NAT SPG/36

NORTH ATLANTIC SYSTEMS PLANNING GROUP

Summary of Discussions and Conclusions of the

Thirty-Sixth Meeting of the

North Atlantic Systems Planning Group

Paris, 6 to 8 June 2000

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FOREWORD

i. Introduction

i.1 The Thirty-Sixth Meeting of the North Atlantic Systems Planning Group (NAT SPG) was held in the European and North Atlantic (EUR/NAT) Office of ICAO from 6 to 8 June 2000.

i.2 Mr Christian Eigl, the Regional Director of the ICAO EUR/NAT Office and the Secretary of the NAT SPG welcomed the NAT SPG. Mr Jacques Vanier from the ICAO EUR/NAT Office assisted him, as did Mr Jean-Claude Bugnet, Chief of the Joint Financing Section, from ICAO Headquarters.

i.3 In the opening session, Mr Ásgeir Pálsson, the Chairman of the NAT SPG, paid tribute to Mr Myles Murphy, the previous Chairman of the NAT SPG, who had passed away in August 1999. The Chairman also expressed the Group's appreciation to Mr John Nordbø who had represented the NAT SPG at Myles' funeral. The entire Group wished to be associated with this tribute. In addition, the Group noted with sadness the untimely death of Mr Ray Hilton who had been a long standing member of the United States delegation to the NAT SPG.

i.4 In addition to the Members of the NAT SPG, the Russian Federation, Spain, the International Air Carriers Asscciation (IACA), the International Air Transport Association (IATA), the International Business Aviation Council (IBAC) and the International Federation of Air Line Pilots Associations (IFALPA) had been invited to attend the meeting. A list of participants is at page 2.

i.5 The Mathematicians' Working Group (MWG) had met in the EUR/NAT Office of ICAO from 2 to 5 May 2000 to consider the mathematical and statistical aspects of the safety of separation minima applied in the NAT Region. **Mr Keith Slater**, the Rapporteur, presented the MWG report in support of the assessment of current system safety performance in terms of lateral, vertical and longitudinal collision risk.

i.6 The group charged with the scrutiny of navigation performance in the NAT Region, which was chaired by **Mr Jim Benson** of the United Kingdom, had met in London on 26 and 27 April 2000 and had provided the NAT SPG with their report.

i.7 The Aeronautical Communications Sub Group (ACSG), which is chaired by Portugal, provided a report on the current use of High Frequency (HF) in the NAT Region.

i.8 The NAT Operations Managers had met in Prestwick from 18 to 22 October 1999. Their report had been made available to the NAT SPG.

i.9 The NAT Implementation Management Group (NAT IMG) had met twice since NAT SPG/35 and a report on their activities had been presented to the Group.

i.10 The NAT SPG expressed its appreciation to all those that had worked within the above mentioned groups for the quality of the material that they had produced.

LIST OF PARTICIPANTS

CANADA
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Mr Robert FULLARTON

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• NAT SPG Member

1. AGENDA ITEM 1 - DEVELOPMENTS

1.1 Introduction

1.1.1 Under this Agenda Item, the Group considered the following specific subjects:

a) Adjacent Regions

b) NAT provider States

1.2 Adjacent Regions

European Region

1.2.1 The Group noted that plans had been agreed to which would lead to the implementation of Reduced Vertical Separation Minimum (RVSM) in the EUR Region, as well as the Europe/South America corridor, by 24 January 2002.

1.2.2 As regards the mandatory carriage of Airborne Collision Avoidance System (ACAS) in the EUR Region and in follow up to NAT SPG/35 Conclusion 35/1, the Group noted that the NAT IMG had tied the NAT ACAS programme to the EUR programme and that no further work was required by the NAT SPG other than to monitor developments for the EUR Region. The Group also noted that the European Region programme had an exemtion policy that would be applicable up to 31 March 2001 at which time mandatory carriage would be required. In this connection, the Group noted that the NAT IMG would continue to monitor this programme and that, if necessary, the NAT Region implementation programme would be adjusted as required in accordance with the European ACAS programme.

ICAO Informal Trans-Asia/Trans-Siberia/Cross Polar Routes High Level Steering Group (ITASPS)

1.2.3 The Group was informed that ITASPS and its contributory bodies had focused their activities since the beginning of the year 2000 on finalizing planning and practical arrangements for the implementation of a set of transit Air Traffic Services (ATS) routes known as Arctica- 1, and Polar 1, 2, 3 and 4. These routes belonged to a larger set of transit ATS routes linking destinations in North America and Europe with those in the Far East through airspace of the Russian Federation.

1.2.4 While the complete development of infrastructures required to serve air traffic along these routes, in particular in the airspace of the Russian Federation, would require several years of concentrated operational and financial efforts, the States concerned agreed on implementation of the five above mentioned transit ATS routes, on a regular basis but with capacity limitations, as of July 2000.

1.2.5 The Group noted the information and agreed that it should be kept informed of developments as they would have an effect on planning for the NAT Region.

CONCLUSION 36/1 - TRANS-ASIA, TRANS-SIBERIA AND CROSS POLAR ROUTES

That the North Atlantic Systems Planning Group be kept informed of cross-polar route developments.

1.3 NAT Provider States

1.3.1 The Group was presented with information concerning developments in various countries. In this connection, the Group noted the provider States'plans for their involvement in NAT data link trials, the plans to upgrade the Gander Automated Air Traffic Services (GAATS) system and developments concerning the Portuguese Oceanic System. Finally, the Group noted the results of the Wide area Augmentation System (WAAS) trials that had taken place in Iceland.

2. AGENDA ITEM 2 - PLANNING AND IMPLEMENTATION

2.1 Introduction

2.1.1 Under this Agenda Item, the Group considered the following specific subjects:

a) NAT IMG report

b) Implementation planning

c) Economic and Financial considerations

d) NAT Traffic Forecasting Group (NAT TFG) report

e) Other issues

2.2 Report of the NAT Implementation Management Group

2.2.1 The Group noted that the NAT IMG had met twice since NAT SPG/35. The Air Traffic Management Group (ATMG), the Future Air Navigation Systems (FANS) Implementation Group (FIG) and the Mathematicians Implementation Group (MIG) had also each met twice. The Communications Automation and Data Link Applications Group (CADAG) and the Reduced Separations Standards Implementation Group (RSSIG) had not met since NAT SPG/35.

2.2.2 In accordance with the mandate given to the NAT IMG by the NAT SPG, a considerable amount of time was spent on ensuring that the further implementation of RVSM was carried out in a safe and efficient manner. Furthermore, substantial efforts were given to developing tools to enable the implementation of reduced longitudinal separation minima using today's technology. Also, significant effort was spent on overseeing the establishment of the FANS 1/A trials and revising the NAT IMG working structure in the light of the publication of the NAT IMG Cost Effectiveness (NICE) report and the decision to proceed with the FANS 1/A trials.

Organizational changes

2.2.3 The Group noted that the NAT IMG had carried out a complete review of its working structure on the basis of the report of the NICE programme. Considering the establishment of the FIG to plan for data link trials as well as future data link applications, it was noted that the CADAG was stood down and that all non-data link application issues be allocated to other working groups if required. With the foregoing in mind, the terms of reference of all working groups, including the NAT IMG itself, were reviewed and updated. It was noted that no changes to the NAT IMG terms of reference should be made and that changes to the NAT IMG working structure would be reflected in the next issue of the NAT SPG Handbook.

The NICE Programme

2.2.4 The NICE Report had been published and presented to the 1999 International Oceanic Conference (IOC 99) which was held in Edinburgh in October 1999. The Report provided valuable insight into the expected savings that could be obtained by implementing planned reductions of separation in the NAT Region. It was noted that the NAT IMG had considered that the NICE programme had provided valuable information that would have an influence on the further developments both in terms of cost considerations and defining implementation priorities.

2.2.5 With the above in mind, it was agreed that it was necessary to ensure that the information collected as well as the experience gained through this activity should not be lost. Accordingly, it was further agreed that the data base of information gathered by the NICE Programme must be maintained and that the assumptions used needed to be further validated to assist in the examination of the feasibility and efficiency of alternative Air Traffic Management (ATM) development scenarios for the NAT Region. The Group also agreed that, in order to continue this work, costs incurred by Iceland should be recovered through the Denmark and Iceland (DEN/ICE) Joint Financing Agreement. In this connection, the United Kingdom and the United States indicated that they would also be maintaining their models. The Group noted that the NICE Programme would become a working group of the NAT IMG and that this would be reflected in the NAT SPG Handbook.

CONCLUSION 36/2 - CONTINUATION OF THE NORTH ATLANTIC IMPLEMENTATION MANAGEMENT GROUP COST EFFECTIVENESS (NICE) PROGRAMME

That:

a) the NICE programme be continued; and

b) costs incurred by Iceland be recovered through the Denmark/Iceland Joint Financing Agreement.

FANS 1/A Operational trials

2.2.6 In follow up to NAT SPG Conclusion 35/8, the Group noted that the NAT IMG had adopted the following policy regarding the development of plans for the gradual implementation of data link applications in the NAT Region:

a) implementation of Automatic Dependent Surveillance (ADS) Waypoint Position Reports (WPR) using FANS 1/A avionics should be the priority task;

b) trials relating to the use of Controller Pilot Data Link Communications (CPDLC) in the NAT Region should be pursued; and

c) any other applications that would demonstrate early benefits such as the use of non-FANS 1/A avionics should be explored.

2.2.7 In addition, it was noted that the terminology for all trials would be referred to as pre-operational or operational trials and that a defined success criteria was required before proceeding from a pre-operational to an operational trial. In order to provide a centralised facility to monitor trials, the Group noted that the NAT IMG had agreed on terms of reference for a NAT FANS Central Monitoring Agency (FCMA). These terms of reference took account of the need to monitor all forms of data link applications. As regards the financing of the FCMA, the Group noted that Canada would continue to assume the costs until such time as a regional cost recovery mechanism could be put in place.

Implementation planning for reductions in longitudinal separation minima

2.2.8 The Group noted that the NAT IMG had committed considerable resources to develop tools and procedures needed to plan for the reductions in current longitudinal in-trail and intersecting track separation minima. A significant achievement was the development of a Collision Risk Model (CRM) for use with longitudinal separation minima. Some difficulties such as time keeping, however, had been encountered and it had not therefore been possible to begin processing any amendment proposals. It was

noted that the NAT IMG intends to continue work in this area in order to ensure that maximum efficacy can be obtained from the use of current longitudinal separation minima or to try to reduce them.

The implementation of Reduced Vertical Separation Minimum

2.2.9 As regards the vertical expansion of RVSM, the Group endorsed the NAT IMG proposal that RVSM be implemented in the entire NAT Region no later than 24 January 2002. In this connection, it was noted that the United Kingdom, in co-operation with Ireland, intended to implement RVSM in their domestic airspace on 19 April 2001.

RVSM Financial Considerations

2.2.10 In follow up to NAT SPG Conclusion 34/7, the Group noted that the NAT IMG had reviewed the need to extend the current contract for the Global Positioning System (GPS) Monitoring System (GMS) post 31 December 2000. Firstly, it was recalled that NAT SPG/35 had agreed that RVSM be extended to the entire NAT Region. In addition, it was recalled that the plans for monitoring relied upon the terrestrial Height Monitoring Units (HMU). It was further recalled that RVSM was to be implemented in the EUR Region by January 2002 and that they had a robust monitoring programme that was being put in place and that an agreement existed whereby the NAT and the EUR Regions would closely co-operate and exchange information.

2.2.11 Having the above in mind, the Group noted that the NAT IMG had agreed that the ICAO-ARINC GMS Contract should not be extended beyond 31 December 2000 because the monitoring requirements using the GMS in NAT Minimum Navigation Performance Specifications (MNPS) airspace had significantly reduced. However, bearing in mind that the equipment was available and that the extension of RVSM into the West Atlantic Route System (WATRS) area was planned for November 2001, it was also noted that the NAT IMG had agreed that maximum use of these assets should be made available as part of the monitoring programme for the implementation of RVSM in WATRS.

2.2.12 In this connection, the member for the United States informed the Group that, during the annual ICAO-ARINC GMS contract review, which was conducted on 19 May 2000 at ICAO Headquarters in Montreal, it had been pointed out that monitoring services in connection with WATRS RVSM would be outside of the scope of the ICAO-ARINC Contract. This was because the current Contract is based on the Height Monitoring System (HMS) Joint Financing Arrangement which specifically refers to MNPS airspace only.

2.2.13 With the above in mind it was agreed that the scope of the existing Joint Financing Arrangement and Contract be extended to the entire North Atlantic Region. Accordingly, the Chief of the ICAO Joint Financing Section informed the Group that, if the six signatory States of the Joint Financing Arrangement (Canada, Iceland, Ireland, Portugal, the United Kingdom and the United States) and IATA, as the representative of the users, confirmed very quickly to ICAO their consent to the proposed geographic extension, ICAO would endeavour to act very quickly to amend the Arrangement.

2.2.14 It was further agreed that the six signatory States and IATA, as the representative of the users, inform ICAO as soon as possible but no later than 30 June 2000 of their consent to change the scope of the present agreement. It was noted that, in order to expedite this process, the representatives of the States concerned were provided with a draft letter of consent to be signed by an official at the appropriate level within their administration.

CONCLUSION 36/3 - MONITORING FOR THE IMPLEMENTATION OF REDUCED VERTICAL SEPARATION MINIMUM (RVSM) IN THE WHOLE OF THE NORTH ATLANTIC (NAT) REGION

That States concerned and IATA inform ICAO without delay of their agreement to extend the area of application of the current Height Monitoring System (HMS) Joint Financing Arrangement to the entire NAT Region under the reservation that it will not result in any increase of the global budget agreed upon in the existing HMS ICAO-ARINC Contract.

2.2.15 The Group noted with appreciation that the Chief of the Joint Financing Section had made available the latest updated figures regarding the administration of the Arrangement on the Joint Financing of the NAT HMS.

Expansion of RVSM to the entire NAT Region

2.2.16 Considering the decision to geographically expand RVSM throughout the entire NAT Region, it was agreed that the current monitoring programme needed to be reviewed. Accordingly there would be technical and financial issues to be considered. The Group noted that, as a first step, the role of the Central Monitoring Agency (CMA) should be expanded to include the entire NAT Region. However, this change would require changes to the current financial arrangements.

2.2.17 The work associated with the expansion of RVSM to the entire NAT Region can be broken down into two distinct areas, technical and financial. As regards the technical issues, the Group agreed that continuous monitoring was required and that only two options to carry out this function were available - the GMS or the HMUs. Considering the fact that the WATRS area is all high seas, the only viable solution appeared to be the use of a GMS.

2.2.18 As regards financial matters, the Group agreed that the technical issues needed to be sorted out before any detailed financial plans could be drawn up.

CONCLUSION 36/4 - DEVELOPMENT OF REDUCED VERTICAL SEPARATION MINIMUM (RVSM) MONITORING REQUIREMENTS FOR THE ENTIRE NORTH ATLANTIC (NAT) REGION

That the:

a) NAT Implementation Management Group (NAT IMG) develop RVSM monitoring requirements for the entire NAT Region;

b) role of the Central Monitoring Agency be expanded to cover RVSM monitoring for the entire Region; and

c) NAT IMG determine the resources required to carry out the monitoring.

The need for a global RVSM monitoring plan

2.2.19 Considering the decision to geographically expand RVSM throughout the entire NAT Region, it was agreed that the current monitoring programme needed to be reviewed. At the present time, as much as thirty percent of the NAT RVSM traffic is not being monitored. That is primarily the MNPS traffic in the Southern part of the NAT Region. With the addition of WATRS area RVSM, that percentage will be much higher. There was no plan for ongoing monitoring of any NAT aircraft that did not cross the HMUs at Gander and Strumble. There have been several instances of non-compliant aircraft identified by the HMUs and a possible drift in Altimetry systems had been identified by the NAT MIG. The question of ongoing

monitoring requirements needed to be addressed. Accordingly there would be technical and financial issues to be considered. The Group noted that, as a first step, the role of the CMA should be expanded to include the entire NAT Region. However, this change would require changes to the current financial arrangements.

2.2.20 It was brought to the Group's attention, that as other regions implemented RVSM, each one was developing a different set of minimum monitoring requirements for initial RVSM aircraft approval. Since RVSM is a global approval, initial approval requirements should be standard throughout the world. The Group agreed that it was appropriate to notify ICAO that such a need existed, and to seek the establishment of a world-wide standard for RVSM aircraft approval.

CONCLUSION 36/5 - DEVELOPMENT OF GLOBAL REDUCED VERTICAL SEPARATION MINIMUM (RVSM) MONITORING REQUIREMENTS

That the Secretary bring to the attention of ICAO Headquarters the need to develop common RVSM monitoring procedures for global application.

Contingency plan for volcanic ash

2.2.21 The Group noted with appreciation that a contingency plan concerning the possible eruption of volcanoes in Iceland had been developed and had been posted on the NAT web site. In addition, it was noted that studies were being carried out to determine the effects that a major volcanic eruption could have on NAT traffic. These studies were being carried out in the context of the NICE group and their results will be presented to NAT SPG/37.

2.3 Implementation planning

Planning for the transition from High Frequency communications services

2.3.1 In follow up to NAT SPG Conclusion 35/8 c), the Group noted that the NAT IMG had begun developing proposals for the future provision of HF services in the NAT Region. In the context of the anticipated decline of HF voice communications requirements, the Group noted that the NAT IMG had examined information highlighting transition planning issues including operators' HF requirements, the required number of HF families, the need to re-equip during an agreed transition phase, regulatory implications, the number of service providers, the cost of service reduction, cost recovery during an agreed transition period and the effects on Flight Information Services (FIS) and alerting services.

2.3.2 The Group was informed that the NAT IMG had agreed that data link applications should take into account the use of HF as well as Very High Frequency (VHF) technologies. As regards the need for operators to identify their future requirements for HF, the Group recognized that it would be very difficult to determine such requirements at this time. However, it was also recognized that this information was a very important element in determining the future HF transition plan. In this connection, it was noted that the definition of an initial HF transition policy could serve as a basis to determine future requirements for operators and in particular their needs for HF.

2.3.3 In order to progress this matter, it was agreed that an ad-hoc meeting of the six communications provider States concerned (Canada, Iceland, Ireland, Norway, Portugal and the United States) be convened as soon as possible in order to develop a transition policy. The task of the ad-hoc meeting would be to identify all possible options and to determine the advantages and disadvantages of each option. The ad-hoc meeting would report to the NAT IMG who would then report to NAT SPG/37. It was further agreed that a non-communications Provider State that is a member of the NAT SPG should chair the ad-hoc meeting. It was agreed that the NAT IMG should develop terms of reference for the ad hoc meeting before it is convened.

CONCLUSION 36/6 - DEVELOPMENT OF A PLAN FOR THE TRANSITION FROM HIGH FREQUENCY (HF) SERVICES TO DATA LINK APPLICATIONS

That:

a) an ad-hoc meeting between Canada, Iceland, Ireland, Norway, Portugal and the United States be convened as soon as possible in order to develop an initial HF transition policy;

b) the NAT Implementation Management Group (NAT IMG) develop terms of reference and working assumptions for the ad-hoc meeting;

c) the ad-hoc meeting be convened and chaired by the United Kingdom;

d) the NAT IMG finalise the HF transition plan; and

e) the NAT IMG report to NAT SPG/37.

2.4 Economic and financial considerations

Establishment of a NAT Economic and Financial Group

2.4.1 Planning for the implementation of RVSM in the NAT Region required that States concerned develop and agree on a method of cost sharing/recovery for the height monitoring system and other associated costs. The results of this undertaking have proven to be very successful. However, experience has shown that the financing model used for RVSM was not appropriate for the entire NAT Region.

2.4.2 In addition to the above, IATA has indicated that the current financial procedures and practices applied by NAT provider States differed. With the above in mind, IATA had convened a meeting of high level executives from all NAT provider States to address this matter. The result of the meeting, which was held in October 1999, was that a small drafting group was convened by the Chairman of the NAT SPG with the explicit task of developing draft terms of reference for a working group that would address economic and financial matters on behalf of the NAT SPG.

2.4.3 In follow-up to the above it was noted that the drafting group had been convened in Geneva in April 2000 to develop a proposal for consideration by the NAT SPG. The Chairman of the NAT SPG had chaired the meeting.

2.4.4 When addressing the possible requirement for the establishment of an economic and financial group, the first question that was addressed by the drafting group was whether or not it was necessary to amend the current NAT SPG terms of reference. It was noted that, after examination of the terms of reference, the drafting group had proposed that no changes were required.

2.4.5 Having agreed that no changes to the terms of reference of the NAT SPG were required, the drafting group then examined a proposal for terms of reference for the establishment of an Economic and Financial Group (EFG). The draft terms of reference are at **Appendix A** to the Report on Agenda Item 2. In developing the terms of reference, cognisance was taken of the need to provide sufficient leeway to address financial issues in general as well as issues that would be specific to the implementation of future Communications, Navigation and Surveillance/Air Traffic Management (CNS/ATM) systems for the NAT Region.

2.4.6 As regards the Chairmanship of the NAT EFG, the Group accepted the proposal that Denmark take on the task. In this connection, it was stressed that the Chairman should be responsible for the

number of participants from all delegations and that the meetings be kept as small as required to address the agenda.

2.4.7 In agreeing to the terms of reference, the Group also agreed that close co-ordination be maintained with the NAT IMG. The Group also agreed that the NAT IMG should review its terms of reference in the light of the establishment of the NAT EFG and report to NAT SPG/37.

CONCLUSION 36/7 - ESTABLISHMENT OF A NAT SYSTEMS PLANNING GROUP (NAT SPG) ECONOMIC AND FINANCIAL GROUP (EFG)

That:

a) a NAT EFG be established with the terms of reference (TOR) as shown in Appendix A to the Report on Agenda Item 2;

b) the TORs of the NAT SPG be examined at NAT SPG/37, if required; and

c) the NAT Implementation Management Group review its terms of reference in the light of the establishment of the NAT EFG and report any proposed changes to NAT SPG/37.

Other economic and financial considerations

2.4.8 The Group noted that several important issues had confronted the NAT IMG which had related to financial and economic matters. Although the NAT IMG had initially been established to take these matters into account, it was felt that the many unforeseen changes over the last decade had created new problems. As an example, the following list of issues that required economic or financial knowledge needed to be addressed:

a) the ARINC GMS post flight data processing contract;

b) CMA funding in the future;

c) the need to develop a funding mechanism for monitoring the entire NAT Region, including WATRS;

d) funding for the Central Automatic Dependent Surveillance (CADS) facility and future extensions to the programme, including the FCMA;

e) the future of the provision of HF services; and

f) future funding for multi national facilities to support the implementation of CNS/ATM.

2.4.9 On the basis of the information presented, the Group felt that the above list of tasks would provide a very useful initial work programme. However the NAT EFG would be expected to address these matters in close coordination with the NAT IMG.

Support to the ICAO European and North Atlantic Office

2.4.10 The Group was presented with a proposal to improve services to the NAT SPG by the Secretariat. In this connection, it was recalled that the ICAO EUR/NAT Office lacked the necessary resources to provide the full range of services that the NAT Region required and, as a consequence, many of the NAT service providers carried out tasks on behalf of the NAT SPG. It was proposed that the ICAO

EUR/NAT Office should be given the necessary financial means to carry out all tasks required to ensure the safe and efficient support to the NAT Region. Considering that this was a new item that had not been given sufficient time for discussions within administrations, the Group agreed that no further action should be taken at this time. However, it did agree that a task force to be chaired by the Chairman of the NAT SPG and supported by the Secretary be established in order to develop a proposal to be presented to NAT SPG/37. This proposal would include a mechanism to support NAT SPG activities, a financial plan and a business plan. NAT SPG Member States interested in participating in the work of the task force should inform the Chairman by 15 July 2000.

CONCLUSION 36/8 - ICAO SUPPORT TO THE NORTH ATLANTIC SYSTEMS PLANNING GROUP (NAT SPG)

That the Chairman of the NAT SPG establish a Task Force with the following terms of reference:

a) to develop a mechanism to support NAT SPG activities;

b) to develop a financial plan ;

c) to develop a business plan; and

d) to report to NAT SPG/37.

2.5 Report of the NAT Traffic Forecasting Group (NAT TFG)

2.5.1 The 32nd meeting of the NAT TFG was held at the ICAO Headquarters in Montreal from 8 to 17 May 2000. The NAT TFG's task was to update the NAT annual and peak period forecasts for the 2000 – 2005 period. To this end the NAT TFG had prepared estimates of annual 1999 passengers and flights to be used as the base in preparing the annual forecasts. The NAT TFG had revised its earlier estimate of 1998 passengers from 60.0 to 59.0 million and also its estimate of the number of aircraft movements from 317.5 to 317.9 thousand. The July and November 1999 sample data supplied by the Oceanic Area Control Centres (OAC) served as a basis for the peak period forecasts.

2.5.2 The Group noted that the number of extended range twin-engine aircraft had increased significantly since 1987 from 4.6% in July 1987 to 47.2 percent in July 1999 and from 6.4% in November 1987 to 47.9 percent in November 1999.

2.5.3 In actual terms, the NAT TFG's medium-term forecast was for the number of passengers to increase by 31.8 million between 1999 (estimated at 63.1 million) and 2005 (94.9 million), an average annual growth rate of 7.0 percent. The equivalent increase in the number of flights was just over 134,900 (5.6 percent annually), from an estimated 346,600 in 1999 to 481,500 in 2005.

2.5.4 In the pessimistic scenario, the average annual growth rates for passengers and flights were 5.5 and 4.0 percent respectively. For the optimistic case, the equivalent figures were 7.8 percent annually for passengers and 7.2 percent annually for aircraft movements. The range between the 2005 optimistic and pessimistic forecasts was 11.7 million passengers and 87,800 flights.

2.5.5 It was stressed that the optimistic and pessimistic scenarios were developed to reflect not only the uncertainties as to economic development but also issues associated with the major supply factors, e.g., airline fleet changes, route generation, competition, and airline marketing strategies.

2.5.6 Charter operations were estimated to total approximately 13,500 in 1999. It had been assumed that charter flights would remain at that level throughout the six-year forecast period.

2.5.7 All-cargo flights (freighters) were estimated to be approximately 18,000 in 1999. It had been assumed that this category would grow at an average annual rate of 2.6 percent over the six-year forecast period, totaling 21,000 in 2005.

2.5.8 General aviation activity on the North Atlantic totaled approximately 11,900 in 1999, an increase of 1.7 percent over 1998. This category was expected to increase to 13,400 in 2005, an average annual growth rate of 2.0%.

2.5.9 Military activity was estimated to have totalled 10,600 in 1999, a decline of 3.6 percent over the previous year. The NAT TFG had assumed that military activity would remain at that level throughout the forecast period.

North Atlantic Long-Range Forecasts

2.5.10 The NAT TFG's revised 2005 base forecast of both passenger and aircraft movements were significantly higher than those prepared at the 31st meeting. The 2005 passenger forecast was 8.3 percent higher (94.9 versus 87.6 million) while the 2005 aircraft movement forecast was 11.5 percent higher (481,500 versus 431,800). Therefore, the NAT TFG recommended that the high long-term forecast be used as a planning base.

2.5.11 In the revised pessimistic scenario, the 2005 passenger forecast was 9.8 percent higher (87.1 versus 79.3 million) while the 2005 aircraft movement forecast was 8.7 percent higher (438,200 versus 403,100).

2.5.12 In the revised optimistic scenario, the 2005 passenger forecast was only 0.9 percent higher (98.8 versus 97.9 million) while the 2005 aircraft movement forecast was 12.7 percent higher (526,000 versus 466,800).

2.5.13 Although the 2005 forecasts were considerably higher than those prepared at the 31st Meeting, the NAT TFG had chosen not to revise its long-term forecast at that time. The NAT TFG planned to revise its long-term forecasts at its 33rd meeting scheduled to be held in 2002.

Caribbean (CAR) and North America

2.5.14 At the request of the NAT SPG (NAT SPG/20 - Summary, paragraph. 11.5 refers) and as noted by the Group (NAT TFG/17 - Summary, paragraph . 7.4 refers), a forecast of the traffic flow between the New York Oceanic Control Area (OCA) and the CAR Region had been carried out.

2.5.15 The sample data for 1999 showed that traffic in the Caribbean had increased 7.4 percent in 1999, up 10.8 percent in July and 4.2 percent in November. However, even with this large increase in 1999, total traffic in the Caribbean had just returned to the levels achieved in 1996.

2.5.16 The NAT TFG had estimated that traffic growth in the region would average 2.5 percent annually, with average daily traffic increasing to 221 flights in July 2005 (up 2.1 percent) and 234 flights in November 2005 (up 2.8 percent).

2.5.17 Growth in this region could be expected to be influenced somewhat by shifts between European and Caribbean sun-destinations brought on by fluctuating exchange rates. Potential growth could, to some extent, be limited by the availability of tourist facilities in the Caribbean region.

2.5.18 Military activity in 2005 had been held constant at the recorded July and November 1999 traffic levels.

2.5.19 General aviation operations had been forecast to increase to 13 daily in July 2005 and to 20 daily in November 2005. However it should be noted that general aviation operations can vary significantly from year-to-year.

Procedures

2.5.20 Data was still required every year even though the NAT FG would only meet biennially. The information was required on a yearly basis by other groups and also to ensure the completeness and accuracy of important data series used in statistical models. It would not be practical to gather and process the data every two years and therefore the OACs continued co-operation in this matter would be greatly appreciated.

CONCLUSION 36/9 - NEED TO COLLECT TRAFFIC DATA ANNUALLY FOR THE NORTH ATLANTIC TRAFFIC FORECASTING GROUP (NAT TFG)

That

a) States concerned continue to collect on an annual basis the traffic data required to develop traffic forecasts for the NAT Region; and

b) the data be made available to the NAT TFG.

2.6 Other issues

The Year 2000 (Y2K)

2.6.1 In follow up to NAT SPG Conclusion 35/12, the NAT Y2K Contingency Plan had been finalised and posted on the NAT Programme Co-ordination Office (PCO) web site (www.nat-pco.org). The plan had been the basis for planning for the Year 2000 transition as well as other relevant days such as 29 February 2000. No difficulties had been reported concerning the transition to the Year 2000.

International Oceanic Conference 2001 (IOC 01)

2.6.2 The Group expressed its appreciation to United Kingdom for the quality of IOC 1999 which had been held in Edinburgh in October 1999. The Group felt that the Conference had been very useful and successful and had agreed that the arrangement between the Federal Aviation Administration (FAA) and the NAT Region to alternate conferences between the Pacific and the Atlantic should continue. With this in mind, the Group noted with appreciation Canada's offer to host IOC.

APPENDIX A

TERMS OF REFERENCE OF THE THE NAT SPG ECONOMIC AND FINANCIAL GROUP (EFG)

Terms of Reference

The establishment of the NAT EFG was based on NAT SPG Conclusion 36/7 to provide economic and financial advice to the NAT SPG in order to ensure the cost-effective management of the North Atlantic air traffic management system and has the following Terms of Reference:

1. Provide the NAT SPG with appropriate financial management expertise and advice in the areas of, inter alia, cost identification, cost allocation models, performance and productivity indicators, variance analyses and standardised financial reporting.

2. Provide advice to the NAT SPG as to best practice in the area of cost recovery and charging for the provision of air navigation services.

3. Develop proposals addressing financial and their related organisational aspects for implementing multinational facilities and services employed by provider States in the NAT region.

4. Review and provide input on financial and economic aspects of NAT development plans, in co-operation with the NAT IMG.

5. Address other issues as directed by the NAT SPG.

6. Report to the NAT SPG.

Members

The NAT EFG is composed of members from the NAT Oceanic service providers of Canada, Denmark, Iceland, Ireland, Norway, Portugal, the United Kingdom and the United States, and members from IACA, IATA and IBAC with the participation of France as an observer.

The NAT EFG may invite other participants as and when required in order to ensure that the relevant expertise is available when addressing specific tasks or issues.

Chairman

The NAT EFG is Chaired by Denmark.

Secretary

Secretariat services are provided by ICAO.

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3. AGENDA ITEM 3 - AIR NAVIGATION SYSTEM REVIEW

3.1 Introduction

3.1.1 Under this Agenda Item, the Group considered the following specific subjects:

a) Review of system safety performance

b) Review of systems operations

3.2 Review of system safety performance

SCRUTINY MATTERS *

Lateral navigation performance accuracy achieved in the NAT Region during the period 1 January 1999 to 31 December 1999.

3.2.1 The Group noted a decrease (17%) in the number of Gross Navigation Errors (GNE) in MNPS airspace compared with the previous 12 month period . It also noted that the overall number ofGNEs in the NAT Region as a whole had increased by one (3%) compared within the last period. However, recognising that there had been an 8 % increase in the level of traffic using the airspace, the Group considered that, as a generic measure of safety, the number of GNEs in the region overall did not give cause for concern.

3.2.2 In accordance with monitoring procedures, follow-up action was taken for any reported error in excess of 50 NM. The Group noted that this had to be done for 12 of 14 reported occurrences. Ten of the errors were attributable to waypoint insertion or equipment control errors. The remaining 4 errors were caused by navigation system failure. It was also noted that four errors involved military aircraft.

3.2.3 Using flights per GNE as a measure of the lateral navigation performance, overall performance was satisfactory. While International General Aviation (IGA) operations followed last year's trend and continued to show an improvement, compared with Public Transport (PT) operations, the performance was still poor in relative terms. Military aircraft performance was worse than the previous two years.

3.2.4 With respect to the continued application of the 10 minutes longitudinal separation, it was noted that only two reports of erosions of longitudinal separation in excess of 3 minutes had been received by the CMA during the monitoring year compared to four in the previous year.

Methods of Improving the Observed Standard of Navigation Performance

3.2.5 In considering the methods by which the observed standard of navigation performance might be improved, account was taken of the lessons derived from the review of navigation performance. During the monitoring period, the number of GNEs reported in the NAT Region was similar to the number reported in 1998. However, the number of reported errors in MNPS airspace was down 30%. In line with the trend of recent years, those reported included a very high percentage of errors involving crew error. Of note is the fact that all but one of the GNEs happened to aircraft on random routings. In particular - as is stressed each year by the Scrutiny group - adherence to the procedures set out in the MNPS Operations Manual (or similar company Standard Operating Procedures (SOP) - would have prevented the vast majority of GNEs from

* For the detailed discussions and analysis of lateral navigation performance, reference should be made to the report of the Scrutiny Group which had been presented to NAT SPG/36 and which is available on request from the ICAO EUR/NAT Office

occurring. Furthermore, there was a firm indication that replacement of older types of aircraft with those having glass cockpits should continue to help reduce the number of GNEs. This supposition was drawn from the fact that eight of the fifteen errors occurred following a re-route and of those eight, five involved non-glass cockpit aircraft.

3.2.6 In the course of the scrutiny of errors, the Group identified the following as significant contributory factors in either the risk of a GNE being committed or to increasing the lateral system risk:

a) failure of crews to adhere to published procedures by not properly cross-checking clearances with information entered and stored in the navigation systems;

b) failure of crews to carry out waypoint crossing and post waypoint checks effectively; and,

c) failure of a crew to remedy Inertial Reference System (IRS) initialisation problems on the ground prior to getting airborne.

Vertical navigation performance accuracy achieved in the NAT Region during the period 1 January 1999 to 31 December 1999.

3.2.7 The Group scrutinised the reports of altitude deviations in excess of 300 ft received by the CMA during the period in an attempt to establish any trends in the operation of aircraft in the NAT, which led to operational errors in the vertical dimension. It was noted that, according to the report of the Scrutiny group, the major causes of the risk bearing were attributable to the following:

a) poor VHF communications in the region of France Upper Information Region close to the oceanic boundary with Shanwick which is controlled by Brest Area Control Centre (ACC);

b) failure of crews to climb or descend as cleared because of a mis-interpretation of a clearance; and,

c) poor Radio Telecommunication (R/T) phraseology.

3.2.8 As regards the perceived communications problems in the Brest/Shanwick interface area, the Group noted with appreciation that France and the United Kingdom would investigate the VHF communications problems encountered in the Shanwick/Brest interface area and report their results to the NAT IMG.

CONCLUSION 36/10 - VERY HIGH FREQUENCY (VHF) COMMUNICATIONS PROBLEMS IN THE BREST/SHANWICK INTERFACE AREA

That:

a) France and the United Kingdom investigate VHF communications problems in the Brest/Shanwick interface area; and

b) the results of these investigations be presented to the NAT Implementation Management Group.

Methods of improving the current monitoring procedures

3.2.9 The Group concluded that the current monitoring methods were generally sufficiently adequate to allow GNEs and altitude deviations to be investigated effectively but urged that allOACs report

deviations and erosions of longitudinal separation to the NAT CMA in line with NAT SPG directives and in accordance with the procedures detailed in NAT Doc 001.

3.2.10 The Group noted that the minimum monitoring requirements for the North Atlantic Region were changing and also noted that the CMA was posting the information on the NAT website as changes were made.

Production of the 'North Atlantic Operational Errors' Video

3.2.11 In follow up of NAT SPG Conclusion 35/6, the Group noted with appreciation that the United Kingdom had produced a video that stressed the importance of being vigilant in order to avoid operational errors in the NAT Region. The video took account of the types of errors that occur in cockpits and the ways to prevent them.

3.2.12 This video, which is entitled "*Keeping Track*", shows those basic errors carried out by even experienced aircrews flying across the North Atlantic, some of which have led to GNEs culminating in Air Proximity Reports. The emphasis throughout the video had been to stress to pilots "to check and if necessary re-check". It was considered that the video would be suitable as a training aid for those undergoing both initial and refresher training for North Atlantic operations.

3.2.13 The ICAO EUR/NAT Regional Office agreed to obtain from all concerned a legal release so that the video could be widely disseminated. In this connection, it was stressed that ICAO should copyright the video in order to maintain control over its distribution. ICAO undertook to carry out this task without delay.

CONCLUSION 36/11 - RELEASE OF NORTH ATLANTIC OPERATIONAL ERRORS VIDEO

That ICAO make arrangements to distribute the North Atlantic operational errors video, which was produced pursuant to NAT SPG Conclusion 35/6, without delay.

MATHEMATICAL MATTERS

1999 LATERAL AND VERTICAL COLLISION RISK ESTIMATES [†]

Lateral

3.2.14 Before determining the 1999 lateral risk estimate, the Group noted that each of the MNPS GNEs reported in 1999 had been appropriately categorised for risk assessment purposes. The Group agreed that a combined meeting of the MWG and the Scrutiny group would allow for a closer exchange of information between the groups and therefore provide a better product for the NAT SPG itself. The presence of additional Air Traffic Control (ATC) expertise, and in particular from Gander, would also be valuable.

CONCLUSION 36/12 - MEETINGS OF THE NAT SPG SUB-GROUPS

That the Mathematicians Working Group and the Scrutiny Group meet in parallel.

3.2.15 Appropriate error weights for lateral GNEs had been previously determined at NAT SPG/27, using the occupancies for 1990. Occupancy values were taken into account when deriving error weights since the weights were obtained by taking the ratio of risks as determined by two different models, both of which required occupancy values. Since lateral occupancies had changed considerably since 1990, NAT

[†] For the 1999 lateral and vertical collision risk estimates together with a detailed discussion and analysis, reference should be made to the report of the MWG presented to NAT SPG/36 and which is available on request from the ICAO EUR/NAT Office.

SPG Conclusion 35/15 required that the error weights to be reviewed. Revised weights were agreed to using the 1999 lateral occupancies and were therefore used in the lateral risk estimates for 1999.

CONCLUSION 36/13 - TABLE OF ERROR WEIGHTS FOR LATERAL RISK ESTIMATION

That the following table of error weights for lateral risk estimation be adopted.

	Type of error		
Deviation	**Waypoint insertion error**	**Equipment failure**	**Non MNPS approved aircraft**
1° (50-70 NM)	0.33	0.48	0.48
2° (>70-130 NM)	0.55	0.62	0.62
3° (>130-190 NM)	0.78	0.76	0.78
4° (>190-250 NM)	1.00	0.91	1.00
5° (>250-310 NM)	1.22	1.05	1.22
6° (>310-370 NM)	1.44	1.19	1.44

3.2.16 The Group noted that the overall collision risk estimate for all MNPS traffic had decreased. The same conclusion applied to the risk for random traffic due to the loss of planned lateral separation. All the estimates for 1999 were below the Target Levet of Safety (TLS) of 20 x 10-9 fatal accidents per flight hour. It was noted that the majority of lateral errors occurred on random tracks and that this was also true for two of the four previous years.

Risk Due to Operational Errors

3.2.17 The operational element of vertical collision risk, in both RVSM and non-RVSM environments, was determined from the estimate of time spent by aircraft at uncleared levels or when incorrectly cleared to a level which resulted in a loss of lateral or longitudinal separation, as well as the number of levels crossed without clearance.

3.2.18 It should be noted that the risk estimates were based on a value of the lateral overlap probability ($P_y(0)$) that was believed to be significantly too small, resulting in an under-estimation of the risk. A new preliminary estimation of $P_y(0)$ had been carried out and the results should be available to NAT SPG/37.

3.2.19 It was determined that the combined vertical collision risk estimate at RVSM levels exceeded the TLS by a factor of approximately 1.4 (or almost 3 times if the new estimate of lateral overlap probability is adopted). The Group estimated that for this year the major part of this risk (84%) was due to time spent at in-correct flight levels. The remaining 16% was due to flights crossing levels without clearance.

3.2.20 The risk for non-RVSM levels was considerably lower than that for RVSM levels since only two such levels were available and the occupancies for those levels was low. The risk for non-RVSM levels was well within the TLS for those levels.

3.2.21 When considering risk in the vertical plan, the Group stressed the importance that the risk was not necessarily associated with the implementation of RVSM, but was the result of the fact that operational errors were now being measured against an agreed TLS. Operational errors were not at all related to the separation minima itself.

CONCLUSION 36/14 - REDUCTIONS IN THE NUMBER OF OPERATIONAL ERRORS

That:

a) the NAT Operations Managers Group determine ways and means to reduce the number and frequency of operational errors in all dimensions within the North Atlantic Region; and

b) the NAT Implementation Management Group carry out studies to assist the NAT Operations Managers.

3.2.22 A further point noted by the Group was that errors involving entry into an airspace at the wrong level appeared to be more frequent in Shanwick than in other sectors. An investigation into the reasons for this could be profitable in terms of reducing the frequency of such events.

CONCLUSION 36/15 - INVESTIGATION OF ERRORS BY AIRCRAFT ARRIVING AT AN INCORRECT ALTITUDE INTO SHANWICK FIR

That the United Kingdom agree to determine the cause of aircraft entering Shanwick FIR at wrong flight levels and report to the NAT Implementation Management Group.

3.2.23 It was noted that since vertical risk had been estimated for a number of years and had on many occasions exceeded the TLS, it may be that the NAT system was operating with a long-term average risk that was close to or above the TLS. It was also noted that the suspension of RVSM operations would not have significantly reduced the risk due to the errors observed in 1999, (it may even have increased the risk due to the increase in occupancies). It was therefore agreed that other options should be pursued to attempt to control the vertical collision risk, in addition to the continued attempts to limit the number of operational errors. The introduction of clearance offset procedures and/or the introduction of ADS could be beneficial in this respect.

CONCLUSION 36/16 - OPTIONS TO REDUCE VERTICAL COLLISION RISKS

That the NAT Implementation Management Group evaluate ways and means to reduce vertical collision risk including the application of offsets.

Technical Risk

3.2.24 As was reported to NAT SPG/34, the technical risk had been found to be relatively small, compared to the risk due to large height deviations. It was noted that the software for the automated estimation of the technical risk was nearing completion and that a full technical risk assessment could be carried out for NAT SPG/37. Furthermore the revised estimate of Py(0) could result in a substantial increase in the technical risk estimate.

3.2.25 As part of the overall technical risk estimation process it was agreed that the average size of aircraft operating in the NAT should also be reviewed since it has been 5 years since this was estimated and new aircraft types have been introduced over the intervening years. The size parameters will also affect the risk estimates for other dimensions.

CONCLUSION 36/17 - NAT REDUCED VERTICAL SEPARATION MINIMUM (RVSM) RISK ASSESSMENT

That the NAT Mathematicians Working Group:

a) carry out a full technical risk assessment;

b) review the average size of aircraft operating in the NAT; and

c) inform NAT SPG/37 of the results.

3.3 Review of system operations

AIR TRAFFIC MANAGEMENT

North Atlantic Operations Managers' Meeting

3.3.1 The NAT Operations Managers Meeting was held in Prestwick from 18 to 22 October 1999. In accordance with existing procedures, the host nation, the United Kingdom, chaired the meeting. A users day was held on Friday 22 October 1999.

3.3.2 The Group noted that the Operations Managers had carried out a comprehensive review of operational issues and had determined ways and means to resolve identified issues. These matters included letters of agreements, automation, preparations for the Year 2000, application of separation minima and civil as well as military operations. In addition, it was felt that user participation had been a very useful exercise as it had permitted the exchange of valuable information.

3.3.3 The Group noted that the Operations Managers had agreed that some issues needed to be highlighted for the NAT SPG. The first of these related to the number of flights claiming hospital status. Up to 5 requests have been received on some days. A common feature of these requests is that they are normally made by operators of older aircraft. In many instances prior notification does not take place and it is therefore not possible to examine the validity of the requests. Because these flights can have an effect on safety and do affect capacity and normal operations, the Operations Managers agreed that a tracking mechanism should be put in place through the CMA and that operators should be required to provide the CMA with written evidence of the legitimacy of their requests when required. In this connection, a form has been developed to initiate this action.

CONCLUSION 36/18 - OPERATIONS IN REDUCED VERTICAL SEPARATION MINIMUM (RVSM) AIRSPACE BY NON APPROVED AIRCRAFT

That:

a) operators wishing to operate non-RVSM approved aircraft in NAT RVSM airspace as hospital flights obtain prior approval to do so;

b) the Central Monitoring Agency keep track of these operations and identify operators that may be abusing the exemption procedures; and

c) appropriate action be taken with regard to the identified operators.

3.3.4 In follow up to NAT SPG Conclusion 35/9 concerning C 17 formation flights, the NAT Operations Managers had developed a tracking and reporting mechanism that has been put in place. Any anomalies encountered will be brought to the attention of the NAT SPG through the NAT CMA.

3.3.5 Another issue that the NAT Operations Managers addressed was the recent (November 1999) amendment to Annex 10 whereby a global (123.45 MHz rather than the current 131.8 MHz for the NAT Region) air-to-air frequency was adopted. Because of the operational problems associated with this change, it had been proposed and agreed through the NAT IMG mechanism that a delay until April 2000 was required in order to allow all concerned to make the necessary changes and frequency re-allocations. The Group noted that it had been agreed that implementation should take place at 0001 UTC on 20 April 2000 rather than 4 November 1999.

3.3.6 A final point raised by the Operations Managers was the need to agree on a common methodology to treat time, that is should it be rounded or truncated. The Operations Managers stressed this point because new systems were being developed or were about to come on-line and it would be very useful that this matter be agreed upon, especially for the medium to longer term. The Group noted that this matter was on the NAT IMG work programme.

COMMUNICATIONS

3.3.7 The NAT IMG, at its 16th Meeting in March 2000 had reviewed and revised where necessary, the Terms of Reference (TORs) of its Sub-Groups to better take account of its working structure. The role of the ACSG had changed with the dissolution of the CADAG. The ACSG had had a dual function, in that it was a NAT SPG Group with an added responsibility to provide assistance to the CADAG in the area of communications planning. While CADAG had essentially completed its work, some ongoing related elements were transferred to the NAT ATMG and the NAT FIG. With this in mind, it was agreed that the Terms of Reference of the ACSG should be amended to reflect the above decision.

CONCLUSION 36/ 19 - TERMS OF REFERENCE FOR THE AERONAUTICAL COMMUNICATIONS SUB-GROUP (ACSG)

That the terms of reference of the ACSG be amended as specified in the Appendix A to the Report on Agenda Item 3.

3.3.8 In follow up to NAT SPG Conclusion 29/13, a limited data collection concerning HF and General Purpose (GP) VHF contacts was presented to the Group. An analysis of the traffic increase for the last five years had shown an increase of 19,11% of air-ground messages. In 1999, 78,42% of the air-ground messages handled by the NAT Aeronautical Stations were received or transmitted on the HF and the rest on GP VHF. The most used NAT HF Families in descending order were, Family A (19,68%), Family B (14,30%), Family C (14,14%) and Family E (13,75%). The least used family was Family F (5,68%). In terms of HF Frequencies, the most used were those within the 8 and 5 MHz band.

3.3.9 The Group expressed its appreciation to Portugal for having collected and produced a document that could be used for planning purposes by all service providers. This was done despite the difficulties in trying to organize a meeting of all concerned. Finally, the Group noted that in addition to Canada, Iceland and Ireland, which had discontinued HF voice intercepts in 1999, that Portugal would discontinue HF voice intercept procedures as of 1 July 2000.

System efficiency

3.3.10 The Group was presented with the ATS system efficiency assessment for Gander ACC for 1999. The Group agreed that these assessment reports did not serve any useful purpose, but that a new methodology of measuring system efficiency was required. With this in mind, it was agreed that all NAT Providers should present to NAT SPG/37 their methodology on evaluating system efficiency.

CONCLUSION 36/20 - MEASUREMENT OF SYSTEM EFFICIENCY

That:

a) the NAT Implementation Management Group and the NAT Economic and Financial Group develop proposals to measure NAT System efficiency; and

b) **they report their progress to NAT SPG/37.**

APPENDIX A

TERMS OF REFERENCE OF THE AERONAUTICAL COMMUNICATIONS SUB-GROUP (ACSG)

Terms of Reference

The Aeronautical Communications Sub-Group (ACSG) reports to the NAT SPG and is responsible for monitoring and analyzing the efficiency and effectiveness of the NAT HF and GP/VHF voice systems in the NAT Region and provides advice on the operational impact of traffic growth and the implementation of new communications technologies on short to medium term operations.

The main tasks of the ACSG are:

a) to monitor and analyze the efficiency and effectiveness of the existing HF and GP/VHF systems;

b) to address short term issues and propose solutions to problems related to fixed/mobile services;

c) to keep under review the current network management arrangements including the distribution of traffic over the HF families of frequencies and to resolve unequal distribution of traffic;

d) to provide advice on the operational communications requirements related to transition issues associated with the implementation of new communications technologies;

e) to provide advice/comment, as required, to the FIG and ATMG on the impact of the implementation of communications systems and/or changes in ATC procedures on HF voice communications; and

f) to address related issues as directed by the NAT SPG.

Composition

Membership will be composed of representatives from Canada, Iceland, Ireland, Norway, Portugal, the United States, IATA and others as the rapporteur may designate.

Working methods

Through correspondence to the extent possible. Meetings may be required from time to time.

Rapporteur

Portugal.

4. AGENDA ITEM 4 - DOCUMENTATION UPDATE

4.1 Introduction

4.1.1 Under this Agenda Item, the Group considered the following specific subjects:

a) NAT MNPS Operations (MNPS OPS) Manual

b) NAT Guidance Material

c) NAT IGA Manual

d) Other documentation

4.2 MNPS OPS Manual

4.2.1 The Group was presented with the latest update to Edition 8 of the 'North Atlantic MNPS Airspace Operations Manual' and noted that it would be published by the end of June 2000. In this connection, the Group noted the changes that had been proposed by the editors. In addition, the Group noted that ICAO would be prepared to take on the task of managing the document as soon as the necessary infrastructure could be put in place.

4.3 NAT Guidance Material

4.3.1 The Group was presented with a plan to restructure the NAT Guidance Material, Doc 001, as well as a programme to finalize the document. In this connection, it was noted that the ICAO EUR/NAT Office would hire an expert to finalize the document. The Group endorsed the following plan:

a) a draft seventh edition would be addressed by e-mail to all concerned immediately after NAT SPG/36 (by 15 July 2000) for amendment and updates of a factual nature (particularly concerning the lists of contacts as shown in the Appendices E and F) - target date for completion 1 September 2000;

b) final document, which would incorporate these changes would be published on 15 September and posted on the NAT PCO website at the same time with a 30 day delay for comments; and

c) the definitive version will be published on 15 October 2000.

CONCLUSION 36/21 - PUBLICATION OF THE SEVENTH EDITION OF THE NORTH ATLANTIC (NAT) GUIDANCE MATERIAL DOCUMENT 001

That:

a) the ICAO European and North Atlantic (EUR/NAT) Office publish and distribute by e-mail a draft version of the NAT Guidance Material (Doc 001), taking into account the newly agreed format, by 15 July 2000;

b) States and international organisations concerned provide the ICAO EUR/NAT Office with any comments of a factual nature by 1 September 2000;

c) the NAT Guidance Material be published by 15 September 2000.

4.4 NAT IGA Manual

4.4.1 The Member for the United States indicated that the FAA would carry out a review of the IGA Manual and present proposal for changes to NAT SPG/37.

4.5 NAT Air Navigation Plan ANP and Facilities and Services Implementation Document (FASID)

4.5.1 Based on examples that clearly indicated that an update to the NAT ANP and FASID were required, the Group was presented with a proposal to amend these documents. Accordingly, it was felt that it was opportune to re-examine the trial NAT ANP and trial NAT FASID in order to bring them up-to-date. With this in mind, the Secretariat accepted to pursue this task on behalf of the NAT SPG.

CONCLUSION 36/22 - UPDATING THE NORTH ATLANTIC AIR NAVIGATION PLAN (ANP) AND NAT FACILITIES AND SERVICES IMPLEMENTATION DOCUMENT (FASID)

That the ICAO European and North Atlantic Office, Paris (EUR/NAT) make arrangements to update the NAT ANP and FASID in accordance with Council Decision 150/3 of 26 February 1997.

5. AGENDA ITEM 5 - ANY OTHER BUSINESS

5.1 Introduction

5.1.1 Under this Agenda Item, the Group considered the following specific subjects:

a) NAT SPG working methods

b) Next meeting

5.2 NAT SPG working methods

5.2.1 The Group was presented with a proposal by the Chairman that the Chairmanship be reviewed every four years. Although the idea was accepted, it was agreed that this matter would be taken up at NAT SPG/37.

5.3 Next meeting

5.3.1 The Group agreed that its next meeting be held in the ICAO EUR/NAT Office, Paris, from 12 to 14 June 2001.

LIST OF ACRONYMS

ACARS	Aircraft Communication Addressing and Reporting System
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACSG	Aeronautical Communications Sub-Group
ADS	Automatic Dependent Surveillance
AFI	African
AFTN	Aeronautical Fixed Telecommunications Network
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Services
ALLPIRG	All Planning and Implementation Regional Groups
AMSS	Aeronautical Mobile-Satellite Service
ANP	Air Navigation Plan
ASE	Altimetry System Error
ATC	Air Traffic Control
ATM	Air Traffic Management
ATMG	Air Traffic Management Group
ATMIP	Air Traffic Management Implementation Plan
ATN	Aeronautical Telecommunications Network
ATS	Air Traffic Services
BOTA	Brest Oceanic Transition Area
CAA	Civil Aviation Authority
CADAG	Communications, Automation and Data Link Applications Group
CADS	Central Automatic Dependant Surveillance
CMA	Central Monitoring Agency
CNS	Communications
CNS/ATM	Communications, Navigation and Surveillance/Air Traffic Management
CPDLC	Controller Pilot Data Link Communications
CRM	Collision Risk Model
CTA	Control Area
EATCHIP	European Air Traffic Control Harmonization and Integration Programme
ECAC	European Civil Aviation Conference
EFG	Economic and Financial Group
EGNOS	European Geostationary Navigation Overlay Service
ELT	Emergency Locator Transmitter
EUR/NAT	European and North Atlantic
FAA	Federal Aviation Administration
FANS	Future Air Navigation Systems
FASID	Facilities and Services Implementation Document
FCMA	FANS Central Monitoring Agency
FDE	Fault Detection and Exclusion
FDPS	Flight Data Processing System
FIG	FANS 1/A Implementation Group
FIR	Flight Information Region
FIS	Flight Information Services
FMS	Flight Management System
FTE	Flight Technical Error
GAATS	Gander Automated Air Traffic System
GAT	General Air Traffic
GLONASS	Global Orbiting Navigation Satellite System
GMS	Global Positioning System Monitoring System
GMU	Global Positioning System Monitoring Unit
GNE	Gross Navigation Error
GNSS	Global Navigation Satellite System

GP	General Purpose
GPS	Global Positioning System
HF	High Frequency
HFDL	HF Data Link
HMS	Height Monitoring System
HMU	Height Monitoring Unit
IACA	International Air Carrier Association
IAOPA	International Council of Aircraft Owner and Pilot Associations
IATA	International Air Transport Association
IBAC	International Business Aviation Council
ICD	Interface Control Document
IFALPA	International Federation of Air Line Pilots' Associations
IFATCA	International Federation of Air Traffic Controllers' Associations
IGA	International General Aviation
Inmarsat	International Maritime Satellite Organization
INS	Inertial Navigation System
IRS	Inertial Reference System
ITASPS	ICAO Informal Trans-Asia/Trans-Siberia/Cross Polar Routes High Level Steering Group
ITU	International Telecommunications Union
JAA	Joint Aviation Authorities
LIM NAT RAN	Limited North Atlantic Regional Air Navigation
MASPS	Minimum Aircraft System Performance Specification
MEL	Minimum Equipment List
MIG	Mathematicians Implementation Group
MNPS OPS	Minimum Navigation Performance Specifications Operations
MNPS	Minimum Navigation Performance Specifications
MOPS	Minimum Operational Performance Standards
MSSR	Monopulse Secondary Surveillance Radar
MWG	Mathematicians Working Group
NAM	North American
NAT IMG	North Atlantic Implementation Management Group
NAT SPG	North Atlantic Systems Planning Group
NAT TFG	North Atlantic Traffic Forecasting Group
NAT	North Atlantic
NICE Group	NAT Implementation Management Cost Effectiveness Group
OAC	Oceanic Area Control Centre
OCA	Oceanic Control Area
OCD	Oceanic Clearance Delivery
ODAPS	Oceanic Display and Planning System
OLDI	On Line Data Interchange
OPS MNG	NAT Operations Managers
OPS/AIR	Operations/Airworthiness
OTS	Organized Track System
PCO	Programme Co-ordination Office
R&D	Research and Development
R/T	Radio Telecommunication
RAIM	Receiver Autonomous Integrity Monitoring
RHSM	Reduced Horizontal Separation Minima
RNAV	Area Navigation
RNP	Required Navigation Performance
RSSIG	Reduced Separation Standards Implementation Group
RTCA	Radio Technical Commission for Aeronautics
RVSM	Reduced Vertical Separation Minimum
SAR	Search and Rescue
SARPS	Standards and Recommended Practices (ICAO)
SATCOM	Satellite Communications
SOTA	Shannon Oceanic Transition Area
SST	Supersonic Transport

SUPPS	Regional Supplementary Procedures
TA	Traffic Advisors
TCAS	Traffic Alert and Collision Avoidance System
TIBA	Traffic Information Broadcast by Aircraft
TLS	Target Level of Safety
TVE	Total Vertical Error
UIR	Upper Information Region
VHF	Very High Frequency
WAAS	Wide Area Augmentation System
WATRS	West Atlantic Route System
WGS-84	World Geodetic System – 1984 Standards
WPR	Waypoint Position Report
WWW	World Wide Web
Y2K	Year 2000

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