG Decision 49/3 - AMHS workshop**

That ICAO Regional Director, on behalf of the EANPG, make the necessary arrangements to organise the AMHS workshop in 2008.

4.106 The Meeting was reminded that following the recommendation of EANPG/45 on AMHS off-line Management, the ATS Messaging Management Manual was developed and completed in May 2005. On this basis the implementation of the ATS Messaging Management Centre was started.

4.107 The Meeting noted that AMHS Management and CIDIN Management were currently fully integrated as part of the ATS Messaging Management Centre and of the ATS Messaging Management Manual. Thus, there was no longer need to maintain the Common ICAO Data Interchange Network (CIDIN) Management as a separate notion. To reflect this evolution, the ATS Messaging Management Manual, which had been initially developed as a companion document to the CIDIN Management Manual, had been merged with the material from the latter. Therefore the ATS Messaging Management Manual was currently a stand-alone, comprehensive document, covering seamlessly AMHS, CIDIN and AFTN off-line Management, and forming the only reference on this subject in the ICAO EUR Region.

4.108 Subsequently, the Meeting agreed that the ATS Messaging Management Manual be maintained by the EANPG AFS Group and made publicly available for the best use of the AFS community in the ICAO EUR Region as a guidance material.

**EANPG Decision 49/4 – Publication of the ATS Messaging Management Manual**

That ICAO Regional Director, on behalf of the EANPG, publish the ATS Messaging Management Manual Edition 3.0 as ICAO EUR Doc021.

4.109 The Meeting acknowledged that there was a need to undertake a study and the development of the AMHS Directory Services which was seen as an essential element required supporting AMHS deployment in the ICAO EUR Region.

4.110 The work to be done would include identification of potential scenarios to be considered for a potential deployment of Directory Services in the EUR Region and the definition of the operational and technical requirements for providing these functionalities.

4.111 The Meeting agreed that availability of specialized expertise was required to undertake this work.

#### **EANPG Conclusion 49/27 – Directory Services activities**

That ICAO Regional Director, on behalf of the EANPG, invite States and expert organisation (e.g. EUROCONTROL) to allocate expert resources to identify and evaluate potential areas of study in order to progress on Directory Services implementation in the ICAO EUR.

4.112 The Meeting was informed that AFS experts in the ICAO EUR region worked on the development of guidelines regarding the Regional AFS security measures as tasked by the EANPG Programme Coordinating Group (COG). In the course of this activity it was noted that experience on specific security incidents and relevant expertise was limited. Furthermore, ANSP security policies often prohibit the disclosure of implemented security measures, for obvious reasons.

4.113 The Meeting acknowledged that in time of high security awareness requirements the need for a broader scope document providing AFS security guidelines was essential.

4.114 Therefore, the Meeting agreed that additional work and expertise was required to produce refined and mature for publication the “ICAO EUR AFS Security Guidelines” document.

#### **EANPG Conclusion 49/28 – AFS security guidelines**

That the ICAO Regional Director, on behalf of the EANPG, invite States and expert organisation (e.g. EUROCONTROL) to provide support in the further development and refinement of the “EUR AFS Security Guidelines”.

#### *24-bit aircraft address*

4.115 The Meeting has recalled the EANPG Conclusion 48/17 that encouraged States to proceed with Mode-S implementation. It was recognized that to enable the full Mode-S implementation benefits, properly assigned and distinct 24-bit aircraft addresses were essential, as they would provide for the correct operation of the airborne collision avoidance system (ACAS) and several communication and surveillance systems.

4.116 The Meeting was pointed out that the assignment of aircraft addresses required a comprehensive scheme providing for a balanced and expandable distribution of aircraft addresses applicable worldwide and that Appendix to Chapter 9 Annex 10 Volume III described the allocation procedure and identifies blocks of consecutive addresses available to States for assignment to aircraft.

4.117 In accordance with this procedure, ICAO was administering the scheme for an appropriate international distribution of aircraft addresses. Then it would be the responsibility of each Contracting State to establish and administer a proper aircraft address assignment scheme based on the block of addresses allocated to it by ICAO. When required for use by suitably equipped aircraft, individual aircraft addresses within each block should be assigned to aircraft by the State of Registry or common mark registering authority in line with principles described in Annex 10.

4.118 The occurrence of the incorrectly set and, in particular duplicated 24-bit addresses, would jeopardize the safety of aircraft and the operational efficiency of the ATM functions. Therefore it must be avoided at all times. ACAS II systems use Mode S protocols and transponders to maintain safe separation

between aircraft. Duplicate 24-bit addresses would have serious safety implications when one or more of the ‘threat’ aircraft can remain partially or totally undetected. The uniqueness property of the 24-bit aircraft address was important for the unambiguous identification of the aircraft by the SSR Mode S Interrogators and Radar trackers. The effects of duplicate addresses were unpredictable and ranged from SSR tracks being dropped to aircraft remaining undetected and leading to misdirected communication messages between controllers and pilots.

4.119 The Meeting was informed about several cases recently reported, when 24-bit aircraft addresses were allocated in non-compliance to the ICAO procedure. Taking into account the potential safety implications of such a deviation from the agreed procedure, the Meeting endorsed the following Conclusion:

**EANPG Conclusion 49/29 - ICAO 24-bit aircraft address allocation**

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

- a) invite States to review their national 24-bit aircraft address allocation procedures and ensure strict compliance with ICAO Annex 10 requirements; and
- b) require States to ensure operators have a system or procedure in place to ensure that correct 24-bit address allocation is kept properly installed on the appropriate aircraft.

*RNAV-1 Infrastructure assessment procedure*

4.120 The Meeting was presented with the EUROCONTROL *Guidance material for RNAV-1 infrastructure assessment* document describing methods and processes that should be used to evaluate if a specific navigation infrastructure is suitable to support RNAV-1 procedures.

4.121 The Meeting felt that the proposed document would be very useful to assist States in determining the compliance with RNAV-1 requirements. It was also noted that the original version of the Guidance material was publicly available on the [www.icao.int/pbn](http://www.icao.int/pbn) website. The Meeting agreed that it would be prudent to make the proposed Guidance material available for the best use of the States in the ICAO EUR Region.

**EANPG Conclusion 49/30 – Guidance material for RNAV-1 infrastructure assessment**

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

- a) take appropriate action to publish a link from the ICAO EUR/NAT Office website pointing to the EUROCONTROL website location of the *Guidance material for RNAV-1 infrastructure assessment*, and
- b) encourage States and Air Navigation Service Providers to make use of the guidance material to evaluate if their navigation infrastructure is suitable to support RNAV-1 procedures.

**LANGUAGE PROFICIENCY REQUIREMENTS**

*Language Proficiency Requirements Implementation Workshops*

4.122 The Group recalled that the 36th Session of the ICAO Assembly decided on Resolution A36/11, confirming the applicability date of 5 March 2008 for the Language Proficiency Requirements (LPR) in Annex 1 for pilots and air traffic controllers. The Resolution also allowed States, which were not able to implement the LPR by 5 March 2008, to benefit from a three-year transition period. However, the Assembly made the posting of the implementation plan on the ICAO website a prerequisite to benefit from this additional three-year transition period for the implementation of the relevant ICAO SARPs. The

Resolution required that the implementation plan be posted as soon as possible but not later than 5 March 2008.

4.123 The Group was informed that as part of the ICAO global initiative, a European Region Special Workshop, to assist those States that have experienced difficulties in complying with the LPR implementation by 5 March 2008, would be conducted in Minsk, from 3 to 6 December 2007, thanks to the kind invitation of Belarus. The workshop would highlight the main elements of the required implementation plan and would assist States in establishing interim measures, including guidance on identifying hazards and risks for pilots and air traffic controllers.

4.124 The Group was informed that COG/39 had recognized that, at all previous LPR implementation workshops, only a few representatives from airlines, service provider organisations and civil aviation authorities from the States from Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) managed to participate. This was mostly due to difficulties related to the lack of financial resources. It was agreed that ICAO EUR/NAT Office should organise a special language proficiency workshop for these States in one of the Central Asian States in order to facilitate the participation of these States' representatives.

4.125 It was agreed that the ICAO Regional Director, in coordination with one of the States from Central Asia, would initiate a Special Implementation Project (SIP) and make all necessary arrangements to conduct this workshop as early as possible in 2008. In this respect and in support of the Strategic Objective A – Safety, the Group agreed as follows:

**EANPG Conclusion 49/31 - Language proficiency requirements implementation workshop**

That:

- a) the ICAO Regional Director initiate a Special Implementation Project (SIP), in order to conduct, in early 2008, a workshop to assist States from the Eastern part of the ICAO EUR Region in implementing the ICAO language proficiency requirements, and
- b) States arrange for participation, at the workshop, of their representatives in charge of the implementation of the language proficiency requirements (national coordinators).

*Language Proficiency Testing Requirements*

4.126 The Group recalled that the Assembly Resolution A36/11 also proposed that ICAO establish globally harmonized language testing criteria. In order to contribute to globally harmonised language testing criteria and to assist States in the ICAO EUR Region to select (or develop) a test to meet the ICAO language proficiency requirements, the COG ATM Training Task Force formulated several recommended practices to select (or develop) such a test (Appendix xx to the Report refers). Thus, the Group, in support of the Strategic Objective A – Safety, agreed on the following:

**EANPG Conclusion 49/32 - Recommended practices to select (or develop) a language proficiency test**

That:

- a) States be invited to use “Recommended practices to select (or develop) a language proficiency test to meet the ICAO language proficiency requirements”, presented in **Appendix Q** to this report, in order to assess the language proficiency of air traffic controllers and pilots in supporting global harmonized testing criteria; and

- b) the Regional Director of the ICAO EUR/NAT Office circulate the Recommended practices to select (or develop) a language proficiency test to all States concerned and make arrangements to publish them on the ICAO EUR/NAT Office Website.

*Action Plan to assist States in implementing the language proficiency requirements*

4.127 The Group noted that the Recommended Action Plan to assist States in implementing the ICAO language proficiency requirements continued to be regularly updated. The new proposed version of the Action Plan is at Appendix n to this Report. The new version outlines activities which States should undertake in response to the outcome of the 36th Session of the Assembly (Montreal, 18-28 September 2007).

4.128 In this respect, and in support of the Strategic Objective A – Safety, the Group agreed as follows:

**EANPG Conclusion 49/33 - Updated version of the EUR Region recommended action plan to assist States in implementing the ICAO language proficiency requirements**

That:

- a) States be invited to use the updated version of the Recommended ICAO EUR Region Action Plan presented in **Appendix R** to this report; and
- b) the Regional Director of the ICAO EUR/NAT Office make arrangements to continue to update the Recommended Action Plan and post it on the ICAO EUR/NAT Web site.

**AERONAUTICAL INFORMATION SERVICES**

*Aeronautical Information Management (AIM)*

4.129 The meeting recalled that the 11th Air Navigation Conference (ANC/11) held in Montreal in 2003 endorsed the ATM Operational Concept and recognized that in the global ATM system environment envisioned by the operational concept, aeronautical information service (AIS) would become one of the most valuable and important enabling services. As the global ATM system foreseen in the operational concept was based on a collaborative decision-making (CDM) environment, the timely availability from authorized sources of high quality electronic aeronautical, meteorological, airspace and flow management information would be necessary. The extensive sharing of information encourages collaborative decision-making, thereby allowing air traffic management to optimize efficiency in the conduct of its operations. The ANC/11 stressed out that aeronautical information services (AIS) and meteorological services (MET) are subsets of the ATM information requirements and therefore, would need to be fully addressed when developing ATM requirements.

4.130 To ensure the cohesion and linkages between different components of the operational concept and to accomplish the role of AIS, the ANC/11 recognized the need for the interchange and management of aeronautical information to be used by different services and users, while taking into account interoperability of existing and future systems.

4.131 Based on the above, the ANC/11 through Recommendation 1/8 recommended that ICAO define requirements for safe and efficient global aeronautical information management; adopt a common aeronautical information exchange model; and develop new specifications for Annexes 4 and 15.

4.132 The meeting recalled that the Global AIS Congress held in Madrid in 2006 agreed that, in order to prevent diverging developments in the future and realising the safety critical nature of aeronautical information, it is considered essential that ICAO takes the lead at the global level with regard to the

transition from AIS to AIM. The Congress agreed that the EUROCONTROL Document “From AIS to AIM – a Global Strategy” made available to the Congress constituted a firm basis for further debate, which could assist ICAO in facilitating global change.

4.133 The recommendations of the Congress are at **Appendix S** to this report.

4.134 The meeting noted that to maintain the momentum for change, a “mini Global AIS Congress” was held in Brussels in June 2007 with the main theme “Global AIM”. Two more “mini-Congresses” are planned possibly ahead of a second main Congress in 2010, i.e.: “Quality AIM Congress” would be held in Singapore in June 2008 and “Implementing AIM Congress” would be held in South Africa in the spring of 2009.

4.135 The meeting recalled that Portugal on behalf of forty-three ICAO Contracting States, comprising the European Community and its member States, members of the European Civil Aviation Conference and EUROCONTROL, presented a working paper on AIM to the 36th ICAO General Assembly. This paper outlined the need for a strategic evolution towards Aeronautical Information Management (AIM), building on the AIM Concept. It explained the progress achieved so far, the general support expressed at the June 2006 AIS Global Congress and presented the recommendations required to achieve a uniform and efficient aeronautical information management structure to support all phases of flight. The working paper was strongly supported, and the need for the ICAO Secretariat to support the recommendations of the AIS Global Congress was highlighted. Accordingly, it was recognized that to satisfy new requirements arising from the Global ATM Operational Concept, aeronautical information services (AIS) must transition to the broader concept of aeronautical information management (AIM). It was agreed that there was a need for an AIM strategy and concept in this respect.

4.136 The meeting noted that the most important changes to move from AIS to AIM are the transition from a product-centred service to the provision and management of data in an interoperable form sufficient for end use, and the broadening of scope in terms of information coverage. In this respect, in order to satisfy user requirements for Gate-to-Gate operations, an enlarged scope of aeronautical information would be needed. Accordingly, MET, FIS, ATM system status, demand and capacity management, etc, are all of concern to AIM alongside the other traditional AIS information categories.

4.137 Though the transition from a product-centric (current AIS) to a data centric (AIM) service is essential, it is foreseen that AIM will still have to cater for the provision of traditional AIS products during the transition phase.

4.138 The meeting recognized that the transition from AIS to AIM will raise a number of legal and institutional issues which should be resolved. In this regard, the meeting noted that an ICAO World wide Symposium on Enabling the Net Centric Information Environment will be held in Montreal beginning of June 2008. It's expected that this Symposium will address, inter-alia, the legal and institutional issues related to the transition from AIS to AIM.

4.139 In line with Recommendation 7 of the Global AIS Congress and as a pre-requisite for the transition to AIM, the meeting agreed that States that have not yet done so, should give high priority to the implementation of existing Annex 15 SARPs in particular WGS-84, Quality Management System and automation.

4.140 Recognizing that not all States or regions can transition immediately to AIM, the meeting was of view that implementation should be evolutionary, based on regional needs. The transition will be supported by the Global Air Navigation Plan, regional plans and State implementation plans, which also describe the progressive intermediate steps. The plans of all States and regions need to be aligned to ensure, to the greatest extent possible, that solutions are internationally harmonized and integrated and do not unnecessarily impose multiple equipment carriage requirements in the air components of the ATM system, or multiple systems on the ground.

4.141 The meeting noted with appreciation the work done within the framework of EUROCONTROL related to AIM and agreed that this represents a very good basis for the development of AIM related SARPs and Guidance Material. However, it was noted that a number of issues have to be clarified/refined during the process of development of AIM related SARPs and Guidance Material, inter-alia, a clear definition of AIM, broaden scope of AIM and related legal and institutional issues i.e.: responsibility, liability issues, etc. Accordingly, the meeting was of view that the creation of a global forum (multi-disciplinary group) with the leadership of ICAO is necessary to show ICAO commitment to follow up on the Recommendations of the Global AIS Congress. This will provide also global participation and transparency in the development of AIM related SARPs and guidance material.

4.142 Based on the above the meeting developed the following Conclusions and Decision:

#### **EANPG Conclusion 49/34 – Strategy/Roadmap for the Global Transition from AIS to AIM**

That, with a view to expedite the transition from AIS to AIM in a global and harmonized manner, EANPG invites:

- a) ICAO to consider the creation of a multi-disciplinary group in order to, inter-alia:
  - i) develop a global strategy/roadmap for the transition from AIS to AIM; and
  - ii) prepare new AIM related SARPs and guidance material based on the AIM documents developed by EUROCONTROL, in line with the Recommendations of the Global AIS Congress; and
- b) States and international organizations (EUROCONTROL, IATA, etc) support the activities of the above-mentioned multi-disciplinary group and participate actively in the development of the AIM strategy/roadmap and related SARPs and guidance material.

#### **EANPG Conclusion 49/35 – Mini Global AIM Congresses**

That, with a view to keep pace with the developments related to the transition from AIS to AIM, States are encouraged to attend the “Quality AIM Congress” which would be held in Singapore in June 2008 and the “Implementing AIM Congress” which would be held in South Africa in the spring of 2009.

#### **EANPG Conclusion 49/36 – Pre-requisites for the Transition to AIM**

That, as a pre-requisite for the transition from AIS to AIM, States that have not yet done so, are urged to give high priority to the implementation of existing Annex 15 SARPs, in particular, WGS-84, Quality Management System and automation.

#### **EANPG Decision 49/5 – Planning for the Transition from AIS to AIM**

That, based on the ICAO Global ATM Operational Concept and in support of the Global Plan Initiative (GPI-18: Aeronautical Information), the COG AIS/MAP Project Team:

- a) include in its work programme the development of an action plan/strategy for the transition from AIS to AIM in the Eastern part of the ICAO European Region;
- b) carry out a review of the AIS parts of the EUR Basic ANP and FASID in order to introduce planning material related to the transition from AIS to AIM; and



- c) work in close cooperation with EUROCONTROL for the development of the necessary planning material.

#### *Electronic Terrain and Obstacle Data (eTOD)*

4.143 The meeting recalled the requirements related to the provision of electronic terrain and obstacle data (eTOD) introduced by Amendment 33 to Annex 15 and noted the difficulties the European States are facing to comply with the dates of applicability as specified in para. 10.6 of Annex 15.

4.144 It was recalled that the EANPG/48 meeting noted with appreciation that Italy, France and Switzerland had made some progress in the development/implementation of their eTOD programme; and was of view that the experience gained by these 3 States, if shared with the other European States, could provide a useful starting point for those that have not yet started implementation of eTOD provisions. However, since such programme is time consuming and requires a lot of resources, it was questioned if the rest of European States would be able to comply with the dates of applicability.

4.145 The meeting was apprised of the eTOD activities in Germany. It was noted in this regard that terrain data for area 1 is available and that of area 2 is partially available but for some regions with a lower accuracy than that required in Annex 15, Appendix 8, Tables A8-1 and A8-2. The meeting was informed about the project EuroDEM (European Digital Elevation Model) and noted that currently the vertical accuracy of the DTM data of EuroDEM does not meet the requirements of Annex 15.

4.146 The meeting was also apprised of EUROCONTROL's activities related to Terrain and Obstacle Data. In this regard, the meeting noted that the outcome of the first three meetings of the EUROCONTROL TOD Working Group, established in December 2006, were presented to the Sixth Meeting of the Stakeholder Consultation Group (SCG) held in Brussels 24-25 September 2007. Accordingly the SCG took the following Decisions:

- a) agreed to help promote awareness of the requirements of Chapter 10 of ICAO Annex 15;
- b) requested that the agency (EUROCONTROL) coordinate a consolidated notification for ICAO on behalf of the European States on the challenges encountered by Europe and the actions under way. In connection with the above, the meeting noted that EUROCONTROL sent a letter to ICAO HQs (D/ANB) on 19 November 2007 reflecting the outcome of the SCG/6 meeting;
- c) requested that a work programme to address the implementation of ICAO Annex 15 be developed through the TOD Working Group with the involvement of all stakeholder segments.

4.147 The meeting noted that ICAO has published "*Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information – Doc 9881*", which contains a lot of guidance material on electronic Terrain and Obstacle Data (eTOD) as well as on Aerodrome Mapping. However, it was mentioned that although Doc 9881 is a voluminous document (355 pages) containing detailed information of technical nature, some of the requirements contained in Annex 15, Chapter 10, are subject to different interpretations, since Doc 9881 did not bring clear guidance and clarifications related to these issues. Concern is raised mainly regarding the following issues:

- the precise technical needs of some of the user applications that will make use of electronic Terrain and Obstacle Data and which led to the ICAO requirements, mainly for area 2, are unclear and as a result, the validation of the user requirements must be carried out. It was mentioned in this respect that the requirements for Area 2 are most important for engine-out and accordingly, it was questioned if 45 km is a logic and cost-effective requirements for a small private aerodrome or heliport;

- the cross-border issue, mainly with regard to area 2, was identified as being in urgent need for further analysis and clarification. It was highlighted in this regard, that Area 2 can exceed Area 1 and the exceeding Area 2 may be part of Area 1 of a neighbouring State. The issue of how to collect the data needed within adjacent States was raised and the question of the liability for the data is not addressed when it is provided by a neighbouring State;
- at IFR aerodromes/heliports where a terminal control area has not been established, Area 2 shall be the area within a 45-km radius of the aerodrome/heliport reference point. It's questioned if 45 km for heliports is excessive;
- the cost recovery issue is not addressed, i.e. it is not specified if the State can charge for the provision of eTOD, taking into consideration that eTOD does not fall within the content of the State Integrated Aeronautical Information Package (IAIP). In this regard, the meeting note that the issue of cost-recovery related to the provision of eTOD might be addressed by the ICAO World wide Symposium on Enabling the Net Centric Information Environment which is expected to be held in Montreal in June 2008; and
- how the eTOD data will be provided. In this regard, concern was raised particularly regarding Amendment 34 to Annex 15 where it was requested that a page pocket may be used in the AIP to include the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) on appropriate electronic media.

4.148 The meeting was of view that even if some of the requirements contained in Annex 15, Chapter 10, are subject to different interpretations or might necessitate clarification and/or validation through safety/business cases, the implementation of eTOD should not be considered as a one block process. To the contrary, it was recommended to proceed by a step by step approach to the implementation of eTOD, which could be divided into many sub-items, particularly:

- provision of electronic terrain data for area 1 and area 4 (as of 20 November 2008);
- provision of electronic obstacle data for area 1 (as of 20 November 2008);
- provision of electronic terrain data for area 2 and area 3 (as of 18 November 2010); and
- provision of electronic obstacle data for area 2 and area 3 (as of 18 November 2010).

4.149 Based on the above the meeting developed the following Conclusions:

#### **EANPG Conclusion 49/37 – Management of National eTOD Programme**

That States, that have not yet done so, are urged to:

- a) manage eTOD implementation as a national eTOD programme supported by necessary resources, a high level policy and a detailed planning including priorities and timelines for the implementation of the programme;
- b) define the responsibilities and roles of the different Administrations within and outside the Civil Aviation Authority in the implementation process (AIS, surveyors, procedure

designers, Aerodromes, Military, National Geographic and Topographic Administrations/Agencies, etc);

- c) based on b) above, establish national Group composed of experts from all involved Administrations responsible for the development and implementation of the eTOD programme;
- d) proceed to the implementation of the eTOD programme in an evolutionary manner (step by step approach);
- e) notify ICAO of any difference to the eTOD SARPs including the applicability dates;
- f) keep the ICAO EUR/NAT Office informed of the progress made in the development/implementation of their national eTOD programme, preferably by COG/41.

#### **EANPG Conclusion 49/38 - Exchange of information/ experience related to eTOD implementation**

That, recognizing that the implementation of eTOD is considered as a global matter, which necessitates coordination and exchange of experience between States, ICAO, EUROCONTROL and other national/international organizations involved (service providers, data integrators, etc):

- a) States take advantage of the experience of those States who have already started the development/implementation of a national eTOD programme;
- b) to the extent possible, States work co-operatively especially with regard to the cross-border issue, for the sake of harmonization and more efficient implementation of eTOD;
- c) ICAO and EUROCONTROL activities related to eTOD be harmonized with a view to:
  - i) avoid duplication of efforts;
  - ii) facilitate and coordinate implementation of ICAO eTOD provisions;
  - iii) assist States in the implementation process and expedite the implementation of eTOD;
  - iv) ensure that the States from the Eastern Part of the ICAO European region be involved in the eTOD activities/developments.

#### **EANPG Conclusion 49/39 - eTOD requirements and guidance material**

That the ICAO Regional Director, on behalf of the EANPG, request EUROCONTROL develop and present to:

- a) COG/42 a draft proposal for amendment to Annex 15 related to the eTOD requirements in order to refine the current SARPs contained in Chapter 10 of Annex 15; and
- b) EANPG/50 the final version of the eTOD guidance material currently under development with a view to propose it to ICAO for global use as a complement to Doc 9881.

## METEOROLOGY

*Guidance on the use of the term “Meteorological Authority”*

4.150 The Group noted the difficulties expressed by the METG with regard to the interpretation of the term “meteorological authority” used throughout ICAO Annex 3, on the one hand, referring to regulatory functions in some cases and, on the other, referring to service provider functions. In addition, some States experienced difficulties caused by differences in the meaning of the term “meteorological authority” in the French and Russian language versions of Annex 3 vis-à-vis the English version.

4.151 The Group agreed that, in order to facilitate the proper designation of the meteorological authorities by the States, ICAO should provide guidance on the correct interpretation of the term “meteorological authority”.

**EANPG Conclusion 49/40 – Guidance on the term “meteorological authority” in Annex 3**

That, ICAO Headquarters be requested to:

- a) provide guidance on the interpretation and use of the term “meteorological authority” found throughout ICAO Annex 3 aimed at enhancing the distinction between the regulatory and service provision functions and responsibilities; and
- b) review the meaning of "meteorological authority" in the French and Russian language versions of Annex 3 in order to ensure consistency vis-a-vis its meaning in the English version.

*Status of implementation of the IAVW in the EUR Region*

4.152 The meeting noted that, as a result of the volcanic ash advisory and SIGMET tests carried out in 2006 and 2007, the response of the EUR MWO to issuing SIGMET has improved comparing with previous tests. However, a number of routing and formatting issues were yet to be resolved.

4.153 The METG through its ad-hoc group on volcanic ash had developed a plan for future tests and simulation exercises to be conducted under the supervision of the VAAC London and VAAC Toulouse. The plan included, inter alia, testing the issuance of ASHTAM/NOTAM for volcanic ash; it was also intended to check the interfaces with other stakeholders in the IAVW framework (ACCs, airlines, CFMU).

4.154 In order to ensure continuity of the tests and simulation exercises on a regular basis, the METG decided to transform its ad-hoc group on volcanic ash to a EUR Project Team on Volcanic Ash (PT/VOLC-EUR). The group formulated terms of reference and invited experts from Italy and the Russian Federation to join the Project Team. (METG Decision 17/2 refers).

4.155 EANPG agreed that, in order to increase the awareness of all stakeholders of the IAVW procedures and improve the participation in the volcanic ash tests in the EUR Region, the Regional Office should make available the results of the VA simulations and tests, together with the procedures and schedules for different types of tests, on its website.

**EANPG Conclusion 49/41 – Publishing information on volcanic ash tests on the ICAO Regional Office web site**

That, the ICAO Regional Office, assisted by the METG PT on Volcanic Ash (PT/VOLC EUR), be invited to post on its website information on:

- a) Regional test procedures for the issuance of volcanic ash advisories and SIGMET;

- b) Coordination test procedures between the MET, AIS and ATS units concerned;
- c) Schedules for the planned tests; and
- d) Results/analyses of the conducted tests.

#### *Implementation of SIGMET and AIRMET*

4.156 The Group noted that a new version of the EUR SIGMET Guide, EUR Doc 014, which has been aligned with the Amendment 74 to Annex 3, was posted on the ICAO Paris website on 26 October 2007. EANPG supported the views of the METG that, in order to ensure harmonized implementation of the AIRMET provisions throughout the Region, it was necessary to develop specific guidance on the issuance and dissemination of AIRMET. It was agreed that this guidance should be developed by the ICAO Regional Office and added to the EUR SIGMET Guide.

#### **EANPG Conclusion 49/42 – Adding guidance on AIRMET to the EUR SIGMET Guide**

That, the ICAO Regional Office develop guidance on the procedures and formats for issuance and dissemination of AIRMET information for inclusion in the EUR Regional SIGMET Guide (EUR Doc 014).

#### *Transition to an optimized regional OPMET exchange scheme (RODEX)*

4.157 The Group reviewed a proposal by METG for an optimized regional OPMET exchange scheme. It was recalled that current MOTNE system consists of 11 centres which have remained in place since the closure of the old MOTNE Loop system in 1997. The Bulletin Management Group (BMG) conducted an analysis through an established set of goals, which included items such as improvements in exchange, resilience, quality, contingency and a reduction in the cost of management.

4.158 The review looked at options, beginning with a theoretical minimum of centres as opposed to rationalising from 11 downwards. The preferred option was for a system of 3 centres, to be called Regional OPMET Centres (ROC) under a new scheme called the EUR Regional OPMET Data Exchange (RODEX). The location of each ROC would be the existing Inter-Regional OPMET Gateways, provided by Austria, France and the UK, thereby making the change transparent to other ICAO Regions, but they would have an increased Area of Responsibility within EUR Region.

4.159 Further details would be developed to enhance the existing MOTNE Centre requirements in the areas of quality, resilience and contingency arrangements. However, to take into account the agreed implementation in EUR of AMHS with a supporting sub-network such as the Pan European Network Service (PENS) with cost based on bandwidth utilisation, it was concluded that delivery from the ROC to its AoR would be matched to defined requirements for each State in order to reduce inefficient transmission and cost. This would require an electronic Regional Data Catalogue (RDC) which should contain the data set required for international distribution as defined in the FASID Table MET 2A, with the facility for each State to indicate detailed requirements.

4.160 With respect to the transition to the table-driven code forms (TDCF), the agreed solution on the coding method to be used (BUFR or XML) was still under study by the WMO and therefore it was difficult to define the exact exchange requirements. However, it was assumed that there would be a lengthy transition phase where there would be a need for both the current traditional alphanumeric codes (TAC) and the future TDCF to be converted both between States in the EUR Region and also with other ICAO Regions. In this case, the three ROCs envisaged in the new scheme would be the optimum 'Control Points' in which to perform this function.

4.161 It was expected that the MOTNE-to-RODEX transition project would be carried out within one year timeframe from January to December 2008. BMG should work in close coordination with the

proposed ROCs and with the AFSG of EANPG to ensure that all aspects of the transition are properly planned and implemented.

4.162 The EANPG endorsed the planned transition from MOTNE to RODEX and adopted the following decision:

**EANPG Decision 49/6 – Transition from MOTNE to RODEX**

That:

- a) EANPG endorse the proposed rationalisation of the current MOTNE exchange system in the EUR Region towards the new Regional OPMET Data Exchange (RODEX) system;
- b) the METG (through BMG) develop a plan and implement the required changes in co-ordination with affected centres and, where applicable, with AFSG, taking into account the need for efficient programming with the forthcoming transition to TDCF, and report progress at COG/41.

*Implementation of the new provision related to TAF in Amendment 74 to Annex 3*

4.163 The Group noted the important changes of the provisions related to the terminal aerodrome forecasts (TAF) in Amendment 74 to Annex 3 which would become applicable on 5 November 2008. The changes included the extension of the TAF period of validity from 24 to 30 hours which was necessary for the new “ultra-long-haul” operations. Amendment 74 introduced also the requirement for issuing only one valid TAF for each aerodrome at any time. It was realized that the implementation of the amended TAF provisions would require significant changes in the existing national and regional practices that needed to be well coordinated and introduced smoothly throughout the region before the applicability date.

4.164 In view of the foregoing, a plan with target dates and responsible bodies has been outlined by the METG to facilitate the transition to the new TAF procedures and regional bulletin structure, as shown in **Appendix T** to this Report. EANPG endorsed the plan and agreed on the following:

**EANPG Conclusion 49/43 – Regional preparations for the implementation of the amended provisions for TAF**

That:

- a) the Bulletin Management Group of METG be tasked to coordinate the implementation of the plan for the new TAF provisions introduced with Amendment 74 to Annex 3, as shown in **Appendix T** to this report, in time for the applicability date of 5 November 2008;
- b) the ICAO Regional Office issue amendment proposals to the EUR Basic ANP and FASID reflecting the changes to the regional procedures related to TAF well in advance to the implementation date; and
- c) the EUR States be urged to undertake the necessary preparations according to the plan and ensure timely implementation of the new TAF provisions.

4.165 The meeting noted that, along with the implementation of the new TAF procedures introduced with Amendment 74 to Annex 3, proposals for further simplifying and optimizing the TAF issuance procedures have been raised by some States and also supported by IATA. However, these proposals needed further study by an appropriate body in ICAO (it was expected that this body would be the AMOF Study Group). To initiate these studies, EANPG agreed on the following Conclusion:

**EANPG Conclusion 49/44 – Issues related to TAF period of validity and issuance time**

That ICAO Headquarters be invited to consider further optimization of Annex 3 provisions related to the period of validity and update cycle of the TAF taking into account the issues listed in **Appendix U** to this report.

*MET support to ATM*

4.166 The Group noted the on-going activities carried out by the METG (through its sub-group on MET support to ATM (METATMG)) aimed at enhancing the meteorological support for the air traffic management. It was realized that the requirements for MET support for ATM have been expanding and the METATMG has initiated a number of initiatives in order to respond to this demand.

4.167 EANPG noted in particular the expanding collaboration with EUROCONTROL concerning the development of standards for MET data link applications; development of Community Specifications (CS) on interoperability for MET products and services; development of the MET component of the SESAR ConOps; and the development of the weather exchange data model (WXXM).

4.168 The meeting noted with appreciation the proposal by EUROCONTROL to host, in coordination with ICAO and WMO, a workshop on the MET support for ATM as a follow-up of the outstanding EANPG conclusion 46/27. The workshop was tentatively planned for the 4th quarter of 2008. The preparation of the programme for the workshop was included in the METATMG work programme.

4.169 With regard to the review of new requirements, the meeting acknowledged the importance of an issue raised by IFALPA related to the current provisions in Annex 3 on the reporting of freezing rain (FZRA). Currently, these provisions covered only situations with “supercooled water droplets”. IFALPA advised that, from an operational point of view, rain falling on a frozen ground and “supercooled” freezing rain had the same effect, therefore, it was considered necessary that both events should be reported in the relevant OPMET messages. The concern by IFALPA was strongly supported by the METG and it was agreed to address this issue to appropriate body in ICAO for further study.

**EANPG Conclusion 49/45 – Reporting of freezing rain (FZRA)**

That ICAO Headquarters be invited to review the reporting of freezing rain in Annex 3 by considering conditions where non-super cooled rain might freeze when reaching the ground.

*Revised Terms of Reference of METG*

4.170 The Group reviewed a proposal for revision of the Terms of Reference of the METG prepared by the METG/17 meeting as presented in Appendix R to the Report. The proposed changes were of two types: firstly, changes aimed at updating the terminology and deleting obsolete items (e.g., texts related to the “final phase of the WAFS”); and secondly, changes aimed at aligning the METG TORs with those of the EANPG as well as establishing link to the ICAO Strategic Objectives and to the new Global Air Navigation Plan. The composition of the group was also updated and the meeting agreed that EUROCONTROL should become a member of METG. EANPG endorsed the proposal for revised TORs of the METG.

**EANPG Decision 49/7 – Revised Terms of Reference of METG**

That, the Terms of Reference of the Meteorology Group (METG) of the EANPG be revised, as shown in **Appendix V** to this Report.

## 5. MONITORING

### THE EUR REGION RVSM SAFETY MONITORING REPORT IN 2007

#### *General*

5.1 It was recalled that the EUROCONTROL Agency, acting as the EUR Regional Monitoring Agency (RMA), carries out an annual calculation of the vertical collision risk between FL 290 and FL410 to ensure that the continued operation in European airspace meets the defined safety criteria established by the ICAO European Air Navigation Planning Group (EANPG Conclusion 43/36 refers). The EUR RMA reports to the EANPG through an annual EUR RVSM Safety Monitoring Report.

5.2 To ensure that the EUROCONTROL EUR RVSM Safety Policy was being met and, in accordance with the safety objectives contained in ICAO Doc 9574, the following must be demonstrated:

- **Safety Objective 1** – That the vertical collision risk in EUR RVSM airspace due solely to technical height-keeping performance meets the ICAO Target Level of Safety (TLS) of  $2.5 \times 10^{-9}$  fatal accidents per flight hour. In the 2007 Report, the technical height-keeping risk estimate was  $0.001 \times 10^{-9}$ . This compared with an estimate of  $0.26 \times 10^{-9}$  in the 2006 Report.
- **Safety Objective 2** – That the vertical collision risk between FL 290 and FL 410 meets the ICAO overall TLS of  $5 \times 10^{-9}$  fatal accidents per flight hour. In the 2007 Report, the vertical collision risk was estimated at  $5.58 \times 10^{-9}$  fatal accidents per flight hour. This compared with the value of  $4.07 \times 10^{-9}$  estimated in the 2006 Report.
- **Safety Objective 3** – That the continuous operation of EUR RVSM has not adversely affected the overall risk of en-route mid-air collision.
- **Safety Objective 4** – That all the issues raised in the previous safety monitoring report, in this case the 2006 Safety Monitoring Report, have been satisfactorily addressed.

5.3 To provide the estimation of risk, the EUR RMA has over the years consistently applied the same model specified in ICAO Doc 9574. The following presents the principal results and issues arising from the 2007 Report. A more complete description of the 2007 assessment and details of the calculations are contained in the EUR RVSM Safety Monitoring Report 2007 produced by EUROCONTROL.

#### *Principal elements of the 2007 Safety Monitoring Report*

5.4 As noted above, four safety objectives have been defined and the Safety Monitoring Report was largely based on the evidence from the monitoring exercise. The reporting periods for the 2007 report were:

- a) 1st June 2005 to 31st May 2007 for technical height-keeping assessment;
- b) 1st December 2006 to 31st May 2007 for estimation of horizontal overlap frequency; and
- c) 1st June 2005 to 31st May 2007 for operational risk assessment.

#### *2007 Safety Monitoring Report Assumptions*

5.5 All measurements recorded by the Height Monitoring Units (HMU) of the RMA, which included traffic which may be operating as Operational Air Traffic (OAT), were used for the calculation of the collision risk model parameter Horizontal Overlap Frequency. This assumption was the same as was used in previous reports.



5.6 The manner in which zero occurrences of Assigned Altitude Deviation Reports (ADR) reported by States were used was consistent with the methodology used in the past. As noted in the 2007 Safety Report, the calculated flight hours for the airspace for which there had been no ADR reports or where irregular reporting of nil occurrences were received (a single zero occurrence report for a 12 month period) were not included in the estimation of total vertical risk. This assumption was the same as was used in previous reports.

*Total Vertical Risk estimation – Safety Objectives 1 and 2*

5.7 To assess the total vertical risk, the risk posed by technical height-keeping must be combined with the operational vertical risk. Operational risk is considered to be the risk from all sources of deviation from the assigned altitude due to operational errors and in-flight contingencies. Such deviations are calculated on the basis of operational reports of assigned altitude deviations to provide an estimate of operational vertical risk.

5.8 The increase in the overall vertical risk was dominated by the increase of the calculated operational vertical risk based on the ADRs received by the RMA. This had increased from  $3.81 \times 10^{-9}$  estimated in the 2006 Report to  $5.57 \times 10^{-9}$  estimated in the 2007 Report.

5.9 The calculation of operational risk was primarily based on the ratio of duration of assigned altitude deviations against the total number of flight hours. For this purpose, an assigned altitude deviation occurs when an aircraft reports a mode C altitude of 300 feet or more from the ATC-cleared flight level. States have been requested to submit reports on assigned altitude deviations of 300 feet or greater to the EUR Regional Monitoring Agency (RMA) safety assurance purposes (State Letter of date).

5.10 The 2007 Report indicates that human errors, which resulted in aircraft operating at un-cleared levels, had increased from the previous reporting period. With regards to pilot errors, reported causes of altitude deviations of 300 feet or more from the assigned flight level included:

- a) climb or descent without ATC clearance, including reports of pilots incorrectly commencing climb/descent based on an ATC clearance issued to another aircraft;
- b) failure to climb or descend as cleared, including level busts; and
- c) altitude insertion errors.

5.11 With regards to air traffic controller error, reported errors included:

- a) ATC clearances to incorrect flight levels;
- b) failure by ATC to detect and correct erroneous read-back of clearances from pilots; and
- c) ATC clearance for non-RVSM approved civil aircraft to operate in EUR RVSM airspace.

*Effect of RVSM on Overall Safety Risk – Safety Objective 3*

5.12 Unlike Safety Objectives 1 and 2, Safety Objective 3 relies more on qualitative analysis than quantitative calculation. The difficulties in concluding on this safety objective were further compounded by the variability in reporting of assigned altitude deviations across the region given the differences that existed in the maturity of national safety management systems. Nonetheless, Safety Objective 3 provided a useful opportunity for analysis of trends over the years since the implementation of RVSM in January 2002. As was the case for the 2006 Safety Monitoring Report, an increased trend of operational errors had been noted in the 2007 Report.

5.13 Also noted in the 2007 Report was the limited number of States who reported assigned altitude deviations on a consistent basis. Such a small sample of States may not give a true representation of the effect of RVSM on the overall safety risk.

5.14 An additional difficulty in concluding on this objective was the lack of reports of any operational errors specific to RVSM operations from interfaces between RVSM and non-RVSM airspace, or between airspaces using different tables of cruising levels.

*Issues raised in the 2006 Safety Monitoring Report – RVSM Safety Objective 4*

5.15 All the issues outstanding when the 2006 RVSM Safety Monitoring Report was released had either been resolved or were being addressed as ongoing issues in 2007 Report. Therefore, this safety objective was being met.

*Actions arising from the EUR RVSM 2007 Safety Monitoring Report*

5.16 The main cause for concern in the 2007 Safety Monitoring was the continued increase in operational errors, as reported by States. The methodology used to translate the operational error reports into risk estimates had remained the same as was used in previous reports.

5.17 As the main trends of the 2007 Safety Monitoring Report became evident, the EUROCONTROL Agency made a number of proposals for action through the 44th Meeting of its Airspace and Navigation Team (ANT) in October 2007. The proposals were adopted by the ANT and are reflected in the EANPG Conclusion 49/46.

5.18 The Group was reminded that it necessary for all States to provide the RMA with information regarding all operational errors above FL 285, whether or not they were related to RVSM. Without this information, it would only be possible to obtain a sketchy view of the risk in the upper airspace and it would be very difficult to determine trends and propose mitigation to reduce risk. With this in mind, it was agreed that action should be initiated immediately in order to reduce risk and to determine trends in order to develop mitigation.

**EANPG Conclusion 49/46 - State actions to reduce operational risk in EUR RVSM Airspace**

That, having regard to the RVSM importance, the increase in traffic and the increased trend in the operational errors (highlighted in the EUR RVSM Safety Monitoring Report 2007), States take the necessary action(s) within their administrations as follows:

- a) require operators registered in their State, to strictly adhere to the EUR RVSM operating practices and procedures as specified in the Joint Aviation Authorities Administrative and Guidance Material, Section One: General, Part 3: Temporary Guidance Leaflet No. 6, Revision 1;
- b) require operators registered in their State to strictly adhere to the flight plan requirements for EUR RVSM airspace specified in the ICAO Regional Supplementary Procedures for Europe (Doc 7030),
- c) require the ANSPS within their State to:
  - i) adhere to the EUR RVSM related procedures specified in the ICAO Regional Supplementary Procedures for Europe (Doc 7030);
  - ii) address the factors that contribute to the operational errors in the RVSM airspace;
- d) report to the RMA all deviations from assigned flight level in RVSM airspace; and

- e) report to the RMA all flights of non-RVSM approved aircraft who incorrectly insert the letter W in Item 10 of a flight plan for operation in EUR RVSM airspace.

**EANPG Conclusion 49/47 - EUROCONTROL actions to reduce the operational risk in EUR RVSM Airspace**

That, in line with the EANPG Conclusion 49/49 EUROCONTROL be invited to issue a Safety Bulletin to:

- a) address the increase in reported operational errors and flight plan errors over the previous reporting period with regards to flight operations within EUR RVSM airspace; and
- b) stress the importance of compliance with the ICAO requirements and procedures for operation in EUR RVSM airspace.

**EANPG Conclusion 49/48 - ICAO actions to reduce the operational risk in EUR RVSM Airspace**

That the Regional Director of the ICAO EUR/NAT Office be invited to circulate a State letter addressing the issues highlighted in EANPG Conclusions 49/46 and 49/47.

5.19 The EUR Regional Monitoring Agency will further evaluate the methods and assumptions used in the calculation of vertical collision risk. As it has not been possible to conclude on two of the safety objectives specified for EUR RVSM airspace, this evaluation will focus on improving accuracy of calculation and better understanding of error bounds, along with a more clear identification of risk bearing elements in the system.

5.20 The RMA will continue to work with ICAO to encourage States to continuously provide reports to the EUR RMA.

5.21 The RMA will initiate a consultation with ICAO on the best methodology to be applied in light of the experience gained in calculating vertical collision risk estimates in the EUR RVSM airspace. Any such refinement of the risk estimation must preserve the ability to clearly observe and report on historical trends of risk evolution.

5.22 The method of calculating the frequency of horizontal overlap shall be reviewed. In order to clearly identify reasons for variation of observed frequency of horizontal overlap, the Height Monitoring Units of the RMA will be updated to facilitate the analysis.

**EANPG Conclusion 49/49 - Activities of the EUR RMA**

That, the European Regional Monitoring Agency (RMA):

- a) continue its work of active monitoring of the technical risk and liaison with airspace users;
- b) continue to work with ICAO to encourage States to continuously provide reports to the EUR RMA;
- c) using inputs from States and ICAO, develop proposals on:
  - i) possible improvements to the methodology to be applied, in light of experience gained, in calculating vertical collision risk estimates in EUR RVSM airspace; and
  - ii) expanding assessments and risk mitigation measures of technical and operational risk including non RVSM airspace; and

- d) report progress to the EANPG COG.

### *Conclusions*

5.23 Of the four Safety Objectives for which evidence had been presented, it was only possible to conclude that two were being met, specifically Safety Objective 1 relating to technical height-keeping risk and Safety Objective 4 relating to issues raised in the 2006 Report.

5.24 The Group noted that, using the same basis as the calculations in the 2005 and 2006 Reports, Safety Objective 2 had not been met. Given the uncertain error bound in the risk estimation, actions would be taken to review the assumptions made and achieve a better understanding of the factors which contributed to operational errors, would improve reporting of operational errors and the treatment of operational errors in the collision risk models.

5.25 It had not been possible to conclude on Safety Objective 3, relating to continuous operation of EUR RVSM airspace not adversely affecting the overall risk. In the light of the actions proposed in the above Conclusions, a further assessment on this objective would be made in the next reporting period.

5.26 Finally, the Group had noted that the principal driver for the estimated increase in overall vertical collision risk was due to that portion of the risk derived from operational errors. The Group had agreed that pressing actions were required to reduce the number of operational error being reported. Such measures included providing feedback to States and operators as to what had been observed.

## **6. DEFICIENCIES**

### *Safety related deficiencies*

6.1 The Group noted that as a follow-up of the ALLPIRG Conclusion 5/14 and EANPG Conclusion 48/9 the Regional Office developed the EUR/NAT Deficiency Database which was posted on the ICAO Paris website on 5 June 2007.

6.2 It was recalled that the identification and reporting of the air navigation deficiencies by the PIRGs has been conducted according to the Uniform Methodology adopted by the ICAO Council on 30 November 2001. According to the Uniform Methodology deficiencies have been defined as non-compliance by a State or a group of States with ICAO SARPs or with a regional procedure/facility specified in the Regional ANP.

6.3 It was further recalled that States “owning” deficiencies should develop corrective action plan and submit it to the ICAO Regional Office as soon as the deficiency has been identified and included in the list. EANPG should review the status of the corrective actions at each meeting and decide about keeping or removing the deficiency from the database.

6.4 To facilitate the preparation by the States of the corrective action plans, the EANPG deficiencies database has been reorganized to include separate “Deficiency – State” entries and respective reports that would be sent to States for validation of the corrective action taken. States would be urged to provide detail on the responsible body and the target date for elimination of the deficiency. The presentation of the deficiency database on the web will be amended accordingly.

*Removal of deficiencies from the database*

6.5 While reviewing the deficiencies endorsed by EANPG/48 for filing in the database, it was identified that, according to the Uniform Methodology, two of the items did not qualify as deficiencies, as follows:

- a) Radiated interference from certain A 320 a/c blocks the use of VHF com frequency 135.985 MHz.
- b) The radio spectrum situation is of critical nature. There is a need to take more effective planning action to avoid a crisis situation.

6.6 Both issues, while their importance should not be underestimated, can not be pursued through the established mechanisms of elimination of deficiencies which requires a particular structure. Therefore, it was agreed to remove them from the EANPG deficiencies database and task COG to monitor these two issues, identify any progress and report back to EANPG/50 with an update.

*Nicosia FIR ATS Coordination Procedures Deficiency*

6.7 The Group considered the safety situation in the Northern part of the Nicosia FIR that had been identified as such by EANPG/48. Despite the complex political situation, it was agreed that the current situation in that particular airspace raised significant safety concerns from the international community.

6.8 Turkey requested to be deleted from the Deficiency List on the above subject and informed the meeting that they sent two letters to the ICAO EUR/NAT Office highlighting their position. From Turkey's point of view, although the deficiency may reflect a real problem, it should be agreed that it did not concern Turkey. In their view, the root of the problem was mainly political, under the concern of the two communities existing in Cyprus which should cooperate and find a solution.

6.9 The Secretariat presented the Group with a brief overview of the situation, underlying the position of the United Nations and the Security Council Resolutions on this matter. Previous and current efforts made by various international organisations including ICAO, Eurocontrol and European Commission were also introduced to the meeting. Despite the efforts spent, this long lasting situation still existed and constituted a continuous and serious threat to the safety of the operations. When considering the provisions of the ICAO Annexes and those of the European Air Navigation Plan, it was recognised that the situation in the area fully qualified as a deficiency.

6.10 IATA and IFALPA stated their major concerns regarding the safety of operation in the area and urged all concerned parties to sit together and find an acceptable solution to this issue. The EC supported the situation presented by the Secretariat and agreed with the statement made by the airspace users' organisations. It underlined the fact that this safety issue was under the agenda of the negotiations taking place between Turkey and EC concerning the candidature of Turkey to the EU.

6.11 The ICAO EUR/NAT Regional Director addressed and invitation to all parties concerned, mainly Cyprus and Turkey, EC and international organisations: Eurocontrol, IATA, IBAC, IFALPA to consider participation to a meeting of States, to be organised in 2008. Cyprus welcomed the ICAO initiative and confirmed their readiness to participate in such event.

6.12 Turkey made the following statement:

“With reference to DEF-5, Turkey sent several official letters to EUROCONTROL in April and May 2006 respectively.

In order to negotiate on the alleged safety matters in the region, Turkey invited EU, EUROCONTROL, IATA and the Turkish Republic of Northern Cyprus (TRNC) to meet in Ankara. Unfortunately, EU, EUROCONTROL and IATA could not decide on a common convenient date for this invitation.

IATA brought out this issue to the attention of ICAO and on the agenda of EANPG 48. Unfortunately, Turkey could not be represented at EANPG/48, but sent an official letter dated 27 Nov 2006, to ICAO Paris Office. The letter was clearly indicating the position of Turkey and included explanations clarifying the reasons why the EANPG should have not been involved in this political rather than technical issue. However, in the absence of Turkey and despite our official objections, it was decided to include this issue as a deficiency.

Following the meeting, Turkey sent another letter dated 20 Apr 2007, asking how this decision was taken and why the position of Turkey was not reflected in the relevant documents. No reply has yet been received From ICAO on this issue.

Turkey, once again, indicates here at EANPG/49, that this highly sensitive and rather political issue is certainly not the concern of technical parties. On the other hand, as it is evaluated as a technical one, it should be discussed between Nicosia and Ercan ACCs. Ercan ACC has its complete technical infrastructure, experienced staff and serving the air traffic for 30 years, in compliance with ICAO SARPs.

Since the neighbouring ACC of Ankara is Ercan Control Centre, and both of them have standard coordination equipment and procedures put in place, it should be better that Nicosia ACC find technical solutions and means of coordination with Ercan.

It is better to underline that the DEF-5 is not a deficiency to be attributed to Turkey, as it is caused by the lack of coordination between Ercan and Nicosia ACCs.

If the main concern is safety, all related parties should encourage Nicosia to find the ways of Coordination with Ercan ACC.

Turkey also would like to indicate that, TRNC has its own sovereignty rights over the lands and territorial waters and also the right to provide services to the traffic evolving within the Ercan Advisory Airspace. In this regard, it should be recognised that TRNC should be invited in international meetings as being one of the related parties of ATS community within the region.”

*Adding new deficiency to the database*

6.13 The Group considered the concerns expressed by the EUR RMA with respect to the number and quality of the height monitoring reports received from States which might not be an accurate reflection of the actual operating environment. In this respect, the EANPG agreed that the non-reporting of the height monitoring data by a State should be considered as a deficiency related to non-compliance with the ICAO Standard set up in Annex 11, 3.3.5.1, as well as, the EUR RVSM Safety Policy set up in accordance with ICAO Doc 9574.

6.14 It was agreed that this new deficiency should be filed in the database in respect to all States listed as “non-reporting” in the EUR RVSM Safety Monitoring Report prepared by Eurocontrol.

*Updated list of deficiencies*

6.15 The EANPG agreed to a proposed change of the text made by the Russian Federation and supported by the Interstate Aviation Committee, on behalf of their member States, concerning the remark column of the “Harmonisation of flight levels” deficiency.

6.16 In view of the foregoing EANPG endorsed the updated list of deficiencies generated by the database as presented in **Appendix W** to this Report and agreed the following conclusion:

**EANPG Conclusion 49/50 – Deficiencies Data Base**

That:

- a) EANPG agrees the new structure of the deficiencies data base as proposed by the Secretariat;
- b) EANPG agrees the updates of the content of the data base (sections 01 – 03); and
- c) States be invited to comment by 31 January 2008 on the deficiencies identified under section 04 of the data base on the understanding that no reply would be interpreted as confirmation of the listed deficiencies.

**7. ANY OTHER BUSINESS***AIG Divisional meeting:*

7.1 The Meeting was informed that the Accident Investigation Group (AIG) Divisional Meeting will be held from 13 to 18 October 2008 in ICAO HQ, Montreal.

*CCAMS development*

7.2 The Meeting noted the information on the ongoing issues with the Originating Region Code Assignment Method (ORCAM) system and on a progress of the Centralised Code Assignment and Management System (CCAMS) Implementation Project. Developed as a solution to the problems being encountered with the ORCAM, the project to implement the CCAMS made good progress since November 2006.

7.3 As a result of the phase implementation strategy, there will be a transition period lasting at least three years when a number of ICAO EUR Region states are operating within the CCAMS and a number who are still applying ORCAM. The Meeting has noted that discussions are ongoing on how best to introduce the CCAMS into the current ORCAM system and how to manage the transition period.

*New aircraft accident prevention and investigation course*

7.4 The Member for Czech Republic informed the meeting on the new aircraft accident prevention and investigation course which would take place in Prague, Czech Republic, 14-25 April 2008. More information about this event could be found on the website: [www.scsi-inc.com](http://www.scsi-inc.com)

*Senior Management meeting*

7.5 Azerbaijan requested the Meeting to invite ICAO to organise a workshop addressed to Senior Management representing the states in the Black Sea and South Caucasus area, in 2008, to address the following :

- strategic planning and implementation; and
- International relations.

*EANPG work programme and associated task list*

7.6 The Group agreed on its work programme as contained in **Appendix X** to this report.

*EANPG Handbook*

7.7 The Group agreed to the EANPG handbook required an update to take into account the new activities carried out and the current structure of the working groups (contributory bodies) reporting to EANPG. It agreed to task COG to carry out a revision exercise, taking good care of the expected changes in the terms of reference of the PIRGs to be agreed by the ICAO Council. A revised version of the EANPG handbook was to be expected to the next EANPG (EANPG/50).

*EANPG Next Meeting*

7.8 The Group agreed to convene its 50th Meeting in the European and North Atlantic Office of ICAO, Paris on the first week of December 2008.



**Appendix A – List of Participants***(Paragraph 0.2 refers)***CHAIRMAN**

Mr Dirk NITSCHKE\*

**ALGERIA**

Mr Mamar KIDOUCHE

Mr Omar ZOUAOU

**BALTIC STATES\*** (*Estonia\*, Latvia, Lithuania*)Mr Viktor POPOV (*Estonia*)Mr Kazimieras JAKAS (*Lithuania*)**BELARUS \***

Leanid CHURO

Tatiana PANACHEVNAYA

**BENELUX\*** (*Belgium\*, Netherlands, Luxembourg*)Mr Roland MOINEAU (*Belgium*)**BULGARIA**

Plamen Ivanov TASEV

**CAUCASIAN STATES\****(Armenia, Azerbaijan, Georgia)*Mr Bala MIRZAYEV (*Azerbaijan*)Mr Giorgi EDISHERASHVILI (*Georgia*)Ms Natali ASLAMADZE (*Georgia*)Mr Vladimir GOGASHVILI (*Georgia*)Mr Igor GORDIENKO (*Georgia*)Mr Nino KVASHVADZE (*Georgia*)**CENTRAL ASIAN STATES\*** (*Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan*)Mr Yury SOLOMONIK (*Kyrgyzstan*)Mr Karim BUTABAEV (*Kyrgyzstan*)Mr Neymatulla SAHIBOV (*Tajikistan*)Mr Tadjieva GUZAL (*Uzbekistan*)Mr Alisher Khamidovich ASHUROV (*Uzbekistan*)Mr Igor TARASOV (*Uzbekistan*)**CYPRUS**

Mr Nicos NICOLAOU

**CZECH REPUBLIC \***Mr Ladislav MIKA\* (*EANPG Vice Chairman*)**FRANCE \***

Ms Geneviève EYDALEINE\*

Mr Denis LEMARCHAND

Mr Denis BOUVIER#

Mr Bertrand HURON#

Mr Denis LAMBERGEON#

Mr Olivier MROWICKI#

**GERMANY \***

Mr Bernd RANDECKER

Mr Michael HOVENBITZER#

Mr Bodo HEINZL#

Mr Erland LORENZEN#

**GREECE \***

Mr Vasileios TAGKALOS

**IRELAND \***

Mr Donie MOONEY

**ITALY \***

Mr Pierluigi D'ALOIA \*

Mr Alessandro GHILARI

**NORDIC STATES \****(Denmark, Finland, Norway\*, Sweden)*

Mr Geir INGEBRETHSEN

**POLAND**

Mr Piotr GOZDZIK

Mr Andrzej GIEROCZYNSKI

**PORTUGAL \***

Mr Carlos ALVES\*

Mr Abel PARAIBA

Mr Artur VENTURA

**REPUBLIC OF MOLDOVA**

Mr Iurie ZIDU

Ms Silvia RAILEAN

**ROMANIA**

Mr Mihai NECULA  
Mr Stefan Adrian IRIMIE  
Mr Traian COMSA

**RUSSIAN FEDERATION \***

Mr Vasily TOPCHIEV  
Ms Anri VERESHCHAGIN  
Mr Sergey POGREBNOV  
Ms Galina SAVINA  
Ms Elena STEPANOVA  
Mr Yury TOKAREV  
Ms Elena GRACHEVA

**SERBIA**

Ms Branislava CULAJEVIC  
Milan LEZAIC  
Nikola STANKOV

**SLOVAKIA**

Augustin KLUS  
Miloslav DANIHELK  
Marian MIHALUS

**SWITZERLAND \***

Mr Beat BAUMGARTNER  
Mr Bernard SCHWENDIMANN

**TUNISIA**

Mr Hatem OUESLATI  
Mr Mhamed HJAIEJ

**TURKEY**

Ms Gaye Betül DOĞAN  
Mr Ridvan CINKILIC  
Mr Ayhan ÖZTEKİN

**UKRAINE \***

Mr Dmytro BABEYCHUK  
Mr Aleksiy PESTERNIKOV  
Mr Vitaliy SIMAK

**UNITED KINGDOM \***

Mr Phil ROBERTS\*  
Mr Gordon REID

**UNITED STATES**

Mr Daniel VACA

**EUROCONTROL**

Mr Istvan BOZSA  
Mr Anders HALLGREN  
Mr Toni LICU  
Mr David MARTEN  
Mr Ken REID  
Mr Joe SULTANA

**EUROPEAN COMMISSION**

Mr Alfonso ARROYO

**IAC**

Mr Oleg ERMOLOV

**IATA**

Mr Günter MARTIS

**IBAC**

Mr Patrick EXPERTON

**IFALPA**

Mr Christian DENKE

**IFATCA**

Mr Patrik PETERS

**NATMC**

Mr Javier CRIADO

**ICAO**

Mr Karsten THEIL #  
Mr George FIRICAN  
Mr Michel BELAND  
Mr Dimitar IVANOV  
Mr Victor KOURENKOV  
Mr Ekhan NAHMODOV  
Mr Herman PRETORIUS  
Mr Mohamed SMAOUI  
Mr Jacques VANIER  
Mrs Nikki GOLDSCHMID  
Mrs Patricia CUFF

\* Member

#part time

**Appendix B**  
**- Proposal for Amendment to ICAO Annex 10 –**  
**Aeronautical Telecommunications, Volume II –**  
**Communication Procedures Including those with PANS Status**

*(Paragraph 4.6 refers)*

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*5.2.2.1 Communications watch/Hours of service*

5.2.2.1.1 During flight, aircraft stations shall maintain watch as required by the appropriate Authority and shall not cease watch, except for reasons of safety, without informing the aeronautical station(s) concerned.

5.2.2.1.1.1 ~~Aircraft on long over water flights, or on flights over designated areas over which the carriage of an emergency locator transmitter (ELT) is required, shall continuously guard the VHF emergency frequency 121.5 MHz, except for those periods when aircraft are carrying out communications on other VHF channels or when airborne equipment limitations or cockpit duties do not permit simultaneous guarding of two channels.~~

5.2.2.1.1.2 Aircraft shall continuously guard the VHF emergency frequency 121.5 MHz in areas or over routes where the possibility of interception of aircraft or other hazardous situations exist, and a requirement has been established by the appropriate authority.

~~5.2.2.1.1.3 **Recommendation.** Aircraft on flights other than those specified in 5.2.2.1.1.1 and 5.2.2.1.1.2 should guard the emergency frequency 121.5 MHz to the extent possible.~~

5.2.2.1.1.4 The user of the air-to-air VHF communications channel shall ensure that adequate watch is maintained on designated ATS frequencies, the frequency of the aeronautical emergency channel, and any other mandatory watch frequencies.

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**Appendix C****- Proposal for amendment to the EUR Regional Supplementary Procedures (Doc 7030/4) -  
Use of Secondary Surveillance Radar (SSR)***(Paragraph 4.8 refers)***NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENTS**

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

- |  |                                   |
|--|-----------------------------------|
| 1. <del>Text to be deleted is shown with a line through it</del>   | text to be deleted                |
| 2. <b>New text to be inserted is highlighted with grey shading</b>   | new text to be inserted           |
| 3. <del>Text to be deleted is shown with a line through it</del> followed by the replacement text which is highlighted with grey shading | new text to replace existing text |

9.0	USE OF SECONDARY SURVEILLANCE RADAR (SSR) (P-ATM, Chapter 8); P-OPS, Vol. I, Part VIII)
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## 9.1 Area of application

9.1.1 The procedures provided below shall be applicable within the EUR Region, as well as in Alger, Canarias, Casablanca and Tunis FIRs.

*Note.— Alger, Canarias, Casablanca and Tunis FIRs are in the AFI Region; however, Alger, Canarias and Casablanca FIRs are part of Originating Region Code Assignment Method (ORCAM) Participating Area (PA) South-West (new PA EUR-A) and Tunis FIR is part of ORCAM PA South-East (new PA EUR-D).*

### 9.1.2 Operation of transponders

9.1.2.1 When it is necessary to stop IFF/SIF transponders from replying on Mode A/3, pilots shall be requested to switch off Mode 3 (see 9.4.1, “STOP SQUAWK MODE THREE”). In no case shall they be requested to switch to STANDBY, since operation of the STANDBY switch stops the IFF/SIF transponder from replying on all modes.

*Note. — Some military aircraft are required to operate IFF transponders for non-ATC purposes simultaneously with and independently of their operation in Mode A/3 for ATC purposes.*

### 9.1.3 Operation of SSR equipment and displays

9.1.3.1 SSR-derived information shall be checked by use of special monitoring devices or by correlation of an identified primary radar blip with the appropriate SSR response.

9.1.3.2 The “all codes” setting shall be used when it is desired to display for ATC purposes all aircraft in a specified area that are equipped with SSR or IFF/SIF transponders; the “all aircraft” setting shall be used when it is desired to also display aircraft equipped with basic IFF transponders.

### 9.1.4 Assignment of SSR codes

9.1.4.1 All aircraft engaged in international flight shall be assigned an appropriate SSR code by the initial ATS unit at the beginning of the flight, if it is to be conducted under instrument flight rules. The code shall be assigned in accordance with the *Air Navigation Plan — European Region, Volume II — FASID* (Doc 7754), Part IV, Attachment H, Principles and Procedures for the Distribution and Use of SSR Codes in the EUR Region.

### 9.1.5 ~~Assignment of SSR Code A2000~~

~~9.1.5.1 Whenever an aircraft leaves SSR radar coverage or the area of applicability as defined below, the ATS unit concerned shall assign Code A2000 unless otherwise coordinated between the transferring and accepting ATS units.~~

~~9.1.5.2 The procedure provided in 9.1.5.1 shall be applicable in the following flight information regions/upper flight information regions (FIRs/UIRs): Baku, Canarias, Casablanca, Tbilisi, Tunis, Yerevan, all FIRs/UIRs within the Russian Federation, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan only, in order to avoid code conflict in other regions.~~

**Appendix D**  
**- Proposal for amendment of PANS-ATM, Doc 4444 -**  
**Use of SSR Codes in Mode S environment**

*(Paragraph 4.13 refers)*

## **8.5.2 SSR Code management**

8.5.2.1 Codes 7700, 7600 and 7500 shall be reserved internationally for use by pilots encountering a state of emergency, radiocommunication failure or unlawful interference, respectively.

8.5.2.2 SSR Codes are to be allocated and assigned in accordance with the following principles.

8.5.2.2.1 Codes should be allocated to States or areas in accordance with regional air navigation agreements, taking into account overlapping radar coverage over adjacent airspaces.

8.5.2.2.2 The appropriate ATS authority shall establish a plan and procedures for the allocation of codes to ATS units.

8.5.2.2.3 The plan and procedures should be compatible with those practised in adjacent States.

8.5.2.2.4 The allocation of a code should preclude the use of this code for any other function within the area of coverage of the same SSR for a prescribed time period.

8.5.2.2.5 To reduce pilot and controller workload and the need for controller/pilot communications, the number of code changes required of the pilot should be kept to the minimum.

8.5.2.2.6 Codes shall be assigned to aircraft in accordance with the plan and procedures laid down by the appropriate ATS authority.

**8.5.2.2.7** Where there is a need for individual aircraft identification, each aircraft shall be assigned a discrete code, except where identification is based solely on Mode S. Whenever possible, a discrete code should be retained throughout the flight.

8.5.2.3 SSR Codes shall be reserved, as necessary, for exclusive use by medical aircraft operating in areas of international armed conflict. SSR Codes shall be allocated by ICAO through its Regional Offices in coordination with States concerned and should be assigned to aircraft for use within the area of conflict.

*Note. — The term “medical aircraft” refers to aircraft protected under the Geneva Conventions of 1949 and under the Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the protection of victims of international armed conflicts (Protocol I).*

**Appendix E****- Proposal for amendment to the EUR Regional Supplementary Procedures (Doc 7030/4) -  
Carriage and operation of SSR Mode S airborne equipment***(Paragraph 4.17 refers)***NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENTS**

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

1. ~~Text to be deleted is shown with a line through it~~ text to be deleted
2. **New text to be inserted is highlighted with grey shading** new text to be inserte
3. ~~Text to be deleted is shown with a line through it~~ new text to replace existing text  
**followed by the replacement text which is highlighted with grey shading**

9.5 **Carriage and operation of SSR Mode S airborne equipment**  
(A10, Vol. IV – 2.1.5 and 2.1.6)

9.5.1 The carriage and operation of Mode S airborne equipment shall be mandatory in airspace designated by the appropriate ATS authorities pursuant to the implementation of SSR Mode S **Elementary or** Enhanced surveillance in accordance with the following requirements:

a) **SSR Mode S Elementary Surveillance (ELS)**

**1)** for IFR flights, as General Air Traffic (GAT), ~~for new aircraft with effect from 1 January 2001, and for all aircraft with effect from 1 January 2003:~~

- Level 2 transponder, as a minimum, with downlink aircraft parameter capability denoted as basic functionality ~~and enhanced surveillance functionality~~ as detailed in 9.5.2.

~~Note: — The employment of Level 4 transponders, as a minimum, with an airborne data link processor (ADLP), is envisaged as a possible future requirement in association with the extended use of Mode S data link in an integrated air-ground communications network. The earliest target date is mid 2005 and this date will be consolidated once a strategy for surveillance and communications has been defined, with due regard to an agreed minimum five-year notification period.~~

b) **2)** for VFR flights ~~conducted in Class B and C~~ in airspace as designated by the appropriate ATS authority ~~and in defined portions of Class D, E, F and G airspace where the carriage and operation of SSR transponders have already been prescribed, for new aircraft with effect from 1 January 2003, and for all aircraft with effect from 1 January 2005~~ **31 March 2008, subject to transition arrangements published by the relevant State regulatory authorities:**

- Level 2 transponder, as a minimum, with downlink aircraft parameter capability denoted as basic functionality as detailed in 9.5.2.

b) **Mode S Enhanced Surveillance (EHS)**

- 1) for IFR flights as GAT by fixed wing aircraft having a maximum take-off mass greater than 5,700 kg or a maximum cruising true airspeed in excess of 250kt in designated airspace as notified by the appropriate authority:
- Level 2 transponder, as a minimum, with downlink aircraft parameter capability denoted as basic functionality and enhanced surveillance functionality as detailed in 9.5.2.

~~Note: — A transition period of 2 years will be applied until 30 March 2007, during which a coordinated exemption policy will be applied through the EUROCONTROL Mode S Exemption Coordination Cell, as detailed in 9.5.3.~~

c) Mode S equipped aircraft shall report, automatically, basic functionality which includes **the transmission of aircraft identification (call sign used in flight) (in the form specified in item 7 of the ICAO flight plan).**

*Note 1. — The aircraft identification required above is not provided by the 24-bit aircraft address.*

*Note 2. — Level 1 transponders are not prescribed for international flights in the European Region.*

d) Mode S equipped aircraft with a maximum mass in excess of 5 700 kg or a maximum cruising true air-speed in excess of ~~324 km/h (175 kt)~~ **463 km/h (250 kt)** shall operate with antenna diversity.

9.5.2 Specific requirements for downlink aircraft parameters (DAPs) are classified, separately, as shown in Tables 2 and 3.



*Note 1. — Additional DAPs that relate to aircraft intention are currently under evaluation, in particular, selected parameters contained in BDS Register 4.0 which have been recommended for inclusion once certain technical and institutional issues have been resolved. Any further additional requirements for DAPs which may become necessary after the initial implementation of Mode S enhanced surveillance will be promulgated with due regard to an agreed minimum five-year notification period.*

*Note 2. - IAS and Mach no. are considered as one DAP (even if technically they are two separate ARINC labels). If an aircraft can provide both, it must do so.*

9.5.3 Dispensation from these requirements may be granted by the appropriate ATS authorities in accordance with the harmonized exemption arrangements, which have been coordinated on a regional basis, as follows: State regulatory authorities have delegated the EUROCONTROL Mode S Exemption Coordination Cell (ECC) to manage requests for exemption from these requirements in the following circumstances:

- a) ~~for VFR flights conducted by aircraft:~~
    - ~~— already equipped with non Mode S transponders having Mode A 4096 code capability and Mode C altitude reporting; or~~
    - ~~— when the carriage of a transponder is impracticable; or~~
    - ~~— when an exception to the requirement is authorized for a specific purpose;~~
  - b) ~~to the operators of older aircraft where airframe life remaining is shown to be less than three years from 1 January 2003;~~
  - e) ~~for IFR flights conducted by State (military) aircraft required to occasionally<sup>1</sup> operate as GAT, subject to the availability of a Mode 3/A transponder with 4096 code capability and Mode C altitude reporting. This concession should also apply, in the same circumstances, to State (military) aircraft equipped with a Mode S transponder but without the capability, either technically or operationally, to downlink the full set of prescribed DAPs.~~
- a) Where aircraft avionics do not permit the extraction and transmission of the full set of downlink aircraft parameters (DAPs).
  - b) For aircraft conducting flights, under existing rules, for the purpose of delivery or for transit into and out of maintenance bases.
  - c) For aircraft that intend to conduct only occasional IFR/GAT flights (under 30 hours per aircraft per annum).

These coordinated exemption arrangements and the operation of the EUROCONTROL Mode S ECC shall be subject to periodic review and, in the first instance, should be for a period not exceeding three years.

*Note. — Aircraft operators who are granted exemptions are advised that it will not be possible to provide the same level of ATM service as that applied to aircraft which comply with the Mode S transponder carriage and operation requirements.*

9.5.4 Operators of older aircraft that are equipped with Mode S transponders but where the avionics do not permit the extraction and transmission of the full set of prescribed DAPs shall be granted air traffic services to the maximum extent possible without penalty. However, this dispensation will be subject to review as in 9.5.3.

**Table 2. Basic Functionality**

<i>Basic functionality</i>	<i>Associated register or protocol</i>
Automatic reporting of Aircraft Identification flight identity (call sign used in flight)	BDS 2 <sub>0</sub>
Transponder Data Link capability report	BDS 1 <sub>0</sub> (enabling transponder data link capabilities to be determined)
GICB capability report	BDS 1 <sub>7</sub> (enabling registers which the transponder provides to be established)
Altitude reporting in 25-ft intervals (subject to aircraft availability)	Provision of altitude in AC field of Mode S protocol (in 25ft increments subject to installation constraints) Mode C transmission
Flight Status (airborne/on the ground)	Provision of flight status field data in the Mode S protocol
Surveillance Identifier (SI) code capability	

**Table 3. Enhanced Surveillance Functionality**

<i>Enhanced surveillance functionality</i>	<i>Associated register</i>
Magnetic Heading Speed (IAS/Mach no.) Vertical Rate (barometric rate of climb/ descend or, preferably, baro-inertial) True Airspeed (provided if Track Angle Rate is not available)	BDS 6 <sub>0</sub>
Speed (TAS) Roll Angle Track Angle Rate True Track Angle Ground Speed	BDS 5 <sub>0</sub>
Selected vertical intention	BDS 4 <sub>0</sub> (To provide ready access to information on aircraft current vertical intentions)
Barometric Pressure Setting (where readily available)	

**Appendix F****- Proposal for amendment to the EUR Regional Supplementary Procedures (Doc 7030/4) -  
24-bit aircraft address**

*(Paragraph 4.23 refers)*

**Insertion of 24-bit aircraft address in Item 18 of the Flight Plan****Amend paragraph ... as follows:**

Operators of flights intending to conduct CPDLC with ATN equipped aircraft shall insert in Item 18 of the ICAO flight plan form the aircraft address (expressed in the form of an alphanumerical code of six hexadecimal characters) preceded by CODE/.

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**Appendix G – Proposal for Amendment to PANS-ATM, Doc 4444**  
**Short-term conflict alert (STCA) procedures**

*(Paragraph 4.33 refers)*

**15.7.2 Short-term conflict alert (STCA) procedures**

...

15.7.2.1 Local instructions concerning use of the STCA function shall specify, *inter alia*:

- a) the types of flight which are eligible for generation of alerts STCA;
- b) the sectors or areas of airspace within which the STCA function is implemented;
- c) the method of displaying the STCA to the controller;
- d) in general terms, the parameters for generation of alerts as well as alert warning time;
- e) the volumes of airspace within which STCA can be selectively inhibited and the conditions under which this will be permitted;
- ef) conditions under which specific alerts the STCA function may be inhibited for individual flights radar tracks; and
- fg) procedures applicable in respect of volumes of airspace or flights for which STCA or specific alerts have has been inhibited.

15.7.2.2 In the event an STCA is generated in respect of controlled flights, the controller shall without delay assess the situation and, if necessary, take action to ensure that the applicable separation minimum will not be infringed or will be restored.

15.7.2.3 Following the generation of an STCA, controllers should be required to complete an air traffic incident report only in the event that a separation minimum was infringed.

15.7.2.4 The appropriate ATS authority should retain electronic records of all alerts STCA generated. The data and circumstances pertaining to each alert STCA should be analysed to determine whether an alert was justified or not. Non-justified alerts, e.g. when visual separation was applied, should be ignored. A statistical analysis should be made of justified alerts in order to identify possible shortcomings in airspace design and ATC procedures as well as to monitor overall safety levels.

**Appendix H**  
**- Proposal for amendment to the EUR Regional Supplementary Procedures (Doc 7030/4) -**  
**Tactical parallel offset procedures**

*(Paragraph 4.41 refers)*

*new paragraph 17.8.3:*

**17.8.3 Tactical parallel offset procedures – ATC initiated**

*Note 1— Tactical parallel offset is not a separation method, but a technique to achieve lateral distance. Horizontal separation will be based on radar or ADS-B.*

*Note 2— See PANS-ATM, 12.3.2.9 for related RTF phraseology and Annex 2 3.6.5 for communication failure procedure.*

17.8.3.1 Tactical parallel offset shall be achieved by ATC instructing an aircraft to fly parallel to a route(s), left or right, at a specified distance.

17.8.3.2 Tactical parallel offset shall only be applied to aircraft with automatic offset programming capability. A flight crew unable to comply, as a result of RNAV system limitations, shall immediately advise ATC.

17.8.3.3 The tactical parallel offset procedure shall only be used at or above established minimum flight altitudes or lowest usable flight levels and when continuous ATS surveillance service is provided. When issuing a clearance for tactical parallel offset the controller shall ensure that the offset path will remain inside controlled airspace.

17.8.3.4 Tactical parallel offset shall only be used after the last point of a SID and before the first point of a STAR.

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**Appendix I – Proposal for amendment to Part VI – Meteorology of the EUR Basic ANP  
(Doc 7754, Volume 1)**

*(Paragraph 4.42 refers)*

## **PART VI - METEOROLOGY (MET)**

### **INTRODUCTION**

1. This part of the EUR Basic Air Navigation Plan contains elements of the existing planning system and introduces the basic planning principles, operational requirements and planning criteria related to Meteorological Service for International Air Navigation (MET) as developed for the EUR Region.

2. *As a complement to the Statement of Basic Operational Requirements and Planning Criteria (BORPC) set out in Part I, Part VI constitutes the stable guidance material* and considered to be the minimum necessary for effective planning of MET facilities and services. A detailed description/list of the facilities and/or services to be provided by States in order to fulfil the requirements of the Basic ANP is contained in the EUR Facilities and Services Implementation Document (FASID). During the transition and pending full implementation of the future CNS/ATM systems, it is expected that the existing requirements will gradually be supplemented and/or replaced by the new CNS/ATM related requirements. Further, it is expected that some elements of the CNS/ATM systems will be subject to amendment, as necessary, on the basis of experience gained in their implementation.

23. The Standards, Recommended Practices and Procedures to be applied are contained in the following ICAO documents:

- a) Annex 3 — Meteorological Service for International Air Navigation, and
- b) *European (EUR) Regional Supplementary Procedures (Doc 7030), Part 4 – Meteorology.*

34. European Air Navigation Planning Group (EANPG) conclusions and ICAO operations groups conclusions shown in brackets below a heading indicate the origin of all paragraphs following that heading. EANPG conclusions and ICAO operations groups conclusions shown in brackets below a paragraph indicate the origin of that particular paragraph.

### **METEOROLOGICAL SERVICE REQUIRED AT AERODROMES AND REQUIREMENTS FOR METEOROLOGICAL WATCH OFFICES**

(FASID Tables MET 1A and MET 1B) [EANPG conclusion 46/26]

#### **General**

45. The service to be provided at the international aerodromes listed *in the Appendix to Part III of the Basic ANP* ~~FASID Table AOP 4~~ is set out in FASID Table MET 1A.

56. The service to be provided for flight information regions (FIR), upper flight information regions (UIR) and search and rescue regions (SRRs) is set out in FASID Table MET 1B.

67. Meteorological service should be provided on a 24-hour basis, except as otherwise agreed between the meteorological authorities, the air traffic service authorities and the operators concerned.

*Note. Details of the service provided should be indicated in Aeronautical Information Publications, in accordance with the provisions in Annex 15.*

## Meteorological observations and reports

~~78.~~ Half-hourly routine observations should be ~~issued for~~ made at RS (international scheduled air transport, regular use) and AS (international scheduled air transport, alternate use) aerodromes, as required in respect of operational needs, and reports issued as local reports and METAR together with local special reports. Half-hourly METAR should also be issued for any additional aerodromes, which are included in the EUR VHF VOLMET broadcast system. ~~Stations disseminating half hourly METAR are not required to issue SPECI.~~

*Note: - Provisions for the EUR VHF VOLMET broadcast system are detailed in FASID Part VII - ATS.*

~~89.~~ At aerodromes with limited hours of operation, issuance of METAR should ~~be issued~~ commence at least two hours prior to the aerodrome resuming operations, or as agreed between the meteorological authority and the operators concerned, to meet pre-flight and in-flight planning requirements for flights due to arrive at the aerodrome as soon as it is opened for use.

~~910.~~ When required, information on the state of the runway should be included as supplementary information in all METAR and SPECI.

~~1011.~~ States under whose jurisdiction off-shore structure or other points of significance in support of off-shore helicopter operations are located should, in consultation with the appropriate operators, establish or arrange for the establishment of aeronautical meteorological observing stations at suitable locations. Information of the state of the sea and sea surface temperature should be included in all METAR and SPECI from those stations.

## Aircraft observations and reports

~~1112.~~ The meteorological watch offices (MWO) designated as the collecting centres for air-reports received by voice communications within the FIR/UIR for which they are responsible, are shown in FASID Table MET 1B, Column 1.

~~1213.~~ TAF should be issued as required in respect of operational needs. They should have a period of validity of 9 hours and/or 24 hours and be issued for designated aerodromes as specified in FASID Table MET-1A.

~~1314.~~ The periods of validity for 9-hour TAF should be 00-09, 03-12, 06-15, 09-18, 12-21, 15-24, 18-03, 21-06 UTC and for 24-hour TAF 00-24, 06-06, 12-12, 18-18 UTC. The periods of validity should be adapted to the hours of operation of the aerodrome as agreed between the meteorological authorities and the operators concerned. The scheduled international exchange of TAF should be completed as follows:

- 9-hour validity period: 30 minutes before commencement of the period of validity, and
- 24-hour validity period: 6 hours before commencement of the period of validity.

~~1415.~~ The forecast maximum and minimum temperature together with their respective times of occurrence should be included in 24-hour TAF for certain aerodromes as agreed between the meteorological authority and the operators concerned.

## Landing forecasts

~~1516.~~ Trend forecasts should be issued for designated aerodromes specified in FASID Table MET 1A.

### Area forecasts for low-level flights

~~16~~17. When the area forecast for low-level flights is issued as a GAMET, the following regional procedures should be followed:

- a) the term "widespread" should be used to indicate a spatial coverage of more than 75 per cent of the area concerned;
- b) section II of the GAMET area forecast should include the following information in addition to the provisions in Annex 3:
  - 1) air mass characteristics in addition to the description of pressure centres and fronts;
  - 2) information about mean surface wind speed also for values less than 60 km/h (30kt);
  - 3) information about surface visibility of 5000 m or more together with the weather phenomena causing a reduction of visibility and inserted between the upper wind and cloud information, and
  - 4) an outlook concerning expected hazardous weather phenomena during the following validity period;
- c) the visibility and cloud base information in section II may be given in the form of visibility/cloud base categories (18 and 19 refer).

~~17~~18. Where combined cloud/visibility information is provided, this information should be in the form of visibility/cloud base categories and should be supplied for well-defined sub-areas and/or route segments. The boundaries of sub-areas and/or route segments for which forecasts for low-level flights are provided in condensed form should be published in the AIP. For each sub-area and/or route segment, the reference height to which the cloud-base information refers, should be specified.

~~18~~19. Where visibility/cloud-base categories are used in low-level forecasts these should be as follows:

- O visibility equal to or more than 8 km and cloud-base equal to or higher than 600 m (2 000 ft);
- D visibility equal to or more than 5 km but less than 8 km with cloud-base 300 m (1000 ft) or higher, or cloud-base equal to 300 m (1000 ft) or higher but less than 600 m (2 000 ft) with visibility equal to or more than 8 km;
- M visibility equal to or more than 1.5 km but less than 5 km with cloud-base equal to or higher than 150 m (500 ft), or cloud-base equal to or higher than 150 m (500 ft) but less than 300 m (1000 ft) with visibility equal to or more than 5 km;
- X visibility less than 1.5 km and/or cloud-base less than 150 m (500 ft).

The visibility/cloud-base category indicated in the forecast for a sub-area should refer to the prevailing conditions in the sub-area concerned. Cloud information should refer to clouds with a coverage of BKN or OVC.

~~19~~20. When provided in a non-GAMET form and where specific ICAO abbreviations are not available, area forecasts for low-level flights in abbreviated plain English language may be supplemented, if necessary.

~~20~~21. Area forecasts for low-level flights exchanged between meteorological offices in support of the issuance of AIRMET information should be issued for 6 hour periods commencing at 0600 and 1200 UTC with additional periods as necessary to cover the hours of operation and be available for pre-flight planning purposes three hours prior to the beginning of their validity period.



~~21~~<sup>22</sup>. Low-level forecasts should be amended where and when required. The amended forecast should also be supplied on automatic briefing facilities where these are available. In the case that the AIRMET/GAMET concept is not fully implemented, the criteria for amendments should as a minimum include the weather phenomena hazardous for low-level flights, which constitute the criteria for the issue of AIRMET. When visibility/cloud base categories are used, an amended forecast should be issued when the forecasted change of visibility and/or cloud base means that the visibility/cloud base category will change.

#### **SIGMET and AIRMET information**

(FASID Tables MET 1B, MET 3B and MET 3C)

~~22.~~ The period of validity of SIGMET messages should not exceed 4 hours. In the special case of SIGMET messages for volcanic ash cloud, the validity period should be extended up to 6 hours and an outlook should be added giving information for an additional period of up to 12 hours, concerning the trajectory of the volcanic ash cloud.

[IAVWOPSG Conclusion 1/1]

~~23.~~ In order to assist MWOs in the preparation of the outlook included in SIGMET messages for volcanic ash, the v

<sup>22</sup>~~23~~. Volcanic ash advisory centres (VAACs) Anchorage, London, Tokyo and Toulouse have been designated to prepare the required advisory information for the EUR Region and disseminate it to MWOs and ACCs concerned following notification/detection of the ash cloud. FASID Table MET 3B and FASID Chart MET 3 set out the areas of responsibility of the VAACs and the MWOs and ACCs to which the advisory information should be sent.

[IAVWOPSG Conclusion 1/1, [Conclusion 3/2](#)]

<sup>23</sup>~~24~~ In order for the VAACs to initiate the monitoring of volcanic ash from satellite data and the forecast of volcanic ash trajectories, MWOs should notify the relevant VAAC immediately on receipt of information that a volcanic eruption has occurred or volcanic ash has been observed in the FIR for which they are responsible. In particular, any special air-reports of pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud, received by MWOs should be transmitted without delay to the VAAC concerned.

[IAVWOPSG Conclusion 1/1]

<sup>24</sup>~~25~~ Selected State volcano observatories have been designated for direct notification of significant pre-eruption volcanic activity, a volcanic eruption and/or volcanic ash in the atmosphere to their corresponding ACC, MWO and VAAC. FASID Table MET 3C sets out the selected State volcano observatories and the VAACs, MWOs and ACCs to which the notification should be sent.

[IAVWOPSG Conclusion 1/13]

<sup>25</sup>~~26~~ AIRMET information should be issued by a MWO if agreed on between users and the meteorological authority concerned. FASID Table MET 1B sets out the responsible MWOs and the areas for which AIRMET information should be provided [EANPG conclusion 46/26].

#### **INFORMATION FOR OPERATORS AND FLIGHT CREW MEMBERS**

[EANPG conclusion 46/26]

<sup>26</sup>~~27~~. As far as possible, English should be among the languages used in meteorological briefing and consultation.

<sup>27</sup>~~28~~. Meteorological information for pre-flight planning by operators of helicopters flying to offshore structures should include data covering the layers from sea level to FL 100. Particular mention should be made of the expected surface visibility, the amount, type (where available), base and tops of cloud below FL

100, sea state and sea surface temperature, mean sea level pressure and the occurrence or expected occurrence of turbulence and icing.

~~28~~<sup>29</sup>. Where feasible and costeffective, automated MET/AIS systems should be used for the combined provision of MET and AIS information for pre-flight planning, flight documentation, briefing and consultation.

*Note:- Further guidance is provided in the ICAO EUR Handbook "Harmonized Access to AIS and MET Services related to pre-flight planning" (ICAO EUR Doc 010)*

## **METEOROLOGICAL INFORMATION FOR AIR TRAFFIC SERVICES UNITS**

[EANPG conclusion 46/26]

~~29~~<sup>30</sup>. Flight information centres and area control centres should be advised, as soon as possible, on SIGMET and AIRMET information, special air reports and amended TAFs referring to the related FIR/UIR and to other FIR/UIRs within a distance of 925 km (500 NM).

## **EXCHANGE OF OPERATIONAL METEOROLOGICAL INFORMATION**

(FASID Tables MET 2A and MET 2B) [EANPG conclusion 49/xx]

~~30~~<sup>31</sup>. The international OPMET data banks at Brussels, Toulouse and Vienna have been designated to serve States in the EUR Region.

~~31~~<sup>32</sup>. The OPMET information as specified in FASID Table MET 2A should be disseminated through the EUR distribution system, MOTNE, which should ensure distribution to the EUR States, to the international EUR OPMET data banks and to the uplink stations of the international satellite communication system (ISCS) and the satellite distribution system for information relating to air navigation (SADIS). The designated OPMET data banks should act also as inter-regional OPMET gateways (IROG) to ensure the availability in the EUR Region of all required OPMET data issued outside the EUR Region.

*Note:- Further guidance concerning the EUR OPMET distribution procedures and EUR OPMET data banks is provided in the ICAO "EUR OPMET Data Management Handbook" (ICAO EUR Doc 018)*

## **WORLD AREA FORECAST SYSTEM (WAFS)**

(FASID Tables MET 5, MET 6 and MET 7)

~~32~~<sup>33</sup>. FASID Table MET 5 sets out the EUR Region requirements for WAFS forecasts to be provided by WAFS London.

[WAFSOPSG Conclusion 1/2]

~~33~~<sup>34</sup>. FASID Table MET 6 sets out responsibilities of WAFSs London and Washington for the production of WAFS forecasts. For back-up purposes, each WAFS should have the capability to produce WAFS forecasts for all the required areas of coverage.

[WAFSOPSG Conclusion 1/2]

~~34~~<sup>35</sup>. WAFS products should be disseminated by WAFS London using the satellite distribution system for information relating to air navigation (SADIS) covering the reception area shown in FASID Chart CNS 4.

[WAFSOPSG Conclusion 2/2]

~~35~~<sup>36</sup>. Each State should make the necessary arrangements to receive and make full operational use of WAFS products disseminated by WAFC London. FASID Table MET 7 lists the authorized users of the SADIS satellite broadcast and location of the operational VSATs.  
[WAFSOPSG Conclusion 1/2]

## COMMUNICATIONS REQUIREMENTS

[EANPG conclusion 46/26]

~~36~~<sup>37</sup>. The satellite distribution system for information relating to air navigation (SADIS) is implemented and operated as a component of the AFS. The SADIS should provide an international point-to-multipoint service on a 24-hour basis. The SADIS should be operated so as to enable States and end users as appropriate to obtain required WAFS products. In addition, it should provide a collection and dissemination service for OPMET information in alphanumeric form where required within the area of coverage of the system. The system should be capable of expansion to carry additional aeronautical meteorological products when required.

~~37~~<sup>38</sup>. The following link design parameters are required:

- a) *Frequency*: C-band.
- b) *Capacity*: The service should provide adequate capacity to transport GRIB coded digital grid point forecast data, and OPMET data as required to all users in a timely manner. c) *Bit error rate*: Better than 1 in  $10^7$ .
- d) *Redundancy*: Provisions are required for protection against extended outages.
- e) *Error correction*: Forward error correction.
- f) *Availability*: 99.95 per cent, exclusive of solar transit outages.

~~38~~<sup>39</sup>. Day-to-day operations of SADIS are controlled and managed by WAFC London. The multi-regional SADIS Operations Group (SADISOPSG) is established to manage and further develop SADIS. Terms of reference of the SADISOPSG can be found in the ICAO SADIS User Guide available in electronic form on: [www.icao.int/anb/sadisopsg](http://www.icao.int/anb/sadisopsg).

~~39~~<sup>40</sup>. The United Kingdom is designated to implement and operate the SADIS service in accordance with the provisions given in paragraphs 37 to 39.

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## Appendix J – Present and future utilization of the aviation frequency spectrum

(Paragraph 4.43 refers)

### Capacity Projections for Aviation Frequency Bands in EUR/NAT Regions

last update 14/09/07 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

	Band	Service	Notes	Previous 4 years							Projections for next 20 years																					
				2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028		
1	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	1	1	1	1	1			
2	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	1	1	1	1	1			
3	2850 – 22000 kHz	HF COM		3	3	3	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1			
4	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	1	1	1	1	1			
5	108 – 111.975 MHz	ILS LOC/VOR + GBAS	A	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
6	111.975 - 117.975	VOR + GBAS	A	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
7	117.975 – 137 MHz	VHF COM	B	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
8	328.6 – 335.4 MHz	ILS GP		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
9	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	1	1	1	1	1			
10	960 – 1215 MHz	DME/GNSS	A	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
11	1030 MHz	SSR GA/CAS		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
12	1090 MHz	SSR AG/CAS		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
13	1215 – 1400 MHz	Primary radar		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
14	1545 – 1555 MHz	SAT COM	C	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
15	1559 – 1610MHz	GNSS		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
16	1646.5 – 1656.5 MHz	SAT COM	C	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
17	2700 – 3100 MHz	Radar (Pri Surveillance)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
18	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	1	1	1	1	1			
19	5030 – 5150 MHz	MLS	A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
20	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	1	1	1	1	1			
21	8750 – 8850 MHz	Radar (dopler)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
22	9000 – 9500 MHz	radar(ASDE+PAR)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
23	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	1	1	1	1	1			
24	15.4 – 16.6 GHz	ASDE		2	2	2	2	2	2	2	2	2	2	2	2	2	?	?	?	?	?	?	?	?	?	?	?	?	?			
25	31.8 – 33.4 GHz	ASDE		?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?			

**Note A** The pairing arrangement that links ILS, VOR, DME and MLS frequency allocations reduces the flexibility and efficiency of frequency allocations in those bands

**Note B** 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 about 2020, however the current agreed partial implementation plans (above FL 195 in 2009) will not catch up with the demand.

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

	Band	Service	Description
1	90 - 110 kHz	LORAN-C	long range air navigation system (LORAN) – C
2	130 – 526.5 kHz	NDB	non-directional radio beacon (NDB) and Locator
3	2850 – 22000 kHz	HF COM	A-G communications (HF voice and data)
4	74.8 – 75.2 MHz	Marker Beacon	radio marker beacon
5	108 – 111.975 MHz	ILS LOC/VOR + [GBAS]	ILS localizer and VOR (+ ground-based augmentation systems (GBAS) on a secondary basis)
6	111.975 - 117.975	VOR + [GBAS]	VOR (+ GBAS on a secondary basis)
7	117.975 – 137 MHz	VHF COM	A-G and A-A communications (VHF voice and data)
8	328.6 – 335.4 MHz	ILS GP	ILS glide path
9	406 – 406.1 MHz	ELT	emergency locator transmitter (ELT)
10	960 – 1215 MHz	DME/GNSS	DME and TACAN (+ GNSS on a secondary basis)
11	1030 MHz	SSR GA/ACAS	ground-air secondary surveillance radar (SSR) and airborne collision avoidance system (ACAS)
12	1090 MHz	SSR AG/ACAS	air-ground secondary surveillance radar (SSR) and airborne collision avoidance system (ACAS)
13	1215 – 1440 MHz	Primary Radar	global navigation satellite system (GNSS) and primary surveillance radar
14	1545 – 1555 MHz	SAT COM	satellite communications
15	1559 – 1610 MHz	GNSS	GNSS
16	1646.5 – 1656.5 MHz	SAT COM	satellite communications
17	2700 – 3100 MHz	Radar - Pri Surveillance	primary surveillance radar
18	4200 – 4400 MHz	RadioAlt	radio altimeter (RadioAlt)
19	5030 – 5250 MHz	MLS	microwave landing system (MLS) 'core band'
20	5350 – 5470 MHz	Radar - weather	airborne weather radar
21	8750 – 8850 MHz	Radar - doppler	airborne doppler radar
22	9000 – 9500 MHz	radar(ASDE+PAR)	airport surface detection equipment (ASDE) and other systems
23	13.25 – 13.4 GHz	Radar - doppler	airborne doppler radar
24	15.4 – 16.6 GHz	ASDE	ASDE
25	31.8 – 33.4 GHz	ASDE	ASDE

## Appendix K – Identified operational/technical and institutional/business-case issues preventing the ATN accommodation in a FANS environment

*(Paragraph 4.76 a) refers)*

### Issues and Resolutions Tables

#### 1.1 Operational/Technical Issues Table

*NB 1: The considerations in this table apply only to Link 2000+ baseline Version 1.3 (7/03/06) and do not include any pioneer a/c.)*

*NB 2: The Link 2000+ message set comprises the ATN B1 message elements supporting ACM, ACL, and AMC per paragraph 2.2.3.4, Table 2 4, of ED-110B/DO-280B, ATN B1 INTEROP Standard.*

No.	Issue	Op or Safety	Hazard / Ops effect	Resolutions
1(a)	<p>Some NAT-essential CPDLC (Ph 4) messages are not included in the requirements for Link 2000+ message set</p> <p><i>NB 1: ADG/1 agreed that, since the start of NAT Phase 4 CPDLC was now scheduled for Q1 2007, it would be wasted effort to consider Phase 3 in any detail.</i></p> <p><i>NB 2: Requirements for Regions outside the NAT will need to be addressed via the DLSG</i></p>	O/S	NAT (Phase 4) CPDLC services cannot be supported by Link 2000+ aircraft. Missing messages have been identified.	<p>ATN aircraft operating in a FANS-1/A environment must include additional messages.</p> <p>Resolution agreed.</p>

No.	Issue	Op or Safety	Hazard / Ops effect	Resolutions
1b	When carrying out the comparison of NAT-essential CPDLC (Ph 4) messages against the Link 2000+ message set, it was noted that some Link 2000+ messages are not included in the NAT Phase 4 message set. Operational advice on how these messages should be handled is needed.	O	LINK 2000+ messages not included in the NAT Phase 4 CPDLC message set have been identified.	Ground systems need to accommodate these downlink messages but uplink messages should not necessitate any accommodation requirements.  The resolution for the downlink messages identified is that Ground systems should reject them and reply appropriately, namely "MESSAGE NOT SUPPORTED BY THIS ATS UNIT"  Resolution agreed.
1(c)	Some FANS-1/A messages are not planned for NAT (Phase 4). These have been identified.	O	Not an issue for NAT/EUR but may affect other Regions	Not an issue for the NAT but may affect other Regions. Wider consultation will be performed by the ADG and the ICAO Secretariat.  For the downlink messages, the aircraft would receive a UM162 response message and display to the flight crew either SERVICE UNAVAILABLE or MESSAGE NOT SUPPORTED BY THIS ATS UNIT, depending on the vintage of the aircraft.
2	Parameter differences between ATN and FANS1/A ADS-C & CPDLC need to be considered. AFN and ATN context management parameter differences also need consideration.	O	Reduced operational flexibility.	Parameter differences have been identified between the LINK 2000+ ATN messages and the FANS 1/A messages. Further work is needed on parameter differences



No.	Issue	Op or Safety	Hazard / Ops effect	Resolutions
3a	ADS-C function is not included in the requirements for Link 2000+	O	Current NAT ADS WPR service cannot be used for position reporting by these aircraft.	<p>There were two options here:</p> <ol style="list-style-type: none"> <li>1. Use current ADS-C SARPs functionality (Doc 9705, Edition 2 + PDRs).</li> <li>2. Evolve the ADS-C SARPs to include new improvements (if feasible within one year).</li> </ol> <p>DLSG has agreed that option 2 should be followed and ADG has developed proposals for draft changes. (Ref DLSG/3, WP03)</p> <p>Resolution agreed.</p>
3b	ADS-C ATN needs to be at the appropriate quality of service (including level of integrity) for route conformance monitoring and to detect loss of separation		ATN aircraft would need different operational procedures for position reporting, because ADS functionality could not be used.	<p>Resolution to be determined. The target quality of service for ADS-C in the future environment needs to be defined.</p> <p>The ATN protected mode can provide a level of integrity equivalent to the FANS-1/A CRC algorithms (ARINC 622).</p>
4a	The requirements for Link 2000+ lack SATCOM (Data-3) capability	O	Long range communication capability, e.g., SATCOM (Data-3) is required to support oceanic use of ATN datalink.	<p>Existing ATN avionics need to be modified to add the capability to use SATCOM (Data-3) for the air/ground link. Current indications from avionics manufacturers are that, if an aircraft is already equipped for SATCOM (Data-3), then providing ATN connectivity is feasible. (NB: VDL/SATCOM [&amp; vice versa] transfers for ATN have not previously been tested).</p> <p>Need to check with Data Link Service Providers (DSPs) and others to see if there are any ground network implications. (SITA have advised that satellite Ground Earth Stations (GESSs) have had a Data-3 capability since the mid-90s). Business issues need to be considered for maintenance/selection of a network with respect to the charging mechanisms for data traffic.</p> <p>Resolution agreed.</p>



No.	Issue	Op or Safety	Hazard / Ops effect	Resolutions
4b	Consider technical implications of the transition from oceanic to domestic operations (and vice versa) – including timer and multiple sub-network connectivity issues	O/S	Disrupt continuity of communication services	Further work required to address transfers from SATCOM to VDL2 & vice versa. Need to check with DSPs and others to see if there are any ground network implications.  SITA advise that they cannot comment on this issue since no one has yet attempted to carry out such transfers between ATN subnetworks. However, they believe that, if the ATN Router is set up correctly a transfer should work as the Router should have different timer values set for the two air/ground communication media.
5	Oceanic ATN connectivity needs to be defined and tested.	O	No confidence in system performance	Regional Groups will decide how best to address this issue. Interfacing with adjacent areas must be considered.  Resolution agreed – local implementation issue.
6	ATN timers for oceanic operation need to be defined (VDL2 & SATCOM timer requirements likely to differ)	O/S	Mismatched timers would result in repeated loss of data link connection(s)	This issue has an impact on both workload and safety. Detailed study is required to determine resolution for issues such as message latency timers.
7	Consider log-on & handover sequences and mitigate FANS-1/A differences (ATN latency timer issues)	O	Disrupt continuity of communication services	Analysis of the operational steps and message exchanges differences to be performed.
8	Ground based HMI and procedures implications of possible differences in ATN & FANS-1/A message sets	O	Operational disparities	Need to cater for some message wording differences between FANS-1/A and ATN messages. Also, need to consider response attributes, use of free text, etc.  Solutions will need to be assessed for their impact on the aircraft and flight deck procedures. International guidance and criteria are needed on how and when it is appropriate to use free text.  Resolution agreed.

No.	Issue	Op or Safety	Hazard / Ops effect	Resolutions
9	Absence of CPDLC integration and automation in ATN aircraft, including auto-load and auto-trigger of reports.			[DLSG Issue. Moved to section 0.
10	Consider operational implications of the transition from oceanic to domestic operations (and vice versa), including dialogue timers.	O/S	Embedded in ED110B/DO-280B are several timers above the CPDLC application (e.g., that can discard a received message, terminate an open dialogue etc). These will need to have different values defined for the ocean and interoperability mechanisms (both air & ground) defined and implemented to reset the timers as the a/c passes from continental to oceanic airspace (and vice versa).	<p>ED-110B/DO-280B should not make timer values fixed.</p> <p>This issue should be considered in the finalisation of ED-110B/DO-280B.</p> <p>Is a static value for the LACK timer acceptable?</p> <p>Operational timers include tts, ttr, tr and latency timers - are they all needed in the aircraft?</p> <p>a) in continental airspace?</p> <p>b) In oceanic airspace?</p>

## 1.2 Strategic/Business Case/Policy Issues Table

No	Issue	Op or Safety	Hazard / Ops effect	Comments
1	<p>Not apparent when there will be a substantial volume of ATN-capable traffic on the NAT.</p> <p><i>NB 1: ATN capable aircraft are defined as those meeting the requirements of the LINK Baseline document – ref section 1.2, 4th bullet.</i></p>	O	Need sufficient traffic/demand to justify cost involved in accommodating ATN traffic.	An action was placed at DLSG/2 to obtain this data – not an ADG issue.
9	Absence of CPDLC integration and automation in ATN aircraft, including auto-load and auto-trigger of reports.	O	Potential for human error and missed reports.	<p>Not an accommodation issue at this moment because it is not a stated requirement for autoload and auto trigger of reports at this moment. DLSG should be asked to confirm this for other Regions.</p> <p>CPDLC automation is highly desirable and might be a requirement in the future.</p> <p>CPDLC automation may be required in order to meet the integrity and performance requirements for operations in a specific area.</p> <p><i>NB 2: the requirement also needs to be confirmed on DATALINK – until then it is not a firm accommodation issue.</i></p> <p><i>NB 3: Lack of CPDLC integration renders CPDLC position reporting problematic since all position data would have to be manually entered by the flight crew. This would rule out CPDLC position reporting as an alternative to ADS WPR. (It is NAT IMG's stated policy that any position data in data link position reports must be automatically entered. It is recognized that transcription errors can occur if such data is entered manually and, for safety reasons, this must be avoided.</i></p>

No	Issue	Op or Safety	Hazard / Ops effect	Comments
11	<p>The accommodation of ATN aircraft in FANS-1/A airspace will require the definition of a revised ATN baseline which should be an update of ED-110B/DO-280B in order to ensure backwards compatibility with domestic operations.</p> <p>Upgrade to the new baseline is the responsibility of States. For example, European data link operations based on the ATN baseline 1 will not require the upgrade to the new baseline.</p>	O	Need appropriate interoperability standards	<p>The issues identified in this paper indicate that an ATN baseline 2 definition is needed to define a set of data link services and applications that can be used worldwide in both oceanic and domestic airspace and that would eventually replace FANS-1/A..</p> <p>The issue resolutions, such when using static timers across regions of airspace, and follow-on NAT trials specification, under consideration by the ADG, should contribute to the validation of these interoperability standards.</p>

**Appendix L – Draft changes to the Manual of Air Traffic Services Data Link Applications  
- (ICAO Doc9694, Part III, ADS-C)**

*(Paragraph 4.76 b) refers)*

**ADS GUIDANCE MATERIAL (Draft 8 (15/8/07))**

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## Explanation of Terms

**Aircraft address.** A unique combination of 24 bits available for assignment to an aircraft for the purpose of air-ground communications, navigation and surveillance.

**Aircraft identification.** A group of letters, figures or a combination thereof which is identical to or the code equivalent of the aircraft call sign. It is used in Field 7 of the ICAO model flight plan.

**Air traffic services interfacility data communication (AIDC).** A data link application that provides the capability to exchange data between air traffic service units during the notification, coordination and transfer of aircraft between flight information regions.

**Automatic dependent surveillance (ADS-C).** A surveillance technique in which aircraft automatically provide, via a data link, data derived from on-board navigation and position-fixing systems, including aircraft identification, four-dimensional position, and additional data as appropriate. ADS-C is a data link application.

**Automatic dependent surveillance (ADS-C) agreement.** An ADS-C reporting plan which establishes the conditions of ADS-C data reporting (i.e. data required by the air traffic services unit and frequency of ADS-C reports which have to be agreed to prior to the provision of the ADS-C services).

*Note.— The terms of the agreement will be exchanged between the ground system and the aircraft by means of a contract, or a series of contracts.*

**ADS-C contract.** A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.

*Note.— The term “ADS-C contract” is a generic term meaning variously, ADS-C event contract, ADS-C demand contract, ADS-C periodic contract or an emergency/urgency alert. Ground forwarding of ADS-C reports may be implemented between ground systems.*

**ATS surveillance system** A generic term meaning variously, ADS-B, PSR, SSR or any comparable ground system that enables the identification of aircraft.

*Note.— A comparable ground-based system is one that has been demonstrated, by comparative assessment or other methodology, to have a level of safety and performance equal to or better than monopulse SSR..*

**Automatic dependent surveillance-broadcast (ADS-B).** ADS-B is a surveillance application transmitting parameters, such as position, track and ground speed, via a broadcast mode data link, at specified intervals, for utilization by any air and/or ground users requiring it. ADS-B is a data link application.

**Availability.** The ability of a system to perform its required function at the initiation of the intended operation. It is quantified as the proportion of the time the system is available to the time the system is planned to be available.

**Baseline information:** Required information upon which to measure certain type of ADS-C events (altitude change event, air speed change event, ground speed change event, heading change event and track angle change event).

**Continuity.** The probability of a system to perform its required function without unscheduled interruptions during the intended period of operations.

**Controller-pilot data link communications (CPDLC).** A data link application that provides a means of communication between controller and pilot, using data link for ATC communications.

**Data link application.** A data link application is the implementation of data link technology to achieve specific air traffic management (ATM) operational functionalities. For example, in this context the current functionalities are DLIC, ADS, CPDLC, DFIS, AIDC, and ADS-B.

**Data link flight information services (DFIS).** A data link application that allows the exchange of pertinent flight data between air and ground users.

**Data link initiation capability (DLIC).** A data link application that provides the ability to exchange addresses, names and version numbers necessary to initiate data link applications.

**Data link service.** A data link service is a set of ATM-related transactions, both system supported and manual, within a data link application, which have a clearly defined operational goal. Each data link application service is a description of its recommended use from an operational point of view.

**End-to-end transfer delay.** The period elapsed from the time at which the originating user initiates the triggering event until the time the transmitted information has been received by the intended recipient.

**Integrity.** The probability of one or more undetected errors in a completed communication transaction..

*Note.— Integrity relates to the trust which can be placed in the correctness of the information provided.*

**Operational requirement (OR).** A statement of the operational attributes required of a system for the effective and/or efficient provision of air traffic services to users.

*Note.— Explanations of other terms are provided in the Glossary and in the Data Glossaries for data link applications.*

## Glossary

ACAS	Airborne collision avoidance system
ADS-B	Automatic dependent surveillance-broadcast
ADS-C	Automatic dependent surveillance - contract
AIDC	ATS interfacility data communication
ASM	Airspace management
ATC	Air traffic control
ATFM	Air traffic flow management
ATM	Air traffic management
ATN	Aeronautical telecommunications network
ATS	Air traffic service(s)
ATSU	Air traffic services unit
CAS	Calibrated Air Speed
CPDLC	Controller-pilot data link communications
CMS	Constant Mach Speed
DFIS	Data link flight information services
DLIC	Data link initiation capability
ETA	Estimated time of arrival
FANS	Special Committee for the Monitoring and
FDPS	Flight data processing system
FIR	Flight information region
FIS	Flight information service
FL	Flight Level
FMS	Flight management system
FOM	Figure of merit
IAS	Indicated air speed
ID	Identification
IFR	Instrument flight rules
NIM	Navigational integrity monitoring
NM	Nautical miles
OR	Operational requirement
QOS	Quality of service
RTA	Required Time of Arrival
SSR	Secondary surveillance radar
TOC	Top Of Climb
TOD	Top of Descent
UTC	Coordinated universal time



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## PART III

### AUTOMATIC DEPENDENT SURVEILLANCE - CONTRACT

#### **Chapter 1** **APPLICATION OVERVIEW**

#### **INTRODUCTION**

1.1 This part of the manual contains guidance material for the automatic dependent surveillance - contract (ADS-C) application. ADS-C is the means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports. ADS-C will allow controllers to obtain position data and other information from ADS-C-equipped aircraft in a timely manner in accordance with their requirements, and will allow the aircraft to be tracked in airspace where an ATS surveillance service is not available.

1.2 The primary objective of the ADS-C application is to provide automated aircraft position and intent data for ATC. The ADS-C application may also be useful in air traffic flow management (ATFM) and airspace management (ASM).

1.3 ATM benefits from the use of the ADS-C application may include separation minima reduction, and more efficient use of airspace.

1.4 Although the application of ADS-C does not specifically encompass ATC communications, automation or procedures, all of these elements must be tailored to support the ADS-C application and to make meaningful use of the data. Therefore, it is critical to consider the ATC automation and communications systems as the foundation upon which an ADS-C based ATC system is built. The implementation of ADS-C into air traffic systems will be an evolving process. There will be a gradual transition from procedurally oriented strategic air traffic control towards a more tactical control environment.

1.5 The ADS-C application and associated communications will have to be supported by advanced airborne and ground facilities and data link communications with proven end-to-end integrity, reliability and availability.

1.6 ADS-C is one of the applications supported by the ATN.

1.7 Figure III-1-1 depicts a general overview of several components of an ADS-C system.

#### **USE OF ADS-C IN ATS**

1.8 The implementation of ADS-C, through reliable data link communications and accurate aircraft navigation systems, will provide enhanced air traffic management in oceanic airspace and other areas where air traffic control services are currently provided. The implementation of ADS-C will also provide benefits in en-route continental, terminal areas and on the airport surface. The automatic transmission of the aircraft

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position through ADS-C will replace pilot position reports by voice and/or CPDLC. The content and frequency of reporting will be determined by the controlling ATC unit. In procedural airspace, the effective use of ADS-C in air traffic services will facilitate the reduction of separation minima, enhance flight safety and better accommodate user-preferred profiles.

### **Use of ADS-C outside the coverage of an ATS surveillance system**

1.9 In oceanic and other areas which are beyond surveillance coverage, ADS-C reports will be used by ATS to improve position determination, resulting in improvements in safety, efficient utilization of airspace and improved controller efficiency. This is expected to increase airspace capacity and allow more economical routing and spacing of aircraft.

1.10 The introduction of ADS-C in airspace where an ATS surveillance system is not in use will better enable controllers to identify potential losses of separation or non-conformance with the flight plan and to take the appropriate action.

### **Transition airspace**

1.11 In transition airspace where other means of surveillance become available, provisions are required to integrate ADS-C and other surveillance information. Further information is provided in the appendix to this chapter.

### **Within radar and/or ADS-B coverage**

1.12 ADS-C will be beneficial in areas where it may serve as a supplement to, or as a back-up for radar and/or ADS-B. Further information is provided in the appendix to this chapter.

### **ADS-C related aeronautical information**

1.13 Adequate information on the operating practices having a direct effect on the operations of air traffic services should be published in aeronautical information publications. This shall include a brief description concerning the area of responsibility, requirements and conditions under which the ADS-C service is available, equipment limitations, ADS-C failure procedures if required, and the initial address(es) for each ATC Unit.

## **FUNCTIONAL DESCRIPTION**

1.14 Information received by ADS-C can assist ATC in performing the following functions:

- 1) *Safety Alerts.* The ground system processes ADS-C information and generates appropriate safety related alerts and warnings.
- 2) *Position monitoring.* The ground system processes the incoming ADS-C information and displays it to the controller for air traffic situation monitoring.

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- 3) *Conformance monitoring.* The position and projected profile reported by ADS-C is compared to the expected aircraft position and flight profile, which is based on the cleared flight plan. Longitudinal, lateral and vertical deviations which exceed a pre-defined tolerance limit will permit an out-of-conformance alert to be issued to the controller.
- 4) *Flight plan update.* ADS-C reports that contain longitudinal variations which exceed a pre-defined tolerance limit will be used to adjust expected arrival times at subsequent fixes.
- 5) *Conflict detection.* The ADS-C data can be used by the ground system automation to identify violation of separation minima.
- 6) *Conflict prediction.* The ADS-C position data can be used by the ground system automation to identify potential violations of separation minima.
- 7) *Tracking.* The tracking function is intended to extrapolate the current displayed position of the aircraft based on ADS-C reports.
- 8) *Meteorological forecasts.* ADS-C reports containing wind and temperature data may be used to update meteorological forecasts and hence expected arrival times at waypoints.
- 9) *Flight management.* ADS-C reports may assist automation in generating optimum conflict-free clearances to support possible fuel-saving techniques, such as cruise climbs requested by the operators.

### ADS-C agreements

1.15 The ATC unit controlling the aircraft should establish the composition and requirements for the transmission of ADS-C reports through an ADS-C agreement with the aircraft. This ADS-C agreement will be fulfilled by one or more contracts.

1.16 Where possible an ADS-C agreement should be established between an aircraft and the ground system prior to the entry into airspace where ADS-C is in use. An ADS-C agreement may also remain in effect for a period of time after an aircraft has exited this airspace.

1.17 Termination of an ADS-C agreement should be achieved automatically by the ground system.

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## Appendix to Chapter 1

# INTEGRATION OF ADS-C AND SSR DATA

## 1. APPLICATION OVERVIEW

1.1 The safe operation of aircraft in close proximity requires an increase in the availability of accurate positional data, in order to apply reduced separation standards and increase the airspace capacity. This material concerning the integration of ADS-C and SSR data offers guidance to achieve a single calculation of aircraft position, by processing both ADS-C and radar data (data fusion). Consequently, an enhancement of tracking algorithms may be necessary, in order to take advantage of all available surveillance sources as well as process new parameters related to aircraft motion.

1.2 The primary objective of integrating ADS-C and radar data is to take advantage of ADS-C functionality, both within areas covered by radar surveillance as well as transition areas between radar and ADS-C only coverage. Complete radar coverage in ADS-C-SSR airspace is not required, although outer horizontal limits should normally be coincident. In addition an ADS-C transition buffer zone is advisable. In areas where duplicate radar coverage is currently mandatory the integration of ADS-C data might lead to a mitigation of that requirement, as well as that for the provision of single radar coverage in areas where the installation of radar systems is not feasible or economically justifiable.

1.3 The integration of ADS-C and SSR data in areas already having multiple radar coverage will provide the system with the capability of making track quality as uniform as possible within radar-covered airspace, thus overcoming residual radar shortcomings. The integration of ADS-C and SSR data will result in the augmentation of surveillance performance in existing radar environments, as well as beyond radar coverage. –This integration will also result in a more reliable data availability for conflict detection and the conformance-monitoring function, thus reducing the probability of false alarms of this function. This will be essentially due to kinematic data measured on board and the availability of aircraft intent data.

1.4 Since the ADS-C technique relies upon the capability of an ATC Unit to set up a contract with the aircraft to send reports with appropriate content and periodicity, the contract management function will play a key role in defining the most appropriate periodicity and content to optimize the data integration. The strategy to define the best contract for this function should take into account constraints on airspace and traffic scenario, as well as aircraft flight plan and communication infrastructure performances.

## 2. SCOPE AND BENEFITS

2.1 The integration of ADS-C and SSR data can provide the following improvements to the surveillance function:

- a) automatic acquisition of certain airborne data containing parameters, such as true track, speed, etc., which will improve the ground-tracking of aircraft;
- b) availability of surveillance data when radar limitations occur. These limitations are:
  - 1) mechanical rotation of the radar antenna, and
  - 2) garbling, fruit and splitting;

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- c) coding of the altitude data in 25-foot increments and the availability of the vertical rate, as provided by ground vector or air vector, which will improve the ability of ATC to monitor and make high-quality predictions of aircraft trajectories in the vertical plane, thus improving the short-term conflict alert (STCA) function to significantly reduce the number of false alarms;
- d) automatic acquisition of aircraft call-signs by ATC system, thus overcoming current problems connected with SSR code-call sign correlation and with radar identification and transfer procedures;
- e) acquisition of surveillance data, when satellite data link is used to support the ADS-C function, also when radar shortcomings such as line-of-sight propagation limitations (e.g. shadowing by orography, earth curvature, low-level flight) become apparent;
- f) minimization of the number of SSRs required to supply mono-radar coverage, since ADS-C fills in the small areas not covered by them (“gap filler”);
- g) increase of the level of availability using ADS-C as one more level of redundancy;
- h) availability of a means for a cross-check of ADS-C with navigation data or radar integrity navigational integrity monitoring (NIM);
- i) possibility of adapting the degree of surveillance redundancy for each aircraft according to instantaneous ATC needs, thus providing redundancy in a very cost-effective manner.

2.2 In general the improvements in a) to i) above are applicable to integration between ADS-C and Mode A/C conventional and monopulse SSR. In addition the improvements in e) to i) are applicable also to integrated systems using SSR Mode-S.

### 3. PERFORMANCE CONSIDERATIONS

When considering the integration of ADS-C and SSR data, the following should be taken into account:

- a) performance requirements for ADS-C, including avail-ability and integrity;
- b) accuracy of both radar and ADS-C position reports;
- c) use of ADS-C data, for example, as part of a data fusion and not just as back-up;
- d) trajectory prediction requirements;
- e) development of a common surveillance processing system, where both the ADS-C and radar tracks may be amalgamated to generate a single system track; and
- f) synchronization of both radar and ADS-C update rates.

### 4. ADDITIONAL OPERATIONAL CONSIDERATIONS

4.1 In addition to position information, the ADS-C-SSR integration process could benefit from aircraft reporting further information, such as:

- a) ground vector: containing track, ground speed and vertical rate; and
- b) ADS-C event reports: including lateral deviation, altitude, speed and FOM change.

4.2 The use of this other data could substantially reduce the need for ADS-C periodic position reports.

## 5. ADS-C CONTRACT CONSIDERATIONS

5.1 The following criteria may have to be taken into account when defining an optimal ADS-C contract strategy:

- a) flight plans and related airspace information;
- b) radar coverage maps;
- c) communication network capabilities;
- d) aircraft capabilities;
- e) accuracy requirements;
- f) tracking needs; and
- g) amount of the route of flight, including constraints, cleared by ATS and loaded into the FMC.

5.2 It may be necessary to define different types of contract for each phase of operations namely:

- a) en-route navigation;
- b) terminal area operations; and
- c) ground movements.

## 6. EN-ROUTE OPERATIONS

6.1 For this phase of operation the main ADS-C contract could be a periodic contract (basic or basic plus ground vector or air vector, depending on aircraft capability) with a low reporting rate, because when the aircraft are flying straight and level, ground processing systems are able to achieve accurate position estimates with low rate reporting.

6.2 Use of ADS-C periodic reports containing basic information and ground vector, when available, may allow a reduction in the data rate and an improvement in tracking.

6.3 In addition, event contracts with the aircraft could allow the detection of the start of a manoeuvre. Such event contracts could indicate a change in one or more of the following parameters:

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- a) lateral deviation;
- b) altitude;
- c) vertical rate;
- d) ground speed;
- e) FOM;
- f) heading;
- g) times over metering fixes; and
- h) Ability to meet vertical, lateral, and speed constraints along the route of flight.

6.4 4 Use of event reporting could minimize the number of required periodic reports.

## **7. TERMINAL AREA OPERATIONS**

7.1 For this phase of operation the main ADS-C contract is a periodic contract (basic plus additional data, depending on aircraft capability) with a high reporting rate, since this may be necessary to satisfy the required tracking accuracy.

7.2 Use of ADS-C periodic reports with additional data (ground vector), when available, may help to minimize the reporting frequency of the required data.

7.3 It is unlikely that in this phase of operations, event reports would be necessary, since the high periodic rate would already provide a good track reconstruction capability.

## **8. GROUND MOVEMENT OPERATIONS**

When the aircraft are moving on the airport surface, the ADS-C contract could be a periodic contract with a very high reporting rate to ensure that the required tracking accuracy is met.

## **9. TRANSITION**

During transition phases and while ADS-C separations equivalent to radar separations are not yet achievable, ADS-C information could be employed as an assistance and back-up to an ATC surveillance service. If it is used as back-up, appropriate large separations may need to be taken into account.

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## **Chapter 2**

### **GENERAL REQUIREMENTS**

#### **PERFORMANCE REQUIREMENTS**

2.1 Systems developed to support ADS-C will be capable of meeting the communication performance appropriate for the phase of operation.

#### **MESSAGE HANDLING**

2.2 In addition to the general performance requirements in Part I, the ADS-C application requires:

- a) that messages are generated and sent in a time-ordered sequence; and
- b) that messages are delivered in the order that they are sent.

#### **QUALITY OF SERVICE**

2.3 The ground system must have the ability to specify the required QOS based on a user-preferred combination of message delay, cost, and permissible error rate.

#### **TIME REQUIREMENTS**

2.4 Wherever time is used in the ADS-C application, it will be accurate to within 1 second of UTC.

##### **2.4.1 Message time stamping**

2.4.1.1 All messages will be time stamped. The time stamp will consist of the date (YYMMDD) and time (HHMMSS) and will be accurate to within 1 second of UTC.

2.4.1.2 The time stamp will indicate the time that the message is released by the controller, by the pilot, or by an automated system on behalf of the controller or pilot, for onward transmission.

*Note 1.- On the occasions when the pilot or controller make a manual input which triggers sending a message (rarely when ADS-C is in use) , the time stamp will be the time at which he/she authorises the transmission of the message (eg by pressing an "ENTER" key or by activation of a message release function in an interactive display).*

*Note 2.- For messages generated by a system without human intervention, the time stamp will be the time when the ADS-C application releases the completed message to the communications system.*



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*Note 3 – This time stamp is separate from and in addition to the time in an ADS-C report.*

Secretariat Note - will be covered by amended material in Appendix A chapter 3 which, itself will be amended to reflect the contents of the Manual on RCP

### **ADS-C OPERATIONAL TIMERS**

2.5 In order to meet the more stringent of the performance requirements in Part I, the aircraft system should be capable of responding to a request for information within 0.5 second.

2.6 If the aircraft cannot respond with a reply message containing the requested information within 0.5 second, it sends a positive acknowledgement of receipt of the request, and must send the information within 30 seconds.

### **SOURCE OF ADS-C DATA**

2.7 ADS-C navigational data must be supplied by the on-board navigational equipment actually navigating the aircraft.

2.8 Information, other than predicted data, contained within an ADS-C report should be no less recent than 2 seconds or ten per cent of the periodic contract rate, if applicable, whichever is the shorter. The report time must be consistent with the data (eg position information) contained in the report .

### **ADS-C REPORT AVAILABILITY**

2.9 ADS-C reports will be made available to facilities other than the controlling ATC unit on the basis of ICAO provisions or mutual agreement.

### **ADS-C CONTRACT REQUIREMENTS**

2.10 The avionics will be capable of supporting ADS-C contracts with at least four ATS ground systems simultaneously.

2.11 The avionics will be capable of supporting one demand, one event and one periodic contract with each ground system simultaneously.

2.12 If a ground system requests a contract with an aircraft, and the aircraft cannot support any additional contracts, the aircraft will reply with the ICAO facility designators of the ground systems with which it currently has contracts.

2.13 Procedures will be established to ensure that only appropriate ATC ground systems initiate ADS-C contracts with a given aircraft.

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2.14 In the event of an unexpected termination of the ADS-C application, both the avionics and the ground system will be notified of the failure. The resumption of the ADS-C application is incumbent on the ground system.

2.15 An existing contract will remain in place until any new contract of the same type is accepted by both the avionics and the ground system, or until the contract type is terminated.

2.16 If latitude, longitude, level, time, or FOM become unavailable or are invalid, then ADS-C reports must continue to be sent with the FOM parameter set to zero. If subsequently, the information becomes valid or available, the FOM will reflect the accuracy of the information.

2.17 Should information contained in an optional requested block become unavailable or invalid, then the block will not be provided as part of the ADS-C report. If subsequently, the information becomes valid or available it must be included in the ADS-C report.

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### **Chapter 3**

## **ADS-C FUNCTIONAL CAPABILITIES**

### **BACKGROUND**

3.1 The ADS-C application is designed to give automatic reports from an aircraft to a ground system. The aircraft provides the information to the ground system in four ways:

- a) on demand;
- b) when triggered by an event;
- c) on a periodic basis; and
- d) in an emergency and/or urgency condition.

3.2 The system will be capable of distinguishing each of the four ways listed above.

### **OPERATING METHOD**

3.3 The ADS-C application comprises the following functions:

- a) establishment and operation of a demand contract;
- b) establishment and operation of an event contract;
- c) establishment and operation of a periodic contract;
- d) cancellation of contract(s); and
- e) operation of emergency and/or urgency alert.

### **ESTABLISHMENT AND OPERATION OF A DEMAND CONTRACT**

3.4 The demand contract provides the capability for a ground system to request a single ADS-C report from an aircraft and specify which optional ADS-C data is required (if any) in addition to the basic ADS-C information.

3.5 Any number of demand contracts may be sequentially established with an aircraft.

3.6 If the avionics can comply with the demand contract request, it sends the requested report.

3.7 If there are errors in the contract request, or if the avionics cannot comply with the request, it sends a negative acknowledgement indicating the contract number and the reason for rejection.

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3.8 If the avionics can partially comply with the contract request, it first sends a non-compliance notification indicating those parts of the contract it cannot comply with and the contract number. Then, it sends a second message which includes:

- a) the basic ADS-C information; and
  - b) the additional information requested which can be supplied.
- 3.9 If the extended projected profile data block is to be requested as part of the contract request, then either a time interval or the number of points to be provided is to be included in the contract request.

### **ESTABLISHMENT AND OPERATION OF AN EVENT CONTRACT**

3.10 The event contract allows the ground system to request the avionics to send ADS-C reports when the specified events occur, principally for the purpose of conformance monitoring by ATC.

3.11 The event contract request states the event types that are to trigger reports and also any required threshold values delimiting the event types.

3.12 An ADS-C event report consists of basic ADS-C information and any additional information required by the event type.

3.13 Only one event contract may exist between a ground system and an aircraft at any one time, but this may contain multiple event types.

3.14 Each time an event contract is established it replaces any event contract already in place (contract number is updated).

3.15 If the avionics can comply with the event contract request, it sends a positive acknowledgement and for level change, level range deviation, airspeed change, ground speed change, heading change, extended projected profile change and track/angle change events a baseline ADS-C report with basic information and any additional information if required by the event type. Should the contracted event occur, the required ADS-C report(s) is/are sent.

3.16 If there are errors in the event contract request, or if the avionics cannot comply with the request, it sends a negative acknowledgement to the ground system indicating the contract number and the reason for its inability to accept the contract.

3.17 If the avionics can partially comply with the request, it sends a non-compliance notification indicating the contract number and those parts of the contract with which it cannot comply. Event reports are subsequently sent only for those events with which the aircraft can comply.

3.18 Should an event for lateral deviation change, vertical deviation change, level range deviation, vertical rate change or “aircraft out of vertical boundaries” occur, a report is sent once every minute while the limit(s) specified in the contract are exceeded. These reports will cease when the event parameters return within the specified thresholds. However, they will resume as soon as the event parameters are exceeded again. For all other events, a single report is sent every time the event occurs.

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3.19 If more than one of the events described below occurs at the same time, the avionics sends separate ADS-C event reports for each event.

**Event types**

3.20 The following ADS-C event types have been defined:

- a) vertical rate change;
- b) waypoint change;
- c) lateral deviation change;
- d) level change;
- e) level range deviation;
- f) airspeed change;
- g) ground speed change;
- h) heading change;
- i) extended projected profile change;
- j) FOM (Figure of Merit) field change;
- k) track angle change;
- l) vertical deviation change; and
- m) aircraft out of vertical boundaries.

*Vertical rate change*

3.21 The vertical rate change event can be triggered in two ways. For positive vertical rate, the event is triggered when the aircraft's rate of climb is greater than the vertical rate threshold, i.e. its rate of climb is greater than expected. For negative vertical rate, the event is triggered when the aircraft's rate of descent is greater than the vertical rate threshold, i.e. its rate of descent is greater than expected.

3.22 The ADS-C vertical rate event report is sent once every minute whenever the aircraft's rate of climb/descent exceeds the value of the vertical rate change threshold.

3.23 The avionics will cease sending ADS-C vertical rate event reports when the aircraft's rate of climb/descent is less than or equal to the value of vertical rate change threshold.

3.24 An ADS-C report sent as a result of the occurrence of a vertical rate change event will contain the basic ADS-C information and ground vector information.

3.25 Figure III-3-1 illustrates a vertical rate change event.

### *Waypoint change*

3.26 Waypoint change event is triggered by a change in the next waypoint. This change is normally due to routine waypoint sequencing. However, it will also be triggered by a change in a waypoint which is not part of the ATC clearance but is entered by the pilot for operational reasons.

3.27 The ADS-C report resulting from a waypoint change event is sent once each time the event occurs.

3.28 An ADS-C report sent as a result of the occurrence of a waypoint change event contains the basic ADS-C information and the projected profile information.

3.29 Figure III-3-2 illustrates the waypoint change event.

### *Lateral deviation change*

3.30 The lateral deviation change event is triggered when the absolute value of the lateral distance between the aircraft's actual position and the aircraft's expected position on the active flight plan becomes greater than the specified left or right lateral deviation threshold.

3.31 The ADS-C lateral deviation change report is sent once every minute while the aircraft's lateral deviation is greater than the value of the left or right lateral deviation threshold.

3.32 The avionics will cease sending ADS-C lateral deviation change reports when the lateral deviation of the aircraft is less than or equal to the value of the left or right lateral deviation change threshold.

3.33 The active flight plan referenced in 3.30 above is either the cleared route contained in the aircraft's navigation system, or the route as modified by the cleared lateral offset, as specified in the contract request.

*Note: Use of the cleared route (without the lateral offset) with different left and right deviation threshold will allow for proper monitoring of an airplane deviating from the cleared route or on a weather deviation. Use of the offset route would be appropriate for monitoring an aircraft cleared on a parallel offset.*

3.34 An ADS-C report sent as a result of the occurrence of a lateral deviation change event contains basic ADS-C information and ground vector information.

3.35 Figure III-3-3 illustrates the lateral deviation change event.

### *Level change*

3.36 The level change event report is triggered when the aircraft's level differs negatively or positively from its value in the previous ADS-C report by an amount exceeding the level change threshold specified in the event contract request. If there has been no previous report, a baseline ADS-C report is sent.

3.37 The ADS-C report resulting from a level change event is sent once each time the event occurs.

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3.38 An ADS-C report sent as a result of the occurrence of a level change event contains basic ADS-C information and ground vector information.

3.39 Figure III-3-4 illustrates a level change event.

*Level range deviation*

3.40 The level range deviation is triggered when the aircraft's level is higher than the level ceiling or lower than the level floor.

3.41 The ADS-C level range deviation event report is sent once every minute when the aircraft's level is greater than the value of the level ceiling or less than the value of the level floor.

3.42 The avionics will cease sending ADS-C level range deviation reports when its level is less than or equal to the value of level ceiling and greater than or equal to the value of the level floor.

3.43 An ADS-C report sent as a result of the occurrence of a level range deviation event report contains basic ADS-C information and ground vector information.

3.44 Figure III-3-5 illustrates a level range deviation event.

*Air speed change*

3.45 The air speed change event is triggered when the aircraft's airspeed differs negatively or positively from its value at the time of the previous ADS-C report containing an air vector by an amount exceeding the air speed change threshold specified in the event contract request. If there has been no previous report containing an air vector, a baseline ADS-C report containing an air vector is sent in response to the event request.

3.46 The ADS-C report resulting from an air speed change event is sent once each time the event occurs.

3.47 An ADS-C report sent as a result of the occurrence of an air speed change event contains basic ADS-C information and air vector information.

*Ground speed change*

3.48 The ground speed change event is triggered when the aircraft's ground speed differs negatively or positively from its value at the time of the previous ADS-C report containing a ground vector by an amount exceeding the ground speed threshold specified in the event contract request. If there has been no such previous report containing a ground vector, a baseline ADS-C report is sent.

3.49 The ADS-C report resulting from a ground speed change event is sent once each time the event occurs.

3.50 An ADS-C report sent as a result of the occurrence of a ground speed change event contains basic ADS-C information and ground vector information.

*Heading change*

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3.51 The heading change event is triggered when the aircraft's heading differs negatively or positively from its value at the time of the previous ADS-C report containing an air vector by an amount exceeding the heading change threshold specified in the event contract request. If there has been no previous report containing an air vector, a baseline ADS-C report is sent.

3.52 The ADS-C report resulting from a heading change event is sent once each time the event occurs.

3.53 An ADS-C report sent as a result of the occurrence of a heading change event contains basic ADS-C information and air vector information.

3.54 Figure III-3-6 illustrates the heading change event.

*Extended projected profile change*

3.55 The extended projected profile change event is triggered by a change to any of the set of future waypoints that are included in the extended projected profile report. The initial response to the change event request includes the extended profile report as a baseline ADS-C report.

3.56 A change to the extended projected profile report occurs whenever:

- 1) The active waypoint is sequenced<sup>2</sup>,
- 2) Additional waypoint(s) or a holding pattern is inserted that is within the time or waypoint reporting parameter,
- 3) A waypoint or holding pattern that is within the time or waypoint reporting parameter is deleted.
- 4) Time has passed such that a waypoint that was not previously within the time reporting parameter is now within that time interval, subject to the 128 point maximum limit of the extended projected profile report.
- 5) The computed location of a waypoint in the report differs from the baseline calculation by more than the tolerance value for latitude or longitude change (TOL1).
- 6) A lateral offset that affects the report is entered, modified or deleted
- 7) The predicted altitude of any waypoint in the report differs from the baseline prediction by more than the tolerance value for altitude change (TOL2).
- 8) The predicted ETA at any waypoint differs by more than the greater of the tolerance value for time change (TOL3) or the tolerance value for percentage (TOL4) applied to the time to go to the waypoint.
- 9) The predicted speed or Mach at the waypoint differs by more than the tolerance value for airspeed change (TOL5).
- 10) A speed, altitude or time constraint (RTA) associated with a waypoint is modified, deleted or inserted.

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<sup>2</sup> The term "waypoint sequencing" is used to describe when the active waypoint in the route of flight changes, so that the subsequent waypoint in the route now becomes the active waypoint. This may, for example, occur when the airplane crosses a line bisecting the inbound track to and outbound track from the waypoint, or when it passes abeam the waypoint, depending on how the route is defined and how the aircraft's navigation system is implemented. In some uses, this is also called "waypoint passage".



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3.57 The tolerances used to determine the occurrence of an extended projected profile change are set in the event contract request. Suitable default values for these tolerances are:

Tolerance Parameter	Definition	Default Tolerance Value	
TOL1	The minimum change in latitude or longitude of a waypoint that constitutes an extended projected profile change	0.2 minutes	Extended projected profile change - Waypoint change
TOL2	The minimum change in predicted altitude at a waypoint that constitutes an extended projected profile change	500 ft	Extended projected profile change - Level change
TOL3	The minimum change in predicted ETA at a waypoint that constitutes an extended projected profile change	3 minutes	Extended projected profile change - Time change
TOL4	The minimum change in time to go to a waypoint that constitutes an extended projected profile change	1%	Extended projected profile change - Time percentage change
TOL5	The minimum change in predicted airspeed at a waypoint that constitutes an extended projected profile change	10 knots or 0.10 mach	Extended projected profile change - Airspeed change

3.58 The ADS-C report resulting from an extended projected profile change event is sent once each time the event occurs. Subsequent events will be determined by comparison against the most recent extended projected profile report.

3.59 An ADS-C report sent as a result of the occurrence of an extended projected profile change event contains basic ADS-C information and extended projected profile information with the waypoints covered by either the specified time interval or within the specified number of future waypoints.

#### *Figure of merit (FOM) field change*

3.60 The FOM field change event is triggered by change in the navigational accuracy, navigational system redundancy or in the airborne collision avoidance system (ACAS) availability.

3.61 The ADS-C report resulting from a FOM field change event is sent once each time the event occurs.

3.62 An ADS-C report sent as a result of the occurrence of a FOM field change event contains only basic ADS-C information.

#### *Track angle change*

3.63 The track angle change event is triggered when the aircraft's track angle differs negatively or positively from its value at the time of the previous ADS-C report containing a ground vector by an amount

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exceeding the track angle change threshold specified in the event contract request. If there has been no previous report containing a ground vector, a baseline ADS-C report is sent.

3.64 The ADS-C report resulting from a track angle change event is sent once each time the event occurs.

3.65 An ADS-C report sent as a result of the occurrence of a track angle change event contains basic ADS-C information and ground vector information.

3.66 Figure III-3-7 illustrates the track angle change event.

*Vertical deviation change*

3.67 The vertical deviation change event is triggered when the absolute value of the vertical distance between the aircraft's actual position and the aircraft's expected position on the active flight plan becomes greater than the vertical deviation threshold.

3.68 The ADS-C vertical deviation change report is sent once every minute while the aircraft's vertical deviation is greater than the value of the vertical deviation threshold.

3.69 The avionics will cease sending ADS-C vertical deviation change reports when the vertical deviation of the aircraft is less than or equal to the value of vertical deviation change threshold.

3.70 An ADS-C report sent as a result of the occurrence of a vertical deviation change event contains basic ADS-C information and ground vector information.

3.71 Figure III-3-X illustrates the vertical deviation change event.

*Aircraft out of vertical boundaries*

3.72 The aircraft out of vertical boundaries event is triggered when the aircraft vertical position is out of the vertical portion of space defined by altitude constraints by more than the value of the out of vertical boundaries threshold.

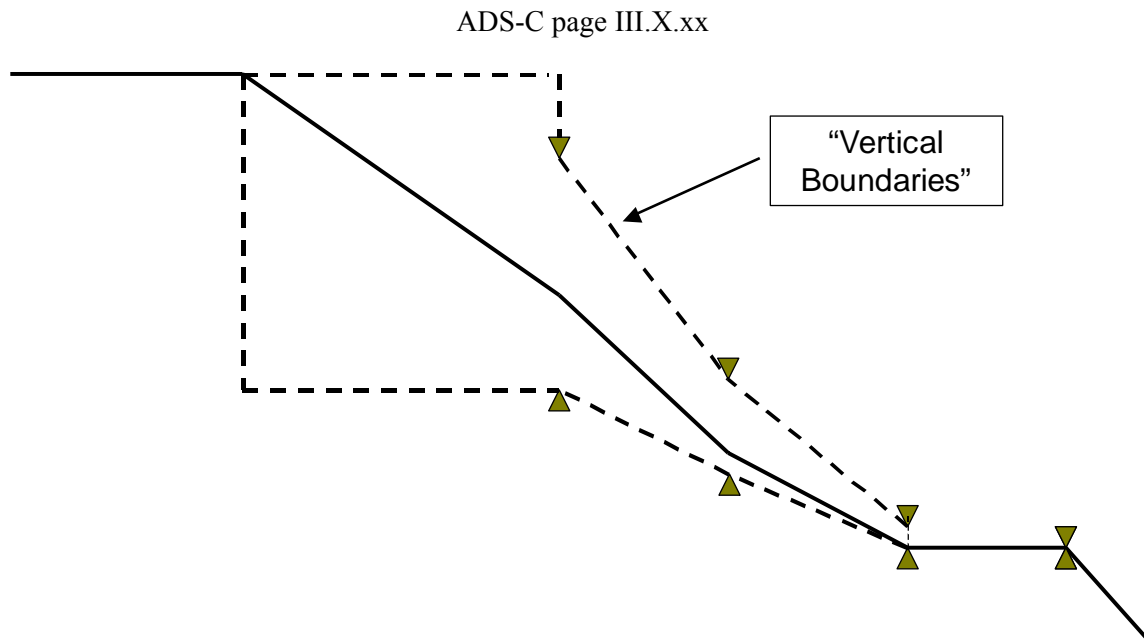
3.73 The ADS-C out of vertical boundaries report is sent once every minute while the aircraft's vertical position is out of the vertical boundaries by more than the threshold value.

3.74 The avionics will cease sending ADS-C out of vertical boundaries reports when the aircraft's vertical position is within the vertical boundaries +/- the threshold value.

3.75 An ADS-C report sent as a result of the occurrence of a vertical deviation change event contains basic ADS-C information and ground vector information.

3.76 Figure III-3-X illustrates the aircraft "out of vertical boundaries" event.

3.77 Appendix A to Chapter 3 provides further information on "vertical deviation" and "out of vertical boundaries" event contracts.



**Figure III-3-X: Out of Vertical boundaries event**

### ESTABLISHMENT AND OPERATION OF A PERIODIC CONTRACT

3.78 The periodic contract provides the capability for a ground system to request periodic reports from an aircraft. The ground specifies which optional ADS-C data is required (if any) in addition to the basic ADS-C information. It also specifies the rate at which the basic ADS-C information is required and a modulus (multiple of the basic reporting rate) on the basic rate for each (if any) optional data required.

3.79.1 The avionics will be able to meet a maximum reporting rate of 1 report per second and minimum reporting rate of 1 report per 120 minutes simultaneously for each ADS-C connection established with the aircraft.

*ADG Note – to coordinate with the former OPLINKP members*

3.79.2 The avionics will be able to support reporting periods from 1 through 59 seconds in increments of 1 second and reporting periods from 1 minute through 120 minutes in increments of 1 minute.

3.80 Only one periodic contract may exist between a given ground system and a given aircraft at any one time.

3.81 Each time a periodic contract is established, it replaces any periodic contract already in place (contract number is updated).

3.82.1 If the avionics can comply with the periodic contract request, it sends the requested ADS-C report with a positive acknowledgement. Periodic ADS-C reports are subsequently sent at the agreed reporting rate.

3.82.2 If the avionics can comply with the periodic contract request but the ADS-C information cannot be sent within 0.5 second, it sends a positive acknowledgement (including the contract number).

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3.83 If there are errors in the periodic contract request, or if the avionics cannot comply with the periodic contract request, it sends a negative acknowledgement to the ground system indicating the contract number and reason for its inability to accept the contract.

3.84 If the avionics can partially comply with the request, it sends a non-compliance notification indicating the contract number and which parts of the periodic contract cannot be complied with. Periodic ADS-C reports are subsequently sent containing only the requested information that the avionics can supply.

3.85 If the requested reporting rate cannot be met due to system degradation, then the avionics will send a non-compliance notification including the contract number and, then report at a rate that is supportable by the avionics that is closest to the requested rate. Subsequently, if the avionics can report at the requested rate it will report at that rate.

3.86 If the extended projected profile data block is to be requested as part of the contract request, then either a time interval or the number of points to be provided is to be included in the contract request.

### **CANCELLATION OF CONTRACT(S) OPERATION**

3.87 Cancellation of contracts allows the ground system to cancel a contract or all contracts currently in operation. The ground system specifies which contracts will be cancelled. The avionics acknowledges the cancellation and ceases sending the ADS-C reports for the cancelled contract(s).

### **OPERATION OF AN EMERGENCY AND/OR URGENCY ALERT**

3.88 This function allows the avionics to provide an emergency and/or urgency alert, either on instruction from the pilot or automatically.

3.89 When a periodic or event contract is established, or in response to a demand contract request, the emergency and/or urgency capability provides the capability for the ADS-C reports to indicate to the ground system(s) that the aircraft is in any one or more of the following situations:

- a) Emergency;
- b) No communications;
- c) Unlawful Interference;
- d) Minimum fuel;
- e) Medical; and/or
- f) Reserved.

*Note 1.- Other than for Emergency, the above listing does not imply a hierarchical ordering.*

*Note 2.- No communications means loss of communications capability, both voice and CPDLC, if equipped.*

3.90 When an emergency and/or urgency situation is selected by the flight crew, existing or requested ADS-C contracts will react in the following ways:

- a) For a demand contract, the ADS-C report will contain the requested information plus the emergency and/or urgency condition (from those listed in 3.83 above).

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- b) For a periodic contract, the existing periodic contract will remain in force but the relevant emergency and/or urgency condition (from those listed in 3.83 above) is also identified in any subsequent periodic ADS-C report.
- c) For an event contract, any relevant event will generate an event ADS-C report with the emergency and/or urgency condition indicated. Any subsequent event ADS-C reports contains the requested event information together with the emergency and/or urgency condition.
- d) when an emergency/urgency alert is initiated in an aircraft, the avionics shall immediately send an additional unsolicited basic ADS-C information to all ATC ground systems with which a contract is in place. This additional ADS-C report contains the emergency and/or urgency condition information.
- e) In addition, any changes to the emergency and/or urgency condition will generate a further ADS-C report showing the changed emergency and/or urgency condition.

### CANCELLATION OF EMERGENCY AND/OR URGENCY ALERT

3.91 Only aircraft can cancel the emergency and/or urgency alert. The avionics removes the emergency and/or urgency condition information from all ADS-C reports and any contracts (periodic, event or demand) currently in force with each ATC ground system continue normally. This will result in an additional ADS-C report containing basic information without the emergency and/or urgency condition information.

### SUMMARY TABLES OF ADS-C FUNCTIONS

3.92 Tables III-3-1 and III-3-2 summarize ADS-C functionality described above.

### APPENDIX B TO CHAPTER 3

3.93 Appendix B to this chapter provides guidance on expected ADS-C message exchange rates in specific airspace environments.

**Table III-3-1. ADS-C functionality summary**

<i>Message</i>	<i>Purpose</i>	<i>Triggering conditions</i>	<i>Source/ Destination</i>
Demand contract request	Obtain single ADS-C report on demand, specifying what data are to be reported	Controller/FDPS request	Ground-air
Periodic contract request	Request establishment of routine ADS-C reporting contract; specifying what data are to be reported and at what rate	Airspace proximity; Changing airspace conditions; Application of a reduced separation standard	Ground-air

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<i>Message</i>	<i>Purpose</i>	<i>Triggering conditions</i>	<i>Source/ Destination</i>
Event contract request	Request establishment of ADS-C event contract; specifying certain flight conditions under which relevant data will be reported	Airspace proximity, changing airspace conditions	Ground-air
Noncompliance notification	Indicates which data cannot be complied with for a given contract	Contract establishment	Air-ground
ADS-C report (Demand, Periodic or Event)	Provide ADS-C data according to contract request	Contract conditions for initiating a report are met	Air-ground
Cancel contract request	Request cancellation of a specific contract	Air traffic conditions no longer require certain reporting	Ground-air
Cancel all contracts	Request cancellation of all contracts	Air traffic conditions no longer require any ADS-C reports from the avionics	Ground-air
Negative acknowledgement	Indicates that an error has been detected or that the avionics cannot comply with any part of the contract, indicating reason	Contract establishment, cancellation	Air-ground
Acknowledgement	Indicates that avionics can comply with contract, however the avionics is unable to send the initial report within 0.5 second	Contract establishment, cancellation	Air-ground

TABLE III-3-2  
ADS-C events summary

<i>Event</i>	<i>Triggering conditions</i>	<i>Frequency</i>	<i>Contents</i>
Vertical deviation change	Absolute value of the vertical distance between the aircraft's actual position and the aircraft's expected position on the active flight plan becomes greater than the vertical deviation threshold	Report once every minute while the aircraft's vertical deviation is greater than the value of the vertical deviation threshold	Basic ADS-C information, ground vector
Vertical rate change	a) positive vertical rate: aircraft's rate of climb is greater than the vertical rate threshold b) negative vertical rate: aircraft's rate of descent is greater than the vertical rate threshold.	Report once every minute whenever the aircraft's rate of climb/descent exceeds threshold	Basic ADS-C information, ground vector
Waypoint change	Change in the next waypoint	Report once each time the event occurs	Basic ADS-C information, projected profile
Lateral deviation change	Absolute value of the lateral distance between the aircraft's actual position and the aircraft's expected position on the active	Report once every minute while the aircraft's lateral deviation is greater than the value of the left or right lateral deviation	Basic ADS-C information, ground vector

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<i>Event</i>	<i>Triggering conditions</i>	<i>Frequency</i>	<i>Contents</i>
	flight plan becomes greater than the left or right lateral deviation thresholds	thresholds	
Level change	Aircraft's level differs negatively or positively from its value in the previous ADS-C report, by an amount exceeding the level change threshold specified in the event contract request.  If there has been no previous report, a baseline ADS-C report is sent.	Report once each time the event occurs.	Basic ADS-C information, ground vector
Level range deviation	a) aircraft's level is higher than the level ceiling b) aircraft's level lower than the level floor	Report once every minute when the aircraft's level is greater than the value of the level ceiling or less than the value of the level floor.	Basic ADS-C information, ground vector
Airspeed change	Aircraft's airspeed differs negatively or positively from its value at the time of the previous ADS-C report containing an air vector, by an amount exceeding the airspeed change threshold specified in the event contract request.  If there has been no previous report containing an air vector, a baseline ADS-C report is sent.	Report once each time the event occurs.	Basic ADS-C information, air vector
Ground speed change	Ground speed differs negatively or positively from its value at the time of the previous ADS-C report containing a ground vector, by an amount exceeding the ground speed threshold specified in the event contract request.  If there has been no such report containing a ground vector, a baseline ADS-C report is sent.	Report once each time the event occurs	Basic ADS-C information, ground vector
Heading change	Aircraft's heading differs negatively or positively from its value at the time of the previous ADS-C report containing an air vector, by an amount exceeding the heading change threshold specified in the event contract request.  If there has been no previous report containing an air vector, a baseline ADS-C report is sent.	Report once each time the event occurs.	Basic ADS-C information, air vector

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<i>Event</i>	<i>Triggering conditions</i>	<i>Frequency</i>	<i>Contents</i>
Extended projected profile change	<p>Change to any of the set of future waypoints that define the active route of flight:</p> <ul style="list-style-type: none"> <li>a) change in waypoint sequence,</li> <li>b) change in waypoint information</li> </ul> <p>The number of waypoints covered in the contract is either defined by a specified time interval or by a selected number from the time of the request.</p>	Report once each time the event occurs.	Basic ADS-C information, extended projected profile
FOM (Figure of Merit Change)	<ul style="list-style-type: none"> <li>a) change in the navigational accuracy,</li> <li>b) change navigational system redundancy,</li> <li>c) change in the Airborne Collision Avoidance System (ACAS) availability</li> </ul>	Report once each time the event occurs.	Basic ADS-C information
Track Angle change	<p>Aircraft's track angle differs negatively or positively from its value at the time of the previous ADS-C report containing a ground vector, by an amount exceeding the track angle threshold specified in the event contract request.</p> <p>If there has been no previous report containing a ground vector, a baseline ADS-C report is sent.</p>	Report once each time the event occurs.	Basic ADS-C information, ground vector
Aircraft out of vertical boundaries	Aircraft vertical position is out of the vertical boundaries (defined by altitude constraints) by more than an altitude threshold defined in the contract request.	Report once every minute when aircraft is out of the vertical boundaries by more than the specified limit.	Basic ADS-C information, ground vector.



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**Appendix A to Chapter 3****ADS-C “VERTICAL DEVIATION” AND “OUT OF VERTICAL BOUNDARIES” EVENTS**

The purpose of this Appendix is to provide more detailed explanatory material and examples concerning these particular ADS-C event contracts.

**1 Top-Level Clarifications**

- 1.1. For both “vertical deviation” and “out of vertical boundaries”: the FMC will report deviating from the path it has stored as the aircraft’s flight plan. It will be necessary for ATC ground systems to request the ADS-C EPP group once to capture what route the aircraft’s FMC has stored (using a demand contract for example). Then, if the ATC ground system requests an EPP change event contract, any changes to the original EPP will be reported.
- 1.2. For both “vertical deviation” and “out of vertical boundaries events”, the aircraft FMC will not explicitly report if it has a constraint loaded which it cannot comply with (and knows this when the constraint is loaded). ATC ground systems will need to detect this through the other predictions in the EPP.

**2) Example 1 - ATC requests a level range deviation event contract** (eg floor threshold 35000ft, ceiling 37000ft)

- 2.1. Normally ATC would do this on the basis of clearing an aircraft to maintain FL360.
- 2.2. If the aircraft’s actual position is higher than 37,000ft, or lower than 35,000ft, this event contract will trigger and the aircraft will send reports (at a one minute rate) until it is back inside the defined levels.
- 2.3. This is the traditional altitude/level range deviation event contract defined for existing FANS-1/A (and ATN) ADS-C applications. There is a difference between the two in terms of what happens once you get back inside the defined levels, but the rest of the function is the same for both systems, and the difference can be accounted for by the ground system.

**3) Example 2 - ATC requests a “vertical deviation” event contract** (deviation threshold value of 500ft)

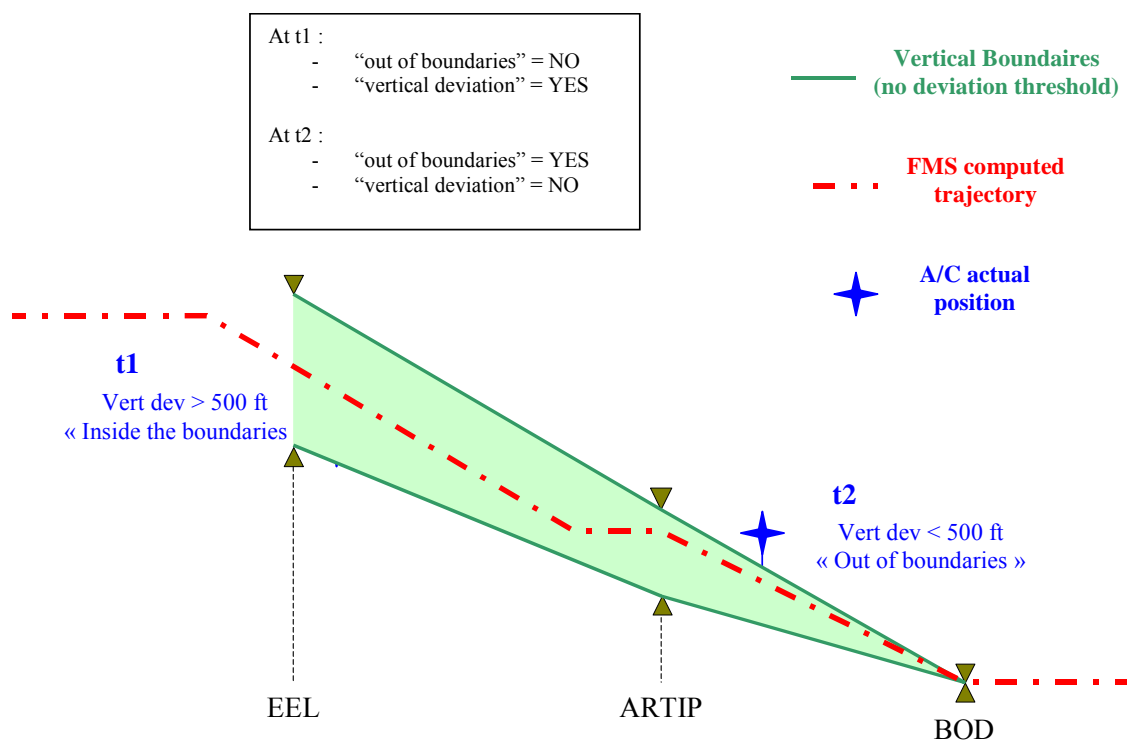
- 3.1. The situation is illustrated in Fig III-3-A1. The requirement here is that ATC wants to check that the aircraft is on the expected path. ATC may also give the aircraft one or more constraints that must be observed in the descent. In this example, a single constraint at 11,000ft has been specified.
- 3.2. The aircraft has computed its Top of Descent (TOD) and the vertical path from there through the 11,000ft constraint to Bottom Of Descent (BOD). This may or may not be a straight geometric line.
- 3.3. If the aircraft’s actual position is more than 500ft above or below that computed path, the “vertical deviation” event contract will trigger and the aircraft will send ADS-C reports at a one minute rate until it is back inside the 500ft threshold of its originally computed path.
- 3.4. ATC will issue any constraints using existing methods.. For instance in Example 1 above, ATC could specify the level constraint via voice, via CPDLC, or via reference to a published procedure (as for any other lateral or vertical clearance). Delivery of these constraints is not an ADS-C function.
- 3.5. If ATC has not specified any constraints, or if they have and the flight crew have entered no constraints into the FMC, then the FMC will still accept and execute the ADS-C event contract. It will always have TOD and BOD, and this is what it will use to create the calculated profile which

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will then be used as a basis for detecting any vertical deviations outside the specified threshold value (500 ft).

- 3.6. It should be noted that a “vertical deviation” event capability is not available in FANS-1/A ADS-C.

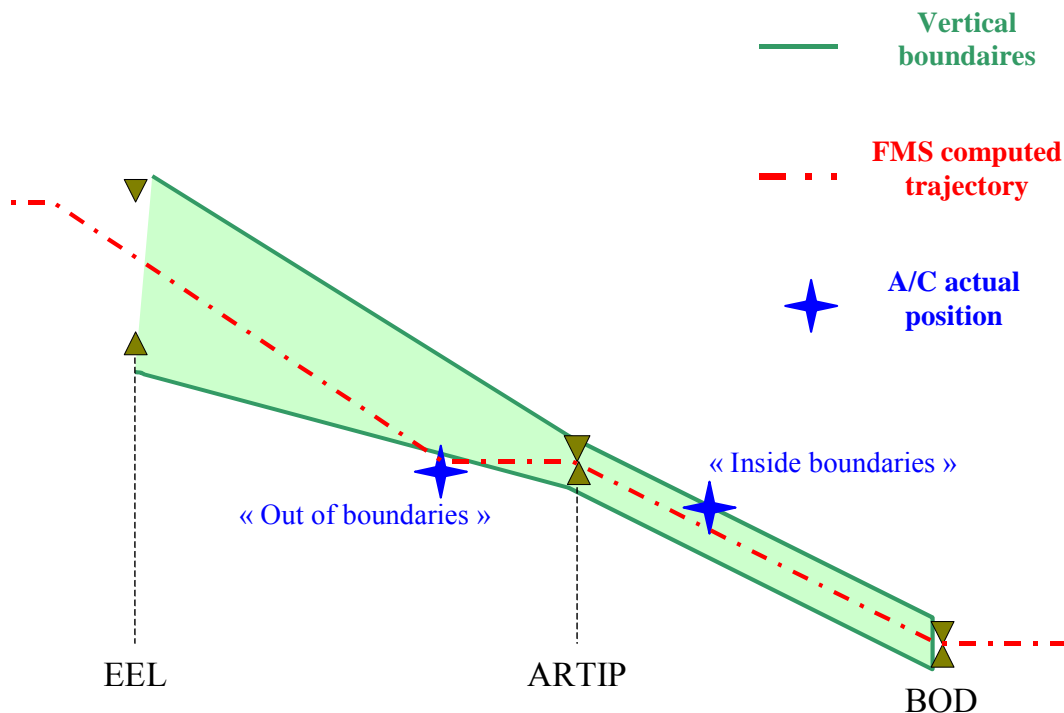
- 4) **Example 3 - ATC requests an “out of vertical boundaries” event contract** (deviation threshold value of 0ft)
- 4.1. The situation is also illustrated in Fig III-3-A1. The requirement here is that ATC wants to check that the aircraft is staying within a defined corridor to maintain separation from , for example, other aircraft or terrain.
  - 4.2. From a Tailored Arrivals perspective, this is perfect for the “window constraint” construct, though it could equally work for a single constraint such as “at or below” thus keeping an aircraft below a crossing corridor being used by other aircraft during the descent.
  - 4.3. ATC may give the aircraft one or more constraints in the descent. As an example, a window has been specified that keeps them in a corridor at the Maastricht boundary, so the aircraft has been given an altitude window constraint, between 23,000ft and 25,000ft, at EEL.
  - 4.4. In addition, ATC has given another altitude window constraint at a lower airspace hand-off point, (e.g. cross ARTIP between 10,000ft and 11,000ft).
  - 4.5. These type of window constraints are used because they keep required predictability in the vertical path to prevent conflicts with crossing traffic, but are not as restrictive as, for example, “EEL at FL240” and/or “ARTIP at 10,000ft”. This kind of flexibility enables a B737 or A320 choose a slightly different path than a B777 or A330, and allows each aircraft type to optimise its path and get a little more efficiency while still meeting ATC requirements.
  - 4.6. When using CPDLC, the ground may send these constraints using a dedicated message element (such as UM50) or a Route Clearance message with adequate level constraints. The latter approach would allow the use of existing airborne automation (i.e. auto load of constraints in FMC) with more aircraft amongst those already built.
  - 4.7. As in Example 2, the aircraft has computed its TOD and the vertical path from there through the EEL constraints and the ARTIP constraints to BOD.
  - 4.8. If the aircraft’s actual position is above a line running from TOD through the higher constraint, the higher constraint at ARTIP, and the BOD, the “out of boundaries” event contract will trigger and the aircraft will send ADS-C reports at a one minute rate until it is back below that line. (Note the word “actual” - the aircraft has to be actually outside the constraint to send the ADS-C reports).
  - 4.9. Alternatively, if the aircraft’s actual position is below a line running from TOD through the lower constraint, the lower constraint at ARTIP, and the BOD, the event contract will trigger and the aircraft will send ADS-C reports at a one minute rate until it is back above that line. (Again, note the word “actual” - the aircraft has to be actually outside the constraint to send the reports).
  - 4.10. As in Example 2 [ref 3.4 above} ATC will issue any constraints using existing methods (eg voice, CPDLC, or by reference to a published procedure [as for any other lateral or vertical clearance]).
  - 4.11. It should be noted that a “out of vertical boundaries” event capability is not available in FANS-1/A ADS-C.



**Fig III-3-A1 - Illustration of “vertical deviation” and “out of vertical boundaries” events**

- 5 **Example 4 - ATC requests an “out of vertical boundaries event” contract** (deviation threshold value of 500ft)
- 5.1. The situation is illustrated in Fig III-3-A2. Once again, the requirement here is that ATC wants to check that the aircraft is staying within a defined corridor in order to maintain separation from for example, other aircraft or terrain..
  - 5.2. Use of 500ft threshold may be required when there is a fixed altitude constraint on the descent path.
  - 5.3. Hence, ATC may define a window constraint at the Maastricht boundary (e.g. cross EEL between 23,500ft and 24,500ft). The constraint at ARTIP is now a single value (for example. 10,000ft), because this constraint is part of a published Standard Arrival Route (STAR).
  - 5.4. The protected corridor would be the following :

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**Fig III-3-A2 - Illustration of “out of vertical boundaries” event contract (500ft deviation threshold)**

#### 6) Significant design considerations related to use of event contracts

A significant design consideration for all three of these event contracts is whether or not they are practical for the intended purposes. It needs to be considered whether ATC ground systems should rely on the use of the ADS-C Extended Projected Profile as the sole means for identifying flight profile deviations or changes associated with flight level hazards.

If ATC ground systems use these mechanisms as a sole means of alerting when an aircraft is deviating out of conformance from a cleared flight plan, significant performance questions arise. ADS-C periodic reports are generally used for surveillance, and ATC ground systems are able to identify and react to a delayed or missing report; as the system knows what reports and reporting rate have been requested, and therefore knows when to expect the next one. Hence, it is possible to identify when a report is late (even the first one) and the system can take an appropriate action.

However, when an event contract of any kind is requested, the ATC ground system cannot know whether or not a report is missing. Since the ground system is relying on the report itself to tell it that the triggering event has occurred, the ground system cannot know that report is missing or has been delayed.

This is already an identified problem for lateral events in the ocean, and in domestic airspace much tighter time tolerances for the event identification may be required.

This may lead to either:

- Limiting the use of event contracts to informational purposes only (For example, advising the ATC ground system that the aircraft has started to descend, in case the ground system wants to display it for some entirely non-safety purpose).

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---or---

- Placing extremely high performance requirements on the communications link, in terms of transfer speed, reliability, and availability. It is likely that these requirements will be shown to be cost-prohibitive, and may delay the implementation and subsequent availability of the supporting data communications infrastructure.

In the case of EPP change events, this may mean that the ADS-C event contract functionality can be used for purposes where it is possible to unambiguously detect a missing report (for example, if the initial request was lost, or if the ATC ground system has instructed the aircraft to add or remove a constraint which would change the EPP contents when this is next received).

In summary, use of enhanced surveillance tools (such as ADS-C event contracts) may imply severe performance requirements on communications (that could be prohibitive for datalink implementation). For this reason, it is important to understand that these event reporting mechanisms are not intended for use as the primary means of surveillance. These event reporting mechanisms should be considered as a complementary means to enhance ground awareness but alternative tools should be used in addition to provide the primary means of surveillance. This approach should be a key driver for the definition of future operational concepts (SESAR, NextGen etc ...).

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**Appendix B to Chapter 3****ADS-C MESSAGE EXCHANGE RATES**

Table III-3-B1 details the possible message exchange rate of ADS-C messages for ATS purposes in the environments specified. The rates shown are the expected averages, per flight.

**Table III-3-B1. Exchange rates expected for ADS-C messages**

	<i>Oceanic-continental en-route low density</i>	<i>Oceanic high density</i>	<i>Continental high density</i>	<i>Terminal area high density</i>	<i>Aerodrome (includes approach, taxi and departure)</i>
Demand contract Request	1-3 per FIR/sector	1-2 per FIR/sector	1-2 per FIR/sector	1-2 per FIR/sector	3-6
Periodic contract Request	1-3 per FIR/sector	1-2 per FIR/sector	1-2 per FIR/sector	1-2 per FIR/sector	3
Event contract Request	1-3 per FIR/sector	1-2 per FIR/sector	1 per FIR/sector	1 per FIR/sector	2
Cancel contract Request	2 per FIR	2 per FIR	2 per FIR	2 per FIR	2
ADS-C periodic report (with basic ADS-C)	1 every 15-30 min.	1 every 5-15 min.	1 every 10 s-5min.	1 every 3-10s	1 every 0.5-5 s
Air and/or ground vector in ADS-C periodic report	1-3 per FIR/sector	1 every fourth report	1 every fourth report	1 every fourth report	1 every second report
Meteorological information in ADS-C periodic report	1 per waypoint, or 1 per hour	1 per waypoint, or 1 per hour	1 per waypoint, or 1 per hour	Negligible	Negligible
ADS-C event report with projected profile	1 per waypoint	1 per waypoint	1 per waypoint	1 per waypoint	1 per waypoint
ADS-C demand report with extended projected profile	1 per FIR	1 per FIR	1 per FIR	1 per FIR	1
Other ADS-C messages	Under exceptional conditions	Under exceptional conditions	Under exceptional conditions	Under exceptional conditions	Under exceptional conditions
Instantaneous number of aircraft to be supported per ATSU	300	750	1250	450	250

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## Chapter 4

### ADS-C MESSAGES DESCRIPTION

#### Notes:

**Note 1:** Information marked "if available" indicates that the aircraft may not be capable of providing the information.

**Note 2:** Information marked as "mandatory if available" indicates that the aircraft will be capable of providing the information, and will provide it except in cases where it is temporarily unavailable (e.g. a 'Next +1 waypoint' may not exist in the active route in some circumstances, and so cannot be sent in a given report although the aircraft is capable of sending it when available).

### MESSAGES DESCRIPTION

4.1 *Basic ADS-C information.* Every ADS-C report contains the following information:

- a) the 3-D position of the aircraft (latitude, longitude, and level);
- b) the time;
- c) an indication of the accuracy of the position data information figure of merit ; and
- d) the contract number identifying which request the report is dedicated to.

4.2 *Optional ADS-C information.* In addition to the basic information included in each ADS-C report, an ADS-C report may contain any (or all) of the following information:

- a) aircraft address;
- b) aircraft identification;
- c) ground vector;
- d) air vector;
- e) projected profile;
- f) meteorological information;
- g) extended projected profile; and.
- h) Emergency/urgency status :
  - i) Emergency;
  - ii) No communications;
  - iii) Unlawful Interference;
  - iv) Minimum fuel;
  - v) Medical; and/or
  - vi) Reserved.

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4.3 The aircraft identification is contained in field 7 of the ICAO model flight plan.

4.4 The ADS-C ground vector is composed of the following information:

- a) track;
- b) ground speed; and
- c) rate of climb or descent.

4.5 The ADS-C air vector is composed of the following information:

- a) heading;
- b) Mach or IAS; and
- c) rate of climb or descent.

4.6 The ADS-C projected profile is composed of the following information:

- a) next waypoint lat/long;
- b) next waypoint - fix name (mandatory if available);
- c) estimated level at next waypoint(mandatory if available);
- d) estimated time at next waypoint(mandatory if available);
- e) (next + 1) waypoint lat/long, if any;
- f) (next+1) waypoint- fix name (mandatory if available);
- g) estimated level at (next + 1) waypoint(mandatory if available); and
- h) estimated time at (next + 1) waypoint(mandatory if available).

4.7 The ADS-C meteorological information is composed of the following:

- a) wind direction;
- b) wind speed;
- c) temperature;
- d) humidity<sup>3</sup> (if available); and
- e) turbulence (if available).

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<sup>3</sup> Defined in the glossary. Action CD to check with MET section whether deletion of humidity, wind-quality flag and turbulence in the Met block is acceptable.



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4.8 The ADS-C extended projected profile is composed of the following information:

NOTE: It was agreed at the teleconference that a second, optional EPP Group should be developed to contain information such as additional Trajectory Intent data identified in ARINC702A (ref ADG Drafting Group meeting, WP/7). ATC ground systems could then specifically request this data if it was required. It was also agreed that such data should not be included in the primary EPP Group. Jose Roca was actioned to develop draft text and offer a proposal for inclusion.

- a) Next waypoint lat/long;
- b) Next waypoint fix name (mandatory if available);
- c) Next waypoint estimated level (mandatory if available);
- d) Next waypoint estimated time (mandatory if available);
- e) Next waypoint estimated speed (IAS or mach) (mandatory if available);
- f) Next waypoint vertical type (if any);
- g) Next waypoint lateral type (if any);
- h) Next waypoint level constraint value (if any);
- i) Next waypoint RTA value (if any);
- j) Next waypoint speed restriction value (if any).

... repeated for up to (next + 127) waypoints that are within the time interval or number of waypoints ahead of the aircraft as specified in the request, and

- k) Current gross mass;
- l) Predicted Gross mass at top of descent (mandatory if available), and
- m) Speed schedule (mandatory if available).

4.9 The waypoints included in the extended projected profile include both lateral waypoints (i.e. those that define the route of flight, and are usually input to the airplane's flight management system) and vertical waypoints (i.e. those associated with speed or vertical trajectory changes, which are usually determined by the airplane's flight management system).

4.10 The lateral waypoints will include:

- a) Fixed waypoints used to define the route of flight (including both en-route waypoints and those contained in terminal area procedures);

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- b) Computed waypoints (e.g. those that are defined by reaching an altitude or flying on a heading, and are thus not fixed). These are usually contained in terminal area procedures;
- c) Wherever a lateral (parallel) offset will be initiated or reached;
- d) Wherever the return from a lateral (parallel) offset will be initiated or completed.

4.11 Lateral waypoints will be included regardless of whether they are ATC-compulsory fixes or not.

Note: Two lateral waypoints may have the same position. For example, with a holding pattern, the hold fix will be included twice in the report : once as the holding pattern entry and once as the exit fix.

4.12 The vertical waypoints will include:

- a) Wherever the airplane will initiate a climb or descent maneuver;
- b) Wherever the airplane will complete a climb or descent maneuver, and level off;
- c) Wherever a speed change of more than 10 knots IAS or 0.10 Mach is planned to be initiated.

Note : A waypoint may correspond to multiple lateral/vertical waypoint definitions. For example, a holding pattern exit may also correspond to initiation of a descent and a speed change.

4.13 Whenever a time interval is specified in the contract, all lateral and vertical waypoints (up to the maximum of 128) that will be passed within that time interval will be included in the report.

4.14 Whenever a number of waypoints is specified in the contract, then all lateral and vertical waypoints up to that number will be included in the report.

4.15 A *positive acknowledgement* indicates acceptance of a requested contract. When not sent as part of an ADS-C report, it contains only the contract number. and the contract type.

4.16 A *negative acknowledgement* indicates rejection of the requested contract and contains the contract number and information on the cause for rejection.

4.17 A *non-compliance notification* contains an indication on which part of a requested contract cannot be complied with and the contract number.

4.18 A *demand contract message* indicates the contract type, the contract number and which of the optional ADS-C information is to be included in the ADS-C report.

4.19 A *demand response message* contains the basic ADS-C data (including the contract number) and the optional ADS-C data required in the demand contract.

4.20 An *event contract message* indicates the contract type, contains the contract number and an indication of the events to be reported on, together with thresholds (as required) for each event specified.

4.21 An *event contract response message* contains an identification of the event type and the required ADS-C data (including the contract number) for the particular event.

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4.22 A *periodic contract message* indicates the contract type, the contract number, the required report interval, an indication of which of the optional ADS-C information is to be included in the periodic reports, and the modulus from the basic interval for each optional field to be included.

4.23 A *periodic response message* contains the basic ADS-C data (including the contract number) and the optional ADS-C data required in the periodic contract.

4.24 A *cancel contract message* contains an indication of the contract (i.e. periodic or event) and the contract number to be cancelled. A cancel contract message without a contract type parameter indicates that all ADS-C contracts with the ground system are to be cancelled.

4.25 An ADS-C message data glossary is provided in Appendix A to this chapter. The range and resolution for variables used in ADS-C messages is presented in Appendix B to this chapter.

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## Appendix A to Chapter 4

### ADS-C MESSAGE DATA GLOSSARY

**Note: check for all definition which fields are mandatory/optional and state explicitly in the definiton.**

#### 1. ADS-C MESSAGE DATA GLOSSARY

1.1 The following data are used as the ADS-C message variables, or components of the variables, and are shown here in alphabetical order:

**ADS-C event report.** ADS-C information consisting of a sequence of *event type* and *ADS-C report*.

**ADS-C report.** ADS-C information consisting of the following sequence:

- *position*;
- *time*;
- *FOM*;
- ADS-C Contract number
- aircraft address (optional)*; — *aircraft identification (optional)*;
- *projected profile (optional)*;
- *ground vector (optional)*;
- *air vector (optional)*;
- *meteorological information (optional)*;
- *extended projected profile (optional)*; and
- *emergency/urgency condition (optional)*.

**Aircraft address.** A unique combination of 24 bits available for assignment to an aircraft for the purpose of air-ground communication, navigation and surveillance.

**Aircraft identification.** A group of letters, figures or a combination thereof which is either identical to, or the code equivalent of the aircraft call-sign to be used in air-ground communications, and which is used to identify the aircraft in ground-ground air traffic services communications.

**Airspeed.** Provides airspeed as a choice of the following: *Mach*, *IAS*, or *Mach* and *IAS*.

**Airspeed change.** Provides the threshold of change for either Mach speed or indicated air speed that requires that the avionics generates an ADS-C report when the current aircraft speed differs more than the specified threshold from the air speed in the last ADS-C report.

**Air vector.** Provides the air vector as a sequence of *heading*, *air speed*(optional), and *vertical rate*(optional).

**Baseline ADS-C report.** ADS-C report against which future changes are measured. It is sent in response to level change, level range deviation, airspeed change, ground speed change, heading change, extended projected profile change and track/angle change event contract requests.

**Cancel contract.** Allows the ground to cancel event and/or periodic contracts in effect.

**Contract number.** Identify an ADS-C contract with an unique number, used in contracts and associated responses.

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**Contract type.** Indicates which type of ADS-C contract is specified: *demand*, *event*, or *periodic*.

**Demand contract.** Indicates that an avionics is to generate an ADS-C report containing the indicated data upon receipt of the contract. The data that can be indicated includes: *aircraft address*, *aircraft identification*, *projected profile*, *ground vector*, *air vector*, *meteorological information*, and *extended projected profile*.

**Distance.** Distance in non-SI units.

**Emergency and/or Urgency Condition.** Indicates in an ADS-C report that the aircraft is in any one or more of the following situations:

- a) Emergency;
- b) No communications;
- c) Unlawful Interference;
- d) Minimum fuel;
- e) Medical; and/or
- f) Reserved.

**ETA.** Estimated time of arrival at a waypoint.

**Event contract.** Indicates *event types* and the threshold for the specified event types.

**Event type.** An indication of what type of ADS-C event is specified:

- *vertical rate change*;
- *waypoint change*;
- *lateral deviation change*;
- *level change*;
- *level range deviation*;
- *airspeed change*;
- *ground speed change*;
- *heading change*;
- *extended projected profile change*;
- *FOM field change*;
- *track angle change*;
- *vertical deviation change*; and
- *out of vertical boundaries change*.

**Extended projected profile.** Provides a sequence of (1-128) of waypoint(s) containing position data (lat/long and *fix name*), *ETA* (optional), estimated *airspeed* (optional), estimated *level* (optional), *vertical type* (optional), *lateral type* (optional), *level constraint* (optional), *airspeed* restriction (optional) and *RTA* (optional) related to the specified waypoint(s) and the current *gross mass*, the predicted *gross mass* (optional) at top of descent and the *speed schedule* (optional).

NOTE: It was agreed at the teleconference that a second, optional EPP Group should be developed to contain information such as additional Trajectory Intent data identified in ARINC702A (ref ADG Drafting Group meeting, WP/7). ATC ground systems could then specifically request this data if it was required. It was also agreed that such data should not be included in the primary EPP Group. Jose Roca was actioned to develop draft text and offer a proposal for inclusion

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**Extended projected profile change.** Indicates that an ADS-C report is to be generated when there is a change in the extended projected profile as specified in 3.56.

**Extended projected profile modulus.** Sequence of *modulus* and *extended projected profile request*.

**Extended projected profile request.** A choice indicating whether the extended projected profile information is to be provided on a time or waypoint interval, and the interval of the specified choice.

**Facility designation.** Specifies the ICAO four-letter location indicator or the ICAO eight-letter combined location indicator, three-letter designator and an additional letter.

**Fix name.** Used to specify the ICAO designator for a waypoint (e.g. airport, navaid, or fix).

**Following waypoint.** Indicates the waypoint after the next waypoint as a *Position*.

**FOM.** Indicates the figure of merit of the current ADS-C data. The information consists of the *position accuracy* and indications 1) whether or not multiple navigational units are operating, and 2) whether or not ACAS is available.

**FOM field change.** Indicates that an ADS-C report is to be generated when any FOM field changes.

**Gross mass.** *Action JCondis*

**Ground speed.** Provides ground speed in non-SI units.

**Ground speed change.** Provides the threshold of change for ground speed that requires the avionics to generate an ADS-C report when the current aircraft ground speed has differed by more than the specified threshold from the last ADS-C report.

**Ground vector.** A sequence of *track*(optional), *ground speed*(optional), and *vertical rate*(optional).

**Heading.** Provides aircraft true or magnetic heading in degrees.

**Heading change.** Provides the threshold of change for heading in degrees that requires the avionics to generate an ADS-C report when the current heading has differed by more than the specified threshold from the last ADS-C report.

**IAS.** Indicated air speed.

**Lateral waypoint Type.** Indicates the type of the reported waypoint in the lateral profile, amongst the following values :

- From (*last sequence waypoint*)
- To (*next sequence waypoint*)
- Offset start (*where aircraft leaves the parent path*)
- Offset reached (*where aircraft reaches the parent path*)
- Return to parent path initiation (*where aircraft initiates its return to the parent path*)
- Offset end (*where aircraft reaches the parent path*)
- Offset (*waypoint which is an offset waypoint but which is neither the offset start/end waypoint nor the offset reach/return to parent path waypoints*)
- Non flyable (*sequence of waypoint where the FMS is not able to compute a flyable trajectory. It should not occur in nominal conditions where procedures to be flown are adapted to aircraft capabilities*)

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- Discontinuity (*discontinuity in the FMS flight plan*)
- Overfly (*waypoint to be overflowed – this changes the way to build the trajectory in case of turn*)
- Hold (*waypoint where a hold is initiated and left*)
- Procedure turn (*U-turn = defines a course reversal starting at a specific database fix and including an outbound leg followed by a Left or Right turn and a 180° course reversal to intercept the reverse leg*)

**Lateral deviation change.** Provides the threshold of change for lateral value that requires the avionics to generate an ADS-C report when the current lateral deviation exceeds the specified threshold.

**Latitude.** Latitude in degrees, minutes, and seconds.

**Level.** Specifies level in non-SI units.

**Level ceiling.** The level above which a level range deviation event is triggered. Provided as a *level*.

**Level change.** Provides the threshold of change for level that requires the avionics to generate an ADS-C report when the current level differs by more than the specified threshold from the level in the last ADS-C report.

**Level constraint.** A sequence of a qualifier (above, below, at) and a *level*, or a sequence of a minimum *level* and a maximum *level*.

**Level floor.** The level below which a level range deviation event is triggered. Provided as a *level*.

**Level range change.** Threshold of change permissible between levels (provided as *level ceiling* and *level floor*) in consecutive ADS-C reports.

**Longitude.** Longitude in degrees, minutes, and seconds.

**Mach.** Airspeed given as a Mach number.

**Mach and IAS.** Airspeed provided as both *Mach* and *indicated airspeed*.

**Meteorological information.** A sequence of *wind direction*, *wind speed*, *temperature*, *humidity (if available)* and *turbulence (if available)*.

**Modulus.** Provides a multiplier on the ADS-C report interval.

**Next time.** Time at next waypoint.

**Next waypoint.** Specifies the next waypoint as a *position*.

**Non-compliance notification.** Used to indicate partial compliance to a contract.

**Out of Vertical Boundaries change.** Provides the threshold for out of vertical boundaries event that requires the avionics to generate an ADS-C report when the aircraft is outside the vertical boundaries and the actual aircraft level differs more than the specified threshold from the vertical boundaries.

**Periodic contract.** Provides the requirements for the generation of ADS-C reports. The periodic contract provides the reporting interval, and the modulus for when and what optional data to be included in an ADS-C periodic report.

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**Position.** Provides aircraft position information using a sequence of *latitude*, *longitude* and *level*.

**Position accuracy.** An indication of the navigational accuracy.

**Projected profile.** A sequence of *next waypoint*, *next time*, and *following waypoint*.

**RTA.** Required Time of Arrival.

**Reporting interval.** Provides the required ADS-C reporting interval.

**Report type.** Indicates which type of ADS-C report is provided: *demand*, *event* or *periodic*.

**Request type.** A choice indicating which type of ADS-C request is being uplinked. The choices are as indicated below:

- cancel event contract;
- cancel periodic contract;
- demand contract;
- event contract;
- periodic contract; or
- cancel all contracts.

**Speed schedule.** The calculated or manually entered speeds the FMS is scheduled to use for the climb, cruise and descent when considering schedule requirements, ATC clearance, fuel, and operating costs. Using the Cost Index and other aircraft parameters an economical speed (calibrated airspeed [CAS] and/or mach) is computed and scheduled for use during each of the flight phases. Speed schedule may be reported in ADS-C as one or several speed values indicated as CAS and/or Mach depending on the current flight phase:

- Climb speed ;
- Initial cruise speed (at TOC);
- Last cruise speed (at TOD);
- Descent speed.

The waypoint estimated speed in the extended projected profile are computed in compliance with these intended speeds.

**Temperature.** Temperature in degrees Celsius.

**Time.** Time at position in YYMMDD and HHMMSS format.

**Time stamp.** In every report in YYMMDD and HHMMSS format.

**Track.** Provides track angle in degrees.

**Track angle change.** Provides the threshold of change for track angle in degrees which triggers avionics to generate an ADS-C report when the current track angle differs by more than the specified threshold from the track angle in the last ADS-C report.

**Turbulence.** Indicates severity of turbulence.

**Vertical Boundaries:** Portion of space vertically delimited by altitude constraints the FMS is scheduled to use for the remaining of the flight. These altitude constraints were previously cleared by ATC (part of



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published procedures or route clearance, single constraint clearance, ...), using CPDLC or any alternative procedures for ATC clearances delivery.

**Vertical deviation change:** Provides the threshold of change for vertical value that requires the avionics to generate an ADS-C report when the current vertical deviation exceeds the specified threshold.

**Vertical rate.** Rate of climb/descent (climb positive, descent negative).

**Vertical rate change.** The threshold of change for vertical rate that requires the avionics to generate an ADS-C report when the current vertical rate differs by more than the specified threshold from the vertical rate in the last ADS-C report.

**Vertical waypoint Type.** Indicates the type of waypoint in the FMS vertical profile, amongst the following values:

- Top of climb (*where climb stops and cruise FL is reached*)
- Top of descent (*where cruise FL is left and descent starts*)
- Start of step climb (*Where climb starts to reach a new cruise FL*)
- End of step climb (*where climb stops and new cruise FL is reached*)
- Start of step descent (*where descent starts to reach a new cruise FL*)
- End of step descent (*where descent stops and a new cruise FL is reached*)
- Start of cruise climb segment (*where a cruise climb segment starts*)
- End of cruise climb segment (*where a cruise climb segment ends*)
- Level off (*level step when in climb or descent*)
- Start of descent (*where descent is resumed after level off*)
- Start of climb (*where climb is resumed after level off*)
- CMS waypoint (*Constant Mach segment*)
- Cross over altitude (*where the limit between IAS and mach is reached*)
- Transition altitude (*where the limit between QNH and FL is reached*)
- Speed change (*where a speed change of more than 10 knots IAS or 0.10 Mach is planned to be initiated*)

**Waypoint.** A route point identified as a sequence of *Position* and *time*.

**Waypoint change.** Change in the next waypoint information.

**Wind direction.** Wind direction in degrees.

**Wind speed.** Wind speed in knots.

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**Appendix B to Chapter 4****ADS-C VARIABLES RANGE AND RESOLUTION****1. ADS-C VARIABLES RANGE AND RESOLUTION**

Table III-4-B1 provides the required range and resolution for the message variables used in the ADS-C application.

**Table III-4-B1. ADS-C variables range and resolution**

<i>Category</i>	<i>Variables/parameters</i>	<i>Unit</i>	<i>Range</i>	<i>Resolution</i>
Aircraft identification		IA5	2 to 7 characters	N/A
Aircraft address		Bit string	24	N/A
Airspeed	Mach	Mach number	0.5 to 4	0.01
	IAS (non-SI)	Knots	0 to 1100	1
Airspeed change	IAS (non-SI)	Knots	1 to 100	1
	Mach	Mach number	0.01 to 1.0	0.01
Calibrated Airspeed	CAS	Knots	0 to 1100	1
Contract Number		Integer	0 to 255	1
Date	Year	Year	1996 to 2095	1
	Month	Month of year	1 to 12	1
	Day	Day of month	1 to 31	1
Extended projected profile	Time interval	Minutes	15 minutes to 20 hours	1
	Number of waypoints	Integer	1 to 128	1
Extended projected profile change	Longitude/Latitude	Minutes	0.01 to 59	0.01
Waypoint change	-minutes			
Extended projected profile change - Level change	Level (non-SI)	Feet	10 to 1000	10
Extended projected profile change - Time change		Minutes	0.1 to 30	0.1
Extended projected profile change - Time percentage change		%	0.1 to 10	0.1
Extended projected profile change - Airspeed change	Mach	Mach number	0.01 to 1.0	0.01
	IAS (non-SI)	Knots	1 to 100	1
Facility designator		Character string	4 to 8	N/A
Fix name		IA5 string	1 to 5	N/A
FOM (position accuracy)		Integer	0 to 7	1
Ground speed	Ground speed (non-SI)	Knots	-50 to +2200	0.5

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Ground speed change	Ground speed (non-SI)	Knots	0 to 100	1
Gross mass		Kg	0 to 1000000	10
Heading	—	Degrees	0.05 to 360	0.05
Heading change	—	Degrees	1 to 359	1
Humidity		Percentage	0 to 100	1
Indicated Air Speed	IAS	Knots	0 to 1100	.05
IAS change		Knots	1 to 700	1
Lateral deviation change	Distance (non-SI)	Nautical miles	0.5 to 150	0.5
Latitude	Latitude degrees	Degrees	±90	1
	Latitude minutes	Minutes	0 to 59	1
	Latitude seconds	Seconds	0 to 59.9	0.1
Level	Pressure altitude (non-SI)	Feet	-750 to +100000	10
Level change	Level (non-SI)	Feet	100 to 5000	10
Longitude	Longitude degrees	Degrees	±180	1
	Longitude minutes	Minutes	0 to 59	1
	Longitude seconds	Seconds	0 to 59.9	0.1
Mach		Mach number	0.5 to 4	0.001
Modulus		Integer	1 to 255	1
Out of vertical boundaries threshold <sup>4</sup>	Altitude (non-SI)	Feet	0 to 5000	10
Reporting interval		Seconds	1 to 59	1
		Minutes	1 to 120	1
		Waypoint number	1 to 128	1
Temperature		Degrees Celsius	-100 to +100	.25
Time	Hours	Hours of day	0 to 23	1
	Minutes	Minutes of hour	0 to 59	1
	Seconds	Seconds of minute	0 to 59	1
Track	Angle	Degrees	0.1 to 360	0.05
Track angle change		Degrees	1 to 359	1
Turbulence	Relative measure	Bit string	0 to 15*	N/A
Vertical deviation change	Altitude (non-SI)	Feet	100 to 5000	10
Vertical rate	Level (non-SI)	Feet/minute	±30000	10
Vertical rate change		Feet/minute	±30000	10
Wind	Wind direction	Degrees True North	1 to 360	1
	Wind speed (non-SI)	Knots	0 to 300	1
	(SI)	Kilometer/hour	0 to 500	2
	Wind quality flag*			

\* To be decided.

ADG Note 1: Some FANS-1/A resolutions are different.

ADG Note 2: Any implications of changes in above Table (eg on CPDLC) may need to be assessed.

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## **Chapter 5**

### **ADS-C MESSAGE SEQUENCES**

*Note.— These sequence diagrams illustrate the expected message sequence for each ADS-C function, and do not include exception handling.*

#### **ADS-C DEMAND CONTRACT**

5.1 The sequence of messages shown in Figure III-5-1 occurs when the ADS-C demand contract is sent and the avionics can comply with the request.

5.2 The sequence of messages shown in Figure III-5-2 occurs when the ADS-C demand contract is sent and the avionics cannot comply with the request.

5.3 The sequence of messages shown in Figure III-5-3 occurs when the ADS-C demand contract is sent and the avionics cannot comply fully with the request.

#### **ADS-C EVENT CONTRACT**

5.4 The sequence of messages shown in Figure III-5-4 occurs when an ADS-C event contract is sent and the avionics can comply with the request.

5.5 The sequence of messages shown in Figure III-5-5 occurs when the ADS-C event contract is sent and the avionics cannot comply with the request.

5.6 The sequence of messages shown in Figure III-5-6 occurs when the ADS-C event contract is sent and the avionics cannot comply fully with the request.

#### **ADS-C PERIODIC CONTRACT**

5.7 The sequence of messages shown in Figure III-5-7 occurs when an ADS-C periodic contract is sent and the avionics can comply with the request.

5.8 The sequence of messages shown in Figure III-5-8 occurs when the ADS-C periodic contract is sent and the avionics cannot comply with the request.

5.9 The sequence of messages shown in Figure III-5-9 occurs when the ADS-C periodic contract is sent and the avionics cannot comply fully with the request.

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## **Chapter 6**

### **ADS-C PROCEDURES**

#### **INTRODUCTION**

6.1 As stated earlier in the document, operational requirements do not necessarily need a technical solution, but may be satisfied by the institution of suitable local or interfacility procedures.

#### **PROCEDURES FOR EFFECTIVE USE OF ADS-C**

6.2 Advance information on the data link capabilities of participating aircraft needs to be known to the appropriate ground facilities. While this is envisaged as being contained in the flight plan, procedures must be in place to enable this information to be exchanged between units in areas where other methods of indicating aircraft intent are used.

6.3 In line with current practice, the transferring ground system will advise the receiving ground system of the capabilities and intent of the aircraft wishing to enter the receiving ground system airspace to permit proper entry of the information into the receiving ground system automation.

6.4 While at least four ADS-C contracts may be simultaneously in force, appropriate local procedures will need to be in place to ensure that non-current contracts are dropped in sufficient time to allow the receiving ground system to set up the controlling ADS-C contract. Such procedures will also take care of the case where aircraft are crossing from airspace where an ADS-C service is provided into non-ADS-C airspace, to ensure closure of all ADS-C contracts, and thus efficient use of resources.

6.5 The probability exists that errors may be input into the aircraft navigation system prior to departure. Since ADS-C is by definition dependent on the on-board navigation system, procedures will be required to ensure pre-departure conformance checking in order to correct these errors.

6.6 As ADS-C will be implemented regionally to different levels of capability, with a mixed-equipage aircraft fleet, procedures will be necessary between adjacent ATS facilities to ensure efficient levels of service to all aircraft users.

6.7 It is anticipated that specific ATC procedures will be developed as experience is gained with the system, and as appropriate separation minima are developed for global use.

6.8 ATS providers should ensure that the number of separation standards applied in a given airspace are kept to a minimum.

6.9 In a mixed environment, the source of surveillance data should be readily apparent to the controller.

6.10 In a mixed environment, procedures must be in place to ensure that all sources of the display refresh rate will be synchronous regardless of the source of surveillance information data.

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## **Chapter 7 EXCEPTION HANDLING**

### **HANDLING OF MESSAGES RECEIVED OUT OF SEQUENCE**

7.1 The sequencing of messages between an airborne system and a ground system is dependent on the type of contract established.

7.2 If the ground system receives messages of the same contract type out of sequence, as determined by the time stamping of the messages, the ground system will terminate that contract and notify both the controller and the airborne system.

### **NON-RECEIPT OF MESSAGES**

7.3 Non-receipt of requested ADS-C demand and periodic reports will be a matter for local implementation.

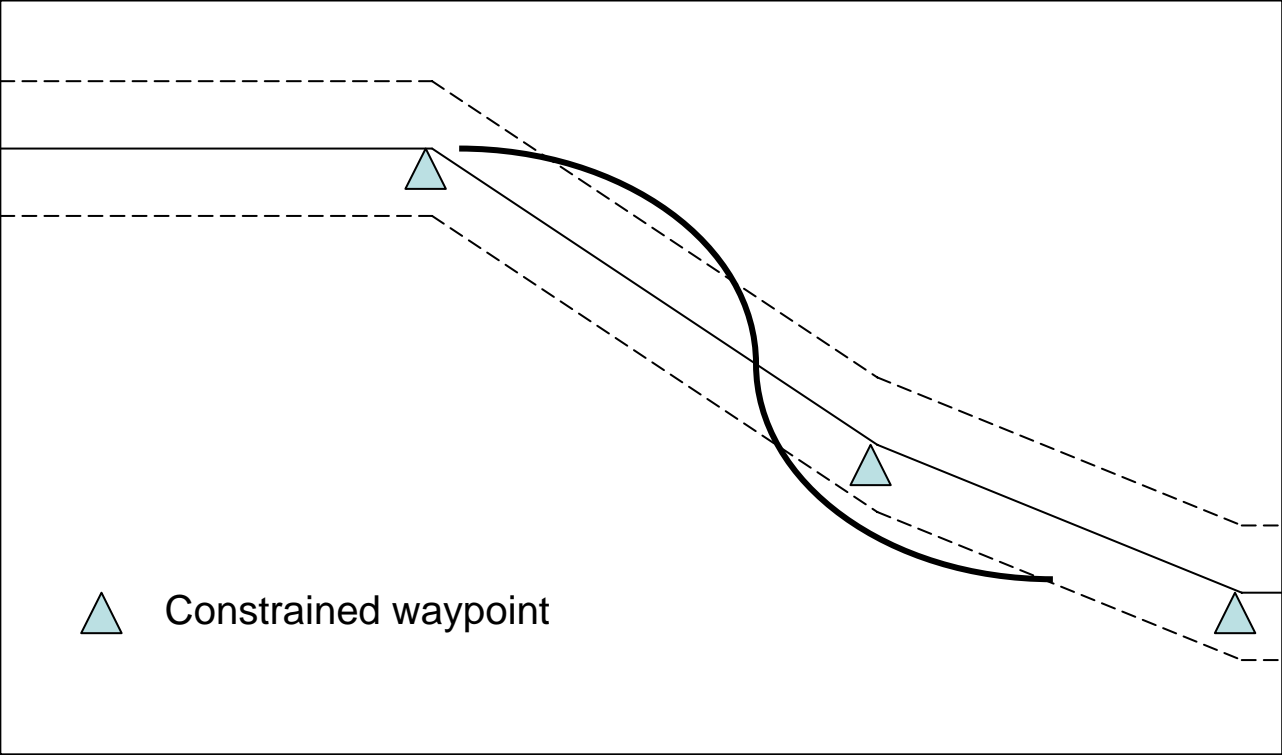
7.4 Non-receipt of requested baseline information as part of an event contract will be a matter for local implementation.

*Note.— Non-receipt of ADS-C event reports may be undetectable.*

### **INVALID DATA AND LOGICAL ERRORS**

7.5 Ground systems will be capable of detecting logical errors and invalid data. In these circumstances the controller will be notified.

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**Fig III-3- X    Vertical deviation change event contract**

## Appendix M – Draft data link harmonization strategy

(Paragraph 4.76 c) refers)

- Any additional ADS-C implementation should either;
  - i) utilise without change the existing FANS 1/A DO-258A/ED-100A<sup>5</sup> ADS-C, or
  - ii) move to the full implementation of the common technical definition that will be defined based on relevant provisions and guidance material (*Manual of Air Traffic Services Data Link Applications (Doc 9694)*) developed by ICAO and its technical bodies

Partial or divergent ADS-C evolutions should not be pursued, as they will continue to promote divergent paths to the detriment to the broader community.

- Any additional CPDLC implementation should either;
  - i) utilise without change the existing FANS 1/A (DO-258A/ED-100A) and ATN (DO-280B/ED-110B<sup>6</sup> CPDLC for ACM/ACL/AMC<sup>7</sup> data link services), or
  - ii) move to the full implementation of the internationally agreed common technical definition, based on *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444), and other operational material as appropriate. A common technical definition might be the technical provisions for the CPDLC application (*Manual on detailed technical specifications for the aeronautical telecommunications network (ATN) based on ISO/OSI standards and protocols* (Doc 9880, First edition).

Partial or divergent CPDLC evolutions that result in excluding messages from aircraft systems should not be pursued, as they will continue to promote divergent paths to the detriment to the broader community.

- Procedural commonalities for implementation of the above packages were considered to be essential. Regional and other implementation groups should harmonise and adopt common procedural guidance packages, rather than each region developing and promulgating unique procedures for common functions.

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<sup>5</sup> RTCA/EUROCAE Interoperability Requirements for ATS Applications Using ARINC 622 Data Communications (FANS 1/A INTEROP Standard)

<sup>6</sup> RTCA/EUROCAE Interoperability Requirements Standard For ATN Baseline 1 (ATN B1 INTEROP Standard)

<sup>7</sup> Air traffic control communications management/Air traffic control clearances and information/Air traffic control microphone check



## Appendix N – Terms of Reference of the Inter-regional Coordination Team (IRCT)

*(Paragraph 4.95 refers)*

### SCOPE OF IRC TEAM ACTIVITIES

- a) The IRC team will identify subjects that need to be addressed as part of inter-regional coordination for global AMHS management and implementation.
- b) The IRC team will coordinate through the ICAO EUR/NAT Office with appropriate bodies in other ICAO regions, including working groups or task forces tasked with similar matters, and with ICAO Headquarters where needed, so as to develop common practices in regard of the identified subjects of inter-Regional relevance.
- c) For this purpose, the IRC team will develop procedures, recommendations and guidance material, as appropriate, to address these subjects.
- d) The IRC team will inform the appropriate bodies within the ICAO EUR/NAT Office, e.g. COG, AFSG and their subgroups, about its activities and conclusions.
- e) The proposed lifetime of the IRC team is 24 months.

### AGREED ACTION PLAN

#	Action	Target date	Deliverable type (if any)	Status
1	Maintain list of subjects that need to be addressed as part of inter-regional coordination.	End of IRC team lifetime	This table	On-going
2	Short-term working arrangements for the global use of the AMC for AMHS MD Register:	Sept 2007	Working paper	Open
2.1	• Develop draft procedures for global AMHS address management in the short-term using AMC	when needed		
2.2	• Informal coordination with designated contact points in other ICAO regions	asap after EANPG/49	Date and agenda	
2.3	• Set up meeting with ICAO HQ and ASIA/PAC to discuss working arrangements			
3	Study management options with other regions for medium-term, taking into account EUR/NAT, ASIA/PAC and other Regions as appropriate:	Sept 2007	Working paper	Open
	• Identify and present options	tbd		
	• Assessment of options	tbd		
	• Impact on existing documentation			

#	Action	Target date	Deliverable type (if any)	Status
4	Address issues related to the implementation of (lower layers) inter-regional network connectivity, as appropriate. This may include: <ul style="list-style-type: none"><li>• Addressing</li><li>• Routing</li><li>• Security</li></ul>		To be determined	Open
5	Develop guidance on publication methods for the various global or regional documents which may affect deployment and operation of AMHS		Memorandum to ICAO HQ	Open

## Appendix O – Short-term working procedures for AMHS address coordination

*(Paragraph 4.96 refers)*

### Outline of proposed procedures for coordination between ICAO AMHS MD Register and ATS Messaging Management Centre

*(Produced by the Inter-regional Co-ordination Team)*

#### 1. Introduction

The first meeting of the AMHS Inter-Regional Coordination Team (in short IRC Team) took place in the ICAO Paris office on 3<sup>rd</sup> July 2007. It was agreed in the IRC Team action plan that, as part of the definition of short-term working arrangements for the global use of the AMC for AMHS MD Register, draft procedures should be developed for global AMHS address management in the short-term using AMC.

This paper provides an outline of the proposed procedures. The overall goal of these procedures is to ensure that global AMHS address management is performed in a consistent manner, both from an operational viewpoint and from an official (institutional) viewpoint.

#### 2. Background on global AMHS address management in the short-term using AMC

Based on the conclusions of the 1<sup>st</sup> IRC Team meeting, the approach for global AMHS address management in the short-term is the following:

- For operational purposes, there is an agreement to use the AMC in the short-term by the EUR and ASIA/PAC Regions, as well as by the U.S. FAA. Other Regions have not discussed AMHS management so far, they should be encouraged to use the AMC as soon as they start studying AMHS implementation;
- for institutional aspects, ICAO intends to publish on its web site an official version of the Register.

Draft procedures between ICAO HQ and AMC should be developed in preparation for discussions of working arrangements with ICAO Headquarters, and should be submitted to EANPG in the mean time.

The working arrangements proposed in this paper are designed for a global AMHS address management using AMC. This implies that **the use of AMC should be strongly recommended to every ICAO Contracting State world wide, as soon as there is an AMHS project or implementation in that State.** The procedures rely upon the fact that all States involved in AMHS, i.e. all States which may declare changes in AMHS addressing, are AMC users.

The basis for these procedures should be that AMC is used operationally, and that ICAO HQ publishes the AMHS MD Register officially on its web site using AMC data. AMC Export files can be used for this purpose.

### 3. Scope of envisaged AMHS address changes

The possible changes in AMHS addresses which need to be managed as part of AMHS address management are classified in two categories and include the following modifications:

- Major changes (should not be frequent):
  - Modification<sup>8</sup> of PRMD-name,
  - Change of addressing scheme, from XF to CAAS or vice-versa (less likely to happen);
- Minor changes (expected to be more frequent):
  - Modifications in CAAS table (associations between location indicator – OU value and O value).

Major changes have either an institutional impact or a major operational impact.

Minor changes have only an operational impact, which may be much more limited, depending on the magnitude of changes which may be roughly assessed on the basis of:

- a) the number of location indicators (LIs) impacted by the change,
- b) the frequency of messages to/from users in the locations of which the LIs are impacted.

Exceptionally, a minor change may have an institutional impact. However this should be very rare and no specific procedure is defined for this, such situations will be handled case by case on an ad-hoc basis.

## 4. Assumptions related to the procedures

### 4.1 Official interactions

Major changes, due to their institutional impact or major operational impact, must be subject to official interactions between the States and ICAO. These interactions are assumed to be based on the exchange of written documents by fax or letter. Pro formas for such documents are provided as Attachment A to this paper.

### 4.2 Systems

In the short-term, only two systems are available to contribute to AMHS address management, as mentioned above:

- the AMC implemented by Eurocontrol under the aegis of the ICAO EUR Office (Paris), for all operational purposes; and
- the ICAO AMHS MD Register, for official purposes. This system is loaded with AMC data to ensure consistency with the operational status of the AMHS network.

### 4.3 Participants

The procedures rely upon the fact that all States/ANSPs involved in AMHS participate in AMC activity. Participants to the procedures are expected to be:

- States, both as the potential initiators of changes in AMHS addressing and as implementers of AMHS systems. The notion of “State” therefore includes:
  - the people in charge of official declarations, for major changes;

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<sup>8</sup> The term “modification” should be understood here in a general way, meaning addition, modification or deletion.

- Cooperating COM Centre (CCC) Operators<sup>9</sup> in charge of operational management of AMHS. They use AMC data to configure their message switches and AFTN/AMHS gateways;
  - Other AMC users, such as AMHS project managers, engineers involved in AMHS projects, COM Centre personnel, etc. (several AMC user categories are defined for them, including “AMF-I User” and “Read-only user”).
- ICAO Regional Offices as a possible interface for the States in each ICAO Region. The Regional Office is represented by the CNS Officer;
  - ICAO Headquarters, represented by the Air Navigation Bureau (ANB) and more specifically (if needed) by its CNS section;
  - AMC Operators, responsible for overall operation of the AMC and of associated procedures.

#### 5. Procedure for major changes

A simplified diagram of the proposed procedure for major changes is provided in Figure 1. The main stages are as follows:

1. an accredited person in the considered State declares the change to ICAO, using a standard written pro forma – “ICAO” means here the Regional Office for the ICAO Region where the State is located. The pro forma includes the applicability date of the change (an AIRAC date);
2. the CNS Officer in the Regional Office, in coordination with ICAO Headquarters as appropriate<sup>10</sup>, validates the acceptability of the declared change from an official and institutional viewpoint;
3. after validation, the CNS Officer forwards the declaration of change to the AMC Operator, using appropriate means such as fax, e-mail, etc. (different from data entry in AMC);
4. the AMC Operator enters data in the AMC based on the input received from the Regional Office, at the appropriate time considering the applicability date of the change and using the AMC operational procedures;
5. at the date of applicability, i.e. at each AIRAC cycle date, the ICAO HQ CNS Section retrieves an AMHS address management export file from the AMC and uploads it in the ICAO Official AMHS MD Register;

This is performed as part of normal AMC operation. This means that in parallel with this process, standard AMC procedures are followed by the AMC Operator and by AMHS managers in other States. The CCC Operators exploit the AMC data reflecting the change, together with other AMHS management data, to update their systems.

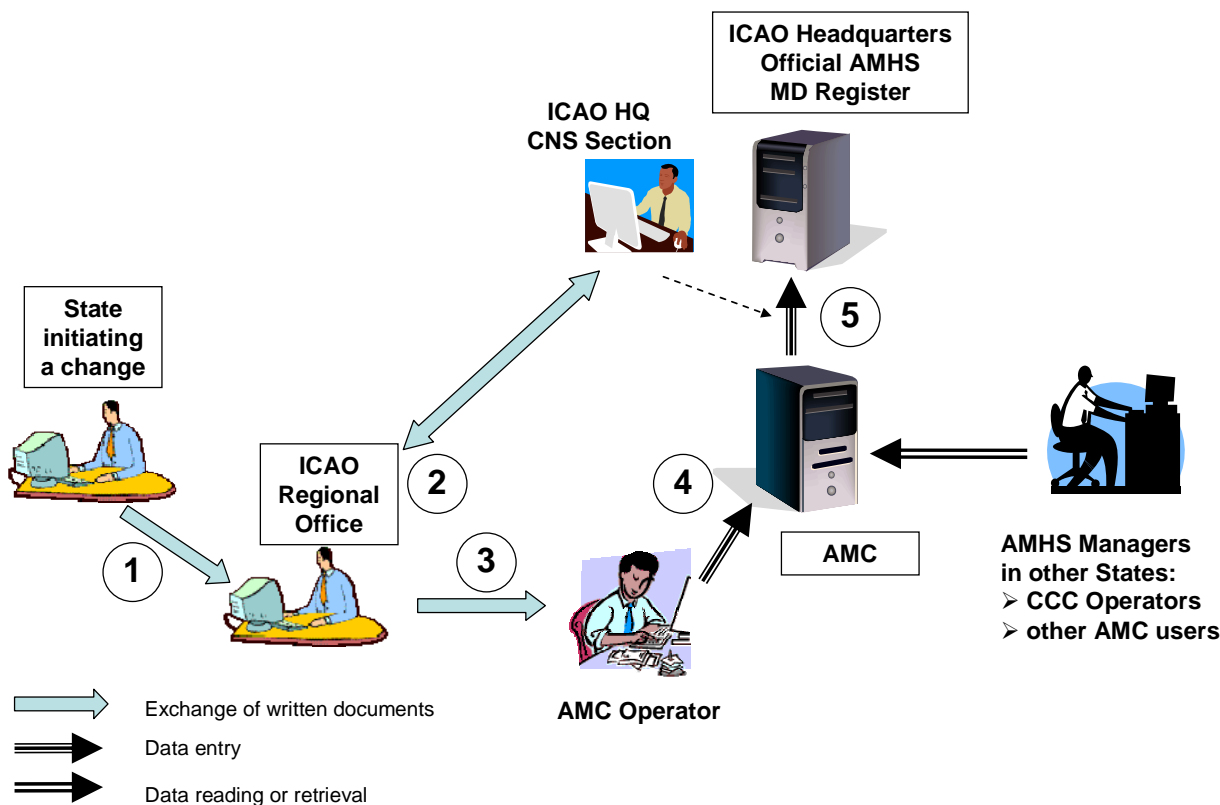
At each stage, coordination may take place if needed between the different parties involved, to ensure the correctness of the proposed change. It will be possible to further describe such coordination aspects, if needed for the specification of the procedure. However, this should be undertaken only when the main principles suggested in this paper are agreed.

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<sup>9</sup> In the current AMC terminology, the term CCC is limited to Europe, and External COM Centre is used for States outside Europe. This distinction should disappear, and the terminology/documentation should be updated, when global use of AMC is started based on these procedures.

<sup>10</sup> e.g. to ensure global uniqueness of a requested PRMD-name with respect to other requests under consideration in other Regions.

# Procedure for major changes



*Figure 1: Procedure to handle major AMHS address changes*

## 6. Procedure for minor changes

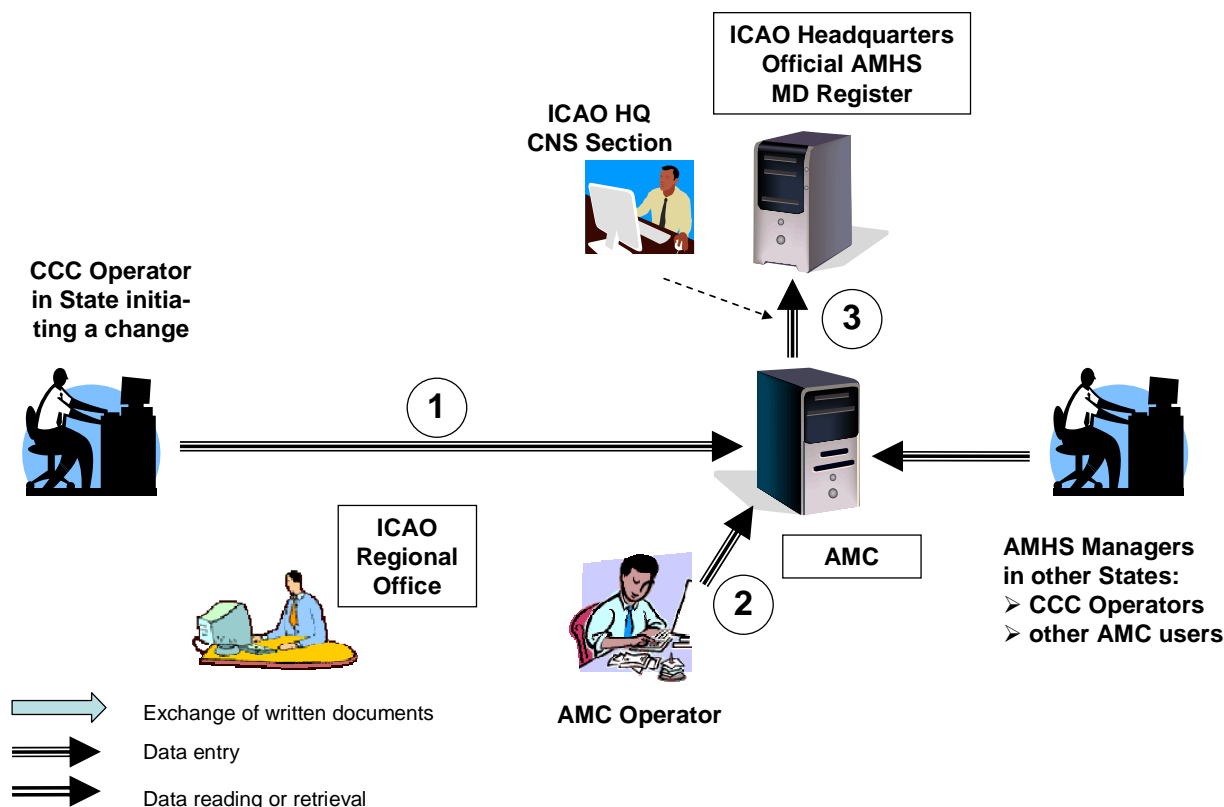
A simplified diagram of the proposed procedure for minor changes is provided in Figure 2. The main stages are as follows:

1. the CCC Operator in the considered State enters data corresponding to the intended change in the AMC, using the standard AMC operational procedures, taking into account the applicability date of the change (an AIRAC date);
2. the AMC Operator performs the standard AMC operational procedures, such that the status of changed data is passed to “operational” at the applicability date;
3. at the date of applicability, i.e. at each AIRAC cycle date, the ICAO HQ CNS Section retrieves an AMHS address management export file from the AMC and uploads it in the ICAO Official AMHS MD Register (this is identical to stage 5 in the procedure for major changes).

This is performed as part of normal AMC operation. This means that in parallel with this process, standard AMC procedures are followed by the CCC Operators and other AMC users to exploit the AMC data reflecting the change, together with other AMHS management data, to update their systems.

At each stage, coordination may take place if needed between the different parties involved, and with the CNS Officer in the Regional Office if needed<sup>11</sup>, to ensure the correctness of the proposed change. It will be possible to further describe such coordination aspects, if needed for the specification of the procedure. However, this should be undertaken only when the main principles suggested in this paper are agreed.

## Procedure for minor changes



**Figure 2: Procedure to handle minor AMHS address changes**

Other procedures already applicable may need to be performed in parallel, such as formal registration of new Location Indicators (LIs) for publication in Document 7910, in case of new LIs being created. However from a formal viewpoint they are out of the scope of this paper.

### 7. Conclusion

The IRC team agreed to:

- adopt the proposed outline as the basis for the draft procedures to be discussed between ICAO HQ and AMC regarding the short term global use of AMC for AMHS address management;
- submit this procedure outline for endorsement by COG and EANPG;
- provide support for the organisation of a meeting between ICAO HQ and representatives of the EUR and ASIA/PAC Regions to discuss such matters, as soon as possible.

<sup>11</sup> The Regional Office needs to be involved only in exceptional cases, such as institutional impact of a minor change.

**Part 1: Modification of PRMD-name Registration**

State: .....

Nationality letters: .....

PRMD-name registered before modification: .....

Please consider the following options in case of modification:

Option A: the PRMD-name to be the reserved identifier consisting of  
C = XX / A = ICAO / P = [nationality letters].

Option B: the PRMD-name to be modified as proposed below, after validation by the Secretariat.

Option C: the PRMD-name to remain unchanged (only the addressing scheme is modified, see Part 2).

Please specify your choice (A, B or C):

If choice is B, please specify the proposed PRMD-name identifier:

P =

Proposed applicability date for the modification (an AIRAC date): .....

Name of organization managing the AMHS MD (if applicable): .....

The contact point: .....

Postal/electronic mail address and telephone/fax number: .....

Additional comments:



<b>Part 2: Modification of declaration of addressing scheme</b>
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State: .....

Nationality letters: .....

PRMD-name registered before modification: .....

Addressing scheme declared before modification: .....

Please select one of the following options in case of modification:

Choice A: AMHS user addresses to be allocated by application of the (recommended) CAAS addressing scheme in the AMHS MD operated in the above State.

Choice B: AMHS user addresses to be allocated by application of the (default) XF addressing scheme in the AMHS MD operated in the above State.

Choice C: the addressing scheme to remain unchanged (only the PRMD-name is modified, see Part 1).

please specify your choice (A, B or C) :

If choice is A (CAAS), please fill in the following table for all location indicators found in Doc 7910 under the above nationality letters.

Organization-name for the group of locations	location indicators

(table to be expanded as appropriate)

Proposed applicability date for the modification (an AIRAC date): .....

Name of organization managing the AMHS MD (if applicable):.....

The contact point: .....

Postal/electronic mail address and telephone/fax number: .....

\_\_\_\_\_

**Appendix P – Proposed update to ICAO Doc 7910**  
**Registration of Predetermined Distribution Addressee Indicators (PDAI)**

*(Paragraph 4.102 refers)*

**Proposed New Definition**

*ATS message handling system (AMHS)* - The set of computing and communication resources implemented by ATS organisations to provide the ATS message handling service.

**Current Text:**

2.5.2 States that have introduced the predetermined distribution system for AFTN messages may assign for that purpose location indicators constituted as follows:

*First and second letters*- the first two letters of the location indicator for the AFTN communications centre designated as the international terminal centre for the receiving state.

*Third and fourth letters* – the letters ‘ZZ’ indicating a requirement for special distribution. These location indicators are not listed in this document.

**Proposed Text:**

2.5.2 States that have introduced the predetermined distribution system for AFTN or AMHS messages may assign for that purpose location indicators constituted as follows:

*First and second letters*- the first two letters of the location indicator for the AFTN/AMHS communications centre designated as the international terminal centre for the receiving state.

*Third and fourth letters* – the letters ‘ZZ’ indicating a requirement for special distribution.

These location indicators shall be listed in this document.

**Appendix Q – Recommended practices for Language Proficiency Testing**

*(Paragraph 4.126 refers)*

**RECOMMENDED PRACTICES TO SELECT (OR DEVELOP) A LANGUAGE PROFICIENCY TEST TO MEET THE ICAO REQUIREMENTS**

A test shall be accompanied by evidence that it:

1. is designed by personnel skilled in language test design and who are familiar with the ICAO Language Proficiency Rating Scale and Holistic Descriptors;
  2. includes tasks for assessing listening and speaking skills representing aeronautical communication involving air traffic controllers and pilots;
  3. is, at the least, capable of assessing at ICAO level 4, and is based on the ICAO language proficiency Rating Scale and Holistic Descriptors and refers to all six criteria: pronunciation, structure, vocabulary, fluency, comprehension, interactions;
  4. has been systematically trialed with representative samples of the target population (air traffic controllers or pilots);
  5. is accepted (or be accepted) by the State respective authority (or provides specific evidence) as being a valid and reliable test that meets the ICAO language proficiency requirements;
  6. identifies and clarifies the role of test administrators, interlocutors and raters; and
  7. provides a sample version readily available to test-takers.
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## Appendix R – ICAO language proficiency requirements – updated Action Plan

(Paragraph 4.128 refers)

### IMPLEMENTING THE ICAO LANGUAGE PROFICIENCY REQUIREMENTS (RECOMMENDED ACTION PLAN)

*Note: State – national legal and/or regulatory authority responsible for adoption and implementation of ICAO Standards (Annex 1).  
ANSP (Air navigation Service Provider) – organization or entity responsible for the provision of air traffic services (Annex 11).  
AO (Airline Operator) – airline or the company responsible for the flight operations (Annex 6).*

N	ACTIVITY	RESPONSIBLE BODY/DATE	REMARKS
	<b>Actions prior to 05 March 2008</b>		
1.	Ensure all stakeholders (pilots, controllers, language teachers, regulators etc.) are familiar with the ICAO language proficiency requirements.	States, ANSPs, AOs. <i>As soon as possible in case States have failed to do it until now.</i>	Conduct workshops, seminars, meetings at national and regional level.
2.	Adopt/incorporate the Standards relating to the ICAO language proficiency requirements (ICAO Annex 1) into national legislation/regulation.	States <i>As soon as possible in case States have failed to adopt them until now.</i>	
3.	Nominate contact person/focal point within a State to be responsible for coordination at the national level (with airlines and ANSPs etc.) of matters dealing with the implementation of the ICAO language proficiency requirements.	States <i>As soon as possible in case States have failed to do it until now.</i>	ANSPs, AOs nominate a person to coordinate this activity with the State.
4.	Establish a plan to coordinate training matters(number of personnel to be trained, training centres, duration of training, etc.) related to the ICAO language proficiency requirements.	States, ANSPs, AOs. <i>As soon as possible in case States have failed to do it until now.</i>	
5.	Select test(s) to meet ICAO language proficiency requirements.	States, ANSPs, AOs. <i>As soon as possible.</i>	ICAO Doc 9835. <i>See Note 1 below the table.</i>
6.	For the selected test(s): select and train personnel to administer and conduct the test and rate candidate performance: <ul style="list-style-type: none"> <li>determine the minimum level of proficiency for testing personnel;</li> <li>establish a programme of accreditation for selected testing personnel; and</li> <li>provide initial and refresher training in the specialist functions</li> </ul>	States, ANSPs, AOs. <i>As soon as possible once a test(s) has(have)been selected and in time to ensure that pilots and controllers can meet the 05 March 2008 deadline.</i>	<i>See Note 2 below the table for desired profiles and requirement (EANPG/48 Report, Appendices J and K)</i>

N	ACTIVITY	RESPONSIBLE BODY/DATE	REMARKS
	required of testing.		
7.	Obtain certification and/or accreditation of selected test(s) from national supervisory authority (regulator/CAA)	States, ANSPs, AOs. <i>As soon as possible once a test(s) has(have)been selected, but not later than 05 March 2008.</i>	
8.	Assess current language proficiency level of controllers and pilots, according to the ICAO rating scale and holistic descriptors (ICAO Annex 1 refers).	States, ANSPs, AOs. <i>As soon as possible in case States have failed to do it until now.</i>	Determine magnitude of problem, address individual training needs.
9.	Develop language training packages designed to close the gap between current language proficiency level and ICAO Level 4 (operational).	States, ANSPs, AOs, providers of language training. <i>As soon as possible in the case where States have failed to do it until now.</i>	Training package includes: plan, syllabus, materials and methods. Language training should be considered in context of job. Note: performance below level 3 will require more general language teaching. Aviation specific language training should be introduced once the ICAO level 3 has been attained.
10.	Assess the financial implications needed to meet ICAO language proficiency requirements. Determine if assistance is required and how it might be obtained.	States, ANSPs, AOs. <i>As soon as possible in case States have failed to do it until now.</i>	Refer to ICAO Doc 9835 chapter 1.3 for guidance on assistance with training programmes. <i>See Note 1 below the table.</i>
11.	Identify social issues resulting from implementation of the ICAO language proficiency requirements and prepare measures to resolve these issues.	States, ANSPs, AOs and social partners. <i>As soon as possible.</i>	Providing for suspension/loss of licence; remedial language training
12	Implement procedures to deal with pilots and controllers who fail to meet the ICAO language proficiency requirements	States, ANSPs, AOs. Before to 05 March 2008	In case of suspension/loss of license; remedial language training

N	ACTIVITY	RESPONSIBLE BODY/DATE	REMARKS
13.	Familiarize pilots and controllers with the format of the test(s) and procedures for administration of the test.	ANSPs, AOs. <i>Before testing.</i>	Organise briefings and make sample tests available for pilots and controllers as soon as possible once the test has been selected.
14.	Conduct qualification testing of pilots and controllers.	States, ANSPs, AOs, test providers. <i>In place before 05 March 2008.</i>	
15.	Develop language training packages to maintain language proficiency and a schedule of language refresher training.	States, ANSPs, AOs <i>In place before 05 March 2008.</i>	Ensure that current Level 4 is not eroded (could be included in refresher training programmes).
16.	Review recruitment and selection procedures and consider a minimum level of plain language proficiency similar to at least equivalent to ICAO level 3 before entry to pilot and air traffic controller professional training programmes.	Training establishments, ANSPs, AOs.	Note: performance below level 3 will require more general language teaching. Aviation specific language training should be introduced once the ICAO level 3 has been attained.
17.	Implement language awareness programmes to ensure that native and expert speakers of English communicate in a manner that is easily understandable to non-native speakers of English proficient at ICAO Level 4.	States, ANSPs, AOs. <i>Not later than 05 March 2008.</i>	Applies equally where other languages are used in aeronautical communication.
18.	Implement a programme for regular testing of pilots and controllers.	States, ANSPs, AOs. <i>Before 5 March 2008</i>	ICAO recommendations: at least every 3 years for a level 4 performance and at least every 6 years for a level 5 performance
19.	Implement language proficiency maintenance programmes (see item 15 above)	States, ANSPs, AOs. <i>Before 5 March 2008</i>	
20.	Present a status report to ICAO on implementation of ICAO language proficiency requirements.	States <i>Before 5 March 2008</i>	

N	ACTIVITY	RESPONSIBLE BODY/DATE	REMARKS
	<b>For States that are not able to meet the Language Proficiency Requirements by 5 March 2008</b>		
21.	<p>Make the national language proficiency implementation plan available to all other Contracting States and notify ICAO of any differences also to be published in their national AIPs.</p> <p>The national plan should include the following:</p> <ul style="list-style-type: none"> <li>a) timeline for adoption of the language proficiency requirements into national regulations;</li> <li>b) timeline for establishment of language training and assessment capabilities;</li> <li>c) a description of a risk-based prioritization system</li> <li>d) a procedure for endorsing licenses to indicate the holders' language proficiency level</li> <li>e) designation of a national focal point on language proficiency requirements implementation</li> </ul>	States Before 5 March 2008	(A36 resolution on LAN proficiency)
22.	Identify, assess and analyze reasons for non compliance with the language proficiency requirements.	States, ANSPs, AOs. Before 05 March 2008.	
23.	Assess additional resources needed	States, ANSPs, AOs. Before 05 March 2008.	Financial, human or other resources needed to implement the plan
24	Provide regular update on implementation status (through EANPG and/or other regular fora) .	States. Every six month until October 2010	To seek additional encouragement and assistance from ICAO if required
25	Present a final report to ICAO on implementation of ICAO language proficiency requirements .	States. As soon as implemented but not later than 5 March 2011	

*Note1: ICAO Doc 9835 –Manual on Implementation of ICAO Language Proficiency Requirements provides guideline material and valuable information on preparing training and testing programmes.*

*Note 2: Suggested profiles for personnel to administer, conduct and rate tests:*

**Administrator** – a person familiar with the preparation and conduct of tests/examinations e.g. logistics, security, candidate briefing (could also be rater or interlocutor).

**Rater** – a person with a level of proficiency in the English language sufficient to evaluate performance up to level 5 in compliance with the holistic descriptors and the ICAO Language Proficiency Rating Scale;

*For details see the EANPG48 Report Appendix J – Recommended qualifications for raters of tests to meet the ICAO language proficiency requirements*

**Interlocutor** - a person with a level of proficiency in the English language sufficient to conduct the selected oral test (tests);

*For details see the EANPG48 Report Appendix K – Recommended qualifications for interlocutors of tests to meet the ICAO language proficiency requirements.*

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**Appendix S – Aeronautical Information Management (AIM)  
- Global AIS Congress Recommendations**

*(Paragraph 4.133 refers)*

**GLOBAL AIS CONGRESS  
MADRID, SPAIN, 27-29 JUNE 2006**

**RECOMMENDATIONS**

**Recommendation 1:** ICAO adopt the AICM/AIXM as the standard aeronautical information conceptual model and the standard aeronautical information exchange model, and

- develop appropriate means of compliance, and
- global mechanisms to manage and develop the AICM/AIXM.

**Recommendation 2:** ICAO should evolve the AIM Concept and associated performance requirements and develop a road map to plan, manage and facilitate on a world-wide basis the transition from AIS to AIM.

**Recommendation 3:** ICAO instigate an urgent review of Annex 4 and Annex 15 in accordance with the recommendation of the 11th Air Navigation Conference.

**Recommendation 4:** ICAO should incorporate transition activities into the Global Air Navigation Plan in order to ensure broad-based development of AIS/AIM capabilities across all ICAO Regions

**Recommendation 5:** ICAO should, as a matter of urgency address legal and institutional issues including those associated with an expansion of service from AIS to AIM that could constrain the adoption and implementation of AIM.

**Recommendation 6:** States working in close coordination with international organisations should support ICAO in any activity to accommodate the transition from AIS to AIM.

**Recommendation 7:** Recognising the critical nature of aeronautical information in the present and future ATM systems, States should give high priority to the implementation of existing Standards such as WGS-84 and Quality Management Systems and should, if necessary, request assistance from ICAO or if appropriate international organisations to do so.

**Recommendation 8:** Recognising the social dimension associated with change, ICAO working with States and international organisations determine the required Staff Profile(s) for AIM and determine appropriate skills and competencies and amend existing guidance material and develop new guidance and training material, under the Trainair programme perhaps, to assist States and other AIS organisations in the transition process.

**Recommendation 9:** ICAO should promote open access to information.

**Recommendation 10:** That ICAO consider as a matter of priority how a Global Forum could be established.

## Appendix T – Regional preparations for the implementation of the amended provisions for TAF

*(Paragraph 4.164 refers)*

### EUR Plan for implementation of the new TAF provision (Amendment 74 to Annex 3)

Action	Resp. body	Deliverable	Target date
Information on airline requirements for the TAF period of validity	IATA	Letter to RO with proposal	Dec 2007
Information to States on TAF changes and circulation of EUR BANP amendment proposal (as prepared by the METG PT)	RO	State letter	10 Jan 2008
Information from States on their decision for the period of validity of TAF for all aerodromes included in FASID Table MET 2A	States	Letter to RO, copy to BMG	28 Feb 2008
First review of the new EUR TAF bulletin structure	BMG	Draft EUR TAF bulletin structure	31 Mar 2008
Second review	BMG	Final EUR TAF bulletin structure	Jun 2008
States informed of the new bulletin structure	BMG and RO	New EUR TAF bulletin structure circulated to EUR States	Jul 2008
Amendment proposal to FASID Table MET 1A (and MET 2A)	RO	State letter with amendment proposal	Jul 2008
Coordination with other ICAO Regions	RO, BMG	Exchange of information on TAF bulletin structure	Jul 2008
Final pre-implementation review	METG/18	BMG WP	Sep 2008
Issuance of METNO	BMG	METNO bulletins sent via AFTN and SADIS to all centres concerned	Early October
Implementation date/time	States	Commence issuance of TAF according to the new bulletin structure	5 Nov 2008 0000 UTC
Post-implementation monitoring	BMG	Monitoring report	Nov 2008

**Appendix U – Issues related to TAF period of validity and issuance time**

*(Paragraph 4.165 refers)*

**REVIEW OF PROCEDURES RELATED TO PERIOD OF VALIDITY AND TIME OF ISSUANCE OF TAF**

METG/17 identified that the following issues related to the TAF procedures should be further studied by its Project Team on TAF procedures and outcome of this study forwarded for consideration by an appropriate ICAO group (AMOF Study Group).

1. Simplification of the provisions related to the TAF update cycle allowing issuance of all TAFs every 3 hours regardless the period of validity.
  2. Elimination of requirement for “short” TAF since airline users requirements have shifted to 24 or longer TAF only.
  3. Allowing additional flexibility in selecting the time of issuance and period of validity of TAF for aerodromes not operating on 24-hours.
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**Appendix V – Revised Terms of Reference of the Meteorology Group (METG)**

*(Paragraph 4.170 refers)*

**METEOROLOGY GROUP (METG)****1. Terms of reference**

1.1 The Meteorology Group (METG) is established by EANPG to pursue the tasks of the Group in the field of aeronautical meteorology in support to the relevant ICAO Strategic Objectives (mostly Safety and Efficiency, and to certain extent, Environment and Continuity) with the following TORs:

- a) Ensure the continuous and coherent development of the MET Part of the European Air Navigation Plan (Basic ANP and FASID, Doc 7754) and other relevant regional documents taking into account the evolving operational requirements in the EUR Region and the need for harmonization with the adjacent regions in compliance with the Global Air Navigation Plan;
- b) Monitor and coordinate implementation of the relevant ICAO SARPs and regional meteorological procedures, facilities and services by the EUR States and where necessary ensure harmonization, taking due account of financial and institutional issues;
- c) Identify any deficiencies in the provision of meteorological service for air navigation in the EUR Region and ensure the development and implementation of relevant action plans by the States to resolve them;
- d) Foster implementation by facilitating the exchange of know-how and transfer of knowledge and experience, in particular, between the Western and Eastern parts of the Region;
- e) Provide input to the work of appropriate ICAO bodies in the field of aeronautical meteorology, according to the established procedures.

**2. Work Programme of METG**

2.1 To ensure that the objectives of METG are met in accordance with the TORs, the group shall conduct its work according to a Work Programme endorsed by EANPG and kept under review by the COG. The following are the main principles to be followed in setting up the Work Programme of METG:

- a) The work programme shall be composed of tasks and projects with clearly identified deliverables, target dates and responsibilities;
- b) The tasks/projects should cover the main implementation domains<sup>12</sup> in MET which are subject to regional planning and implementation;
- c) The progress on the tasks/projects should be reviewed regularly by METG and reported to COG and EANPG to ensure that the target dates are met and the deliverables are of required quality.
- d) To facilitate the execution of its work programme, METG may set up working groups and project teams, if and when required, charge them with specific tasks and define target dates for

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<sup>12</sup> The main implementation MET domains for the EUR Region at present are: Implementation of the WAFS, including SADIS; Implementation of advisory and warning services (IAVW, SIGMET, AIRMET); Exchange of OPMET information; MET services for ATM.

their completion. After completion of their task(s), the working groups/project team(s) will be dissolved.

3. **In conducting its activities, METG should follow the following guidance given to the Group by the EANPG and COG:**

- a) Maintain close coordination with relevant EANPG contributory bodies to ensure harmonious development of the EUR air navigation system as a whole;
- b) Conduct periodic reviews and originate, as necessary, proposals for amendment of Part VI - MET of the EUR Basic ANP and FASID (Doc 7754) and EUR SUPPs (Doc 7030);
- c) Seek co-ordination and harmonization with the relevant planning and implementation activities in other ICAO Regions;
- d) Use different techniques to monitor implementation in the States (such as, regional surveys, monitoring exercises, regional tests and simulations, etc.) and identify deficiencies; conduct risk analysis to prioritize the identified deficiencies and prepare proposals to EANPG to ensure the urgent resolution of safety-related MET deficiencies;
- e) Identify areas where assistance to individual States or sub-regions is necessary to eliminate deficiencies and improve harmonized implementation of the MET facilities and services through the established mechanisms (e.g., SIP or ICAO TCP projects) and prepare proposals thereon;
- f) Ensure close liaison between EANPG and the MET operations groups established by ANC: WAFSOPSG, IAVWOPSG, SADISOPSG, and with relevant ANC study groups and/or panels in addressing MET matters; Provide feed-back received from States on problems impeding implementation which need to be addressed by appropriate ICAO bodies;
- g) Assist the Secretariat in developing and keeping up-to-date of regional guidance material as necessary to foster the implementation by the States of the global requirements and regional procedures on the provision of meteorological services for air navigation;
- h) Prepare proposals and support organization of regional seminars and workshops in the MET field with emphasis on implementation issues;
- i) Coordinate regional activities in the field of aeronautical meteorology with appropriate WMO bodies; liaise closely with Eurocontrol, IATA and IFALPA on issues of common interest ;
- j) Identify and refer to COG and EANPG emerging operational and institutional issues related to the planning and implementation of the meteorological services and facilities in order to ensure that such issues are addressed in a coherent manner with the respective ICAO plans, strategies and provisions.

#### 4. Composition of the METG

Armenia (on behalf of Armenia, Azerbaijan and Georgia)  
Austria  
Belgium  
Czech Republic  
Denmark  
Finland  
France  
Germany  
Ireland  
Italy  
Kazakhstan (on behalf of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan).  
Latvia (on behalf of Estonia, Latvia and Lithuania)  
Netherlands  
Portugal  
Romania  
Russian Federation, the  
Slovakia  
Slovenia  
Spain  
Switzerland  
United Kingdom  
USA

Eurocontrol  
IAOPA  
IATA  
IFALPA  
WMO

#### Note:

*According to the EANPG Handbook: The composition of a contributory body shall be kept as small as possible, however all States, whether or not member of the EANPG, and ICAO recognized international organizations likely to make valid contributions are given the opportunity to participate in essential work programme issues.*

*Contributory body participants have the status and role only of technical experts, nominated by their State or ICAO recognized international organizations. They do not represent their State or organization in any formal way, and work on behalf of the EANPG.*

**Appendix W - List of deficiencies**  
(Paragraph 6.16 refers)

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**REPORTING FORM ON  
AIR NAVIGATION DEFICIENCIES IN THE EUR REGION**

DEF ID	DEF Priority	State	DEF Type	DEF Req - ICAO Doc	DEF Req - Detail	DEF Descr	Reported by	Date Reported	DEF Rmk	Cor Act Recom ICAO	CAP Submitted	CAP Description	CAP Exec Body	CAP Target Date
<p>Remark: According to the Uniform Methodology, deficiencies are prioritized with regard to their implications on the safety or regularity and efficiency, as follows:  <b>U priority</b> = Urgent requirements having a direct impact on safety and requiring immediate corrective actions.  <b>A priority</b> = Top priority requirements necessary for air navigation safety.  <b>B priority</b> = Intermediate requirements necessary for air navigation regularity and efficiency.</p>														
EUR-ATM-01-01	A	Georgia	WGS-84	An 15	Par. 3.6.4	WGS-84 - Not implemented		01/12/2004	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	N		Georgia CAA	ASAP
EUR-ATM-01-02	A	Kazakhstan	WGS-84	An 15	Par. 3.6.4	WGS-84 - Not Implemented		01/12/2004	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	N		Kazakhstan CAA	
EUR-ATM-01-03	A	Kyrgyzstan	WGS-84	An 15	Par. 3.6.4	WGS-84 - Not implemented		01/12/2004	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	N		Kyrgyzstan CAA	
EUR-ATM-01-04	A	Russian Federation	WGS-84	An 15	Par. 3.6.4	WGS-84 - Not implemented		01/12/2004	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	N		Russian Federation CAA	2004
EUR-ATM-01-05	A	Tajikistan	WGS-84	An 15	Par. 3.6.4	WGS-84 - Not implemented		01/12/2004	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	N		Tajikistan CAA	

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EUR-ATM-01-06	A	Turkmenistan	WGS-84	An 15	Par. 3.6.4	WGS-84 - Not implemented		01/12/2004	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	N		Turkmenistan CAA	
EUR-ATM-01-07	A	Uzbekistan	WGS-84	An 15	Par. 3.6.4	WGS-84 - Not implemented		01/12/2004	The difficulties which impede CIS States to speed up and complete the implementation of WGS-84 are systematic and have legal and financial aspects.	Implement WGS-84	N		Uzbekistan CAA	ASAP



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EUR-ATM-02-01	A	Kazakhstan	Harmonization of flight levels	An 15	Par. 3.6.4	Non-ICAO SARPS compliant flight level system		01/12/2003	The lack of harmonization of flight levels in accordance with ICAO SARPS slows down the implementation of ICAO strategic objectives and global initiatives.	Implement flight levels system in accordance with ICAO SARPs	N		Kazakhstan CAA	ASAP
EUR-ATM-02-02	A	Kyrgyzstan	Harmonization of flight levels	An 15	Par. 3.6.4	Non-ICAO SARPS compliant flight level system		01/12/2003	The lack of harmonization of flight levels in accordance with ICAO SARPS slows down the implementation of ICAO strategic objectives and global initiatives.	Implement flight levels system in accordance with ICAO SARPs	N		Kyrgyzstan CAA	1999
EUR-ATM-02-03	A	Russian Federation	Harmonization of flight levels	ANP	Part II, Table ATS 3D	Non-ICAO SARPS compliant flight level system		01/12/2003	The lack of harmonization of flight levels in accordance with ICAO SARPS slows down the implementation of ICAO strategic objectives and global initiatives.	Implement flight levels system in accordance with ICAO SARPs	N		Russian Federation CAA	
EUR-ATM-02-04	A	Tajikistan	Harmonization of flight levels	An 11	Par. 2.6	Non-ICAO SARPS compliant flight level system		01/12/2003	The lack of harmonization of flight levels in accordance with ICAO SARPS slows down the implementation of ICAO strategic objectives and global initiatives.	Implement flight levels system in accordance with ICAO SARPs	N		Tajikistan CAA	
EUR-ATM-02-05	A	Turkmenistan	Harmonization of flight levels	An 11	Par. 2.6	Non-ICAO SARPS compliant flight level system		01/12/2003	The lack of harmonization of flight levels in accordance with ICAO SARPS slows down the implementation of ICAO strategic objectives and global initiatives.	Implement flight levels system in accordance with ICAO SARPs	N		Turkmenistan CAA	
EUR-ATM-02-06	A	Uzbekistan	Harmonization of flight levels	An 11	Par. 2.6	Non-ICAO SARPS compliant flight level system		01/12/2003	The lack of harmonization of flight levels in accordance with ICAO SARPS slows down the implementation of ICAO strategic objectives and global initiatives.	Implement flight levels system in accordance with ICAO SARPs	N		Uzbekistan CAA	2005

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EUR-ATM-03-01	A	Cyprus	ATS coordination procedures	An 11, EUR ANP	SARPs and reg. procedures related to coordination between ACCs	Safety deficiencies in the N part of Nikosia FIR			Long lasting issue. Any solution envisaged requires political agreement between the parties involved		N		Cyprus	ASAP
EUR-ATM-03-02*	A	Turkey	ATS coordination procedures	An 11, EUR ANP	SARPs and reg. procedures related to coordination between ACCs	Safety deficiencies in the N part of Nikosia FIR			Long lasting issue. Any solution envisaged requires political agreement between the parties involved		N		Turkey	ASAP
EUR-ATM-04-01	U	Albania	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-02	U	Austria	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-03	U	Bosnia& Herzegovina	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008

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EUR-ATM-04-04	U	Croatia	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-05	U	Cyprus	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-06	U	Estonia	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-07	U	Germany	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-08	U	Latvia	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008

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EUR-ATM-04-09	U	Malta	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-10	U	Moldova Republic	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-11	U	Morocco	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-12	U	Romania	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-13	U	Slovak Republic	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008

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EUR-ATM-04-14	U	Slovenia	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-15	U	Spain	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-16	U	Tunisia	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-17	U	Ukraine	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-18	U	Georgia	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008

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EUR-ATM-04-19	U	Turkey	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "N"	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-20	U	Armenia	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-21	U	Bulgaria	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-22	U	Czech Republic	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-23	U	Finland	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008

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EUR-ATM-04-24	U	FYROM	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-25	U	Greece	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-26	U	Hungary	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-27	U	Lithuania	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-28	U	Poland	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008

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EUR-ATM-04-29	U	Russian Federation	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008
EUR-ATM-04-30	U	Serbia	Provision of air space safety monitoring data	An 11	Par. 3.3.5.1	The State authority concened does not report the required data to the RMA	EUR RMA	15/11/2007	THE EUR air space safety SAFETY MONITORING REPORT 2007 - Reporting Status "0" (applies to zero occurrence reports)	Required monitoring data to be sent to the RMA on a regular basis	N		State CAA	2008

\* Note: Turkey expressed disagreement with the deficiency (paragraph 6.12 of the EANPG/49 report refers).



### Appendix X – EANPG Work Programme for 2008

(Paragraph 7.6 refers)

N°	Action by	Deliverable	Target
1		<b>AIR NAVIGATION ISSUES – ATM</b>	
1-01	COG (ATMGE)	ATM Safety Management Programme Implementation – progress report. [to be conducted in coordination with associated action in task -1] : - Implementation of Safety Management Systems in ATM – activity performed by the "Safety Management Systems in ATM Task Force – Eastern Part of the ICAO EUR Region" (ATMGE/SMSA) Task Force; regular meetings in March and September of each year); - Implementation of ATM Safety Occurrences Reporting Systems ATM – activity performed by the "ATM Safety Occurrences System Task Force - Eastern Part of the ICAO EUR Region" (ATMGE/SORS) Task Force - regular meetings in March and September of each year).	on-going
1-02	COG (ATMGE)	Provide input to the new format of the EUR ANP (CTPC)	Ongoing
1-03	COG (RDGE)	For the Eastern part of the Region maintain: - working 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
1-04	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
1-05	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. New working procedures put in place (task no. 1-06 refers).	Completed
1-06	COG (TF)	Update of language proficiency action plan and progress report Assistance to States for implementation of new language proficiency requirements	By 2008; on-going By 2011
1-07		Flexible Use of Airspace	Dec2008

N°	Action by	Deliverable	Target
2		<b>AIR NAVIGATION ISSUES – CNS</b>	
2-01	COG (AFSG)	Overview of network operations and resolution of problems; overview of ATS Messaging Management Centre (CMC/AMC) operations; monitoring and resolution of AMHS transition issues; Maintenance of relevant documentation; Co-ordination with adjacent Regions, SITA, EUROCONTROL and other bodies, as necessary.	Ongoing
2-02	COG (AFSG)	Completion of draft Regional manual of guidelines for minimum network security standards for access (physical & system) to the AFTN/CIDIN/AMHS network and Directory Services for AMHS.	Ongoing report to EANPG50
2-03	COG (AFSG)	Support the implementation of the ATSMHS off-line management functions	completed
2-04	COG (AFSG)	a) Draft update/amendment material for the Regional ANP and other relevant ICAO documentation, including that necessary for AMHS implementation. b) [Draft Regional Transition Strategy for ATN] ( <i>action suspended because there are no agreed operational requirements to guide implementation planning</i> )	Ongoing
2-05	COG (FMG)	Monitor and report to the EANPG the status of available capacity in the various aviation bands	Ongoing
2-06	COG (FMG)	Ensure the effective operation of the coordination process for the necessary agreement to make new frequency assignments and coordinate 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
2-07	COG (FMG)	In coordination with Eurocontrol implement the SAFIRE tool for electronic exchange of coordination data for updating of COM tables	Deployment from 2007 onward
2-08	COGFMG)	Support States in coordination with Eurocontrol in internal review of the frequency assignments	EANPG/50
2-09	COG (FMG)	Determine the region wide requirements for VDL/4 frequency allocations	EANPG/50

N°	Action by	Deliverable	Target
3		<b>AIR NAVIGATION ISSUES – MET</b>	
3-01	COG (METG)	Implementation of the Amended TAF provision in the EUR Region	COG - October 2008
3-02	COG (METG)	Conduct tests on volcanic ash Contingency Plan and analyse the results. Develop a web page on the VA advisories and SIGMET tests and publish the results.	ongoing
3-03	COG (METG)	Transition from the MOTNE scheme to the new regional scheme for exchange of OPMET information (RODEX)	COG - October 2008
3-04	COG (METG)	Enhancing the compliance with the ICAO provisions in the implementation of MET services in the Eastern part of the EUR Region; analysis of deficiencies and develop correction plans	COG - October 2008
3-05	COG (METG)	Enhancing the MET support for air traffic management. Study the new ATM requirements for MET service and develop appropriate proposals.	COG October 2008
3-06	COG (METG)	Organize and conduct, in coordination with Eurocontrol and WMO a Workshop on the MET support for ATM	Dec 2008
4		<b>AIR NAVIGATION ISSUES – AOP</b>	
4-01	EUROCONTROL	a) Identify feasible capacity-enhancing ATM procedures –progress report b) Implementation planning for procedures that are possible in the near term.	ongoing
5		<b>AIR NAVIGATION ISSUES – AWOP</b>	
5-1	COG (AWOG)	Amendment to the EUR Doc 013 in respect to i) Clarification of the ICAO and JAA/EASA on LVP requirements from the pilot and ATCO perspectives ii) 200ft cloud ceiling requirements for LVP iii) and Effects of equipment failure on aircraft operations	Completed; Edition 3 expected to be released early 2008
5-2	COG (AWOG)	Assess the results of MLS operational trials at Heathrow, and the outcome of the ITU World Radio Conference (in conjunction with FMG)	COG/41
5-3	COG (AWOG)	Investigate the management of the ILS CAT I critical and sensitive areas	Progress report 2008
5-4	COG (AWOG)	Investigate wind farm influence on NavAids signal propagation	Ongoing report 2008

N°	Action by	Deliverable	Target
6		<b>AIR NAVIGATION ISSUES – AIS</b>	
6-01	COG (AIS/MAP)	Implementation of AIS/MAP services in the Eastern part of the EUR Region, progress report	COG 42-Oct 2008
6-02	COG (AIS/MAP)	Monitoring and update of the AIS/MAP deficiencies in the Eastern part of the Region	COG41
6-03	COG (AIS/MAP)	Organise AIS/MAP seminars/workshops	COG41
6-04	COG (AIS/MAP)	Transition from AIS to AIM	COG41
6-05	COG (AIS/MAP)	Progress report on eTOD implementation	COG41
6-06	COG (AIS/MAP)	Review of proposal for amendment to Annex 15	COG41
7		<b>IMPLEMENTATION ISSUES</b>	COG41
7-01	COG (FMG)	Take the necessary steps and report on the progress for the implementation of the VDL frequency plan,	Ongoing, October 2008
7-02	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.	Suspended until further EGNOS evolution
7-03	COG (AFSG/METG)	develop plans to accommodate BUFR OPMET transmission within the constraints of the EUR AFS network	Pending decision for BUFR in WMO (?)
7-04	COG	monitor progress and make any necessary CCAMS decisions on behalf of EANPG	Ongoing Report to COG41
7-05	COG	Monitor progress and make any necessary 8.33 decisions on behalf of EANPG. Follow-up the 8.33 implementation above FL195 and planning for introduction below FL195	Ongoing. report COG41

N°	Action by	Deliverable	Target
8		<b>SAFETY MANAGEMENT</b>	
8-01	COG	Coordinate and promote regional air navigation safety activities	COG – October 2008
8-02	COG	Airspace Safety monitoring (RVSM)	COG41
9		<b>DEFICIENCIES</b>	
9-01	COG	Monitoring and update of the deficiencies database	COG

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