INTERNATIONAL CIVIL AVIATION ORGANIZATION

SUMMARY OF DISCUSSIONS AND CONCLUSIONS OF

THE FORTY-SEVENTH MEETING OF

THE NORTH ATLANTIC SYSTEMS PLANNING GROUP

Paris, 13 to 16 June 2011

PREPARED BY THE EUROPEAN AND NORTH ATLANTIC OFFICE OF ICAO JUNE 2011

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF CONCLUSIONS

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0. INTRODUCTION

PLACE AND DURATION

0.1 The Forty-Seventh Meeting of the North Atlantic Systems Planning Group (NAT SPG) was held in the European and North Atlantic (EUR/NAT) Office of ICAO from 13 to 16 June 2011.

OFFICERS AND SECRETARIAT

0.2 The Meeting was chaired by Mr Ásgeir Pálsson, the Representative of Iceland. Mr Luis Fonseca de Almeida, ICAO Regional Director, Europe and North Atlantic, was the Secretary of the Meeting and he was assisted by Mr George Firican, Deputy Regional Director / Technical Team Leader and Mrs Carole Stewart-Green, Messrs Christopher Keohan, Elkhan Nahmadov and Léon Vonlanthen, Regional Officers from the same Office. Mr François Robert, ATM Officer from ICAO Headquarters also supported the meeting. Additional assistance was provided by Mrs Nikki Goldschmid and Patricia Cuff from the EUR/NAT Office of ICAO.

ATTENDANCE

0.3 In addition to the Representatives of the NAT SPG member States, representatives from the International Air Transport Association (IATA), the International Business Aviation Council (IBAC) and the International Federation of Air Line Pilots Associations (IFALPA) participated in the meeting. The Inmarsat sent its apologies that other responsibilities prevented attendance by a representative from that organization. France and the International Federation of Air Traffic Control Associations (IFATCA) did not attend. The NAT SPG noted with regret the absence of a representative from Spain (paragraph 5.1.3 refers). Lists of participants and contacts are at **Appendix A**.

AGENDA

0.4 The NAT SPG 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: Proposed air navigation systems performance monitoring and measurement

Agenda Item 3: NAT planning and implementation management issues

- **3.1** Implementation programme updates
- **3.2** Performance monitoring

Agenda Item 4: NAT operational and safety improvements

Agenda Item 5: Safety Monitoring

Agenda Item 6: NAT Documentation

Agenda Item 7: Work programme, including sub-groups

Agenda Item 8: Any Other Business

1. DEVELOPMENTS

1.1 ICAO UPDATE

1.1.1 The NAT SPG was advised that amendments had recently been approved to the *Procedures for the Air Navigation Services – Air Traffic Management* (PANS ATM, Doc 4444) and adopted for Annexes 1, 9, 10, 16, 17 and 18. It was noted that amendments to Annexes 2, 6, 8, 10, 11, 14 and 15 and to the *Procedures for Air Traffic Services – Aircraft Operations* (PANS OPS, Doc 8168), the PANS ATM and the *Procedures for Air Traffic Services - Training* (PANS TRG, Doc 9868) had been proposed. The NAT SPG was provided information concerning a number of planned events, both at the EUR/NAT Office of ICAO and at ICAO Headquarters. Finally, the NAT SPG was advised that a number of ICAO and NAT SPG documents had been updated (section 6.1 also refers).

1.2 GLOBAL AIR NAVIGATION INDUSTRY SYMPOSIUM (GANIS)

1.2.1 A presentation was made to the NAT SPG about the upcoming Global Air Navigation Industry Symposium (GANIS). The Secretariat provided a short explanation of Aviation System Block Upgrades (ASBUs) concept. Some members of the NAT SPG expressed concerns with the concept of ASBUs and the concept of interoperability.

1.3 TWELFTH AIR NAVIGATION CONFERENCE

1.3.1 The NAT SPG was provided information concerning the upcoming Air Navigation Conference scheduled for November 2012.

1.4 WORK PROGRAMME OF ANC PANELS AND STUDY GROUPS

1.4.1 The NAT SPG was provided detailed information by the Secretariat on the various Panels, Study Groups (SG) and Task Forces (TF) of the Air Navigation Commission (ANC). At the request of NAT SPG, the Secretariat agreed to provide to the participants to the NAT SPG, via electronic correspondence, a list of participants to each of these Panels, SGs and TFs.

1.5 UPDATES ON THE DANISH AND ICELANDIC JOINT FINANCING AGREEMENTS

1.5.1 The NAT SPG noted information concerning amendments envisaged to the Danish and Icelandic Joint Financing Agreements.

1.6 REVIEW BY THE AIR NAVIGATION COMMISSION OF THE NAT SPG/46 REPORT

1.6.1 The Secretariat presented the NAT SPG with a working paper regarding the action taken by the ANC on the NAT SPG/46 Report. The NAT SPG recalled that following each Planning and Implementation Regional Group (PIRG) meeting, the report was first reviewed by the Working Group for Strategic Review and Planning (WG/SRP) of the ANC followed by the ANC itself. In the case of the NATSPG/46 Report, as there were no specific items that required Council action, the report was not submitted to the Council. During these reviews, the ANC noted the report, made comments thereon and provided guidance to the PIRG as appropriate. Furthermore, the ANC took specific actions on certain conclusions contained therein, since the follow-up to some conclusions may require approval by the ANC. Follow-up actions by the ICAO Secretariat on conclusions and decisions of PIRG were then guided by the outcome of the ANC and the Council (when required) actions described above (**Appendix B** refers).

1.6.2 In this respect, the ANC when reviewing the NAT SPG/46 Report took specific action on certain conclusions that would require follow-up actions in the work programme of NAT SPG, as follows:

- Air Navigation systems implementation performance monitoring and measurement. The ANC noted that the NAT SPG was in the process of identifying Key Performance Indicators (KPI) / metrics in order to measure NAT region performance in specified Key Performance Areas (KPA). The ANC, however, emphasized the need to have a set of metrics common to all the regions, in addition to its own, so as to facilitate comparative analysis of regional developments. The ANC noted that the Secretariat had already included this task in its work programme.

- Data Link Mandate. The ANC noted that this item was subject to further work by the NAT Implementation Management Group (NAT IMG) of the NAT SPG, and decided to defer comment on this matter until the outcome of the NAT IMG meeting was known (paragraphs 3.1.4, 3.1.5, 3.1.11 and **Appendix C** refer).

- SATCOM Voice. The ANC noted the revised amendment proposal for the use of SATCOM voice for ATS communications. The ANC requested that the EUR/NAT Office of ICAO include IFATCA and CANSO in the list of international organizations when circulating this type of amendment proposal, and also requested the Secretariat to develop related guidance material and to include the development of standards for the use of SATCOM voice in the agenda of the AN-Conf/12 (section 6.3 refers).

- NAT Safety Oversight Group (NAT SOG) Vertical Risk Task Force. The ANC indicated that post implementation reviews were necessary. The cases, where target levels of safety exceeded in the NAT Region affecting RVSM safety/height monitoring, demanded a different approach and called for the application of safety management systems (SMS) concepts to assess the contributory factors and to address them from a different safety approach angle.

- Volcanic ash contingency plan for the EUR and NAT regions. The ANC noted NAT SPG Conclusion 46/6 and expressed its appreciation for the efforts of the NAT and EUR regions in the development of this common contingency plan. The ANC requested the Secretariat to share this contingency plan with other regions which could have similar volcanic ash activities.

- Business cases to support NAT Region implementation planning. The ANC supported the need for a safety assessment in all cases prior to accepting NAT Region implementation plans and to also include trials or pre-implementation plans in this requirement. The ANC also commented on the growing support for regulatory impact assessments and that the NAT SPG should consider adopting this approach.

1.6.3 Following the presentation, the NAT SPG requested clarification on the expectations of the ANC with respect to safety assessment; was it appropriate to move away from traditional TLS in favour of an SMS approach? If that was the case, was a template available for regulatory safety assessment? The Secretariat agreed to research these issues and provide full clarification to the next NAT SPG.

1.7 STATUS OF NAT SPG46 CONCLUSIONS

1.7.1 The ICAO Secretariat presented the NAT SPG with information on the status of the NAT SPG/46 agreed Conclusions. The NAT SPG noted the good progress and that, in respect to NAT SPG Conclusion 46/02 – Data Link Mandate, the relevant proposal for amendment was cleared and forwarded to ICAO HQ for further processing; with respect to NAT SPG Conclusion 46/04 – Use of SATCOM voice, the NAT SPG was advised that the proposal for amendment was approved by the President of the Council on 11 May 2011.

1.8 ARCTIC SEARCH AND RESCUE REGIONS

1.8.1 The NAT SPG noted information from the ICAO Secretariat on the Agreement reached by the Arctic Council Task Force for the Development of an International Instrument on Cooperation in Search and Rescue Operations in the Arctic on newly defined Search and Rescue Region (SRR) boundaries. It was noted that official submissions to the ICAO EUR/NAT Office for a proposal for amendment to the EUR and NAT Air Navigation Plans to amend SRR boundaries had been received from Denmark and Norway. The NAT SPG noted that a draft proposal for amendment, based on the "*Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic*" (final version of 6 April 2011) and envisaged to include updates to the Icelandic and United Kingdom SRR boundary, would be circulated to the States concerned for their verification and confirmation in order that a single proposal for amendment initiated by all the eight States concerned be processed. The NAT SPG was also informed on the requirement to update all Letters of Agreement (LoA) between the relevant Area Control Centres (ACC) concerning alerting services and noted that the ICAO Secretariat had started the necessary coordination in order for this issue to be addressed.

1.9 ANC DECISION ON STATEMENT OF THE BORPC

1.9.1 The NAT SPG noted information from the ICAO Secretariat on the decision taken by the ANC on 8 March 2011 (Discussion Paper No. 1 related to AN-WP/8500 on BORPC refers) to withdraw the current Statement of Basic Operational Requirements and Planning Criteria (BORPC) from all Regional Air Navigation Plans (ANP) at the appropriate time and that a new BORPC should be developed in conjunction with and considered for inclusion in the upcoming revision of the *Global Air Navigation Plan* (GANP, Doc 9750). The NAT SPG noted that ICAO would develop a new Statement, with a new name, for inclusion in the upcoming revision to the GANP which would provide general guidance material to PIRGs in its implementation. It was also noted that all States would be informed about the ANC decision on BORPC during the process of consultation for the revision to the Basic ANP/FASID of all ANPs, during the transition to the electronic version of regional air navigation plans (eANP).

2. PROPOSED AIR NAVIGATION SYSTEMS PERFORMANCE MONITORING AND MEASUREMENT

2.1 UPDATE CONCERNING NAT REGION PERFORMANCE METRICS

2.1.1 The NAT SPG was provided an update on the activities undertaken by the NAT IMG and the NAT Economic and Financial Group (NAT EFG) to address NAT SPG Conclusion 46/1 - NAT Region Performance Metrics. In the course of developing possible KPIs both groups took note of input suggesting that developing definitions for operational indicators and implementing the means to collect new data could require significant resources. Accordingly, both the NAT IMG and NAT EFG focused on examining the possibility that data already being collected would be suitable as KPIs.

2.1.2 The NAT SPG was advised that the NAT IMG would determine whether data could be collected concerning operations within the NAT Organised Track System (NAT OTS), detailing the clearances provided versus the track, flight level and speed requested. If possible, data concerning aircraft on random routes would also be collected; this would provide a more accurate measure of regional performance and increase the likelihood that all NAT ANSPs could report the same data. The NAT IMG also planned to examine whether it would be possible to collect data regarding the number of vertical clearances requested versus the clearances provided. The NAT IMG would review the material and determine its applicability as KPIs, in order to formulate a recommendation for NAT SPG/48.

2.1.3 The NAT SOG had initiated discussions concerning an "acceptable level of safety: for the ICAO NAT Region (paragraph 5.1.7 refers). This subject would be further discussed at the next NAT SOG meeting with the contribution and the intervention of specialists; the development of KPIs for the KPA of safety in the ICAO NAT Region would then be considered. The main metrics to evaluate safety in the ICAO NAT Region presently considered by the NAT SOG were the collision risks calculated for the lateral and vertical dimensions.

2.1.4 The NAT SPG reviewed the suggestion by the NAT EFG that information currently being reported through CANSO mechanisms be considered as being applicable KPIs for the KPA of cost efficiency. The NAT SPG noted that this information was specific for each State / Air Navigation Services Provider (ANSP) and that care was required to avoid comparisons that did not take due account of differences in operational complexity or other factors which would properly place the information in context. The NAT SPG also noted that the material collected by CANSO supported purposes that were not necessarily fully aligned to the requirements of the NAT SPG to monitor, on a regional basis, the performance of its work programmes.

2.1.5 Taking all of the foregoing into account, the NAT SPG determined that cost effectiveness KPIs should be reflective of, and related to, the operational KPIs being developed by the NAT IMG and take into account the concerns expressed above. Accordingly, the NAT EFG should await finalization of the NAT IMG work before suggesting regional (not ANSP specific) cost effectiveness KPIs. The NAT SPG also noted that, until the NAT IMG and the NAT SOG had finalized their recommendations, it would not be possible for the NAT EFG to provide advice concerning the costs related to the implementation of a NAT Region performance monitoring and reporting framework.

3. NAT PLANNING AND IMPLEMENTATION MANAGEMENT ISSUES

3.1 IMPLEMENTATION PROGRAMMES UPDATES

Update on planning for transition from MNPS to PBN

3.1.1 The NAT SPG recalled its discussion regarding the development of a NAT Region Performance Based Navigation (PBN) Transition Plan which would focus on how the accommodation of RNAV 10 (RNP 10[1]) and RNP 4 approved aircraft in the NAT Minimum Navigation Performance Specifications (MNPS) airspace could be achieved. In the process of developing the plan, any part of the current NAT MNPS airspace requirements that would not be met by the requirements specified in Doc 9613 for obtaining an RNAV 10 (RNP 10 label) or RNP 4 aircraft approval would be identified. The plan would also identify appropriate mitigations and include an MNPS devolution strategy so that the current MNPS approval system could be transformed to a PBN-based system for the ICAO NAT Region (*Summary of Discussions and Conclusions of the 46th Meeting of the NAT SPG*, paragraphs 7.1.2 and 7.1.3 refer).

3.1.2 The NAT SPG was advised that the NAT IMG, taking account that the NAT SPG had indicated that its clear intention was to transition from MNPS to PBN, had taken the necessary steps to begin drafting a step by step plan to do so. As a result, a draft *MNPS to PBN Transition Plan for the ICAO NAT Region* had been produced. The NAT SPG supported the intention that further development should be on the understanding that, eventually, MNPS would be eliminated as a requirement and basis for separation, to be replaced by appropriate separation standards for the airspace based upon RNP. It was noted that such a transition would require the development of a new set of system performance criteria using a Target Level of Safety (TLS) applicable to the lateral dimension, although the practical application of, for example, a 50 NM

[1] The *Performance-based Navigation (PBN) Manual* (Doc 9613), Part B, Chapter 1 notes that RNAV 10 is designated and authorized as RNP 10.

lateral minimum would not require any significant changes to current ATC operational practices. It would also be necessary to develop companion navigational and other performance statements associated with the application of the minima in the ICAO NAT Region. Finally, the NAT SPG supported the philosophy that State authorizations would continue to be required to operate in the airspace currently designated as NAT MNPS airspace. The foregoing would be taken into account in refining the plan, including identifying more detailed tasks and suggested timelines for presentation to NAT SPG/48.

Airspace associated with NAT Region Data Link Mandate

3.1.3 The NAT SPG recalled that it had been agreed to advance a proposal to amend the *North Atlantic Regional Supplementary Procedures* (NAT SUPPs, Doc 7030) to support the NAT Region Data Link Mandate (NAT SPG Conclusion 45/11 refers) and that the NAT IMG would determine the vertical and horizontal limits of the area of applicability (NAT SPG Conclusion NAT SPG 46/02 refers). Once agreed, the limits would be published by the States concerned in their respective Aeronautical Information Publications (AIP).

3.1.4 The NAT SPG discussed the NAT IMG's recommendation that the airspace where the carriage and operation of data link equipment should be mandatory to support the first phase of the NAT Region Data Link Mandate should be FL360 to FL390 inclusive, on tracks of the NAT OTS designated as the "core tracks" in the NAT Track Message. A supporting definition had been developed for a "split track structure" and a set of rules for designating "core tracks" for the purpose of designating the airspace associated with the NAT Region Data Link Mandate had been developed. This material is provided at **Appendix D**.

3.1.5 The recommendation had been developed based on an analysis of the number and percentage of aircraft that would not have been permitted to operate as they actually had if, on certain tracks and associated flight levels, the carriage an operation of data link equipment had been mandatory during the past 12 months. The analysis was conducted using the rules described in Appendix D for the designation of core tracks and showed the average number and percentage of non-equipped aircraft that would have been excluded. Selecting the heaviest loaded eastbound and westbound tracks and flight levels 360 to 390 showed that around 20 flights per day would have been excluded from the specified region in each direction based on the sample data. This comprised less than 8% of the overall NAT OTS traffic in the region, which the NAT SPG agreed was acceptable. Extending these vertical limits to include FL350 showed that approximately 30 flights per day would have been excluded in each direction, approximately 12% of NAT OTS traffic. The NAT SPG accordingly endorsed the NAT IMG's recommendation and agreed to the following:

NAT SPG Conclusion 47/1 – Vertical and horizontal limits of airspace associated with the ICAO NAT Region Data Link Mandate

That the limits of the airspace within the ICAO NAT Region where the carriage and operation of data link is mandatory shall be:

a) in the vertical plane, flight level 360 to flight level 390 inclusive; and

b) in the horizontal plane, no more than two tracks within the NAT Organised Track System designated as core tracks in accordance with the rules detailed in **Appendix D** of this report and identified as such on the NAT Track Message.

3.1.6 The foregoing conclusion would be updated as necessary to account for changes to the vertical and horizontal limits of the data link mandatory airspace, when deemed appropriate by the NAT SPG. The NAT SPG noted that the data used for the analysis would be periodically recalculated, in order to provide updated results based upon more recent traffic figures and updated projections as they became available. This development was welcomed as was the fact that the analytical tool could assist with

estimating the potential effects of exclusionary airspace related to the Reduced Lateral Separation Minimum of 25 Nautical Miles (NM) (RLatSM) implementation along with assessing future expansions of the data link mandatory airspace.

3.1.7 The NAT SPG was informed that IATA had requested that the vertical limits of the data link mandatory airspace be flexible. The NAT IMG would examine this possibility in more detail for subsequent phases and assess possible ways that such flexibility could be implemented; possible hazards would be identified and it would be determined whether it would be possible to mitigate them.

3.1.8 The NAT SPG then concurred that States should use the following text as a basis for AIP material, in accordance with the direction of the NAT SPG (paragraph 3.1.3 above refers):

> All aircraft intending to conduct flights in the airspace defined below shall be fitted with and shall operate Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance-Contract (ADS-C) equipment.
>
> Two specified tracks within the NAT OTS between FL360 to FL390 inclusive.
>
> *Note: The specified tracks shall be identified when the NAT Organised Track message is published.*
>
> The basis for determining the specified tracks will be:
>
> a) Tracks whose predicted loading is in the higher percentage of overall predicted OTS loading on that day.
>
> b) Tracks which have an adjacent non specified OTS track available to non data link equipped aircraft.

Data link mandate

3.1.9 The NAT SPG was provided with information on the status of NAT SPG Conclusion 46/02 which had endorsed a draft proposal for amendment to the NAT SUPPs mandating the carriage and use of Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance – Contract (ADS-C) in specified portions of the ICAO NAT Region. It was recalled that the draft proposal had been distributed for global consultation by the EUR/NAT Office of ICAO on 14 September 2010 (State Letter EUR/NAT 10-0691.TEC refers).

3.1.10 One of the responses received had indicated that the proposed text of the amendment would not be supported. This issue was discussed at NAT IMG/37 and it was decided that the NAT IMG members would engage in discussions with the aim of finding an acceptable solution which would allow further processing of the proposal for amendment. As an outcome of a coordination process amongst the NAT IMG members, facilitated by the ICAO Secretariat, a revision of the original proposal for amendment was agreed and the objection had been withdrawn. The revised proposal for amendment (Appendix C refers) was therefore forwarded to ICAO Headquarters for approval.

3.1.11 The NAT SPG was advised that, in the course of the aforementioned coordination, it had also been determined that it would be necessary to include flight planning requirements to support the handling of data link exempt aircraft. It was noted that this requirement was addressed in a separate proposal for amendment to the NAT SUPPs (paragraph 6.2.2 refers).

3.1.12 The NAT SPG agreed that additional practical guidance would be required for States and airspace users in order to implement the provisions of the proposal for amendment related to the handling of the exemption cases. In particular this was related to paragraphs 3.3.3 e) and 5.4.3 e) of the proposal which

stipulated that operators of types of aircraft that met certain criteria may request the granting of an exemption from the appropriate aviation authority. The guidance material should provide additional interpretation of the criteria and provide a mechanism for practical implementation of the foregoing process. The work on the guidance material would need to be completed by the next meeting of the NAT IMG and promulgated via Aeronautical Information Circulars (AIC) or equivalent.

3.1.13 The NAT SPG agreed that that handling of exemptions was largely a regulatory issue. Therefore the NAT SPG supported the decision of the NAT SOG to establish a Data Link Exemptions task force (paragraph 5.1.8 refers). It was noted that this work would also be supported by the NAT IMG (paragraph 7.1.11 refers).

3.1.14 Finally, the NAT SPG discussed whether, in view of the latest developments, the NAT data link service could be declared fully operational. It was recalled that it was previously agreed that this declaration would take place when the NAT Data Link Monitoring Agency (NAT DLMA) was fully functional. It was noted that although the NAT DLMA itself was already providing its services, several NAT service providers were still in the process of upgrading their ground automation systems in order to be able to provide data to the NAT DLMA in the format required. It was reiterated that the completion of these actions would allow the establishment of a fully functional NAT data link monitoring system and enable the declaration of the NAT data link service fully operational. It was noted that the NAT IMG would monitor the progress on this subject and report to NAT SPG/48.

3.2 PERFORMANCE MONITORING

Data link performance reports

3.2.1 The NAT SPG was presented with a report on data link performance in the ICAO NAT Region based on the inputs provided by the NAT DLMA and NAT provider States. The NAT SPG noted that there were three main components of the NAT Region data link performance monitoring system:

a) collection of data to measure the data link performance, the analysis of that data according to the guidance in the GOLD, delivery of observed performance analysis, and identification and reporting of problems. This was a joint task of the NAT DLMA and NAT service providers;

b) maintenance of a problem reporting website, posting of ANSP-observed performance analysis and liaising with stakeholders on website content. This was a responsibility of the joint NAT/APAC web site (**http://www.ispacg-cra.com**) data coordinator; and

c) investigation and resolution of identified problems by the NAT DLMA.

3.2.2 The NAT SPG noted that the reported satellite and VHF data link performance met the 95% criteria for RCP 240 and surveillance performance 180 specifications. The performance analysis by operator (for the time period from October 2010 to January 2011) included the operators contributing to the top 80% in terms of message counts. The analysis showed that for the time period investigated, some operators were meeting the RCP criteria at 95% and 99.9%. However, 8 of the operators presented did not meet the 95% criteria for RCP and 4 operators did not meet the 95 % criteria for ADS-C.

3.2.3 In this regard, the NAT SPG noted that reporting the data link performance from other NAT areas would be essential to ensure a full region-wide view. It was recalled that this would become possible as soon as upgrades to all NAT ground automation systems were completed.

FANS1/A over Iridium

3.2.4 The NAT SPG was informed that as part of the FANS 1/A over Iridium (FOI) evaluation project, the FOI performance observed within New York FIR was measured. It was noted that, overall, the results were encouraging.

3.2.5 The NAT SPG agreed that in view of the Iridium satellite network rollout it would be important to ensure that the NAT service providers would have continuous visibility of the Iridium performance. Therefore it was agreed that Iridium should be invited to provide regular status and performance reports at the NAT CNSG meetings and attend the NAT SPG meetings.

FANS 1/A over Inmarsat

3.2.6 The NAT SPG was provided with information on the status of Inmarsat I3/I4 Classic Aero services and the accelerated roadmap for the deployment of the SwiftBroadbaSPnd (SB) Oceanic Safety Services. It was noted that SB Oceanic Safety flight trials were planned for mid-2012. The NAT SPG recalled that at NAT SPG/46, Inmarsat clarified that the I3 Classic Aero equipped fleet, with the exception of a decreasing portion of older generation aircraft, should largely continue to be "*FANS 1/A over Inmarsat*" capable, would gradually begin utilizing the I4 network and would not require any changes to the on-board equipment. The NAT SPG was informed that, however, this information was not yet included in the formal Inmarsat policy documentation. As Inmarsat was not present at the meeting (Inmarsat sent apologies for not being able to participate due to other overlapping events), the NAT SPG agreed that this issue should be monitored and clarified through the NAT IMG structure and reported to the next NAT SPG.

Data link performance analysis

3.2.7 The NAT SPG was informed about the NAT IMG/38 discussion on the benefits of conducting the analysis of the performance data centrally by the NAT DLMA for the ICAO NAT Region, versus individual analysis by the individual service providers. The NAT SPG noted that this process was currently somewhat repetitive as the involved ANSPs would provide raw data and conduct the analysis of the same data, while the NAT DLMA would also analyse the (same) provided data at the regional level. It was noted that, while acknowledging the rationale for this repetitive effort, the NAT IMG invited the United States to consider if the process could be streamlined in the future NAT DLMA upgrades.

Investigation and resolution of identified problems by the NAT DLMA

3.2.8 The NAT SPG noted that investigation and resolution of the reported problems by the NAT DLMA was continuing. The reports were related to abnormalities observed in the performance and behaviour of the various data link system components on the ground and on board aircraft. The continued monitoring and resolution of identified problems also involved coordination with aircraft and avionics manufacturers, communications and satellite service providers and air navigation service providers.

3.2.9 In this regard, the NAT SPG noted that participation of the aircraft operators in the problem reporting was essential. It was underlined that a continuos awareness campaign among operators would be very important, especially during this initial phase of the NAT DLMA operations. The NAT SPG noted that the degree of the aircraft operators involvement in the NAT DLMA activities would be continuously assessed through the NAT DLMA reports and additional measures would be determined and implemented, as required. IFALPA and IBAC were invited to contact the NAT DLMA in order to get included on the NAT DLMA contact list and gain access to the NAT DLMA problem reporting website.

Ground systems automation in support of the NAT data link monitoring system

3.2.10 The NAT SPG was provided with the status of upgrades to the NAT ANSPs' ground automation systems in support of the NAT Region data link performance monitoring system. It was noted that the NAT IMG continued to monitor and coordinate this implementation at the regional level through the maintenance of the NAT Table of implementation dates.

	Gander	***Shanwick***	***Reykjavik***	***Santa Maria***	***New York***	***Bodo***	***Shannon***
Support tools for DLMA in ground systems	*Spring 2011*	*4Q2010*	*Partial Jan2011* *Full Sep 2011*	*2Q 2011*	*Completed*	*TBD*	*1Q2012* *1Q 2013*

Coordination with the NAT CMA

3.2.11 The NAT SPG noted the possibility to use the NAT DLMA as a conduit for coordinating safety concerns regarding communications system performance with communications service providers and end users. The NAT SPG noted that the NAT DLMA Terms of Reference and the NAT Fast Track Procedure for Safety Occurrence provided the NAT DLMA with a framework to formally carry out this function.

3.2.12 On the practical side, three mechanisms were identified through which safety concerns associated with the NAT Region communications system performance could be coordinated with the end users and communications service providers: a) individual coordination by each NAT service provider with the NAT Central Monitoring Agency (NAT CMA) through the safety occurrence reports; b) direct exchange of information between the NAT DLMA and NAT CMA; and c) periodic reports from the NAT CNSG meetings.

3.2.13 The NAT SPG noted that direct coordination between the NAT CMA and NAT DLMA was already put in place, and all above mentioned options would lead to the safety concerns being coordinated among all addressees on the NAT DLMA and NAT CMA distribution lists, effectively including end users and communication service providers. The NAT SPG agreed that it would be useful that the weekly NAT CMA summaries indicate whether or not data link services were used by an aircraft involved in an incident. This information could be then further analysed by the NAT DLMA to determine if there were any specific issues related to the data link performance.

4. NAT OPERATIONAL AND SAFETY IMPROVEMENTS

4.1 UPDATE ON PLANNING FOR RLATSM

4.1.1 The NAT SPG recalled that it had agreed to revise the NAT IMG work programme to focus on reductions in distance-based separation (NAT SPG Conclusion 41/3 refers). Subsequent discussions reinforced the operational requirement that lateral separation reductions should be planned so as to support the flight planning and routing conventions in the ICAO NAT Region (*Summary of Discussions and Conclusions of the 41st Meeting of the NAT SPG*, paragraphs 2.1.13 and 2.1.14 and NAT SPG Conclusion 43/4 refer). The NAT SPG had endorsed the proposal that planning for RLatSM should proceed on the basis that Required Navigation Performance (RNP) 4 was the appropriate navigation performance specification to support the intended application (*Summary of Discussions and Conclusions of the 45th Meeting of the NAT SPG*, paragraph 3.1.20 refers). At the same time, the NAT SPG had also agreed upon a concept of

operations for reducing lateral separation to 25 NM in the ICAO NAT Region (NAT SPG Conclusion 45/10 refers).

4.1.2 Most recently, the NAT SPG had updated a *Draft Implementation Plan for the Trial Application of RLatSM* (Draft RLatSM Plan). It had been noted that the planning assumption was that Required Communications Performance (RCP) 240 would be a requirement, although this, along with other details of the draft plan, was to be verified by the NAT IMG (*Summary of Discussions and Conclusions of the 46th Meeting of the NAT SPG*, paragraphs 3.1.1 through 3.1.4 refer).

4.1.3 The NAT SPG was informed that the NAT IMG had clarified the role of RCP in connection with the planned RLatSM trial implementation by inserting the following wording into the plan:

> *8.1.5 RCP240 as defined in RTCA DO-306/ED-122 is the guideline against which actual communication performance will be measured. Surveillance performance specification 180 as defined in the same standard is the guideline against which actual surveillance performance will be measured.*

4.1.4 The NAT SPG noted that the NAT IMG had not supported a contention that the upward trend in Large Height Deviations (LHD) must be reversed as a precondition for RLatSM implementation. The NAT SPG was advised that the NAT IMG had developed a detailed task list to support the RLatSM implementation and agreed that Canada would act as a focal point (project manager) for these tasks. The NAT IMG would work in close coordination with the NAT SOG regarding input from the NAT SOG and exchange of information concerning tasks for which that group had been identified as a focal point (lead or coordination). The task list would continue to be updated and modified as the implementation programme evolved. The task list, along with the RLatSM Plan would be made available on the ICAO EUR/NAT website, in the "EUR & NAT Documents" area. Other material related to the RLatSM implementation would be provided via the same means, as it became mature.

4.1.5 The NAT SPG reviewed a proposal to amend the concept of operations for the implementation of RLatSM in the ICAO NAT Region described in NAT SPG Conclusion 45/10. It was proposed that the implementation of Phase 1 of RLatSM should be coincident with the appropriate step or benchmark to be contained in the *MNPS to PBN Transition Plan for the ICAO NAT Region* (paragraphs 3.1.1 and 3.1.2 refer). It was also proposed that the vertical limits of the airspace within which RLatSM would be applicable should be harmonized with the vertical limits of the airspace associated with the NAT Region Data Link Mandate (paragraphs 3.1.3 to 3.1.5 refer). In this way, the equipage requirements for RLatSM would be associated with an appropriate supporting initiative and the vertical limits of the RLatSM airspace would be harmonised with those of airspace with similar mandatory equipage requirements. The NAT SPG endorsed the proposal, which is provided in **Appendix E**, and supported the inclusion of Phase 1 of the concept in the RLatSM Plan (which is provided in **Appendix F**), superseding NAT SPG Conclusion 45/10. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 47/2 – Updated NAT concept of operations to support reducing lateral separation to 25 Nautical Miles (NM)

That the

a) NAT IMG use the concept of operations provided in **Appendix E** to this report to develop an implementation plan for reducing lateral separation to 25 NM in the ICAO NAT Region; and

b) ICAO Regional Director, Europe and North Atlantic, coordinate with ICAO Headquarters in order to initiate the development of global provisions.

4.1.6 The NAT SPG noted that the NAT IMG would carry out further analyses to develop detailed concepts of operation for Phases 2 and 3 of the RLatSM implementation. Canada would lead the

development effort in close coordination with the United Kingdom; the involvement of all stakeholders would be ensured by progressing this work through the appropriate NAT IMG contributory groups. The concepts of operation would take into account the anticipated requirements of all ICAO NAT Region stakeholders (both operators and airspace planners responsible for air traffic management) and would be developed with sufficient lead time to allow for advanced planning to occur. An update would be provided to NAT SPG/48.

4.1.7 The NAT SPG noted that the decision to link timing of implementing Phase 1 of RLatSM to the *MNPS to PBN Transition Plan for the ICAO NAT Region* (paragraph 4.1.5 above refers) meant that a number of considerations (not just percentage of equipped aircraft) would need to be taken into account when determining whether it was appropriate to proceed with each RLatSM Phase.

4.1.8 In reviewing current and forecast equipage for operators in the ICAO NAT Region, it had been observed that some aircraft, although technically capable of meeting RNP specifications, might not be approved. For commercial operators, it could be assumed that aircraft with FANS 1/A equipage were RNP 4 capable; for business aviation operators, however, it could not be assumed that aircraft equipped with GNSS would automatically have the navigation capabilities necessary to qualify for an RNP 4 approval.

4.1.9 It was agreed that operators should be encouraged to obtain RNP approvals for appropriately equipped aircraft and, furthermore, that RNP 4 approvals should be sought when possible. This would support the planned transition to PBN in the ICAO NAT Region and also support operators having the necessary approvals to benefit from the planned RLatSM implementation, commensurate with their fleet equipage. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 47/3 – Required Navigation Performance (RNP) 4 equipage plans

That the ICAO Regional Director, Europe and North Atlantic, encourage NAT Region operators to take the necessary steps to obtain RNP 4 approvals for suitably equipped aircraft in their fleets.

4.1.10 The NAT SPG was advised that, in the course of carrying out a study of past NAT SPG Conclusions which should be included as policy in the NAT SPG Handbook, the ICAO Secretariat had detected an anomaly. Conclusions to support the adoption of TLS to support vertical and longitudinal reductions had been identified (NAT SPG Conclusions 27/22 and 33/6), but a conclusion supporting lateral reductions had not been found. It was recalled that a TLS of 5×10^{-9} fatal accidents per flight hour (fapfh) had been adopted as the criteria against which safety of the planned RLatSM implementation would be assessed, as documented at paragraph 7.1 of the RLatSM Plan.

4.1.11 The NAT SPG noted that the *Manual on Airspace Planning Methodology for the Determination of Separation Minima* (Doc 9689) stated, in section 6.14, that in the NAT MNPS airspace "as separation reductions are introduced in the horizontal plane, the system risk in the lateral and longitudinal dimensions will be also be measured against a new TLS of 5×10^{-9} fapfh", suggesting that this had, sometime in the past, been confirmed as a policy of the NAT SPG. The recommendation provided to the NAT IMG reflected a consensus that adopting a TLS of 5×10^{-9} fapfh to support planning for reduced lateral separation would be appropriate, considering that it would provide a common basis for planning separation reductions in the ICAO NAT Region.

4.1.12 The NAT SPG endorsed the recommendation of the NAT IMG and noted that the conclusion would be documented in the NAT SPG Handbook. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 47/4 – Target Level of Safety (TLS) to support reductions in lateral separation minima

That a TLS of $5x10^{-9}$ fatal accidents per flight hour be used for planning purposes in carrying out the work required to sustain reductions in lateral separation minima in the ICAO NAT Region.

4.2 NAT RCP AND ADS-C SURVEILLANCE PERFORMANCE BASED OPERATIONS IMPLEMENTATION

4.2.1 The NAT SPG was provided with an update of the work carried out on the *NAT RCP and ADS-C Surveillance Performance-Based Operations Implementation Plan.* In this regard, it was recalled that NAT SPG/44 had endorsed Conclusion 44/11 which had tasked the NAT IMG to oversee the development of a project management plan for the implementation of RCP in the NAT Region by 2015 that would support the implementations set out in the NAT Service Development Roadmap.

4.2.2 It was recalled that implementing a Required Communication Performance (RCP) and ADS-C surveillance performance framework in the ICAO NAT Region would provide for the flexibility needed to support different communications and surveillance capability and performance (voice and data) that would:

a) leverage "less capable" aircraft capability (communications capability would not be simplistically ON or OFF, or based solely on the presence of a CPDLC connection or ADS-C contract); and

b) prescribe and/or restrict operations to the appropriate level of service based on demonstrated performance level of the aircraft/operator.

4.2.3 In this regard the NAT SPG noted that implementing communications and surveillance performance based operations would require the following:

a) Compliance with RCP and surveillance performance specifications becoming part of the requirements to ground automation and communication systems, CSPs and SSPs;

b) Compliance with RCP and surveillance performance specifications becoming part of the requirements to the type design approval of aircraft and related operational authorizations, where required;

c) Aforementioned compliance requirements be included in the NAT regional supplementary procedures (Doc 7030) and/or national AIPs (or equivalent);

d) Flight planning requirements to cater for RCP and ADS-C surveillance performance-based operations be developed and included in Doc 7030 and/or national AIPs (or equivalent), and

e) ATC automation changes to recognize flight plan indicators and apply appropriate level of service to eligible operators.

4.2.4 In reviewing the updated *NAT RCP and ADS-C Surveillance Performance-Based Operations Implementation Plan*, the NAT SPG agreed that the prime objective of the plan was to provide a performance-based framework for the provision of data link services in support of the NAT reduced longitudinal separation of 5 minutes between ADS-C equipped aircraft in the ICAO NAT Region (RLongSM) and RLatSM programmes. Therefore, it was agreed to remove the third of the initial objectives of the plan, namely, "*implementation of the performance-based framework for the SATCOM voice communications*". The NAT SPG noted that this decision might need to be revisited once the work being carried out by the ICAO Inter-Regional SATCOM Voice Task Force (that also included a definition of the performance-based framework for the use of SATCOM voice) was completed.

4.2.5 The NAT SPG recalled that the NAT implementation plans for the trial application of RLongSM and RLatSM included performance specifications for communications and surveillance. It was underlined that during the NAT RLongSM and RLatSM validation trials, a) the RCP 240, as defined in the GOLD, would be the guideline against which actual communication performance would be measured and b) the surveillance performance specification 180, as defined in the GOLD, would be the guideline against which actual surveillance performance would be measured.

4.2.6 Concerning the performance specifications envisaged for the operational RlongSM and RLatSM implementations, the NAT SPG agreed to include a statement in the plan that RCP 240 and surveillance performance specification 180 were the candidate specifications to be prescribed.

4.2.7 In this regard, the NAT SPG emphasized that the current separation standards/minima were not predicated on communications performance requirements, were strategic in nature and that no change to this status was envisaged. Meeting RCP and ADS-C surveillance performance specifications would therefore be applicable only to reduced separation and new separation standards. The NAT SPG agreed that when data link performance would be assessed for the current separation standards this would be done with reference to RCP 240 and surveillance specification 180.

4.2.8 The NAT SPG noted that Task 8 of the plan addressed the need to draft a proposal for amendment to the ICAO NAT SUPPs to prescribe the performance specifications for communications and surveillance to support RLongSM and RLatSM. The proposal would include criteria for operator eligibility, aircraft equipage, requirements for flight planning, monitoring, alerting and reporting. It was agreed that the timeline of this exercise would need to coincide with the proposals for amendment concerning the RLatSM and RlongSM.

4.2.9 With regards to Task 3 of the plan, the NAT SPG supported the need for an operational concept/guidance material (including procedures) on the use of the data link services in the current separation environment in order to increase safety. This document would include conformance monitoring using ADS-C contracts, handling of exempted aircraft, and any other aspects deemed relevant for the operating concept. It was noted that most of the material necessary for this work already existed in various NAT documents. This material would need to be collated into a single document that would reside in the GOLD.

4.2.10 The NAT SPG agreed that several workshops would need to be conducted in order to raise awareness and promote the implementation of the plan. The NAT SPG also recognised the need to develop guidance material to clarify the interpretation of RCP and surveillance specifications applicability when performance would fall below specified levels, including the role of operational judgement in determining appropriate actions. Therefore, the NAT SPG agreed to include Tasks 16 and 17 in the plan.

4.2.11 On the basis of the above discussion, the NAT SPG agreed to approve the *NAT RCP and ADS-C Surveillance Performance-Based Operations Implementation Plan* as provided at **Appendix G** and included the task of execution of the plan on the work programme of the NAT IMG. Consequently the NAT SPG agreed to the following:

NAT SPG Conclusion 47/5 – Approval of the NAT RCP and ADS-C Surveillance Performance based operations implementation plan

That:

a) the *NAT RCP and ADS-C surveillance performance based operations implementation plan* (**Appendix G** refers) be endorsed;

b) the NAT IMG

i) include the management and execution of the *NAT RCP and ADS-C surveillance performance based operations implementation plan* on its work programme; and

ii) provide updates to the NAT SPG.

4.3 ELIGIBILITY TO RECEIVE ADS-B SERVICES IN THE ICAO NAT REGION

4.3.1 The NAT SPG was advised that the NAT IMG had been discussing the need to ensure that Air Traffic Services (ATS) surveillance services based on Automatic Dependent Surveillance-Broadcast (ADS-B) would be provided on the basis of reliable information. Some Mode S transponders could provide false position information and therefore ways and means to mitigate this risk had been examined.

4.3.2 The NAT SPG noted that the NAT IMG had confirmed there was a need for an eligibility list in order to ensure that ATS surveillance services based on ADS-B would only be provided to aircraft which met, at minimum, the requirements specified in the European Aviation Safety Agency (EASA) Acceptable Means of Compliance (AMC) 20-24 or equivalent. The position of IATA that a global list was preferable had been noted, but it was recognized that the planned implementation in the ICAO NAT Region was distinct from planned continental implementations, which would be subject to more stringent performance requirements. It was also noted that expected European Implementing Rules and regulations in the United States would, in the medium term, ban the use of Mode S transponders that did not provide the required level of performance; this would likely mean that the need for an eligibility list would be temporary.

4.3.3 The NAT SPG accepted the offer of Canada to maintain a shared eligibility list on behalf of the ICAO NAT Region. The NAT SPG was advised that Canada, Iceland, Ireland and Portugal would explore the possibility that they would be able to accept each other's ADS-B service approvals, which took the form of ensuring that the aircraft concerned had demonstrated they were in compliance with EASA AMC 20-24 or equivalent. The NAT SPG was informed that the United States would require compliance with the more stringent requirements specified in AC 20-165 in order for aircraft to be provided with ATS surveillance services based on ADS-B in airspace where it provided such services. It was noted that the effort required to coordinate and maintain the currency of the list was somewhat burdensome, but the need was unavoidable so long as there were aircraft operating Mode S transponders that would provide false position indications. An update on this subject would be provided to NAT SPG/48. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 47/6 – ADS-B Eligibility List for the ICAO NAT Region

That Canada maintain an eligibility list on behalf of the ICAO NAT Region detailing aircraft which, it has been confirmed, meet the requirements specified in the European Aviation Safety Agency (EASA) Acceptable Means of Compliance (AMC) 20-24 or equivalent.

4.4 REGIONAL PREPAREDNESS AND RESPONSE TO A RADIOACTIVE EMERGENCY WITHIN OR BEYOND THE EURR/NAT REGIONS

4.4.1 The NAT SPG acknowledged the proposal by the European and North Atlantic Volcanic Ash Exercises Steering Group (EUR/NAT VOLCEX/SG) to consider the need for developing a regional contingency plan in the EUR and NAT Regions for a radioactive emergency (EUR/NAT VOLCEX/SG/6 Action 6/4 refers). This proposal was considered with importance in light of the radioactive accident at the Fukushima Daiichi nuclear power plant as a result of a historic earthquake and tsunami that occurred on 11 March 2011 in Japan.

4.4.2 The NAT SPG noted that in the context of international civil aviation (Annexes 3, 11, and 15 in particular), information on radioactive clouds provided to international aviation stakeholders included:

a) notification to ACCs of release of radioactive material by Volcanic Ash Advisory Centre (VAAC) London;

b) SIGMET on radioactive cloud in simplified manner (location, duration, and date and time of the release as well as forecast locations) using information provided by Regional Specialized Meteorological Centres (RSMCs), also noting that improvements to SIGMET on radioactive cloud were being addressed by the International Airways Volcano Watch Operations Group (IAVWOPSG);

c) NOTAM on radioactive cloud and prohibited or restricted area if applicable; and

d) designation of radioactive release on World Area Forecast Centre (WAFC) Significant Weather (SIGWX) Charts.

4.4.3 The NAT SPG drew a parallel with the current volcanic ash contingency plan in that stakeholders would use information such as NOTAM and SIGMET to determine the impact to airspace and operations. The NAT SPG considered that the proposal should:

a) pay due respect to the prevailing provisions within ICAO Annexes (and supporting guidance material/manuals) and the Joint Radiation Emergency Management Plan of the International Organizations;

b) take into account the often limited information on source term parameters used to initialise atmospheric dispersion models;

c) recognize that a radioactive emergency had potentially far-reaching consequences on human health, the movement of contaminated passengers and cargo, etc.;

d) note that nuclear emergency contingencies were often handled under the auspices of national (State level) contingency plan and/or procedures;

e) recognize that global harmonization of regional contingency plans was desired (noting this report would be reviewed by the ANC); and

f) consider development of contingency utilizing the volcanic ash contingency plan for the EUR/NAT Region by a small group of experts for subsequent review by the subgroups of the NAT SPG and EANPG.

4.4.4 Given the above, the NAT SPG agreed to the following:

NAT SPG Conclusion 47/7 – Development of a EUR/NAT contingency plan for nuclear emergency

That the ICAO Regional Director, Europe and North Atlantic, be invited to:

a) Establish a suitable mechanism in order to develop a draft EUR and NAT air traffic management (ATM) contingency plan to ensure regional preparedness and response to a nuclear emergency within or beyond the ICAO EUR and NAT Regions; and

b) Report back on progress to NAT IMG/39 (October 2011).

Note: The development of a regional ATM contingency plan for a radioactive emergency should be undertaken in coordination with respective sub-groups of the EANPG and NAT SPG (including the EANPG METG and the NAT ATMG), take into account existing ICAO provisions, and recognize prevailing international or regional response management plans.

4.5 ACTIVITIES OF THE EUR/NAT VOLCANIC ASH EXERCISES STEERING GROUP OF THE EANPG PROGRAMME COORDINATING GROUP (COG) (EUR/NAT VOLCEX/SG)

4.5.1 The NAT SPG acknowledged the current works of EUR/NAT Volcanic Ash Exercises Steering Group (VOLCEX), in light of the recent debrief of the VOLCEX Excercise11/01 and VOLCEX/SG/7 Meeting held in Brussels from 6 to7 June 2011. As expressed consistently by operators (noting a record high participation of 77 airlines in Exercise11/01), simplification and centralization of information on volcanic ash was necessary for operators to make timely, informed decisions. The VOLCEX/SG/7 meeting agreed to targeted improvements such as issuing volcanic ash concentration maps more frequently and up to an hour in advance of becoming valid to assist in timely issuance of NOTAM. Furthermore, centralizing the SIGMET and NOTAM information and providing them in graphical form (e.g. utilizing the European Crisis Visualization Interactive Tool for ATFCM (EVITA)) would assist operators in making informed decisions in a timely manner. The NAT SPG noted a comprehensive list of targeted improvements would be available on the ICAO EUR/NAT Regional Office website when the VOLCEX11/01 debrief report would be finalized and posted.

4.5.2 The NAT SPG noted that the next exercise (April 2012) would simulate a volcanic eruption in the Azores by Volcanic Ash Advisory Centre (VAAC) Toulouse that preferably would impact southwest Europe as well as 4 Oceanic FIRs (to be determined, based on archived weather data). This two-day exercise would allow States to enact a safety risk assessment approach (initiated by the European Aviation Crisis Coordination Cell (EACCC)) to allow operators to determine whether or not to operate based on their safety risk assessments.

4.5.3 Discussions on the Grimsvötn eruption on 21 May 2011 included Iceland's utilization of detailed SIGMET/NOTAM through automated processes that assisted in minimizing the airspace not utilized. Automation and easy to use plotting tools would assist States that receive advisories with many points in providing graphical information sooner for operational decisions. A general agreement to be well informed, yet in a simplified manner, was a desired balance to consider in the future development of products.

4.5.4 The NAT SPG further noted the upcoming Second Meeting of the International Volcanic Ash Task Force (IVATF/2) to be held in Montréal from 11 to 15 July 2011. The NAT SPG noted that outcomes of the IVATF/2 in relation to regional implications to *the Volcanic Ash Contingency Plan for the EUR/NAT Regions* (EUR Doc 019 / NAT Doc 006, Part II) should be reviewed at the NAT IMG/39 Meeting. An effort by the VOLCEX/SG to include volcanic ash product formats as an appendix to the contingency plan was also expected by the NAT IMG/39 Meeting.

4.5.5 The NAT SPG recalled the EANPG COG Decision 48/04 that initiated the VOLCEX/SG for the Eastern part of the EUR Region (EUR (EAST) VOLCEX SG) to conduct volcanic ash exercises involving far eastern Russia (Kamchatka or Sakhalin) that may impact trans-east, trans-polar and cross-polar routes which would involve VAACs Tokyo (Japan) and Anchorage (United States), the Russian Federation and IATA. The NAT SPG noted that nominations were received by the Russian Federation and Japan, however, the United States could not participate at this time and IATA had not yet responded.

4.6 NAT FAST TRACK PROCEDURE FOR SAFETY OCCURRENCES

4.6.1 The NAT SPG reviewed and endorsed the NAT Fast Track Procedure for Safety Occurrences, developed by the NAT SOG in cooperation with the NAT IMG, as provided in **Appendix H**. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 47/8 - NAT Fast Track Procedure for Safety Occurrences

That the:

a) NAT Fast Track Procedure for Safety Occurrences as presented in **Appendix H** to this report, be added to the NAT SPG Handbook; and

b) ICAO Regional Director, European and North Atlantic, take the necessary steps to inform all affected parties regarding the adoption of this procedure by the NAT SPG.

5. SAFETY MONITORING

5.1 SAFETY OVERSIGHT REPORTING

5.1.1 The NAT SPG noted the summary of the activities of the NAT SOG since its last meeting. Regarding the activity of the NAT CMA, the NAT SPG noted that the new ground-based height monitoring unit (HMU) at Strumble that became operational in spring 2011 was running in parallel with the old unit for comparison purposes. The new unit, used to monitor vertical performance in support of the monitoring programme for RVSM, would be able to track multiple targets at the same time and would not need the intervention of a radar specialist to confirm the measured data.

5.1.2 The NAT SPG was informed that the NAT CMA worked closely with the engineering departments of several airlines to assist in their investigations regarding the poor altimetry systems performance observed on a number of aircraft. The NAT SPG noted with concern that in the vertical dimension a total of 631 minutes were reported as being flown at un-cleared flight levels in 2010, compared with 519 minutes in 2009.

5.1.3 The NAT SPG also noted that the Safety Performance Report, as prepared by the NAT Scrutiny Group, was reviewed by the NAT SOG. The NAT SPG noted the errors caused by coordination and control at the Shanwick/Madrid common boundary. Despite the considerable efforts spent by United Kingdom to engage discussions with Madrid, the initiative was unsuccessful and the continued difficulties at the Madrid/Shanwick interface were a matter of concern. The NAT SPG was cognisant of the current difficulties being faced by Spain, and expressed its hopes that Spain would resume its participation in the work of the NAT SPG so as to facilitate resolution of these continuing interface issues. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 47/9 - Oceanic Interface Safety Occurrences Working Group Meeting

That, the ICAO Regional Director, Europe and North Atlantic, considering the recurrent difficulties at the Madrid/Shanwick interface:

a) invite France, Portugal, Spain and United Kingdom to form a working group, composed of regulatory and Air Navigation Service Providers (ANSPs) representatives, for the assessment of the interface issues between their respective Oceanic Area Control Centres (OACCs).

b) host the first meeting of the working group.

5.1.4 The NAT SPG noted with satisfaction that the lateral collision risk estimate of 0.2×10^{-9} fapfh remained well below the Target Level of Safety (TLS) of 20×10^{-9} fapfh.

5.1.5 With respect to the operational vertical collision risk, the NAT SPG was informed that estimates for the NAT RVSM airspace exceeded the vertical TLS (5×10^{-9} fapfh) since 2001. The most recent estimates for the vertical operational collision risk, which took account of the effect of SLOP on reducing risk, were 29.3×10^{-9} for the years 2009 and 2010. The NAT SPG noted the fact that the major

contribution to the overall vertical collision risk (98%) in 2010 was due to the time spent at wrong flight levels. As failure of inter-centre ATC coordination continued to be one of the significant contributors to the risk in the region, the NAT SOG urged ANSPs to pay particular attention to this problem. It was noted that the full implementation of ATS Interfacility Data Communications (AIDC) capabilities would contribute to the resolution of this issue, as would the implementation of the conformance monitoring applications supported by ADS-C. Considering the inter-relationship between safety and implementation in this regard, the issue would be closely coordinated between the NAT SOG and the NAT IMG.

5.1.6 Regarding the Report Leaving / Report Reaching procedure, the NAT SPG recognized the importance of these reports in detecting vertical errors. The NAT SPG noted that when using data link communications, the report could not be activated from the cockpit unless a corresponding request was included in the uplink instruction from ATC. Therefore the NAT SPG urged each State and ANSP to apply this procedure.

5.1.7 The NAT SPG was informed of the NAT SOG efforts to develop an "acceptable level of safety" and the intention to invite a representative of CANSO to contribute to discussions on the subject (paragraph 2.1.3 also refers). Canada asked about the history of establishing the Target Level of Safety (TLS) in the vertical plane. The representative of United Kingdom offered to take action to analyse the TLS in relation with the action plan to reduce risk in the NAT Region.

5.1.8 Concerning the development of guidance material for the application of NAT Data Link Mandate Exemptions (paragraphs 3.1.12 and 3.1.13 refer), the NAT SPG noted the information provided by the NAT SOG and agreed with the suggestion to establish a Data Link Mandate (DLM) Exemption Task Force to develop DLM exemptions guidance material prior to NAT IMG/39, which was planned to take place from 7 to 10 November 2011.

5.2 TERMS OF REFERENCE FOR THE NAT SOG AND SUBGROUPS & CHAIRMANSHIP

5.2.1 The NAT SPG was informed on the review performed by the NAT SOG of its own Terms of Reference (ToR) and those of its sub-groups, NAT MWG and NAT SG, and of the service provider NAT CMA. The NAT SPG endorsed the revised ToRs of the NAT CMA and the NAT SOG (**Appendix I** refers) and noted the amended ToR for the NAT MWG and NAT SG (**Appendix J** refers). Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 47/10 - ToRs for the NAT SOG and Sub-Groups

That the:

a) terms of reference of the NAT Safety Oversight Group (NAT SOG) and NAT Central Monitoring Agency (NAT CMA) be amended as presented in **Appendix I** to this report; and

b) NAT SPG Handbook be amended to take account of a) above and the revised terms of reference for the NAT Mathematicians' Working Group and the NAT Scrutiny Group as presented in **Appendix J** to this report.

5.2.2 The NAT SPG noted that the Chairmanship of the NAT SOG would be reviewed every two years, in the fall. In this respect, the NAT SPG noted that at its last meeting the NAT SOG elected the United States representative as its new Chairman (starting as of NAT SOG/5 meeting in the fall of 2011). The NAT SPG extended congratulations to the new NAT SOG Chairman and wished him success in his new functions.

5.2.3 A view was expressed that, for consistency, the Chairmanship of the NAT SPG and its subgroups could be aligned to the same process. The Chairman underlined that the NAT IMG and NAT SOG subgroups had *rapporteurs* designated by the respective parent groups and proposed that the issue of a common approach for the nomination/review of *chairmanship*/*rapporteurship* be discussed by the NAT IMG

and NAT EFG. The outcome of their deliberations would be brought to the attention of the next NAT SPG in the form of a working paper; the Secretariat agreed to coordinate this matter.

6. NAT DOCUMENTATION

6.1 UPDATES TO DOCUMENTS MANAGED BY THE NAT IMG

6.1.1 The NAT SPG was advised that the NAT IMG had approved version 1.2.8 of the *NAT Common Coordination Interface Control Document* (NAT CC ICD) and version 1.4 of the *Common Aeradio Communications ICD for the NAT Region* (NAT Aeradio ICD) to include material specifying the requirement to forward position reports. The NAT IMG also approved a general update to the NAT CC ICD, which would be included in version 1.2.9. These changes were mainly editorial in nature, to update the titles and editions of reference documents and to update examples to reflect current operations and traffic. The NAT IMG also approved future version 1.3.0 of the NAT CC ICD to account for changes arising from Amendment 1 to the PANS ATM, 15th Edition.

6.1.2 The NAT SPG noted that the NAT IMG approved Amendment 3 to the *Air Traffic Management Operational Contingency Plan for the NAT Region* (NAT Doc 006, Part I) which was effective in January 2011. The NAT IMG recently approved another update, which would be published as soon as practicable.

6.1.3 The NAT SPG was informed that an amendment had been made to the *Application of Separation Minima – North Atlantic Region* (NAT ASM, NAT Doc 008) to incorporate new definitions and to clarify the provisions for the application of longitudinal separation using Mach number technique. A second amendment would soon be published to correct editorial errors and to correctly reflect the operational practice that aircraft not approved for MNPS may be permitted to continuously climb or descend through NAT MNPS airspace.

6.1.4 Finally, the NAT SPG noted that the NAT IMG had received an updated NAT Table of Implementation Dates and that the FPL Implementation Table had been updated.

6.2 PROPOSED AMENDMENT TO THE NAT SUPPS TO UPDATE FLIGHT PLANNING REQUIREMENTS

6.2.1 The NAT SPG recalled that Amendment 1 to the PANS ATM, 15th Edition, would introduce changes to the content and format of the ICAO flight plan form. These changes would be effective from 15 November 2012 and would affect certain flight planning provisions currently described in the *North Atlantic Regional Supplementary Procedures* (NAT SUPPs, Doc 7030). The NAT SPG was advised that the NAT IMG had initiated action to address the foregoing, and in the course of developing the necessary proposal to amend the NAT SUPPs, identified a number of other issues which could be addressed at the same time.

6.2.2 The NAT SPG supported the proposal to amend the NAT SUPPs, as detailed in **Appendix K**. Along with accounting for Amendment 1 to the PANS ATM, the proposal also incorporated changes related to the provision of ATS surveillance services based on ADS-B and to indicate exemptions from the requirement to carry and operate data link equipment (paragraph 3.1.11 refers). The proposal also reflected a desire for all aircraft with RNP 10 or RNP 4 capability to indicate that capability in the flight plan. In this regard, the NAT SPG noted that the proposal repeated the detailed direction for inserting information regarding RNP capabilities into the flight plan which would be provided in the PANS ATM; this was normally not the practice for SUPPs provisions. The NAT SPG requested the ICAO Secretariat, when processing the proposal, to take account of the possibility of confusion and incorrect application if the full guidance were not provided in the NAT SUPPs.

6.2.3 The NAT SPG also agreed that the proposal would seek to simplify the flight planning process by requiring the provision of the aircraft registration markings in Item 18 of the flight plan as a general requirement in the ICAO NAT Region, rather than being associated with various specific implementations. In this regard, the ICAO Secretariat advised that the potential global applicability of this provision would be assessed, given the number of existing and emerging applications that required this information for the safe and efficient provision of services. Finally, Iceland agreed to submit the proposal on behalf of the ICAO NAT Region. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 47/11 - Updated NAT Region Flight Planning Provisions

That:

a) Iceland submit the North Atlantic Regional Supplementary Procedures proposal for amendment regarding updates to the flight planning requirements in the ICAO NAT Region as provided at **Appendix K** to this report to the European and North Atlantic Office of ICAO; and

b) the ICAO Regional Director, Europe and North Atlantic, process the submitted proposal in accordance with the formal procedure.

6.3 ICAO INTER-REGIONAL SATCOM VOICE TASK FORCE REPORT

6.3.1 The NAT SPG was provided with an update on the ICAO Inter-Regional Satellite Communications (SATCOM) Voice Task Force (IRSVTF) work. It was recalled that the IRSVTF was established by the North Atlantic Systems Planning Group (NAT SPG) and Asia-Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) with the objective to produce a globally applicable SATCOM voice guidance material (SVGM) for air traffic service (ATS) communications. This work was scheduled for completion for December 2011.

6.3.2 The NAT SPG noted that the IRSVTF held its first meeting on 25-27 January 2011, in Paris, France. 32 members from 11 States, 5 international organizations and industry, including an airline, aircraft manufacturers, communication service providers and satellite companies participated. The IRSVTF reviewed its terms of reference, status of implementation and available documentation and developed a work plan.

6.3.3 The latest revision of the SVGM (version 0.4) was provided to the NAT SPG. It was noted that the SVGM incorporated the NAT SATCOM voice trial guidance material, the material developed by the FAA PARC CWG SATCOM voice project, airworthiness certification and operational approval guidance by the FAA and the European Aviation Safety Agency (EASA).

6.3.4 The NAT SPG was informed that IRSVTF/1 reviewed a number of scenarios provided in its terms of reference (ToR), including:

a) Use of AMS(R)S voice for ATS communications via third party radio operator (No MEL relief considerations);

b) Minimum Equipment List (MEL) relief 1 HF + 1 SATCOM;

c) Use of portable SATCOM phones;

d) 1 or 2 portables or installed satellite phones and no HF radio at all; and

e) Use of SATCOM voice direct to controller communications.

6.3.5 The NAT SPG noted that in reviewing the scenarios described in the ToR, the IRSVTF concluded on the following principles:

a) the guidance material would remain neutral on these scenarios;

b) the guidance material would be developed within the global ICAO RCP framework to provide States with some flexibility to apply different standards for different uses, without implication to seamless operations;

c) the guidance material would provide a basis for determining acceptability of any implementation, taking into account routine and emergency use, provision and use of SATCOM voice for ATS communications, procedures for the radio operator, controller and flight crew, performance specifications and qualification;

d) the guidance on the use of portable SATCOM phones would merely indicate that their use was not advisable for ATS communications, as its use was not allowed by national regulations of many States, and any special applications on their use would not be addressed by this guidance material;

e) the guidance material would not specifically address MEL matters, but could serve to facilitate State regulatory authorities in establishing policies in such matters; and

f) the use of SATCOM technology alone (i.e. without any HF capability) would require study beyond the target date for completing the first edition of the guidance material. This scenario would therefore not be analyzed.

6.3.6 The NAT SPG agreed with the IRSVTF suggestion that the approval of the SATCOM voice as a long range communication system (LRCS) was instrumental to progress the implementation of SATCOM voice. It was felt that such recommendations could be a potential subject for discussion and decision at the ICAO Air Navigation Conference in 2012. The NAT SPG noted that the Global Air Navigation Industry Symposium (GANIS) (ICAO, Montreal, 20-23 September 2011) would be a preparatory milestone for the Conference. In this regard, it was agreed to mandate the IRSVTF to prepare necessary input material to be presented at the GANIS.

6.3.7 The NAT SPG noted that close cooperation was ensured between the IRSVTF and the ICAO OPLINK Panel. The OPLINKP relied on the work of the IRSVTF to produce guidance material that could possibly be endorsed by ICAO for global use. The OPLINKP also monitored the progress of implementation with the aim to determine if at any point in time possible amendments to ICAO SARPS would be required.

6.3.8 It was noted that the IRSVTF input might be useful in this respect by providing recommendations which may include proposed amendments to ICAO SARPS. The NAT SPG supported the idea that such proposal for amendments be presented to the next meeting of the NAT IMG prior to transmission to the OPLINKP or ACP.

6.3.9 The NAT SPG noted that the next meeting of the IRSVTF was scheduled on 12-16 September 2011, Seattle WA USA. The IRSVTF planned to complete its work by the end of 2011 and present the SVGM edition 1.0 to NAT SPG/48 approval in June 2012.

6.3.10 In concluding this subject, the NAT SPG was informed that the NAT SUPPs proposal for amendment on the use of SATCOM voice was formally approved by the President of the ICAO Council on 11 May 2011. It was emphasised that this was a very important milestone that would formally enable using SATCOM voice in the NAT Region for all ATS communications. In this respect it was noted that AIPs, NAT Doc 007 and NAT OPS Bulletins could serve as formal mechanisms for promulgating information on

the use of SATCOM voice in the NAT. The NAT SPG also noted that all matters related to MEL associated with the use of SATCOM voice would be a State regulatory issue.

6.4 OTHER NAT DOCUMENTATION

Proposed amendment to NAT Doc 007

6.4.1 The NAT SPG recalled that, at its 46th meeting, it had been agreed to expand the *NAT Minimum Navigation Performance Specifications Airspace Operations Manual* (NAT MNPSA Operations Manual) to provide operational guidance for the common benefit of NAT MNPSA operators and their regulators. It was also agreed that the update subsequent to autumn 2010 should take account of the provision of Air Traffic Services (ATS) surveillance services based on ADS-B. The NAT MNPSA Operations Manual was accordingly updated and re-titled to reflect its expanded purpose (NAT SPG Conclusion 46/7 refers). The NAT SPG was advised that the first edition of *Guidance Concerning Air Navigation In and Above the North Atlantic MNPS Airspace* (NAT Doc 007) was published in December of 2010.

6.4.2 The NAT SPG reviewed and endorsed suggested changes to NAT Doc 007 to account for the provision of ATS surveillance services in the ICAO NAT Region and to account for an agreed change in the NAT Region Flight Allocation Scheme (FLAS). The changes would involve amendments to existing text and the addition of a new Chapter 10 devoted to the subject of ATS surveillance services. These changes are detailed in **Appendix L**. The NAT Document Management Office (NAT DMO) reviewed this material and indicated that further coordination was required to ensure that the text correctly conveyed, to airspace users, the provisions and any associated requirements. Once the necessary clarifications had been received the material would be refined as required. The NAT SPG also noted that an updated chart was required from Portugal to support the new material in Chapter 10 specific to the Santa Maria OCA. The NAT DMO would also make the necessary adjustments to update references to traffic levels and error rates and changes to operational procedures and to NAT SPG and ICAO documentation. The NAT SPG agreed that the ICAO Secretariat and the NAT DMO would coordinate to produce the 2011 edition of NAT Doc 007 in September of 2011. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 47/12 - NAT Doc 007, Edition 2011

That the NAT Document Management Office:

a) continue to manage Guidance Concerning Air Navigation In and Above the North Atlantic MNPS Airspace (NAT Doc 007);

b) in coordination with the ICAO Secretariat, prepare an amendment to NAT Doc 007, taking account of the decisions of NAT SPG/47, changes to the air navigation system in the ICAO NAT Region since September 2010 and the material shown in **Appendix L** to this report; and

c) arrange to publish Edition 2011 of NAT Doc 007 electronically in September 2011.

Activities of the NAT DMO

6.4.3 In addition to the foregoing, the NAT SPG noted that the NAT DMO would continue to coordinate with the NAT IMG concerning material that had been included in NAT Doc 001, to ensure that material pertinent only to ATS providers would be incorporated into the *Application of Separation Minima, North Atlantic Region* (NAT Doc 008, NAT ASM) and that remaining material appropriate for public promulgation would be incorporated into NAT Doc 007. Finally, the NAT SPG was advised that the NAT DMO was continuing its coordination with the United States regarding an update to the *North Atlantic International General Aviation Operations Manual*.

Proposed amendment to the NAT SPG Handbook

6.4.4 The NAT SPG reviewed a number of proposed amendments to the NAT SPG Handbook to take account of developments since June 2010. The NAT SPG noted that the agenda included in the Handbook was the version used prior to the reorganization of the group and its working structure following the NAT SPG Symposium on Structure and Working Methods (3 to 5 November 2008) which had been convened in accordance with NAT SPG Conclusion 44/41. Accordingly, it was agreed that the agenda used to support the current meeting, which was structured according to the work programme, should be included in the Handbook.

6.4.5 The NAT SPG noted that a number of Policy Conclusions had been superseded or otherwise become obsolete:

a) NAT SPG Conclusion 41/7 - Mandating Data Link Requirements had been superseded by NAT SPG Conclusion 46/2 - NAT Region Data Link Mandate;

b) NAT SPG Conclusion 45/10 – NAT concept of operations to support reducing lateral separation to 25 Nautical Miles (NM) had been superseded by NAT SPG Conclusion 47/WP/04/1 – Updated NAT concept of operations to support reducing lateral separation to 25 Nautical Mile (NM) (paragraph 4.1 refers);

c) NAT SPG Conclusion 43/31 - Format of NAT SPG follow-up action list was no longer extant because the ICAO Secretariat had developed a tool to track progress on NAT SPG Conclusions which included the capability of outputting status reports which were provided to each meeting of the NAT IMG and the NAT SPG;

d) NAT SPG Conclusion 45/13 – Amendment to the Application of Separation Minima (North Atlantic Region) (NAT ASM) Document – Edition 2009 was no longer extant because the NAT IMG was now responsible for configuration management;

e) NAT SPG Conclusion 45/29 - Amendment to the NAT Minimum Navigation Performance Specifications (MNPS) Airspace Operations Manual was no longer extant because the document had been replaced by *Guidance Concerning Air Navigation In and Above the North Atlantic MNPS Airspace* (NAT Doc 007); and

f) NAT SPG Conclusion 45/30 - Amendment to the Guidance Material concerning Air Navigation in the North Atlantic Region (NAT Doc 001) was no longer extant, because the document had been removed from the NAT SPG library (*Summary of Discussions and Conclusions of the 46th Meeting of the NAT SPG*, paragraph 6.2.2 refers).

6.4.6 In regard to item e) above, the NAT SPG agreed that it was not appropriate to incorporate conclusions supporting each change to NAT Doc 007, as this information was not necessary to support the understanding of the NAT SPG structure or its working methods.

6.4.7 The NAT SPG agreed that the following two extant NAT SPG conclusions supporting the planning for reductions in separation should be included in the Handbook, along with the newly agreed conclusion supporting the planning for reductions in lateral separation (paragraph 4.1.12 refers):

NAT SPG Conclusion 27/22 – Definition of a Target Level of Safety (TLS) for the Implementation of the Reduced VSM in the NAT Region

That the TLS be defined as follows:

a) the TLS for collision risk in the vertical dimension due to all causes be 5.0×10^{-9} fatal accidents per flight hour and that the overall collision risk in the vertical plane be assessed against this TLS; and

b) the TLS would not be partitioned into separate components for the different types of risk. However, assessments of height-keeping performance would need to be conducted with reference to a safety constraint of 2.5 X 10^{-9}, as this is the value which has been used to derive the Minimum Aircraft System Performance Specification.

NAT SPG Conclusion 33/6 - Target Level Of Safety (TLS) to support reductions in longitudinal separation minima

That a TLS of $5.0x10^{-9}$ fatal accidents per flight hour be used for planning purposes in carrying out the work required to sustain reductions in longitudinal separation minima.

6.4.8 The NAT SPG also agreed that the Handbook should include a list of the documents that form the NAT SPG library; the ICAO Secretariat was given the remit to update this list when necessary, without a requirement to seek NAT SPG endorsement. Considering that NAT Doc 005 was in the process of being updated it was agreed that it would be included on the list, but with a note that it was "currently unavailable; in the process of being updated". Numbers for superseded documents would be included, with notations indicating that the associated documents had been superseded. Finally, the NAT SPG agreed to re-designate the Handbook as NAT Doc 001. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 47/13 – Update to NAT SPG Handbook following NAT SPG/47

That the ICAO Secretariat:

a) take the necessary steps to update the NAT SPG Handbook in accordance with the outcome of NAT SPG/47; and

b) publish it on the ICAO EUR/NAT website as soon as possible following NAT SPG/47.

7. WORK PROGRAMME INCLUDING SUB-GROUPS

7.1 NAT IMG OUTCOME

7.1.1 The NAT SPG noted that NAT IMG met twice since NAT SPG/46 (NAT IMG/37 took place in Dublin, Ireland from 2 to 5 November 2010 and NAT IMG/38 met at the European and North Atlantic (EUR/NAT) Office of ICAO from 10 to 13 May 2011).

7.1.2 The NAT SPG noted the information from the United States clarifying the planned activities necessary to implement 50 nautical miles (NM) longitudinal separation and 30 NM lateral/30 NM longitudinal separation between suitably equipped and authorized aircraft pairs in the New York oceanic Flight Information Region (FIR). The NAT SPG also noted that the United States, along with other ANSPs in the ICAO Asia and Pacific (APAC) Region, had applied 30 NM lateral/30 NM longitudinal separation standards since December 2005. The NAT SPG noted that planning would be conducted in accordance with the appropriate published ICAO documentation including ICAO Annexes, Regional Supplementary Procedures and guidance; the planning process would also address the basic tasks outlined in *Manual on Airspace Planning Methodology for the Determination of Separation Minima* (Doc 9689). The appropriate plans and documents, including required safety analyses, would be coordinated through the NAT SPG working structure. It was noted that an implementation date had not yet been established, pending the completion of the necessary plans and studies.

7.1.3 The NAT SPG noted that NAT IMG initiated coordination with the Separation and Airspace Safety Panel (SASP) regarding the planned RLongSM and RLatSM implementations in the ICAO NAT Region. Information papers had been provided to the SASP to inform them of the *Draft Implementation Plan for the Trial Application of RLatSM in the ICAO NAT Region* and the *Draft Implementation Plan for the NAT RLongSM Validation Trial in the ICAO NAT Region* as endorsed by NAT IMG/37.

7.1.4 The NAT SPG reaffirmed the importance of maintaining coordination with the SASP (*Summary of Discussions and Conclusions of the 46th Meeting of the NAT SPG*, paragraph 1.5.2 also refers). The NAT SPG also noted that the application of RLatSM and RLongSM in the ICAO NAT Region would be on an operational trial basis until the applicable separation standards and procedures were incorporated into the PANS ATM.

7.1.5 The NAT SPG noted that the NAT IMG had continued the task of identifying the material that would be required to update the Activities shown on the NAT Service Development Roadmap. It was recalled that it had been agreed to update the format of this material, in order to provide a better overview of the various service improvement activities taking place in the ICAO NAT Region and to provide links between the overview document and more detailed supporting documents such as plans, studies and task lists. As the new format did not easily accommodate itself to being printed on the standard paper sizes or being viewed on a computer screen, and it was difficult to determine when activities began or ended, or to easily determine inter-relationships, the NAT IMG had agreed to develop an alternative format which would address these concerns.

7.1.6 In this respect, it was noted that, although the plans, task list and analyses would continue to be updated, no further work should be undertaken to update the Activities until an alternative format for the Roadmap had been developed. It was also noted the agreement that the Roadmap should be used to track the implementation of any new separation standard, including those documented in the PANS ATM, implementation of mitigations to address vertical risk and activities associated with the full implementation of AIDC.

7.1.7 The NAT SPG noted the information that a number of Airborne Separation Assistance System (ASAS) applications were under development under the impetus of the Single European Sky ATM Research Programme (SESAR) and the Cooperative ATS through Surveillance and Communication Applications Deployed in European Civil Aviation Conference (ECAC) (CASCADE). The CASCADE programme had begun the process of supporting the installation of new avionics on aircraft in pioneer airlines to support the use of Air Traffic Situational Awareness In-Trail Procedure (ATSA ITP). The NAT IMG would continue to receive updates concerning developments, including the necessary information to update the NAT Service Development Roadmap. The NAT SPG noted that no adjustments to work programmes were required at this time, as ASTA ITP related tasks were already included.

7.1.8 The NAT SPG noted the progress with an analysis of the procedures related to the NAT Oceanic Clearance process. The input of the NAT SOG on this subject had been noted and had been conveyed to the appropriate contributory group. It was noted that it might be possible to eliminate a requirement to specify the clearance limit (in almost every case, the destination airport) from oceanic clearances without affecting safety. The next part of the analysis would involve determining whether it might possible to modify systems and procedures so that routes would only be specified if there was a change from the flight plan route. The result of this analysis would include an assessment as to whether it had been determined that changing the procedure (only issue the route if it had been changed from the flight plan route) was safer than always issuing the route.

7.1.9 The NAT SPG also noted the information that, due to continuing safety concerns associated with the non-adherence or incorrect execution of oceanic clearances, the United States would evaluate the discontinuation of the oceanic clearance procedure for flights issued an oceanic clearance by New York Air Route Traffic Control Centre (ARTCC). This evaluation would be carried out in accordance with the appropriate safety risk management procedures and would be presented to the NAT IMG prior to any decision being made. Based on the input received from the other NAT provider States, the United States did not intend to remove any altitude or speed confirmation; the evaluation would examine the possible elimination of the route confirmation portion of the Oceanic Clearance. The United States confirmed that the analysis would consider the effects on adjoining oceanic control areas if oceanic clearances were not issued.

7.1.10 The NAT SPG was informed that NAT IMG had reviewed an implementation plan and supporting safety analysis for an operational trial for the application of 50 NM lateral separation between MNPS approved aircraft in the Reykjavik Control Area (CTA). The plan specified that aircraft exiting the Reykjavik CTA would be laterally separated as required by the receiving control area. The NAT IMG endorsed the plan for the operational trial and the associated objectives and success criteria, as provided in **Appendix M** and agreed that the operational trial should proceed. The NAT SPG noted that updates would be provided to the appropriate contributory groups and the NAT SPG would be informed of developments.

7.1.11 The NAT SPG noted the agreement reached by the NAT IMG that a draft concept of operations for accommodating non-equipped aircraft in regards to the NAT Region Data Link Mandate and implementation of RLatSM needed to be produced without further delay. It was additionally noted that inputs from the NAT SOG would be required concerning how aircraft would be exempted from the NAT Region Data Link Mandate (paragraphs 3.1.12, 3.1.13 and 5.1.8 refer). The NAT IMG and the NAT SOG would coordinate closely in this regard.

7.1.12 The NAT SPG noted that NAT IMG agreed to request the NAT DMO to identify material in *Guidance and Information Material Concerning Air Navigation in the North Atlantic Region* (NAT Doc 001), which was no longer part of the NAT SPG library, which should be moved into NAT Doc 008. In this regard, such material should consist only of items pertinent to the provision of ATS or related to tasks carried out by ATSUs. All historical or background material should be confirmed as already residing in NAT Doc 007 or NAT Doc 007 should be amended accordingly. The NAT IMG was in the process of determining whether information related to altitude reservations and formation flights by State aircraft should be included in NAT Doc 007, which was a publicly available; a decision would be taken at NAT IMG/39. Finally, the NAT IMG had agreed that NAT Doc 001 should be removed from the ICAO EUR/NAT website; this had been done immediately following NAT IMG/38.

7.1.13 The NAT SPG noted that the NAT IMG would coordinate with the NAT SOG concerning issues identified related to RVSM approvals for modified airframes. The material developed within the NAT IMG working structure would be forwarded to the NAT SOG.

7.1.14 The NAT SPG was informed that NAT IMG noted a proposal to redefine the "basic" lateral separation minimum in the ICAO NAT Region as 100 NM rather than the current 120 NM with a practical application defined by the Gentle Slope Rules. In this regard, the "basic" lateral separation was specified in paragraph 6.2.1.1 e) of the NAT SUPPs. Such a redefinition would create consistency with other ICAO Regions where the "basic" oceanic lateral separation minimum was defined as 100 NM (AFI, MID/ASIA, PAC and parts of the SAM).

7.1.15 The NAT IMG recalled that the practical application of the stated NAT Region minimum allowed actual lateral spacing as low as 101 NM and noted that it seemed logical to define the lateral minimum in such a way that the practical application would not result in lower spacing. However, considering the amount of work that would be required by this task (e.g. requisite studies, including safety assessments) in balance to the benefits that might accrue, the NAT SPG supported the NAT IMG's decision not to add this task to its work programme but rather to concentrate on the planned transition from MNPS to PBN in the ICAO NAT Region.

7.2 REPORT OF THE NAT EFG

7.2.1 The NAT SPG noted the outcome of the twenty-first meeting of the NAT EFG. The NAT SPG noted the information provided to the NAT EFG that the government of the United Kingdom had decided to implement Administered Incentive Pricing to aeronautical Very High Frequency (VHF) bands (*Summary of Discussions and Conclusions of the 46th Meeting of the NAT SPG*, paragraph 1.6.1 also refers). The incentive pricing for the VHF aeronautical communications band would be phased in over 5 years beginning in April 2012 and would be applied only to ground infrastructure. Emergency and fire frequencies

(121.5, 121.6 MHz) would be free of charge. The indicative price for a national 25 kHz channel would be 9,900 pounds sterling (GBP) per year and for an 8.33 kHz channel 3,300 GBP per year. Airport towers would be levied charges of 2,600 GBP per year for each 25 kHz channel. The impact on NATS Enroute Limited (NERL) would be that licence fees would increase from approximately 40,000 GBP per year in 2011/2012 to approximately 1,000,000 GBP per year in 2017/2018. The fees were being challenged, but this was not expected to result in a substantial decrease.

7.2.2 The NAT SPG noted the consensus of the NAT EFG that unrest in North Africa and the Middle East was likely to affect oil prices and therefore fuel prices; due to the relative value of the United States dollar (USD), this was likely to impact North American operators more than others. It was also noted that fuel prices, although volatile, were tending to increase at a higher rate than inflation. There had been a sharp recovery in traffic in the ICAO NAT Region and cargo demand was also returning. Future growth would depend upon the resolution of political unrest, fuel prices and the robustness of the global economic recovery.

7.2.3 The NAT SPG was advised that IATA had reported that 2010 had been a profitable year for commercial airlines, but a downturn had been observed in 2011, mainly due to rising fuel prices; this trend was expected to continue. Also of concern was an increasing tendency by States to introduce new taxes on the airline industry, employing practices that did not appear to be in alignment with ICAO guidance. Despite this, strong growth was foreseen in the Latin American and Asia and Pacific markets. IATA expected consolidations to continue, which would likely affect traffic levels in the ICAO NAT Region.

7.2.4 The NAT SPG noted that IBAC had advised that business aviation had not been immune from global financial effects. Prices of used aircraft had collapsed and manufacture of new aircraft had been significantly reduced or delayed. Recent indications were that manufacturers were planning to increase output of ultra-long range large cabin business aircraft. Business aviation had recovered to approximately 2009 levels, with a noticeable increase in inter-continental flights. It appeared that the Very Light Jet programme had been significantly set back. IBAC also had concerns about the increasing tendency for fees and taxes to be levied.

7.2.5 The NAT SPG was advised that the government of the United Kingdom was exploring the possibility of selling some portion of its 49% ownership of NATS.

7.2.6 The NAT SPG noted the NAT EFG's review of the output of the NAT Fee Analysis Model (NAT FAM) (paragraph 7.4.1 refers). The NAT FAM analysis showed that light aircraft would face the largest increase in charges under harmonization, unless charges were based on weight. When flights were stratified by distance travelled through the ICAO NAT Region, the current fee structures behaved essentially as a distance-based charge structure; flights that traversed the ICAO NAT Region for relatively short distances would face fee increases under flat charges and decreases if charges were to be weight/distance-based. The NAT EFG agreed that the validated model was generally robust and noted that distance-based harmonization would likely have the lowest impact across user groups.

7.2.7 The NAT SPG was advised concerning the NAT EFG's preliminary economic analysis of NAT Region Data Link Mandate (NAT SPG Conclusion 46/10 refers). The NAT EFG reviewed a detailed, preliminary, analysis of the benefits and costs to operators related to the NAT Region Data Link Mandate (NAT SPG Conclusions 45/11 and 46/2 refer). The objectives of the benefits analysis were to assess potential fuel and time savings or penalties after the mandate was implemented and to differentiate savings or penalties for equipped and non-equipped aircraft. The objectives of the economic impact analysis were to assess costs, benefits, and program risks that would result from the implementation of a data link mandate in the ICAO NAT region and to assess impact to aircraft operators (commercial and International General Aviation) and ANSPs.

7.2.8 The cost conclusions were considered quite mature but further refinement would require coordination with the NAT IMG and NAT SOG to better define the plans for the RLatSM implementation and to more accurately take account of which aircraft types would be eligible for exemptions from the NAT Region Data Link Mandate. In this context, it was emphasized by the NAT SPG that there should be no linkage between the NAT Data Link Mandate and the RLatSM implementation, except for the recognition that operators would obtain tangible benefits from data link equipage once the RLatSM implementation had begun. The NAT SPG reiterated its position that the NAT Region Data Link Mandate's primary purpose was to support safety, and particularly to support the increased use of data link technologies which could be used to reduce collision risk in the vertical plane.

7.2.9 The NAT SPG noted that the NAT EFG expected to finalize the analysis at its next meeting. The NAT SPG was advised that the programme risk assessment for NAT Region Data Link Mandate and RLatSM implementation was nearly completed and would be forwarded to the NAT IMG once it had been finalized. It was expected that the NAT IMG would determine what aspects of the risk assessment might have changed due to intervening decisions and developments and would identify areas where focussed mitigation activity would be required to assure successful programme implementations.

7.2.10 The NAT SPG noted that the work to develop a business case to support RLatSM implementation in the ICAO NAT Region had begun, but further development would be based upon the outcome of the NAT IMG/38 and NAT SPG/47 discussions concerning the timing of the phased implementation. In this regard, the NAT SPG concurred that the analysis should be based on an estimate that Phase 2 of the RLatSM implementation would take place in 2017; it was stressed that this timeframe was estimated and for the purpose of supporting the analysis only. The NAT SPG also agreed that the allocation of costs associated with RLatSM would need to be adjusted to account for aircraft already being equipped in response to the NAT Region Data Link Mandate; for this purpose, costs incurred prior to the mandate should be allocated to the mandate, and subsequent costs allocated to the RLatSM implementation. The NAT SPG noted the intention that updated cost assessments for the NAT Region Data Link Mandate and the RLatSM implementation would be produced at the next NAT EFG meeting along with the more mature benefits assessment.

7.2.11 The NAT SPG also noted that the next NAT EFG would receive a report on the RLongSM business case. Data reflective of the performance of the validation trial would be reported at the same time.

7.2.12 The NAT SPG reviewed and endorsed the NAT EFG work programme as follows:

a) completion of the benefits assessment related to the economic analysis of the NAT Region Data Link Mandate;

b) completion of benefits analyses for the planned RLatSM and RLongSM implementations;

c) developing definitions and data for financial KPIs;

d) developing KPIs related to the financial aspects of communications services; and

e) completion of the NAT Region Data Link Mandate and RLatSM project risk assessment.

7.3 FUTURE ROLE OF THIRD PARTY COMMUNICATIONS

7.3.1 The NAT SPG was presented with the outcome of the discussion initiated in follow up to NAT SPG Conclusion 46/11 that tasked the NAT IMG to determine the circumstances which would permit the elimination of the requirements for HF voice in the NAT Region.

7.3.2 The NAT SPG noted the conclusions of the assessment stating that the requirement for HF voice in the NAT Region would remain in the foreseeable future, largely depending on the level of the safety and service continuity requirements.

7.3.3 The NAT SPG noted that two possible directions for the evaluation were identified. One was to take a broad view and speculate on the potential for drawing down or eliminating the air/ground radio centres or focus on the individual media available to these centres. The assessment was focused on analysing the potential for using other means than HF equipment on boa rd of aircraft to support third-party communications, i.e. SATCOM voice.

7.3.4 In this regard it was noted that the question of migration to SATCOM was not symmetrical. Individual aircraft might wish to opt for SATCOM as an alternative to HF while the air/ground radio facility would need to continue to support HF for those aircraft not equipped with data link or preferring HF for some other reason.

7.3.5 It was recalled that the question of migrating air radio communications to SATCOM voice was discussed in recent years, mostly in the context of partial removal of the HF equipment – perhaps even only for returning to home base with malfunctioning equipment ("MEL relief").

7.3.6 The NAT SPG agreed that diversification by addition of SATCOM voice to offset a reduction of HF redundancy would seem to be desirable. In fact, it was felt that this would increase the resilience of the communications system. While SATCOM had not yet been proven as a medium suitable for wholesale migration of the fleet, it should suffice as a "backup to a backup" means of communication.

7.3.7 As for the next logical step, i.e. the complete removal of HF equipment from aircraft, the NAT SPG noted that a certain number of caveats would need to be addressed. The first would be that dual installations of avionics based on the same service (Inmarsat or Iridium) might not be deemed sufficiently robust. Therefore, there may be a need for a requirement for both Inmarsat and Iridium (or some other service that may be commissioned) to be fitted.

7.3.8 The NAT SPG noted that with regards to the SATCOM voice system capacity in case of a data link system-wide failure and a resulting en masse reversion to voice, the complexities of that situation were for the most part independent of the medium used. Such an eventuality would be problematic regardless of the availability of HF. Assuming that the capacity of the SATCOM voice environment was sufficient, the limiting factor for both SATCOM and HF would be the number of radio operators available and not a bottleneck in the communications channel itself.

7.3.9 The NAT SPG agreed that the paragraphs above answered the intent of NAT SPG Conclusion 46/11, to the maximum extent possible with currently available information, and therefore it should be considered completed. However, the NAT SPG noted that the ICAO inter-regional SATCOM voice task force was developing the SATCOM Voice Guidance Material (SVGM). As the completion of the guidance material was expected by the end of 2011 it would provide additional information and clarity on various issues associated with the use of SATCOM voice. As the IRSVTF would be reporting regularly to the NAT SPG meetings, its work could be used as an input to further evaluations, if required.

7.4 NORTH ATLANTIC FEE ANALYSIS MODEL: SUMMARY OF FINDINGS

7.4.1 The NAT SPG was provided a detailed briefing on the development and capabilities of the NAT FAM. The NAT FAM was an analytical tool, developed under the auspices of the NAT EFG work programme, which could be used to study harmonization or changes to the fee structures related to the provision of ATS services in the ICAO NAT Region. The NAT FAM had supported the work done by the NAT EFG to determine whether it might be possible to adopt a single NAT charge or to harmonize the calculation of fees. The NAT FAM had assisted the NAT EFG in understanding the complexities of the current charging regimes and the difficulties and expense that would be encountered in trying to change them, due to the operational, organizational and regulatory differences between the NAT Region ANSPs. Accordingly, the NAT EFG had concluded that any possible savings to airspace users from harmonizing, at this time, would be out-weighed by the costs incurred to achieve the harmonization. The NAT FAM would

remain available to the NAT EFG to support assessments of possible fee changes, including the application of discounts.

8. ANY OTHER BUSINESS

8.1 NEXT MEETING

8.1.1 The Group agreed to convene its Forty-Eighth Meeting in the EUR/NAT Office of ICAO in Paris from 12 to 15 June 2012.

Appendix A - List of Participants

(Paragraph 0.3 refers

CHAIRMAN
Ásgeir PÁLSSON

CANADA
Larry LACHANCE
Ted FUDGE
Jennifer TAYLOR

DENMARK
Kirsten SONDERBY
Bjarne BERLIN

ICELAND
Hlin HOLM
Ingunn ÓLAFSDÓTTIR
Leifur HAKONARSON

IRELAND
Donie MOONEY

NORWAY
Gitte VIKSAAS

PORTUGAL
Carlos ALVES
Carlos ABREU

UNITED KINGDOM
Matthew TEMPLE-SMITH
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Appendix B -
Implementation of select conclusions/decisions of NAT SPG/46 Meeting
- Action Plan -

(Paragraph 1.6.1 refers)

Conclusion No. --- Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by ANC on 2 December 2010 (ANC 185-6)	Reporting/ Completion date
C 46/1 **A**	**NAT Region Performance Metrics**	That the NAT Implementation Management Group (NAT IMG), in coordination with the NAT Economic and Financial Group (NAT EFG): a) identify appropriate Key Performance Indicators (KPI) to measure NAT Region performance in the Key Performance Areas (KPA) of access, capacity, cost-effectiveness, efficiency, environment, flexibility, predictability and safety; b) determine reporting mechanisms for the KPIs and the associated potential economical impact; and c) report to NAT SPG/47.	ICAO European and North Atlantic Office/ NAT IMG ICAO HQ/ATM	Key Performance Indicators (KPI)	Noting that NAT SPG is in the process of identifying KPIs/Metrics in order to measure NAT Region performance in the Key Performance areas, it was emphasized that there was a need to have a common set of metrics for all the regions so as to facilitate comparative analysis of regional developments. In this regard, it was noted that the Secretariat has already included this task in its work programme and will be made by the end of 2011. .	June 2011 September 2011

Conclusion No. --- Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by ANC on 2 December 2010 (ANC 185-6)	Reporting/ Completion date
C 46/2 **D**	**Data Link Mandate**	That: a) the United Kingdom submit the North Atlantic Regional Supplementary Procedures proposal for amendment (PfA) regarding a data link mandate, as provided at Appendix F, to the European and North Atlantic Office as soon as possible; b) the ICAO Regional Director, European and North Atlantic Office, process the submitted PfA in accordance with the formal procedure; c) the NAT Implementation Management Group (NAT IMG) undertake a study to determine the vertical and horizontal limits of the area of application of the NAT data link mandate; d) the NAT IMG undertake a study to specify the accommodation procedures for aircraft unable to equip in the framework of the NAT Region data link mandate;	ICAO European and North Atlantic Office/ United Kingdom ICAO HQ/ATM ICAO European and North Atlantic Office/ ICAO European and North Atlantic Office/ NAT IMG	Proposal for amendment of SUPPS Proposal for amendment of SUPPS Study of vertical and horizontal limits of area of application of NAT data link mandate Study for accommodation procedures for aircraft unable to equip of NAT data link mandate	The ANC noted that this item was worked by the Implementation Management Group (IMG) of the NAT SPG based on the initial States feedback of the PfA. The ANC also noted that a process of consultation of the PfA is underway between the ICAO European and North Atlantic Office and States/ Organizations. Also, the ANC requested the Secretariat to inform the Commission on the final results of this amendment proposal regarding data link mandate when known. The ANC noted that the data link mandate was a very significant development however the associated State letter issued by the European Regional Office, although circulated widely to States, was not generally known of to a wider interested audience and, particularly the Commission. The ANC requested the Secretariat to address this issue of circulation through an appropriate mechanism.	June 2011 June 2011 June 2011 June 2011

Conclusion No. --- Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by ANC on 2 December 2010 (ANC 185-6)	Reporting/ Completion date
C 46/2 (cont'd) **D**	**Data Link Mandate**	e) the NAT IMG develop guidance material on the application of the data link mandate to operators and aircraft; and f) the NAT IMG report progress to NAT SPG/47.	ICAO European and North Atlantic Office/ NAT IMG ICAO European and North Atlantic Office/ NAT IMG	Guidance material on the application of data link mandate	The ANC requested the Secretariat to address this issue of circulation through an appropriate mechanism.	June 2012 June 2011

Conclusion No. --- Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by ANC on 2 December 2010 (ANC 185-6)	Reporting/ Completion date
C 46/3 **A**	**NAT Data Link Monitoring Agency (NAT DLMA)**	That the ICAO Regional Director, European and North Atlantic Office urge:	ICAO European and North Atlantic Office/States/		Noted.	
		a) NAT Air Navigation Service Providers (ANSP) to complete upgrades of their ground air traffic service systems in support of the NAT DLMA data collection by the end of 2010;	NAT ANSP/ Communication service providers/ airspace users/industry	Upgrade ground air traffic service systems		December 2010
		b) Airspace users to take an active part in the work of the NAT DLMA by participating in meetings of the NAT Communications, Navigation and Surveillance Group; and		Participate in meetings of NAT CNS Group		June 2011
		c) States, ANSPs, Communications Service Providers, airspace users and industry to submit data link problem reports via the joint NAT DLMA/informal South Pacific ATS Coordinating Group FANS Implementation Team Central Reporting Agency website.		Submit data link problem reports		June 2011

Conclusion No. --- Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by ANC on 2 December 2010 (ANC 185-6)	Reporting/ Completion date
C 46/4 **D**	**Use of SATCOM voice**	That the ICAO Regional Director, European and North Atlantic Office forward the revised NAT Regional Supplementary Procedures proposal for amendment on t he use of SATCOM, as provided at Appendix H to this report, to ICAO Headquarters for further processing.	ICAO European and North Atlantic Office/ ICAO HQ/CNS	Proposal for amendment of SUPPS	Noted and requested the EUR/NAT Regional Office to include IFATCA and CANSO when circulating this type of amendment proposal. Also, requested the Secretariat to develop related guidance material and to include the development of standards for the use of SATCOM voice in the agenda of the 12th Air Navigation Conference.	June 2011 November 2012
C 46/5 **D**	**Inter-regional ad hoc SATCOM task force**	That: a) the Terms of Reference of the inter-regional ad hoc Satellite Communications (SATCOM) task force as provided at Appendix I be endorsed pending a similar endorsement by the Asia/Pacific Air Navigation Planning Group; b) the task force report to the NAT Implementation Management Group (NAT IMG); and c) NAT IMG provide a progress report to NAT SPG/47.	ICAO European and North Atlantic Office/ NAT IMG	Endorsement of Terms of Reference of inter-regional ad hoc Satellite Communication (SATCOM) task force	Noted.	June 2011

Conclusion No. --- Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by ANC on 2 December 2010 (ANC 185-6)	Reporting/ Completion date
Para 5.2 **D**	**NAT SOG Vertical Risk Task Force**	The NAT SPG was informed that the NAT SOG when considering the situation of the vertical risk that was exceeding the Target Level of Safety (TLS), agreed that this problem needed to be addressed in a robust, focused and transparent manner.	ICAO European and North Atlantic Office/ ICAO HQ/ATM	Solution developed by NAT SPG to ensure meeting the Target Level of Safety (TLS).	The ANC encouraged the NAT Region to continue to monitor the situation of the vertical risk exceeding the target level of safety and to keep working with the solution developed by NAT SPG to fix this situation. The Secretariat is requested to monitor the situation in the NAT Region and with the additional safety information obtained in due course, the ANC would consider further actions accordingly. Requested the Secretariat to include the subject of monitoring RVSM in the consolidated report of PIRGs for 2010 to the Council.	June 2011 June 2011 Completed

Conclusion No. --- Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by ANC on 2 December 2010 (ANC 185-6)	Reporting/ Completion date
C 46/6 **E**	**Endorsement of the Volcanic Ash Contingency Plan — European and North Atlantic Regions**	That: a) the *Volcanic Ash Contingency Plan – EUR and NAT Regions*, as presented in Appendix K to this report, be endorsed; b) future amendments to the *Volcanic Ash Contingency Plan – EUR and NAT Regions* be processed in accordance with the existing procedure for amendment of documentation commonly applicable to the two regions and managed by the European Air Navigation Planning Group (EANPG) and NAT SPG; c) the ICAO Regional Director, Europe and North Atlantic Office identify the expertise and resources necessary and initiate the development of templates for aeronautical information and meteorological messages to be promulgated by Provider States in case of a volcanic eruption; and	ICAO European and North Atlantic Office ICAO HQ/MET	Volcanic Ash Contingency Plan Amendments to Volcanic Ash Contingency Plan Templates for aeronautical information and meteorological messages	Appreciating the efforts of EUR and NAT Regions in the development of Volcanic Ash contingency plan, requested the Secretariat to share this contingency plan with other regions which could have similar volcanic ash activities.	Completed June 2011 June 2011

Conclusion No. --- Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by ANC on 2 December 2010 (ANC 185-6)	Reporting/ Completion date
C 46/6 (cont'd) **E**	**Endorsement of the Volcanic Ash Contingency Plan — European and North Atlantic Regions**	d) the ICAO Regional Director, Europe and North Atlantic Office inform the EANPG about this decision and invite it to endorse the *Volcanic Ash Contingency Plan – EUR and NAT Regions* as well as the procedure for future amendments.	ICAO European and North Atlantic Office/EANPG	Volcanic Ash Contingency Plan		November 2010 (EANPG) compleetd

Conclusion No. --- Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by ANC on 2 December 2010 (ANC 185-6)	Reporting/ Completion date
C 46/7 **D**	**NAT MNPS Airspace Operations Manual, Edition 2010**	That the NAT Document Management Office: a) continue to manage the NAT Minimum Navigation Performance Specifications (MNPS) Airspace Operations Manual; and b) in coordination with the European and North Atlantic Office, update the NAT MNPS Airspace Operations Manual, taking account of: i) changes to the NAT Air Navigation System since September 2009; ii) the full list of unique NAT Region procedures specified in the NAT *Regional Supplementary Procedures* (NAT SUPPs) (Doc 7030); and iii) decisions of the NAT SPG concerning: 1. the disposition of material currently contained in NAT Doc 001; 2. the future utility of NAT OPS Bulletins within the NAT publications library; and 3. revisions to the scope, status and title of the document.	ICAO European and North Atlantic Office/NAT Document Management Office	Update NAT MNPS Manual	Noted	June 2011

Conclusion No. --- Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by ANC on 2 December 2010 (ANC 185-6)	Reporting/ Completion date
C 46/8 **D**	**Adoption of the GOLD**	That the *Global Operational Data Link Document* (GOLD), version 1.0, as provided at Appendix L, replace *Guidance Material for ATS Data Link Services in North Atlantic Airspace* as regional guidance material for use by States and airspace users as the basis for operating Automatic Dependent Surveillance-Contract (ADS-C) and Controller Pilot Data Link Communications (CPDLC) in the NAT Region.	ICAO European and North Atlantic Office/States and users	Global Operational Data Link Document (GOLD)	Noted	June 2011
C 46/9 **D**	**Global configuration management process for the GOLD**	That: a) ICAO establish a global configuration management process whereby the document would be maintained in coordination between the concerned PIRGs and the ICAO Secretariat; b) pending the implementation of the global configuration management process, the GOLD ad-hoc group should continue to maintain and update the GOLD; and c) the NAT IMG provide a progress report to NAT SPG/47.	ICAO HQ/ATM ICAO European and North Atlantic Office/ NAT IMG	Global configuration management process for GOLD document Update GOLD document	Noted	June 2011 June 2011 June 2011

Conclusion No. --- Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by ANC on 2 December 2010 (ANC 185-6)	Reporting/ Completion date
C 46/10 **D**	**NAT Region Data Link Mandate Economic Analysis**	That the NAT Economic and Financial Group, in coordination with the NAT Implementation Management Group: d) complete an analysis of the economic impact of the NAT Region Data Link Mandate (NAT SPG Conclusion 45/11 refers); e) identify possible factors which might induce operators to equip earlier than the dates specified in the Mandate or to choose to comply with the Mandate rather than avoiding NAT Region airspace where data link has been mandated; and f) report to NAT SPG/47.	ICAO European and North Atlantic Office/NAT IMG	Analysis of economic impact of NAT Region Data Link Mandate Factors inducing operators to equip earlier where data link has been mandated	Noted	June 2011
C 46/11 **A**	**Requirement for High Frequency (HF) voice in the NAT Region**	That the NAT Implementation management Group: a) determine the circumstances which would permit the elimination of the requirement for HF voice in the NAT Region; and b) provide a progress report to NAT SPG/47.	ICAO European and North Atlantic Office/NAT IMG	Circumstances for elimination of HF Voice requirement in NAT region	Noted	June 2011

Conclusion No. --- Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by ANC on 2 December 2010 (ANC 185-6)	Reporting/ Completion date
C 46/12 **D**	**Business cases to support NAT Region implementation planning**	That the NAT SPG, as part of its decision making process, require a business case and/or a s afety assessment, as appropriate, be completed and reviewed prior to accepting NAT Region implementation plans.	ICAO European and North Atlantic Office/ NAT IMG	Business case/ safety assessment, prior implementation plans	Noted and supported the need to conduct a s afety assessment in all cases prior to accepting NAT Region implementation plans and to also include trials or pre-implementation plans in this requirement. The ANC also commented on the growing support for regulatory impact assessments and that the NAT SPG should consider adopting this approach.	June 2011

*** Note:** ICAO established the following Strategic Objectives for the period 2008-2010:
A: Safety - *Enhance global civil aviation safety*;
B: Security - *Enhance global civil aviation security*;
C: Environmental Protection - *Minimize the adverse effect of global civil aviation on the environment*;
D: Efficiency - *Enhance the efficiency of aviation operations*;
E: Continuity - *Maintain the continuity of aviation operations;*
F: Rule of Law - *Strengthen law governing international civil aviation.*

Appendix C -
Proposal for amendment supporting the NAT Region Data Link Mandate

(Paragraphs 1.6.2 and 3.1.10 refers)

PROPOSAL FOR AMENDMENT OF THE REGIONAL SUPPLEMENTARY PROCEDURES, NAT REGION (Doc 7030/5)

(Serial No.: EUR/NAT-S09/18 – NAT)

a) **Regional Supplementary Procedures:**

Doc 7030/5 – NAT

b) **Proposed by:**

The United Kingdom on behalf of the NAT SPG (NAT SPG Conclusion 46/2 refers)

c) **Proposed amendment:**

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

1. *Insert* the following in NAT SUPPs, Chapter 3 – Communications, paragraph 3.3 - Controller Pilot Data Link Communications (CPDLC)

~~Nil.~~

Area of applicability

3.3.1 All aircraft intending to conduct flights in the airspace defined below shall be fitted with and shall operate controller pilot data link communications (CPDLC) equipment:

a) from 7 February 2013, on specified tracks and flight levels within the NAT organised track system (OTS); and

b) from 5 February 2015, in specified portions of NAT minimum navigation specifications (MNPS) airspace.

Note 1.– The specified tracks and flight level band within the NAT OTS will be published by the States concerned in national AIPs and identified daily in the NAT track message.

Note 2.– The specified portions of NAT MNPS airspace and aircraft equipment performance requirements where applicable will be published by the States concerned in national AIPs.

Means of compliance

3.3.2 Operators intending to conduct flights within the airspace specified in 3.3.1 shall obtain CPDLC operational authorization, where applicable, either from the State of Registry or the State of the Operator.

The State of Registry or the State of the Operator shall verify that the equipment has been certified in accordance with the requirements specified in RTCA DO-258/EUROCAE ED-100 or equivalent, capable of operating outside VHF data link coverage.

3.3.3 Aircraft are exempted from the requirement stipulated in 3.3.2 in the following cases:

a) aircraft which have a certificate of airworthiness issued before 31 December 1997 and which will cease operation in the airspace referred to in 3.3.1 before 31 December 2017;
b) State aircraft;

c) aircraft flying in the airspace referred to in 3.3.1 for testing, delivery and for maintenance purpose;

d) aircraft operating on special routes published by States concerned in national AIPs; and

e) types of aircraft reaching the end of their production life and being produced in limited numbers, types of aircraft for which re-engineering costs required would be disproportionate due to old design, and types of aircraft for which FANS 1/A equipment is not commercially available. Operators of such types of aircraft may, based on these criteria, request from the appropriate authority the granting of an exemption. Such requests shall be made prior to 1 September 2014 and include detailed information justifying the need for the granting of the exemption.

3.3.4 The services provided within the airspace specified in 3.3.1. shall comply with the Oceanic Safety and Performance Requirements as specified in RTCA DO306/EUROCAE ED122 or equivalent.

Note.– Additional guidance can be found in the ICAO Global Operational Data Link Document (GOLD).

2. *Insert* the following in NAT SUPPs, Chapter 5 – Surveillance, paragraph 5.4 – Automatic Dependent Surveillance – Contract (ADS-C)

~~Nil.~~

Area of applicability

5.4.1 All aircraft intending to conduct flights in the airspace defined below shall be fitted with and shall operate automatic dependent surveillance – contract (ADS-C) equipment:

a) from 7 February 2013, on specified tracks and on specified flight levels within the NAT organised track system (OTS); and

b) from 5 February 2015, in specified portions of NAT minimum navigation specifications (MNPS) airspace.

Note 1.– The specified tracks and flight level band within the NAT OTS will be published by the States concerned in national AIPs and identified daily in the NAT track message.

Note 2.– The specified portions of NAT MNPS airspace and aircraft equipment performance requirements where applicable will be published by the States concerned in national AIPs.

Means of compliance

5.4.2 Operators intending to conduct flights within the airspace specified in 5.4.1 shall obtain an ADS-C operational authorization, where applicable, either from the State of Registry or the State of the Operator. The State of Registry or the State of the Operator shall verify that the equipment has been certified in accordance with the requirements specified in RTCA DO-258/EUROCAE ED-100 or equivalent, capable of operating outside VHF data link coverage.

5.4.3 Aircraft are exempted from the requirement stipulated in 5.4.2. in the following cases:

a) aircraft which have a certificate of airworthiness issued before 31 December 1997 and which will cease operation in the airspace referred to in 5.4.1. before 31 December 2017;

b) State aircraft;

c) aircraft flying in the airspace referred to in 5.4.1. for testing, delivery and for maintenance purpose;

d) aircraft operating on special routes published by States concerned in national AIPs; and

e) types of aircraft reaching the end of their production life and being produced in limited numbers, types of aircraft for which re-engineering costs required would be disproportionate due to old design, and types of aircraft for which FANS 1/A equipment is not commercially available. Operators of such types of aircraft may, based on these criteria, request from the appropriate authority the granting of an exemption. Such requests shall be made prior to 1 September 2014 and include detailed information justifying the need for the granting of the exemption.

5.4.4 The services provided within the airspace specified in 5.4.1. shall comply with the Oceanic Safety and Performance Requirements as specified in RTCA DO306/EUROCAE ED122 or equivalent. Conformance monitoring shall provide alerts to the controller when reports do not match the current flight plan and the following ADS contracts shall be used:

a) ADS periodic contracts at an interval consistent with safety requirements and published by the States concerned in national AIPs; and

b) ADS event contracts that include the following event types:

1) lateral deviation event (LDE) with a lateral deviation threshold of 9.3 km (5 NM) or less;

2) level range deviation event (LRDE) with a vertical deviation threshold of 90 m (300 ft) or less; and

3) waypoint change event (WCE) at compulsory reporting points.

Note.– Additional guidance can be found in the ICAO Global Operational Data Link Document (GOLD).

d) **Date when proposal received:**

August 2010

e) **Proposer's reason for amendment:**

1. The CPDLC and ADS-C implementation based on RTCA DO-258A/EUROCAE ED-100A (or ED-100) avionics standards started in the ICAO NAT Region at the end of 1990. The provisions for data link services contained in RTCA DO306/EUROCAE ED122 apply and will provide the guidelines against which actual communication and surveillance performance are measured. Data link service enhances ATM surveillance and intervention capabilities and is seen as instrumental in allowing reduction of collision risk and meeting the NAT TLS. This is particularly vital for the reduction of collision risk in the vertical plane where the NAT TLS is currently not being met. The use of ADS-C for conformance monitoring of an aircraft position in vertical and horizontal plane will help towards resolving this significant safety issue. The use of ADS-C would also greatly facilitate search and rescue operations and location of an aircraft following an accident in oceanic airspace.

   In order to achieve the foregoing safety objectives, it is important to increase the level of data link equipage in the NAT. The current level of data link usage in the NAT has reached 45-50% and continues to grow. Introducing mandatory data link equipment carriage requirement will increase the NAT data link equipage level and help in meeting the NAT TLS.

2. The European Commission (EC) adopted the Data Link Service Implementing Rule (DLS IR) in early 2009. This requires implementing CPDLC in designated areas within the EUR Region based on the requirements contained in RTCA DO-280B/EUROCAE ED-110B, Interoperability Requirements Standard for ATN Baseline 1 (INTEROP ATN B1). This implementation will not meet the NAT Region operational needs. However, the DLS IR exempts aircraft fitted with RTCA DO-258A/EUROCAE ED-100A (or ED-100) compliant data link equipment and with an individual certificate of airworthiness first issued before 1 January 2014 for the life of that particular airframe. Aircraft commissioned after this date and required to operate in the NAT would also need to equip with DLS IR compliant data link equipment in order to operate in the designated areas within the EUR Region. With this in mind, the timeline and exemption policies stipulated in this proposal are equivalent to those declared by the DLS IR.

3. For the purpose of application of paragraphs 3.3.1 a) and 5.4.1 a), the specified tracks within OTS would be typically the two central and most densely populated tracks between FL 360 and F 390, as published by the States concerned in their respective AIPs.

f) **Proposed implementation date of the amendment:**

Upon approval by the Council.

g) **Proposal circulated to the following States and international organizations:**

The proposal has been circulated to the following States and International Organizations:

Afghanistan	Argentina	Bahamas
Albania	Armenia	Bahrain
Algeria	Australia	Bangladesh
Andorra	Austria	Belarus
Angola	Azerbaijan	Belgium

Benin
Bhutan
Bosnia and Herzegovina
Botswana
Brazil
Brunei Darussalam
Bulgaria
Burkina Faso
Cameroon
Canada
Cape Verde
Central African Republic
Chad
Chile
China
Colombia
Congo
Côte d'Ivoire
Croatia
Cuba
Cyprus
Czech Republic
Democratic People's Rep. of Korea
Democratic Republic of the Congo
Denmark
Djibouti
Dominican Republic
Ecuador
Egypt
Eritrea
Estonia
Ethiopia
Finland
France
Gabon
Gambia
Georgia
Germany
Ghana
Greece
Guinea-Bissau
Haiti
Hungary
Iceland
India
Indonesia
Iran (Islamic Republic of)
Iraq
Ireland
Israel
Italy
Jamaica
Japan
Jordan
Kazakhstan
Kenya
Kuwait
Kyrgyzstan
Latvia
Lebanon
Libyan Arab Jamahiriya
Lithuania
Luxembourgadagascar
Malaysia
Maldives
Mali
Malta
Mauritania
Mauritius
Mexico
Monaco
Mongolia
Montenegro
Morocco
Mozambique
Namibia
Nepal
Netherlands
New Zealand
Niger
Nigeria
Norway
Oman
Pakistan
Paraguay
Philippines
Poland
Portugal
Qatar
Republic of Korea
Republic of Moldova
Romania
Russian Federation
San Marino
Saudi Arabia
Senegal
Serbia
Seychelles
Sierra Leone
Singapore
Slovakia
Slovenia
Somalia
South Africa
Spain
Sri Lanka
Sudan
Suriname
Swaziland
Sweden
Switzerland
Syrian Arab Republic
Tajikistan
Thailand
The former Yugoslav Republic of Macedonia
Togo
Trinidad and Tobago
Tunisia
Turkey
Turkmenistan
Uganda
Ukraine
United Arab Emirates
United Kingdom
United Republic of Tanzania
United States
Uruguay
Uzbekistan
Venezuela
Viet Nam
Yemen
Zambia
Zimbabwe

Eurocontrol
IACA
IAOPA
IATA
IBAC
IFALPA

h) **Secretariat comments:**

The 43rd Meeting (12-15 June 2007) of the NAT SPG was highlighted the presence of a high number of the large height deviations (LHD) and gross navigation errors (GNE) in the NAT Region. It was reported that LHDs and GNEs represented the largest contributory factors to the increase of the horizontal and vertical overlap probabilities, and was the main reason for not meeting the NAT Region TLS in the vertical plane. Based on this information, NAT SPG/43 had endorsed Conclusion 43/21 – Ways and means to reduce or mitigate the number of LHDs and Conclusion 43/22 – Urgent need to reduce or mitigate the number of LHDs.

NAT SPG/44 (17-20 June 2008) noted that the use of ADS-C for conformance monitoring to detect lateral and vertical deviations from the cleared route and flight level with the aim of reducing risk, would provide the air traffic controller with a very early indication that an aircraft was deviating from its cleared flight profile. Early detection of potential LHDs and/or GNEs, and their early resolution would significantly reduce the amount of time flown at the wrong profile and therefore reduce risk. Therefore, the NAT SPG, Conclusion 44/2 was agreed on the implementation of ADS-C to reduce risk due to departures from the cleared flight profile.

Bearing the foregoing in mind, NAT SPG/46 (22-25 June 2010) agreed that it was urgent to begin processing a proposal for amendment to the NAT SUPPs in order to introduce data link equipment mandatory carriage requirements. Consequently, the NAT SPG endorsed Conclusion 46/1 whereby the United Kingdom was invited to submit the NAT SPG agreed text of the proposal for amendment to ICAO for further processing.

The proposal for amendment had been widely circulated and subjected to interregional coordination. The States and international organizations listed in paragraph g) were included it its circulation. One State provided comments on the text of the proposal while in principle fully supporting the intent of the amendment. In order to address these comments, revisions were introduced in the text of the amendment to amplify its intent, and provide additional guidance in support of implementation. The objection was therefore withdrawn. This change was coordinated by the ICAO EUR/NAT office among the NAT SPG members and was fully supported.

Appendix D –
Designation of Core Tracks

(Paragraph 3.1.4 refers)

For the purpose of designating exclusionary airspace associated with the NAT Region Data Link Mandate, the following will apply:

1. A "split track structure" is an organised track structure with at least two entry points between one group of organised tracks and another.

2. Core Tracks shall be designated in accordance with the following:

   a) the first basis for determining which organised track would be a "core" organised track, which defines the area of applicability, would be a track whose predicted loading was in the higher percentage of the overall predicted OTS loading, on that day (the core tracks would be identified when the NAT Track message was promulgated);

   b) the method of predicting track loadings would be the same as used today for the creation of the OTS and operational tactical planning purposes;

   c) core organised tracks would have an adjacent non core organised OTS track available one degree north or south to allow for non equipped aircraft;

   d) an adjacent OTS track would be defined as an OTS organised track whose:

      i) Entry point was no more than 1 degree different to the core organised track; and

      ii) Exit point was no more than 2 degrees different to the core organised track; and

   e) the number of core organised tracks in any one OTS would be no more than two.

Appendix E - Updated RLatSM Concept of Operations

(Paragraph 4.1.5 refers)

The following concept of operations shall be used to develop an implementation plan for reducing lateral separation to 25 NM in the ICAO NAT Region:

a) Each implementation phase shall be harmonized to an appropriate step or benchmark (as determined by the NAT IMG) contained in the NAT MNPS to PBN Transition Plan for the ICAO NAT Region.

b) Phase 1 shall introduce 25 NM lateral separation by implementing ½ degree spacing between the two core tracks within the vertical limits applicable to the airspace associated with the NAT Region Data Link Mandate (NAT SPG Conclusion 46/2 refers); only aircraft with the appropriate Required Navigation Performance (RNP) approval, Automatic Dependent Surveillance-Contract (ADS-C) and Controller Pilot Data Link Communications (CPDLC) would be permitted to operate on the ½ degree spaced tracks.

Note 1 - As of NAT SPG/47, the NAT MNPS to PBN Transition Plan for the ICAO NAT Region was still under development by the NAT SARSIG. It is expected, however, that the NAT IMG will be in a position to endorse the plan prior to NAT SPG/48.

Note 2 – Each Phase will be applicable in whatever vertical band is currently associated with NAT Region data link mandatory airspace.

c) Phase 2 shall expand the introduction of 25 NM lateral separation by implementing ½ degree spacing through the entire NAT Organised Track System (OTS), within the vertical limits applicable to the exclusionary airspace associated with the NAT Region Data Link Mandate; only aircraft with the appropriate RNP approval, ADS-C and CPDLC would be permitted to operate on the ½ degree spaced tracks.

d) Phase 3 shall introduce 25 NM lateral separation throughout the entire ICAO NAT Region, including for converging and intersecting track situations, within the vertical limits applicable to the airspace associated with the NAT Region Data Link Mandate. The application of the reduced separation standard between targets of opportunity should be permissible in any part of the ICAO NAT Region outside the OTS (mixed mode operations).

Appendix F - Draft Implementation Plan for the Trial Application of RlatSM

(Paragraph 4.1.5 refers)

1. Introduction

1.1 Advancements in aircraft avionics and air traffic management flight data processing systems have driven analysis of whether the lateral separation standard in the current NAT MNPS airspace can be reduced to increase the number of tracks available and therefore increase capacity at optimum flight levels. The proposed change is to reduce lateral separation for aircraft operating at the flight levels associated with the NAT Region Data Link Mandate, where the carriage and operation of data link equipment is mandatory. This can be practically achieved by establishing tracks which are spaced by ½ degree of latitude. This track spacing initiative will be referred to as Reduced Lateral Separation Minimum (RLatSM).

1.2 This implementation plan follows the guidelines provided in ICAO Doc 9689 (Manual on Airspace Planning Methodology for the Determination of Separation Minima).

2. Identification of the Need for Change

2.1 NAT customers request more fuel-efficient flight profiles and routes that will reduce operating costs and show a return on operator investment in aircraft avionics. Applying reduced lateral separation is expected to enhance the provision of fuel-efficient profiles and routes with minimal change to NAT operations.

2.2 The new separation standard is expected to result in a reduction in fuel burn and a consequent reduction in greenhouse gas emissions through an increased likelihood of flights being able to operate at their optimum flight levels and routes.

3. Description of the Current Airspace and the CNS/ATM Systems

3.1 Airspace Structure

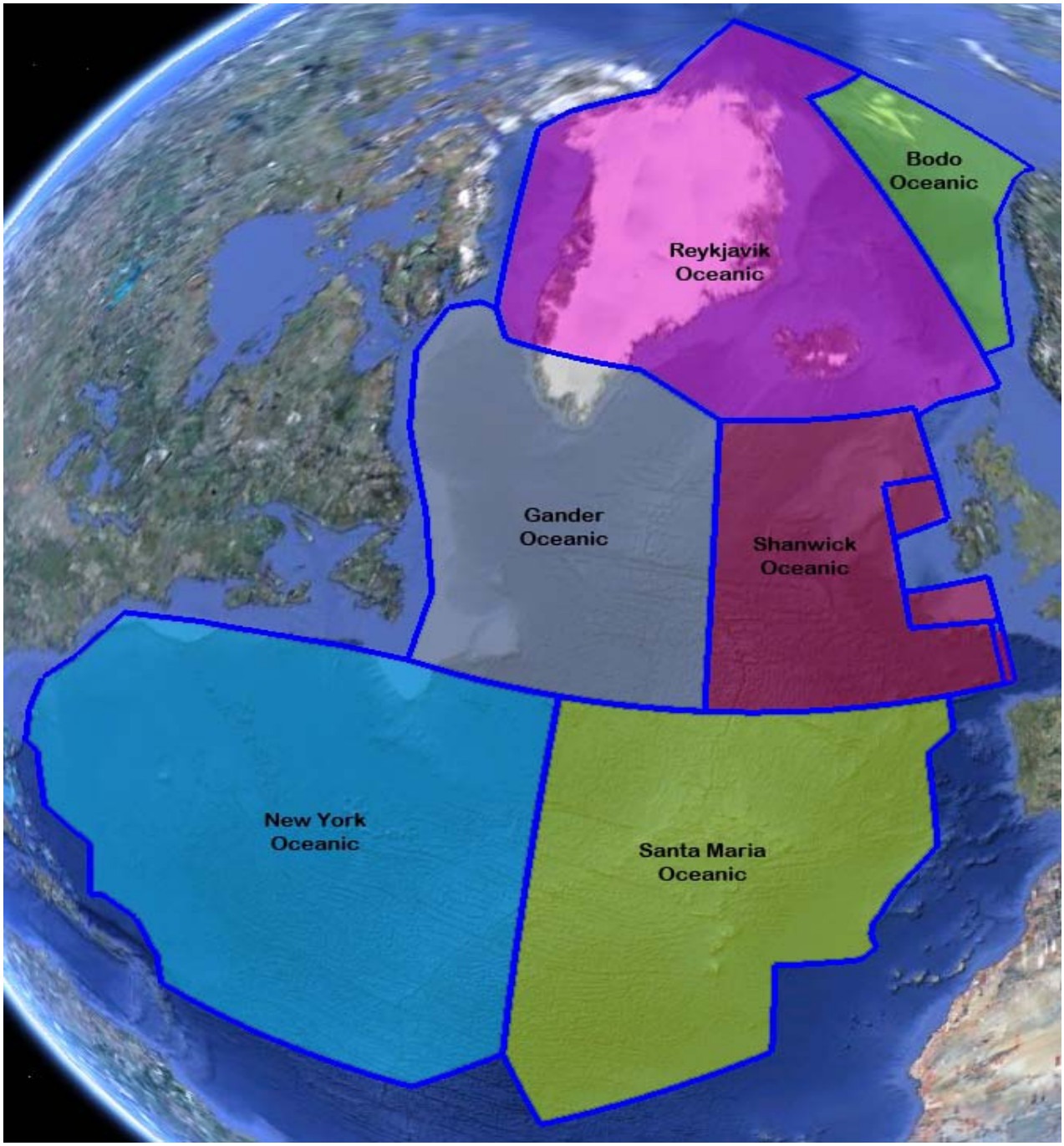
8.1.2 The responsibility for air traffic control services within the North Atlantic (NAT) Region is shared among seven states: Canada, Denmark, Iceland, Norway, Portugal, the United Kingdom and the United States.

8.1.3 The NAT Region is Class A airspace (at and above FL55); in which Instrument Flight Rules (IFR) apply at all times, except in the Sondrestrom FIR where Class A airspace begins above FL195.

8.1.4 The NAT airspace is divided into seven Flight Information Regions (FIRs) or Control Areas (CTA) for the implementation of the Communications Navigation Surveillance/Air Traffic Management (CNS/ATM) systems. The NAT Region comprises the following FIRs/CTAs: Bodø Oceanic, Gander Oceanic, New York Oceanic, Reykjavik, Santa Maria, Shanwick. and Søndre Strømfjord.

8.1.5 Traffic is controlled by Oceanic centres at Reykjavik, Bodø, Gander, New York, Santa Maria, Søndre Strømfjord and Prestwick.

8.1.6 The following diagram illustrates;



8.1.7 NAT traffic is predominantly commercial. International General Aviation (IGA) Business aircraft comprise a high proportion of the higher altitude airspace operations.

8.1.8 For most of the North Atlantic (NAT) airspace radar surveillance and VHF voice communications is unavailable. Therefore, procedural control is exercised. The exception is the south and east sector of the Reykjavik area, where radar aided services are provided.

3.2 Strategic Lateral Offset Procedure (SLOP)

3.3 3.2.1 Strategic lateral offsets of one or two miles right of a route or track centreline have been introduced as a means of reducing collision risk and is now standard operating procedure in the entire NAT Region.

3.4 Airborne Collision Avoidance Systems (ACAS)

3.3.1 In addition to the requirements of Annex 6, (Part I, paragraph 6.16 and Part II, paragraph 6.14) ACAS II shall be carried and operated in the NAT Region by all turbine-engined aeroplanes having a maximum certificated take-off mass exceeding 5 700 kg or authorized to carry more than 19 passengers.

4. Traffic Patterns

4.1 General

4.1.1 The traffic is dominated by three major axes. First, there is the axis linking Europe (and the Middle East) to North America (excluding Alaska). Second, there is the axis linking the Eastern seaboard of North America with the Caribbean, South America and Bermuda. Third, there is the axis linking Europe to the Caribbean and South America. A substantial proportion of NAT traffic, namely that operating between cities in Europe and those in North America operate on the first axis.

4.1.2 The major traffic flow between Europe and North America takes place in two distinct traffic flows during each 24-hour period due to passenger preference, time zone differences and the imposition of night-time noise curfews at the major airports. The majority of the Westbound flow leaves European airports in the late morning to early afternoon and arrives at Eastern North American coastal airports typically some 2 hours later - local time - given the time difference. The majority of the Eastbound flow leaves North American airports in mid/late evening and arriving in Europe early to mid morning - local time. Consequently, the diurnal distribution of this traffic has a distinctive tidal pattern characterised by two peaks passing 30° W, the Eastbound centred on 0400 Universal Co-ordinated Time (UTC) and the Westbound centred on 1500 UTC.

4.2 North Atlantic Organised Track System (NAT OTS)

4.2.1 Although a number of fixed trans-Atlantic tracks exist, the bulk of traffic operates on tracks, which vary from day to day dependent on meteorological conditions. The variability of the wind patterns would make a fixed track system unnecessarily penalising in terms of flight time and consequent fuel usage. Nevertheless, the volume of traffic along the core routes is such that a complete absence of any designated tracks (i.e. a free flow system) would currently be unworkable given the need to maintain procedural separation standards in airspace largely without radar surveillance.

4.2.2 As a result, an OTS is set up on a diurnal basis for each of the Westbound and Eastbound flows. Each core OTS is comprised of a set, typically 4 to 7, of parallel or nearly parallel tracks, positioned in the light of the prevailing winds to suit the traffic flying between Europe and North America.

4.2.3 The main difference between the North American-Caribbean traffic axis and that between Europe and North America is that the former is constrained by the fixed track structure. Some of these fixed tracks are tied to Non Directional Beacon (NDB) and Very High Frequency Omni directional Range/Distance Measuring Equipment (VOR/DME) radio navigation aids and, where this is the case, appropriate separation standards apply. Where tracks are beyond the range of such aids, long-

range navigation systems are required. However, this part of the NAT Region is not yet designated as Minimum Navigation Performance Specifications (MNPS) Airspace and the 60 NM lateral separation minimum does not apply (see below).

4.2.4 The designation of an OTS facilitates a high throughput of traffic by ensuring that aircraft on adjacent tracks are separated for the entire oceanic crossing - at the expense of some restriction in the operator's choice of track. In effect, where the preferred track lies within the geographical limits of the OTS, the operator is obliged to choose an OTS track or fly above or below the system. Where the preferred track lies clear of the OTS, the operator is free to fly it by nominating a random track. Trans-Atlantic tracks, therefore, fall into three categories: OTS, Random or Fixed.

4.3 Minimum Navigation Performance Specification

4.3.1 MNPS airspace has been established between FL285 and FL420. Longitudinal separation between in-trail aircraft using the Mach Number Technique is 10 minutes - a reduced longitudinal separation minimum (RLongSM) of 5 minutes between eligible aircraft pairs is to be trialed commencing 2010. Aircraft tracks are separated using the earth's coordinate system to define tracks and effect separation laterally by *60 NM* or *1 degree* provided a portion of the route is within, above, or below MNPS airspace. Given the curvature of the earth, 'Gentle Slope Rules' have been adopted to ensure that the actual separation never falls below distances which vary with latitude but never fall short of 50.5 NM. To ensure the safe application of the reduced separation minimum, only MNPS certified aircraft are permitted to operate within the MNPS airspace. The current MNPS was established to ensure that the risk of collision as a consequence of a loss of horizontal separation would be contained within an agreed Target Level of Safety (TLS).

4.4 Reduced Vertical Separation Minimum (RVSM)

4.4.1 RVSM airspace has been established within the confines of MNPS airspace and associated transition areas. In RVSM airspace, 1000 ft vertical separation is applied between approved aircraft. Currently, RVSM is only applied between FL 290 and FL 410 inclusive. To ensure the safe application of the separation minimum, only RVSM approved aircraft are allowed to operate within RVSM airspace. Aircraft are monitored to ensure that the TLS is being met.

4.5 Aircraft Equipage in Target Environment

4.5.1 The on-board equipment that provides the CPDLC and ADS-C capabilities required for the use of RLatSM is provided by FANS 1/A or equivalent. The State of Registry or the State of the Operator should verify that the equipment has been certified in accordance with the requirements specified in RTCA DO-258A/EUROCAE ED-100A and RTCA DO-306/ED 122 (see also paragraph8.1.4) or equivalent.

4.5.2 The navigational accuracy component to support RLatSM will be provided by the RNP 4 navigation specification which explicitly requires GNSS.

4.5.3 The following performance values are valid for phase one of the RLatSM operational trial since the current CRM only supports same direction traffic.

a) Required navigation specification is RNP 4; and

b) due to the fact that all RNP 4 approved aircraft are GNSS equipped the standard deviation of lateral track errors is assumed to be less than 1.852 km (1 NM); and

c) the proportion of the total flight time spent by aircraft 27.8 km (15 NM) or more off the cleared track shall be less than 1.07×10^{-5}; and

d) the proportion of the total flight time spent by aircraft between 46.3 and 64.8 km (25 and 35 NM) off the cleared track shall be less than 2.36×10^{-6}.

4.5.4 ADS-C position reports provide time-keeping accuracy of ± 1 second or better (Annex 2 paragraph 3.5.3 refers).

5. Determination of the Proposed System

5.1 RLatSM will be introduced to improve the efficiency of NAT operations. Initially it will involve establishment of tracks between core OTS published routes using the same vertical and longitudinal standards as conventional tracks.

5.2 RLatSM spacing between core tracks in the NAT OTS will be ½ degree as measured between segments anchored every 10^0 meridians.

5.3 RLatSM separation between adjacent tracks will be at least 25 NM as measured perpendicularly between tracks.

5.4 FDPs will receive and process position (POS) reports to an accuracy of ± 1 second or better.

5.5 In accordance with the outcome of NAT IMG/38, RLatSM will be implemented using the following phased approach:

a) Phase 1 – 2014/2015 – introduce 25 NM lateral separation by implementing ½ degree spacing between the two core tracks, within the vertical limits applicable to the airspace associated with the NAT Region Data Link Mandate; only aircraft with the appropriate RNP approval, ADS-C and CPDLC would be permitted to operate on the ½ degree spaced tracks.

b) Phase 2 – To Be Determined – introduce 25 NM lateral separation by implementing ½ degree spacing through the entire NAT Organised Track System (OTS), within the vertical limits applicable to the airspace associated with the NAT Region Data Link Mandate; only aircraft with the appropriate RNP approval, ADS-C and CPDLC would be permitted to operate on the ½ degree spaced tracks.

c) Phase 3 – To Be Determined – introduce 25 NM lateral separation throughout the entire NAT Region, including for converging and intersecting track situations, within the vertical limits applicable to the airspace associated with the NAT Region Data Link Mandate. The application of the reduced separation standard between targets of opportunity should be permissible in any part of the NAT Region outside the OTS (mixed mode operations).

Note 1: The final decision to implement segregated airspace in the OTS should be supported by:

a) the establishment of a target percentage of flights that should be RLatSM-eligible in order for segregated tracks and FL's to be implemented without causing significant disruption to air traffic in the NAT or disproportionate dis-benefit to the NAT operator fleet; and.

b) an assessment of NAT operator/aircraft fleet capability to meet RCP, RNP, ADS-C and CPDLC requirements in the timeframes proposed including a projection of the percentage of flights to be conducted by RLatSM-eligible aircraft.

Note 2: The vertical limits associated with each Phase of the RLatSM implementation will be harmonized with the vertical limits of the airspace associated with the NAT Region Data Link Mandate, where the carriage and operation of data link equipment is mandatory.

Note 3: As regards the planned phased introduction of segregated airspace, the NAT SPG supported the philosophy that expanding such airspace beyond the Phase 1 limits should be based upon a positive business case. The NAT SPG has interpreted "business case" as a clear indication from airspace users or a quantified benefits analysis.

Note 4: When it is feasible, the target day, month and year that implementation is planned should be specific and States and operators informed in order to give States and operators sufficient lead time to prepare. The dates, to be specified at a later date by the NAT IMG; will be harmonized with the dates applicable to the MNPS to PBN Transition Plan for the ICAO NAT Region.

Note 5: Phase 2 would likely enable an overall reduction of the lateral extent of the OTS, thereby increasing the flexibility for random operations and providing both economic and environmental benefits.

5.6 The introduction of RLatSM to any of the FIRs within the NAT will require changes to the associated ATC system. Respective ANSP FDPs will need to depict and conflict probe the RLatSM tracks.

5.7 Operational Application

5.7.1 In order to issue a flight with an RLatSM clearance, the following conditions must be met:

a) the aircraft concerned are RNP4 approved and confirm navigating using GNSS;

b) tracks are established with ½ degree spacing and aircraft are capable of n avigating the waypoints;

c) the aircraft concerned will provide ADS-C position reports; and

d) CPDLC communication will be established with the aircraft concerned to minimise the time required for any interventions. It is also noted that the use of CPDLC to upload RLatSM clearances would significantly decrease the risk of FMS waypoint input errors, should this functionality be enabled.

5.8 Concept of Use (Phase 1)

Introduction

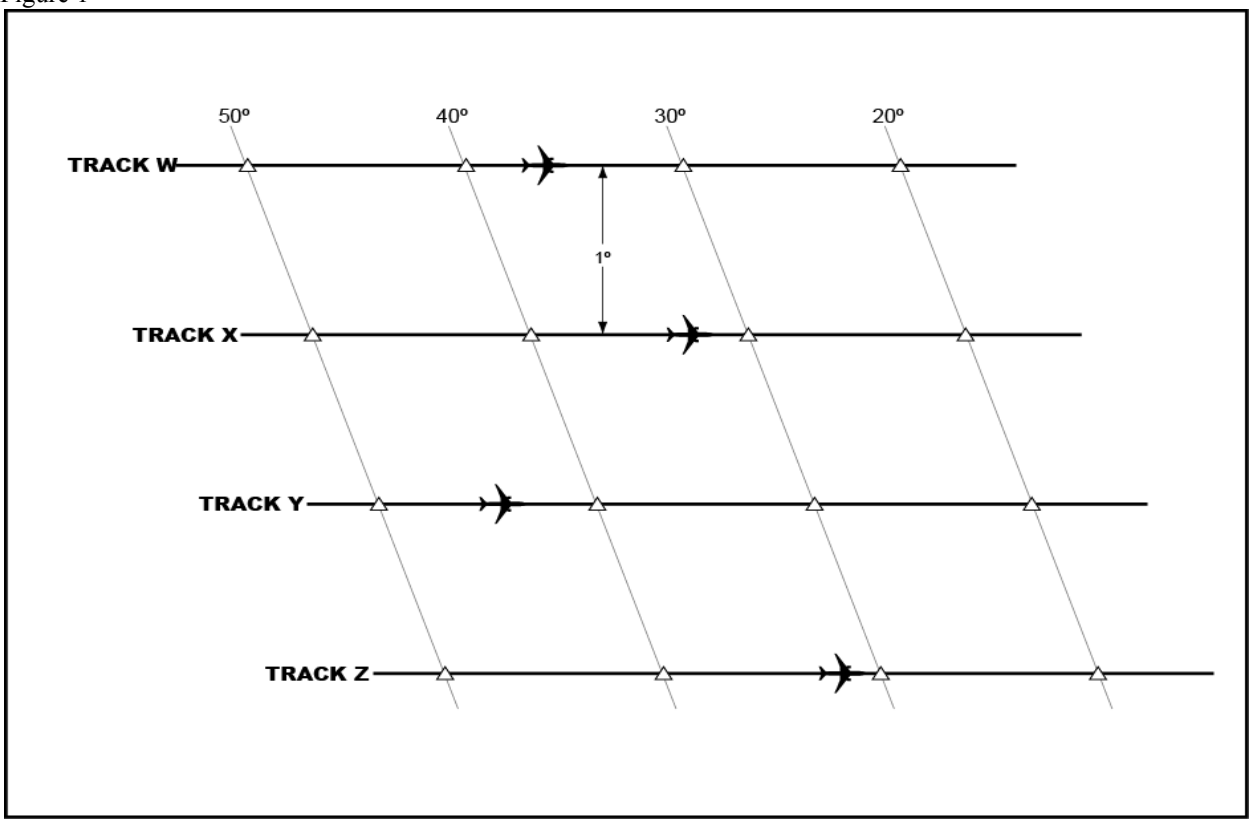
Commencing at a to be determined date within the 2014/2015 time frame, a reduced lateral separation minimum (RLatSM) of 25 Nautical Mile (NM) will be applied in the current North Atlantic (NAT) minimum navigation performance specification (MNPS) airspace between flight planned tracks of aircraft authorized for Required Navigation Performance 4 (RNP 4) operations and having Automatic Dependent Surveillance – Contract (ADS-C) and Controller-Pilot Data Link Communications (CPDLC) capability. Initial implementation will involve insertion of a single, unidirectional track within the NAT Organised Track System (OTS).

Note: When it is feasible, the target day, month and year that implementation is planned should be specific and States and operators informed in order to give States and operators sufficient lead time to prepare. The dates, to be specified at a later date by the NAT IMG; will be harmonized with the dates applicable to the MNPS to PBN Transition Plan for the ICAO NAT Region.

Background

All flights in NAT MNPS airspace which generally route in an eastbound or westbound direction are normally flight planned so that specified ten degrees of longitude (20°W, 30°W, 40°W etc.) are crossed at whole degrees of latitude. Aircraft tracks are separated using the earth's coordinate system to define tracks and effect separation laterally by 60 NM or 1 degree (see Figure 1) provided a portion of the route is within, above, or below MNPS airspace. Given the curvature of the earth, 'Gentle Slope Rules' have been adopted to ensure that the actual separation never falls below distances which vary with latitude but never fall short of 50.5 NM.

Figure 1



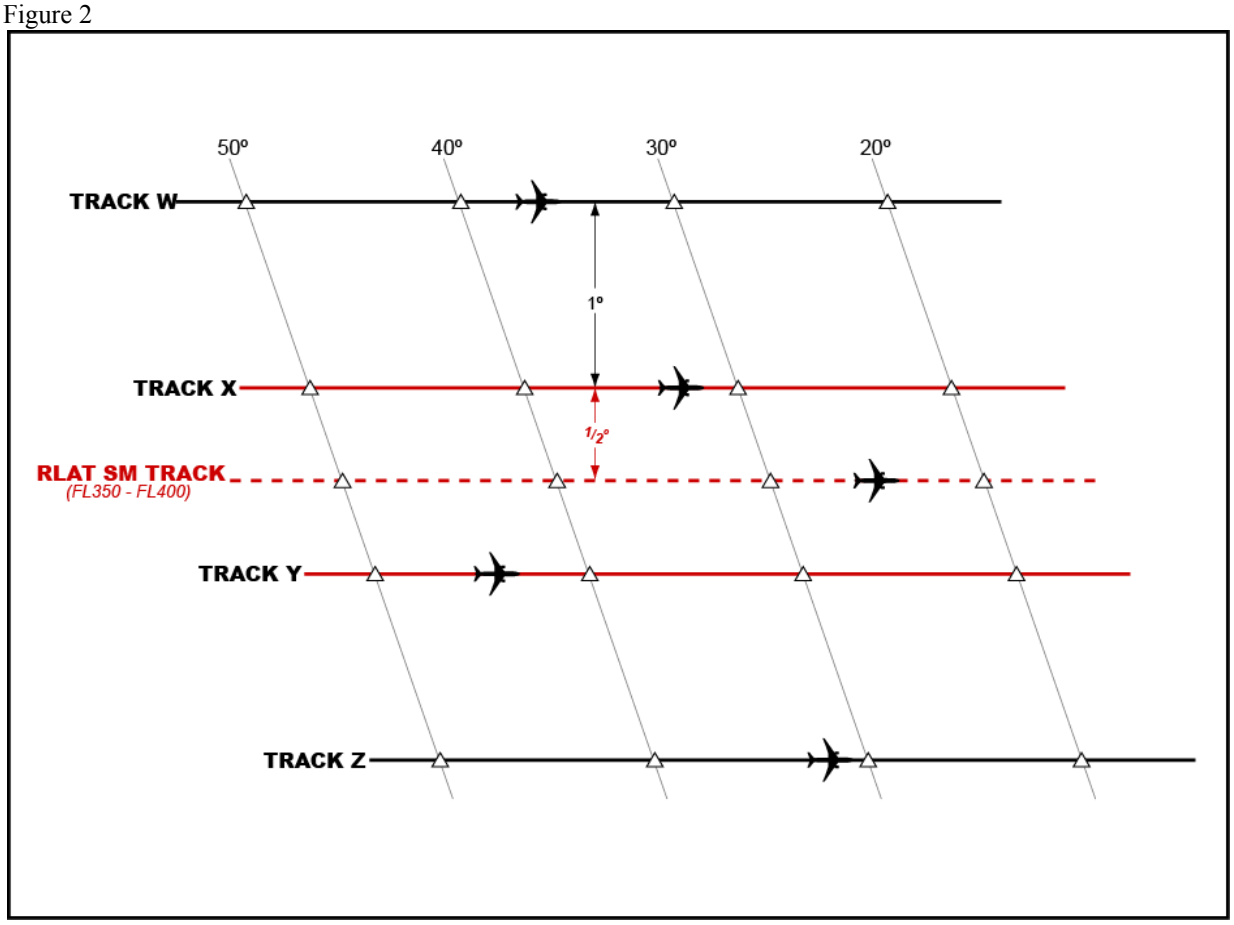
RLatSM Objectives

Collision risk modelling work conducted within the NAT region has determined that aircraft certified RNP 4, a navigation specification requiring navigation using GNSS, can be separated by 25 NM. The objectives of RLatSM implementation are to:

- Reduce lateral track spacing from one degree (nominal 60 NM with gentle slope rules) to one half degree (nominal 30 NM with gentle slope rules) from FL350 to FL400 between aircraft authorized RNP 4 and having ADS-C and CPDLC capability;

Note: Phase 1 of RLatSM implementation will involve insertion of a single, unidirectional track within the NAT OTS with half degree spacing between that track and the adjacent tracks immediately to the north and south. All other tracks within the OTS and those randomly flight planned will be spaced by one degree (see Figure 2). Future phases are anticipated to encompass first the entire OTS and then the entire NAT region within the vertical limits of airspace associated with the NAT Region Data Link Mandate.

Figure 2



- increase the number of tracks available and therefore increase capacity at optimum flight levels;
- enhance the provision of fuel-efficient profiles and routes for NAT customers to reduce operating costs with minimal change to NAT operations;
- allow for reduction in fuel burn and a consequent reduction in greenhouse gas emissions through an increased likelihood of flights being able to operate at their optimum flight levels and routes.

OTS Design and Promulgation

The eastbound OTS is produced by Gander Oceanic Area Control Centre (OAC) and the westbound OTS by Shanwick OAC (Prestwick), each incorporating any requirement for tracks within the New York, Reykjavik, Bodø and Santa Maria Oceanic Control Areas (OCAs). A full description of the OTS concept is contained within ICAO NAT Doc 007 (Guidance concerning Air Navigation in and above the NAT MNPSA).

The use of RLatSM tracks requires ½ degree of latitude coordinates to be filed at each ten degrees of longitude (20°W, 30°W, 40°W etc.) and also the establishment of additional oceanic entry and exit points located midway between the existing points.

OTS samples with Phase 1 of RLatSM implementation are at Figure 3 and Figure 4 below.

Figure 3

TRACK	OCEAN FIX	ROUTE				OCEAN FIX	ALTITUDES
U	STEAM OYSTR	55/50	57/40	59/30	59/20	GOMUP GINGA	320 330 340 350 360 370 380 390 400
V	REDBY CARPE	54/50	56/40	58/30	58/20	SUNOT ELPIN	320 330 340 350 360 370 380 390 400
W	YAY HECKK	53/50	55/40	57/30	57/20	PIKIL ODLUM	320 330 340 350 360 370 380 390 400
WX	WXQX1 WXQX2	5230/50	5430/40	5630/30	5630/20	WXPK1 WXPK2	350 360 370 380 390 400
X	DOTTY CRONO	52/50	54/40	56/30	56/20	RESNO BABAN	320 330 340 350 360 370 380 390 400
Y	CYMON DENDU	51/50	53/40	55/30	55/20	DOGAL BURAK	320 330 340 350 360 370 380 390 400
Z	YQX KOBEV	50/50	52/40	54/30	54/20	MALOT DOLIP	320 330 340 350 360 370 380 390 400

Figure 4

A	SUNOT	58/20	58/30	57/40	55/50	OYSTR STEAM	310 320 330 340 350 360 370 380 390
B	PIKIL	57/20	57/30	56/40	54/50	CARPE REDBY	310 320 330 340 350 360 370 380 390
C	RESNO	56/20	56/30	55/40	53/50	HECKK YAY	310 320 330 340 350 360 370 380 390
CD	CDPK1 CDPK2	5530/20	5530/30	5430/40	5230/50	CDQX1 CDQX2	350 360 370 380 390 400
D	DOGAL	55/20	55/30	54/40	52/50	CRONO DOTTY	310 320 330 340 350 360 370 380 390
E	MALOT	54/20	54/30	53/40	51/50	DENDU CYMON	310 320 330 340 350 360 370 380 390
F	LIMRI	53/20	53/30	52/40	50/50	KOBEV YQX	310 320 330 340 350 360 370 380 390

RLatSM tracks require all aircraft operating on the tracks immediately adjacent to them to contain RLatSM eligible aircraft at the designated flight levels. All RLatSM affected tracks and flight levels will be identified as part of the track message content. Flights not eligible for RLatSM separation are not to flight plan on those tracks or flight levels.

Implementation of RLatSM will have no requirement for alteration of OTS promulgation procedures.

Oceanic Clearance Production and Delivery

NAT oceanic clearance procedures are contained within ICAO NAT Doc 007 (Guidance concerning Air Navigation in and above the NAT MNPSA) and further detailed in NAT OPS Bulletins for the Gander Reykjavik, Santa Maria and Shanwick OACs.

Implementation of RLatSM currently contains no requirement for alteration of oceanic clearance procedures. It is has been recognized that the upload of route clearances containing ½ degree coordinates would benefit from the use of CPDLC technology.

6. Identification of the Method of Safety Assessment

6.1 Collision risk for same direction traffic only has been estimated using the Reich model. This is considered to be applicable under phase 1 of the RLatSM operational trial.

6.1.1 Calculations used in the safety assessment are sufficient to allow provisions for the application of SLOP where RLatSM is being applied.

6.1.2 Additional collision risk modelling work will be necessary to consider opposite direction traffic for application in future phases of RLatSM implementation. It is not anticipated that this will have an effect on the core navigational component but may have some effect on the choice of the limit associated with maximum acceptable rate of large navigation errors.

7. Evaluation of the Risk

7.1 The TLS for NAT MNPS airspace in the lateral dimension is currently 20 x 10^{-9} fatal accidents per flight hour (fapfh). For RLatSM the TLS will be 5 X 10^{-9} fapfh. Ongoing monitoring will determine whether the TLS in the vertical and longitudinal dimensions is affected by the introduction of RLatSM.

7.2 Hazard Identification and Risk Analyses (HIRA) to assess the impact of the proposed change on the current system shall be carried out. These will be made available to the appropriate regulatory authorities and planning bodies as they are completed.

7.3 In accordance with NAT SPG Conclusion 45/22, the NAT Implementation Management Group will:

a) ensure that the errors arising from the input and display of ½ degree coordinates (for example, 48º30" North) are subject to specific hazard analysis and mitigation developed to address the identified hazards;

b) develop a robust plan to capture and contain errors arising from flight crews misconstruing ½ degree coordinates as a full degree coordinate or vice versa (for example, flying to 43º30" rather than 43º00" or vice versa); and

c) ensure that the results of a) and b) are an integral part of the implementation plan for reduced lateral separation.

8. Satisfaction of Safety Criteria

8.1 System Performance Criteria

8.1.1 Aircraft will be required to meet communication, navigation and surveillance requirements for RLatSM operations.

8.1.2 Aircraft will be authorized for an RNP 4 navigation specification and the aircraft found eligible for RNP 4 operations by the State of the Operator or the State of Registry, as appropriate.

Note: Volume II, Part C, Chapter 1 of the Performance-based Navigation Manual *(Doc 9613) provides guidance on the authorization of operators and aircraft for RNP 4. Paragraph 1.3.3.1 contains a statement that "GNSS must be used and can be used as either a stand-alone navigation system or as one of the sensors in a multi-sensor system".*

8.1.3 GNSS may be approved using one of the following FAA Technical Standard Orders (TSO): C129a, C145c, C146c, or C196 or, one of the following Joint Technical Standard Orders (JTSO): C129a or C146. TSO C115b and JTSO C115b are applicable to GNSS equipment using Aircraft Autonomous Integrity Monitoring. Airworthiness approval for GNSS can be obtained using the guidance contained in the advisory circulars listed below (or their equivalent):

a) for multi-sensor systems integrating GNSS: U.S. FAA AC 20-130 (as amended); and

b) for all GNSS equipment: U.S. FAA AC 20-138 (as amended).

8.1.4 Operators intending to conduct RLatSM operations should obtain CPDLC/ADS-C operational authorization, where applicable, either from the State of Registry or the State of the Operator. The State of Registry or the State of the Operator should verify that the equipment has been certified in accordance with the requirements specified in RTCA DO-258A/EUROCAE ED-100A (or equivalent) and DO-306/ED-122, Annex B (or equivalent).

8.1.5 RCP240 as defined in RTCA DO-306/ED-122 is the guideline against which actual communication performance will be measured. Surveillance performance specification 180 as defined in the same standard is the guideline against which actual surveillance performance will be measured.

8.1.6 ANSP FDP software development to support RLatSM is expected to be fully functional in time for operational trials.

8.1.7 Air traffic management and control procedures are in development and will be finalized to provide timely training prior to implementation.

9. Modification of the Proposed System

9.1 The requirement for modification will be a result of constant assessment of the system performance.

10. Implementation and Monitoring of the Proposed System

10.1 It is intended to introduce RLatSM via an operational trial in 2012. Operators will be advised via Aeronautical Information Circular (AIC) of requirements of the trial applicable to operators at least 12 months in advance and of operational trial details no less than three AIRAC cycles (84 days) prior to implementation. A ny delay in the implementation date or significant change to the implementation plans shall be notified by NOTAM as soon as the information is available.

10.2 Eligible flights are those that meet all of the following requirements:

a) MNPS approval

b) RNP4 approval;

c) ADS-C and CPDLC equipped and, where applicable, authorized; and

d) the required CNS systems are operational.

10.3 ATS systems use Field 10 (Equipment) of the standard ICAO flight plan to identify an aircraft's data link and navigation capabilities. The operator should insert the following items into the ICAO flight plan (as per the proposed 2012 flight plan format) for FANS 1/A or equivalent aircraft:

a) Field 10a (Radio communication, navigation and approach aid equipment and capabilities); insert "J2 – J7" as appropriate to indicate CPDLC FANS 1/A data link equipment.

b) Field 10b (Surveillance equipment and capabilities); insert "D1" to indicate ADS with FANS 1/A capabilities.

c) Field 18 (Other Information); insert the characters "PBN/" followed by "L1" for RNP4.

10.4 RLatSM will not be applied to flights with only HF equipment due to the inherent communication delay.

10.5 The use of RLatSM will be enabled by the improved confidence in aircraft position due to the navigation accuracy of GNSS, the position reporting using ADS-C and the intervention capability provided by CPDLC. Controllers will intervene via CPDLC free text or voice as appropriate if an aircraft track was forecast to drop below the specified minimum separation, to prevent loss of separation.

10.6 Monitoring of NAT communication system performance and analysis of problem reports will be assisted by the NAT Data Link Monitoring Agency (NAT DLMA).

PLACEHOLDER – CONTINGENCY PROCEDURES IN THE EVENT OF DATA LINK SYSTEM OUTAGE. The RLatSM plan does not currently address contingency procedures for pilots and controllers to follow in the event of data link system outages.

PLACEHOLDER – GUIDANCE IN THE EVENT OF AIRCRAFT CNS SYSTEM MALFUNCTION OR FAILURE. Guidance to pilots and controllers in the event of aircraft system malfunction or failure prior to and after airspace entry.

Appendix G - NAT RCP and ADS-C Surveillance Performance Based Operations Implementation Plan

(Paragraph 4.2.11 refers)

Associated with the NAT data link services in support of RLongSM and RLatSM.[2]

	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
	GENERAL PROJECT DEVELOPMENT & MANAGEMENT				
1	Prepare a draft *RCP and ADS-C Surveillance Performance-Based Operations Plan* outlining the way forward for consideration by the NAT IMG	NAT IMG/38 and NAT SPG/47	Approved by NAT SPG/47.	NAT CNSG	
2	Identify Key Target Dates on implementing RCP and ADS-C surveillance performance framework and prescribing specifications to support RLongSM, and RLatSM.	NAT IMG/38 and NAT SPG/47	Pending target dates for associated operations.	NAT IMG	NAT SPG Conclusion 44/11 targets 2015. Target dates for RCP/ADS-C performance specifications need to be in combination with the target dates for RLongSM and RLatSM operational implementation.

[2] Plans for prescribing RCP specifications associated with SATCOM voice will be addressed, as appropriate, pending completion of the SATCOM Voice Guidance Material by the Inter-Regional SATCOM Voice Task Force.

	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
10	Confirm applicable performance specifications that will be used for operational implementation of data link services in support of RLatSM and RLongSM. Detail and validate CRM assumptions against actual performance measurements in accordance with GOLD.	NAT SPG/46 for RLatSM and RLongSM.	Approved by NAT SPG/47	NAT SARSIG	During trials of RLongSM and RLatSM, specifications are not prescribed, but will provide guidelines against which the actual performance is measured. RCP 240 and surveillance performance 180 are the candidate's specifications to be prescribed for RLatSM and RLongSM operations. Note : When performance falls below specified levels, operational judgment may be a consideration in determining appropriate actions.
	Update operational concepts for implementation of RLatSM, RLongSM supported by associated RCP and surveillance performance specifications. Develop operational concept (of use), including procedures, for data link services using CPDLC and ADS-C to reduce the number and exposure of operational errors and pilot deviations, regardless of whether or not reduced ADS-C based separations are applied. For example, concept of use should detail conformance monitoring, intervention and route re-clearances. Review and comment on material for incorporation in GOLD, NAT Doc 006 and Doc 007.	NAT IMG/40 and NAT SPG/48	Draft and review through end 2011.	NAT ATMG in coordination with CNSG	ADS-C and CPDLC operational concepts are complete. Review and propose text to be candidate for GOLD amendment.

	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
	DOCUMENTATION				
4	Development of the GOLD material in support of reduced longitudinal; -the provisions for data link service (AIC, guidance for AIPs, eligibility requirements etc) -performance specifications -initial qualifications for operations of operators, aircraft and ATC -post implementation monitoring	NAT SPG/46	Complete	GOLD ad-hoc group	Amendments to GOLD are in work for tasks 3, 5, 6 and 7. Adoption planned at NAT SPG/49.
5	Develop flight crew and controller contingency procedures in the event of service outage, malfunction or failure that would cause performance to degrade below that required by specifications. Review and comment on material for incorporation in GOLD, NAT Doc 006 and Doc 007.	NAT IMG/40 and NAT SPG/48	Draft and review through end 2011.	NAT ATMG/ CNSG	Included in NAT Doc 006. Amendments needed to ensure that long duration outages/degradations are also considered. Similar provisions should be included in the GOLD and in NAT Doc 007 .
6	Develop the criteria for resuming data link service, RLatSM, or RLongSM operations after service communication and/or surveillance capabilities are restored to acceptable level of performance. Review and comment on material for incorporation in GOLD, NAT Doc 006 and Doc 007.	NAT IMG/40 and NAT SPG/48	Draft and review through end 2011.	NAT ATMG/ CNSG	Included in NAT Doc 006. Amendments needed to ensure that long duration outages/degradations are also considered. Similar provisions should be included in the GOLD and NAT Doc 007.
7	Draft guidance material for the flight plan to define the descriptors for performance specifications, as appropriate, using the new format planned for 2012 implementation. Review and comment on material for incorporation in GOLD.	a) NAT IMG/40 and NAT SPG/48 (as part of the NAT SUPPs PfA) and GOLD b)12th Air Navigation Conference – amend Doc 4444	Work needs to be confirmed and assigned. Draft and review through end 2011.	NAT CNSG ICAO (Global)	Definition of P descriptors in Item 10a and expansion or redefinition of descriptors for ADS-C.

	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
8	Draft or update PfA (or revise existing drafts) to the NAT Regional Supplementary Procedures (SUPPs) (Doc 7030) to prescribe the performance specifications for communication and surveillance to support RLatSM and RLongSM. PfA should include criteria for operator eligibility, aircraft equipage, requirements for flight planning, monitoring, alerting and reporting.	NAT IMG/42 and NAT SPG/49	Draft and review through end 2011.	NAT CNSG NAT ATMG	Dependent on timeline for RLatSM and RLongSM. PfA should be part of PfA for each operational improvement.
9	Amend AIPs and other State documents to support SUPPs amendment.	Consistent with Task 8	Consistent with Task 8	States	Consistent with Task 8
11	Implement operational communications performance monitoring capability in ATC automation.	Before the start of operational trials of RLongSM or RLatSM.	Gander – 1Q/2011 Shanwick – 4Q/2010 Reykjavik –3Q/2011 Santa Maria – 2Q/2011 New York – Completed Bodo – TBD Shannon – 1Q/2013	NAT ANSPs	Should be in place prior to effective date of data link mandate and start of RLatSM or RLongSM trials.
12	Measure actual performance against specifications for feasibility, i.e., ACP, ACTP, PORT, ADS-C latency for operators and aircraft types	Prior to operational implementation	Ongoing	ANSPs/ DLMA/ CNSG/ SARSIG	Collect and analyze data in accordance with GOLD, Apx D.
	AIRWORTHINESS AND OPERATIONAL ELIGIBILITY				
13	Provide guidance to State regulators related to aircraft equipage and operator eligibility requirements taking into account the GOLD and appropriate RCP and surveillance performance specifications. Review and amend GOLD, if required.	NAT IMG/40 and NAT SPG/48	Draft and review through end 2011.	OPSAIR SG	Refer to FAA AC 20-140A and AC 120-70B. Other State material may apply.

	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
14	Develop or revise State guidance and/or regulations, as necessary Establish State airworthiness requirements Establish operational policy/procedures requirements for operational approval. Prepare State inspectors to perform tasks for operational approval. Develop plan to issue operational approval to national operators by [date], to extent possible Train pilots and, if applicable, dispatchers on RCP and surveillance performance aspects of reduced separation Develop and distribute operations manuals, pilot bulletins or other appropriate docs containing RCP and communication surveillance performance policy/procedures	End of 2014 Prior to operational implementation of RLatSM or RLongSM	On-going Need status reports from States	SOG/ States/ ANSPs/ Users	Implementation tasks in this plan need to be completed by NAT SPG/49 (June 2013) to allow time for operational readiness to implement RCP/surveillance performance by 2015.
	POST IMPLEMENTATION TASKS				
15	Post-implementation monitoring, analysis and corrective action per GOLD, Apx D and any other necessary monitoring tasks		On-going See related Task 11.	ANSP/s DLMA/ CNSG	When performance falls below specified levels, operational judgment may be a consideration in determining appropriate actions.
16	Develop a guidance material to clarify the interpretation of RCP and surveillance specification in terms of compliance/non-compliance.	NAT SPG/49	In progress	CNSG	
17	Conduct workshops to raise awareness on RCP and surveillance performance.	NAT SPG/49		States	

Appendix H –
NAT Fast Track Procedure for Safety Occurrences

(Paragraph 4.6.1 refers)

Step 1 NAT provider State regulator, NAT CMA, NAT service provider, NAT SPG contributory group and/or NAT user organisation identifies safety issue(s).

Step 2 The issue is communicated to the EUR/NAT Office of ICAO, who coordinates with the Chairmen of the NAT SPG, the NAT SOG and NAT IMG (**icaoeurnat@paris.icao.int**).

Step 3 The issue is communicated to the NAT SOG e-mail list if required.

Step 4 The NAT SOG determines how the issue(s) will be discussed.

Step 5 The NAT SOG, after coordination/cooperation with NAT IMG Chairman, deliberates and determines next steps and/or actions to be taken (such as gather more information, share and track mitigation, etc.).

Step 6 The NAT SOG Chairman coordinates directly with the Chairmen of the NAT SPG and NAT IMG to implement changes or further actions.

Step 7 Further action is then communicated to the ICAO EUR/NAT office, which takes action as instructed.

Appendix I -
Terms of Reference for the
Nat Safety Oversight Group (NAT SOG)

(Paragraph 5.2.1 refers)

Terms of Reference

The NAT SOG is responsible to the NAT SPG for safety oversight in the NAT Region, and will:

1. Review system safety performance in the NAT Region.
2. Share data on safety-related occurrences in the NAT Region.
3. Support the development of best practices in the management of safety in the NAT Region.
4. Ensure safety-related occurrences in the NAT Region are analysed by the appropriate NAT SOG contributory groups to determine root causes.
5. Identify areas where mitigation is required and report to the NAT SPG and coordinate with NAT IMG. A ssess the effectiveness of implemented mitigation measures.
6. Keep under review safety monitoring methods and analysis and recommend improvements to the process as appropriate.
7. Monitor safety cases in progress and review completed safety cases prepared to support changes to the NAT air navigation system.
8. Address other safety-related issues as necessary.
9. Use the fast track to advance safety concerns between formal meetings.
10. Report to the NAT SPG.

Composition

The NAT SOG is composed of representatives from the NAT SPG member States. State representatives should be in a position to address service delivery and flight operations regulatory issues in the NAT Region, and as necessary regulatory issues related to the conduct of flight operations in the NAT Region. In order to ensure that NAT users' views are represented and to provide valuable operational experience, NAT SOG meetings are also attended by representatives from Spain, IATA, IBAC, IFALPA and IFATCA. The NAT SOG may invite participants from other States or organisations as required.

The Chairmanship of the NAT SOG will be reviewed in the fall every two years.

Terms of Reference for the NAT Central Monitoring Agency (NAT CMA)

(Paragraph 5.2.1 refers)

Terms of Reference

The NAT CMA is responsible to the NAT SOG for certain aspects of operations monitoring and reporting in the NAT Region. Specifically, its principle functions are:

1. Establish and amend, as required, mechanisms for the collection and analysis of occurrence data, including operational errors, for use in the risk assessment and safety assurance process.
2. Establish and operate a database of RVSM approvals, for the NAT Region, issued by State aviation authorities.
3. Categorize all reported occurrences in the NAT Region and take follow-up action with State aviation authorities as required after relevant analysis.
4. Establish a mechanism for the tactical monitoring of aircraft approvals and take follow-up action with State aviation authorities as required.
5. Act as the custodian of all aircraft technical height keeping data collected as part of the NAT Region monitoring process and take follow-up action, as required, with operators and State aviation authorities of aberrant or non-compliant aircraft.
6. Responsibility for the amendment and publication of the "NAT Minimum Monitoring Requirements" table after co-ordination with the NAT MWG and NAT SOG.
7. Provide NAT customers and State aviation authorities with height monitoring data on request.
8. Ensure that the requisite height monitoring is completed by operators of aircraft listed in the RVSM approvals database and to take appropriate action where necessary.
9. Produce a quarterly report on operational performance in the NAT Region for distribution to the NAT SPG, the NAT SOG and other interested parties.
10. Liaison with other regional monitoring agencies in order to achieve an exchange of monitoring and RVSM approvals data amongst the regions.

Appendix J - Terms of Reference for the NAT Mathematicians' Working Group (NAT MWG)

(Paragraph 5.2.1 refers)

Terms of Reference

The NAT MWG reports to the NAT SOG and is responsible for providing mathematical and statistical advice relating to the on-going monitoring of safety through the assessment of collision risk and any other tasks as determined by the NAT SOG. It has the following terms of reference:

1. Estimate monthly and annually the lateral and vertical occupancies (traffic densities) in the NAT Region.
2. Estimate the current lateral, longitudinal and vertical collision risks to show whether the estimated risks meet the respective Target Levels of Safety (TLS).
3. Identify trends that may not be identified within the SG Report including component elements of the collision risk model and highlight where safety improvements could prove most effective.
4. To reflect changes in operating conditions within the NAT region, review the collision risk model.
5. Periodically perform other data collections (e.g. core navigation studies) in order to ensure that the parameter values within the mathematical collision risk models remain current.
6. Review other mathematical aspects as directed by the NAT SOG and/or the NAT SPG.
7. Coordinate with the NAT SG.
8. Report to the NAT SOG.

Composition

The NAT MWG is composed of experts from the NAT SPG member States, Spain, IATA and IFALPA. Representatives from EUROCONTROL may also be invited as observers in order to ensure consistency between related European and North Atlantic work programmes.

Working Methods

The NAT MWG conducts its work via correspondence to the extent possible.

Terms of Reference for the NAT Scrutiny Group (NAT SG)

(Paragraph 5.2.1 refers)

Terms of Reference

The NAT SG is responsible to the NAT SOG for ensuring the correct categorization of NAT Region reported occurrences for the purposes of mathematical analysis and other safety management activities. To that end, the NAT SG will:

1. For the purpose of mathematical analysis, and in close cooperation with the NAT MWG, categorise navigational errors and altitude deviations of 300ft or more occurring in NAT MNPS airspace.
2. For the purpose of safety management activities, categorize reported occurrences in the NAT Region as directed by the NAT SOG.
3. Analyse occurrences in order to allow the study of trends and prevalent causes.
4. Evaluate the effect of, and provide advice and recommendations to the NAT SOG on the implemented mitigations in the NAT region.
5. Work in close co-operation with the NAT CMA to compile data necessary to conduct safety analysis in the NAT Region.
6. Keep under review the procedures for collecting and categorising occurrence reports.
7. Address other related issues as directed by the NAT SOG.
8. Report at least twice per year to the NAT SOG; the reports should include findings from all tasks of the SG (vis-a-vis ToRs). Ensure that reports are sent to the SOG at least 2 weeks prior to SOG's biannual meetings.
9. Report once per year on the categorisation of occurrences for mathematical analysis to the NAT MWG.

Composition

The NAT SG is composed of nominated experts from the NAT SPG member States, Spain, NAT MWG, NAT CMA, IATA, IBAC, IFALPA and IFATCA.

Working Methods

The NAT SG conducts its work via correspondence to the extent possible

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Appendix K -
Proposal for amendment supporting Amendment 1 to the PANS ATM, 15th Edition

(Paragraph 6.2.2 refers)

PROPOSAL FOR AMENDMENT OF THE REGIONAL SUPPLEMENTARY PROCEDURES, NAT REGION (Doc 7030/5)

(Serial No.: EUR/NAT-11/xx – NAT)

a) **Regional Supplementary Procedures:**

Doc 7030/5 – NAT

b) **Proposed by:**

Iceland on behalf of the NAT SPG (NAT SPG Conclusion 47/11 refers)

c) **Proposed amendment:**

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

1. *Amend* the following in NAT SUPPs, Chapter 2 – Flight Plans

2.1 CONTENT – GENERAL
(A2 – Chapter 3; P-ATM – Chapter 4 and Appendix 2)

2.1.2 Area navigation (RNAV) specifications

2.1.2.1 All RNAV 10 (RNP 10) approved aircraft intending to operate in the NAT Region shall insert ~~T~~the letter R ~~shall be inserted~~ in Item 10a ~~(Equipment)~~ of the flight plan ~~to indicate the aircraft meets the RNAV specification prescribed, has been appropriately approved and can comply with all conditions of that approval. Additionally, the letter Z shall be inserted in Item 10 and NAV/RNP 10 or NAV/RNP 4, as appropriate, inserted~~ and the A1 descriptor in Item 18 following the PBN/ indicator.

2.1.3 Required navigation performance (RNP) specifications

2.1.3.1 All RNP 4 approved aircraft intending to operate in the NAT Region shall insert ~~T~~the letter R ~~shall be inserted~~ in Item 10a ~~(Equipment)~~ of the flight plan ~~to indicate the aircraft meets the RNP specification prescribed, has been appropriately approved and can comply with all conditions of that approval. Additionally, the letter Z shall be inserted in Item 10 and NAV/RNP 10 or NAV/RNP 4, as appropriate, inserted~~ and the L1 descriptor in Item 18 following the PBN/ indicator.

2.1.4 Minimum navigation performance specifications (MNPS)

2.1.4.1 All MNPS-approved aircraft intending to operate in the NAT Region shall insert the letter ~~"~~X~~"~~ in Item ~~Field~~ 10a of the flight plan.

2.1.5 Reduced vertical separation minimum (RVSM)-approved aircraft

2.1.5.1 All RVSM approved aircraft intending to operate in the NAT Region, regardless of the requested flight level, shall insert ~~T~~the letter W ~~shall be inserted~~ in Item 10a ~~(Equipment)~~ of the flight plan ~~if the aircraft and operator have received RVSM State approval, regardless of the requested flight level. The aircraft registration shall be inserted in Item 18 of the flight plan.~~

~~**2.1.14 Controller-pilot data link communications (CPDLC)**~~
2.1.14 Data link services

2.1.14.1 All flights planning to operate in the NAT Region and intending to use data link services shall include in Item ~~18~~ 10a of the ICAO flight plan the ~~indicator REG/ followed by the aircraft registration~~. appropriate descriptor (J2, J5 or J7) to indicate FANS 1/A interoperable equipment.

2.1.14.2. All flights planning to operate in the airspace specified in paragraphs 3.3.1 and 5.4.1 and which have been granted an exemption in accordance with the provisions of paragraphs 3.3.3 and 5.4.3, shall include the indicator RMK/FANSX in Item 18 of the flight plan.

NOTE: Proposed new paragraph 2.1.14.2 refers to airspace defined in Proposal for amendment No: EUR/NAT- S 09/18 – NAT 3-2 which supports the NAT Region Data Link Mandate.

2.1.15 Automatic Dependent Surveillance – Broadcast (ADS-B)

2.1.15.1 All ADS-B approved aircraft intending to operate in the NAT Region shall insert either the B1 or B2 descriptor as appropriate in Item 10b of the flight plan.

Note.—Eligibility for ADS-B service in the NAT Region is based upon the compliance considerations of European Aviation Safety Agency (EASA) AMC 20-24 or equivalent.

2.1.16 Aircraft Registration

2.1.16.1 All aircraft intending to operate in the NAT Region shall include in Item 18 of the ICAO flight plan the indicator REG/ followed by the aircraft registration.

d) **Date when proposal received:**

June 2011

e) **Proposer's reason for amendment:**

1. Amendment 1 to the *Procedures for Air Navigation Services – Air Traffic Management* (PANS ATM, Doc 4444) 15th edition, changed the content and format of the ICAO flight plan form. The NAT SUPPs included a number of flight planning provisions, some of which were affected by Amendment 1.
2. The North Atlantic Systems Planning Group (NAT SPG) intends to transition from the current NAT Minimum Navigation Performance Specifications (MNPS) navigational specifications to specifications defined in the *Performance-based Navigation (PBN) Manual* (Doc 9613). Plans are also underway to initiate an operational trial implementation of a reduced lateral separation based on a specified Required Navigation Performance (RNP) as defined in Doc 9613. Accordingly, it would be beneficial for operators with existing PBN authorizations/approvals to begin indicating this in the flight plan as soon as practicable.

3. The NAT SPG has agreed that, in specified portions of the ICAO NAT Region, the carriage and operation of CPDCL and ADS-C equipment certified in accordance with the RTCA DO-258A/EUROCAE ED-100A (or ED-100) avionics standards (FANS 1/A interoperable) will be mandatory. It has been agreed that, once the mandate extends beyond the initial limits, exemptions should be accommodated. In this regard, it will be necessary to have these exemptions indicated in the flight plan.
4. Aircraft must provide the aircraft registration in order to be provided with CPDLC services . The same requirement applies to RVSM approved aircraft intending to operate in the ICAO NAT Region. Considering that this information pertains to the vast majority of NAT Region operations, it was agreed that it would simplify the flight planning process if provision of the aircraft registration in Item 18 of the flight plan were a general requirement.

f) **Proposed implementation date of the amendment:**

15 November 2012.

g) **Proposal circulated to the following States and international organizations:**

The proposal has been circulated to the following States and International Organizations:

Afghanistan
Albania
Algeria
Andorra
Angola
Argentina
Armenia
Australia
Austria
Azerbaijan
Bahamas
Bahrain
Bangladesh
Belarus
Belgium
Benin
Bhutan
Bosnia and Herzegovina
Botswana
Brazil
Brunei Darussalam
Bulgaria
Burkina Faso
Cameroon
Canada
Cape Verde
Central African Republic
Chad
Chile
China
Colombia
Congo
Côte d'Ivoire
Croatia
Cuba
Cyprus
Czech Republic
Democratic People's Rep. of Korea
Democratic Republic of the Congo
Denmark
Djibouti
Dominican Republic
Ecuador
Egypt
Eritrea
Estonia
Ethiopia
Finland
France
Gabon
Gambia
Georgia
Germany
Ghana
Greece
Guinea-Bissau
Haiti
Hungary
Iceland
India
Indonesia
Iran (Islamic Republic of)
Iraq
Ireland
Israel
Italy
Jamaica
Japan
Jordan
Kazakhstan
Kenya
Kuwait
Kyrgyzstan
Latvia
Lebanon
Libyan Arab Jamahiriya
Lithuania
Luxembourg
Madagascar
Malaysia
Maldives
Mali
Malta
Mauritania
Mauritius
Mexico
Monaco
Mongolia
Montenegro
Morocco
Mozambique
Namibia
Nepal
Netherlands
New Zealand
Niger
Nigeria

Norway	Slovenia	Uganda
Oman	Somalia	Ukraine
Pakistan	South Africa	United Arab Emirates
Paraguay	Spain	United Kingdom
Philippines	Sri Lanka	United Republic of Tanzania
Poland	Sudan	United States
Portugal	Suriname	Uruguay
Qatar	Swaziland	Uzbekistan
Republic of Korea	Sweden	Venezuela
Republic of Moldova	Switzerland	Viet Nam
Romania	Syrian Arab Republic	Yemen
Russian Federation	Tajikistan	Zambia
San Marino	Thailand	Zimbabwe
Saudi Arabia	The former Yugoslav Republic	Eurocontrol
Senegal	of Macedonia	IACA
Serbia	Togo	IAOPA
Seychelles	Trinidad and Tobago	IATA
Sierra Leone	Tunisia	IBAC
Singapore	Turkey	IFALPA
Slovakia	Turkmenistan	

h) **Secretariat comments:**

The 47th meeting of the North Atlantic Systems Planning Group (NAT SPG/47) agreed that it was necessary to properly reflect the flight planning requirements in the ICAO NAT Region in light of the changes arising from Amendment 1 to the PANS ATM. In order to minimize workload, it was also agreed to incorporate updates necessary to support the planned transition from MNPS to PBN in the ICAO NAT Region and the need to indicate exemption from the mandatory carriage and operation of FANS 1/A data link. Finally, considering that the inclusion of aircraft registration in Item 18 was necessary to support operations pertaining to the majority of NAT Region airspace users, it was agreed to simplify the flight planning process by making the inclusion of this information a general requirement, rather than associating it with each specific operation taking place in the Region.

———————

Appendix L - Proposed amendment to NAT Doc 007

(Paragraph 6.4.2 refers)

Insert the following in the foreword:

A change was made to Attachment 6 to update the information provided concerning the NAT Flight Allocation Scheme (NAT FLAS).

The following changes have been made in the 2011 Edition to provide the necessary information for operators, aircraft and crew to enable them to receive ADS-B services:

a) add new section 1.8 to Chapter 1 – General;
b) add material to Chapter 4 – Flight Planning;
c) add new section to Chapter 8 – MNPS Flight Operation Navigation Procedures;
d) add material to paragraph 13.2.1 in Chapter 13 – Check Lists for Pilots Operating in NAT MNPS Airspace;
e) add material to Chapter 16 – Guidance for Dispatchers; and
f) add material to section 3.11 of Attachment 4 – ICAO FPL Completion for a NAT Flight

The following changes have been made to provide information concerning the provision of ATS surveillance services:

a) create a new Chapter 10 – ATS SURVEILLANCE SERVICES IN MNPS AIRSPACE; and
b) move the text in paragraph 6.8 (2010 Edition) to become new 10.2.1 and 10.2.2.

The detailed changes are as follows:

In Attachment 6, make the following amendment

OTS Design & Use

For all westbound Tracks which landfall at or north of PRAWN, Reykjavik require FL340 to be omitted from that Track to allow profiles for aircraft originating in the Reykjavik OCA.

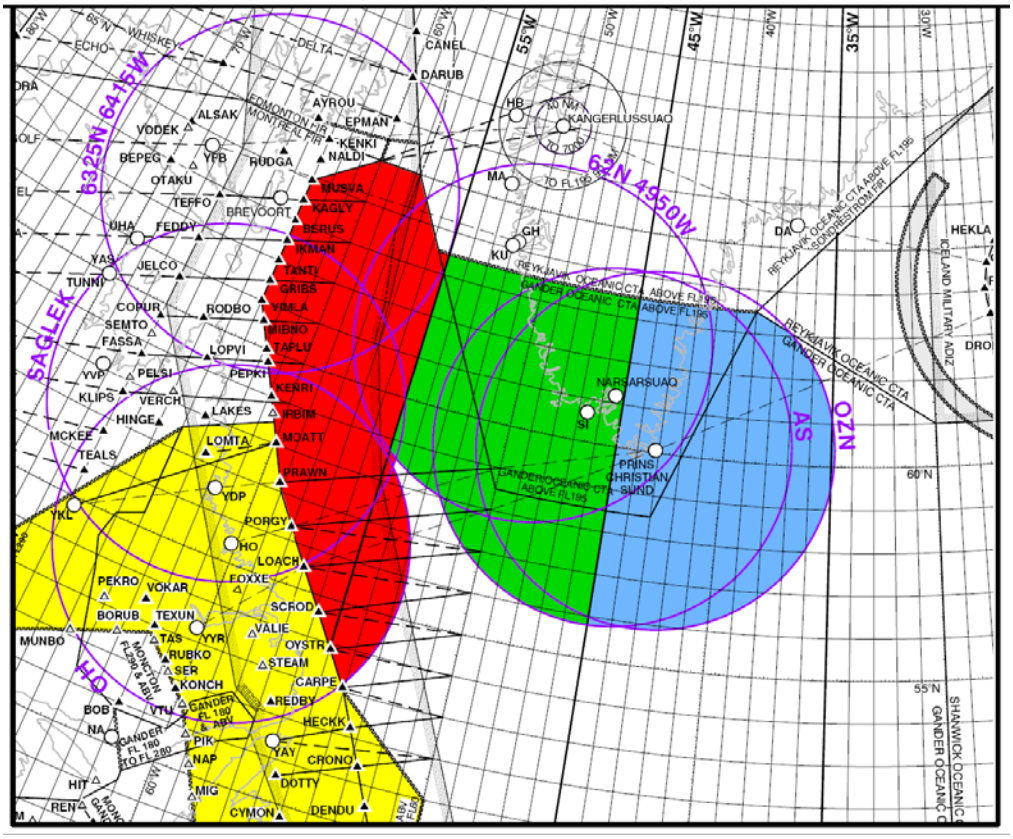
During the westbound OTS validity times, ~~Controllers at~~ Shanwick shall not clear westbound aircraft which landfall at or north of PRAWN ~~or north of,~~ at FL340, except ~~for~~ random flights that remain clear of the OTS and Gander OCA. Such flights may be cleared at FL340 without prior coordination with Reykjavik ~~which cross 61N at or east of 20W and route ay or north of 63N030W~~.

In Chapter 1 – General, add new material as follows:

1.8 ADS-B SERVICE AND REQUIREMENTS

1.8.1 **Automatic Dependent Surveillance – Broadcast (ADS-B)** is a form of electronic surveillance. Information (identity, location, altitude, speed and additional data) is determined by on-board navigation equipment and transmitted to ATC ground receivers.

1.8.2 ADS-B control services at FL290 and above is available west of 55 degrees longitude and north of 54 degrees north latitude within the Gander FIR. Phase 2, scheduled for winter 2011/12 is an area anchored over southern Greenland; 35 to 55 degrees longitude from 56 to 6330 degrees latitude.



1.8.3 Eligibility for ADS-B service in the Gander Oceanic CTA is based upon the compliance considerations of European Aviation Safety Agency (EASA) AMC 20-24 or equivalent. Operators shall meet the conditions of operational specification No. 609 or 610 as appropriate; outlined in Transport Canada Advisory Circular 700-009.

In Chapter 4 – Flight Planning, add new material as follows:

4.1.16 To indicate appropriate certification of ADS-B transmit capability; operators shall file "RMK/ADSB" in Field 18 of the flight plan.

In Chapter 8 – MNPS Flight Operation Navigation Procedures, add new material as follows:

8.8 ADS-B NAVIGATION PERFORMANCE MONITORING

8.8.1 ADS-B services within Gander OCA require the following from eligible aircraft

1. Aircraft avionics functionally compliant with DO 260, DO 260A, or DO 260B;
2. Compliance with EASA AMC 20-24 or equivalent;
3. Review of technical information to ensure compliance; and
4. Entry onto the eligibility list.

In Chapter 13 - Check Lists for Pilots Operating in NAT MNPS Airspace, add material to paragraph 13.2.1 as indicated in grey highlight:

13.2 SPECIAL NAT MNPSA ITEMS

13.2.1 To assist those pilots who are less familiar with operating in NAT MNPS Airspace, below is a list of questions which address the unique and/or particularly important NAT MNPSA check list elements.

……..

13 If approved for ADS-B services in the NAT, have you correctly entered the Flight ID into the Transponter/FMS control panel? The Flight ID must exactly match the ACID entered in item 7 of the ICAO flight plan. Have you included RMK/ADSB in the ICAO flight plan?

In Chapter 16 – Guidance for Dispatchers, add new material as follows:

16.5.5 For flighs who intend to receive ADS-B services in the NAT, enter RMK/ADSB in Item 18 of the flight plan to indicate that the flight is apporved for ADS-B services.

In section 3.11 of Attachment 4 – ICAO FPL Completion for a NAT Flight, add new material as indicated by grey highlight:

3.11 Field 18: Other Information

RMK/

Being a free text field, this is a useful sub-field for the inclusion of data only defined in particular regions (e.g. RMK/AGCS EQUIPPED RVR/800). Unrecognised sub-fields embedded within the RMK/ sub-field would simply form part of the remarks and would not be processed. Hyphens must not be used in this sub-field.

Insert RMK/ADSB if the aircraft is approved for ADS-B services and intends to receive ADS-B services in the NAT.

New Chapter 10

CHAPTER 10 ATS SURVEILLANCE SERVICES IN MNPS AIRSPACE

10.1 GENERAL

10.1.1 ATS Surveillance services (radar and ADS-B) are provided within the MNPS airspace, where radar- and/or ADS-B coverage exists, in the Bodö, Reykjavik, Gander, Santa Maria and New York oceanic areas.

10.1.2 The ATS Surveillance services are provied in accordance with the ATS Surveillance services procedures in the PANS ATM (DOC 4444).

10.2 OPERATION OF SSR TRANSPONDERS

10.2.1 All aircraft operating as IFR flights in the NAT Region shall be equipped with a pressure-altitude reporting SSR transponder. Unless otherwise directed by ATC, pilots flying in the NAT FIRs will operate transponders continuously in Mode A/C Code 2000, except that the last assigned code will be retained for a

period of 30 min after entry into NAT airspace. Pilots should note that it is important to change from the last assigned domestic code to the Mode A/C Code 2000 since the original domestic code may not be recognised by the subsequent Domestic Radar Service on exit from the oceanic airspace. It should be noted that this procedure does not affect the use of the special purpose codes (7500, 7600 and 7700) in cases of unlawful interference, radio failure or emergency. However, given the current heightened security environment crews must exercise CAUTION when selecting Codes not to inadvertently cycle through any of these special purpose codes and thereby possibly initiate the launching of an interception.

10.2.2 Reykjavik ACC provides a r adar control service in the south-eastern part of its area and consequently transponder codes issued by Reykjavik ACC must be retained throughout the Reykjavik OCA until advised by ATC.

10.3 OPERATION OF ADS-B TRANSMITTERS

10.3.1 The Flight ID is the Aircraft Identification (ACID) and is used in both ADS-B and Mode S SSR technology. Up to seven characters long, it is usually set by the flight crew via a cockpit interface. The Flight ID is used by the ATC ground system to correlate the ADS-B information with the flight plan data and to identify the aircraft on the ATC situation display system. To allow corrletion of a Flight ID to a flight plan, the **Flight ID must exactly match the ACID entered in item 7 of the ICAO flight plan**. It is important that the Flight ID is correctly entered or ADS-B seervice may be denied.

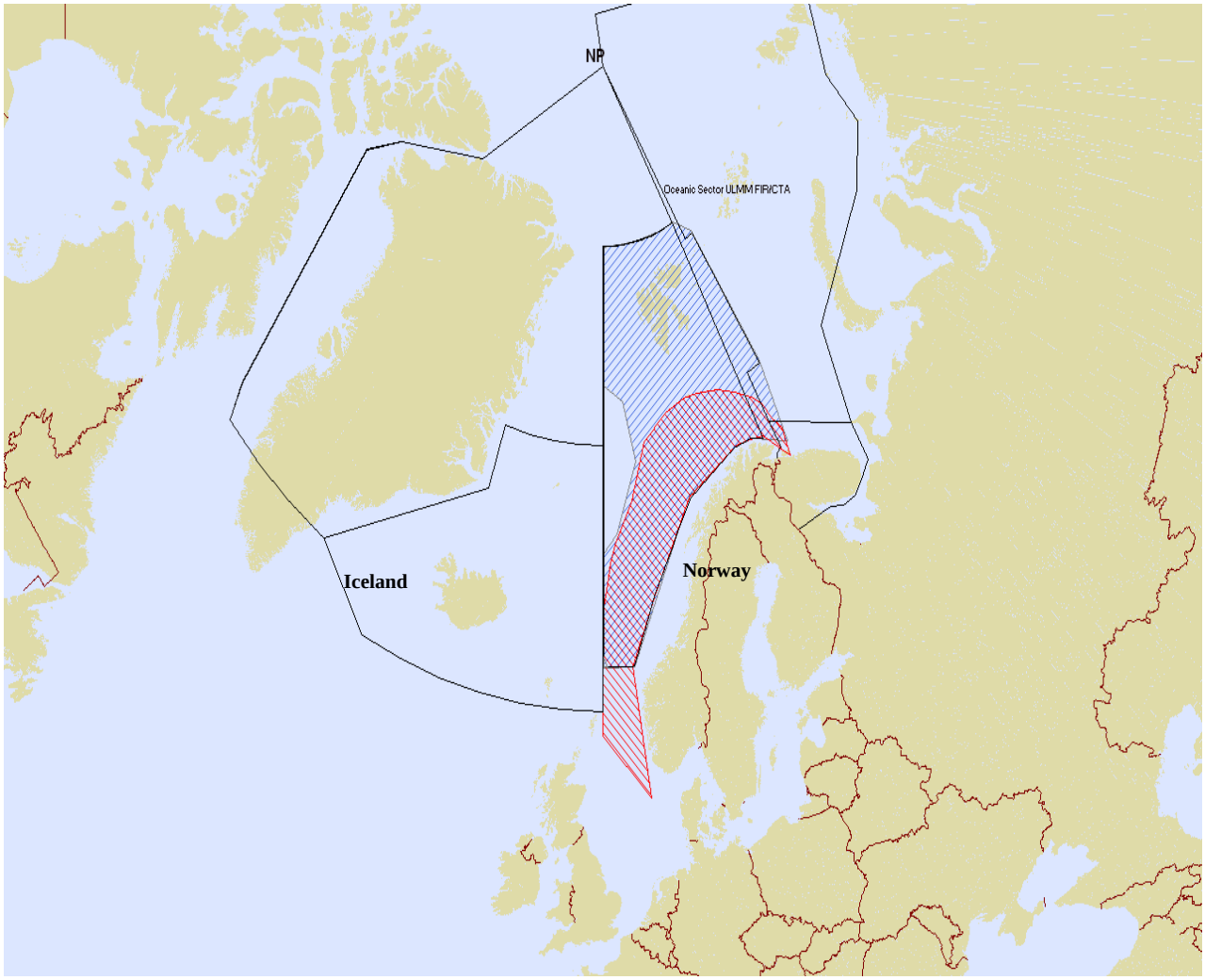
Note: The way in which ADS-B avionics are integrated into the cockpit may prevent changing of Flight ID once airborne. Some avionics packages may be wired to a weight-on-weels switch that detects when the aircraft is airborne so that the Flight ID field is not editable after take –off.

10.3.2 Most ADS-B transmitters (DO-260 compliant ADS-B transmitters) incorporate a single emergency bit for the squawk codes 7500, 7600 and 7700 and do therefore not indicate the nature of the emergency. Thus when activated, the pilot will need to eontact ATC to communicate the type of emergency. Such ADS-B transmitters are also unable to squawk ident while the general emergency mode is being transmitted.

10.4 ATS SURVEILLANCE SERVICES IN BODÖ OCEANIC

10.4.1 Bodø OACC provides a radar control service in the southern and south-eastern portion of Bodø OCA along the Norwegian coast as indicated in the figure below. Bodø Radar coverage overlap with Reykjavik radar, along 0 E/W, south of 6430N.

10.4.2 Radio communication is via HF and VHF.

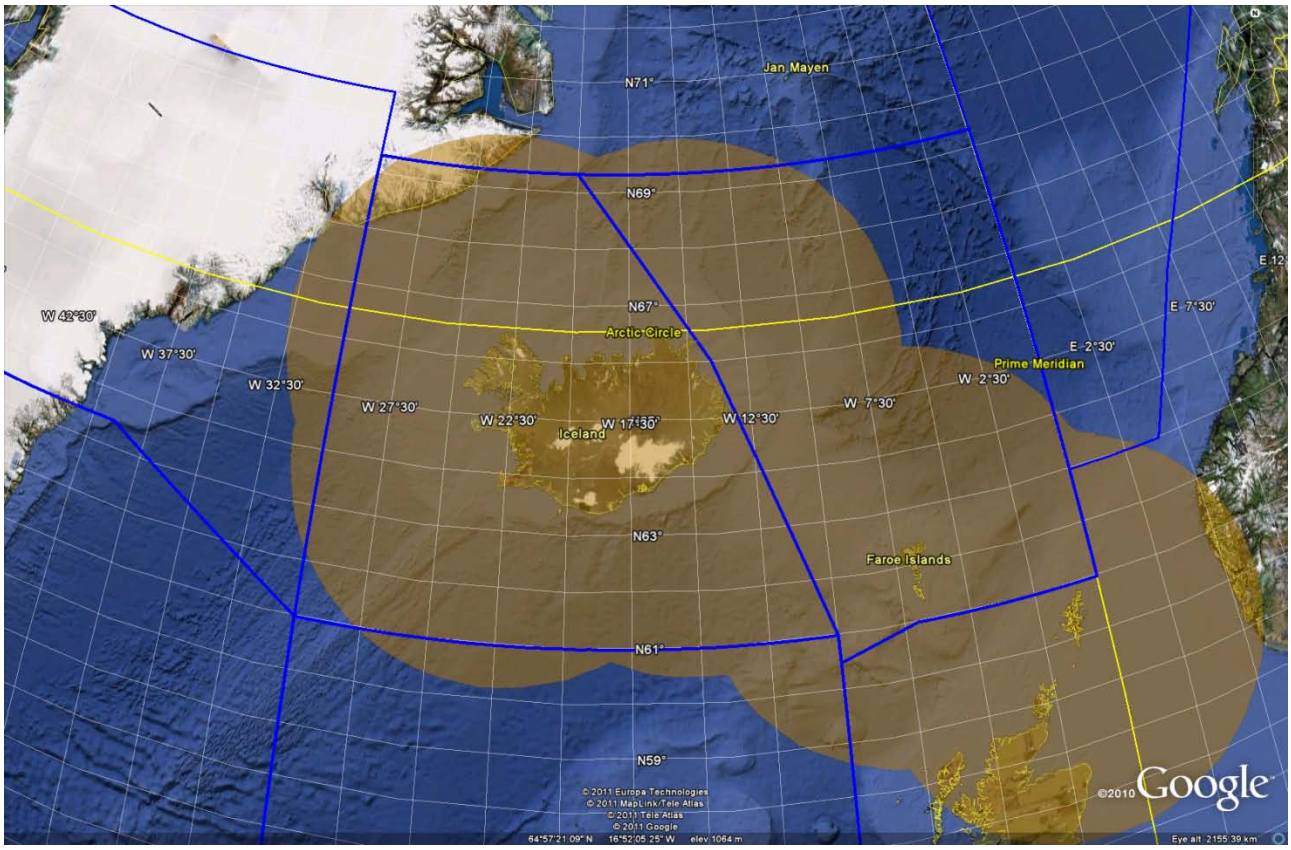


10.4.3 The map above shows radar coverage along the Norwegian coast, indicated in the red portion, and the VHF coverage in Bodø OCA, indicated in the blue portion.

10.4.4 Transponder codes issued by Bodø ACC must be retained throughout the Bodø OCA until advised by ATC.

10.5 ATS SURVEILLANCE SERVICES IN REYKJAVIK OACC

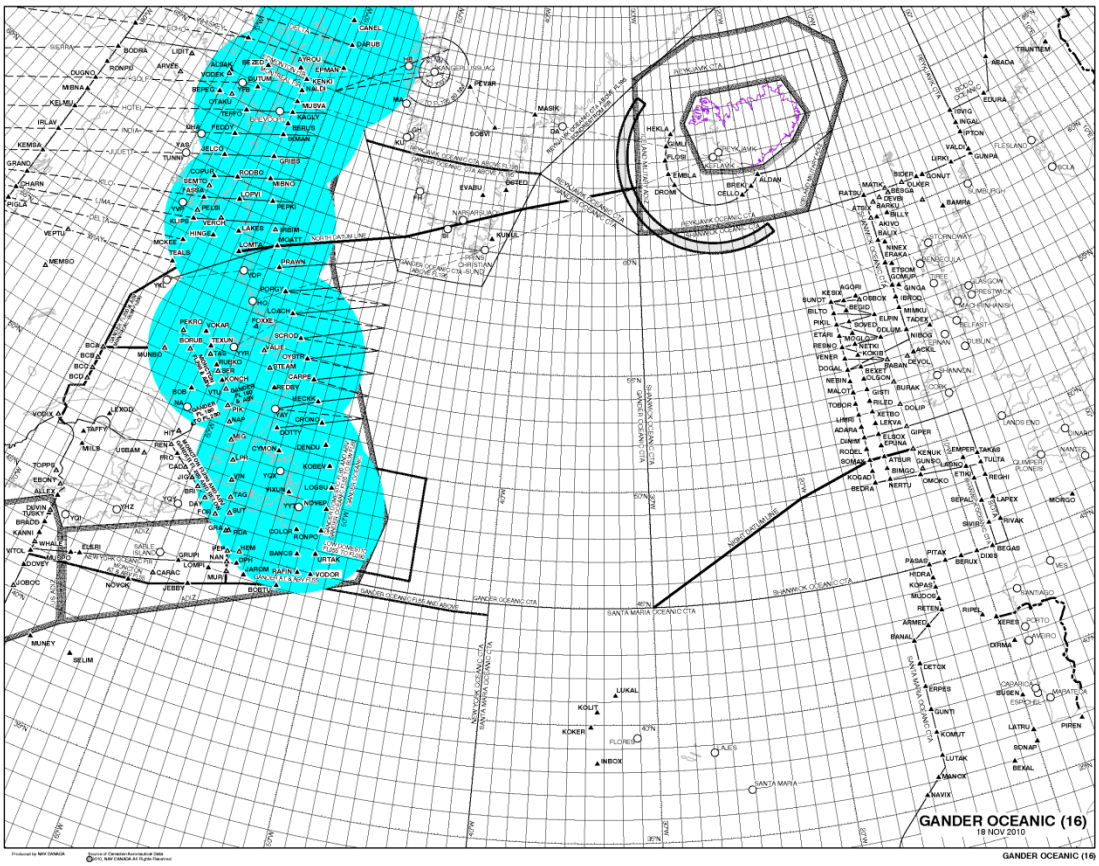
10.5.1 Reykjavik OACC provides a radar control service in the south-eastern part of its area as indicated in the figure below.



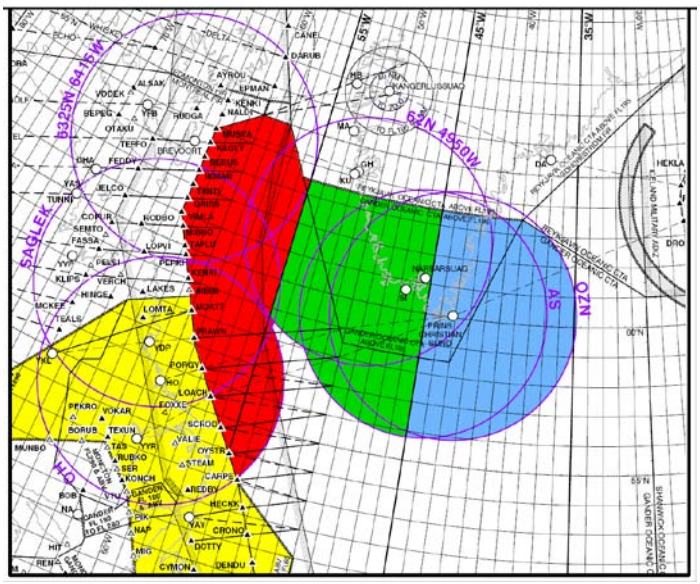
10.5.2 Transponder codes issued by Reykjavik ACC must be retained throughout the Reykjavik OCA until advised by ATC.

10.6 ATS SURVEILLANCE SERVICES IN GANDER OACC

10.6.1 Gander OACC provides a radar control service along the eastern boundary of Canada as indicated in the figure below:

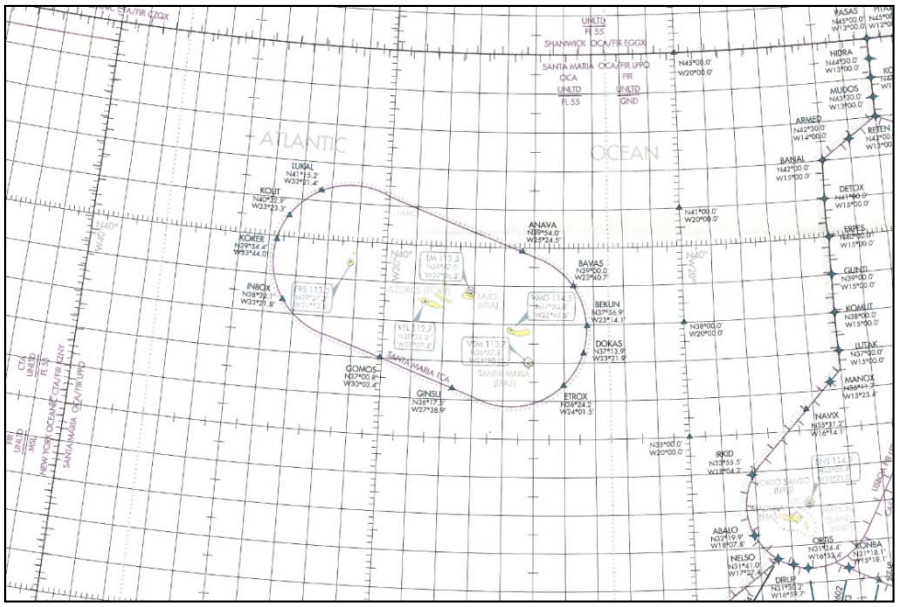


10.6.2 Gander provides ADS-B service in the northwestern portion of its area as indicated below in red. ADS-B service will be provided by Gander of southern Greenland as indictaed in green and blue.below:



10.7 ATS SURVEILLANCE SERVICES IN SANTA MARIA OACC

10.7.1 Santa Maria OACC provides ATS Surveillance service in the portion of its area surrounding Azores islands as indicated in the figure below: ***(Editorial Note – an updated chart is to be provided by Portugal, prior to this material being submitted to NAT SPG/47)***



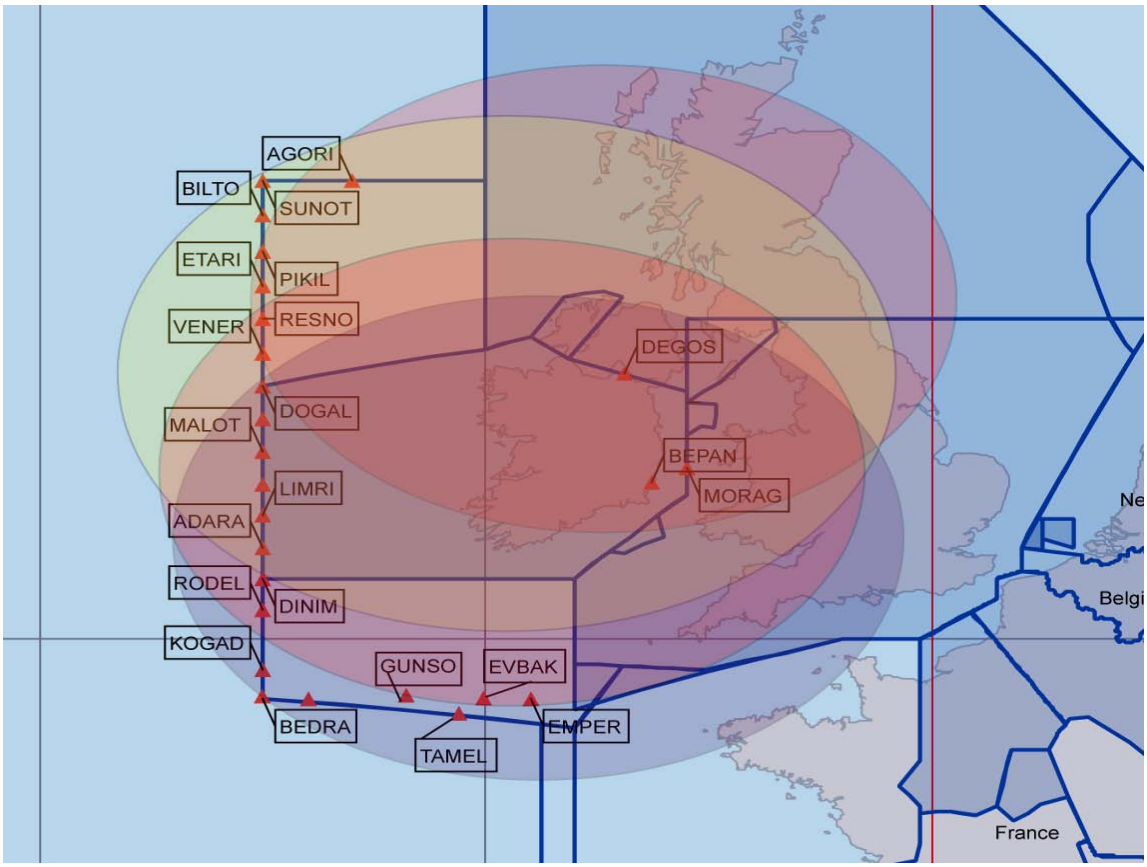
10.7.2 Transponder codes issued by Santa Maria OACC must be retained throughout Santa Maria OCA until advised by ATC.

10.8 ATS SURVEILLANCE SERVICES IN NEW YORK OACC

TBD

10.9 ATS SURVEILLANCE SERVICES IN SHANNON UIR, NOTA & SOTA

10.9.1 Shannon ACC provides a radar service with the Shannon (FIR)UIR, NOTA & SOTA along with airspace delegated by the UK and French authorities as indicated in the figure below:



10.9.2 Shannon ACC issue transponder codes to eastbound NAT flights in accordance with ORCAM.

Appendix M – Implementation Plan for an operational trial for the application of 50 NM lateral separation between MNPS approved aircraft in the Reykjavik CTA

(Paragraph 7.1.10 refers)

(provided separately for the word version)

List of Acronyms

ACC	Area Control Centre
ADS-B	Automatic Dependent Surveillance–Broadcast
ADS-C	Automatic Dependent Surveillance – Contract
AIC	Aeronautical Information Circular
AIDC	Air Traffic Services Interfacility Data Communications
AIP	Aeronautical Information Publication
AMS(R)S	Aeronautical Mobile Satellite (Route) Service
ANC	Air Navigation Commission
ANP	Air Navigation Plan
ANSP	Air Navigation Service Provider
APAC	Asia and Pacific
APANPIRG	Asia/Pacific Air Navigation Planning Group
ARTCC	Air Route Traffic Control Centre
ASAS	Airborne Separation Assistance System
ASM	Application of Separation Minima – North Atlantic Region (NAT ASM)
ATC	Air Traffic Control
ATM	Air Traffic Management
ATN	Aeronautical Telecommunications Network
ATS	Air Traffic Services
ATSA ITP	Air Traffic Situational Awareness In-Trail Procedure
CASCADE	Cooperative ATS through Surveillance and Communication Applications Deployed in European Civil Aviation Conference (ECAC)
COG	EANPG Programme Coordinating Group
CPDLC	Controller Pilot Data Link Communications
CSP	Communications Service Provider
CTA	Control Area
DLM	Data Link Mandate
DLS IR	(European Commission) Data Link Service Implementing Rule
Doc 4444	Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM)
Doc 7030	Regional Supplementary Procedures (SUPPs)
Doc 8168	*Procedures for Air Traffic Services – Aircraft Operations* (PANS OPS, Doc 8168)
Doc 9613	Performance-based Navigation (PBN) Manual
Doc 9750	Global Air Navigation Plan
Doc 9854	Global Air Traffic Management Operational Concept
Doc 9868	*Procedures for Air Traffic Services - Training* (PANS TRG, Doc 9868)
Doc 9882	Air Traffic Management System Requirements
Doc 9883	Manual on Global Performance of the Air Navigation System
EACCC	European Aviation Crisis Coordination Cell
EANPG	European Air Navigation Planning Group
EASA	European Aviation Safety Agency
ECAC	European Civil Aviation Conference
EUR	European
EUR/NAT VATF	European/North Atlantic Volcanic Ash Task Force
EUR/NAT	European and North Atlantic
EVITA	European Crisis Visualization Interactive Tool for ATFCM
FDPS	Flight Data Processing System
FIR	Flight Information Region
FOI	FANS 1/A over Iridium

FPL 2012	New format of the ICAO Flight Plan Form arising from Amendment 1 to Doc 4444, 15th Edition
GANIS	Global Air Navigation Industry Symposium
GNSS	Global Navigation Satellite System
GOLD	Global Operational Data Link Document
HF	High Frequency
IATA	International Air Transport Association
IAVWOPSG	International Airways Volcano Watch Operations Group
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
IRSVTF	ICAO Inter-Regional Satellite Communications (SATCOM) Voice Task Force
IVATF	International Volcanic Ash Task Force
KPA	Key Performance Area
KPI	Key Performance Indicator
LHD	Large Height Deviation
LoA	Letter of Agreement
LRCs	long range communication system
MEL	Minimum Equipment List
MNPS	Minimum Navigation Performance Specifications
NAT	North Atlantic
NAT CC ICD	NAT Common Coordination Interface Control Document
NAT CMA	North Atlantic Central Monitoring Agency
NAT CNSG	North Atlantic Communications, Navigation and Surveillance Group
NAT DLMA	North Atlantic Data Link Monitoring Agency
NAT DMO	North Atlantic Document Management Office
NAT EFG	North Atlantic Economic and Financial Group
NAT FAM	NAT Fee Analysis Model
NAT IMG	North Atlantic Implementation Management Group
NAT MWG	North Atlantic Mathematicians' Working Group
NAT OTS	North Atlantic Organized Track System
NAT SG	North Atlantic Scrutiny Group
NAT SOG	North Atlantic Safety Oversight Group
NAT SPG	North Atlantic Systems Planning Group
NERL	NATS Enroute Limited
NM	Nautical Mile
OCA	Oceanic Control Area
PANS	Procedures for Air Navigation Services
PANS-ATM	Procedures for Air Navigation Services – Air Traffic Management (Doc 4444)
PBN	Performance Based Navigation Concept
PfA	Proposal for Amendment
PIRG	Planning and Implementation Regional Group
RCP	Required Communications Performance
RLatSM	Reduced Lateral Separation of 25 Nautical Miles (NAT Region)
RLongSM	Reduced Longitudinal Separation of 5 minutes between ADS-C equipped aircraft
RNP	Required Navigation Performance
RSMC	Regional Specialized Meteorological Centre (RSMC)
RVSM	Reduced Vertical Separation Minimum
SARPs	Standards and Recommended Practices
SASP	Separation and Airspace Safety Panel

SATCOM	Satellite Communication
SB	SwiftBroadbaSPnd
SES	Single European Sky
SESAR	Single European Sky ATM Research Programme
SG	Study Group
SIGWX	Significant Weather
SLOP	Strategic Lateral Offset Procedures
SMS	safety management systems
SRR	Search and Rescue Region
SSP	Satellite Service Provider
SUPPs	Regional Supplementary Procedures (Doc 7030)
SVGM	SATCOM voice guidance material
TF	Task Force
TLS	Target Level of Safety
ToR	Terms of Reference
VAAC	Volcanic Ash Advisory Centre
VHF	Very High Frequency
VOLCEX/SG	Volcanic Ash Exercises Steering Group
WAFC	World Area Forecast Centre
WG/SRP	Working Group for Strategic Review and Planning (WG/SRP) of the ANC

- END -