INTERNATIONAL CIVIL AVIATION ORGANIZATION

SUMMARY OF DISCUSSIONS AND CONCLUSIONS OF

THE FORTY-EIGHTH MEETING OF

THE NORTH ATLANTIC SYSTEMS PLANNING GROUP

Paris, 12 to 15 June 2012

PREPARED BY THE EUROPEAN AND NORTH ATLANTIC OFFICE OF ICAO JUNE 2012

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0. INTRODUCTION

PLACE AND DURATION

0.1 The Forty-Eighth Meeting of the North Atlantic Systems Planning Group (NAT SPG) was held in the European and North Atlantic (EUR/NAT) Office of ICAO from 12 to 15 June 2012.

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, Regional Officers from the same Office and François Robert, ATM Officer from ICAO Headquarters also supported the meeting. Additional assistance was provided by Mrs Nikki Goldschmid and Ms 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), the International Federation of Air Line Pilots Associations (IFALPA) and Inmarsat participated in the meeting. The European Commission attended part time. The International Federation of Air Traffic Control Associations (IFATCA) did not attend. 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. REVIEW OF SIGNIFICANT INTERNATIONAL AVIATION DEVELOPMENTS

1.1 ICAO UPDATE

1.1.1 The NAT SPG was advised about recent significant international aviation developments and took note of the adopted amendments to the ICAO Annexes and Documents (Annexes 1, 2, 6, 7, 10, 11, *Procedures for Air Navigation Services - Aircraft Operations* (PANS OPS, Doc 8168) Volume II and *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM, Doc 4444)) and the proposed amendments to ICAO Annexes and PANS Documents (Annexes 3, 9, 10, 13, 16 and the PANS-ATM). The NAT SPG noted that several State Letters had been issued on the approvals or proposals to amend the EUR and NAT *Regional Supplementary Procedures* (SUPPs, Doc 7030). A number of ICAO documents, manuals and circulars on a wide range of subjects had been also published since the last meeting. The NAT SPG also noted that in accordance with the direction provided by the NAT Implementation Management Group (NAT IMG), NAT Region Updates bulletin 2012-001 was issued on 13 February 2012 and made available on the ICAO EUR/NAT website (www.paris.icao.int).

1.1.2 The NAT SPG was informed that the EUR/NAT Office of ICAO received a letter from the Irish Aviation Authority (IAA) and the United Kingdom Civil Aviation Authority (CAA) informing that plans had begun to jointly implement a single Transition Altitude at 18 000 feet throughout the United Kingdom and Irish airspace. The intention was to progress a joint project to deliver the revised arrangements during the winter of 2012-13 with a current target date of November 2013, subject to consultation and coordination internally and with neighbouring States (during the winter of 2011-12).

1.1.3 The NAT SPG also noted that the 5th Meeting of the Global Operational Data Link Document Ad Hoc Working Group (GOLD/5) would be held in Miami Florida.

1.2 REVIEW OF THE OUTLINE AND OBJECTIVE FOR REVISED GANP

1.2.1 The Secretariat presented the NAT SPG with information concerning the revised *Air Navigation Plan* (GANP, Doc 9750) which highlighted the differences between the current GANP and the upcoming revised version. The new GANP would be web-based, and its final content was expected to be endorsed at the 12th Air Navigation Conference (AN-Conf/12) in November 2012.

1.3 TWELFTH AIR NAVIGATION CONFERENCE

1.3.1 The Secretariat presented the NAT SPG with information concerning the upcoming Twelfth Air Navigation Conference (AN-Conf/12) scheduled for November 2012, and its associated Aviation System Block Upgrades (ASBU) concept. A brief description of the performance improvement areas, the various blocks and the modules was presented to the NAT SPG.

EUR/NAT Regional Preparatory Activities for AN-Conf/12

1.3.2 The NAT SPG noted the outcome of the ICAO EUR/NAT high-level Symposium which was held from 20 to 21 March 2012 in Moscow, the Russian Federation. The main objective of the Symposium was to support States in the ICAO EUR and NAT Regions to prepare for the AN-Conf/12 which would be held from 19 to 30 November 2012 in Montréal, Canada.

1.3.3 The Symposium provided a crucial networking and knowledge-sharing opportunity and included presentations from ICAO, States, international organizations and leading industry stakeholders. The Symposium also identified several potential AN-Conf/12working papers that would be submitted by States.

1.3.4 The NAT SPG was informed that ICAO working papers for AN-Conf/12 would be posted before 30 June 2012. States and international organisations could submit their AN-Conf/12 contributions

until 30 October 2012. However, translation would be provided only for material submitted as of 30 September 2012.

1.3.5 It was also noted that an ICAO Workshop entitled "Preparations for 12th Air Navigation Conference (AN Conf/12) − Aviation System Block Upgrades (ASBU) methodology" would take place in Paris from 4 to 6 July 2012. Additional information on the Symposium and the Workshop was made available at:

http://www.paris.icao.int/documents_open_meetings/files.php?subcategory_id=188

1.4 REGIONAL PERFORMANCE FRAMEWORK-ALIGNMENT OF AREAS OF APPLICABILITY OF AIR NAVIGATION PLANS (ANP) AND REGIONAL SUPPLEMENTARY PROCEDURES (SUPPS)

1.4.1 The NAT SPG reviewed a working paper that had been developed by ICAO Headquarters in coordination with all ICAO Regional Offices for presentation to the AN-Conf/12. It was highlighted that the draft version of the paper had been presented to NAT IMG/40 in order to receive an early reaction from any of the States in the ICAO NAT Region that would be directly impacted by the changes proposed. Since NAT IMG/40, the paper had been finalized and published as WP/24 to the Conference.

1.4.2 The NAT SPG noted that the expected significant benefits of the proposed alignment of the areas of applicability of Regional Air Navigation Plans (ANP) and SUPPs would be:

a) availability of simplified planning and editing tools for Planning and Implementation Regional Groups (PIRG) and the ICAO Secretariat to ensure centralization and currency of data through the electronic air navigation plans (eANP); and

b) only one PIRG to develop and up-keep both the ANP and the SUPPs for each region which provides an immediate and collaborative approach to regional performance framework management in accordance with the aviation system block upgrade (ASBU) methodology.

1.4.3 With specific reference to the proposals relating to the ICAO NAT Region, the NAT SPG noted that the northern part of Flight Information Region (FIR) New York Oceanic was currently covered in the NAT SUPPs whilst the southern part of FIR New York Oceanic was in the Caribbean (CAR) SUPPs. It was proposed that the entire FIR New York Oceanic be covered in the NAT SUPPs area of applicability. It was however recognized that FIR New York Oceanic accommodated two main traffic flows with different operational requirements, namely, a North-South traffic flow and an East-West traffic flow. Discussions have been initiated between the Caribbean/South American Regional Planning Group (GREPECAS) and NAT SPG, assisted by the North American and Caribbean (NACC) and EUR/NAT Offices of ICAO, on the best structure of the airspace in order to accommodate, to the extent possible, the traffic flows in homogeneous airspaces.

1.4.4 With respect to FIR Bodø Oceanic, it was noted that it was currently covered in both the NAT and EUR ANPs. The proposal was to maintain the FIR Bodø Oceanic only in the NAT ANP and remove it from the EUR ANP area of applicability.

1.4.5 In the ensuing discussion, the United States and Norway indicated that there were some concerns with these specific proposals which would be raised at the AN-Conf/12.

1.4.6 The United Kingdom observed that some regulatory difficulties could be caused if same airspace were to be included in two different ANPs, particularly where information is handled electronically in a data base which would not take such situations into account. It was highlighted that such considerations could be missed when data bases would be used to retrieve, track or update information about such airspace.

1.5 REVIEW BY THE AIR NAVIGATION COMMISSION OF THE NAT SPG/47 REPORT

1.5.1 The Secretariat presented the NAT SPG the actions taken by the Air Navigation Commission (ANC) on the NAT SPG/47 Report. The NAT SPG recalled that following each 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/47 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 could 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).

1.5.2 The NAT SPG agreed to take account of the ANC comments in addressing and further developing its work programme.

1.6 STATUS OF NAT SPG/47 CONCLUSIONS

1.6.1 The ICAO Secretariat presented the NAT SPG with information on the status of the NAT SPG/47 agreed Conclusions. The NAT SPG noted all but one Conclusion had been closed. The exception was NAT SPG Conclusion 47/07 – Development of a EUR/NAT contingency plan for nuclear emergency which status was still on-going, pending actions to be taken at the global level.

1.7 AIRE AND ENGAGE

1.7.1 The NAT SPG was informed by the representative from the Single European Sky Air Traffic Management (ATM) Research Programme (SESAR) Joint Undertaking (SJU) on the activities taking place in an effort to reduce the negative environmental impact of aviation in the European and North Atlantic regions. It was noted that the AIRE initiative (Atlantic Interoperability Initiative to Reduce Emissions) managed by the SJU had led to 24 successful projects in Europe since 2009 with over 10 000 flight trials performed. These projects demonstrated savings ranging from 60 to 2 000 kilograms (kg) of carbon dioxide (CO_2) per flight. These positive results have led to more than 80% transition rate from trials to routine, daily ATM procedures and also provided a better comprehension of systems and their limitations. It was noted that for the Oceanic projects conducted, savings ranging from 90 to 1 050 kg of CO_2 could be achieved without further significant investments by Air Navigation Services Providers (ANSP).

1.7.2 Amongst the AIRE projects conducted in 2010/2011, the Canadian ANSP, NAV CANADA, led the ENGAGE (Europe-North America Go ADS-B for a Greener Environment) project with the United Kingdom ANSP, NATS, in the Gander and Shanwick Area Control Centres (ACC). The NAT SPG noted a comprehensive presentation on the background, procedures, results and future steps of the deployment of the ENGAGE Corridor. Flight trials were conducted to assess the impact of variable Mach and altitude in the North Atlantic and within the ENGAGE corridor. Accordingly, aircraft within surveillance coverage of Automatic Dependent Surveillance – Broadcast (ADS-B) would be able to climb earlier, thus releasing flight levels which could be assigned to aircraft not yet in surveillance coverage. This would also provide opportunities for aircraft not yet in surveillance coverage to vary their Mach so as to maintain more fuel efficient speeds. It was noted that the largest fuel efficiencies were gained from variable Mach, rather than changing flight levels. It was also noted that, sometimes, descents would result in a more fuel efficient flight profile.

1.7.3 The NAT SPG was informed that the ENGAGE trial was on-going with intentions to extend the airspace involved, inviting more operators to participate and allowing more flights to participate. It had been noted that the Reduced Longitudinal Separation of 5 minutes between Automatic Dependent

Surveillance – Contract (ADS-C) equipped aircraft (RLongSM) application created more opportunities to apply variable flight level/variable Mach.

1.7.4 The representative from Portugal congratulated the SJU and Canada on the presentations and achievements made in this respect. He emphasized that Portugal, being a partner on some of the SESAR JU projects, would continue to support such initiatives. The IATA representative expressed his appreciation for the AIRE and ENGAGE projects and noted with satisfaction that other NAT ANSPs were looking to build upon these successes. IATA made specific note of the operator airline operations centers (AOC) flight planning processes and that the most opportune time to affect fuel efficiency would be during pre-flight planning and at the point of fuel uplift stages and it is at these operational points where the most economic benefits would be realized. Finally, with future NAT trials and programs, solutions should be sought whereby operators would be able to incorporate solutions into their automated flight planning systems. The IFALPA representative emphasized that significant savings and benefits could be gained by providing flight crews information on where they would receive fuel-efficient flight profiles at the flight planning stage as this would allow them to make the appropriate decisions, before departure, regarding the amount of fuel to carry.

1.7.5 The NAT SPG noted that the ENGAGE project had been initially limited between two ANSPs and was not coordinated through the NAT SPG framework. It was explained this was due to uncertainties and the potential complications a large number of partners could create. The advantage of Canada and the United Kingdom sharing a common flight data processing platform had made coordination aspects easier to manage. The representative of Canada invited other ANSPs who wished to participate in the ENGAGE trial to make their intentions known to the participating ANSPs. The NAT SPG also noted that the development of supporting procedures had been added to the NAT IMG work programme.

2. PROPOSED AIR NAVIGATION SYSTEMS PERFORMANCE MONITORING AND MEASUREMENT

2.1 REGIONAL PERFORMANCE FRAMEWORK-PLANNING METHODOLOGIES AND TOOLS

2.1.1 The Secretariat presented the NAT SPG with information concerning the strategic planning principles and next steps needed to align the regional plans with the global plan and the ASBU methodology. It also provided an introduction to a new web-based format for eANPs, which could be updated in real time, edited online, viewed by all relevant partners, which would result in far more up-to-date and accurate data.

3. NAT PLANNING AND IMPLEMENTATION MANAGEMENT ISSUES

3.1 IMPLEMENTATION PROGRAMME UPDATES

NAT RLatSM Planning

3.1.1 The NAT SPG reviewed detailed information concerning the continuing activities of the NAT IMG to progress planning for the implementation of Reduced Lateral Separation of 25 Nautical Miles (NM) (RLatSM) in the ICAO NAT Region. As a result, changes had been made to the *Task List Supporting the Trial Implementation of RLatSM in the ICAO NAT Region* and agreements had been reached on some other related matters. The NAT SPG noted the purpose of the Task List was to support a trial implementation of RLatSM. It was further noted that the separation reductions would be considered as trial applications until the relevant new standards would be incorporated into global documentation to support the new separation minimum.

3.1.2 The NAT SPG agreed that the updated *Task List Supporting the Trial Implementation of RLatSM in the ICAO NAT Region*, as provided in **Appendix C** should be made available on the ICAO

EUR/NAT website, so as to provide updated information to stakeholders concerning the RLatSM implementation in the ICAO NAT Region. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/1 – Updated NAT RLatSM Task List

That the ICAO Regional Director, Europe and North Atlantic, publish the updated *Task List Supporting the Trial Implementation of RLatSM in the ICAO NAT Region*, as provided at Appendix C to this report, on the ICAO EUR/NAT website no later than 2 July 2012.

3.1.3 The NAT SPG was advised that, as part of addressing Task 2 on the Task List, the NAT IMG had reviewed detailed information concerning the work which had been initiated to NAT SPG Conclusion 45/22. This conclusion related to a requirement to address errors associated with the input and display of ½ degree waypoints as part of the implementation planning for RLatSM. This information had been forwarded to Canada and would form part of the material used in the safety assessments supporting the RLatSM implementation, including those required to address NAT SPG Conclusion 45/22.

3.1.4 In relation to the foregoing, the NAT SPG was advised that IFALPA had provided the following clarification concerning its stated position that *Phase 1* should not involve re-routing aircraft onto routes that contained ½ degree waypoints, which had been notified to the NAT IMG (*NAT IMG/38 Summary of Discussions*, paragraph 5.8 and *NAT IMG/39 Summary of Discussions*, paragraph 4.11 also refer). IFALPA confirmed that it did not support such re-routes being initiated by Air Traffic Control (ATC) to an en-route aircraft, as this would introduce risks associated with manual input of ½ degree waypoints. IFALPA further expressed that these risks would increase the closer the aircraft was to the oceanic entry point as time constraints would introduce additional stress on the flight crew. IFALPA re-stated its contention that providing for such re-route clearances via Controller Pilot Data Link Communications (CPDLC) would mitigate the risks. IFALPA additionally affirmed that concerns related to route discontinuities should not prevent ANSPs from implementing this capability, as route discontinuities were sometimes introduced in the current operational environment from re-route clearances issued via voice. Finally, IFALPA advised of its recommendation that flight crews should not request re-clearance onto a route which contained ½ degree waypoints if such a route would need to be manually input into the Flight Management System (FMS).

3.1.5 The NAT SPG was advised the foregoing would also be taken into consideration during the conduct of the safety assessments supporting RLatSM. Canada also confirmed the safety assessment would encompass all operational aspects potentially affected by the RLatSM implementation, including the delivery of oceanic clearances and re-routes.

3.1.6 The NAT SPG was advised of the NAT IMG's agreement that the following approach for implementing *Phase 2* and *Phase 3* of RLatSM offered the best combination of benefits and practicality and were most likely to command the support of operators:

a) the current number of NAT Organized Track System (NAT OTS) tracks could be maintained, but would be more closely spaced; and

b) use of ½ degree separations for random flights could increase capacity in congested flows, e.g. Europe to the Caribbean and facilitate improved clearances in "steep track" situations.

3.1.7 It was noted that a) did not constrain the number of NAT OTS tracks and had the flexibility required to increase the number of tracks if and when future demand required it. The NAT SPG noted the possibility that *Phase 3* could be implemented at the same time as *Phase 2* (in consideration that the *Phase 3* implementation could provide a shorter term "quick win" through the introduction of RLatSM for random flights in carefully targeted areas as described in b) above). The NAT SPG was advised the NAT IMG would consider such an approach. As was required for the implementation of *Phase 1* and *Phase 2*, such an approach would need to be supported by positive safety assessments and business case analyses.

3.1.8 The NAT SPG recalled its endorsement of the *RLatSM Concept of Operations* (NAT SPG Conclusion 47/2 refers) and agreed it should be updated to take account of the foregoing; it was also agreed that an editorial correction to the Concept should be made to remove an inadvertent reference to "exclusionary airspace". The NAT SPG agreed to include a reference to the *NAT Performance Based Communication and Surveillance Implementation Plan* and to remove a note which was no longer necessary in view of the endorsement of the *MNPS to PBN Transition Plan for the ICAO NAT Region* (paragraph 3.1.15 refers). Finally, the NAT SPG agreed the updated *RLatSM Concept of Operations* provided at **Appendix D** should be published on the ICAO EUR/NAT website in order to provide updated information to stakeholders.

NAT SPG Conclusion 48/2 – Updated NAT RLatSM Concept of Operations

That:

a) the NAT Implemenation Management Group use the updated *RLatSM Concept of Operations* provided in Appendix D to this report to further develop an implementation plan for reducing lateral separation to 25 nautical miles in the ICAO NAT Region;

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

   i) coordinate with ICAO Headquarters in order to initiate the development of global provisions; and

   ii) publish the updated *RLatSM Concept of Operations* on the ICAO EUR/NAT website no later than 2 July 2012; and

c) this conclusion supersedes NAT SPG Conclusion 47/2.

3.1.9 The NAT SPG reviewed proposed updates to the *Draft Implementation Plan for the Trial Application of RLatSM in the NAT Region*. The updates would align the Plan with the *NAT Performance Based Communication and Surveillance Implementation Plan*, take account of developments in data link implementation, reflect the current status of planning for the trial RLatSM implementation, including the update of the *RLatSM Concept of Operations* (paragraph 3.1.8 above refers) and correctly reflect the airspace structure and service provision in the airspace concerned. The NAT SPG supported the foregoing updates and also agreed to remove a note which was no longer necessary in view of the endorsement of the *MNPS to PBN Transition Plan for the ICAO NAT Region* (paragraph 3.1.15 refers) and to correctly refer to "risk" rather than "TLS" in paragraph 7.1 of the Plan. Finally, it was agreed that the updated Plan, as provided in **Appendix E** should be provided on the ICAO EUR/NAT website, so as to provide updated information to stakeholders concerning the RLatSM implementation in the ICAO NAT Region.

NAT SPG Conclusion 48/3 – Updated Draft NAT RLatSM Plan

That the ICAO Regional Director, Europe and North Atlantic, publish the updated *Draft Implementation Plan for the Trial Application of RLatSM in the NAT Region* (Draft NAT RLatSM Plan) as provided in Appendix E to this report on the ICAO EUR/NAT website no later than 2 July 2012.

Updated NAT RLongSM Implementation Plan

3.1.10 The NAT SPG reviewed proposed updates to the *Implementation Plan for the Trial Application of Reduced Longitudinal Separation of 5 minutes between ADS-C equipped aircraft (RLongSM) in the NAT Region* to align it with the *NAT Performance Based Communication and Surveillance*

Implementation Plan [1] and to take account of developments in data link implementation in the ICAO NAT Region. It was also proposed that the success criteria for the RLongSM validation trial should be updated to include reference to the *Global Operational Data Link Document* (GOLD) in connection with assessing the trial results in comparison to the Required Communication Performance (RCP) 240 and Required Surveillance Performance (RSP) specifications.

3.1.11 The NAT SPG supported the foregoing updates and also adjustments to correctly reflect the airspace structure and service provision in the airspace concerned and to ensure agreement with the appropriate part of the *Draft Implementation Plan for the Trial Application of RLatSM in the NAT Region*. Finally, it was agreed that the updated Plan accompanying success criteria, as provided in **Appendix F** should be provided on the ICAO EUR/NAT website, so as to provide updated information to stakeholders concerning the RLongSM implementation in the ICAO NAT Region. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/4 – Updated NAT RLongSM Plan

That the ICAO Regional Director, Europe and North Atlantic, publish the updated *Implementation Plan for the Trial Application of RLongSM in the NAT Region* (NAT RLongSM Plan) and accompanying success criteria for the Reduced Longitudinal Separation of 5 minutes between Automatic Dependent Surveillance – Contract (ADS-C) equipped aircraft (RLongSM) validation trial as provided in Appendix F of this report on the ICAO EUR/NAT website no later than 2 July 2012.

3.1.12 In relation to the foregoing, the NAT SPG was advised that the validation trial results indicated that the success criteria were being met and that significant fuel savings were being realized by aircraft as a result of the application of RLongSM in the Gander and Shanwick Oceanic Control Areas (OCA).

NAT MNPS to PBN Implementation Planning

3.1.13 The NAT SPG recalled its previous discussions concerning the transition from Minimum Navigation Performance Specifications (MNPS) to Performance Based Navigation (PBN) in 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 and *Summary of Discussions and Conclusions of the 47th Meeting of the NAT SPG*, paragraphs 3.1.1 and 3.1.2 refer). The NAT SPG was advised that the NAT IMG had reviewed and endorsed an *MNPS to PBN Transition Plan for the ICAO NAT Region* and received updates concerning the activities required to complete the transition.

3.1.14 The NAT SPG noted the Plan included historical material documenting the direction provided by it and the NAT IMG concerning the transition from MNPS to PBN in the ICAO NAT Region. The Plan also included a NAT MNPS to PBN Transition Task List. In relation to the Task List, the NAT IMG would further develop the list and indicate responsibility for the completion of tasks and indicate, as specifically as possible, completion dates. The NAT SPG was provided with a detailed update concerning some activities which were planned, or which had already been initiated, to address some of the transition tasks.

3.1.15 The NAT SPG agreed the *MNPS to PBN Transition Plan for the ICAO NAT Region*, as provided at **Appendix G** should be made available on the ICAO EUR/NAT website so as to provide information to stakeholders concerning the planned transition from MNPS to PBN in the ICAO NAT Region. Therefore the NAT SPG agreed to the following:

[1] This plan was previously titled the *NAT RCP and ADS-C Performance Based Operations Implementation Plan* (paragraph 3.1.18 refers)

NAT SPG Conclusion 48/5 – MNPS to PBN Transition Plan

That the:

a) ICAO Regional Director, Europe and North Atlantic, publish the *MNPS to PBN Transition Plan for the ICAO NAT Region* as provided in Appendix G to this report on the ICAO EUR/NAT website no later than 2 July 2012; and

b) NAT Implementation Management Group continue to update the Plan.

3.1.16 The NAT SPG reviewed a draft Proposal for Amendment (PfA) to the NAT SUPPs, required to support the first Milestone in the *MNPS to PBN Transition Plan for the ICAO NAT Region*. Milestone 1 was defined as "An aircraft that is approved (certified) for RNAV10 (RNP10) and/or RNP4 can be issued an MNPS operational authorization without further examination of the navigation specification component. The indicator X will still be required in item 10 of the ICAO FPL".

3.1.17 The NAT SPG agreed the proposal, provided at **Appendix H** was adequate to support the initial step in the Transition Plan, whereby Required Navigation Performance (RNP) 10 and RNP 4 approved aircraft would be deemed to meet the NAT MNPS navigational performance requirement (NAT SUPPs 4.1.1.5.1.2 a) refers). It was noted that, following the amendment, operators would still need to meet the other requirements to obtain an MNPS approval and to indicate their MNPS approval status in the flight plan. The NAT SPG agreed that 10 January, the first Aeronautical Information Regulation And Control (AIRAC) date in 2013, should be the applicability date for the amendment and noted that Iceland would formally submit the proposal for processing. In regard to part of the proposal, which made reference to the former NAT Doc 001 (which had been titled *Guidance and Information Material Concerning Air Navigation in the North Atlantic Region* [2]), it was noted the proposal should refer to the newly agreed title for NAT Doc 007: North Atlantic Operations and Airspace Manual (paragraph 6.1.2 refers). Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/6 – NAT SUPPs PfA for Milestone 1 of MNPS to PBN Transition

That Iceland submit the Proposal for Amendment (PfA) of the *North Atlantic Regional Supplementary Procedures* (NAT SUPPs, Doc 7030), provided in Appendix H to this report, to the European and North Atlantic Office of ICAO for processing:

The NAT Performance Based Communication and Surveillance Implementation Plan

3.1.18 The NAT SPG was provided with the updated *NAT Performance Based Communication and Surveillance Implementation Plan* as approved by NAT IMG/40[3]. Additional editorial comments provided during the meeting were agreed and included in the document (**Appendix I** refers).

3.1.19 The NAT SPG noted NAT IMG Decision 40/17, which tasked the NAT Communications, Navigation and Surveillance Group (NAT CNSG) to conduct a compliance assessment in order to determine whether Required Communication Performance (RCP) 240 was being met in each NAT OCA and if not, to identify what aspects of the system's performance were not compliant with the requirements and what possible effect those shortcomings might have on the implementation of reduced separation minima.

[2] NAT SPG/47 agreed that the *NAT SPG Handbook* should be designated as NAT Doc 001 (*Summary of Discussions and Conclusions of the 47th Meeting of the NAT SPG*, paragraph 6.4.8 refers).
[3] Among the updates endorsed by NAT IMG was a change to the title; the plan was formerly called the *NAT RCP and ADS-C Performance Based Operations Implementation Plan*.

Establishment of the RCP/RSP SUPPS PfA development task force

3.1.20 The NAT SPG noted NAT IMG Decision 40/18 approving the establishment of the RCP/Required Surveillance Performance (RSP) SUPPS PfA development Task Force. An amendment to the Terms of Reference of the task force was proposed to the NAT SPG for review. The NAT SPG felt that the proposal was significantly expanding the originally intended scope of the task force mandate and therefore invited the United States to submit this proposal to the attention of the next meeting of NAT IMG for further discussions.

Applicability of RCP and RSP in the current operations, during the RLatSM and RlongSM trials and operations

3.1.21 The NAT SPG was provided with a draft Conclusion that was developed in response to the NAT IMG/39 agreement that the status of paragraph 4.2.7 of the NAT SPG/47 Summary of Discussions should be elevated to a conclusion by NAT SPG/48.

3.1.22 It was recalled that this action was agreed in response to a comment received during the NAT data link proposal for amendment consultation process, stating that the approval of the amendment shouldn't contradict the statement of paragraph 4.2.7 of NAT SPG/47 Summary of Discussions. Therefore, the NAT SPG agreed to the following:

NAT SPG Conclusion 48/7 - Applicability of communication and surveillance performance specifications

That:

a) the current separation standards/minima are strategic in nature and not predicated on Required Communication Performance (RCP) and Required Surveillance Performance (RSP);

b) communication and surveillance performance specifications will be prescribed when required for reduced separation minima (e.g., Reduced Longitudinal Separation of 5 minutes between Automatic Dependent Surveillance – Contract (ADS-C) equipped aircraft (RLongSM) and Reduced Lateral Separation of 25 Nautical Miles (NM) (RLatSM)) that are predicated on communications and surveillance performance;

c) although current separation minima are not predicated on RCP or RSP, NAT data link operations will use RCP and RSP for gauging communications and surveillance performance as follows:

   i) Controller Pilot Data Link Communications (CPDLC) performance will be measured against RCP 240, as defined in the *Global Operational Data Link Document* (GOLD);

   ii) ADS-C performance will be measured against RSP 180, as defined in the GOLD.

d) the performance specifications envisaged for the operational RlongSM and RLatSM implementations, RCP 240 and RSP 180 are the candidate specifications to be prescribed, subject to validation by the RLongSM and RLatSM trials; and

e) further applications of RCP/RSP to communication and surveillance capability may be considered by NAT SPG in situations where it has been found to be beneficial. At such time, the *NAT Performance Based Communication and Surveillance Implementation Plan* will be amended.

NAT Data Link Mandate (DLM) Implementation Plans

3.1.23 The NAT SPG was advised the NAT IMG was developing NAT Data Link Mandate (DLM) Implementation Plans to identify and track tasks required for the successful implementation of the NAT Region Data Link Mandate (NAT SPG Conclusions 46/2 and 47/1 refer). The Plans were intended to clearly identify all related tasks, timelines, deliverables and responsibilities. The Plans would be supplemented by another document which would identify and track the interdependencies between the various NAT SPG initiatives, including RLatSM, RLongSM, NAT DLM implementation, performance-based communication, PBN Transition and any others as appropriate. It was expected that these documents would reach sufficient maturity to be presented to NAT SPG/49.

SATVOICE Guidance Material

3.1.24 The NAT SPG was provided with the report of the ICAO Inter-Regional Satellite Communications Voice (SATVOICE) Task Force (IRSVTF) on the development of a globally harmonized *SATVOICE Guidance Material* (SVGM).

3.1.25 It was recalled that the IRSVTF was established by NAT SPG Conclusion 46/5 and Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) Conclusion 21/27 with the objective to assist States, airspace users and service providers in the implementation and use of satellite voice communications in Air Traffic Services (ATS).

3.1.26 The NAT SPG noted that, in line with the IRSVTF Terms of Reference (ToR), the following principles were observed in the development of the SVGM:

a) the guidance material would remain neutral on the scenarios identified in the ToR;

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 Satellite Communications (SATCOM) phones would merely indicate that their use is not advisable for ATS communications, as its use is 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 Minimum Equipment List (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 High Frequency (HF) capability) will require study beyond the target date for completing the first edition of the guidance material. This scenario would therefore not be analysed by the Task Force

3.1.27 With regard to the future maintenance of the SVGM, it was noted that, similar to the GOLD, the ICAO EUR/NAT and APAC Regional Offices in coordination with the ICAO Headquarters would maintain the document.

3.1.28 The NAT SPG was informed that the ICAO Operational Data Link Panel (OPLINKP) work programme included amendments to ICAO Standards and Recommended Practices (SARPs)/PANS and guidance material related to use of SATVOICE for ATS communications. The outcome of the IRSVTF work

would be provided to the OPLINKP Secretariat to review and decide on appropriate actions for global applicability of the SVGM.

3.1.29 The NAT SPG noted that the SVGM was submitted to the NAT IMG sub-groups for reviewing. The result of the review was provided to NAT IMG/40 which noted that the main comments concerned a) the application of RCP400 to the use of SATVOICE irrespective of whether or not a reduced separation minimum was being applied, and b) several portions of the document which appeared to establish general air traffic control or aeradio procedures that were not specific to SATVOICE.

3.1.30 The NAT IMG/40 recalled the NAT SPG had determined that the current separation standards were not predicated on RCP (*Summary of Discussions and Conclusions of NAT SPG/47*, paragraph 4.2.7 refers) and confirmed its position that RCP should only be associated with separation reductions and not with current operations. Accordingly, the NAT IMG/40 agreed that the text in the SVGM would need to reflect this position, before to be endorsed as NAT Region guidance material. It was suggested this could possibly be achieved via notes at the appropriate paragraphs (*inter alia* paragraph 3.2.2.3) to clearly indicate that RCP would be specified only when SATCOM voice was used in the support of an ATS service for which an RCP was required.

3.1.31 In view of the above, the NAT SPG agreed that the deadline for comments should be extended to 1 July 2012. The revised document would be submitted for review to the next NAT Air Traffic Management Group (NAT ATMG) and NAT CNSG meetings in September 2012 aiming for endorsement of the SVGM by NAT IMG/41. In this regard, the NAT SPG agreed to the following:

NAT SPG Conclusion 48/8 – SATVOICE Guidance Material (SVGM) Review and approval process

That, at its 41st meeting, the NAT Implementation Management Group be mandated, on behalf of the NAT SPG, to review, approve and process further, as appropriate, the SATVOICE Guidance Material (SVGM) v 1.0.

3.2 PERFORMANCE MONITORING

NAT Data link performance and related issues

3.2.1 The NAT SPG was informed that practically all ICAO NAT Region service providers had completed upgrades of their ground automation systems and started providing data link performance data in accordance with the GOLD provisions. It was noted that using the foregoing data and a common reporting template/format, the NAT IMG would be provided with the annual consolidated NAT Region data link performance reports at its spring meetings.

3.2.2 The NAT SPG was informed that some commonalities were identified with respect to the observed data link performance in the NAT Region. In particular it was noted that RCP240 and RSP180 criteria were met for 95% probability but not for 99.9% (the performance was usually around 98-99%). There were indications that not meeting the Pilot Operational Response Time (PORT) allocation requirements could be one of the contributing factors to not meeting the 99.9 criterion. It was noted that the NAT IMG would be provided with a more detailed assessment of the above-mentioned commonalities at the next meeting.

3.2.3 The NAT SPG was informed that the NAT IMG discussed whether it would be beneficial to implement data link operational authorizations in the ICAO NAT Region as a mechanism to ensure that aircraft operators' procedures and training programmes properly addressed data link use based on the GOLD provisions. The NAT SPG noted that such action would be premature at this stage. Instead, alternative solutions would need to be explored to effectively promulgate this information to aircraft operators. The NAT SPG noted that a draft bulletin would be prepared in coordination between the NAT IMG sub-groups

for approval at NAT IMG/41 and further circulation in order to raise aircraft operators' awareness on data link use related issues.

3.2.4 Therefore, the NAT SPG agreed to the following:

NAT SPG Conclusion 48/9 - Addressing the Pilot Operational Response Time (PORT) issue

That the ICAO Regional Director, Europe and North Atlantic, invite aircraft operators to review their flight crew procedures and training programmes to ensure that the data link use related issues are properly addressed and in accordance with the *Global Operational Data Link Document* (GOLD) provisions.

3.2.5 The NAT SPG was presented with a proposal to acknowledge acceptability of the Iridium Short Burst Data (SBD), Inmarsat I3 Classic Aero Services and Very High Frequency (VHF) sub-networks for the provision of CPDLC and ADS-C within the scope of the NAT data link mandate.

3.2.6 The NAT SPG was informed that acceptability of the foregoing sub-networks for the above-mentioned purposes was established through the NAT data link performance monitoring mechanisms. It was also noted that FANS 1/A over the I3 Inmarsat Classic Aero Services and VHF were traditionally considered as an acceptable means of compliance.

3.2.7 The NAT SPG noted that consistent with the *NAT Performance Based Communication and Surveillance Implementation Plan*, eligibility for data link operations in the current separations would not constitute an automatic eligibility to participate in the planned reduced separations. Also, advances in technology and implementation would be evaluated for eligibility on a per operator/aircraft type basis within the NAT performance-based framework. Therefore, the NAT SPG agreed to the following:

NAT SPG Conclusion 48/10 - Acceptability of various sub-networks' performance for FANS 1/A data link services

That FANS 1/A or equivalent over Inmarsat I3 Classic Aero, Iridium Short Burst Data and Very High Frequency (VHF) sub-networks demonstrate performance acceptable for the use of data link services.

3.2.8 The NAT SPG was informed about the issue of downlinks that were not delivered to the respective Air Traffic Services Unit (ATSU), thus causing a loss of connectivity between the ATSU and the airplanes under its control and creating a number of problems, including:

a) inability to logon to the ATSU;

b) inability to complete the CPDLC connection after a successful logon;

c) inability to deliver ADS-C reports to the ATSU; and

d) inability to deliver the flight crew's response (WILCO, UNABLE, etc.) to the ATSU.

3.2.9 It was noted with concern that this problem could also result in the non-delivery of an emergency CPDLC or ADS-C message when activated by flight crew.

3.2.10 The NAT SPG was informed that the basic issue causing the problem was the aircraft establishing a VHF link with a non-contracted Data link Service Provider (DSP), due to the automatic selecting a frequency used by their contracted DSP in other parts of the world, but by the non-contracted DSP in the NAT. The aircraft then was sending downlinks by the non-contracted DSP VHF link, while uplinks were delivered by their contracted DSP over SATCOM. The non-contracted DSP then discarded the downlinks, without delivering them to the ATSU.

3.2.11 The NAT SPG noted that the foregoing problem was discussed at a number of the NAT CNSG meetings and that this DSP system behaviour was not in compliance with paragraph 2.2.3 of the ARINC-620 specification.

3.2.12 The NAT SPG was informed that the problem pertained to both ARINC and SITA. It was noted that SITA agreed to investigate the issue and report to the next NAT CNSG meeting. ARINC had not participated at the recent NAT CNSG meetings, therefore no feedback had been available from them.

3.2.13 The NAT SPG noted that several States contacted the respective DSPs directly and reported this problem. Canada conducted a hazard identification and risk analysis exercise to demonstrate the potential safety consequences stemming from the DSP's non-compliance to the above-mentioned ARINC-620 requirement.

3.2.14 The NAT SPG agreed that this issue had a direct impact on safety and noted that the NAT CNSG had initiated the NAT Fast Track Procedure for Safety Occurrences in line with the procedure published in the *NAT SPG Handbook*. In follow up to the decision of the Chairmen of the NAT IMG and the NAT Safety Oversight Group (NAT SOG), the ICAO Regional Director sent a letter to ARINC and SITA urging them to resolve the foregoing problem as soon as possible. The NAT SPG noted that informal responses were received from SITA and ARINC indicating possible solutions and proposing to discuss them at the next NAT CNSG meeting.

3.2.15 The NAT SPG emphasized the urgent need for resolving the foregoing issue having an impact on safety and that solutions should be aggressively pursued and implemented. The Secretariat was invited to follow up on this subject and report the progress to NAT SPG upon reception of the formal responses.

NAT SUPPs PfA on FPL 2012 - Update

3.2.16 The NAT SPG was provided an update of the actions taken in response to NAT SPG Conclusion 47/11 - Updated NAT Region Flight Planning Provisions. A proposal for amendment to the NAT SUPPs had been initiated to take account of Amendment 1 to the PANS-ATM, and had been updated to take account of developments subsequent to the NAT SPG/47 meeting. The proposal had been approved on 16 March 2012, for applicability on 15 November 2012. Parallel with the processing of the amendment proposal, ICAO Headquarters was developing, in coordination with the Regional Offices, consequential amendments to Doc 7030 to take account of Amendment 1. The NAT SPG was advised that the consequential amendment to the NAT SUPPs in this regard would remove material specifying that aircraft capability be indicated in the flight plan (NAT SUPPs paragraphs 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.14 and 2.1.15 refer), as this material had been found to be repetitive of, rather than supplementary to, the related PANS-ATM provisions. The NAT SPG noted that the NAT Document Management Office (NAT DMO) intended to develop appropriate guidance material to address the concerns expressed by the NAT IMG in this regard (paragraph 6.1.5 refers).

4. NAT OPERATIONAL AND SAFETY IMPROVEMENTS

4.1 A REGIONAL PLAN TO ADDRESS VERTICAL RISKS IN THE ICAO NAT REGION

4.1.1 The NAT SPG was advised that the operational vertical collision risk estimate for 2011 was 32.6 x 10^{-9} fatal accidents per flight hour (fapfh). This estimate had been calculated taking account of the risk mitigation offered by the application of the Strategic Lateral Offset Procedures (SLOP) in the ICAO NAT Region, which had provided a 62% reduction, but was still more than 6 times the Target Level of Safety (TLS) for the vertical dimension. It was noted with concern that the estimated collision risk in the vertical dimension continued to rise at an accelerated rate over the past years, despite numerous efforts to reduce errors and the duration of Large Height Deviations (LHD).

4.1.2 The NAT SPG agreed that immediate and aggressive action was required to address this situation. Accordingly, it was agreed to create a NAT Vertical Risk Task Force (NAT VRTF), under the authority of the NAT SOG and the NAT IMG. It was recalled that a similar Task Force had been established by the NAT SOG previously, but the recommendations from that effort had not had the desired effect of supporting a reduction in the estimated vertical collision risk.

4.1.3 The new Task Force would operate under the terms of reference provided at **Appendix J** and would, at minimum, review the last two years' LHDs and investigations, review analyses detailing common vertical LHD causes, review the mitigations proposed by the first VRTF and the input provided by the NAT IMG. Further, a listing of all reasonable and proactive solutions, including "Best Practices" would be developed. The goal would be to develop and implement a regional plan to reduce the numbers and durations of LHDs and the resulting vertical risk. Finally, it was agreed the NAT VRTF should also develop recommendations for improving the guidance provided in relation to the application of SLOP in the ICAO NAT Region (paragraph 5.1.5 refers), in view of the importance of SLOP in reducing the risk associated with vertical errors and also examine situations data link messages which might have revealed the presence of an uncoordinated flight were not provided to the appropriate Air Traffic Controllers (ATCO) (paragraph 5.1.8 refers). Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/11 – NAT Vertical Risk Task Force

That:

a) the terms of reference of the NAT Vertical Risk Task Force as provided at Appendix J to this report are endorsed;

b) the ICAO Regional Director, Europe and North Atlantic, initiate coordination no later than 2 July 2012 with the members of the NAT Implementation Management Group and the NAT Safety Oversight Group to nominate participants; and

c) a *NAT Vertical Risk Reduction Implementation Plan* be submitted to NAT SPG/49.

5. SAFETY MONITORING

5.1 NAT SOG OUTCOME

5.1.1 The NAT SPG reviewed the outcome of the recent meeting of the NAT SOG, which had taken place from 22 to 25 May 2012.

5.1.2 The NAT SPG noted that the NAT SOG and the NAT IMG had each agreed to provide direction for the formulation of recommendations from their contributory groups. This guidance aimed at streamlining the workings of the NAT SPG working structure and in particular to ensure clarity and conciseness of the recommendations developed by the contributory groups. The NAT SPG agreed to adopt similar guidance for the formulation of Draft NAT SPG Conclusions from its contributory groups, as detailed in **Appendix K**, which would be published in the next update of NAT Doc 001 (paragraph 6.1.1 also refers). Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/12 – Recommendations to the NAT SPG

That the:

a) procedure for formulating recommendations to contributory groups as detailed in Appendix K to this Report is endorsed; and

b) NAT SPG contributory groups be advised to use the procedure to formulate recommendations for consideration by the NAT SPG.

5.1.3 The NAT SPG was advised of the NAT SOG's concern regarding the continuing incidence of lateral deviations occurring immediately after oceanic entry. It was recalled that the NAT IMG had, in the past, examined the feasibility of requiring all domestic ATSUs at the interface to perform cross-checks of the initial oceanic route prior to aircraft exiting domestic airspace; it had been found that it would not be feasible in many cases. It was further recalled that various efforts were planned or underway to facilitate detection of incipient lateral errors prior to flights entering oceanic airspace. The NAT SPG agreed it was important to address this issue and that sharing of plans between the ANSPs providing services in the ICAO NAT Region might facilitate implementation of the most effective solutions; accordingly, it was appropriate for the NAT IMG to address the subject. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/13 - Prevention of lateral deviations at domestic/oceanic interfaces

That the NAT Implementation Management Group initiate action to determine and implement processes and procedures to support the prevention of lateral deviations occurring immediately after entering oceanic airspace.

5.1.4 The NAT SPG was advised there continued to be instances where, although a reroute message had been acknowledged by the flight crew, the flight would subsequently deviate from the cleared route or would provide information which indicated the flight would subsequently do so. It was noted that operator reports had included recommendations for a "reroute" indication to be placed at the beginning of a CPDLC clearance message rather than at the end, so it would likely be noticed more consistently. In this regard, it was highlighted that the placement of such a notification as the first element in a CPDLC message was, reportedly, the standard practice in the ICAO NAT Region. Accordingly, the NAT SPG acknowledged the need for further investigation to confirm whether this was the actual practice and agreed to the following:

NAT SPG Conclusion 48/14 - Confirm placement of reroute notification in CPDLC messages

That all Air Navigation Services Providers which provide services in the ICAO NAT Region confirm to the NAT Implementation Management Group that Controller Pilot Data Link Communications (CPDLC) messages contain a "reroute" notification at the beginning of the message rather than at the end.

5.1.5 The NAT SPG discussed a proposal to clarify the guidance provided in NAT Doc 007 concerning the application of the SLOP in the ICAO NAT Region. The purpose of the proposal was to provide additional advice to optimize the random application of the procedure, so as to maximize the potential of the SLOP to reduce the possible collision risk if there were an error in the vertical dimension. The NAT SPG agreed to request the NAT DMO to update the text in paragraph 8.5.3 b) of NAT Doc 007 in the next update. Additionally, it was agreed that the NAT VRTF should develop recommendations concerning how to describe and publicize the correct application of the SLOP in the ICAO NAT Region, including, if appropriate, additional proposed revisions to the material in NAT Doc 007 (paragraph 4 also refers). Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/15 - Clarify SLOP guidance within NAT Doc 007

That the text within paragraph 8.5.3 b) of the *North Atlantic Operations and Airspace Manual* (NAT Doc 007) pertaining to the application of the Strategic Lateral Offset Procedures (SLOP) be amended as follows:

~~It is recommended that P~~pilots of aircraft capable of programming automatic offsets should preferably not fly the centre line but rather elect to fly an offset one or two nautical miles to the right of the centre line in order to obtain lateral spacing from nearby aircraft (ie those immediately above and/or below). Pilots should use whatever means are available (e.g. TCAS, communications, visual acquisition, GPWS) to determine the best flight path to fly.

5.1.6 The NAT SPG recalled that it had been expected that ADS-C event contract reporting would provide safety benefits, and in particular, would contribute to reducing the risk associated with LHDs involving ADS C equipped aircraft. Analysis of 2011 data for the ICAO NAT Region indicated that the benefit could theoretically be in the region of 40% to 50%; however, it was apparent that this theoretical benefit was not being observed in reality. During 2011 there had been two LHDs of more than 100 minutes duration by ADS-C reporting aircraft which had comprised approximately 15% of the operational vertical collision risk for the year. Additionally, there were several other LHDs whose duration was longer than expected considering the technology being used.

5.1.7 The NAT SPG agreed it appeared this was a systemic issue that could involve procedural matters, data link connection management and the receipt and processing of data link messages. Accordingly, it was agreed the NAT IMG should specifically examine all related issues in an effort to prevent long duration LHDs by ADS-C reporting aircraft. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/16 - Resolution of Automatic Dependent Surveillance – Contract (ADS-C) related system design issues

That the NAT Implementation Management Group, taking account of the trend in recent long-duration large height deviations exacerbated by data link log-on issues:

a) initiate action to identify the system weaknesses and failures which result in position information provided via data link not being used appropriately, or not being received;

b) implement appropriate mitigation(s); and

c) provide information to the NAT Safety Oversight Group concerning the effectiveness of the implemented mitigation(s).

5.1.8 The NAT SPG noted that, sometimes, when unexpected messages were received by ATC they were ignored or deleted. The NAT SPG considered that such messages constituted a warning and their presence in the absence of normal flight data was likely to be evidence of the existence of an unknown aircraft. It was agreed this type of situation should be examined by the NAT Vertical Risk Task Force as part of its work (paragraph 4 also refers).

5.1.9 The NAT SPG was advised the NAT Mathematicians' Working Group (NAT MWG) had determined it would be beneficial to have additional information , mainly derived from position reports, to support their work on behalf of the NAT SOG. In some cases, this would involve in additional information being provided by ANSPs which were already making information available to the NAT MWG and in other cases this would involve the provision of information from additional ANSPs. The data being requested would improve the completeness and accuracy of system performance estimates and would assist the NAT MWG to provide the necessary data to support collections and analysis for the purpose of reporting against Safety Key Performance Indicators agreed for the ICAO NAT Region (paragraph 5.1.12 below refers).

5.1.10 The NAT SPG agreed the NAT IMG should examine the feasibility of this information being provided to the NAT MWG and additionally requested the NAT SOG to advise of how often and to whom this information should be provided. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/17 - Collection of traffic activity data to improve system performance estimation

That the:

a) NAT Implementation Management Group investigate the feasibility of the Air Navigation Service Providers (ANSPs) serving Gander, Shanwick, New York, Reykjavik and Santa Maria Oceanic Control Areas (OCA) to provide air traffic activity data from the 4th and the 15th of each month to the NAT Mathematicians' Working Group (NAT MWG);

b) data requested in a) include:

i) operator and aircraft type, time, position, level and assigned Mach number from all compulsory reporting points (waypoints), including oceanic entry and oceanic exit points;

ii) estimated time of arrival at each subsequent waypoint to the waypoints listed in i), except the oceanic exit point; and

iii) suitable identification, e.g., registration or other unique indication, so that the disparate data sources can be combined;

c) data described in (b) be provided in ASCII text in comma-separated-variable (CSV) format; and

d) the NAT Safety Oversight Group advise NAT SPG/49 of how often and to whom the requested data should be provided.

5.1.11 The NAT SPG was advised of the NAT SOG discussions to address the Group's contribution to NAT SPG Conclusion 46/1 - NAT Region Performance Metrics. The NAT SOG had agreed to not suggest that the number of Airborne Collision Avoidance System (ACAS) Traffic Advisories (TA) be an indicator, because reports of such events were currently not required; furthermore, it was not seen as appropriate to institute such a reporting requirement in the ICAO NAT Region at the current time. The NAT SOG had also agreed it was premature to suggest that the number of reports submitted to the NAT Central Monitoring Agency (NAT CMA) be considered as an indicator for effectiveness of reporting in the ICAO NAT Region; it was agreed, however, that this information would be monitored by the NAT SOG.

5.1.12 It was noted that additional indicators or changes to already agreed indicators could be proposed at a future time if it was found appropriate to do so. The NAT SPG agreed to adopt a number of Key Performance Indicators (KPI) for the key performance area (KPA) of safety for the ICAO NAT Region and agreed to update the NAT SOG terms of reference to take account of this decision. It was further noted that the agreed KPIs were indicators only, for the present time. Future developments would include determining metrics and eventually setting performance objectives. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/18 – Establishment of safety KPIs for the ICAO NAT region.

That the NAT SPG:

a) adopt the following as safety Key Performance Indicators (KPI) for the ICAO NAT Region:

i) number of hull loss events;

ii) number of Airborne Collision Avoidance System (ACAS) Resolution Advisory (RA) events;

iii) number of Large Height Deviation (LHD) events;

iv) number of minutes that aircraft spend at the wrong flight level;

v) performance in the vertical dimension against the vertical Target Level of Safety (TLS);

vi) number of minutes spent away from air traffic control cleared route;

vii) number of Gross Navigation Error (GNE) events;

viii) performance in the lateral dimension against the lateral TLS;and

b) add to the NAT Safety Oversight Group terms of reference the responsibility to:

i) collect data on and monitor the safety KPIs as listed in a);

ii) advise the NAT SPG annually on the performance of the ICAO NAT Region in relation to the safety KPIs; and

iii) keep under review and, when appropriate, propose revisions to the safety KPIs.

5.1.13 The NAT SPG agreed that the information detailed in **Appendix L** should be included in all occurrence reports made to the NAT CMA. This would ensure that the appropriate information would be available to support the analysis and classification of the reports. It was further agreed that ANSPs should begin providing this information as of 30 September 2012. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/19 - Provision of detailed oceanic event reports to the NAT CMA

That the ICAO Regional Director, Europe and North Atlantic, request States responsible for providing air navigation services in the ICAO NAT Region to take the necessary steps to ensure that the appropriate Air Navigation Services Providers will, as of 30 September 2012, include at least the information detailed in Appendix L to this report in occurrence reports submitted to the NAT Central Monitoring Agency (NAT CMA).

5.1.14 The NAT SPG noted that the reporting requirements in the ICAO NAT Region had gradually expanded to meet the needs of system risk assessment, understanding of operational errors, and informing the safety assessments involved with reductions in separation. However, there was no single source "handbook" which described these requirements, which could make it difficult to ensure that all stakeholders had a proper understanding of the safety occurrence reporting requirements agreed for the ICAO NAT Region. The NAT SPG agreed the NAT SOG should develop such a document, which would cover not only incidents and errors, but also accidents and serious incidents as defined by *Aircraft Accident and Incident Investigation* (ICAO Annex 13). Finally, it was noted the document would need to take account of the relationship between the NAT Data Link Monitoring Agency (NAT DLMA) and the NAT CMA. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/20 - Consolidated ICAO NAT Region safety occurrence reporting requirements document

That the NAT Safety Oversight Group develop a document in which all safety occurrence reporting requirements within the ICAO NAT Region will be consolidated and present it to NAT SPG/49.

5.1.15 The NAT SPG noted the discussion of the NAT SOG as it related to the classification of reports concerning lateral deviations. The NAT SPG agreed upon a new definition for a Gross Navigation Error (GNE), in order to support collection of data which would be beneficial to support the planning for RLatSM. It was agreed that, at the present time, the NAT CMA follow up activities currently associated with GNEs would only pertain to GNEs of 25 NM or more (i.e. there would be no change to the current practices in this regard). It was expected that the NAT CMA follow up activities would only pertain to all GNEs once RLatSM had been implemented. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/21 - Lateral deviation classifications

That the:

a) following definitions be used when classifying reports made to the NAT Central Monitoring Agency (NAT CMA):

   i) a lateral deviation is any actual deviation from the cleared track other than those covered by the Strategic Lateral Offset Procedures (SLOP);

   ii) a Gross Navigation Error (GNE) is a lateral deviation from a cleared track by 10 Nautical Miles (NM) or more;

   iii) an ATC Intervention is an event where the Air Traffic Controller (ATCO) caught and corrected a lateral deviation before it developed into a GNE; and

   iv) an ATC Prevention is an event where the ATCO intervention prevented a lateral deviation; and

b) NAT CMA initiate GNE-related follow up actions in regard to GNEs of 25 NM or more.

5.1.16 The NAT SPG discussed the importance of ensuring that all available information related to an occurrence would be submitted to the NAT CMA. To support this, it was agreed that the NAT CMA should create a follow up procedure to seek information from ANSPs in relation to occurrences of which it became aware. This would include information that was missing from reports that had been submitted and information which had not been provided at all from an ANSP which had been involved in the occurrence. Furthermore, it was agreed that ANSPs should be made aware of the foregoing and be encouraged to provide this information in a timely manner. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/22 - Provision of information to the NAT CMA

That, in order to ensure a complete picture of safety occurrences:

a) the NAT Central Monitoring Agency (NAT CMA) establish a safety occurrence follow-up procedure to request missing information from service providers that have been involved in an occurrence; and

b) the ICAO Regional Director, Europe and North Atlantic, request States responsible for providing air navigation services in the ICAO NAT Region to implement appropriate procedures to ensure the effective and timely provision of the information needed or requested by the NAT CMA.

5.1.17 The NAT SPG noted that the most recent meeting of the NAT SOG had taken place two weeks after the NAT IMG and two weeks prior to the NAT SPG. Considering that the deadline for the submission of working papers to the NAT SPG was usually set two weeks prior to the first day of the meeting, it was agreed this type of scheduling did not provide adequate time for coordination between the groups. The Secretariat agreed to work with the Chairmen of the NAT SPG contributory groups to ensure there was adequate time for coordination between meetings prior to finalizing input to the NAT SPG.

5.1.18 The NAT SPG discussed some concerns that the current NAT SPG structure might not adequately reflect the independence of safety oversight and the role of the NAT SOG in monitoring and reviewing the safety work undertaken within the NAT IMG and its contributory groups. Furthermore, there was concern that operator inputs, useful for the development and understanding of flight crew procedures might not be fully addressed. The NAT SPG noted that all of its contributory groups kept their working structure under review. It was also noted that the NAT SOG terms of reference had been updated during the current meeting (paragraph 5.1.11 refers) and during the previous meeting, at which time the NAT SOG contributory groups terms of reference had also been updated (NAT SPG Conclusion 47/10 refers).

5.1.19 It was further noted the NAT IMG had also updated part of its structure. The representatives from IATA, IBAC and IFALPA expressed the view of their organizations that airspace users' participation and representation within the current NAT SPG working structure was seen as appropriate and adequate to support integrated collaboration between airspace users and service providers. Accordingly, the NAT SPG agreed it was not necessary at the current time to launch a formal activity to review the overall NAT SPG structure and working arrangements. It was, however, agreed to update the description of the composition of the NAT Economic and Financial Group (NAT EFG) to remove the words "NAT Oceanic service providers".

6. NAT DOCUMENTATION

6.1 UPDATES TO DOCUMENTS MANAGED BY THE NAT IMG

NAT SPG Handbook (NAT Doc 001)

6.1.1 The NAT SPG agreed to update the *NAT SPG Handbook* (NAT Doc 001) to include procedures for the provision of recommendations to itself, the NAT IMG and the NAT SOG from contributory groups. It was also agreed to update NAT Doc 001 to take account of the changes made to the terms of reference of the NAT Operations and Airworthiness (NAT OPS/AIR) sub-group. It was agreed that the *List of Documents Promulgated by the NAT SPG* should also include information regarding configuration management and that amendments made to NAT Doc 001 should be detailed. It was noted this amendment list would include the changes made when NAT Doc 001 was created by NAT SPG/47. Finally, it was agreed that updates should also be made to account for the decisions taken during the current meeting. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/23 – Updates to NAT Doc 001

That the ICAO Regional Director, Europe and North Atlantic:

a) take the necessary steps to update the *NAT SPG Handbook* (NAT Doc 001) in accordance with the outcome of NAT SPG/48; and

b) publish the updated version of NAT Doc 001 on the ICAO EUR/NAT website no later than 20 July 2012.

North Atlantic Operations and Airspace Manual (NAT Doc 007)

6.1.2 The NAT SPG reviewed material developed by the NAT IMG to provide examples of standard phraseology used in the ICAO NAT Region. After removing one example which did not correctly reflect how the referenced clearance would be presented if provided via CPDLC, the NAT SPG agreed the material, as provided at **Appendix M** should be included in NAT Doc 007. The NAT DMO intended to provide this material as an Appendix to NAT Doc 007.

6.1.3 In considering the foregoing, the NAT SPG noted that the scope of the guidance provided in what was currently titled *Guidance Concerning Air Navigation In and Above the North Atlantic MNPS Airspace* exceeded matters related only to MNPS operations. Accordingly, it was agreed to change the title to the *North Atlantic Operations and Airspace Manual* (NAT Doc 007).

6.1.4 The NAT SPG also endorsed an addition to Chapter 10 of NAT Doc 007 to address the ATS surveillance services provided by France, as detailed in **Appendix N**. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/24 – Update of NAT Doc 007 on basis of NAT IMG inputs

That the:

a) title of NAT Doc 007 be changed to *North Atlantic Operations and Airspace Manual;*

b) NAT Document Management Office use the material provided in Appendix M and Appendix N of this Report to develop appropriate material for inclusion in the next amendment to NAT Doc 007; and

c) next update of NAT Doc 007 be completed no later than 31 October 2012.

6.1.5 The NAT SPG was advised the NAT IMG had requested the NAT DMO to develop appropriate language for NAT Doc 007 to encourage operators to provide capability indications in the flight plan (paragraph 3.2.16 refers).

6.1.6 The NAT SPG was advised that, as was the usual practice, the NAT DMO had kept under review the outcomes of the NAT SPG contributory group meetings with a view to identifying issues which should be addressed via amendments to NAT Doc 007. As a result, a number of amendments were being developed.

6.1.7 The NAT SPG was advised of a NAT DMO concern in connection to the material added to NAT Doc 007 regarding ATS surveillance services. It was observed that each section within Chapter 10 included a specific chart related to the particular airspace being discussed. These charts were in various formats and provided State-specific information which would normally be available in Aeronautical Information Publications (AIP). The NAT DMO therefore proposed that a consolidated chart, such as the ones provided to depict communications coverage, be used to depict overall ATS surveillance coverage. It was noted it would be appropriate to have two charts for this purpose, one to depict radar surveillance and one to depict surveillance based on ADS-B. The NAT SPG supported this view and agreed that Iceland, which provided the NAT DMO service on behalf of the NAT SPG, should make the necessary arrangements to support the NAT DMO's proposal. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/25 – ATS surveillance charts

That Iceland, in coordination with the NAT Document Management Office, prepare up to two charts depicting where Air Traffic Services (ATS) surveillance services are provided in the ICAO NAT Region for inclusion in the *North Atlantic Operations and Airspace Manual*.

6.1.8 The NAT SPG agreed with the NAT DMO's suggestion that NAT Doc 007 should include a list of current trials in the ICAO NAT Region and those which were planned to begin within the next five years. Such information would provide operators with the necessary information to support their equipage and training plans. It was noted this information could also be expanded upon to highlight to operators that operational flexibility had increased in the airspace, which meant it was more likely that speed and level change requests could be accommodated.

6.1.9 The NAT SPG was advised the NAT DMO would coordinate with the NAT CMA to update the statistical information provided in NAT Doc 007. This coordination would also identify whether there have been any unique errors noted recently; such information would prompt development of material to highlight the issue to operators and provide guidance on how such errors may be avoided in the future.

6.1.10 Finally, the NAT SPG agreed that the NAT DMO should undertake the necessary actions to produce the next update of NAT Doc 007 and, taking into account the amount of work to be done, agreed that the new edition should be planned for publication no later than 31 October 2012. This update would take account of the foregoing and also of other decisions taken at NAT SPG/48. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/26 – NAT Doc 007, 2012 Edition

That the NAT Document Management Office:

a) continue to manage the *North Atlantic Operations and Airspace Manual* (NAT Doc 007);

b) in coordination with the ICAO Secretariat, prepare an amendment to NAT Doc 007 taking into acccount the decisions of NAT SPG/48 and changes to the air navigation system in the ICAO NAT Region since June 2011; and

c) arrange to publish the 2012 Edition of NAT Doc 007 electronically no later than 31 October 2012.

NAT FPL2012 and AIDC Programmes

6.1.11 The NAT SPG was provided with a draft *ICAO NAT FPL2012 and AIDC Implementation Plan*. It was recalled that the full implementation of ATS Inter-Facility Data Communication (AIDC) in the NAT was agreed to coincide with the FPL2012 implementation date (15 November 2012). Therefore, the FPL2012 and AIDC implementation programmes were merged into a single document.

6.1.12 It was noted that the following tasks were identified as part of the development of the NAT FPL2012 programme:

a) revision of the regional documentation in view of Amendment 1 to the PANS-ATM - completed;

b) a list of the national points of contact would need to be composed - completed;

c) inventory of the NAT ATS automation systems readiness to be undertaken - completed;

d) target dates for test readiness dates, including Flight Data Processing Systems (FDPS) and AIDC capabilities, be determined and agreed - completed;

e) coordinate and conduct regional, bi-lateral and inter-regional tests, as required;

f) target dates for operational readiness be determined and agreed - completed;

g) dates for commencing transition and operations to be determined and agreed - completed;

h) determine and agree on actions for post implementation monitoring;

6.1.13 With regards to the AIDC part of the document, the NAT SPG was informed that there might be delays in the testing readiness dates for some of the NAT service providers. The NAT SPG recalled that implementation of AIDC was one of the major measures to address coordination errors that were one of the causes of LHDs. While acknowledging the reasons for implementation delays, the NAT SPG emphasized the urgency for the completion of the AIDC implementation. It was noted that the AIDC part of the document would be a living document and kept updated based on the inputs from the NAT service providers. Therefore, the NAT SPG agreed to the following:

NAT SPG Conclusion 48/27 - Approval of the NAT FPL2012 and AIDC implementation plan

That the ICAO Regional Director, Europe and North Atlantic, take appropriate measures for publication of the *ICAO NAT FPL2012 and AIDC Implementation Plan* (**Appendix O** to this Report).

6.1.14 The NAT SPG was provided with the status of work on the development of a pan-regional APAC/NAT AIDC document which was initiated in follow-up of NAT SPG Conclusion 45/25. It was noted that this work was carried out by an informal group of experts from Canada, Iceland, Norway, Portugal, the United Kingdom and the United States. Additional expertise was drawn through facilitation of the ICAO APAC Office. As a result of this work, the version v.0.4 of the harmonised document was produced to include updates from the latest versions 1.2.9 and 1.3.0 of the *North Atlantic Common Coordination Interface Control Document* (NAT CC ICD, NAT Doc 002).

6.1.15 The NAT SPG recalled that, in line with its previous decision, the first priority was the full AIDC implementation in the NAT Region by 15 November 2012, to coincide with the completion of the NAT FPL2012 programme. In view of the approaching completion of the above-mentioned programmes and finalising the work on the SVGM, more resources could be allocated to the development of the pan-regional APAC/NAT AIDC document. It was agreed that a more formal approach to progress this work would be helpful to ensure that necessary resources were made available. The NAT SPG noted the offer from the United States to lead this work and that the task force would commence its work in January 2013. Therefore, the NAT SPG agreed to the following:

NAT SPG Conclusion 48/28 - Establishment of an inter-regional APAC/NAT AIDC task force

That the ICAO Regional Director, Europe and North Atlantic:

a) take appropriate measures to coordinate with the Asia and Pacific (APAC) Office of ICAO regarding the need to establish an inter-regional APAC/NAT Air Traffic Services (ATS) Inter-Facility Data Communication (AIDC) task force; and

b) following a positive opinion of the APAC Office of ICAO, take appropriate measures for the establishment of the inter-regional APAC/NAT AIDC task force with the Terms of Reference as provided at **Appendix P** to this Report.

6.2 OTHER NAT DOCUMENTATION

Review of NAT Air Navigation Plan (Doc 9634)

6.2.1 The NAT SPG was informed that a review of the *Air Navigation Plan — European Region* (EUR ANP, Doc 7754) had been conducted and the new format of the EUR Basic ANP had been endorsed by the 53rd meeting of the European Air Navigation Planning Group (EANPG/53) (Paris, 28 November to 1 December 2011). It was noted that the new format had been adopted by ICAO Headquarters as a basic template for revamping the current text in all Regional ANPs and that all ICAO Regional Offices had been invited to edit or revise, as appropriate, their regional Basic ANPs, based on the new format. It was also noted that ICAO Headquarters have begun transitioning the current Facilities and Services Implementation Document (FASID) tables and the ATS route tables in the Basic ANP into online versions and also working to align the FASID tables with the ASBU methodology in time for presentation at the AN-Conf/12 in November 2012.

6.2.2 Accordingly, the ICAO Secretariat conducted a review of the current *Air Navigation Plan — North Atlantic Region* (NAT ANP, Doc 9634). The NAT SPG noted the principles that had been adopted when conducting the review and how this was foreseen to relate to the FASID and other supporting material. Additionally, the NAT SPG noted that the following four new chapters had been added to the Table of Contents of all Regional Basic ANPs:

- Part VIII – Safety (SAF);
- Part IX —Human Resources And Training (HR&TNG);
- Part X — Contingency Planning (CPLN); and
- Part XI — Environment (ENV).

6.2.3 The NAT SPG was informed that Part II – Aerodromes/Aerodrome Operations (AOP), Part III – Communications, Navigation and Surveillance (CNS) and Part V — Meteorology (MET) had not been changed as they had not been subject to revision in the EUR ANP.

6.2.4 The following is a brief summary and outline of the work that was done on specific parts of the NAT Basic ANP.

Part 0 - Introduction

It is felt that the Introduction should contain provisions and statements that are common to all the Regional ANPs. The changes have been made to Part 0 – Introduction include:

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

b) the introduction of a diagram (from Doc 9750) to reflect the relationship between global, regional and national plans (updated version to be presented at AN-Conf/12); and

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

With regard to the Basic Operational Requirements and Planning Criteria (BORPC), ICAO Headquarters accepted the EANPG/51 invitation to update the BORPC and presented the ANC with a revised version (AN-WP8500 refers) at its session on 3 February 2011. The ANC reviewed the issue and decided that the BORPC should be withdrawn from all Regional ANPs; a new BORPC would be developed in conjunction with and considered for inclusion in the upcoming revision of Doc 9750.

Part I - General Planning Aspects (GEN)

Changes were suggested to Part I - General Planning Aspects (GEN) to better reflect the 'performance based approach' described in Doc 9854. It stated the requirement to have common Performance Objectives throughout the Region, based on the ICAO global KPAs; associated local Performance Targets and related KPI which can be measured.

The incorporation of the principle elements of the performance approach in the Basic ANP would underpin the subsequent inclusion of Performance Objectives, which would be developed by the NAT SPG; these elements were considered dynamic and should be lodged in the FASID, which could be readily amended to reflect changes as they occurred. Other suggested updates to Part I included:

a) a paragraph on Global Planning Initiatives (GPI) and Regional Planning Initiatives (RPI) has been introduced;

b) linkage to the ICAO Global Aviation Safety Plan and associated Global Safety Initiatives had been made in the Safety Consideration section as well as a short paragraph on deficiency management as it was considered this aspect should be included within the Plan;

c) a paragraph was added to reflect the requirement to consider the environment;

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

d) a matrix detailing major traffic flows was included; and

e) a high level paragraph on implementation strategy was included.

Part IV - Air Traffic Management (ATM)

Part IV - Air Traffic Management (ATM) had only been slight amendments suggested. The suggested updates included:

a) a high level paragraph on information management and the system wide information management (SWIM) system;

b) a brief outline of ATM elements that are required in the transition to achieving the ATM Concept. The latter section on Flexible Use of Airspace (FUA) is more detailed than envisaged as it has been necessary to include verbatim the ANP Part One amendment proposal from the FUA Task Force, agreed by EANPG/51, which has influenced the overall style and level of detail;

c) update to the section on airspace structure to include issues such as flight information regions (FIR), functional airspace blocks (FAB) and ATS route planning;

d) update to the section on monitoring at the lateral and vertical planes;

e) a paragraph on performance measuring was included.

Part VI - Search and Rescue (SAR)

Part VI - Search and Rescue (SAR) had some amendments suggested to follow the EUR ANP template. The plan for search and rescue regions (SRR) in Chart SAR 1 was deleted as it would be reflected in the FASID.

Part VII - Aeronautical Information Management (AIM)

The AIM Part is a significant rewrite from the existing Aeronautical Information Services (AIS) material. The opportunity has been taken to suggest a change to the title of this Part from AIS to AIM to reflect the future direction on the provision of aeronautical information in the context of the Global ATM Operational Concept and associated System Wide Information Management (SWIM). The transition to AIM will not, however, completely change the traditional role of AIS and many of the current products will remain, albeit in a digital format. Consequently, the first section of this Part details the key elements that States should provide in the provision of aeronautical information.

It was suggested that the Part then provide an overview of the Transition to AIM. It would not go into too much detail of the component elements and timings of the ICAO Transition Plan as these would be better reflected in the FASID. Finally, this Part would refer to the requirement for States to develop national plans for transition to AIM and details which would be shown in the FASID.

The proposed FASID Tables were:

1. FASID TABLE AIM-1: Responsibility for the provision of AIM Services;

2. FASID TABLE AIM-2: Provision of AIM products and services based on the Integrated Aeronautical Information Database (IAID);

3. FASID TABLE AIM-3: Terrain and Obstacles datasets and Airport Mapping Databases (AMDB);

4. FASID TABLE AIM-4: Aeronautical Data Quality;

5. FASID TABLE AIM-5: World Geodetic System-1984 (WGS-84);

6. FASID TABLE AIM-6: Aeronautical Charts;

7. FASID TABLE AIM-7: Production responsibility for sheets of the World Aeronautical Chart - ICAO 1:1 000 000;

8. FASID TABLE AIM-8: Pre-Flight Information Services; and

9. FASID TABLE AIM-9: AIM Certification.

Part VIII - Safety (SAF)

Part VIII - Safety (SAF) would be a new ANP chapter and relate to safety matters associated with navigation services, ATM/CNS and the work of the NAT SPG. Whilst it would state the overarching requirements of the Global Aviation Safety Plan and associated Global Safety Initiatives, this would be included to show the contribution the safe delivery of navigation services makes to the ICAO global strategic safety objectives. To ensure there was no confusion with Global Safety Initiatives (GSI), the term “regional safety objective (RSO)” was proposed. This term described what would be developed as a safety objective to overcome identified deficiencies or gaps. These could be considered as regional performance objectives in the safety arena as they should be readily measurable.

Part IX – Human Resources and Training (HR&TNG)

Part IX – Human Resources and Training (HR&TNG) was a new part proposed for inclusion in the regional air navigation plans. It reflected the planning and training elements that needed to be considered by all those

responsible for the regulation, supervision and provision of air navigation services within the wider context of planning for future aviation sector personnel. Human Resource planning was considered on the basis of *Global and Regional 20-year Forecasts* (Doc 9956), developed by ICAO to provide the aviation sector with an informed forecast for the period 2010-2030 relating to: air transport development – traffic, movement and fleet growth; pilot; maintenance; and air traffic controller personnel requirements. In this respect both global and NAT Region forecasts were reflected. The Training element would provide information on ICAO Training Policy and latest developments in respect of ICAO's TrainAir Plus initiative. Reference to access the Aviation Training Directory of ICAO would be provided. Lastly, the related EUR/NAT Office support to States in the NAT Region and State support would be shown.

Part X – Contingency Planning (CPLN)

Part X – Contingency Planning (CPLN) was a new part proposed for inclusion in the regional air navigation plans. It would provide an overview of policy and requirements that Sates and ANSPs should consider in preparing contingency plans to maintain the provision of services in airspaces for which they were responsible.

Part XI - Environment (ENV)

This new ANP chapter would provide an overview of on-going work to mitigate the impact of aviation on the environment. The Chapter would discuss a wide range of initiatives, including some outside of the traditional PIRG area of responsibility e.g. research and development of alternative fuel. These had been shown to demonstrate the efforts across the entire aviation spectrum in respect of the sustainable development of aviation. It would highlight areas where PIRGS could directly influence the adoption of measures to improve the efficiency of air navigation including adoption of performance based navigation and improved civil/military co-ordination thus facilitating the flexible use of airspace. Lastly, it would reflect the performance objective and associated metric which should be developed by the NAT SPG.

6.2.5 It was clarified that the new Part on Contingency Planning had been developed separately from the Air Traffic Management Part as it was noted that most situations requiring contingency plans covered areas that were beyond that of ATM. Editorial corrections provided by Portugal were incorporated.

6.2.6 The NAT SPG endorsed the completed part of the new format of the NAT Basic ANP as shown in **Appendix Q** for further processing as a proposal for amendment to the NAT ANP. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/29 – Proposal for Amendment of the NAT Basic ANP

That:

a) the new format of the *Air Navigation Plan - North Atlantic Region* (NAT ANP, Doc 9634), Volume I, Basic ANP, as presented in Appendix Q to this report, is endorsed; and

b) the ICAO Regional Director, Europe and North Atlantic, on behalf of the NAT SPG, undertake appropriate action to ensure that the new format is processed as a proposal for amendment of the NAT ANP, Volume I, Basic ANP.

Global Operational Data Link Document

6.2.7 The NAT SPG was provided with the latest status of the GOLD ad-hoc group work on the development of Edition 2.0 of the GOLD.

It was recalled, that the GOLD ad-hoc working group was established by the decisions of the ICAO NAT and APAC Regions in order to harmonise the regional data link guidance documents. Additionally, to promote global harmonization of data link applications for safe and efficient air traffic management, the work of the GOLD ad-hoc group was coordinated through ICAO Regional Offices with the ICAO NAM, CAR/SAM, Middle East (MID) and Africa-Indian Ocean (AFI) Regions. This work was supported by the ICAO OPLINKP that was intending to use the outcome of this work in order to endorse the resulting document for global application as an ICAO document.

6.2.8 The NAT SPG was informed that in addition to the NAT and APAC Regions, Edition 1.0 of the GOLD was now accepted in the South American (SAM) Region and parts of the EUR Region, where applicable. The area of the GOLD applicability included 46 FIR/Control Areas (CTA).

6.2.9 The NAT SPG noted that the GOLD ad-hoc working group's activities included the following in line with the NAT SPG and EANPG directives:

a) soliciting proposals for amendments to the GOLD among participating regions and airspace users;

b) coordinating proposed amendments across the Regions;

c) providing interpretation and further clarification to GOLD guidelines, as necessary;

d) facilitating implementation of standardized data link operations, post-implementation monitoring, and corrective actions; and

e) incorporation of the Link2000+ operational guidance material.

6.2.10 The NAT SPG noted that when the GOLD ad-hoc group would complete its work, the document would be circulated to the NAT and APANPIRG groups for review and further approval. With regards to the amendment proposals originating from the NAT Region, it was intended that those would be first coordinated among the NAT IMG sub-groups and then provided to the GOLD ad hoc group for global coordination with facilitation of the ICAO Secretariat.

6.2.11 The NAT SPG was informed that Edition 2.0 of the GOLD was expected to be made available for the NAT IMG sub-groups review in February 2013. Early involvement in the review process would facilitate the approval of the GOLD.

6.2.12 The NAT SPG noted that the NAT IMG sub-groups were regularly provided with the latest status and latest drafts of the GOLD. Additionally, the NAT SPG noted that a dedicated portal was created http://portal.icao.int/ for the GOLD group. Access could be granted for additional interested users though registering on this portal and using the "GOLD" name for subscription.

Future data link systems

6.2.13 The NAT SPG was provided with an update on the work being done by the RTCA SC214/EUROCAE WG78 joint group on the definition of future data link systems. The NAT SPG noted that the work on the CPDLC message set was on-going and coordinated with the ICAO OPLINKP. The NAT SPG agreed that, from the NAT Region perspective, it was required to continue supporting the review of the latest version of the CPDLC message set by providing input to the SC214/ED78 and to continue cooperation during the consolidation of the ADS-C work (e.g. on Safety and Performance Requirements).

NAT Table of Implementation dates.

6.2.14 The NAT SPG noted the latest updates of the NAT Table of Implementation dates (**Appendix R** refers).

NAT Service Development Roadmap

6.2.15 The NAT SPG noted NAT IMG Decision 40/33 regarding the approval of several amendments to the *NAT Service Development Roadmap* (SDR). The amendments included adding to the SDR: a) the NAT performance based communication and surveillance implementation plan; b) the AIDC plan and c) the FPL2012 implementation plan. It was also suggested that including high-level interdependencies on the chart and moving indicators would allow a high level traceability of the progress on each item of the chart. It was recognised that providing an editable version of the SDR could significantly simplify the task of drafting the amendment proposals for the NAT IMG contributory groups.

CPDLC route re-clearances

6.2.16 The NAT SPG was presented with a proposal for amendment to the GOLD related to the use of CPDLC for oceanic route re-clearances. It was recalled that this proposal was a result of the actions initiated following the NAT IMG/36 discussions on the potential for using CPDLC for oceanic route re-clearances.

6.2.17 The NAT SPG noted that this work was actively coordinated with the aircraft manufacturers who provided necessary information on how the CPDLC route clearance messages were processed by their FMS. It was also noted that the approach taken in the proposal was to identify the functional common denominator between Airbus and Boeing with regard to the processing of uplink route re-clearances. The proposal was also coordinated with other manufacturers through the IBAC participation at the NAT IMG sub-groups meetings.

6.2.18 The NAT SPG noted that this proposal for amendment was submitted to the GOLD ad-hoc group for global coordination before eventual inclusion in Edition 2.0 of the GOLD. It was agreed that once the preliminary coordination was completed, the NAT service providers could start implementing the use of CPDLC for route re-clearances based on the principles provided in the above-mentioned proposal for amendment.

7. WORK PROGRAMME INCLUDING SUB-GROUPS

7.1 NAT IMG OUTCOME

7.1.1 The NAT SPG noted that the NAT IMG met twice since NAT SPG/47 (NAT IMG/39 took place from 7 to 10 November 2011 in Miami, United States and NAT IMG/40 was held from 7 to 10 May 2012 at the European and North Atlantic (EUR/NAT) Office of ICAO).

7.1.2 The NAT SPG was advised concerning the outcome of the NAT Oceanic Interface Safety Occurrences Working Group (NAT OISO WG) meeting convened in response to NAT SPG Conclusion 47/09. The meeting had been attended by 9 representatives from the States concerned and was characterized by an open and detailed exchange of information and views. The OSIO WG agreed upon the a number of areas for possible improvement including: a) Sharing of ANSP information; b) Inter-unit communications; c) Improving the clarity of Letters of Agreement contents; and d) Increase NAT Airspace Users involvement in the NAT SPG working structure and related activities.

7.1.3 The NAT SPG noted that the work of the NAT OISO WG would continue by merging its activities with that of the NAT ATMG. It was noted that, subsequently, the composition of the NAT ATMG was expanded to include Spain.

7.1.4 The NAT SPG noted that NAT IMG was provided with a briefing on the outcome of the Prestwick Centre Familiarization event which had been held at the Prestwick ACC from 29 to 30 November 2011. The event aimed to provide NAT Region operators with an overview of Prestwick ACC, including

Shanwick oceanic operations and with an overview of the ICAO NAT SPG organizational structure. It was noted the participants' consensus that the Prestwick forum provided good information and future regional NAT Operations forums should include sufficient time to discuss details concerning NAT safety, volcanic ash contamination contingency plans and specific ANSP plans as it concerned the extension of the RLongSM trial, the NAT Region Data Link Mandate, RLatSM and the transition to PBN.

7.1.5 The NAT SPG noted the foregoing event partially responded to the NAT SPG policy expressed in NAT SPG Conclusion 45/14 - Convening NAT users meeting, in which ICAO was called upon to convene, from time to time, such events.

7.1.6 The NAT SPG noted that, at the request of IATA, the NAT IMG initiated coordination with the NAT SOG to explore whether it might be possible to expand the geographic scope of the validation trial of RLongSM. The on-going trial since March 2011, was currently taking place within the Gander and Shanwick OCAs. The NAT SOG would, at its next meeting, review information from Canada and the United Kingdom to determine what additional work would be required to approve the extension of the validation trial into other OCAs within the ICAO NAT Region.

7.1.7 The NAT SPG was informed that the NAT IMG completed its investigations into the possibility of changing the oceanic clearance procedures used to support operations in the ICAO NAT Region. It was confirmed that, in the current operational environment, there was no consensus the NAT oceanic clearance procedure could be safely eliminated. The United States provided a detailed briefing to the NAT IMG concerning several procedural changes that were planned regarding the delivery of Oceanic Clearances by the New York Air Route Traffic Control Center (ARTCC). It was confirmed the changes would not eliminate issuance of any portion of the Oceanic Clearance and would satisfy the requirements described in Chapter 5 (Oceanic ATC Clearances) of NAT Doc 007. Along with implementing procedural changes, the United States intended to incorporate supporting information into a new section of its AIP which would be titled "Oceanic Operations". The planned implementation date for the procedural changes was September 2012 and a NOTAM would be issued in the interim until the AIP update had been completed. The NAT IMG expressed its appreciation to the United States for the information provided and its commitment to ensuring compliance with the NAT Region requirements related to the oceanic clearance.

7.1.8 In relation to the foregoing, it was pointed out that the current radio communication failure procedures documented in the NAT SUPPs were related to whether or not the flight had received an oceanic clearance. It was suggested that, in areas where separation was not being applied strategically, the procedure might not be appropriate and, additionally, flight crews might not always understand whether or not they had "received an oceanic clearance" in the context of applying the procedure. The NAT IMG agreed this issue would be examined and revisions to the NAT SUPPs would be suggested if appropriate.

7.1.9 The NAT SPG noted the NAT IMG's agreement to investigate the feasibility of collecting data which would compare the cleared, versus flight requested, flight profiles of aircraft operating in the ICAO NAT Region as a basis for operational efficiency KPIs. It was expected that a proposal would be provided to NAT SPG/49 in this regard.

7.1.10 The NAT SPG was informed that NAT IMG/40 approved a proposal to update the contact information provided in the Reykjavik section of the *Air Traffic Management Operational Contingency Plan - North Atlantic Region* (NAT Doc 006, Part I). Accordingly, Amendment 06 to this document was promulgated on 21 May 2012.

7.1.11 It was also noted the NAT IMG's continued efforts to update *Future ATM Concept of Operations for the NAT Region* (NAT Doc 005). Coordination had been effected with the NAT SOG concerning material related to safety management in the ICAO NAT Region. In view of the nature of this material, it was intended to seek the approval of the NAT SPG for its amendment. It was expected the NAT IMG would finalize the overall amendment of NAT Doc 005 prior to NAT SPG/49.

7.1.12 The NAT SPG was informed that the NAT IMG provided detailed information to the NAT SOG concerning planned and implemented safety improvements by NAT Region ANSPs. It was noted that the NAT IMG would examine the material provided in NAT Doc 007 concerning the application SLOP in the ICAO NAT Region with a view to ensuring consistency of language and alignment with the applicable global provisions, as detailed in the PANS-ATM, Section 16.5.

7.1.13 The NAT SPG noted that the NAT IMG would examine the possibility of applying certain separation minima, detailed in PANS-ATM Section 5.4.2.2, in the ICAO NAT Region (application of 10 minutes longitudinal separation between aircraft operating on intersecting tracks).

7.1.14 The NAT SPG was advised that a safety issue had been identified with the use of waypoints defined as a range and bearing from a significant point or a navigation aid. It had been discovered that different navigational data bases might not define the same magnetic variation for the same locations; in many cases, this would differ also from the values used by ANSPs. As a result, the actual position of an aircraft could be considerably different from what would be calculated by the ground systems and so could the actual spacing between two aircraft. Accordingly, Iceland had implemented a policy whereby flight planned waypoints defined as range and bearing from a navigation aid or a significant point would not be used in ATC route clearances. Rather, the flight would be cleared using waypoints defined by latitude and longitude or via defined significant points or via navigation aids. The NAT SPG noted that this issue would also be raised at the upcoming meeting of the Cross Polar Working Group, as the effects would be most severe at higher latitudes. The NAT SPG noted the NAT IMG's agreement that, in airspace where ATS surveillance services were not provided, route clearances would not include waypoints defined as a range and bearing from a navigation aid or significant point.

7.1.15 The foregoing issue was also discussed at NAT SOG/06 and additional information was provided concerning another risk arising from this situation. This risk related to the effect of significant discrepancies between the magnetic variation used to develop published Category II and III Instrument Landing System approaches and that being applied by the aircraft's navigation system. If the difference was significant enough, the autopilot would disconnect, preventing the flight from completing the "coupled" approach. The NAT SPG noted that all of the foregoing was brought to the attention of ICAO Headquarters to support global awareness and resolution of the issue.

7.2 REPORT OF THE NAT EFG

7.2.1 The NAT SPG noted that the NAT EFG met twice since NAT SPG/47 (NAT EFG/22 took place from 25 to 27 October 2011 at the EUR/NAT Office of ICAO and NAT EFG/23 took place from 2 to 4 May 2012 in Miami, United States).

7.2.2 The NAT SPG was informed that during NAT EFG/22 Mr Denis Daly, from Ireland, who had served as the group's chairman since NAT EFG/5, announced he wished to step down from that role. The NAT EFG thanked Mr Daly for his long years of service to the group and to the aviation community and expressed its warm hopes he would enjoy this new stage in his life.

7.2.3 The NAT EFG agreed unanimously that Mr David Chin, from the United States, should serve as the Chairman *pro tem*, which duties he carried out at NAT EFG/23. The NAT SPG welcomed the formal proposal of the United States that Mr Chin be appointed the next chairman of the NAT EFG and unanimously approved the nomination.

7.2.4 The NAT SPG noted that updates have been received by the NAT EFG concerning the progress and planning in relation to the RLongSM validation trial, the planned implementation of RLatSM the NAT Region Data Link Mandate (NAT SPG Conclusions 46/2 and 47/1 refer) and the development of KPIs for the ICAO NAT Region (NAT SPG Conclusion 46/1 refers). The information received by the NAT EFG addressed as well the direction provided by the NAT SPG in relation to the allocation of costs

associated with the RLatSM implementation (*Summary of Discussions and Conclusions of the 47th Meeting of the NAT SPG*, paragraph 7.2.10 refers) and the development of cost efficiency KPIs that would be reflective of and related to operational KPIs (*Summary of Discussions and Conclusions of the 47th Meeting of the NAT SPG*, paragraphs 2.1.1, 2.1.2, 2.1.4 and 2.1.5 refer).

7.2.5 The NAT SPG noted the information related to the involvement of several States in various FABs.

7.2.6 It was noted that Norway was preparing for the establishment of the North European Functional Airspace Block (NEFAB) in December 2012 in cooperation with Estonia, Finland and Latvia. The Bodø Oceanic FIR would be included in the NEFAB, due to the integrated nature of the domestic and oceanic Air Navigation Services (ANS) infrastructure in Norway but it was highlighted that Norway was aware that the Single European Sky (SES) legislation was not applicable in high seas airspace and would ensure this was properly reflected during the finalization of the legal framework for NEFAB.

7.2.7 It was also noted that Portugal was preparing for the establishment of the Southwest FAB in cooperation with Spain and that the Santa Maria Oceanic FIR would not be included.

7.2.8 The NAT SPG noted the information provided by Ireland to the NAT EFG that the actual savings to operators arising from the implementation of their FAB with the United Kingdom were exceeding the estimated benefits predicted by the supporting business case. These benefits were a result of lower fuel burn, reduced CO_2 emissions and other operational efficiency gains.

7.2.9 The NAT SPG noted that the United Kingdom's government had, for the present time, decided not to sell part of its 49% share in NATS, the entity which provided enroute air navigation services in the United Kingdom.

7.2.10 The NAT SPG noted the briefings from Canada and the United Kingdom provided to the NAT EFG concerning the estimated benefits to airspace users as a result of the on-going validation trial of the application of RLongSM in the Gander and Shanwick OCAs. It was noted it appeared that a significant number of opportunities existed for aircraft to climb which, it was assumed, would allow flights to operate at more efficient flight levels. However, since crews frequently did not request climbs, many of these opportunities were not being taken advantage of. It was agreed it would be beneficial for more flight level and speed changes to be requested so that airspace users would gain benefits from decreased fuel burns. Accordingly, it was agreed that efforts should be made to increase flight crew awareness of the RLongSM validation trial. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 48/30 – Publicizing potential benefits of RLongSM trial

That the NAT SPG, desiring to maximize the fuel savings and associated reductions in CO_2 emissions which could result from aircraft operating at more optimimum flight profiles in the ICAO NAT Region, invite airspace users and professional organisations together with NAT DMO to:

a) develop and implement appropriate measures to:

   i) increase awareness in the airspace user community regarding the increased operational flexibility resulting, *inter-alia*, from the validation trial for the implementation of a Reduced Longitudinal Separation Minimum of 5 minutes between Automatic Dependant Surveillance - Contract (ADS-C) equipped aircraft (RLongSM) in the ICAO NAT Region; and

   ii) encourage flight crews to request vertical and speed changes for more fuel-efficient flight profiles; and

b) provide an update to NAT SPG/49.

7.2.11 The NAT SPG was informed that the NAT EFG reviewed a cost and benefits analysis for the planned implementation of RLatSM in the ICAO NAT Region. The analysis was linked to the costs associated with the NAT Region Data Link Mandate and concluded that the main incentive for operators to equip, so as to conform to the Mandate, would be to avoid penalties arising from being excluded from airspace where the most optimum flight profiles could be flown.

7.2.12 As the primary focus of the NAT Region Data Link Mandate was to ensure appropriate equipage to support more robust conformance monitoring and error detection as a means of controlling operational safety risks, the NAT EFG agreed that it would be appropriate, although challenging, to take account of various scenarios in assessing the economic impact of the NAT Region Data Link Mandate. This complexity included how to properly account for the safety benefits achieved and expected from Data Link and how to account for the possibility that some percentage of the NAT fleet would operate in other areas where FANS 1/A services, and attendant operational benefits, were available.

7.2.13 The NAT SPG noted that the United States agreed to take all of the foregoing into account in developing an updated economic impact analysis for the NAT Region Data Link Mandate and to develop a cost and benefits analysis for RLatSM which would not include costs associated with the NAT Region Data Link Mandate and which would be specific for each planned implementation phase. Furthermore, it was also noted that Canada and the United Kingdom agreed to collaborate in the development of a separate RLatSM cost and benefits analysis, taking advantage of the experience gained from their trial implementation of RLongSM and the ability to directly monitor actual operations in the airspace to which the initial applications of RLatSM would be restricted. These analyses would be presented to NAT EFG/24.

7.2.14 The NAT SPG was informed on the coordination that took place between the Chairman *pro tem* of the NAT EFG and the Chairman of the NAT SPG concerning the definition and scope of possible cost effectiveness KPIs for the ICAO NAT Region. The NAT SPG Chairman had clarified these KPIs should be directly related to the operational KPIs being developed by the NAT IMG. The intention was to provide an indication of the costs necessary to support the level of service being provided in the ICAO NAT Region which would also provide a means to show regional trends in cost effectiveness. Finally, it was stressed that any KPIs should be regional, not ANSP-specific (as an example, it was suggested that average cost per 100 kilometres flown could be a possible KPI).

7.2.15 The NAT SPG noted that NAT EFG/24 was planned to take place at the EUR/NAT Office of ICAO from 31 October to 2 November 2012.

North Atlantic Fee Analysis Model

7.2.16 The NAT SPG noted that information provided by the NAT EFG on the North Atlantic Fee Analysis Model (NAT FAM). The summary of findings provided robust and reasonable estimates of historical NAT charges that could be used to study their harmonization.

7.2.17 The NAT SPG noted that the NAT FAM had a demonstrated potential to carry out a broad range of financial and policy analyses of air transportation in the NAT region, including:

a) analyses of the historical collection of NAT user charges, including resulting revenues, on an ANSP or FIR basis, as well as analyses of distributional impacts by weight, distance, and origin-destination region pairs;

b) analyses of the hypothetical harmonized charge structures for NAT user charges, including resulting revenues, on an ANSP or FIR basis, as well as analyses of distributional impacts by weight, distance, and origin-destination region pairs;

c) analyses of the impact of various hypothetical discounts or exceptions;

d) analyses of changes in ANSP-specific unit rates under either current or hypothetical charge structures;

e) evaluation of new concepts for charge structures or the development of hybrid charge structures; and

f) analyses of hypothetical changes to the Danish and Icelandic Joint Financing Agreements (DENICE JFA).

7.2.18 The key conclusions of the analyses conducted to date were as follows:

a) the model provided a robust and reasonable estimate of historical NAT charges;

b) the model provided a rich data set for information on NAT flight activity and user charges, including airport origin and destination, aircraft make and model, aircraft Maximum Take Off Weight (MTOW), distance by FIR, and user charge by FIR;

c) a distance-based charge structure would result in the lowest disruption over the status quo for the various groups of aviation users that operate in the NAT region today;

d) in the absence of discounts, lighter aircraft would generally face the largest increase in charges under harmonization, except under a weight/distance-based charge structure; and

e) short-haul flights would generally face increases under a flat charge structure and decreases under a weight/distance-based charge structure.

7.2.19 The NAT SPG noted that the key findings from the analysis of the NAT FAM mode results were presented to the NAT EFG and directions for future work were discussed. It was also noted that the NAT EFG agreed to engage in the following tasks related to NAT FAM:

a) update the model with calendar year 2011 data; including updating the computation of DENICE charges in accordance with the revised DENICE JFA;

b) prepare a framework for developing regional cost effectiveness key performance indicators (KPIs) using NAT FAM to aggregate data across flights that enter the region formed by the NAT FIRs. The framework would take into consideration the suggested cost-effectiveness KPIs presented in the draft revised text for the *Manual on Air Navigation Services Economics* (Doc 9161; *Joint Meeting: Airport Economics Panel and Air Navigation Services Panel*, 4th meeting, Working Paper 8 refers).

7.3 INTEGRATION OF NAT AND DOMESTIC LONG TERM STRATEGY

7.3.1 At the outset, the representative from the United Kingdom acknowledged the highly important role played by the NAT SPG in the past decades in directing and overseeing the significant improvements in safety, performance and efficiency in operations in the North Atlantic Region.

7.3.2 The long-term plans taking place in Europe and the United States to enhance the future ATM system in their respective airspaces via the SESAR and NextGen projects have been progressing steadily to the development of Concepts of Operations (CONOPS) for domestic as well as oceanic operations. These would have a significant impact on the plans and investments being to be made by all aviation stakeholders as the pace towards the implementation of SESAR/NextGen would accelerate.

7.3.3 It was noted from industry feedback that benefits of about $300 to $500 per flight for aircraft operators could be provided over the next 10 to 15 years leading to over $1 billion of benefits for the industry.

7.3.4 However, to ensure that such benefits would be delivered whilst ensuring that the costs were well managed, the United Kingdom felt that the NAT SPG needed to develop a strategy and plan. It was proposed to establish a short-term NAT 2025 Task Force, which would be tasked to assure operational alignment across the EUR, NAM and NAT regions in light of the NextGen and SESAR ATM programmes and to lead the development and agreement of a future Integrated Transatlantic ATM CONOPS for the next 10-15 years. It was noted that NATS and NAV CANADA were committed to carrying out this task which would be limited to a period of 6 to 9 months.

7.3.5 The representatives from Inmarsat and IFALPA supported this proposal which could lead to increased interoperability between the domestic and oceanic operations and expressed their willingness to contribute to this work.

7.3.6 The representatives from the United States and ICAO Headquarters stated that, at present, joint activities were already taking place to ensure global harmonization of the SESAR and NextGen ATM programmes and highlighted that close coordination with the appropriate bodies involved was essential to avoid duplication of efforts.

The NAT SPG invited Canada and the United Kingdom to conduct a gap analysis on the current situation, including the developments that were or were not taking place, and that the Terms of Reference, deliverables and composition of the Task Force be presented to the next meeting of the NAT IMG.

7.4 INMARSAT I-3/I-4 CLASSIC AERO GES HARMONIZATION

7.4.1 The NATSPG was provided with information on Inmarsat's implementation plan to harmonise the ground station and network infrastructure between the I-3 and I-4 Classic Aero services. The information provided the rationale for the upgrade, outlined the benefits for end-users, and a timetable for the transition.

7.4.2 The NAT SPG noted that the changeover to the new service delivery model for Classic Aero on the I-3 network was expected to commence in the fourth quarter of 2012, with a phased transition that would be completed by the end of second quarter of 2013. Inmarsat and its partners will work with the aviation industry to ensure a smooth transition during this period. Inmarsat would continue to keep the NAT CNSG informed about the new network readiness and transition plans accordingly.

8. ANY OTHER BUSINESS

8.1 ADDRESSING REGIONAL AIR NAVIGATION DEFICIENCIES-TRANSITION FROM FIVE REGIONAL DATABASES INTO A CENTRAL DATABASE

8.1.1 The Secretariat presented the NAT SPG with information regarding the transition from five regional databases of air navigation regional deficiencies into a central database. The paper highlighted the fact that the initial five regional databases were not available for worldwide viewing and usage, and in order to be consistent with the principles of sharing safety information worldwide, global access was necessary.

8.1.2 A prototype system for the management of air navigation deficiencies at the global had been incorporated in the integrated Safety Trend Analysis and Reporting System (iSTARS) with the objectives to consolidate different regional air navigation deficiency databases. The centralized system, initiated in November 2011, was populated with data coming from all the Regions and after cleaning up the database,

the data was made available on iSTARS in February 2012. Regional Offices were continuing the coordination with States in order to complete the full transition to a single database in December 2012.

8.1.3 On a positive note, it was noted that the NAT didn't have any deficiencies reported.

8.1.4 The Secretariat informed the NAT SPG that no action was required from the NAT SPG since the Regional Office was taking care of any implementation and transition issues regarding the single database.

8.2 NEXT MEETING

8.2.1 The Group agreed to convene its Forty-Ninth Meeting in the EUR/NAT Office of ICAO in Paris, France, from 25 to 28 June 2013.

Appendix A - List of Participants

(Paragraph 0.3 refers

Chairman

Ásgeir PÁLSSON

CANADA

Larry LACHANCE
Denis GUINDON
Jeff DAWSON

FRANCE

Murielle SUFFRIN

DENMARK

Kirsten SONDERBY
Henrik HOLM

ICELAND

Hlin HOLM
Ingunn ÓLAFSDÓTTIR
Leifur HAKONARSON

IRELAND

Donie MOONEY
Peter KEARNEY

NORWAY

Gitte VIKSAAS
Per Harald PEDERSEN

PORTUGAL

Carlos ALVES
Albano COUTINHO

UNITED KINGDOM

Pauline LAMB
Stuart LINDSEY
Matthew TEMPLE-SMITH

UNITED STATES

Heather HEMDAL
Anthony FERRANTE
Leslie SMITH
Kevin HAGGERTY
Gaya (Lynsey) HARRIMAN

EUROPEAN COMMISSION

Marinus DE JONG (part time)

IATA

Jeffrey T. MILLER

IBAC

Peter INGLETON

IFALPA

Mark SEAL

INMARSAT

Gary COLLEDGE

ICAO

Luis FONSECA DE ALMEIDA
(ICAO RD, NAT SPG Secretary)
George FIRICAN *(NAT IMG secretary)*
Carole STEWART-GREEN
Christopher KEOHAN
Elkhan NAHMADOV
Nicolas RALLO
François ROBERT
Patricia CUFF
Nikki GOLDSCHMID

Appendix B -
Implementation of select conclusions of NAT SPG/47 — Action Plan—
(*paragraph 1.5.1 refers*)

Concl # Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by the ANC 15 November 2011 (ANC 188-5)	Reporting/ Completion date
C 47/1 **C**	**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.	ICAO European and North Atlantic Office	Common text for AIPs/AICs publications by States in line with the provisions of the NAT SUPPs (Doc 7030)	The ANC supported this conclusion.	June 2012
C 47/2 **A**	**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.	ICAO European and North Atlantic Office/ NAT IMG ICAO HQ/ATM	Implementation plan Global provisions	The ANC supported Conclusion 47/2, and expressed concern about the desire to reduce lateral separation while the TLS for current separation is not met. The ANC called upon the Separation and Airspace Safety Panel (SASP) to include work in the development of global provisions on this subject in its work programme.	June 2012 June 2016

Concl # Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by the ANC 15 November 2011 (ANC 188-5)	Reporting/ Completion date
C 47/3 A	**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.	ICAO European and North Atlantic Office/ NAT IMG	Letter to States requesting them to encourage operators	The ANC supported this conclusion.	June 2012
C 47/4 A	**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.	ICAO European and North Atlantic Office/States	Amended RLatSM Plan Update to NAT SPG Handbook to record this Policy Conclusion for future reference	The ANC supported this conclusion.	July 2011
C 47/5 C	**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.	ICAO European and North Atlantic Office/ IMG	NAT RCP and ADS-C surveillance performance based operations implementation plan	The ANC noted this conclusion.	June 2012

Concl # Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by the ANC 15 November 2011 (ANC 188-5)	Reporting/ Completion date
C 47/6 C	**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.	ICAO European and North Atlantic Office/ CANADA	ADS-B Eligibility list	The ANC noted this conclusion, while suggesting that it was preferable to have a global database and that the Secretariat task the proper panel to further investigate the issue. The ANC highlighted the work of APANPIRG in this matter for NAT SPG consideration.	June 2012
C 47/7 A	**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.*	ICAO European and North Atlantic Office	Nuclear Emergency Contingency Plan	The ANC supported this conclusion and recommended that other regions develop similar contingency plans. The ANC requested the Secretariat to follow-up this matter with all regional offices.	June 2012

Concl # Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by the ANC 15 November 2011 (ANC 188-5)	Reporting/ Completion date
C 47/8 A	**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.	ICAO European and North Atlantic Office	Amendment to SPG Handbook Information to NAT SPG working structure Letter to NAT user States	The ANC noted this conclusion.	June 2012
C 47/9 A	**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.	ICAO European and North Atlantic Office	Creation of a working group for the assessment of the interface issues between their respective Oceanic Area Control Centres (OACCs) Convene a meeting of the working group	The ANC noted this conclusion.	June 2012

Concl # Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by the ANC 15 November 2011 (ANC 188-5)	Reporting/ Completion date
C 47/10 A	**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.	NAT SPG/ NAT SOG	Amended ToRs Update to NAT SPG Handbook	The ANC noted this conclusion.	July 2011
C 47/11 A	**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.	ICAO European and North Atlantic Office/ Iceland	Doc 7030 Supp Procedures Amendment proposal	The ANC noted this conclusion.	June 2012
C 47/12 A	**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	ICAO European and North Atlantic Office	New edition of Doc 007	The ANC noted this conclusion.	September 2011

Concl # Strategic Objective*	Title of Conclusion	Text of Conclusion	Responsibility	Deliverable	Action Agreed by the ANC 15 November 2011 (ANC 188-5)	Reporting/ Completion date
		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.				
C 47/13 **A**	**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.	ICAO European and North Atlantic Office	Updated NAT SPG Handbook	The ANC noted this conclusion.	July 2011

* The Council agreed to three Strategic Objectives for the triennium 2011to 2013 as follows (C-DEC 188/13 refers):

Strategic Objective A: Safety — Enhance global civil aviation safety

Strategic Objective B: Security — Enhance global civil aviation security

Strategic Objective C: Environmental Protection and Sustainable Development of Air Transport — Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment

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Appendix C- Task List Supporting the Trial Implementation of RLatSM in the ICAO NAT Region

(*paragraph 3.1.2 refers*)

	SUBJECT	COMPLETION DATE	LEAD(S) NOTE: leads will coordinate with groups identified in next column	COORDINATION	KEY IMPLEMENTATION TASKS
1	**Task List and Schedule**		NAT SARSIG	All contributory groups	Develop a Task List and schedule for completion of individual tasks.
2	**Concept of Operations**	At least 2 years prior to start of Trial, to support other activities	NAT ATMG	NAT SARSIG NAT OPS/AIR (½ degree waypoints) - **COMPLETED**	Develop and coordinate Concept of Operations and incorporate into appropriate operational policy and procedures documents (e.g., ICAO State Letters, State AIP Supplements, AIC's) The concept of operations shall include a Concept of Use, an impact assessment on the domestic interface, safety assessment of use of ½ degree waypoints and development of related mitigation**.** Note: This relates to Task 12
3	**Cost/Benefit Analysis (CBA)**		NAT EFG		Complete CBA/Business Case.
4	**ICAO SARPS and Guidance & NAT SPG Documents**	Post trial	NAT ATMG, NAT CNSG, NAT SARSIG	NAT SOG	Review related ICAO SARPS and guidance documents and NAT SPG documents: ICAO Doc 4444, Doc 7030; Annexes 2, 6, 11, all NAT SPG documents **1.** Plan for amendment of NAT Regional SUPPS for: 25 NM-lateral and Data Link mandate. **2.** Establish date for submittal of a draft 7030 amendment to ICAO Paris. **3.** Establish target date for ICAO distribution for comment. **4.** Establish target date for publication.
5	**RNP and Data Link authorization criteria**		NAT SARSIG, NAT OPS/AIR	NAT SOG	**1.** Review ICAO Performance Based Navigation (PBN) Manual (ICAO Doc 9613) for current criteria for RNP authorization. (Third Edition – 2008 is current). **2.** Review GOLD for data link authorization criteria.

	SUBJECT	COMPLETION DATE	LEAD(S) NOTE: leads will coordinate with groups identified in next column	COORDINATION	KEY IMPLEMENTATION TASKS
6	**Role of RCP and Surveillance Specifications**	May 2011 **COMPLETED**	NAT SARSIG, NAT CNSG	NAT SOG	Establish role of RCP and Surveillance specifications in RLatSM implementation plan. To be documented in NAT RCP and ADS-C Surveillance Performance Based Operations Implementation Plan
7	**Coordination with ICAO HQ/SASP**		NAT IMG		**1.** What coordination of RLatSM and RLongSM criteria with SASP will be necessary? **2.** Does NAT SPG desire/expect approval from ICAO HQ? **3.** Will RLatSM and RLongSM become a new separation minimum published in ICAO DOC 4444 for global use?
8	**Recommend target implementation dates for 25 NM lateral separation**	Phase 1 –2015 Phase 2 – Phase 3 -	NAT IMG	NAT ATMG, NAT SARSIG, NAT CNSG	Establish target implementation dates for RLatSM implementation. Phase 1 – 2015 time frame, harmonized to NAT MNPS to PBN transition plan. Phase 2 – to be determined. Phase 3 – to be determined.
9	**Recommend conditions required to proceed to each implementation phase**	Phase 1 – Phase 2 – Phase 3 -	NAT ATMG	NAT IMG	Develop a recommendation for the approximate percentage of flights to be conducted by RLatSM eligible aircraft to proceed with Phase 1, Phase 2 and Phase 3 implementations. Assess airspace to be included and aircraft that would be consequently affected to determine whether to proceed to each implementation phase
10	**Operator/aircraft fleet readiness projection**	**COMPLETED**	NAT SARSIG, NAT OPS/AIR	NAT CNSG	Make projection of percentage of flights that will be conducted by RLatSM eligible and data link equipped aircraft by 2013 and 2015
11	**ATC system modification**	End of 2011 **COMPLETED**	NAT ATMG and NAT CNSG		Identify the time schedule required to modify ATS provider ATC systems for RLatSM, including modifications necessary to take account of revised domestic route structures (see Task 17). See Table of ATC system changes arising from RLatSM implementation for details.
12	**Safety Assessment**	Prior to trial	NAT SARSIG	NAT SOG	Complete Safety Management System (SMS) required documents (e.g., Safety Assessment/Collision Risk Modelling) to be available prior to trial.

	SUBJECT	**COMPLETION DATE**	**LEAD(S)** **NOTE:** leads will coordinate with groups identified in next column	**COORDINATION**	**KEY IMPLEMENTATION TASKS**
13	**Coordination with NAT Safety Oversight Group**	Prior to trial	NAT IMG	NAT SARSIG	As they develop, coordinate safety cases with SOG and present completed safety cases to SOG to support changes to the NAT air navigation system.
14	**Data Link System Performance**	Prior to trial	NAT SARSIG, NAT CNSG	NAT SOG	NAT SARSIG determine requirement for data link system performance and NAT CNSG establish whether or not it is being met, and if not, determine what measures should be taken. To be documented in NAT RCP and ADS-C Surveillance Performance Based Operations Implementation Plan
15	**FANS 1/A or equivalent Over Iridium**	**COMPLETED**	NAT CNSG	NAT SARSIG, NAT SOG	Determine acceptability for FANS 1/A or equivalent CPDLC and ADS-C to be conducted over Iridium. Measure performance against RCP240 and RSP180 **COMPLETED - NAT IMG/40 confirmed acceptability of FANS 1/A over IRIDIUM. Performance will be monitored as component of Task 14.**
16	**Safety Management System (SMS) Document**(s)		NAT ANSP'S	NAT PROVIDER STATES NAT SOG	**ATS provider requirement:** complete and submit SMS documents for Providers State approval approx___ months prior.
17	**Airspace structure redesign**	At least 2 AIRAC cycles prior to commencement of Trial	NAT ATMG	NAT SARSIG, NAT OPS/AIR	Identify steps necessary to introduce ½ degree track spacing. Consider accommodations necessary at the domestic interfaces; consider steps necessary to incorporate changes into ATC systems (see also Task 11).
18	**Plan and schedule for aeronautical chart data publication**		NAT SARSIG, NAT OPS/AIR	NAT PROVIDER STATES NAT CNSG, NAT SOG	**1.** Develop plan and schedule for publication of revised aeronautical charts. 2. Work with Provider States and industry chart providers to revise chart panels, etc. to include services (data link, SATCOM, etc), frequencies and communication switching boundaries to charts. Note – this prepares the work plan for Task 30.

	SUBJECT	COMPLETION DATE	LEAD(S) NOTE: leads will coordinate with groups identified in next column	COORDINATION	KEY IMPLEMENTATION TASKS
19	**Information Dissemination Program**		AS DIRECTED BY NAT IMG	NAT SOG	**1.** Create RLatSM area in NAT Documentation section of ICAO EUR/NAT website. **2.** Develop distribution list for State and industry organizations and key individuals. **3.** Distribute ICAO State letters, as necessary. (Include Training Centers).
20	**Job Aids for ADS-C, CPDLC, RNP 4 and RCP Authorization Process**		NAT SARSIG, NAT OPS/AIR	NAT SOG	**1.** Develop Job Aids (a repository for how-to guides or summaries to help understand and comply with policies and standards), as necessary, based on ICAO and NAT guidance. **2.** Post in RLatSM area on ICAO EUR/NAT website. **3.** Ensure current PBN Manual and GOLD references incorporated. **4.** Have ICAO State letter advocate use of Job Aids.
21	**Advance notice to User States and Operators**	1 year prior to expected start date of Trial	NAT ATMG, NAT SARSIG	NAT IMG, NAT SOG	Develop suggested common language for Provider State AIC's and AIP Supplements) for NAT IMG approval showing intent to implement (key dates, basic plan and operating policy, etc.). This is advance notification of intent, ahead of the more detailed "finalized" material, which is addressed at Task 24). This Task is also closely related to Task 23
22	**Publication of Advance Notice**		NAT PROVIDER STATES DOMESTIC INTERFACE STATES NAT IMG	NAT SOG	Publish State AIC's or AIP Supps developed in above task 21.
23	**Draft ICAO State Letter**	1 year prior to expected start date of Trial	NAT ATMG, NAT SARSIG	NAT IMG, NAT SOG	Draft ICAO State letter for NAT IMG approval to: outline project and advocate use of Job Aids and other guidance posted in the RLatSM area on the ICAO EUR/NAT website. The purpose is to inform the NAT User States so they may prepare for the implementation. Note: this Task is closely related to Task 21
24	**Operational Policy & Procedures documents (AICs, AIP Supps)**	At least 2 AIRAC cycles prior to commencement of Trial	NAT ATMG, NAT SARSIG	NAT CNSG, NAT SOG	Develop suggested common language for Provider State AIC's or AIP Supplements containing applicable operational policy and procedures for Provider State distribution.

	SUBJECT	**COMPLETION DATE**	**LEAD(S)** **NOTE:** leads will coordinate with groups identified in next column	**COORDINATION**	**KEY IMPLEMENTATION TASKS**
25	**Publication of Operational Policy & Procedures documents**		NAT PROVIDER STATES DOMESTIC INTERFACE STATES	NAT SOG	Publish Provider State AIC's or AIP Supps developed in task 24 above.
26	**Provider State ATS policy documents**		NAT PROVIDER STATES DOMESTIC INTERFACE STATES NAT SOG		Provider States revise or develop Air Traffic Services policy documents, as necessary.
27	**Pre-implementation Safety Assessment & Implementation Decision**	Phase 1 - Phase 2 - Phase 3 -	NAT IMG	NAT SARSIG NAT SOG	Update and complete final Safety Assessment and Implementation Readiness Review. Make a Go/No go decision for each Phase.
28	**Plan for Post Implementation Performance Monitoring**	Pre-trial	NAT SARSIG, NAT CNSG	NAT SOG	Develop and agree on system safety performance monitoring criteria. Clarify roles of NAT DLMA, NAT CMA and NAT Provider States.
29	**Final Notice of decision to implement**		NAT SPG, NAT IMG	NAT SOG	Provide notification to Provider and User States and operators of decision to implement.
30	**Operator Notification of decision to implement**		NAT PROVIDER STATES	NAT SOG	Publish AIC's or AIP Supps announcing decision to implement. Note - Task 18 prepares the work plan for this Task.
31	**State controller training**	Pre-trial	NAT PROVIDER STATES DOMESTIC INTERFACE STATES	NAT SOG	States train controllers.
32	**Aeronautical chart and navigation databases**	At least 2 AIRAC cycles prior to commencement of Trial	NAT PROVIDER STATES DOMESTIC INTERFACE STATES	NAT ATMG, NAT SARSIG, NAT SOG	**1.** Publish and distribute revised aeronautical chart and navigation information. **2.** Coordinate with industry chart providers.

	SUBJECT	**COMPLETION DATE**	**LEAD(S)** **NOTE:** leads will coordinate with groups identified in next column	**COORDINATION**	**KEY IMPLEMENTATION TASKS**
33	**Provider State ATC automation systems**		NAT PROVIDER STATES DOMESTIC INTERFACE STATES	NAT SOG	Modify ATC automation systems and programs, as necessary.
34	**Operator readiness**		OPERATORS NAT SOG	NAT OPS/AIR	Operators should plan to be ready by one month in advance of implementation. Note: Detailed check list/Job Aid to be developed by the NAT OPS/AIR sub-group
35	**Formally agree target Implementation Dates**	Phase 1 - Phase 2 - Phase 3 -	NAT SPG	NAT IMG, NAT SOG	Target date for implementation of each Phase of RLatSM.
36	**Post implementation monitoring**	Commencement of trial	NAT SARSIG, NAT CNSG, NAT DLMA, NAT CMA, NAT PROVIDER STATES	NAT SOG	Conduct post-implementation monitoring and convene specialists as necessary for monitoring.

Appendix D- Updated RLatSM Concept of Operations
(*paragraph 3.1.8 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 *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 – Each Phase will be applicable in whatever vertical band is currently associated with NAT Region data link mandatory airspace.

Note 2 - The dates will also be harmonized with the dates applicable to the NAT Performance Based Communication and Surveillance Implementation Plan.

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 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 E - Updated Draft Implementation Plan for the Trial Application of RLatSM in the NAT Region

(*paragraph 3.1.9 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 (NAT SPG Conclusion 46/2 refers) airspace, which 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

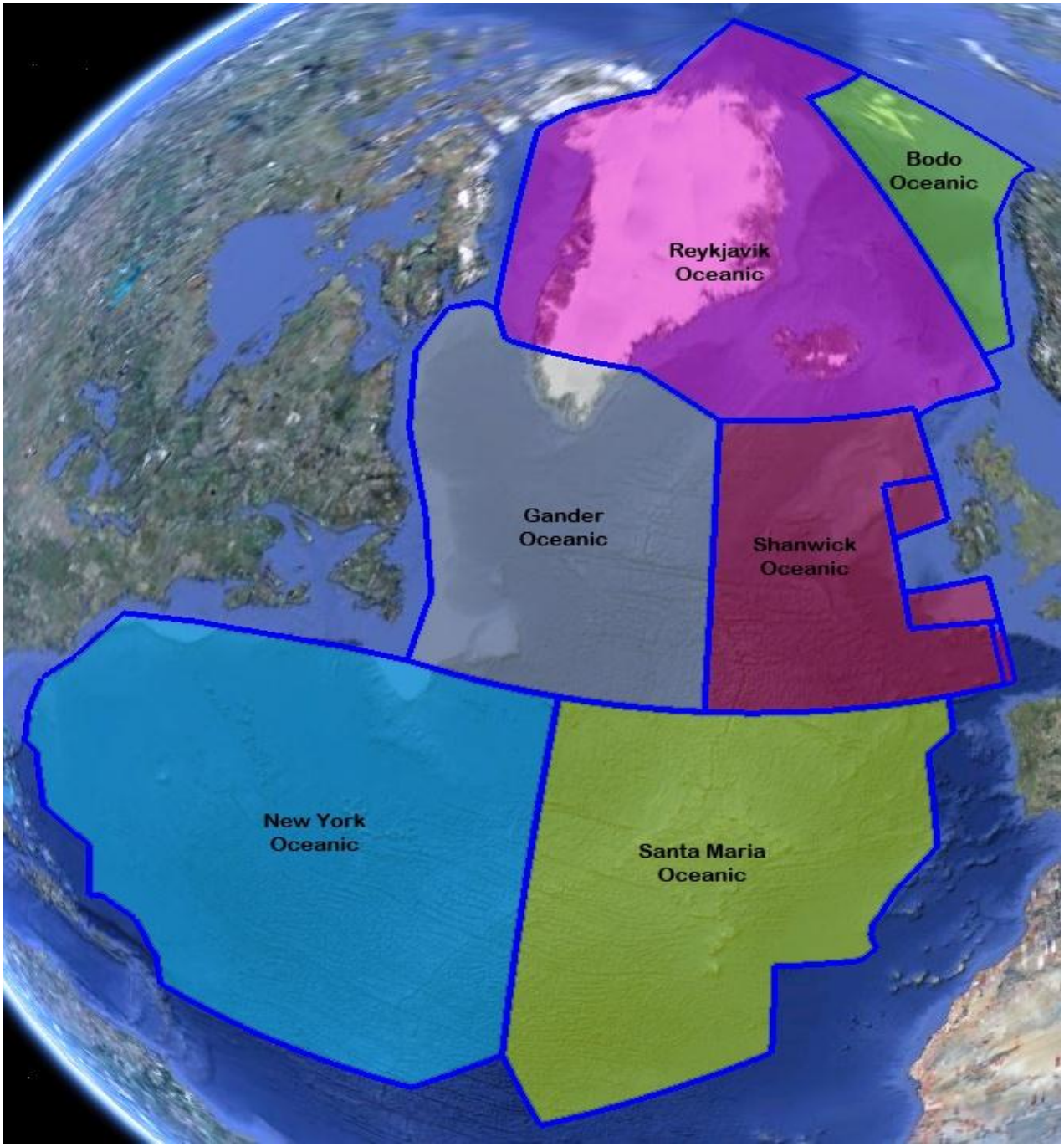
3.1.1 The responsibility for air traffic control services within the North Atlantic (NAT) Region is shared among nine states: Canada, Denmark, France, Iceland, Ireland, Norway, Portugal, the United Kingdom and the United States.

3.1.2 The NAT Region mainly consists of Class A airspace; in which Instrument Flight Rules (IFR) apply at all times. Class A airspace has been established at and above FL 55 except in the Bodø Oceanic Control Area (OCA) where it has been established above FL 195 and in the domestic portion of the Reykjavik Flight Information Region (FIR) where it has been established at and above FL 200.

3.1.3 The NAT airspace is divided into seven 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.

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

3.1.5 The following diagram illustrates;



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

3.1.7 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, Bodø oceanic airspace with the exception of the north-west part, the

NOTA ,SOTA and BOTA airspaces in the eastern portion of Shanwick FIR controlled by Shannon and Brest ACCs and in the central portion of the Santa Maria OCA where radar aided services are provided.

3.2 Strategic Lateral Offset Procedure (SLOP)

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.

3.3 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-258/EUROCAE ED-100 and RTCA DO-306/ED 122 Annex B (see also paragraph 8.1.4) 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 SPG/47 and NAT IMG/3~~8~~9, RLatSM is planned to be implemented using the following phased approach:

a) Phase 1 – 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 (NAT SPG Conclusion 46/2 refers); only aircraft with the appropriate RNP approval, ADS-C and CPDLC would be permitted to operate on the ½ degree spaced tracks.

Note 1 – Each Phase will be applicable in whatever vertical band is currently associated with NAT Region data link mandatory airspace.

Note 2 - The dates will also be harmonized with the dates applicable to the NAT Performance Based Communication and Surveillance Implementation Plan.

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, ADS-C performance and RNP 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.

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 and the NAT Performance Based Communication and Surveillance Implementation Plan for the ICAO NAT Region.

Note 5: It is planned that Phase 2 will involve promulgating approximately the same number of tracks as is the current practice, thus achieving an overall reduction of the lateral extent of the OTS, thereby increasing the flexibility for random operations and providing both economic and environmental benefits.

Note 6: Consideration will be given to implementing Phase 2 and Phase 3 in parallel, if supported by appropriate safety assessments and business case analyses.

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 navigating 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

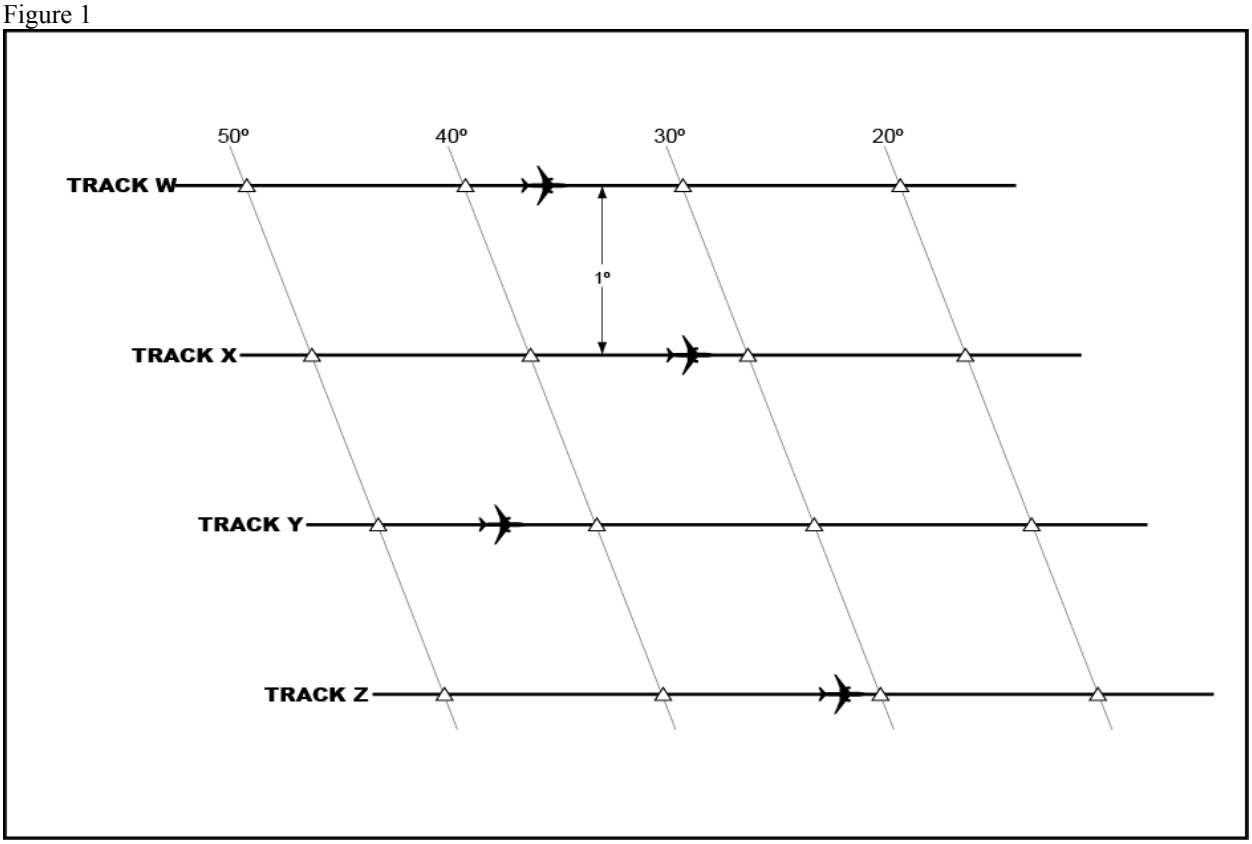
Commencing at a to be determined date within the 2014/2015 time frame, a reduced lateral separation minimum (RLatSM) of 25 Nautical Mile (NM) will be applied in the current North Atlantic (NAT) minimum navigation performance specification (MNPS) airspace between flight planned tracks of aircraft authorized 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 and NAT Performance Based Communication and Surveillance Implementation 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

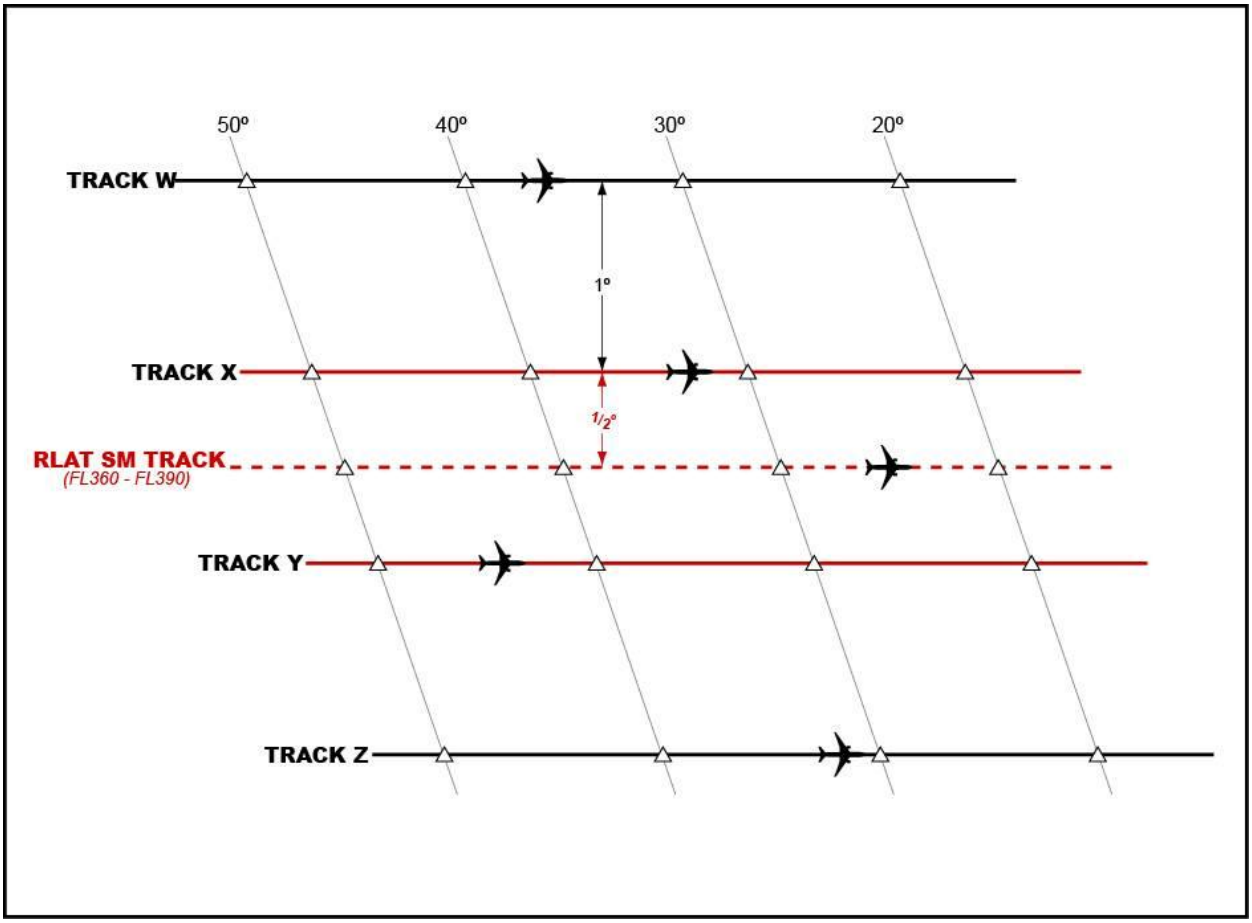
Collision risk modelling work conducted within the NAT region has determined that aircraft certified RNP 4, a navigation specification requiring navigation using GNSS, can be separated by 25 NM. The objectives of RLatSM implementation are to:

- 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) within the vertical limits applicable to the airspace associated with the NAT Region Data Link Mandate (NAT SPG Conclusion 46/2 refers) between aircraft authorized RNP 4 and having ADS-C and CPDLC capability;

  Note 1: 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 the airspace associated with the NAT Region Data Link Mandate.

  Note 2: As indicated in NAT SPG Conclusion 47/1, the vertical limits applicable to the airspace associated with the NAT Region Data Link Mandate are flight level 360 to flight level 390 inclusive.

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	360 370 380 390
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	360 370 380 390
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 risk 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-258/EUROCAE ED-100 (or equivalent) and DO-306/ED-122, Annex B (or equivalent).

8.1.5 .During the NAT RLatSM validation trial, RCP 240, as defined in the GOLD, would be the guideline against which actual communication performance would be measured. Surveillance performance specification 180, as defined in the GOLD, would be the guideline against which actual surveillance performance would be measured (NAT IMG/38 report, para 5.16-5,17 refer). In this period, monitoring will be carried out to ensure that the NAT communications and surveillance performance requirements of the RLatSM safety assessment are met. Concerning the performance specifications for the full RlatSM operations, RCP 240 and surveillance performance specification 180 are the candidate specifications to be prescribed for the RLatSM.

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 envisaged to introduce RLatSM via an operational trial starting 2014/2015. 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. Any 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 "J5" to indicate CPDLC FANS1/A SATCOM (Inmarsat) or "J7" to indicate CPDLC FANS1/A SATCOM (Iridium) 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). In accordance with NAT SPG CONCLUSION 45/18 the NAT States, ANSPs and industry support the DLMA according to the GOLD requirements.

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 F –
Updated Implementation Plan for the Trial Application of RLongSM in the NAT Region

(paragraph 3.1.11 refers)

1. Background

1.1 Advancements in aircraft avionics and air traffic management flight data processing systems have driven analysis of whether the current longitudinal separation standards in the NAT can be reduced to increase capacity at optimum flight levels. The proposed change is to reduce the minimum longitudinal separation within MNPS airspace to 5 minutes where lateral and vertical separation does not exist between aircraft pairs equipped with Automatic Dependent Surveillance-Contract (ADS-C), Controller-Pilot Data Link Communications (CPDLC) and Global Navigation Satellite System (GNSS).

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 have indicated that the ability to "step climb" enables more fuel-efficient flight profiles. Applying reduced longitudinal separation to accommodating mid-ocean altitude requests is expected to enhance the provision of fuel-efficient profiles without changing basic NAT operations. This would provide opportunity for more frequent altitude changes on a case-by-case basis.

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. This will have the added benefit of allowing return on operator investment in aircraft avionics without requiring a change from current NAT MNPS certification.

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

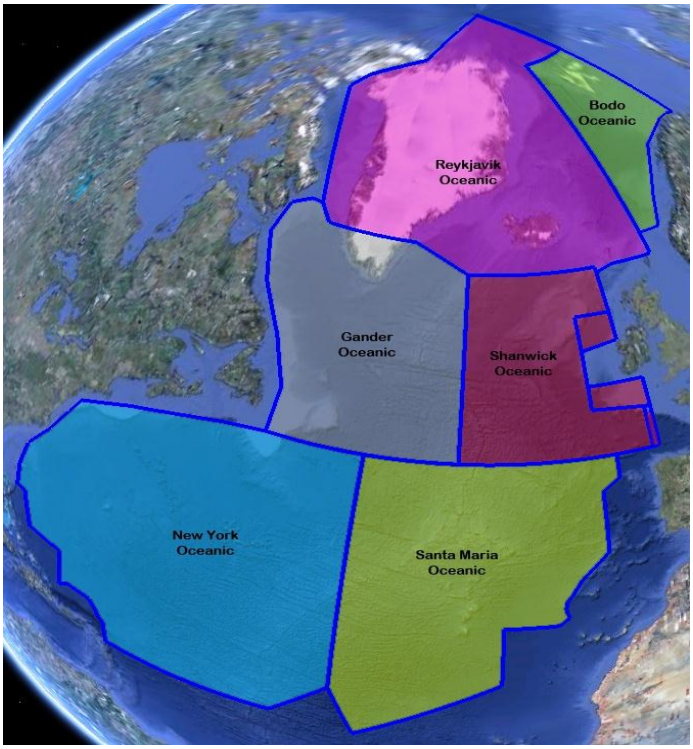
Airspace Structure

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

3.2 The NAT Region mainly consists of Class A airspace; in which Instrument Flight Rules (IFR) apply at all times. Class A airspace has been established at and above FL 55 except in the Bodø Oceanic Control Area (OCA) where it has been established above FL 195 and in the domestic portion of the Reykjavik Flight Information Region (FIR) where it has been established at and above FL 200.

3.3 The NAT airspace is divided into seven 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.

3.4 Traffic is controlled by Oceanic centres at Reykjavik, Bodø, Gander, New York, Santa Maria, Søndre Strømfjord and Prestwick, and by Shannon and Brest ACCs as illustrated by the following diagramme:



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

3.6 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, Bodø oceanic airspace with the exception of the north-west part, the NOTA, SOTA and BOTA airspaces in the eastern portion of the Shanwick FIR controlled by Shannon and Brest ACCs and in the central portion of the Santa Maria OCA where radar aided services are provided. Canada and Iceland also have plans to introduce Automatic Dependent Surveillance-Broadcast (ADS-B) surveillance in the western part of the Reykjavik OCA and the North West part of the Gander OCA.

Strategic Lateral Offset Procedure (SLOP)

3.7 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.

Airborne Collision Avoidance Systems (ACAS)

3.8 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-engine aeroplanes having a maximum certificated take-off mass exceeding 5 700 kg or authorized to carry more than 19 passengers.

4. Traffic Patterns

General

4.1 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.

4.2 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.

North Atlantic Organised Track System (NAT OTS)

4.3 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.

4.4 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.

4.5 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).

4.6 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.

Minimum Navigation Performance Specification

4.7 MNPS airspace has been established between FL285 and FL420. Longitudinal separation between in-trail aircraft using the Mach Number Technique is 10 minutes and aircraft which satisfy MNPS are separated laterally by a minimum of 60 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).

Reduced Vertical Separation Minimum (RVSM)

4.8 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.

Aircraft Equipage in Target Environment

4.9 The on-board equipment that provides the CPDLC and ADS-C capabilities required for the use of RLongSM 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-258/EUROCAE ED-100 and RTCA DO-306/ED 122 Annex B or equivalent.

4.10 Currently aircraft on the NAT report their position at waypoints which are 10º of longitude apart. Previous work looking into RLongSM operations considered the use of additional reports every 5º of longitude or circa 20 minute periodic reporting, in order to be able to safely reduce separation below the current standard of 10 minutes.

5. Determination of the Proposed System

5.1 RLongSM will be introduced to improve the efficiency of NAT operations. It will only be applied between flights travelling in the same direction on the same or diverging tracks (either an OTS published route or a random route).

5.2 The introduction of RLongSM to any of the FIRs within the NAT requires changes to the associated ATC system. Following modification of the Prestwick OACC's SAATS system, in June 2010 preliminary operational trials were conducted for eligible eastbound aircraft pairs operating solely within the Shanwick OCA although technical problems required the temporary suspension of this trial until SAATS system enhancements could be introduced. A major update to the Gander OACC's GAATS system will be also introduced into service in November 2010 which will support RLongSM. Both of these developments accommodate agreed methods of operation with other NAT OCAs.

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

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

Operational Application

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

a) the aircraft concerned have reported over a common point and follow the same track, or continuously diverging tracks, and a minimum of 5 minutes separation continues to exist until the oceanic exit point or until some other form of separation is established;

b) five minutes separation is applied to an accuracy of 1 second, i.e. 4 minutes and 59 seconds based on position reports over a common point would constitute a loss of separation;

c) RLongSM may be applied where there is a speed difference between aircraft, provided the requirement for a minimum separation (see a) above) is not breached;

d) if the aircraft have not reported over a common point, it is possible to ensure by RADAR or some other means approved by the State that the appropriate time interval will exist at the common point from which they follow either the same or continuously diverging tracks (Note: this condition is not applicable during the operational trial, where only targets of opportunity already in NAT airspace will be separated using RLongSM);

e) the aircraft concerned are providing periodic ADS-C reports at intervals of not more than 18 minutes (Note: all aircraft using ADS-C position reporting, even those not separated by the five minute minimum, will be required to provide 18 minute interval reports during the operational trial);

f) CPDLC communication has been established with the aircraft concerned to minimise the time required for any interventions; and

g) the aircraft to which RLongSM is applied will exit the oceanic control area into another oceanic control area in which RLongSM is applicable or into domestic airspace.

6. Identification of the Method of Safety Assessment

6.1 An evaluation of longitudinal risk has been made through the use of a statistical model based on the Reich model (*NAT SARSIG/7 WP/05* refers*)*. One of a number of assumptions made in the modelling of risk was that RLongSM would be applied to the entire population of aircraft i.e. the worst case scenario. The outcome of the modelling was that the estimated value of longitudinal risk would be less than the Target Level of Safety (TLS) if ADS-C periodic position reports were received every 20 minutes and appropriate action taken by controllers on their receipt. Studies conducted subsequent to the original CRM indicated that, based on current controller practice during situations where longitudinal separation may be eroding, 100% intervention whenever the separation was estimated to fall below 5 minutes based on the periodic report estimates might not be assured and therefore, for the purpose of the operational trial, a more frequent reporting interval of 18 minutes would be applied in order to meet the TLS. The modelling process did not take into account the receipt of waypoint position reports. Had it done so, the effect would have been to reduce the value of estimated longitudinal risk. Initial conclusions from this modelling were presented to NAT SARSIG/7 and following off-line exchanges it was agreed that the model was valid.

Evaluation of the Risk

6.2 The TLS for NAT MNPS airspace in the longitudinal dimension is currently 20 x 10^{-9} fatal accidents per flight hour (fapfh) but with any change of separation standard the NAT SPG has determined that a TLS of 5x10^{-9} fapfh be adopted to encapsulate both technical and operational risk.

6.3 Hazard Identification and Risk Analyses (HIRA) to assess the impact of the proposed change on the Gander and Prestwick systems have been carried out. These have been made available to the appropriate regulatory authorities and planning bodies.

Satisfaction of Safety Criteria - System Performance Criteria

6.4 There are no additional aircraft specifications outside of MNPS certification and aircraft equipage with ADS-C, CPDLC, and GNSS meeting appropriate standards. Appropriate standards for ADS-C and CPDLC equipment are RTCA DO-258/EUROCAE ED-100 and RTCA DO-306/ED 122 Annex B (or equivalent). 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:

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).

6.5 It has been determined that current NAT communications performance supports the assumptions of the RLongSM safety assessment (see NAT IMG/35 Summary of Discussions paragraph 3.7) and is acceptable for the purpose of an operational trial. Ongoing monitoring will be carried out to ensure that the assumptions of the safety assessment continue to be valid.

6.6 During the NAT RLongSM validation trial, RCP 240, as defined in the GOLD, would be the guideline against which actual communication performance would be measured. Surveillance performance specification 180, as defined in the GOLD, would be the guideline against which actual surveillance performance would be measured (NAT IMG/38 report,para 5.16-5,17 refer). Concerning the performance specifications for the full RlongSM operations, RCP 240 and surveillance performance specification 180 are the candidate specifications to be prescribed for the RLongSM.

6.7 Software development to support RLongSM is complete for the Gander and Shanwick OCAs.

6.8 Air traffic management and control procedures have been developed and appropriate training will be provided prior to implementation.

7. Modification of the Proposed System

7.1 The requirement for modification will be a result of constant assessment of the system performance. Due to system readiness limitations in many of the NAT ANSPs, the operational trial will be initially conducted using aircraft pairs transiting the Gander and Shanwick OACCs.

8. Implementation and Monitoring of the Proposed System

8.1 RLongSM was introduced via an operational trial. Bilateral operations between Gander and Shanwick began in March 2011. Operators have been advised via Aeronautical Information Circular (AIC). Any change to the implementation plans shall be notified by NOTAM as soon as the information is available.

8.2 Eligible flights are those which are ADS-C and CPDLC equipped and have established appropriate data link communications for both of these systems. There is no additional operational certification required and flight planning requirements have not changed from what currently exists for flight within NAT MNPS airspace. ATS systems use Field 10 (Equipment) of the standard ICAO flight plan to identify an aircraft's data link capabilities. The operator should insert the following items into the ICAO flight plan for FANS 1/A aircraft:

Editorial Note – the following is valid until 15 November 2012:

a) Field 10a (Radio communication, navigation and approach equipment); insert the letter "J" to indicate data link equipment.

b) Field 10b (Surveillance equipment); insert the letter "D" to indicate ADS capability.

c) Field 18 (Other Information); insert the characters "DAT/" followed by one or more letters as appropriate to indicate the type of data link equipment carried, when the letter "J" is inserted in field 10.

Editorial Note – the following is valid as of 15 November 2012:

a) Field 10a (Radio communication, navigation and approach equipment); insert the letter "J5" to indicate CPDLC FANS1/A SATCOM (Inmarsat) or "J7" to indicate CPDLC FANS1/A SATCOM (Iridium) data link equipment.

b) Field 10b (Surveillance equipment); insert the letter "D1" to indicate ADS-C with FANS1/A capability.

8.3 RLongSM will not be applied to flights with only HF equipment due to the inherent communication delay and due to the inability of such flights to provide POS reports to the required ± 1 second accuracy.

8.4 The use of RLongSM will be enabled by the improved confidence in aircraft position estimates provided by more frequent position reporting using ADS-C, the improved navigational performance and accurate time keeping associated with GPS and the intervention capability provided by CPDLC. Controllers will intervene if the separation for any pair, based on either the synchronous or asynchronous reporting of aircraft pairs, is forecast to drop below the specified minimum separation, to prevent loss of separation.

8.5 Monitoring of NAT communication system performance and analysis of problem reports will be assisted by the NAT Data Link Monitoring Agency (NAT DLMA). In accordance with NAT SPG CONCLUSION 45/18 the NAT States, ANSPs and industry support the DLMA according to the GOLD requirements.

9. Success Criteria

Goals

9.1 The goal of RLongSM is to decrease fuel cost to airlines by providing the opportunity for more optimal climb profiles within the NAT, with longitudinal collision risk remaining within the target level of safety (TLS) and without negative impact on collision risk in the vertical or lateral dimensions.

9.2 The goal of the RLongSM trial is to provide confidence for all stakeholders to decide whether the trial should become operational by testing key safety assumptions using data from the operational trial and by showing what the expected benefits of RLongSM are likely to be.

9.3 The trial shall therefore be successful if stakeholders feel suitably informed to make a "go"/"no go" decision. The stakeholders include:

- Prestwick and Gander OACCs
- Regulators (e.g. UK CAA SRG)
- NAT groups (SPG, IMG, ATMG, SARSIG, CNSG/DLMA)
- NAT airlines

9.4 The scope of the trial is to apply the RLongSM procedure for suitably equipped Eastbound aircraft within Shanwick OCA and Westbound aircraft within Gander OCA, collecting data in order to support the goal of the trial (see above).

9.5 The contingencies for the trial shall be covered by the NATS and NAV CANADA safety cases.

9.6 The questions and metrics associated with determining the success of the RLongSM operational trial are shown in the *Success Criteria for the RLongSM Validation Trial* document. These metrics shall be assessed during the trial in order to answer the relevant questions and determine whether the goal of the trial has been met.

Success Criteria for the RLongSM Validation Trial

QUESTIONS		METRICS, DETAILS & TARGETS	
Safety	Longitudinal collision risk remains below the TLS and vertical/lateral collision risk does not increase as a result of RLongSM	i) Longitudinal	Validate collision risk modelling (CRM) assumptions. Collect sufficient data to validate distributions used as input to CRM. Target = 1000 RLongSM pairs. If around 40 pairs of aircraft make use of RLongSM during one week (suggested from initial Shanwick trial data), this corresponds to around 6 months of data. Note that, depending on the distribution of this specific data, the minimum number of pairs may need to be increased in order to gain a full picture. Distribution of RLongSM separations Initial separation. Target = can validate or edit distribution for CRM. Minimum separation. Target = no pairs with less than 5 minutes separation. Communications performance. Target = compare ACP to RCP240 and surveillance performance 180, as specified in the GOLD, to validate or edit CRM assumption (CNSG/DLMA task). Duration of unplanned system outages (or other technical performance failures). Target = confirm that outages do not increase longitudinal risk beyond TLS (e.g. for 2009 NAT data with current CRM, require total outages ≤506 minutes to remain within TLS).
		ii) Vertical	Monitor risk during trial and compare to pre-trial. Target = ensure no increase in vertical risk due to RLongSM (and preferably no increase at all). Note that any increase/decrease in risk could be due to reasons other than RLongSM, hence there is likely to be an element of determining vertical risk for a subset of the population (some possibilities mentioned here). LHD summary Possible to estimate recent risk Possible to estimate risk for RLongSM pairs
		iii) Lateral	Monitor risk during trial and compare to pre-trial. Target = ensure no increase in lateral risk due to RLongSM (and preferably no increase at all). Note that any increase/decrease in risk could be due to reasons other than RLongSM, hence there may be an element of determining lateral risk for a subset of the population (some possibilities mentioned here). GNE summary Possible to estimate recent risk Possible to estimate risk for RLongSM pairs

QUESTIONS		**METRICS, DETAILS & TARGETS**	
Safety (cont.)	No additional adverse safety events due to RLongSM	i) Target = TCAS reports do not increase due to RLongSM	
		ii) Target = Wake vortex reports do not increase due to RLongSM	
		iii) Target = Overload reports do not increase due to RLongSM	
		iv) Target = SLOP usage does not worsen due to RLongSM (e.g. pilots possibly selecting centreline due to additional aircraft on TCAS display)	
	Any safety benefits connected with RLongSM	i) Event contracts (enabled in the RLongSM system build) may reduce time at wrong FL (since reports triggered when 300ft from level). Extra details may also be available to scrutiny of events. Target = distribution of LHD duration shows decrease in long errors (thus overall reduced vertical risk), due to ADS-C reports.	
		ii) 18-minute periodic reports and event contracts may flag up lateral errors sooner (since reports triggered when 5NM from track), thus reduced lateral risk. Extra details may also be available to scrutiny of events. Target = decrease in lateral risk, due to ADS-C reports.	
RLongSM benefit to airlines	Total fuel cost	i) Analyse climb statistics. Target = increased proportion of climbs for RLongSM aircraft than for overall population, thus showing that benefits are available to operators.	Look at changes in climb statistics. Take changes in ADS-C usage into account
			Look at typical vertical profiles for individual aircraft.

QUESTIONS		**METRICS, DETAILS & TARGETS**	
RLongSM benefit to airlines (cont.)	Total fuel cost (cont.)	ii) Analyse average fuel burn and CO2. Participants in SESAR AIRE2 trial have agreed to provide data on their fuel cost during the trial. Target = average fuel burn and CO2 for aircraft is less under RLongSM.	Does it validate business case?

Appendix G - MNPS to PBN Transition Plan for the ICAO NAT Region

(*paragraph 3.1.15 refers*)

1. Introduction

1.1 This document details the NAT transition plan from the Minimum Navigation Specifications (MNPS) to a Performance Based Navigation (PBN) environment in conformance with the ICAO policies and guidance specified in the PBN Manual.

1.2 Following is the guidance as provided by the NAT Implementation Management Group (IMG) and the NAT Systems Planning Group (NAT SPG) concerning the development of a NAT PBN transition plan.

NAT IMG/36 Report:

TRANSITION TO PBN

4.5.4 The group was presented with a status report from NAT SARSIG and NAT CNSG in support of the task of developing a plan for the NAT Region to transition towards the Performance Based Navigation (PBN) Concept. The Group noted the information and agreed that a plan should be developed on how the accommodation of RNP10 (RNAV10) and also RNP4 approved aircraft in the NAT MNPS airspace could be achieved.

4.5.4 The Group agreed that this plan should identify any part of the current NAT MNPS airspace requirements that would not be met by the requirements specified in Doc 9613 for obtaining an RNP10 or RNP4 aircraft approval. The plan should also include an MNPS devolution strategy so that the current MNPS approval system could be transformed to a RNP based system for the NAT Region.

4.5.4 The Group emphasized that the RNP operational approval process would cover not only the aircraft navigation accuracy requirements, but also the procedures for safe operation in the NAT environment. Therefore it was felt appropriate that the already RNP10 (RNAV10) certified aircraft should be allowed to operate in NAT MNPS airspace without an additional approval. Potential accommodation of RNP approved aircraft in NAT MNPS airspace should be supported by a study, which would be presented to NAT SARSIG/12. The study would include an analysis to support the application of 50 NM lateral separation in NAT MNPS airspace between RNP10 (RNAV10) certified aircraft on intersecting tracks. The foregoing would be reported to NAT SPG, in accordance with NAT SPG/45 (paragraph 2.2.11 of NAT SPG/45 refers).

NAT SPG/46 Report:

Transition to PBN

7.1.2 The NAT SPG was advised that a draft NAT Region PBN Transition Plan would be further developed and would focus on how the accommodation of RNAV 10 (RNP 10 label) and RNP 4 approved aircraft in the NAT MNPS airspace could be achieved. In the process of further developing this 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 NAT Region.

7.1.3 The NAT SPG was informed that, because the PBN operational approval process would cover not only the aircraft navigation requirements, but also the procedures for safe operation in the NAT environment, it was felt appropriate that aircraft already certified for RNAV 10 (RNP 10 label) should be allowed to operate in NAT MNPS airspace without an additional approval. This approach would be supported by a study which would include an analysis to support the application of 50 NM lateral separation in NAT MNPS airspace between RNAV 10 (RNP 10 label) certified aircraft on intersecting tracks.

NAT IMG/37 Report:

TRANSITION TO PBN

4.35 The NAT IMG was presented with a status report regarding development of a plan concerning the transition from MNPS to Performance Based Navigation (PBN) specifications in the NAT Region (*NAT IMG/36 Summary of Discussions*, paragraphs 4.39 to 4.41 refer) as supported by the outcome of the NAT SPG (*Summary of Discussions and Conclusions of the 46th Meeting of the NAT SPG*, paragraphs 7.1.2 and 7.1.3 refer).

4.36 In considering the clarification of the NAT SPG that the clear intention for the NAT Region was to transition from MNPS to PBN, the NAT SARSIG agreed to begin drafting a step by step plan to do so. It was noted that with regards to eliminating a requirement for MNPS approvals, it would be necessary to take into account the time required for regulators to re-orient their documentation to support the changed requirement. The NAT SARSIG Member from Iceland agreed to act as the focal point for producing an outline of the steps required, including timelines where possible. The NAT SARSIG also assessed the possibility to amending the NAT SUPPs to allow for RNAV 10 (RNP 10 label[4]) or RNP 4 approved aircraft to operate in the NAT MNPS airspace without an MNPS approval and found that numerous existing inter-relationships between regulatory and guidance material, produced by the NAT SPG, ICAO and States, would need to be taken into account in planning for the elimination of a requirement for NAT MNPS approvals.

4.37 The NAT IMG noted that Iceland had provided a presentation to the NAT SARSIG suggesting that it might be advantageous to analyse the navigation performance of MNPS and RNP 10 approved aircraft with the aim of determining if any performance differences existed (it appeared that MNPS aircraft would be able to attain an RNP 10 approval without any changes to the aircraft). If no performance difference was found to exist, it might help in the transition from MNPS to PBN to assume the RNAV 10 (RNP 10 label) 95% containment of 10 NM for MNPS aircraft in the development of separation minima in the NAT Region.

NAT IMG/38 Report:

NAT MNPS to PBN Transition Plan

4.47 The NAT IMG recalled its previous discussions concerning the development of a plan to transition from MNPS to PBN in the ICAO NAT Region, in accordance with the direction provided by the NAT SPG (*Summary of Discussions and Conclusions of the 46th Meeting of the NAT SPG*, paragraphs 7.1.2 and 7.1.3 refer). The NAT SARSIG had further developed the plan, in accordance with the direction from the NAT IMG (*NAT IMG/36 Summary of Discussions*,

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

paragraphs 4.39 to 4.41 and *NAT IMG/37 Summary of Discussions*, paragraphs 4.35 and 4.36 refer).

4.48 The NAT IMG noted the foregoing and confirmed 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 TLS applicable to the lateral dimension, although the practical application of, for example, a 50 NM 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 IMG supported the philosophy that State authorizations would continue to be required to operate in the airspace currently designated as NAT MNPS airspace. The NAT SARSIG would be advised of the foregoing, which was to be taken into account in refining the plan, including identifying more detailed tasks and suggested timelines for presentation to NAT IMG/39.

NAT SPG/47 Report:

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) 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 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.

NAT IMG/39 Report:

Updated draft NAT MNPS to PBN transition plan WP13

4.61 The NAT IMG noted that at its 14th meeting, the NAT Safety Analysis and Reduced Separation Implementation Group (NAT SARSIG/14) reviewed the inputs concerning the development of a draft Minimum Navigation Performance Specifications (MNPS) to Performance Based Navigation (PBN) Transition Plan (the NAT Region PBN Transition Plan) for the ICAO NAT Region (NAT Region PBN Transition Plan). It was recalled that during its 38th meeting, the NAT IMG reviewed the draft NAT Region PBN Transition Plan that had been prepared by NAT SARSIG/13. It was noted that the draft had taken account of the direction provided by the NAT IMG (NAT IMG/36 Summary of Discussions, paragraphs 4.39 to 4.41 and NAT IMG/37 Summary of Discussions, paragraphs 4.35 and 4.36 refer) and the NAT Systems Planning Group (NAT SPG) (Summary of Discussions and Conclusions of the 46th Meeting of the NAT SPG, paragraphs 7.1.2 and 7.1.3 refer).

4.62 The NAT IMG recalled its decision that further development should be on the understanding that, eventually, MNPS would be eliminated as a requirement and basis for separation and to be replaced by appropriate separation standards for the airspace based upon Required Navigation Performance (RNP). 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 lateral minimum would not require any significant changes to current Air Traffic Control (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 IMG supported the philosophy that State authorizations would continue to be required to operate in the airspace currently designated as NAT MNPS airspace and directed the NAT SARSIG to further refine the Plan, including identifying more detailed tasks and suggested timelines (NAT IMG/38 Summary of Discussions, paragraphs 4.47 and 4.48 refer).

4.63 At its 47th meeting, the NAT SPG recalled its previous discussion regarding the development of a NAT Region PBN Transition Plan which would focus on how the accommodation of RNAV 10 (RNP 10 label) and RNP 4 approved aircraft in the NAT 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 47th Meeting of the NAT SPG, paragraphs 3.1.1 and 3.1.2 refer).

4.64 The NAT IMG noted that all of the foregoing was taken into account during reviews of an updated draft NAT Region PBN Transition Plan by the NAT OPS/AIR sub-group and the NAT ATMG. The NAT OPS/AIR sub-group provided suggested timelines and identified tasks required to support the regulatory and authorization aspects of the Plan and to include a note linking the Plan to the timing of the planned implementation of the RLatSM in the ICAO NAT Region. The NAT IMG noted that the NAT ATMG did not provide suggestions for updates, but agreed to assist in developing realistic timelines. In this respect, information would be provided to NAT ATMG/39 concerning the time that would be required to update Flight Data Processing System (FDPS) and when the Air Navigation Services Providers (ANSPs) in the NAT Region would be prepared to apply a 50 NM separation minimum to MNPS and RNP aircraft rather than the currently programmed standards.

4.65 The NAT IMG was informed that the United States agreed to review Annex 6 provisions related to MNPS and to provide an assessment to NAT SARSIG/15 concerning what text, if any, would need to be modified to account for the planned change. The NAT IMG also noted that the NAT SARSIG reviewed an initial draft of a proposal to amend the NAT SUPPs to account for the planned devolution from MNPS specifications in the ICAO NAT Region. A number of suggestions were made which would be used by the United States to update the proposal for presentation to NAT SARSIG/15.

4.66 The NAT IMG noted that the NAT SARSIG/14 took account of all input during its further update to the Plan, reviewed and endorsed the NAT Region PBN Transition Plan as provided in Attachment WP13/A. It was recognised that a connection was to be drawn between the RLatSM and PBN implementation plans. In this respect RNP 4 requirements would become the necessary prerequisite for RLatSM implementation, but not sufficient – a positive business case (to be developed by NAT EFG) would be required to support its implementation.

1.3 In accordance with the references above it is concluded that the NAT Region transition plan:

a) should be developed to identify how the accommodation of RNP10 (RNAV10) and also RNP4 approved aircraft in the NAT MNPS airspace could be achieved; and

b) should identify any part of the current NAT MNPS airspace requirements that would not be met by the requirements specified in Doc 9613 for obtaining an RNP10 or RNP4 aircraft approval, and

c) should identify appropriate mitigations and also include an MNPS devolution strategy so that the current MNPS approval system could be transformed to a RNP based system for the NAT Region.

2. Transition task lists

2.1 This part of the transition plan consists of:

a) a list of milestones that mark the transition from the current system based on MNPS approvals and 60NM/gentle slope separation to a system based on PBN and 50NM lateral separation: and

b) a list of tasks that are required in order to achieve each defined milestone.

2.2 The transition plan task lists detail five milestones specified in the first table. Each milestone requires a number of enabling tasks which are defined in association with each milestone in the subsequent tables.

NAT MNPS TO PBN TRANSITION MILESTONES – TABLE 1[5]

No.	Timeline	Milestone	Comments
1	2013	An aircraft that is approved (certified) for RNAV10 (RNP10) and/or RNP4 can be issued an MNPS operational authorization without further examination of the navigation specification component. The indicator X will still be required in item 10 of the ICAO FPL.	The timing of this milestone depends on the time that is needed to prepare and process a Doc7030 amendment.
2	2015	For new MNPS operational approvals, discontinue the use of MNPS navigation specification (6.3 NM standard deviation). New MNPS operational approvals will be based on RNAV10 (RNP10) or RNP4 navigation specifications. Existing aircraft having MNPS approvals based on the 6.3 NM standard deviation will be allowed to continue operating in the NAT MNPS airspace.	
3	2015	Modify the definition of the NAT airspace such that the NAT MNPS airspace will be replaced with the NAT PBN airspace. The NAT PBN airspace will be defined in such a way that MNPS, RNAV10 and RNP4 aircraft are deemed to satisfy the prescribed NAT PBN airspace operation requirements.	
4	2020	All aircraft operating in the NAT PBN airspace shall have an operational approval based on the RNAV10 (RNP10) or RNP4 navigation specification requirements Aircraft having MNPS approvals based on the 6.3 NM standard deviation will not be allowed anymore.	
5	TBD	Allow applying 50NM lateral separation between a mix of MNPS, RNAV10 and RNP4 approved aircraft on intersecting and non-intersecting tracks in the NAT MNPS airspace.	

[5] Each implementation phase of RlatSM shall be harmonized to an appropriate step or benchmark (as determined by the NAT IMG) contained in this Plan. According to the Summary of actions planned or initiated to address the RLatSM Task List, as endorsed by NAT IMG/38 (Refer to NAT IMG/38 SD Appendix H), the RLatSM Phase 1 implementation date is to be in the 2014/2015 time frame, harmonized to the NAT MNPS to PBN Transition Plan.

NAT MNPS to PBN Transition Task List – Table 1.1

Milestone 1			
	2013	An aircraft that is approved (certified) for RNAV10 (RNP10) and/or RNP4 can be issued an MNPS operational authorization without further examination of the navigation specification component. The indicator X will still be required in item 10 of the ICAO FPL.	
Tasks for milestone	**Timeline**	**Task**	**Comments**
1.1	2012	Notify States of the change and plans to facilitate necessary regulatory actions, update of approval/authorization, procedures, training of staff etc and request that operators be notified.	Complete as soon as possible in the form of a state letter when authorized by the NAT IMG/SPG.
1.2	2012	Modify document 7030.	A draft DOC7030 amendment has been prepared by SARSIG and forwarded to the IMG for approval.
1.3	2012	Modify the MNPS operations manual (NAT DOC007).	OPS-AIR is willing to work with the DMO on this task.
1.4	2012	Modify NAT State documents.	Try to harmonize text in State documents as much as possible.
1.4.1	2012	Appropriate IMG working group(s) to propose wording for AIPs.	
1.5	2013	Modify NAT ATS unit documentation and ATS operations manuals.	

NAT MNPS to PBN Transition Task List – Table 1.2

Milestone 2			
	2015	For new MNPS operational approvals, discontinue the use of MNPS navigation specification (6.3 NM standard deviation). New MNPS operational approvals will be based on RNAV10 (RNP10) or RNP4 navigation specifications. Existing aircraft having MNPS approvals based on the 6.3 NM standard deviation will be allowed to continue operating in the NAT MNPS airspace.	**This milestone is concurrent with milestone 3 and it is assumed that document changes will take account of both milestones.**
Tasks for milestone	**Timeline**	**Task**	**Comments**
2.1	2013	Effect global coordination.	Complete as soon as possible in the form of a state letter when authorized by the NAT IMG/SPG.
2.2	2014	Notify States of the change and plans to facilitate necessary regulatory actions, update of approval/authorization, procedures, training of staff etc and request that operators be notified.	Should be done in the form of a state letter when authorized by the NAT IMG/SPG.
2.3	2012	Initiate an Annex 6 amendment.	SARSIG has determined that an Annex 6 amendment is not required.
2.4	2014	Modify DOC 7030.	This will require states to modify regulations and certification documents.
2.5	2014	Modify MNPS Operations Manual (DOC 007)	
2.6	2014	Modify NAT State documents.	Try to harmonize text in State documents as much as possible.
2.6.1	2014	Appropriate IMG working group(s) to propose wording for AIPs.	
2.7	2015	Modify NAT ATS unit documentation and ATS operations manuals.	

NAT MNPS to PBN Transition Task List – Table 1.3

Milestone 3			
	2015	Modify the definition of the NAT airspace such that the NAT MNPS airspace will be replaced with the NAT PBN airspace. The NAT PBN airspace will be defined in such a way that MNPS, RNAV10 and RNP4 aircraft are deemed to satisfy the prescribed NAT PBN airspace operation requirements.	**This milestone is concurrent with milestone 2 and it is assumed that document changes will take account of both milestones.**
Tasks for milestone	**Timeline**	**Task**	**Comments**
3.1	2012~~2~~	Effect global coordination.	Complete as soon as possible in the form of a state letter when authorized by the NAT IMG/SPG.
3.2	2014	Notify States of the change and plans to facilitate necessary regulatory actions, update of approval/authorization, procedures, training of staff etc and request that operators be notified.	Should be done in the form of a state letter when authorized by the NAT IMG/SPG.
3.3	2012	Initiate an Annex 6 amendment if required.	SARSIG has determined that an Annex 6 amendment is not required.
3.4	2014	Modify the NAT Air Navigation Plan.	
3.5	2014	Modify Doc7030.	This will require states to modify regulations and certification documents.
3.6	2014	Modify state documents (list).	Try to harmonize text in State documents as much as possible.
3.6.1	2014	Appropriate IMG working group(s) to propose wording for AIPs.	
3.7	2014	Initiate consequential amendments to NAT SPG documents to take account of the name change.	
3.8	2015	Modify NAT ATS unit documentation and ATS operations manuals.	

NAT MNPS to PBN Transition Task List – Table 1.4

Milestone 4			
	2020	All aircraft operating in the NAT PBN airspace shall have an operational approval based on the RNAV10 (RNP10) or RNP4 navigation specification requirements. Aircraft having MNPS approvals based on the 6.3 NM standard deviation will not be allowed anymore.	
Tasks for milestone	**Timeline**	**Task**	**Comments**
4.1	2012	Effect global coordination.	Complete as soon as possible in the form of a state letter when authorized by the NAT IMG/SPG.
4.2	2014	Notify States of the change and plans to facilitate necessary regulatory actions, update of approval/authorization, procedures, training of staff etc and request that operators be notified.	Should be done in the form of a state letter when authorized by the NAT IMG/SPG.
4.3	2019	Modify DOC 7030.	This will require states to modify regulations and certification documents.
4.4	2019	Modify MNPS Operations Manual (DOC 007)	
4.5	2019	Modify NAT State documents.	Try to harmonize text in State documents as much as possible.
4.5.1	2019	Appropriate IMG working group(s) to propose wording for AIPs.	
4.6	2019	Modify NAT ATS unit documentation and ATS operations manuals.	

NAT MNPS to PBN Transition Task List – Table 1.5

Milestone 5			
		Allow applying 50NM lateral separation between a mix of MNPS, RNAV10 and RNP4 approved aircraft on intersecting and non-intersecting tracks in the NAT MNPS airspace.	**The timing of this milestone is TBD**
Tasks for milestone	**Timeline**	**Task**	**Comments**
5.1	2012	Assess the equipment mix of the aircraft fleet operating in the whole of the NAT MNPS airspace (MNPS, RNAV10, RNP4, GNSS).	An assessment of the equipment mix has been provided for Reykjavik and New York airspaces.
5.2	2012	Develop a set of system performance criteria for the application of 50 NM lateral separation using a Target Level of Safety (TLS) of $5x10^{-9}$ FAPFH applicable to the lateral dimension.	
5.3	2013	Determine whether the navigation performance of the population of the fleet of aircraft operating in the NAT is satisfying the criteria specified in task 5.2.	
5.4	2014	If the result of 5.3 is positive then determine when the change from 60 NM/gentle slope rules to 50 NM separation between aircraft on intersecting and non-intersecting tracks shall take place.	
5.5	2014	Notify States of the change and plans to facilitate necessary regulatory actions, update of approval/authorization, procedures, training of staff etc and request that operators be notified.	Should be done in the form of a state letter when authorized by the NAT IMG/SPG.
5.6	TBD	Modify Doc7030.	
5.7	TBD	Modify the NAT ASM.	
5.8	TBD	Modify FDPS systems for different FPL processing.	
5.9	TBD	Modify unit documentation and operations manuals.	

Appendix H - Proposal to Amend the NAT SUPPs, in Support of Task 1.2 on the MNPS to PBN Transition Task List
(paragraph 3.1.17 refers)

Proposed by:
Iceland

Proposed Amendment:

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

Modify the following in NAT SUPPSs,

Chapter 4 – Navigation

4.1 Performance-Based Navigation

4.1.1.5 Pre-PBN navigation specifications

4.1.1.5.1 Minimum navigation performance specifications (MNPS)

Area of applicability

4.1.1.5.1.1 The MNPS shall be applicable in that volume of airspace between FL 285 and FL 420 within the Oceanic Control Areas of Santa Maria, Shanwick, Reykjavik, Gander Oceanic and New York Oceanic, excluding the area west of 60°W and south of 38°30′N.

Note.— This volume of airspace is referred to as the "MNPS airspace".

Means of compliance

(A2 – Chapter 5; A6, Part I – Chapters 3, 4 and 7; A6,

Part II – Chapters 3 and 7; A8 – Chapter 8)

4.1.1.5.1.2 Except for those flights specified in 4.1.1.5.1.~~5~~7, aircraft operating within the volume of airspace specified in 4.1.1.5.1.1 shall have lateral navigation performance capability such that:

a) the standard deviation of lateral track errors shall be less than 11.7 km (6.3 NM);

b) the proportion of the total flight time spent by aircraft 56 km (30 NM) or more off the cleared track shall be less than 5.3×10^{-4}; and

c) the proportion of the total flight time spent by aircraft between 93 and 130 km (50 and 70 NM) off the cleared track shall be less than 1.3×10^{-4}.

4.1.1.5.1.3 The State of Registry or the State of the Operator, as appropriate, should verify that the lateral navigation capability of approved aircraft meets the requirements specified in 4.1.1.5.1.2.

Note. — Guidance material of use to those involved in the initial achievement and continued maintenance of the navigation capability set forth in 4.1.1.5.1.2 has been issued by ICAO under the title ~~Guidance and Information Material Concerning Air Navigation in the~~ North Atlantic ~~Region~~ Operations and Airspace Manual (NAT Doc. 00~~1~~7) *and will be supplemented and updated as required and as new material becomes available.*

4.1.1.5.1.4 Aircraft that have been approved by the State of Registry or the State of the Operator, as appropriate, for RNP 10 (PBN application of RNAV 10) or RNP 4 are considered to meet the requirements specified in 4.1.1.5.1.2.a).

Note. – The Performance-based Navigation (PBN) Manual *(Doc 9613) provides guidance on aircraft approval, operations and maintenance programmes for initial achievement and continued compliance with RNP 10 and RNP 4.*

4.1.1.5.1.5 When granting approval for operations in MNPS airspace, States should take account of the RNP 10 time limits for aircraft equipped with dual INS or inertial reference unit (IRU) systems.

Note. – (RNP 10 time limits are discussed in the Performance-based Navigation (PBN) Manual *(Doc 9613) Part B, Volume II Chapter 1*.

4.1.1.5.1.4~~6~~ When granting approval for operations in MNPS airspace, States of Registry shall ensure that in-flight operating drills include mandatory navigation cross-checking procedures which will identify navigation errors in sufficient time to prevent the aircraft inadvertently deviating from the ATC-cleared route. Guidance on procedures are detailed in NAT Doc 00~~1~~7 ~~and North Atlantic MNPS Airspace Operations Manual~~.

4.1.1.5.1.~~5~~7 Flights not subject to an Oceanic Clearance, which flight plan to route through Brest Oceanic Transition Area (BOTA) and/or Shannon Oceanic Transition Area (SOTA), are not subject to MNPS approval.

Note 1.— SOTA is defined as that airspace from DINIM (510000N 0150000W) — LESLU (510000N 0080000W) — 483000N 0080000W — BEDRA (490000N 0150000W) to DINIM (510000N 0150000W).

Note 2.— BOTA is defined as that airspace from 483400N 0084500W — 483000N 0080000W — 450000N 0080000W — 450000N 0084500W to 483400N 0084500W.

Proposed implementation date of the amendment:

10 January 2013

Appendix I -
NAT Performance Based Communication and Surveillance Implementation Plan

Associated with the NAT data link services in support of RLongSM and RLatSM.[6]

(paragraph 3.1.18 refers)

	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
	GENERAL PROJECT DEVELOPMENT & MANAGEMENT				
1	Prepare a draft *plan* outlining the tasks to implement performance based communication and surveillance 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 performance based framework for communication and surveillance and prescribing RCP/RSP 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 prescribing RCP/RSP specifications need to be coincident with or prior to the target dates for RLongSM and RLatSM operational implementation.

[6] 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.

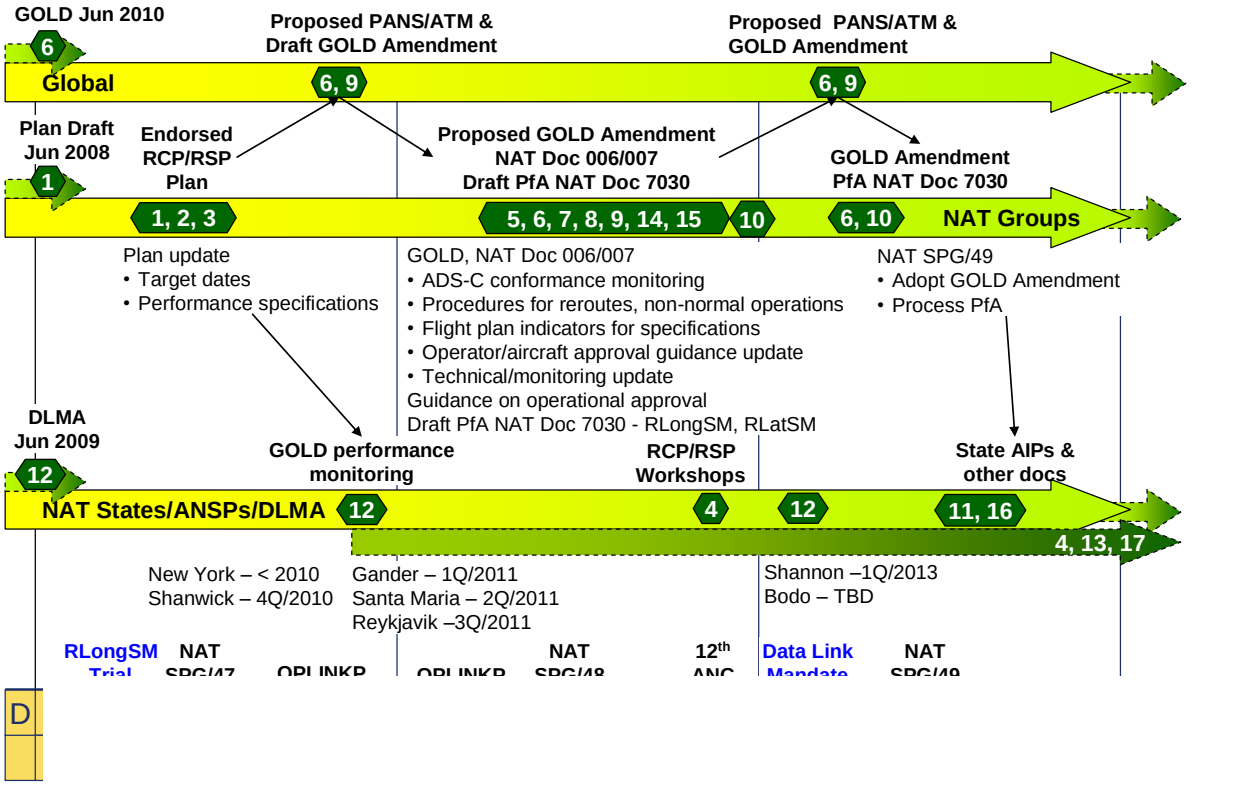
	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
3	a) Confirm applicable performance specifications that will be used for operational implementation of data link services in support of RLongSM. Detail and validate CRM assumptions against actual performance measurements in accordance with GOLD. b) Confirm applicable performance specifications that will be used for operational implementation of data link services in support of RLatSM. Detail and validate CRM assumptions against actual performance measurements in accordance with GOLD.	NAT SPG/47	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 RSP/180 are the candidate specifications to be prescribed for RLatSM and RLongSM operations (subject to validation during the trials and Doc 4444 amendments).
4	Conduct workshops to raise awareness on performance based communication and surveillance.	2012-2013	Planned in 4Q2012 in conjunction with the PfA drafting task force and depending on the availability of the workshop material	ICAO/States	

	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
5	a)Update operational concepts for implementation of RLatSM and RLongSM supported by data link to include associated RCP/RSP specifications. b)Develop operational concept (of use), including procedures, 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 when using data link. c) Review and comment on material for incorporation in GOLD, NAT Doc 006 and Doc 007.	NAT IMG/42and NAT SPG/49	a)complete b) and c) Draft and review through end 2012. The 1st draft for the GOLD material prepared to be further reviewed at CNSG/7	NAT ATMG in coordination with CNSG	Review and propose text to be candidate for GOLD amendment.
	DOCUMENTATION				
6	Develop GOLD material in support of reduced separations : -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 IMG/42 and NAT SPG/49	In progress	GOLD ad-hoc group	Amendments to GOLD are in work for tasks 5, 6, 7, 8,9, 14 and 15. Adoption planned at NAT SPG/49.
7	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 performance specifications. Review and comment on material for incorporation in GOLD, NAT Doc 006 and Doc 007.	NAT IMG/42and NAT SPG/49	Draft and review through end 2012. Further review at ATMG/40	NAT ATMG/ CNSG	Further review at ATMG/40. Doc006 will include ref to Chapters 4 and 5 of the GOLD

	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
8	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/42 and NAT SPG/49	Draft and review through end 2012 .	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.
9	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.	- NAT IMG.42 and NAT SPG/49 as part of the NAT SUPPS and GOLD amendment - NAT SPG/50 ,target date for Doc 4444 amendment	await the OPLINKP initiated Doc 4444 amendment	NAT CNSG ICAO (Global)	Definition of P descriptors in Item 10a and expansion or redefinition of descriptors for ADS-C.
10	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 2012.	NAT CNSG NAT ATMG	Dependent on timeline for RLatSM and RLongSM trials and Doc 4444 amendment.
11	Amend AIPs and other State documents to support SUPPs amendment.	Consistent with Task 10	Consistent with Task 10	States	Consistent with Task 10

	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
12	Implement post-implementation monitoring capability in ATC automation.	Before the start of operational trials of RLongSM or RLatSM.	Gander – completed Shanwick – completed Reykjavik –4Q/2011 Santa Maria – 2Q/2011 New York – Completed Bodø – 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.
13	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.
14	Develop a guidance material to clarify the interpretation of performance specification in terms of compliance/non-compliance. Review and comment on material for incorporation in GOLD	NAT IMG/42 and NAT SPG/49	In progress	CNSG	
	AIRWORTHINESS AND OPERATIONAL ELIGIBILITY				
15	Provide guidance to State regulators related to aircraft equipage and operator eligibility requirements taking into account the GOLD and performance specifications. Review and amend GOLD, if required.	NAT IMG/42 and NAT SPG/49	Draft and review through end 2012.	OPS/AIR	Refer to FAA AC 20-140A and AC 120-70B. Other State material may apply.

	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
16	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/RSP aspects of reduced separation. Develop and distribute operations manuals, pilot bulletins or other appropriate docs containing RCP/RSP 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/RSP by 2015.
	POST IMPLEMENTATION TASKS				
17	Post-implementation monitoring, analysis and corrective action per GOLD, Apx D and any other necessary monitoring tasks.		On-going See related Task 12	ANSP/sDLMA/ CNSG	When performance falls below specified levels, operational judgment may be a consideration in determining appropriate actions.


GOLD Jun 2010
6
Global
Proposed PANS/ATM & Draft GOLD Amendment
6, 9
Proposed PANS/ATM & GOLD Amendment
6, 9
Plan Draft Jun 2008
1
Endorsed RCP/RSP Plan
Proposed GOLD Amendment NAT Doc 006/007 Draft PfA NAT Doc 7030
GOLD Amendment PfA NAT Doc 7030
1, 2, 3
5, 6, 7, 8, 9, 14, 15
10
6, 10
NAT Groups
Plan update
• Target dates
• Performance specifications
GOLD, NAT Doc 006/007
• ADS-C conformance monitoring
• Procedures for reroutes, non-normal operations
• Flight plan indicators for specifications
• Operator/aircraft approval guidance update
• Technical/monitoring update
Guidance on operational approval
Draft PfA NAT Doc 7030 - RLongSM, RLatSM
NAT SPG/49
• Adopt GOLD Amendment
• Process PfA
DLMA Jun 2009
12
GOLD performance monitoring
RCP/RSP Workshops
State AIPs & other docs
NAT States/ANSPs/DLMA
12
4
12
11, 16
4, 13, 17
New York – < 2010
Shanwick – 4Q/2010
Gander – 1Q/2011
Santa Maria – 2Q/2011
Reykjavik –3Q/2011
Shannon –1Q/2013
Bodo – TBD
RLongSM Trial
NAT SPG/47
OPLINKP
OPLINKP
NAT SPG/48
12th ANC
Data Link Mandate
NAT SPG/49
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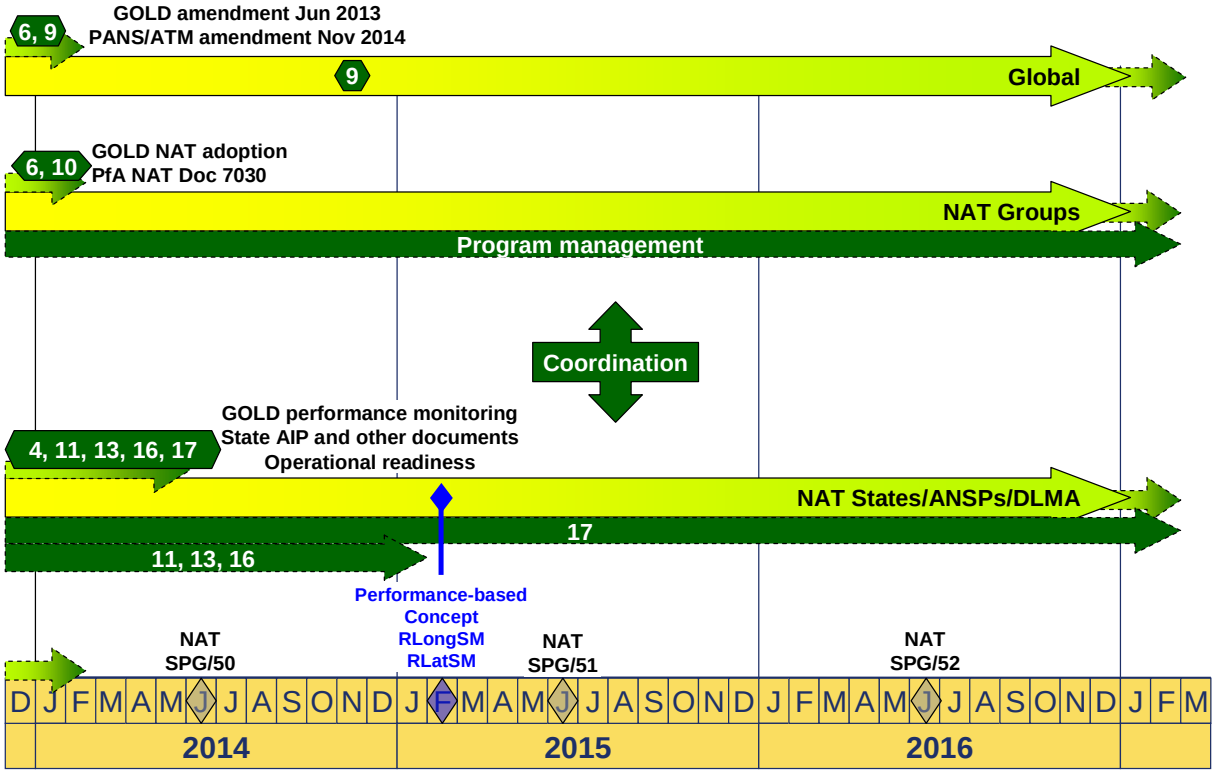
6, 9
GOLD amendment Jun 2013
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2014
2015
2016

Appendix J -
Terms of Reference of the NAT Vertical Risk Task Force

(*paragraph 4.1.3 refers*)

The NAT Vertical Risk Task Force (NAT VRTF) is established under the authority of the NAT SOG and the NAT IMG with the following terms of reference:

Deliverable(s)

a) *NAT Vertical Risk Reduction Analysis Report*, which will include the results of data collected to determine causes and effects of LHDs and validate the actual vertical risk; and

b) Draft *NAT Vertical Risk Reduction Implementation Plan*, which will include tasks, milestones, interdependencies and schedule for:

1) target levels of reduced vertical risk for short, mid and long term goals;

2) mitigation strategies and associated tasks; and

3) post-implementation monitoring and analysis.

Note.— Upon completion of these deliverables, they will be provided to the contributory groups of the NAT IMG and the NAT SOG in order for them to provide their own comments and recommendations. The NAT SOG and the NAT IMG will then coordinate in the finalization of a NAT Vertical Risk Reduction Implementation Plan, which will be presented to NAT SPG/49 for its endorsement.

Scope of work

The following are the broad principles describing the scope of work:

a) develop clear definitions of the errors and circumstances which contribute to vertical risk;

b) collect and review all reports of LHDs within at least the last two years;

c) collect and review the results of investigations into these events and identify common causes and contributing factors;

d) collect and analyze any available data concerning the effectiveness of vertical risk mitigations that have already been implemented;

e) identify any possible improvements which may assist in reducing the likelihood of LHDs including those already implemented by some operators, ANSPs or States, within or outside the ICAO NAT Region;

f) develop recommendations concerning how to describe and publicize the correct application of the SLOP in the ICAO NAT Region, including, if appropriate, proposed revisions to the material in NAT Doc 007;

g) examine situations which result in messages which might reveal the presence of an unknown aircraft in an oceanic control area not being brought to the attention of the relevant air traffic controller(s); and

h) report findings and recommendations to the NAT SOG and the NAT IMG in sufficient time for review by their respective contributory groups prior to the spring 2013 meetings of the NAT SOG and the NAT IMG.

Composition

The NAT Vertical Risk Task Force is composed of NAT SOG and NAT IMG members and invited experts.

Conduct of the work and schedule

The completion of this task requires more involvement from the States and resources than was foreseen for the original NAT SOG VRTF. It may require direct meetings among task force members in addition to teleconferences and other electronic means of communications. The tentative completion date for this task, provided resources are available, is early in 2013.

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Appendix K -

Formulation of recommendations to the NAT SPG

(*paragraph 5.1.2 refers*)

The NAT SPG contributory groups are to provide reports that are as concise as possible, whilst providing sufficient detail and supporting material for any recommendations which might be made. In order to clarify the intent of contributory group recommendations they are to be formulated in the form of "draft NAT SPG Conclusions". Each draft Conclusion is to be accompanied by sufficient supporting justification, which is to include, at minimum:

a) a concise summary of the discussion of the group, including the reasons why particular options are or are not supported;

b) the full text of any material proposed for adoption by the NAT SPG into a NAT SPG or ICAO document;

c) the full text of proposed revisions to text of an existing NAT SPG or ICAO document, with insertions shown in grey highlight (text to be inserted) and deletions shown in strikethrough (~~text to be deleted~~); and

d) a clear description of why the NAT SPG should endorse the draft Conclusion, what is expected in order to fully address the conclusion, who should carry out the actions required and when the actions should be completed, using the tabular format described below.

The following table shall be used to summarize why the NAT SPG should endorse the draft Conclusion by describing what is expected to fully address the conclusion, who should carry out the actions required and when the actions should be completed:

Why	
What	
Who	
When	

Draft NAT SPG Conclusions shall be presented in the following format:

Draft NAT SPG Conclusion ##/NATXXXxx/Z – TITLE

That the NAT(Group designation)/ICAO Regional Director, Europe and North Atlantic:

a) AA;

b) BB; and

c) CC.

Where:

TITLE is a concise description of the subject addressed by the proposed draft Conclusion;

is the designation of the next NAT SPG meeting;

NATXXXxx is the designation and meeting number of the NAT SPG contributory group proposing the draft Conclusion; and

Z is a number indicating the sequence of the proposed draft Conclusion as it appears in the contributory group report.

When formulating each NAT SPG Conclusion, all acronyms except NAT SPG shall be decoded when they are initially used. This shall be true even for acronyms which have appeared in a previous draft Conclusion. It is acceptable to use an acronym in the title, so long as it is decoded in the body of the draft Conclusion.

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Appendix L - Detailed Oceanic Event Reports Content

(*paragraph 5.1.13 refers*)

a) event type;

b) date the event occurred;

c) start and end times and locations (expressed as latitude/longitude) of the occurrence;

d) location where the event occurred;

e) type of airspace involved (i.e. MNPS, below MNPS, etc.);

f) whether the event occurred within, north or south of the NAT OTS;

g) type of aircraft operation (i.e. commercial, general aviation or military);

h) operator name;

i) aircraft identification, type, departure and destination;

j) assigned flight level and, if different, the observed flight level;

k) whether or not the aircraft entered the reporting OCA at an uncoordinated flight level;

l) assigned speed and, if different, the observed or reported speed;

m) assigned route and if different, the observed or reported route, including for a subsequent route portion not yet flown:

n) flight plan;

o) if applicable, the duration at uncleared flight level;

p) if applicable, the duration at uncleared speed;

q) type(s) of communication being used at the time of the occurrence;

r) identification of the unit, flight information region or sector from which the flight entered the OCA of the unit providing the report;

s) communications or surveillance mode used to detect the event (i.e. Mode C, ADS-B, ADS-C, pilot report, etc.);

t) whether the flight crew was advised of the event;

u) any comments provided by the flight crew;

v) whether the event was reported to the NAT DLMA;

w) if applicable, whether or not the appropriate contingency procedure(s) was(were) followed;

x) if the applicable contingency procedure was not followed, details concerning the action taken by the flight;

y) an initial event summary (to be included with the initial report to the NAT CMA);

z) findings and conclusions (including causes and contributory factors) arising from the unit's investigation of the event;

aa) when applicable, the name of the unit(s) whose breakdown in procedure led to the event;

bb) corrective actions taken in response to the event; and

cc) mitigations, if any, put in place to address the event.

Appendix M - Addition to NAT Doc 007 regarding NAT Region phraseology

(*paragraph 6.1.2 refers*)

Format of Oceanic Clearance messages delivered via voice:

Oceanic clearances delivered via voice in the NAT Region will normally have the following format:

"OCEANIC CLEARANCE [WITH A <list of ATC info>]. <atc unit> CLEARS <ACID> TO <clr limit>, VIA <route>, FROM <entry point> MAINTAIN <level> [<speed>] [.<free text>]"

Note - Fields in [] are optional.

The "list of ATC info" will normally be in accordance with the table below:

Condition	List of ATC info	#
The controller changes, deletes or adds a waypoint other than the entry point.	REROUTE	1
Flight level in the clearance message is not the same as the flight level in the RCL.	LEVEL CHANGE	2
Speed in the clearance message is not the same as the speed in the RCL.	SPEED CHANGE	3
The first waypoint in the clearance message is not the same as in the RCL.	ENTRY POINT CHANGE	4
The controller changes the clearance limit.	CLEARANCE LIMIT CHANGE	5

Multiple elements in the list of ATC info will normally be separated with the word "AND".

Delivery method for Oceanic Clearance messages delivered via voice:

The oceanic clearance will normally be provided to the pilot in two parts in accordance with the following example

Controller/radio operator:

DLH458- OCEANIC CLEARANCE WITH A LEVEL CHANGE AND SPEED CHANGE.

Pilot:

GO AHEAD.

Controller/radio operator:

REYKJAVIK OAC CLEARS DLH458 TO CYVR, VIA GUNPA 65/10 69/20 71/30 72/40 73/60 MEDPA, FROM GUNPA MAINTAIN F340 M083

Format of re-clearance messages delivered via voice:

Clearances delivered via voice that include changes to the level and/or route and/or speed will normally have the following format:

"AMENDED <change> CLEARANCE. <atc unit> CLEARS <acid>, <clearance>"

where <change> can be one or more of the following:

LEVEL, ROUTE, SPEED.

Multiple <change> elements will normally be separated with the word “AND”.

Delivery method for re-clearance messages delivered via voice:

Controller/radio operator:

DLH458- AMENDED LEVEL AND SPEED CLEARANCE.

Pilot:

GO AHEAD.

Controller/radio operator:

REYKJAVIK OAC CLEARS DLH458, CLIMB TO F350, MAINTAIN M082, REPORT LEAVING, REPORT REACHING

Clearance Examples:

The following are examples of typical clearances that could be received by flights operating in NAT Region oceanic airspace. These examples have been chosen with a view to explaining certain elements that are unique to the ICAO NAT Region operational environment, or which have been shown to be subject to errors or misinterpretation.

Example 1 – oceanic clearance to follow a NAT track

Example 1a – Oceanic clearance delivered via voice (aeradio or clearance delivery), for a flight cleared on a NAT track GANDER OCEANIC CLEARS ABC123 TO PARIS CHARLES DE GAULLE VIA CARPE, NAT TRACK WHISKEY. FROM CARPE MAINTAIN FLIGHT LEVEL 330, MACH 082.	**Meaning** ABC123 is cleared to destination LFPG via oceanic entry point CARPE and NAT track W. The cleared oceanic flight level is FL330. The flight should ensure that an air traffic control clearance is obtained in sufficient time to allow the flight to cross CARPE at FL330. If the flight is unable to cross CARPE at FL330 air traffic control must be advised immediately. The assigned true Mach number is M082. The flight must maintain this Mach from CARPE until landfall at BEGID. Any required or unexpected deviation must be immediately reported to air traffic control.
Example 1b – Oceanic clearance delivered via voice (DCPC), for a flight cleared on a NAT track ABC123 CLEARED TO PARIS CHARLES DE GAULLE VIA CARPE, NAT TRACK WHISKEY. FROM CARPE MAINTAIN FLIGHT LEVEL 330, MACH 082.	**Meaning** ABC123 is cleared to destination LFPG via oceanic entry point CARPE and NAT track W. The cleared oceanic flight level is FL330. The flight should ensure that an air traffic control clearance is obtained in sufficient time to allow the flight to cross CARPE at FL330. If the flight is unable to cross CARPE at FL330 air traffic control must be advised immediately. The assigned true Mach number is M082. The flight must maintain this Mach from CARPE until landfall at BEGID. Any required or unexpected deviation must be immediately reported to air traffic control.

Example 1c – the same clearance delivered via data link using the ED/106 Standard	**Meaning**
CLX 1259 060224 CYQX CLRNCE 026 ABC123 CLRD TO LFPG VIA CARPE NAT W CARPE 54N050W 56N040W 57N030W 57N020W BILTO BEGID FM CARPE/1348 MNTN F330 M082 END OF MESSAGE	Data link clearance number 026, sent from the Gander Area Control Centre at 1259 UTC on 24 February 2006. ABC123 is cleared to destination LFPG via oceanic entry point CARPE and NAT track W. NAT track W is defined as CARPE, 54N050W, 56N040W 57N030W 57N020W BILTO to the landfall point BEGID. The clearance is based upon an expectation that ABC123 will reach CARPE at 1348. If the flight crew estimate differs from this time by 3 minutes or more, the flight should advise the current air traffic controller. The cleared oceanic flight level is FL330. The flight should ensure that an air traffic control clearance is obtained in sufficient time to allow the flight to cross CARPE at FL330. If the flight is unable to cross CARPE at FL330 air traffic control must be advised immediately. The assigned true Mach number is M082. The flight must maintain this Mach from CARPE until landfall at BEGID. Any required or unexpected deviation must be immediately reported to air traffic control.

Example 2 – oceanic clearance to follow a random route

Example 2a – Oceanic clearance delivered via voice (aeradio or clearance delivery) for a flight cleared on a random route.	**Meaning**
GANDER CENTRE CLEARS ABC456 TO LONDON HEATHROW VIA CRONO, 52 NORTH 050 WEST, 53 NORTH 040 WEST, 53 NORTH 030 WEST, 52 NORTH 020 WEST, LIMRI, XETBO. FROM CRONO MAINTAIN FLIGHT LEVEL 350, MACH 080.	ABC456 is cleared to destination EGLL via oceanic entry point CRONO, 52N050W, 53N040W, 53N030W, 52N020W, LIMRI to the landfall point XETBO. The cleared oceanic flight level is FL350. The flight should ensure that an air traffic control clearance is obtained in sufficient time to allow the flight to cross CRONO at FL350. If the flight is unable to cross CRONO at FL350 air traffic control must be advised immediately. The assigned true Mach number is M080. The flight must maintain this Mach from CRONO until landfall at XETBO. Any required or unexpected deviation must be immediately reported to air traffic control.

Example 2b – Oceanic clearance delivered via voice (DCPC) for a flight cleared on a random route. ABC456 CLEARED TO LONDON HEATHROW VIA CRONO, 52 NORTH 050 WEST, 53 NORTH 040 WEST, 53 NORTH 030 WEST, 52 NORTH 020 WEST, LIMRI, XETBO. FROM CRONO MAINTAIN FLIGHT LEVEL 350, MACH 080.	**Meaning** ABC456 is cleared to destination EGLL via oceanic entry point CRONO, 52N050W, 53N040W, 53N030W, 52N020W, LIMRI to the landfall point XETBO. The cleared oceanic flight level is FL350. The flight should ensure that an air traffic control clearance is obtained in sufficient time to allow the flight to cross CRONO at FL350. If the flight is unable to cross CRONO at FL350 air traffic control must be advised immediately. The assigned true Mach number is M080. The flight must maintain this Mach from CRONO until landfall at XETBO. Any required or unexpected deviation must be immediately reported to air traffic control.
Example 2c – the same clearance delivered via data link using the ED/106 Standard CLX 1523 060530 CYQX CLRNCE 118 ABC456 CLRD TO EGLL VIA CRONO RANDOM ROUTE CRONO 52N050W 53N040W 53N030W 52N020W LIMRI XETBO FM CRONO/1632 MNTN F350 M080 END OF MESSAGE	**Meaning** Data link clearance number 118, sent from the Gander Area Control Centre at 1523 UTC on 30 May 2006. ABC456 is cleared to destination EGLL via oceanic entry point CRONO and then a random route. The detailed route description is CRONO 52N050W 53N040W 53N030W 52N020W LIMRI to the landfall point XETBO. The clearance is based upon an expectation that ABC456 will reach CRONO at 1632. If the flight crew estimate differs from this time by 3 minutes or more, the flight should advise the current air traffic controller. The cleared oceanic flight level is FL350. The flight should ensure that an air traffic control clearance is obtained in sufficient time to allow the flight to cross CRONO at FL350. If the flight is unable to cross CRONO at FL350 air traffic control must be advised immediately. The assigned true Mach number is M080. The flight must maintain this Mach from CRONO until landfall at XETBO. Any required or unexpected deviation must be immediately reported to air traffic control.
Example 2d – Similar clearance, delivered via HF, relayed through ARINC ATC CLEARS ABC123 CLEARED DESTINATION AIRPORT UUDD DIRECT BALOO 36N060W 38N050W 43N045W 47N040W 52N030W 56N020W BALIX UP59 NINEX. MAINTAIN FLIGHT LEVEL 330. MAINTAIN MACH POINT EIGHT TWO.	ABC123 is cleared to Moscow via the route specified. The altitude, route and speed elements of the Oceanic Clearance are derived from the aircraft's current route, altitude and speed. These may change prior to entering or exiting oceanic airspace via an ATC clearance to do so. At all times, the aircraft is expected to maintain the route, altitude and speed last assigned by ATC.

Example 3 – oceanic clearance, change to the flight plan route

Example 3a – Oceanic clearance delivered via voice (aeradio or clearance delivery), where the route differs from the flight plan route OCEANIC CLEARANCE WITH A REROUTE. GANDER OCEANIC CLEARS ABC456 TO LONDON HEATHROW VIA CRONO, 52 NORTH 050 WEST, 53 NORTH 040 WEST, 53 NORTH 030 WEST, 52 NORTH 020 WEST, LIMRI, XETBO. FROM CRONO MAINTAIN FLIGHT LEVEL 350, MACH 080.	**Meaning** The route included in the oceanic clearance is not the same as the flight plan route. ABC456 is cleared to destination EGLL via oceanic entry point CRONO, 52N050W, 53N040W, 53N030W, 52N020W, LIMRI to the landfall point XETBO. The cleared oceanic flight level is FL350. The flight should ensure that an air traffic control clearance is obtained in sufficient time to allow the flight to cross CRONO at FL350. If the flight is unable to cross CRONO at FL350 air traffic control must be advised immediately. The assigned true Mach number is M080. The flight must maintain this Mach from CRONO until landfall at XETBO. Any required or unexpected deviation must be immediately reported to air traffic control.
Example 3b – Oceanic clearance delivered via voice (DCPC), where the route differs from the flight plan route OCEANIC CLEARANCE WITH A REROUTE. ABC456 CLEARED TO LONDON HEATHROW VIA CRONO, 52 NORTH 050 WEST, 53 NORTH 040 WEST, 53 NORTH 030 WEST, 52 NORTH 020 WEST, LIMRI, XETBO. FROM CRONO MAINTAIN FLIGHT LEVEL 350, MACH 080.	**Meaning** The route included in the oceanic clearance is not the same as the flight plan route. ABC456 is cleared to destination EGLL via oceanic entry point CRONO, 52N050W, 53N040W, 53N030W, 52N020W, LIMRI to landfall point XETBO. The cleared oceanic flight level is FL350. The flight should ensure that an air traffic control clearance is obtained in sufficient time to allow the flight to cross CRONO at FL350. If the flight is unable to cross CRONO at FL350 air traffic control must be advised immediately. The assigned true Mach number is M080. The flight must maintain this Mach from CRONO until landfall at XETBO. Any required or unexpected deviation must be immediately reported to air traffic control.

Example 3c – the same clearance delivered via data link using the ED/106 Standard	**Meaning**
CLX 1523 060530 CYQX CLRNCE 118 ABC456 CLRD TO EGLL VIA CRONO RANDOM ROUTE CRONO 52N050W 53N040W 53N030W 52N020W LIMRI DOLIP FM CRONO/1632 MNTN F350 M080 ATC/ ROUTE AMENDMENT END OF MESSAGE	Data link clearance number 118, sent from the Gander Area Control Centre at 1523 UTC on 30 May 2006. ABC456 is cleared to destination EGLL via oceanic entry point CRONO and then a random route. The detailed route description is CRONO 52N050W 53N040W 53N030W 52N020W LIMRI to landfall point XETBO. The clearance is based upon an expectation that ABC456 will reach CRONO at 1632. If the flight crew estimate differs from this time by 3 minutes or more, the flight should advise the current air traffic controller. The cleared oceanic flight level is FL350. The flight should ensure that an air traffic control clearance is obtained in sufficient time to allow the flight to cross CRONO at FL350. If the flight is unable to cross CRONO at FL350 air traffic control must be advised immediately. The assigned true Mach number is M080. The flight must maintain this Mach from CRONO until landfall at XETBO. Any required or unexpected deviation must be immediately reported to air traffic control.
Example 3d – Revised oceanic clearance delivered via data link using the ED/106 Standard	**Meaning**
CLX 1558 060530 CYQX CLRNCE 135 ABC456 CLRD TO EGLL VIA CRONO RANDOM ROUTE CRONO 52N050W 53N040W 53N030W 53N020W LIMRI XETBO FM CRONO/1702 MNTN F340 M082 ATC/ ROUTE AMENDMENT LEVEL CHANGE MACH CHANGE RECLEARANCE 1 END OF MESSAGE	Data link clearance number 135 sent from the Gander OceanicArea Control Centre at 1558 UTC on 30 May 2006. ABC456 is cleared to destination EGLL via oceanic entry point CRONO and then a random route. The detailed route description is CRONO 52N050W 53N040W 53N030W 52N020W LIMRI to landfall point XETBO. The clearance is based upon an expectation that ABC456 will reach CRONO at 1702. If the flight crew estimate differs from this time by 3 minutes or more, the flight should advise the current air traffic controller. The cleared oceanic flight level is FL340. The flight should ensure that an air traffic control clearance is obtained in sufficient time to allow the flight to cross CRONO at FL340. If the flight is unable to cross CRONO at FL340 air traffic control must be advised immediately. The assigned true Mach number is M082. The flight must maintain this Mach from CRONO until landfall at XETBO. Any required or unexpected deviation must be immediately reported to air traffic control. The cleared route, oceanic flight level and assigned true Mach number have been revised from those contained in the previously sent oceanic clearance. This is the first revision to the originally sent oceanic clearance.

Example 3e – Similar clearance, delivered via HF, relayed through ARINC ATC CLEARS ABC123 CLEARED DESTINATION AIRPORT UUDD DIRECT BALOO 36N060W 38N050W 43N045W 47N040W 52N030W 54N020W DOGAL BEXET. MAINTAIN FLIGHT LEVEL 330. MAINTAIN MACH POINT EIGHT TWO, ROUTE HAS BEEN CHANGED.	ABC123 is cleared to Moscow via the route specified. The altitude and speed elements of the Oceanic Clearance are derived from the aircrafts current altitude and speed. These may change prior to entering or exiting oceanic airspace via an ATC clearance to do so. At all times, the aircraft is expected to maintain the route, altitude and speed last assigned by ATC. In this particular case, the route of flight that is issued in the Oceanic Clearance is not the same as that filed in the FPL. The aircraft is advised of the fact that it is receiving an airborne reroute by the statement "ROUTE HAS BEEN CHANGED".

Example 4 – Re-route clearances

Example 4a –Revised route clearance delivered via voice (aeradio) ABC123 AMENDED ROUTE CLEARANCE SHANWICK OCEANIC RE-CLEARS ABC123 AFTER 57 NORTH 20 WEST TO REROUTE VIA 58 NORTH 015 WEST, GOMUP, GINGA.	**Meaning** The previously cleared route is to be followed until 57N020W. After passing 57N020W the flight is cleared direct to 58N015W, then direct to GOMUP and then direct to GINGA.
Example 4b –Revised route clearance delivered via voice (DCPC) ABC123 AMENDED ROUTE CLEARANCE ABC123 AFTER PASSING 57 NORTH 20 WEST CLEARED REROUTE VIA 58 NORTH 015 WEST, GOMUP, GINGA.	**Meaning** The previously cleared route is to be followed until 57N020W. After passing 57N020W the flight is cleared direct to 58N015W, then direct to GOMUP and then direct to GINGA.

Example 5 – level clearances – no restrictions

Example 5a –Revised level clearance delivered via voice (aeradio) ABC456 AMENDED LEVEL CLEARANCE. SANTA MARIA OCEANIC CLEARS ABC456 CLIMB TO AND MAINTAIN FLIGHT LEVEL 340. REPORT LEAVING, REPORT REACHING. **Note- the instruction to "Report Leaving" is not a requirement, and may not always be included in clearances issued by New York ARTCC**	**Meaning** ABC456 is cleared to climb to and maintain FL340. If the instruction to "report leaving" is included, flight is to report leaving its current level. The flight is to report reaching FL340.

Example 5b –Revised level clearance delivered via voice (DCPC) ABC456 CLIMB TO AND MAINTAIN FLIGHT LEVEL 340. REPORT LEAVING, REPORT REACHING. **Note- the instruction to "Report Leaving" is not a requirement, and may not be included in all clearances**	**Meaning** ABC456 is cleared to climb to and maintain FL340. If outside Radar Contact and if the instruction to "report leaving" is included, flight is to report leaving its current level. The flight is to report reaching FL340.
Example 5c – the same clearance delivered via CPDLC CLIMB TO AND MAINTAIN F340 REPORT LEAVING F320 REPORT LEVEL F340 **Note- the instruction to "Report Leaving" is not a requirement, and may not always be included in clearances issued by New York ARTCC**	**Meaning** ABC456, which is currently at FL320, is cleared to climb to and maintain FL340. The flight is to send a CPDLC downlink message to report leaving FL320 and to send another CPDLC downlink message to report when the flight has levelled at FL340.

Example 6 – level clearances – with geographic restrictions/conditions

Example 6a –Revised level clearance delivered via voice (aeradio) – geographic restriction to reach level by POINT ABC123 AMENDED LEVEL CLEARANCE. SANTA MARIA OCEANIC CLEARS ABC123 CLIMB TO REACH FLIGHT LEVEL 320 BEFORE PASSING 41 NORTH 020 WEST. REPORT LEAVING, REPORT REACHING.	**Meaning** ABC123 is cleared to climb to and maintain FL320. Climb must be arranged so that the flight is level in sufficient time to cross 41N020W already level at FL320. The flight is to report leaving its current level and also to report reaching FL320.
Example 6b – clearance with the same intent, using different phraseology ABC123 AMENDED LEVEL CLEARANCE. GANDER OCEANIC CLEARS ABC123 CLIMB TO AND MAINTAIN FLIGHT LEVEL 320. CROSS 20 WEST LEVEL. REPORT LEAVING, REPORT REACHING.	**Meaning** ABC123 is cleared to climb to and maintain FL320. Climb must be arranged so that the flight is level in sufficient time to cross 41N020W level at FL320. The flight is to report leaving its current level and also to report reaching FL320.

Example 6c –Revised level clearance delivered via voice (DCPC) – geographic restriction to reach level by POINT ABC123 CLIMB TO REACH FLIGHT LEVEL 320 BEFORE PASSING 41 NORTH 020 WEST. REPORT LEAVING, REPORT REACHING.	**Meaning** ABC123 is cleared to climb to and maintain FL320. Climb must be arranged so that the flight is level in sufficient time to cross 41N020W already level at FL320. The flight is to report leaving its current level and also to report reaching FL320.
Example 6d – the same clearance delivered via CPDLC CLIMB TO AND MAINTAIN F320 CROSS 41N020W AT F320 REPORT LEAVING F310 REPORT LEVEL F320	**Meaning** ABC123, which is currently at FL310, is cleared to climb to and maintain FL320. Climb must be arranged so that the flight is level in sufficient time to cross 41N020W already level at FL320. The flight is to send a CPDLC downlink message to report leaving FL310 and to send another CPDLC downlink message to report when the flight has levelled at FL320.
Example 6e – Revised level clearance delivered via voice (aeradio) – geographic restriction to maintain current level until POINT ABC456 AMENDED LEVEL CLEARANCE. SANTA MARIA OCEANIC CLEARS ABC456 MAINTAIN FLIGHT LEVEL 300. AFTER PASSING 41 NORTH 020 WEST CLIMB TO FLIGHT LEVEL 320. REPORT LEAVING, REPORT REACHING. **Note- the initial phrase "maintain flight level 300" is not a requirement, and may not always be included in such clearances delivered via voice**	**Meaning** ABC456, which is currently at FL300, is cleared to climb to and maintain FL320; however, climb must not commence until after the flight has passed 41N020W. The flight is to report leaving its current level and also to report reaching FL320. The initial phrase "MAINTAIN FLIGHT LEVEL 300" may be included to bring attention to the fact that the clearance is a conditional level clearance; the level change cannot commence until the specified condition has been met.
Example 6f – Revised level clearance delivered via voice (DCPC) – geographic restriction to maintain current level until POINT ABC456 MAINTAIN FLIGHT LEVEL 300. AFTER PASSING 41 NORTH 020 WEST CLIMB TO FLIGHT LEVEL 320. REPORT LEAVING, REPORT REACHING. **Note- the initial phrase "maintain flight level 300" is not a requirement, and may not always be included in such clearances delivered via voice**	**Meaning** ABC456, which is currently at FL300, is cleared to climb to and maintain FL320; however, climb must not commence until after the flight has passed 41N020W. The flight is to report leaving its current level and also to report reaching FL320. The initial phrase "MAINTAIN FLIGHT LEVEL 300" may be included to bring attention to the fact that the clearance is a conditional level clearance; the level change cannot commence until the specified condition has been met.

Example 6g – the same clearance delivered via CPDLC	**Meaning**
MAINTAIN F300 AT 41N020W CLIMB TO AND MAINTAIN F320 REPORT LEAVING F300 REPORT LEVEL F320	ABC456, which is currently at FL300, is cleared to climb to FL320; however, climb must not commence until the flight reaches 41N020W. The flight is to send a CPDLC downlink message to report leaving FL300 and to send another CPDLC downlink message to report when the flight has levelled at FL320. The initial message element "MAINTAIN F300" is intended to bring attention to the fact that the clearance is a conditional level clearance; the level change cannot commence until the specified condition has been met.

Example 7 – level clearances – with time restrictions/conditions

Example 7a –Revised level clearance delivered via voice (aeradio) –restriction to reach level by TIME	**Meaning**
ABC123 AMENDED LEVEL CLEARANCE. SANTA MARIA OCEANIC CLEARS ABC123 CLIMB TO FLIGHT LEVEL 320 TO BE LEVEL AT OR BEFORE 1337. REPORT LEAVING, REPORT REACHING.	ABC123 is cleared to climb to and maintain FL320. Climb must be arranged so that the flight is level at FL320 no later than 1337 UTC. The flight is to report leaving its current level and also to report reaching FL320.
Example 7b –Revised level clearance delivered via voice (DCPC) –restriction to reach level by TIME	**Meaning**
ABC123 CLIMB TO REACH FLIGHT LEVEL 320 AT OR BEFORE 1337. REPORT LEAVING, REPORT REACHING.	ABC123 is cleared to climb to and maintain FL320. Climb must be arranged so that the flight is level at FL320 no later than 1337 UTC. The flight is to report leaving its current level and also to report reaching FL320.
Example 7c – the same clearance delivered via CPDLC	**Meaning**
CLIMB TO REACH F320 BY 1337 REPORT LEAVING F310 REPORT LEVEL F320	ABC123, which is currently at FL310, is cleared to climb to and maintain FL320. Climb must be arranged so that the flight is level at FL320 no later than 1337 UTC. The flight is to send a CPDLC downlink message to report leaving FL310 and to send another CPDLC downlink message to report when the flight has levelled at FL320.

Example 7d – Revised level clearance delivered via voice (aeradio) –restriction to maintain current level until TIME ABC456 AMENDED LEVEL CLEARANCE. SANTA MARIA OCEANIC CLEARS ABC456 MAINTAIN FLIGHT LEVEL 300. AT 1337 OR AFTER CLIMB TO AND MAINTAIN FLIGHT LEVEL 320. REPORT LEAVING, REPORT REACHING. **Note- the initial phrase "maintain flight level 300" is not a requirement, and may not always be included in such clearances delivered via voice.**	**Meaning** ABC456, which is currently at FL300, is cleared to climb to and maintain FL320; however, climb cannot be commenced until 1337 UTC, or later. The flight is to report leaving its current level and also to report reaching FL320. The initial phrase "MAINTAIN FLIGHT LEVEL 300" may be included to bring attention to the fact that the clearance is a conditional level clearance; the level change cannot commence until the specified condition has been met.
Example 7e – Revised level clearance delivered via voice (DCPC) –restriction to maintain current level until TIME ABC456 MAINTAIN FLIGHT LEVEL 300. AT OR AFTER 1337 CLIMB TO AND MAINTAIN FLIGHT LEVEL 320. REPORT LEAVING, REPORT REACHING. **Note- the initial phrase "maintain flight level 300" is not a requirement, and may not always be included in such clearances delivered via voice**	**Meaning** ABC456, which is currently at FL300, is cleared to climb to and maintain FL320; however, climb cannot be commenced until 1337 UTC, or later. The flight is to report leaving its current level and also to report reaching FL320. The initial phrase "MAINTAIN FLIGHT LEVEL 300" may be included to bring attention to the fact that the clearance is a conditional level clearance; the level change cannot commence until the specified condition has been met.
Example 7f – the same clearance delivered via CPDLC MAINTAIN F300 AT 1337 CLIMB TO AND MAINTAIN F320 REPORT LEAVING F300 REPORT LEVEL F320	**Meaning** ABC456, which is currently at FL300, is cleared to climb to FL320; however, climb must not commence until 1337 UTC. The flight is to send a CPDLC downlink message to report leaving FL300 and to send another CPDLC downlink message to report when the flight has levelled at FL320. The initial message element "MAINTAIN F300" is intended to bring attention to the fact that the clearance is a conditional level clearance; the level change cannot commence until the specified condition has been met.

Example 8 – time restrictions/conditions – reach a point no later than a specified time

Example 8a – time restriction delivered via voice (aeradio), speed amended – AT OR BEFORE ABC123 AMENDED SPEED CLEARANCE. REYKJAVIK OAC CLEARS ABC123 CROSS 63 NORTH 030 WEST AT OR BEFORE 1428.	**Meaning** ABC123 is to adjust its speed to ensure that the flight will reach 63N030W no later than 1428 UTC.
Example 8b – time restriction delivered via voice (DCPC), speed amended – AT OR BEFORE ABC123 AMENDED SPEED CLEARANCE. ABC123 CROSS 63 NORTH 030 WEST AT OR BEFORE 1428. **Note - the initial phrase "amended speed clearance" may not always be included in clearances issued via DCPC**	**Meaning** ABC123 is to adjust its speed to ensure that the flight will reach 63N030W no later than 1428 UTC.
Example 8c – the same clearance delivered via CPDLC CROSS 63N030W AT OR BEFORE 1428	**Meaning** ABC123 is to adjust its speed to ensure that the flight will reach 63N030W no later than 1428 UTC.
Example 8d – time restriction delivered by aeradio via voice (using different phraseology) – AT OR BEFORE, then a speed instruction GANDER OCEANIC CLEARS ABC123 CROSS 50 NORTH 040 WEST AT TIME 1428 OR BEFORE. AFTER 40 WEST RESUME MACH 082.	**Meaning** ABC123, which is currently assigned Mach 082, is to adjust its speed to ensure that the flight will reach 50N040W no later than 1428 UTC. After reaching 50N040W, the flight is to resume maintaining Mach 082.
Example 8e – the same clearance delivered via CPDLC ABC123 CROSS 50N040W AT OR BEFORE 1428 AFTER PASSING 50N040W MAINTAIN MACH 082	**Meaning** ABC123 is to adjust its speed to ensure that the flight will reach 50N040W no later than 1428 UTC. After passing 50N040W, the flight is to maintain Mach 082.

Example 9 – time restrictions/conditions – cross a point no earlier than a specified time

Example 9a–. time restriction delivered via voice (aeradio) – AT OR AFTER ABC456 AMENDED SPEED CLEARANCE. REYKJAVIK OAC CLEARS ABC456 CROSS 63 NORTH 030 WEST AT OR AFTER 1337.	**Meaning** ABC456 is to adjust its speed to ensure that the flight will not reach 63N030W earlier than 1337 UTC.
Example 9b–. time restriction delivered via voice (DCPC) – AT OR AFTER ABC456 AMENDED SPEED CLEARANCE. ABC456 CROSS 63 NORTH 030 WEST AT OR AFTER 1337. **Note - the initial phrase "amended speed clearance" may not always be included in clearances issued via DCPC**	**Meaning** ABC456 is to adjust its speed to ensure that the flight will not reach 63N030W earlier than 1337 UTC.
Example 9c – the same clearance delivered via CPDLC CROSS 63N030W AT OR AFTER 1337	**Meaning** ABC456 is to adjust its speed to ensure that the flight will not reach 63N030W earlier than 1337 UTC.
Example 9d – time restriction delivered by aeradio via voice (using different phraseology) – AT OR LATER, then a speed instruction GANDER OCEANIC CLEARS ABC456 CROSS 50 NORTH 040 WEST AT 1337 OR LATER. AFTER 40 WEST RESUME MACH 082.	**Meaning** ABC456, which is currently assigned Mach 082, is to adjust its speed to ensure that the flight will not reach 50N040W earlier than 1337 UTC. After reaching 50N040W, the flight is to resume maintaining Mach 082.
Example 9e – same clearance delivered via CPDLC CROSS 50N040W AT OR AFTER 1337 AFTER PASSING 50N040W MAINTAIN MACH 082	**Meaning** ABC456 is to adjust its speed to ensure that the flight will not reach 50N040W earlier than 1337 UTC. After reaching 50N040W, the flight is to maintain Mach 082.

Appendix N - Update to NAT Doc 007 Chapter 10

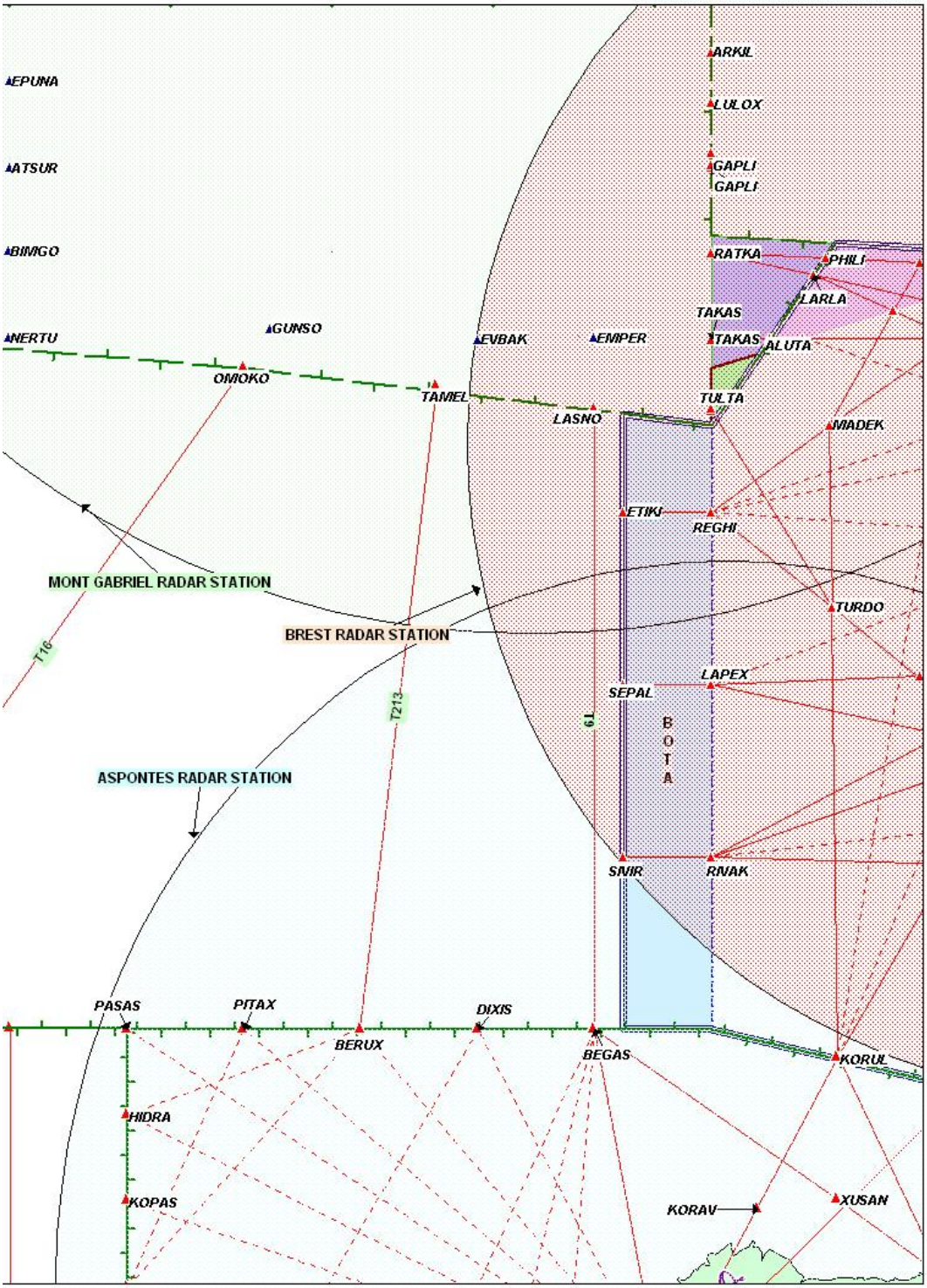
(paragraph 6.1.4 refers)

Add the following to Chapter 10 - ATS Surveillance Services in NAT MNPS Airspace:

10.10 ATS SURVEILLANCE SERVICES IN BREST UIR & BOTA

10.10.1 Brest ACC provides a radar service within the Brest (FIR) UIR & BOTA along with airspace delegated by the UK and Irish authorities as indicated in the figure below:

10.10.2 Brest ACC issues transponder codes to eastbound NAT flights in accordance with EUROCONTROL Guidelines.


EPUNA
ATSUR
BIMGO
NERTU
GUNSO
OMOKO
TAMEL
EVBAK
EMPER
LASNO
ARKIL
LULOX
GAPLI
GAPLI
RATKA
PHILI
LARLA
TAKAS
TAKAS
ALUTA
TULTA
MADEK
ETIKI
REGHI
TURDO
LAPEX
SEPAL
SMIR
RIVAK
KORUL
BOTA
MONT GABRIEL RADAR STATION
BREST RADAR STATION
ASPONTES RADAR STATION
T16
T213
61
19
PASAS
PITAX
BERUX
DIXIS
BEGAS
HIDRA
KOPAS
KORAV
XUSAN

Appendix O -
ICAO NAT FPL2012 and AIDC Implementation Plan

(paragraph 6.1.13 refers)

INTRODUCTION

1.1 Purpose

This document describes the regionally coordinated actions undertaken by the States and ATS authorities in the NAT and facilitated by the ICAO EUR/NAT to implement Amendment 1 to the 15th Edition of the PANS-ATM, Doc 4444.

The document also provides a list of all points of contacts for the national FPL2012 programmes and their status of readiness.

This document serves to ensure a harmonised implementation of the FPL2012 programme in the NAT, coordination with the adjacent Regions and aircraft operators worldwide, and enables to monitor and report on the progress. The plan would also allow the identification any issues or risks that may arise, and describe mitigation actions.

1.2 Context

The nature and of Amendment 1 is to update the ICAO model flight plan form in order to meet the needs of aircraft with advanced capabilities and the evolving requirements of automated air traffic management systems, while taking into account compatibility with existing systems, human factors, training, cost and transition aspects.

The changes were announced by ICAO in State letter AN 13/2.1-08/50 dated 25 June 2008 and will become applicable on 15 November 2012.

The changes have considerable impact on ATS flight plan data processing systems that check and accept flight plans and related messages, use flight plan data in displays for controller reference, use data in ATS automation and for data communication between ATS systems.

The changes have impact flight plan and related messages origination systems, e.g. aircraft operators, flight planning service providers etc.

The main effects on the contents and processing of FPL and associated messages are:

a) Changes to indications of equipment and capabilities on board as described in Items 10 and 18 of the FPL;

b) FPLs and associated messages can now to be filed up to 120 hours before the flight, with a requirement for the Date of Flight (DOF/) in Item 18 if the messages are filed more than 24 hours before the flight;

c) A change to the description of significant points which are described by range and bearing in the route (Item 15);

d) Changes to the contents of several Item 18 indicators STS, REG, EET, TYP, PER, DAT, DEP, DEST, ALTN, RALT;

e) Addition of New Item 18 indicators DOF, DLE, TALT, ORGN, PBN, SUR;

f) Inclusion of field 18 in CHG, DLA, CNL, DEP, RQP, RQS messages

As the change has a global impact on all automated systems involved in the flight plan data chain, implementation of the change needs to be carefully planned, coordinated and executed in a harmonised manner to avoid any disruption or degradation in the aircraft operations and provision of ATS. Particular attention should be given to the transition aspects as both old and new flight plan forms will inevitably coexists during the transition period.

NAT IMG/36 (18 to 21 May 2010) and NAT SPG/46 (22 to 25 June 2010) discussed the actions required regarding the implementation of FPL 2012 programme in the NAT in accordance with Amendment 1 to the PANS-ATM. It was agreed that implementation of FPL 2012 programme would require a regionally coordinated effort and decided that the NAT CNSG could act as a focal point for the NAT Region in this respect. This activity would be conducted in close coordination with the adjacent Regions and with the EUR in particular, to ensure a smooth and harmonised implementation.

As part of this work the following tasks were identified:

a) revision of the regional documentation that would need to amended in view of Amendment 1 to Doc 4444, including NAT SUPPs Doc 7030, NAT Doc 002 – NAT CC ICD, NAT ANP etc;

b) A list of the national points of contact would need to be composed;

c) Inventory of the NAT ATS automation systems readiness to be carried out;

d) Target dates for test readiness dates, including FDPS and AIDC capabilities, be determined and agreed;

e) Coordinate and conduct regional, bi-lateral and inter-regional tests, as required;

f) Target dates for operational readiness be determined and agreed;

g) Dates for commencing transition and operations to be determined and agreed;

h) Determine and agree actions on post implementation monitoring;

THE NAT FPL 2012 IMPLEMENTATION STRATEGY

2.1 ICAO Global Guidance

ICAO has developed guidance for implementation of flight plan information to support Amendment 1 of Doc 4444 in order to coordinate the transition to the new flight plan at the global level. The guidance material was circulated with a State letter AN 13/2.1-09/9 on 6 February 2009. The primary objective of this guidance is to support a coordinated global effort during the transition period so that a successful and coordination is achieved by the applicability date of November 2012.

To support the transition, a public website was established by ICAO where States, ANSPs and airspace users are able to find information regarding the implementation status of the Amendment and where the most common issues and difficulties encountered are discussed.

This website is managed by the ICAO Regional Offices and can be accessed at http://www2.icao.int/en/FITS/Pages/home.aspx.

The website provides only complementary means for notifying of readiness. Similarly, this NAT FPL2012 implementation plan and attachments provide only additional means of promulgating information on the NAT ANPSs readiness. The only formal method of promulgating the compliance information is through the national aeronautical information publication channels, e.g. AIC/AIPs.

ICAO didn't define any start date for commencing the implementation of Amendment 1. Therefore, the transition period can start any time from the date of circulation of Amendment 1 (25 June 2008) until the date of applicability of 15 November 2012.

The ICAO implementation guidelines indicate that:

a) As each ANSP transitions to NEW, it is essential that they also support PRESENT until 15 Nov 2012;

b) There is no requirement for ANSPs to accept and process PRESENT after 15 Nov 2012;

c) All airspace users will file NEW from 15 Nov 2012 forward as using PRESENT is not assured after that date;

d) During the transition period and after an ANSP has advised that they can accept NEW, the determination to file NEW or PRESENR with that ANSP is the choice of the airspace user.

2.2 NAT implementation strategy

In line with the requirements of the above-mentioned ICAO guidance, the NAT service providers plan to switch over to the NEW form at 00.00 UTC on 15 November 2012 (AIRAC number 1212).

This would minimize any transitional period when both NEW and PRESENT could be mixed-used operationally and mitigate potential confusion and complexity. This would be also aligned with the transition strategy adopted by the EUR Region, which is in particular important for the NAT, as some of the NAT States are also part of the EUR and participate in the CFMU IFPS Zone.

The following principles were agreed for the NAT:

a) Flight plan originators should provide NEW FPLs not earlier than three days in advance of the implementation date (i.e. from 00:00 UTC on 12 November 2012), for flights which will take place wholly or partly in the NAT Region;

b) If a flight plan originator chooses to file NEW in advance of the implementation date, shall ensure that only addressees who are known to be able to process the New contents are recipients of the NEW FPL;

c) Flight plan originators should switch to the NEW form by 00:00 UTC on 15/11/2012, after which PRESENT will not be accepted.

d) ANSPs who are able to process NEW before 12:00 UTC on 16 Nov. 2012 may receive a mixture of PRESENT and NEW up to that time, owing to the latency of the FPL distribution networks and systems.

e) After 12:00 UTC on 16/11/2012, ANSPs should no longer receive PRESENT (except in certain cases within the IFPS Zone, by special arrangement with the CFMU for prolongation of the CFMU's translation function).

f) In order to minimise the possible complexity of the arrangements around 15 November 2012, all States in the NAT Region are encouraged to minimise any changes which may be planned to their airspace on that AIRAC date.

2.3 Specific Arrangements for States Served by the IFPS

The CFMU deployment plan and other specific information could be accessed at www.eurocontrol.int/cfmu.

The CFMU approach is based on the following principles (ref. ICAO EUR FPL2012 plan):

a) Adherence to the published Implementation Date (15/11/2012) - the CFMU area shall respect the published date and it is recommended that any operational use of New content by ATC Units ahead of the Implementation Date i.e. a mixed mode of operation, should be of limited duration;

b) A short transition period ahead of the Implementation Date when flight plan originators may already submit flight plans to the IFPS using New content thereby providing AOs with valuable flexibility with regard to their deployment planning and facilitating a smooth transition. IFPS may make the translation to Present content before transmitting to ATC Units, should they require it, providing ANSPs with a similar flexibility in their deployment planning. A complete description of the translation function is provided in the document 'CFMU 2012 Requirements'.

c) The ability of IFPS to provide Present content (translating from New) after the Implementation Date, providing ANSPs with a contingency scenario or mitigation against any problems experienced during their migration. (Note: this will only apply to IFR GAT FPLs. ANSPs should expect to receive VFR or OAT FPLs in New content after the Implementation Date, even if they have asked IFPS to translate New content IFR GAT FPLs into Present content).

d) In order to reduce the period of 'mixed mode' operation, in the 5 days leading up to 15 November 2012 (i.e. from 00.00 UTC on 10 November 2012) the IFPS will not allow IFR GAT FPLs to be filed more than 24H in advance of the flight.

e) In the CFMU, a parameter will be implemented in the ENV database to permit each addressee of IFR GAT FPL messages to indicate the date/time from which he wishes to receive these messages with New contents. By default, this parameter will be set to 00:00 UTC on 16/11/2012.

The arrangements for processing IFR FPLs inside the IFPS Zone are summarised in Figure 1 below:

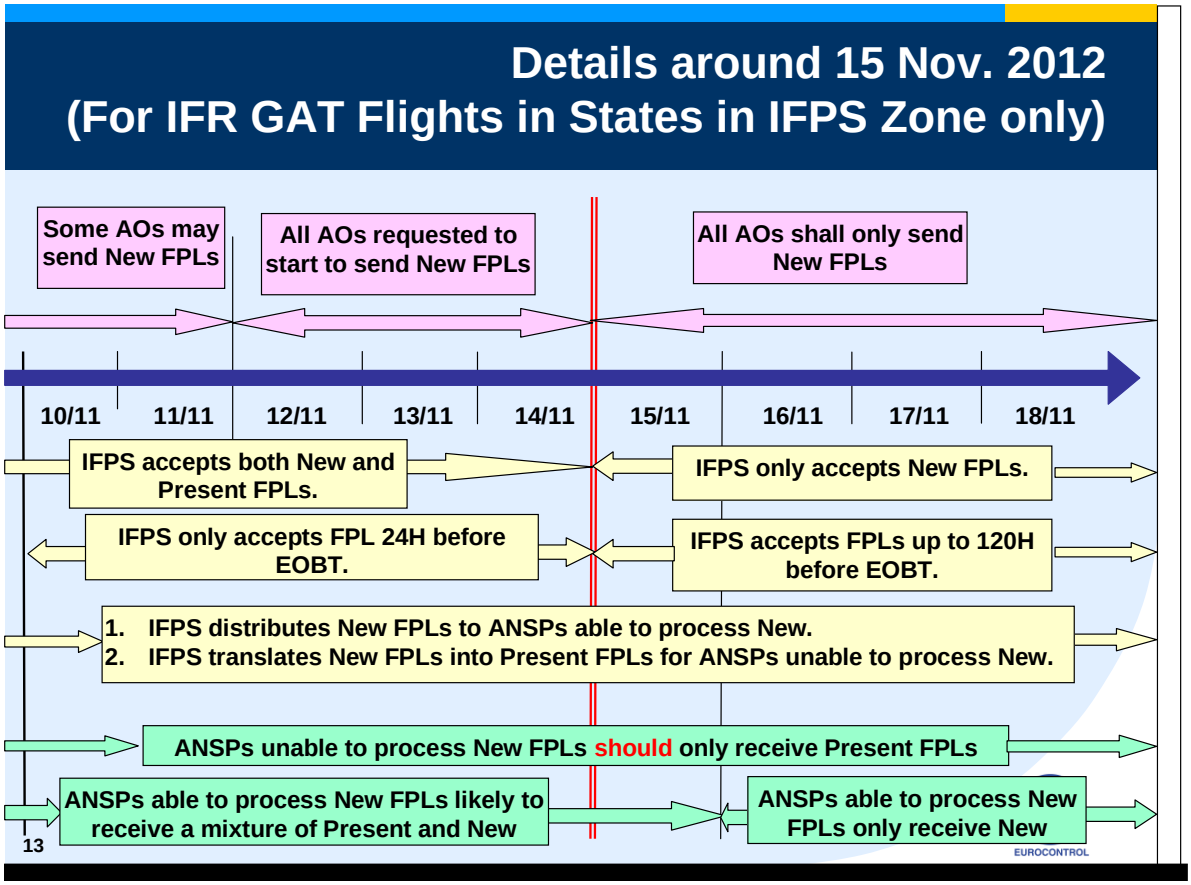


Fig.1 Summary of Transition Scenario for IFR FPLs in States within the IFPS Zone (ref. EUR FPL2012 Implementation Plan, www.paris.icao.int)

TESTING

3.1 The NAT ANSPs have agreed on the following test readiness dates for ATC flight data processing systems and associated AIDC functionality.

	Gander	***Shanwick***	***Reykjavik***	***Santa Maria***	***New York***	***Bodø***	***Shannon***
FDPS	*15 Nov 2011*	*TBD*	*2Q2012*	*Completed*	*2Q 2011*	*15 Nov 2012*	*TBD*
AIDC	*Nov 2011*	*TBD*	*4Q2013*	*Completed*	*Completed*	*4Q2013*	*TBD*

3.2 Bi-lateral, regional, inter-regional testing will be coordinated as soon as all ANSPs confirm test readiness.

3.3 The Eurocontrol CFMU offers testing capabilities that will utilized as much as possible.

3.4 Coordination between CFMU and the NAT is taking place through the regular participation of Eurocontrol at the NAT CNSG meetings and facilitation of the ICAO EUR/NAT Secretariat.

3.5 The CFMU made three types of testing available:

a) Static Testing

b) IFPS Validation System (IFPUV)

c) Dynamic Operational Test sessions (OPT)

3.6 The Static Testing could be carried out by providing, preferably via e-mail, of files containing example test messages (FPLs, CHG, DLA, CNL, ARR, etc.). This tool could be used by AOs, AROs, ANSPs or CFSPs to validate new format messages produced by their system.

3.7 A set of valid new format flight data containing flights within the EUR was made available by the CFMU. A similar set will be made available for the NAT Region.

3.8 The IFPUV is a tool provided to test the validity of FPL messages only. The tool could be used by AOs, AROs or flight plan service providers (CFSPs) to validate New format FPLs and by ANSPs in the creation of valid New format FPLs for testing purposes. The tool was available via AFTN (EUCHZMFV), SITA (BRUEY7X), B2B or Public Web: http://www.cfmu.eurocontrol.int/cfmu/public/subsite_homepage/homepage.html.

3.9 The on-line, pre-determined test sessions for AOs and ANSPs will be conducted according to the following schedule:

a) OPT1: 30 January – 3 February 2012

b) OPT2: 20 – 24 February 2012

c) OPT3: 7 – 11 May 2012

d) OPT4: 11 – 15 June 2012

e) OPT5: 3 – 7 September 2012

f) OPT6: 24 – 28 September 2012

3.10 The NAT ANSPs and AOs are requested to participate jointly in these sessions.

A dedicated NAT testing session will be arranged in coordination between NAT CNSG and CFMU, if required. Participation in OPTs could be done with a prior registration through dnm.fpl2012@eurocontrol.int.

DOCUMENTATION

4.1 Flight planning

NAT Doc 7030 was developed to take Amendment 1 to Doc 4444 into account.

The following summarizes the NAT flight planning requirements that come into effect from 15 Nov 2012 with the approval of the above mentioned Doc 7030 proposal for amendment:

a) All RNAV 10 (RNP 10) approved aircraft intending to operate in the NAT Region shall insert the letter R in Item 10a of the flight plan and the A1 descriptor in Item 18 following the PBN/ indicator.
b) All RNP 4 approved aircraft intending to operate in the NAT Region shall insert the letter R in Item 10a of the flight plan and the L1 descriptor in Item 18 following the PBN/ indicator.
c) All MNPS-approved aircraft intending to operate in the NAT Region shall insert the letter "X" in Item 10a of the flight plan.
d) All RVSM approved aircraft intending to operate in the NAT Region, regardless of the requested flight level, shall insert the letter W in Item 10a of the flight plan.
e) All flights planning to operate in the NAT Region and intending to use data link services shall include in Item 10a of the ICAO flight plan the appropriate descriptor (J2, J5 or J7) to indicate FANS 1/A interoperable equipment.
f) 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.
g) 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.

4.2 AIDC

The NAT CC ICD (NAT Doc 002) providing the NAT AIDC interface control document, was amended to take Amendment 1 to Doc 4444 into account.

Version 1.3 of NAT Doc 002 is made available at
http://www.paris.icao.int/documents_open/files.php?subcategory_id=145

and becomes applicable from 15 Nov 2012. The functions described in this document shall be made available for testing as discussed in Chapter 3.

Bearing in mind the applicability date of 15 November 2012 for Amendment 1 to the 15th Edition of the PANS-ATM (Doc 4444) and the need to change FDPS to accommodate that change, NAT SPG/45 agreed that the same date be used for the mandatory implementation of AIDC throughout the NAT Region. Therefore, implementation of v 1.3 of NAT Doc 002 will be done in parallel with the full implementation of AIDC in the NAT as mandated by NAT SPG Conclusion 45/25.

This decision was made in response to the NAT SPG/44 determination that a significant proportion of the LHD reported in the NAT had involved coordination errors. It had been recognised that the use of AIDC could enhance safety by eliminating or reducing the potential for co-ordination errors as well as improving the efficiency of the ATS units by facilitating the co-ordinating process. Considering the significant safety benefits that could be derived from an expanded use of AIDC, the NAT SPG had agreed that its implementation in the entire NAT Region be given a high priority and that an implementation plan should be drafted.

The full implementation of AIDC will be done in accordance with the list of all the NAT AIDC links that would need to be implemented to fulfill the requirements of NAT SPG Conclusion 44/1. The list is provided in Table 2 below.

			Eurocontrol OLDI								ICAO OLDI								CLR			Miscellaneous				Acknowlwgement			TOC			
FIR - FROM	FIR - TO	TYPE	ABI	ACT	REV	CDN	ACP	RJC	OCM	MAC	ABI	CPL	EST	CDN	ACP	OCX	REJ	MAC	CLR	CNL	OCM	EMG	NAT	MIS	ASM	LAM	LRM	TAM	TOC	AOC	FAN	FCN
BIRD	CZQX	Oceanic									<>	<>		<>	<>		<>	<>								<>	<>					
BIRD	EGGX	Oceanic									<>	<>		<>	<>		<>	<>	<>		<					<>	<>	<>				
BIRD	ENOB	Oceanic									<>	<>		<>	<>		<>	<>								<>	<>					
CZQX	EGGX	Oceanic									<>	<>		<>	<>		<>	<>	<>	<>		<>	<>	<>	<>	<>	<>	<>				
CZQX	KZNY	Oceanic										<>		<>	<>		<>							<>	<>	<>	<>					
CZQX	LPPO	Oceanic									<>	<>		<>	<>		<>	<>				<>		<>	<>	<>	<>				<>	<>
EGGX	LPPO	Oceanic		<>							<>	<>		<>	<>		<>	<>			>	<>		<>	<>	<>	<>				<>	<>
KZNY	LPPO	Oceanic									<>	<>		<>	<>		<>	<>				<>		<>	<>	<>	<>				<>	<>
BIRD	CZQX-D	Domestic																														
BIRD	CZEG	Domestic											<>	<>	<>		<>									<>	<>					
BIRD	ULMM	Domestic																														
BIRD	ENSV	Domestic	<>	<>	<>	<>	<>	<>		<>																<>						
BIRD	EGPX	Domestic	<>	<>	<>	<>	<>	<>		<>																<>						
CZQX	CZQX-D	Domestic										<>				>		<>			>					<>	<>					
CZQX	CYQM	Domestic														>					>					<	<>					
CZQX	CYUL	Domestic										<>				>		<>			>					<>	<>					
CZQX	CYEG	Domestic										<>						<>								<>	<>					
EGGX	LFFR	Domestic	<	>	<>				>	<>																<>						
EGGX	EISN	Domestic		<>	<>				>	<>																<>						
EGGX	EGPX	Domestic		<>	<>				>	<>																<>						
EGGX	LEMD	Domestic		<>	<>				>	<>																<>						
KZNY	CZQX-D	Domestic										<>		<>	<>		<>							<>	<>	<>	<>				<>	<>
KZNY	TTZP	Oceanic									<>	<>		<>	<>		<>	<>				<>		<>	<>	<>	<>				<>	<>
KZNY	KZCN	Domestic																														
KZNY	ZNCW	Domestic																														
KZNY	KZCJ	Domestic																														
KZNY	KZCR	Domestic																														
KZNY	KZCN	Domestic																														
LPPO	LECM	Domestic	<>	<>	<>				<>	<>																<>						
LPPO	LPPC	Domestic	<>	<>	<>				<>	<>																<>						
LPPO	GCCC	Oceanic	<>	<>	<>				<>	<>																<>						
LPPO	GVSC	Oceanic	<>	<>	<>				<>	<>																<>						
LPPO	TTZP	Oceanic																														

LPPO	Submitted by NavPT
CZQX	Submitted by NavCanada
EGGX	Submitted by NATS
KZNY	Submitted by FAA
BIRD	Submitted by ISAVIA

<>	Implemented
<>	Incomplete/Deficient
<>	Planned
	Not required

RISKS

5.1 A general list of risks and mitigations includes the following:

	Risk	Effect	Mitigation
1	SOME AOS MAY NOT IMPLEMENT 1 BY 15 NOV 2012	THEIR FPL DATA MIGHT BE LOST FULLY OR PARTIALLY	AWARENESS OF THE POTENTIAL OPERATIONAL PROBLEMS TO BE EMPHASISED.
2	SOME ANSPS IN THE IFPS ZONE MAY NOT IMPLEMENT AMENDMENT 1 BY 15 NOV. 2012	THE IFPS TRANSLATION FUNCTION WILL ALLOW THESE ANSPS TO RECEIVE FPL DATA IN THE PRESENT FORM FOR A LIMITED TIME.	AWARENESS OF THE POTENTIAL OPERATIONAL PROBLEMS TO BE EMPHASISED.
3	SOME ANSPS OUTSIDE THE IFPS ZONE MAY NOT IMPLEMENT AMENDMENT 1 BY 15 NOV. 2012	THESE ANSPS MAY FIND THAT THEY RECEIVE FPLS AFTER 15 NOV. 2012 WHICH THEIR SYSTEMS CANNOT PROCESS.	AWARENESS OF THE POTENTIAL OPERATIONAL PROBLEMS TO BE EMPHASISED.

Appendix P

Terms of Reference

The ICAO Inter-Regional APAC/NAT AIDC Task Force

(paragraph 6.1.15 refers)

Deliverable(s)

A pan-regional APAC/NAT AIDC document.

Scope of work

The following are the broad principles describing the scope of work:

a) Take into account the APAC, NAT and any other existing guidance material related to AIDC; and

b) Be consistent with the global ICAO framework to ensure global harmonization and interoperability.

Composition

The task force would be composed of experts nominated by the APAC and NAT States, international organisation and industry

Additional membership could be invited from other Regions.

Conduct of the work and schedule

The task force shall complete its work by 1 Q 2014. The work would be carried out by means of electronic correspondence as far as practicable. Minimum amount of face to face meetings would be planned.

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Appendix Q - NAT ANP - Proposed New lay out and content

(paragraph 6.2.6 refers)

(Given separately)

NORTH ATLANTIC AIR NAVIGATION PLAN

VOLUME I, BASIC ANP

PROPOSED NEW LAYOUT AND CONTENT

09 MAY 2012

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Appendix R - The NAT table of CNS implementation dates

(paragraph 6.2.14 refers)

	Gander	***Shanwick***	***Reykjavik***	***Santa Maria***	***New York***	***Bodø***	***Shannon***
ADS-C							
ADS Waypoint and Met reporting	*Jan 2001*	*Jan 2001*	*Aug 2001*	*Oct 2001*	*Sep 2003*	*Mar 2004*	
Local ADS	*Feb 2005*	*Nov 2006*	*Apr 2005*	*Dec 2006*	*June 2005*	*4Q2013*	
CPDLC							
NAT Phases 1&2	*Nov 2002*	*Nov 2002*	*Apr 2005*				
NAT phase 3	*Dec 2003*	*Dec 2003*	*N/A*	*Dec 2006*			
NAT Phase 4	*Jan 17 2008*	*Jan 17 2008*	*Jan 17 2008*	*Jan 17 2008*	*Mar 2003*	*4Q2013*	*1 Feb 2013*
Special cases							
Uplink SSR Code/frequency/squawk/mic.check				*Completed*	*Completed*		*1Q 2012*
FMC WPR	*Nov 25 2004*	*Nov 25 2004*	*2Q 2006*	*Nov 25 2004*		*2Q2005*	
Local FMC				*Apr 2007*			
OCL							
ARINC 623/ED106A Voiceless operation	*May 2006*	*Nov 1996*	*2Q 2010*	*Sep 2007*			
CPDLC OCL					*Completed*	*4Q2013*	

	Gander	***Shanwick***	***Reykjavik***	***Santa Maria***	***New York***	***Bodø***	***Shannon***
Conformance monitoring							
Automation of Level Range Deviation Event Contract (LRDE)	*March 2011*	*4Q2010*	*4Q 2012*	*Dec2011*	*1Q2013*	*TBD*	
Automation of Lateral Deviation Event Contract (LDEC)	*Feb 2011*	*4Q2010*	*4Q2012*	*Dec2011*	*June 2005*	*TBD*	
Automation of periodic events	*March 2011*	*1Q2011*		*Completed 15 min*	*Completed 20 min*		
GOLD implementation							
Support tools for DLMA in ground systems	*completed*	*completed*	*Partial Jan2011* *Full Oct 2011*	*completed*	*Completed*	*TBD*	*1Q2012* *1Q 2013*
DO306/ED122 compliance	*Completed*	*Completed*	*Completed*	*Completed*	*Completed*	*TBD*	
DO258A/ED100A compliance					*Completed*		
CPDLC reroutes	*TBD*	*TBD*	*TBD*	*3Q2008* *UM79, 80, 83*	*JUNE 2005*		*FEB 2013*
Implementation of ADS-B surveillance	*March* *2012*		*Second half 2012*	*4Q2012*	*2Q2015*		

	Gander	***Shanwick***	***Reykjavik***	***Santa Maria***	***New York***	***Bodø***	***Shannon***
Ground/Ground communications							
Full AIDC implementation	*Nov 2011*	*Nov 2012*	*4Q2013*	*completed*	*completed* *AIDC2.0*	*4Q2013*	*TBD*
TRD	*Nov 2011*	*TBD*	*4Q2013*	*completed*	*Completed*	*4Q2013*	
Forwarding POS reports	*Completed*	*4Q2006*	*completed*	*4Q2010*	*3Q2015*		
FPL 2012	*15 Nov 2012*	*15 Nov 2012*	*15 Nov 2012*	*15 Nov 2012*	*ready*	*15 Nov 2012*	*15 Nov 2012*
TRD	*15 Nov 2011*	*TBD*	*2Q2012*	*4Q2011*	*2Q 2011*		

List of Acronyms

ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ADS-B	Automatic Dependent Surveillance–Broadcast
ADS-C	Automatic Dependent Surveillance – Contract
AFI	(ICAO) Africa-Indian Ocean (Region)
AIDC	Air Traffic Services Interfacility Data Communications
AIM	Aeronautical Information Manual
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIRE	Atlantic Interoperability Initiative to Reduce Emissions
AIS	Aeronautical Information Services
ANC	Air Navigation Commission
AN-Conf/12	Twelfth Air Navigation Conference
ANP	Air Navigation Plan
ANSP	Air Navigation Services Provider
AOC	Airline Operations Centre
APANPIRG	Asia/Pacific Air Navigation Planning and Implementation Regional Group
ARTCC	Air Route Traffic Control Centre
ASAS	Airborne Separation Assistance System
ASBU	Aviation System Block Upgrades
ATC	Air Traffic Control
ATCO	Air Traffic Controller
ATM	Air Traffic Management
ATSU	Air Traffic Services Unit
BORPC	Basic Operational Requirements and Planning Criteria
CAA	Civil Aviation Authority
CAR	(ICAO) Caribbean (Region)
CNS	Communications, Navigation and Surveillance
CO_2	Carbon Dioxide
CONOPS	Concept of Operations
CPDLC	Controller Pilot Data Link Communications
CTA	Control Area
DENICE	Danish and Icelandic
DLM	(ICAO NAT Region) Data Link Mandate
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 9613	*Performance-based Navigation (PBN) Manual*
Doc 9750	*Global Air Navigation Plan* (GANP)
DSP	Data Link Service Provider
eANP	Electronic Air Navigation Plan
EANPG	European Air Navigation Planning Group
ENGAGE	Europe-North America Go ADS-B for a Greener Environment
EUR	(ICAO) European (Region)
EUR ANP	*Air Navigation Plan - European Region* (Do 7754)
EUR/NAT	European and North Atlantic
FAB	Functional Airspace Block
fapfh	Fatal Accidents Per Flight Hour
FASID	Facilities and Services Information Document

FDPS	Flight Data Processing System
FIR	Flight Information Region
FMS	Flight Management System
FPL2012	New format of the ICAO Flight Plan Form arising from Amendment 1 to Doc 4444, 15th Edition
GANP	*Global Air Navigation Plan* (Doc 9750)
GNE	Gross Navigation Error
GOLD	*Global Operational Data Link Document*
GPI	Global Plan Initiative
GREPECAS	Caribbean/South American Regional Planning Group
GSI	Global Safety Initiative
HF	High Frequency
IATA	International Air Transport Association
IBAC	International Business Aviation Council
ICD	Interface Control Document
IFALPA	International Federation of Air Line Pilots Associations
IFATCA	International Federation of Air Traffic Controllers' Associations
IRSVTF	ICAO Inter-Regional Satellite Communications (SATCOM) Voice Task Force
iSTARS	Integrated Safety Trend Analysis and Reporting System
JFA	Joint Financing Agreement
kg	Kilogram
KPA	Key Performance Area
KPI	Key Performance Indicator
LHD	Large Height Deviation
MEL	Minimum Equipment List
MID	(ICAO) Middle East (Region)
MNPS	Minimum Navigation Performance Specifications
MTOW	Maximum Take Off Weight
NACC	North American and Caribbean (Office of ICAO)
NAT	(ICAO) North Atlantic (Region)
NAT ANP	*Air Navigation Plan - North Atlantic Region* (Doc 9634)
NAT ATMG	North Atlantic Air Traffic Management Group
NAT CC ICD	*NAT Common Coordination Interface Control Document* (NAT Doc 002)
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 OISO WG	NAT Oceanic Interface Safety Occurrences Working Group
NAT OTS	North Atlantic Organized Track System
NAT SOG	North Atlantic Safety Oversight Group
NAT SPG	North Atlantic Systems Planning Group
NM	Nautical Mile
OCA	Oceanic Control Area
OPLINKP	Operational Data Link Panel
PANS	Procedures for Air Navigation Services
PANS-ATM	*Procedures for Air Navigation Services – Air Traffic Management* (Doc 4444)
PANS-OPS	*Procedures for Air Navigation Services - Aircraft Operations* (Doc 8168)

PBN	Performance Based Navigation
PfA	Proposal for Amendment
PIRG	Planning and Implementation Regional Group
PORT	Pilot Operational Response Time
RA	Resolution Advisory
RCP	Required Communications Performance
RLatSM	Reduced Lateral Separation of 25 Nautical Miles
RLongSM	Reduced Longitudinal Separation of 5 minutes between ADS-C equipped aircraft
RNP	Required Navigation Performance
RPI	Regional Planning Initiative
RVSM	Reduced Vertical Separation Minimum
SARPs	Standards and Recommended Practices
SASP	Separation and Airspace Safety Panel
SATCOM	Satellite Communication
SATVOICE	Satellite Voice Communications
SBD	(Inmarsat) Short Burst Data
SDR	(NAT) Service Development Roadmap
SES	Single European Sky
SESAR	Single European Sky ATM Research Programme
SJU	SESAR Joint Undertaking
SLOP	Strategic Lateral Offset Procedures
SRR	Search and Rescue Region
SUPPs	*Regional Supplementary Procedures* (Doc 7030)
SVGM	SATVOICE Guidance Material
TA	Traffic Advisory
TF	Task Force
TLS	Target Level of Safety
ToR	Terms of Reference
VHF	Very High Frequency
WG/SRP	Working Group for Strategic Review and Planning (of the ANC)

- END -