INTERNATIONAL CIVIL AVIATION ORGANIZATION

SUMMARY OF DISCUSSIONS AND CONCLUSIONS OF

THE FIFTY-FIRST MEETING OF

THE NORTH ATLANTIC SYSTEMS PLANNING GROUP

Paris, 22 to 26 June 2015

PREPARED BY THE EUROPEAN AND NORTH ATLANTIC OFFICE OF ICAO JUNE 2015

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INTRODUCTION

PLACE AND DURATION

0.1 The Fifty-First Meeting of the North Atlantic Systems Planning Group (NAT SPG) was held in the European and North Atlantic (EUR/NAT) Office of ICAO from 22 to 26 June 2015.

OFFICERS AND SECRETARIAT

0.2 The Meeting was chaired by Mr Ásgeir Pálsson, the Representative from 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 Messrs Arkadii Merkulov, Celso Figueiredo, Christopher Keohan, Elkhan Nahmadov, Rodolphe Salomon, and Sarantis Poulimenakos, Regional Officers from the same Office; additional assistance was provided by Ms Patricia Caviston and Ms Patricia Cuff, also from the EUR/NAT Office of ICAO.

ATTENDANCE

0.3 The Meeting was attended by 25 participants from 9 States and 3 international organisations. In addition to the Representatives of the NAT SPG member States, representatives from the NAT Document Management Office (NAT DMO), the International Air Transport Association (IATA), the International Business Aviation Council (IBAC) and the International Federation of Air Line Pilots Associations (IFALPA) attended the meeting. Apologies were received from the NAT Central Monitoring Agency (NAT CMA). The International Federation of Air Traffic Controllers' 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 NAT SPG working structure

Agenda Item 2: Review of significant international aviation developments

Agenda Item 3: Proposed air navigation systems performance monitoring and measurement

Agenda Item 4: NAT planning and implementation management issues

- **4.1** Implementation programme updates
- **4.2** Performance monitoring

Agenda Item 5: NAT operational and safety improvements

Agenda Item 6: Safety Monitoring

Agenda Item 7: NAT Documentation

Agenda Item 8: Work programme, including sub-groups

Agenda Item 9: Any Other Business

1. REVIEW OF NAT SPG WORKING STRUCTURE

1.1 NAT SPG WORKING STRUCTURE - NAT IMG REVIEW OF NAT IMG WORKING STRUCTURE

1.1.1 The NAT SPG recalled that at its 49th meeting, the North Atlantic Systems Planning Group (NAT SPG/49) agreed by NAT SPG Conclusion 49/25 to "explore ideas to expedite current work processes". As a follow-up to the aforementioned NAT SPG Conclusion 49/25, Canada presented the 50th meeting of the NAT SPG with a proposal for the "alignment of work programmes to support future implementation" (NAT SPG/50, WP/28 refers). The proposal was discussed at NAT SPG/50 (NAT SPG/50 Report, paragraphs 3.1.10 through 3.1.14 refer), and NAT SPG Conclusion 50/04 [*Review of NAT SPG Working Structure*] was endorsed.

1.1.2 The NAT SPG was informed that the NAT SPG Symposium (NAT SPG SYMP/15) took place in Paris, France, on 23 and 24 February 2015, as a follow-up of the NAT SPG Conclusion 50/04 c). The final *NAT SPG SYMP/15 Summary of Discussion*s was made available on the EUR/NAT Office public website (www.icao.int/EURNAT/), following "EUR/NAT Documents", in folder "NAT SPG Reports".

1.1.3 As part of its discussions, the NAT SPG Symposium agreed that all the contributory bodies in the NAT SPG working structure be informed of the outcome of the meeting (*NAT SPG SYMP/15 Summary of Discussions*, paragraph 7.1 refers) and invited the North Atlantic Safety Oversight Group (NAT SOG) and the North Atlantic Implementation Management Group (NAT IMG) to investigate and make concrete proposals to the NAT SPG/51 to restructure their contributory bodies working arrangements, with the view to rationalize the use of resources, avoid duplication of work and address the issues where the necessary expertise exist.

1.1.4 The NAT SPG Symposium outcome was reviewed by the 45th meeting of the North Atlantic Air Traffic Management Group (NAT ATMG/45, 9-13 March 2015), the 12th meeting of the North Atlantic Communications Navigation Surveillance Group (NAT CNSG/12, 23-27 March 2015), and the 21st meeting of the North Atlantic Safety Analysis and Reduced Separation Implementation Group (NAT SARSIG/21, 7-10 April 2015). The NAT IMG/46 (11-14 May 2015) considered the suggestions received from the three contributory bodies when investigating the way its new structure should accomplish the proposed two functions of Operations / Procedures and Technology / Automation (*NAT SPG SYMP/15 Summary of Discussions*, section 6.6 refers).

1.1.5 With regards to the current functions of the North Atlantic Operations and Airworthiness Subgroup (NAT OPS/AIR), it was noted that this contributory body was the only place where representatives of flight operations regulatory authorities were present, and it would be important to retain this expertise to ensure effective functioning of the NAT aviation system. Nevertheless, it was noted that the operational expertise of the OPS/AIR covered in the current Terms of Reference (ToRs), could be included into the proposed Operations/Procedures and Technology/Automation functions. Similarly, it was found that the inclusion of the North Atlantic Aeronautical Communications Subgroup (NAT ACSG) current activities in the working arrangements of the two new proposed structures should be feasible in principle. However, some logistical issues would also need to be taken into account, such as:

a) the increased complexity and diversity of the discussion subjects within a larger group could require the conduct of some parallel discussions in breakout sessions on various topics that would need additional facilities (e.g. additional meeting rooms etc.); and

b) the need for some States to increase the number of their participants in the meetings to accommodate for possible parallel discussions in breakout sessions.

1.1.6 The NAT SPG noted the following concerns that should be duly considered in the transition from the current structure to the new one:

a) a number of significant ongoing or upcoming initiatives and evolutions were taking place in the ICAO NAT Region, inter alia the NAT Data Link Mandate (DLM) implementation (currently in Phase 2A), Reduced Lateral Separation Minima (RLatSM) Trials (Phase 1 commencement scheduled for November 2015), the transition from Minimum Navigation Performance Specifications (MNPS) to Performance Base Navigation (PBN) with the advent of the NAT High Level Airspace (in replacement of the MNPS Airspace, and much more. The future working arrangements should provide confidence that these initiatives and evolutions would not negatively affect the safety of the ICAO NAT Region and that the work programme would continue uninterrupted and without loss during the transition to the new working structure; and

b) one of the NAT SARSIG major contributions was the provision of material in support of safety for new implementations in the ICAO NAT Region, such as safety and collision risk assessments, etc., and subsequently the review and assessment of such material. It was noted that the current descriptions and lists of tasks highlighted for the two functions of Operations/Procedures (*NAT SPG SYMP/15 Summary of Discussions*, paragraph 6.6.1 a) iv. refers) and Technology/Automation (*NAT SPG SYMP/15 Summary of Discussions*, paragraph 6.6.2 a) v. refers) clearly mentioned the review of material in support of safety but would require a clear indication of which function/group would be responsible for the provision of safety material.

1.1.7 The NAT SPG noted the NAT IMG support to a common vision which would drive the formation of a roadmap to deliver this vision, supported by a work programme. The NAT IMG reviewed the ToRs as developed by the NAT SPG Symposium for the NAT IMG and agreed on a number of amendments, as presented at **Appendix B**. The NAT SPG noted that the current common vision was considered by the NAT IMG to be collectively described by those items covered in the NAT IMG ToRs (point 1 refers). However, the NAT SPG noted the NAT IMG's agreement that the outcomes from the 2025 Task Force should be further reviewed by the NAT IMG and appropriately reflected in its ToRs.

1.1.8 Therefore the NAT SPG agreed the following :

NAT SPG Conclusion 51/01 – ToRs of the NAT Implementation Management Group (NAT IMG)

That:

a) the *North Atlantic Systems Planning Group* (NAT SPG) *Handbook* (NAT Doc 001)) be amended regarding the Terms of Reference (ToR) for the NAT Implementation Management Group, as detailed in **Appendix B** to this Report; and

b) the ICAO Regional Director, Europe and North Atlantic, take appropriate action to publish and promulgate the updated NAT Doc 001.

1.1.9 The NAT SPG noted the NAT IMG decision to rename Technology/Automation to Technology/Interoperability as it was felt this better reflected the focus of the NAT SPG function. The NAT SPG also noted the NAT IMG's agreement to reflect the actions necessary to review, update and align around a common NAT Vision in a Working Paper to be presented to the NAT IMG/47, to allow more time to develop a proposal of how to achieve this goal and separate the task from the transition to the new NAT SPG/IMG structure.

1.1.10 To fulfil the updated NAT IMG ToRs and deliver the expectation of the proposed functions of Technology/Interoperability and Operations/Procedures it was agreed that two groups, reporting to the NAT IMG, as shown in the new organisational structure diagram in **Appendix C**, would be created as follows:

i) Procedures and Operations Group (POG); and

ii) Technology and Interoperability Group (TIG).

1.1.11 The proposed functions of Operations/Procedures and Technology/Interoperability and the current structure mapping of the function attributes from the current contributing bodies to the two proposed groups, are presented in **Appendix D**. The NAT SPG noted that further work was required to review the ToRs for all existing NAT IMG contributing bodies and to map these onto the POG and TIG ToRs. These two Groups would receive the responsibility to define specific projects under specific project teams, with established responsibilities to deliver time bound and specific outcomes.

1.1.12 In this respect, the NAT SPG supported the NAT IMG's agreement that the definition of a project team would cover the following non-exhaustive principles:

i) NAT SPG project teams are created to discharge the NAT SPG Work Programme by working on defined projects requiring detailed technical expertise;

ii) A project team shall only be formed when it has been clearly established that it is able to make a substantial and effective contribution to the required work.

iii) A project team would be dissolved when it has completed its assigned project, or if the project cannot be usefully continued. The allocation of tasks may also need to be reviewed if the work required was adequately covered by other bodies.

iv) All NAT SPG contributory bodies would have the right to propose/establish projects/project teams with the approval of the parent body (e.g. the NAT IMG, as the parent group, should approve the projects of the POG and TIG and a governance solution should be found to allow for timely delivery of identified outcomes).

1.1.13 The NAT SPG acknowledged that the ultimate driver for the change to the NAT SPG structure was to achieve "an even higher degree of efficiency and quality" and therefore a pragmatic approach should be found in the NAT IMG governance over the scale of projects and activities.

1.1.14 The NAT SPG noted that the NAT IMG also considered that it would be beneficial that Rapporteurs of the new Contributory Bodies be invited to attend the NAT IMG meetings as deemed appropriate per agenda items. The NAT SPG also noted the NAT IMG's agreement to establish a NAT IMG Structure Change Management Project Team (NAT IMG SCMPT) to plan, facilitate, co-ordinate and report progress on the transition.

1.1.15 The NAT SPG was informed that the NAT IMG SCMPT had the first teleconference on 15 of June and agreed on a series of actions meant to implement the new working structure starting on 1 January 2016 and ensure a smooth and transparent transition. Meanwhile, the current structure would remain as it was and it would only change post the NAT IMG/47 agreement in November 2015. The NAT IMG SCMPT agreed to continue working through two Webex sessions (29 June and in September 2015) and, if necessary, a final physical meeting, in October 2015, to consolidate its proposal for NAT IMG/47. The proposal should consist of the NAT IMG revised structure, ToRs, high level project proposals and relevant amendments to the *NAT SPG Handbook*. The NAT SPG agreed to approve the final version of the revised structure, together with the associated amendments to the *NAT SPG Handbook* by correspondence, before the end of year 2015.

1.2 NAT SPG WORKING STRUCTURE – TERMS OF REFERENCE OF THE NAT EFFG

1.2.1 Following the NAT SPG SYMP/15 agreement, that all the bodies in the NAT SPG working structure should be informed of the outcome of the meeting (*NAT SPG SYMP/15 Summary of* Discussions, paragraph 7.1 refers), the 28th meeting of the North Atlantic Economic and Financial Group (NAT EFG/28, 28-30 April 2015) addressed the outcome of NAT SPG SYMP/15.

1.2.2 The NAT EFG noted that its Terms of Reference (ToRs), initially amended by NAT SPG Conclusion 50/21 to include provision of traffic forecast for the NAT, were additionally modified by the

Symposium to confirm the provision of traffic forecast. The NAT EFG acknowledged that its name would become "NAT Economic, Financial, and Forecast Group" (NAT EFFG), and concurred with its new proposed ToRs.

1.2.3 Noting the agreement reached at the NAT EFG/28, and that the functions of the NAT Traffic Forecast Group (NAT TFG) were now fully under the remit of the NAT EFFG, the NAT SPG agreed to the following:

NAT SPG Conclusion 51/02 – ToRs for the NAT Economic, Financial and Forecast Group (NAT EFFG)

That:

a) the NAT Traffic Forecast Group (NAT TFG) be disbanded;

b) the *North Atlantic Systems Planning Group* (NAT SPG) *Handbook* (NAT Doc 001) be amended regarding the Terms of Reference (ToRs) for the NAT Economic and Financial Group, renamed as the NAT Economic, Financial and Forecast Group (NAT EFFG), as detailed in **Appendix E** to this Report;

c) reference to the NAT EFG be replaced by reference to the NAT EFFG everywhere in NAT Doc 001;

d) NAT Doc 001 be amended to remove the ToRs, mention of, or references to the NAT TFG, adapting it to reference the NAT EFFG instead where necessary; and

e) the ICAO Regional Director, Europe and North Atlantic, take appropriate action to publish and promulgate the updated NAT Doc 001.

1.3 NAT SPG WORKING STRUCTURE – TERMS OF REFERENCE OF THE NAT SOG AND NAT MWG

1.3.1 The NAT SPG was informed that based on the actions by the Symposium, the NAT SOG/12 reviewed its current structure and agreed that no changes were necessary to its ToRs nor for the NAT CMA or the NAT Scrutiny Group (NAT SG).

1.3.2 The NAT SPG noted that the NAT SOG reviewed several changes proposed by the NAT Mathematicians' Working Group (NAT MWG) required by the on-going tasks related to the Risk Estimation contained in *NAT SPG SYMP/15*. In this respect, the task "*Coordinate and collaborate, for the purposes of categorizing the occurrences, with the NAT Occurrence Classification and Trend Analysis Group*" was considered very important for safety improvement and therefore included in a revised version of the NAT MWG ToRs.

1.3.3 Based on the foregoing, the NAT SPG agreed to the following:

NAT SPG Conclusion 51/03 – ToRs for the NAT Mathematicians Working Group (NAT MWG)

That:

a) the *North Atlantic Systems Planning Group* (NAT SPG) *Handbook* (NAT Doc 001) be amended regarding the Terms of Reference (ToRs) for the NAT Mathematicians Working Group (NAT MWG), as detailed in **Appendix F** to this Report; and

b) the ICAO Regional Director, Europe and North Atlantic, take appropriate action to publish and promulgate the updated NAT Doc 001.

2. REVIEW OF SIGNIFICANT INTERNATIONAL AVIATION DEVELOPMENTS

2.1 ICAO UPDATE

2.1.1 The NAT SPG was informed about recent significant international aviation developments and took note of the amendments to a number of ICAO Annexes and Procedures for Air Navigation Services (PANS) including Annexes 14 and 18 that had been adopted since April 2015. The NAT SPG was also informed about the proposed amendments to ICAO Annexes and PANS Documents (Annexes 2, 3, 6, 9, 10, 11, 13, 14, 15, *Procedures for Air Navigation Services – ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400), *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM, Doc 4444) and the *Procedures for Air Navigation Services - Aircraft Operations* (PANS-OPS, Doc 8168). A number of ICAO State Letters and ICAO Documents on a wide range of subjects had also been published since the last meeting. The NAT SPG also noted several ICAO global and NAT related meetings that would take place in the near future.

2.1.2 The Regional Director provided the NAT SPG with information on the latest ICAO developments and introduced the new ICAO initiative "No Country Left Behind" (NCLB) and the EUR/NAT Office actions, measures and challenges. The NAT SPG received with appreciation the briefing provided by the Regional Director, extended their gratitude to the excellent support provided by the ICAO Secretariat to the working programme of NAT SPG and expressed their expectation that this support would remain in the future at the same level.

2.2 REVISION OF THE REGIONAL SUPPLEMENTARY PROCEDURES (DOC 7030)

2.2.1 The NAT SPG recalled that, in follow-up to the ICAO Twelfth Air Navigation Conference (AN-Conf/12, 19 to 30 November 2012) Recommendation 6/11 [*Regional performance framework – alignment of air navigation plans and regional supplementary procedures*] regarding the process of alignment of the areas of applicability of *Air Navigation Plans* (ANPs) and *Regional Supplementary Procedures* (SUPPs, Doc 7030), the first phase to update the Africa-Indian Ocean (AFI), Asia and Pacific (ASIA/PAC), Caribbean and South America (CAR/SAM)), European (EUR), Middle East (MID) and North Atlantic (NAT) *Air Navigation Plans* (Basic and *Facilities and Services Implementation Document* (FASID)) had been completed by all ICAO Regional Offices in 2014.

2.2.2 The NAT SPG noted that ICAO Headquarters were in the process of conducting the second phase to amend the SUPPs by aligning the areas of applicability with those that were in the ANPs and a single amendment to restructure the SUPPs as a whole would be submitted to the President of the Council for approval when completed.

2.2.3 The proposed new version of the NAT SUPPs, as a result of copying procedures related to New York Oceanic East Flight Information Region (FIR) from the Caribbean (CAR) to the NAT Regions, to be submitted to the President of the Council for approval was provided for information. The NAT SPG also noted the comments to the proposed new version that had been made by the ICAO EUR/NAT Office.

2.3 PIRGS ACTIVITIES IN OTHER REGIONS

2.3.1 The NAT SPG was presented with an update on the activities of the Planning and Implementation Regional Groups (PIRGs) in other Regions and a summary of the corresponding meeting reports' review by the Air Navigation Commission (ANC) up to March 2015.

2.4 REVIEW BY THE AIR NAVIGATION COMMISSION OF THE NAT SPG/50 REPORT

2.4.1 The Secretariat presented the NAT SPG with the actions taken by the ANC on the NAT SPG/50 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 NAT SPG/50 Report, as there were no specific items that required action by the Council, the report was not submitted to the Council.

2.4.2 The WG/SRP offered its congratulations to the NAT SPG in achieving its fiftieth meeting and once again remarked on the high quality of the report and the scope of the work undertaken, which at times was breaking new ground. The same sentiments should be considered as those of the ANC. The WG/SRP expressed their satisfaction with the majority of the actions and progress made outlined in the report and made specific comment on the some points.

2.4.3 The WG/SRP also recommended that the ANC congratulates the NAT SPG for the draft *2013 Annual Safety Report & Safety Priorities and Targets Summary* and strongly suggest that the NAT Aviation Safety Report (ASR) document be made freely available to the public. This was the practice of Regional Aviation Safety Group (RASG) annual regional Aviation Safety Reports in the interest of transparency to contribute to the improvement of safety.

2.4.4 With respect to the NAT SPG Conclusion 50/32 [*Geographical applicability of the European Union Law and especially the Single European Sky Regulations*] it was noted that the ANC support of the NAT SPG position in regard to upholding the Chicago Convention and ICAO provisions for services on the high seas should be clearly stated. The ANC suggested that the Secretariat prepare an appropriate Council action in coordination with the Legal Bureau as the NAT SPG Conclusion was outside the remit of the Commission.

2.4.5 The President of the ANC explained that the Secretariat could provide further explanation to the Council during its review of the consolidated report of the PIRG activities. It was further commented that the Legal Bureau should verify the understanding of the Conclusion since the input to the NAT SPG/50 Report was provided by the regional office; to which the AN-WG/SRP Chairperson and the Chief of Airspace Management and Optimization (C/AMO, ICAO Headquarters) confirmed that this had been done, and that the comments by the Regional Director comprised the ICAO position at this juncture.

2.4.6 The NAT SPG noted that the action recommended to the ANC by the AN-WG/SRP was amended to read "*Express support for the NAT SPG position regarding upholding the Chicago Convention and ICAO provisions for services on the high sea.*"

2.5 STATUS OF NAT SPG/50 CONCLUSIONS

2.5.1 The ICAO Secretariat presented the NAT SPG with information on the status of the NAT SPG/50 agreed Conclusions. The NAT SPG noted that 26 of the 32 NAT SPG/50 Conclusions had been closed and the remaining 6 would be addressed during the current meeting.

2.6 OVERVIEW OF ICAO'S ENVIRONMENT WORK

2.6.1 The NAT SPG was presented with a summary of the main developments on actions requested by the 38th Session of the ICAO Assembly in the field of international aviation and climate change, in particular those actions relating to: 1) technological and operational measures; 2) sustainable alternative fuels for aviation; 3) market-based measures; 4) States' action plans; and 5) assistance to States.

2.6.2 The NAT SPG noted that one major area of activity in the technological and operational measures was the development of a technical carbon dioxide (CO_2) certification standard for aircraft, while regarding operational measures, it was noted that the Committee on Aviation Environmental Protection (CAEP) had completed a preliminary analysis of fuel savings associated with Aviation System Block Upgrades (ASBU) Block 0 modules and had embarked on a more detailed evaluation. The NAT SPG recalled that after the 38th Assembly, significant efforts had been spent in developing a recommendation for a global Market Based Measures (MBM) scheme with the goal to have it implemented from 2020, following a decision to be taken by the 39th Session of the Assembly in 2016.

2.6.3 In this regard, it was noted that in February 2014, the ICAO Council agreed on a clear process and roadmap, with expected milestones and necessary governance structure, including the establishment of the Environment Advisory Group (EAG). ICAO also conducted MBM Global Aviation Dialogues (GLADs) in 2015 in five ICAO Regions, including one in Madrid, Spain from 27 to 28 April 2015, to share up-to-date information on the work of ICAO related to the development of a global MBM scheme for international aviation, and provide an important opportunity for ICAO to receive feedback from all its Member States and relevant organizations.

2.7 ICAO REPORT ON CIVIL AVIATION CYBER SECURITY

2.7.1 The NAT SPG was informed on the latest developments on civil aviation cyber security activities. Anticipating the need for a harmonized and global approach to cybersecurity and recognizing its potential threats, a provision on measures relating to cyber threats was introduced in Amendment 12 to Annex 17 — *Security*, which became applicable on 1 July 2011. This provision was complemented with new guidance material introduced in Chapter 18 – *Cyber threats to critical aviation information and communication technology systems* – of the *ICAO Aviation Security Manual* (Doc 8973 — Restricted) and the release of the First Edition of the *ICAO Air Traffic Management Security Manual* (Doc 9985 — Restricted).

2.7.2 The NAT SPG recalled that the High-level Conference on Aviation Security (HLCAS, 12-14 September 2012) recommended ICAO to intensify efforts to develop guidelines on the prevention and appropriate response to emerging aviation security threats such as Global Navigation Satellite Systems jamming, blocking and spoofing. In the same vein, the AN-Conf/12 recommended ICAO to establish, as a matter of urgency, an appropriate mechanism including States and industry to evaluate the extent of the cybersecurity issues and develop a global air traffic management architecture taking care of cybersecurity issues. It was also recalled that the 38th Assembly adopted the Resolution A38-15: *Consolidated statement of continuing ICAO policies related to aviation security*, requesting the Council to direct the Secretary General to continue to address cyber threats to aviation security, in consultation with the Aviation Security Panel (AVSECP).

2.7.3 In this regard, the NAT SPG noted that the AVSEC Panel Working Group on Threat and Risk (WGTR) undertook periodical assessments of the risks associated with a range of cyber threat scenarios. In their assessments, the WGTR considered terrorist-related attacks only, which included deliberate malign acts intended to cause loss of life and/or significant disruption and economic damage to the aviation and focused primarily on attacks against Information Technology (IT)-based air traffic management (ATM) systems and other aircraft systems. The vulnerabilities of airport-based cyber systems such as departure control, flight information display, baggage handling, lighting control and security access control systems were also assessed against various scenarios of cyber-attacks.

2.7.4 The NAT SPG was informed that ICAO, together with the Airports Council International (ACI), the Civil Air Navigation Services Organisation (CANSO), the International Air Transport Association (IATA), and the International Coordinating Council of Aerospace Industries Associations (ICCAIA) agreed to establish an Industry High-level Group (IHLG) as a mechanism for high-level cooperation on issues of common interest and importance. On 5 December 2014, the five organizations signed the *Civil Aviation Cyber Security Action Plan* and an accompanying *Roadmap*. This cooperation would enable the participating parties to draw together all elements of the aviation industry to ensure a shared vision, strategy and set of commitments to tackle the cyber threat.

3. PROPOSED AIR NAVIGATION SYSTEMS PERFORMANCE MONITORING AND MEASUREMENT

3.1 COST EFFECTIVENESS KEY PERFORMANCE INDICATORS (KPIS) COMMON TO THE NAT IMG AND NAT EFG

3.1.1 The NAT SPG recalled that, as a follow-up to NAT SPG Conclusion 49/24 [*Harmonization of the list of* NAT *EFG and NAT IMG KPIs*], the "*Cost per 100 km flown*" and the "*Cost per oceanic flight hour*" had been identified as the only key performance indicators (KPIs) of common interest to the NAT EFG and NAT IMG but requested NAT EFG to provide for clarifications on the term "cost", and whether the envisaged costs covered air traffic control (ATC), communications and meteorological aspects and to which extent.

3.1.2 As a consequence, the NAT EFG consulted with the CANSO on their used KPIs, and more specifically on their definition of cost. The NAT SPG noted that CANSO defined total Air Navigation Service Provider (ANSP) cost to include Operating Costs, Cost of Capital, and Depreciation/Amortisation, and that each type of cost was further defined as follows:

a) Operating costs: direct and indirect employment costs, non-staff operating expenses, and other costs incurred through the purchase of goods and services directly used to provide Air Navigation Services (ANS). These costs should include outsourced services such as communications, information technology (IT) and external staff on short-term assignments, as well as materials, energy, rent, and facilities and maintenance. Meteorological services being separate from ANS service, their cost could not be accounted in operating cost;

b) Cost of capital: either the interest paid to the providers of debt capital, or the appropriate cost of capital applied to equity capital; and

c) Depreciation/Amortisation: depreciation and capital lease amortisation expenses related to the total fixed assets in operation associated with providing ANS services.

3.1.3 The NAT SPG noted that the information on the CANSO global Key Performance Indicators definitions (*NAT EFG/28 Summary of Discussions*, Appendix C refers) was made available on the EUR/NAT Office public website (www.icao.int/EURNAT/) as "Key Performance Indicators - CANSO Definitions", following "EUR/NAT Documents", following "NAT Documents", in folder "NAT Economic, Finance and Forecast supporting documents".

3.1.4 The NAT SPG was informed that the NAT EFG was investigating the possibility of reporting the NAT average "*Cost per 100 km flown*" and "*Cost per oceanic flight hour*" to be aggregated up to the ICAO NAT Region on an annual basis..

4. NAT PLANNING AND IMPLEMENTATION MANAGEMENT ISSUES

4.1 IMPLEMENTATION PROGRAMME UPDATES

Progress on Development of RLatSM Trial

4.1.1 The NAT SPG was presented with an update on the latest progress on the Trial Implementation of 25 nautical miles (NM) Reduced Lateral Separation (RLatSM) in the ICAO NAT Region, planned to commence on the November 2015 AIRAC date. The NAT SPG noted that updates had been provided to the NAT IMG/46 and NAT SOG/12 meetings.

4.1.2 The updates covered the Implementation Plan for the Trial Application of RLatSM in the NAT Region (RLatSM Plan) to include a number of corrections, the removal of the mention "draft" in the

title, a statement indicating that rerouting of flights onto RLatSM identified tracks containing ½ degree coordinates would only be permitted via Controller Pilot Data Link Communications (CPDLC) , and a new Section 11 with success criteria for the RLatSM Trial.

4.1.3 The updated RLatSM Plan (v-2015-1) was promulgated on 11 June 2015 (State letter EUR/NAT 15-0325.TEC refers), and was made available for download at its usual location on the ICAO EUR/NAT public website: (www.icao.int/EURNAT/), following "EUR/NAT Documents", then "NAT Documents", in folder "Planning documents supporting separation reductions and other initiatives".

4.1.4 The NAT SPG noted that the monitoring of the RLatSM operation during the trial would be performed against the Success Criteria identified in Section 11 of the RLatSM Plan and that this task would be performed by the NAT Safety Analysis and Reduced Separation Implementation Group (NAT SARSIG) (NAT IMG Decision 46/04 [*Reporting on RLatSM Operations trial against RLatSM Success Criteria*] refers).

RLatSM Task List

4.1.5 The NAT SPG noted several updates to the Task List Supporting the Trial Implementation of RLatSM in the ICAO NAT Region (RLatSM Task List), in particular to the tasks below (**Appendix G** to this Report refers):

a) Task 18 [*Plan and schedule for aeronautical chart data publication*] and Task 32 [*Aeronautical chart and navigation databases*]. It was agreed that the most practical way to ensure a solid coordination process was for the ICAO Secretariat to include the commercial service providers, such as NGA, Jeppesen, Lido and Navtech, on their distribution list whenever amendments to *North Atlantic Operations and Airspace Manual* (NAT Doc 007) would be circulated.

b) Task 12 [*NAT Safety Assessment*]. It was noted that the updated Collision Risk Estimate (CRE) was of 4.60×10^{-9} fatal accidents per flight hour (fapfh) (less than the target level of safety (TLS) of 5×10^{-9} fapfh). This result included revised aircraft size estimates and a modified same direction lateral occupancy value to more closely reflect *anticipated* conditions on the core tracks of the NAT Organized Track System (OTS) . This revised estimate completed the Task for Phase 1. The CRE was also presented to NAT SOG/12, and captured in Task 13 [*Coordination with NAT Safety Oversight Group*] (**Appendix G** to this Report refers).

4.1.6 In view of 4.15 a) above, the NAT SPG agreed to the following:

NAT SPG Conclusion 51/04 – Coordination with the third party aeronautical charts providers

That the NAT DMO, in coordination with the Secretariat, take appropriate actions to ensure that the third-party aeronautical charts providers are included on the distribution list for all amendments to the *North Atlantic Operations and Airspace Manual* (NAT Doc 007).

4.1.7 The NAT SPG noted that the updated RLatSM Task List (v-2015-1), as endorsed by NAT IMG Decision 46/03 [*Updated RLatSM Task List*] was promulgated on 11 June 2015 (State letter EUR/NAT 15-0325.TEC refers), and was made available for download on the ICAO EUR/NAT website.

RLatSM Safety Review; Commencement of RLatSM Trial Phase 1

4.1.8 The NAT SPG was informed that a NAT SOG Task Force meeting was held in Iceland on 11 February 2015 to perform an RLatSM safety review. The meeting was attended by representatives of Regulators and ANSPs from Canada, Iceland and the United Kingdom. The NAT SOG Task Force concluded that the preparation of the RLatSM trial had been well carried out by the NAT IMG and

subgroups. In this respect, the NAT SOG/11 (1-5 December 2014) noted that there were no identified "show stoppers" to prevent proceeding with Phase 1 as scheduled.

4.1.9 Additionally, the NAT SPG noted that when reviewing Task 29 [*Final Notice of decision to implement*], the NAT IMG/46 agreed that all the elements received were sufficient to propose to go ahead for the commencement of phase 1 of the RLatSM trial. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 51/05 – Approval of the RLatSM Trial Implementation Phase 1 Commencement

That:

a) the commencement of Phase 1 of the trial implementation of Reduced Lateral Separation Minima (RLatSM) in the ICAO NAT Region as of 12 November 2015 is approved;

b) NAT IMG and NAT SOG:

i) monitor the trial to ensure that safety requirements were being met; and

ii) provide the NAT SPG with progress reports; and

c) the ICAO Regional Director, Europe and North Atlantic, in the behalf of NAT SPG, notify the Provider, User States and International Organisations of the above decision.

Business Case Analysis (BCA) from NAT EFG for RLatSM Phases 1 and 2

4.1.10 The NAT SPG was informed that the NAT EFG/28 (NAT EFG/28 IP08 refers) received an update from Canada and the United Kingdom on the progress of a BCA for the implementation of RLatSM Phases 1 and 2 (RLatSM Task List, Task 3 refers). The NAT SPG recalled that customer support and a positive BCA were expected in order to proceed with RLatSM Phase 2 trials.

4.1.11 The methodology used was in line with Phase 1, which already showed a positive result. The RLatSM Phase 2 BCA identified and quantified the benefits of RLatSM Phase 2 in the Gander and Shanwick Oceanic Control Areas (OCAs) for two years starting in 2017 and the costs to ANSPs associated with RLatSM starting in 2015. This analysis compared the benefits of RLatSM (Phases 1 and 2) taking into account the fuel and Green House Gas (GHG) savings for NAT customers.

4.1.12 The benefit timeline for RLatSM Phase 2 was quantified for two years post implementation, based on an equipage rate similar to that for Phase 1, a NAT traffic growth of 2% per year with similar mix of fleet, a similar daily proportion of flights eligible for RLatSM and data link mandated over the full NAT OTS from FL350 to FL390.

4.1.13 Compared to Phase 1, it was assumed that flights benefiting from RLatSM in Phase 2 would only generate 80% of the fuel savings estimated through simulation in the RLatSM Phase 1 BCA. It was anticipated in RLatSM Phase 2 that Eastbound flights would be closer to or aligned with the jet stream 83% of the year (304 days), to take account of operational realities, and Westbound flights would avoid them 85% of the year (310 days), and that flights would not be operating identically to Phase 1 and would have slightly less fuel savings.

4.1.14 Based on a price per litre of jet fuel of 0.80 Canadian Dollar (CAD) per litre (CAD/litre) the BCA showed a total benefit of 16.4 million CAD, with about 12 million CAD during RLatSM Phase 2, on top of 3.3 million CAD during Phase 1, for an investment (by ANSPs and operators) of 6.8 million CAD which was incurred in preparation for RLatSM before Phase 1.

4.1.15 The NAT SPG noted that the estimated combined net saving in fuel for RLatSM Phases 1 and 2 amounted to 9.6 million CAD, and 52 000 metric tonnes in avoided GHG emissions (equivalent to 14 000 trips of a Boeing 767-300 from New York JFK to London Heathrow). It was also noted that a sensitivity analysis on fuel price showed the net benefit would only be reduced to 5.5 million CAD if fuel price dropped to 0.60 CAD/litre, but that, at 1.0 CAD/litre, the net benefit would more than double, to 13.6

million CAD. Average jet fuel price would have to drop to below 0.35 CAD/litre for the net benefit of RLatSM to become negative. Each 0.05 CAD/litre change in jet fuel price represented approximately 1 million CAD change in expected net benefits.

4.1.16 The NAT SPG noted that the above mentioned methodology was received and supported by IATA, and therefore the Task 3 [*Cost/Benefit Analysis (CBA)*] of the RLatSM Task List was to be considered complete for Phase 2 as well. The summarising BCA is provided in **Appendix H**.

Volcanic Ash Exercises

4.1.17 The NAT SPG noted that the European and North Atlantic Volcanic Ash Exercises Steering Group (EUR/NAT VOLCEX SG) planned on conducting one exercise in the second quarter of 2016 (VOLCEX16). Details of this exercise would be determined at the VOLCEX16 planning meeting that would be held at the ICAO EUR/NAT Office from 8 to 9 December 2015.

4.1.18 The NAT SPG noted that the Volcanic Ash Exercises Steering Group for the (far) Eastern part of the EUR Region (EUR (EAST) VOLCEX/SG) conducted a volcanic ash exercise from 2200 UTC on 15 April to 0400 UTC on 16 April 2015. This exercise, called VOLKAM15, simulated a volcano eruption of a volcano called Ksudach located in southern Kamchatka, Russian Federation. The simulated ash plume moved southeast to impact the northern Pacific (NOPAC) and trans-east routes, as well as Pacific Organized Track System (PACOTS). The associated debrief meeting held in Paris on 22 April 2015 produced several recommendations.

4.1.19 One recommendation agreed upon at the debrief meeting was to formalize a permanent Letter of Agreement (LoA) between Petropavlovsk-Kamchatsky (PK), Fukuoka Oceanic and Anchorage Flight Information Regions (FIRs) for handling cross border flights that includes contingencies. New routes linking PK and Fukuoka Oceanic FIRs would need a flight check, which is being investigated by the Russian Federation.

4.1.20 Another recommendation was to continue developing a process of communicating and accepting revised flight plans. It was noted that the Cross Polar Working Group (CPWG) was expected to provide a status the week of 11 May 2015 on development of a matrix on how area control centres (ACCs) provide revised flight plans downstream to other ACCs. In addition to revised flight plans, changed messages should be considered as well.

4.1.21 Arranging teleconferences for real events was also recommended, which would include criteria (e.g. volcanic ash cloud >= FL300, expected impact to NOPAC and trans-east routes as well as PACOTS, level of current and expected traffic to these routes) that warrants teleconferences. Teleconference facilities that could be used would include the EUROCONTROL Network Manager and United States Command Centre.

Implementation of Surveillance Enabled Services in the ICAO NAT Region

4.1.22 The NAT SPG was provided with information on the planned implementation of Air Traffic Service (ATS) surveillance enabled services using space-based Automatic Dependent Surveillance – Broadcast (ADS-B) in the North Atlantic OCAs. In this respect NAT SPG Conclusion 50/07 [*Space-Based ADS-B Initiative*] was recalled. It was noted that the ANSPs providing services in the Gander and Shanwick OCAs, NAV CANADA and NATS, had been coordinating on a common implementation strategy for ATS surveillance services using Space-Based ADS-B (SB ADS-B). The current focus of the collaboration effort was on the implementation on 1 February 2018 of a longitudinal application of 15 NM ATS surveillance separation as described below:

a) all flights would continue to be planned and cleared on conflict free flight profiles from oceanic entry to exit between the Gander and Shanwick OCAs;

b) the application of 15 NM ATS surveillance-enabled longitudinal separation would only be permitted between a pair of ADS-B equipped aircraft;

c) ADS-B equipped aircraft pairs operating within or inbound to NAT OCAs would only be considered as being eligible for the application of 15 NM ATS surveillance-enabled separation if both flights would have active CPDLC connections with the appropriate ATS unit(s);

d) the application of 15 NM ATS surveillance-enabled separation could be used to permit one ADS-B equipped aircraft to climb or descend to or through the level of another ADS-B equipped aircraft;

e) 15 NM ATS surveillance separation could be applied between same direction aircraft only while they were operating on the same exact track;

f) 15 NM ATS surveillance separation could be applied between opposite direction ADS-B equipped aircraft provided that they have both passed a common point.

g) ADS-B and CPDLC equipped aircraft pairs planning to operate on the same NAT OTS track could be planned into oceanic airspace with 15 NM longitudinal spacing; and

h) the application of 15 NM ATS surveillance separation could be tactically initiated between ADS-B equipped aircraft pairs operating on the same exact non-NAT OTS track.

4.1.23 The NAT SPG noted that all required procedures, analyses and planning documents would be coordinated through the NAT SPG working structure, as per NAT SPG Conclusion 50/07, to ensure all NAT stakeholders would have the ability to engage in this activity. In addition, the outcomes of this coordination would be a key activity towards enabling a seamless approach to deploying 15 NM separation throughout the NAT Region.

4.1.24 The NAT SPG was informed that a coordination process was ongoing to further enhance services post the February 2018 implementation considering, for example, the application of lateral 15 NM ATS surveillance-enabled separation between non-intersecting tracks and 15 NM ATS surveillance separation between target centres. During the initial deployment of ATS surveillance-enabled operations the level of benefit realisation would be proportionate to the prevailing level of ADS-B equipped aircraft. Therefore, whilst it was understood that the NAT Concept of Operations (CONOPS) would need to facilitate a mixed equipage environment there should be due consideration of NAT Operations policies to encourage timely aircraft equipage enabling maximum possible benefit realisation from surveillance enabled operations for all stakeholders.

4.2 PERFORMANCE MONITORING

NAT Data Link Performance Report

4.2.1 The NAT SPG was provided with a *NAT region equipage and data link performance report for 2014* (**Appendix I** refers). With regards to equipage levels, the NAT SPG noted the following:

a) The rates of usage and filing of equipage increased during 2014 for all reporting 5 NAT air traffic service providers (ATSPs);

b) The observed rates of usage and filing of equipage increased within the OTS subpopulation for all reporting 5 NAT ATSPs;

c) Inconsistencies between data link capabilities filed in the flight plan and actual usage of data link continued to be observed. IATA and IBAC had been invited to communicate this information to their members for follow up to avoid future inconsistencies; and

d) In line with the previous NAT IMG instructions, the equipage levels information included also data on Required Navigation Perfomance (RNP) 4 and ADS-B levels as filed in the flight plans.

4.2.2 With regards to NAT data link performance, the NAT SPG noted that in 2014 it met the requirements as established by NAT SPG Conclusions 48/07 and 49/05 (*on applicability of required communication performance (RCP) 240 and required surveillance performance (RSP) 180 to 25 NM lateral separation minimum (RLatSM) and 5 min longitudinal separation minimum (RlongSM) implementations*).

4.2.3 With regards to the North Atlantic Data Link Monitoring Agency (NAT DLMA) activities, it was noted that since March 2014, 319 problem reports (PRs) have been submitted at the global level, via the problem reporting website (http://www.ispacg-cra.com/).

4.2.4 The NAT SPG noted that the NAT CNSG, in coordination with the NAT ANSPs and NAT DLMA, had undertaken studies in the following areas in order to determine further performance improvements:

a) CPDLC transfer of authority failures;

b) Termination of Automatic Dependent Surveillance – Contract (ADS-C) contracts;

c) Pilot Operational Response Time (PORT) studies;

d) Delivery of CPDLC uplink messages;

e) Undeliverable uplink messages;

f) Incorrect timestamps in CPDLC messages; and

g) CPDLC message element usage.

4.2.5 In conclusion, the NAT SPG noted that the annual data link performance and equipage data collection and report was an important and necessary activity, also as part of the regional and local safety management system. In view of the above, the NAT SPG agreed that the foregoing activity should continue and endorsed the following:

NAT SPG Conclusion 51/06 – NAT Data Link Performance Report 2014

That:

a) the *2014 NAT Data Link Performance Report* as provided at **Appendix I** to this Report is noted; and

b) the ICAO Regional Director, Europe and North Atlantic, take appropriate actions to publish the 2014 NAT Data Link Performance Report.

Update on the NAT DLMA Terms of Reference and Funding Mechanism

4.2.6 The NAT SPG was provided with an update on the United States efforts to continue funding the NAT DLMA's Priority 1 tasks in follow-up to the NAT SPG Conclusion 50/31 [*NAT DLMA Terms of Reference and Funding Mechanisms*].

4.2.7 The NAT SPG recalled that the United States funded the ICAO NAT Region DLMA services and the Central Reporting Agency (CRA) services in the ICAO Pacific (PAC) Region through Technical Service Agreement contracts. The DLMA/CRA service contract expired in December 2014. In an effort to maintain the current DLMA/CRA service beyond 2014, the United States had approved an extension of the existing contract while analysing the technical and financial aspects of continued funding including: security to protect confidentiality; corrective action system for addressing problem reports; retrieving required data; data analysis; data classification; trend identification; coordination with

stakeholders; technical report generation; corrective action recommendation; configuration control; and NAT/PAC meeting support.

4.2.8 Based on the above mentioned analysis, the identified period of performance had been extended through 31 December 2019 with an updated cost estimate for the service of approximately 2 million US Dollars (USD). This cost and performance period encompassed both NAT DLMA and PAC CRA services to encourage regional harmonization and shared lessons-learned. The DLMA/CRA website would continue to be maintained by Airways New Zealand as a service to the NAT/PAC regions and the global Future Air Navigation System (FANS) community.

4.2.9 The NAT SPG thanked the United States for their efforts to extend the current NAT DLMA funding arrangement in order to ensure the continuous and uninterrupted functioning of the NAT DLMA within its current scope of work through 31 December 2019.

5. NAT OPERATIONAL AND SAFETY IMPROVEMENTS

5.1 UPDATE ON ICAO EUR/NAT WORKSHOP ON PBCS

5.1.1 The NAT SPG was informed that NAT IMG/45 (10-13 November 2014) had endorsed Decision 45/14 [*ICAO EUR/NAT Workshop on PBCS*] (*NAT IMG/45 report*, para. 7.31 to 7.33 refers). The main objective of the workshop was to facilitate the roll out of the new amendments to Annex 4, 6, 11, 15, PANS-ATM, and new manuals related to new separation standards, Performance-Based Communication and Surveillance (PBCS), *Global Operational. Data Link Document* (GOLD), *Satellite Voice Operations Manual* (SVOM) and Performance-Based Horizontal Separation Minima (PBHSM) (ICAO State Letters SP 52/4-15/44 and AN 13/2.5-15/45 of 11 and 12 June 2015 refer), and support implementation of the NAT PBCS plan and PBCS dependent ATM functions (reduced separation).

5.1.2 In this respect, it was noted the Workshop was held from 17 to 19 June 2015 in the EUR/NAT Office of ICAO and was attended by 40 participants from 7 States, 6 international organisations and industry. The Workshop resulted in a number of recommendations to be further analysed within the NAT IMG working structure. However, there were two issues that, due to the urgency and potential impact on the NAT, required review by the NAT SPG to assign further tasks to the NAT IMG and NAT SOG.

a) The workshop recalled that there was a proposal for amendment (PfA) to the NAT SUPPs endorsed by NAT IMG Decision 43/15 (in follow up NAT SPG Conclusion 49/06) related to implementation of new reduced separation and asssociated PBCS/PBN measures. The workshop noted that in view of the above-mentioned ICAO State letters containing new proposals for amendment to ICAO Standards and Recommended Practices (SARPs)/PANS and guidance material, the foregoing NAT SUPPS PfA should be reviewed and updated taking the new global material into account. The NAT SUPPS PfA would allow the prescription of the appropriate separation and associated supporting requirements.

b) It was noted that the implementation of the new Annex 6 provisions may take longer than the November 2016 applicability date and therefore it was thought that having a transition strategy might be desirable as this issue could have impact on the planned NAT implementations.

5.1.3 In this regard, the NAT SPG agreed that the impact of the new proposals for amendment to ICAO provisions on the NAT ANSPs, aircraft operators and State safety oversight and regulatory authorities would need to be carefully assessed by the NAT IMG and NAT SOG. If determined necessary, a transition strategy would need to be devised to accommodate for potential delays in compliance with the proposed provisions, specifically from the aircraft operators and safety regulators perspective. Appropriate regional provisions and guidance material, e.g. NAT SUPPs, would also need to be reviewed.

5.1.4 Therefore, the following Conclusion was agreed:

NAT SPG Conclusion 51/07 – ICAO revised provisions on performance based operations

That, the NAT IMG in coordination with the NAT SOG:

a) assess the impact of the proposals for amendment to ICAO provisions (ICAO State letters AN 13/2.5-15/45 and SP 52/4-15/44 refer) on the ANSPs, aircraft operators and regulators in the NAT Region;

b) determine a transition strategy for the NAT Region to accommodate possible non-compliance with the Annex 6 PBCS-related requirements by November 2016;

c) review appropriate regional provisions including *NAT Regional Supplementary Procedures* (NAT SUPPs, Doc 7030/5) and relevant guidance material, to determine necessary changes to prescribe reduced separation minima and associated PBN/PBCS requirements in the NAT Region; and

d) report to the NAT SPG/52.

6. SAFETY MONITORING

6.1 OUTCOME OF NAT SOG CONTRIBUTORY BODIES

Review outcome of NAT SG/12 meeting

6.1.1 The NAT SPG noted that the NAT CMA presented a detailed briefing to the NAT SOG concerning the 12th meeting of the North Atlantic Scrutiny Group (NAT SG/12) which took place in Washington DC, United States from 20 to 23 April 2015.

6.1.2 The NAT SPG noted the retirement of Mr Dale Livingston, the Rapporteur of the Mathematicians Working Group, who had equally served both that group (NAT MWG) and the Scrutiny Group (NAT SG) with consistent dedication over many years and extended its sincere appreciation and thanks for his outstanding efforts and contributions to the work of the NAT SPG.

6.1.3 The NAT SPG noted the concerns conveyed by the NAT SG to the NAT SOG regarding the proposed separation of the "Occurrence Classification & Trend Analysis" role (identified as the "Scrutiny Group") and the "Risk Estimation" role currently provided by the "Mathematicians Working Group" discussed during the NAT SPG Symposium 2015, last February. As the NAT SPG Symposium agreed that "as a minimum, the functions should cover those currently provided by the NAT MWG and NAT SG" the NAT SPG noted the NAT SOG's agreement to keep the current titles of the sub-groups.

6.1.4 The NAT SPG was also informed that some functions of a Regional Monitoring Agency (RMA) were not performed by the NAT CMA, specifically those related to the RNP performance monitoring. The NAT SPG noted that the United States would conduct a review of all NAT SPG Subgroups ToRs to determine if this requirement was being met and present the results to the next NAT SG and NAT SOG meetings.

6.1.5 In this respect, the Secretariat informed the NAT SPG on a new ICAO document "*Manual on Monitoring the Application of Performance-Based Horizontal Separation Minima*" currently under development and planned to be released before the end of 2015. It was expected that the new manual would be used to support the implementations of reduced horizontal separation minima after 2016.

6.1.6 The NAT SPG noted that a review of lateral errors and deviations and the safety-related occurrences, developments and trends demonstrated a reduced number of reported errors when compared with the previous period.

6.1.7 The NAT SPG noted a number of instances where westbound flights entering oceanic airspace deviated from the cleared route immediately after crossing the boundary. The NAT SPG noted the

NAT SG's suggestion to assess the use of ADS-C to check the conformance of outbound aircraft before the boundary and agreed to the following:

NAT SPG Conclusion 51/08 – Conformance checking prior to oceanic entry

That, considering the current and future safety risks of lateral deviation at oceanic entry, the NAT IMG introduce conformance checking using ADS-C prior to oceanic entry in sufficient time to prevent deviations.

6.1.8 The NAT SPG noted the NAT SOG's concern regarding third party entities filing multiple flight plans without cancelling or deleting earlier flight plans and therefore generating flight plan data inconsistences between the ATS units and air crew. Considering the severity of this issue, the NAT SOG agreed that a review of the current requirements for flight plan filing and its operational use in NAT Region was required and encouraged ANSPs to execute early identification of differences between the routes held by ATC and the flight crew and consider whether the ATC route clearance terminology and practice should be modified. Therefore the NAT SPG agreed to the following:

NAT SPG Conclusion 51/09 – Multiple flight plans

That, considering the consequences of deviations that may occur, the NAT IMG:

a) review the current requirements for flight plan filing and its operational use in NAT Region; and

b) encourage ANSPs to execute early identification of differences between the routes held by ATC and the flight crew and consider whether the ATC route clearance terminology and practice should be modified.

Central Monitoring Agency (CMA) Report

6.1.9 The NAT SPG noted that the NAT CMA presented its report to the NAT SOG/12. The NAT SPG also noted the CMA website became operational in March 2015 and the registration of the majority of users had been completed and replaced the e-mail circulation of the CMA Weekly Report.

6.1.10 The NAT SPG was informed that, as agreed at the NAT SOG/11, a *NAT Deviations and Errors Monitoring Application* (NAT DEMA)[1] *Modification List* was created in order to facilitate subsequent modification of the NAT DEMA. It was also noted that the NAT SOG adopted an amended format for the CMA Monthly Report that would be made available on the CMA website.

North Atlantic Mathematicians' Working Group Report (NAT MWG/51)

6.1.11 The NAT SPG noted that the NAT SOG was presented with a detailed NAT MWG/51 Report (4-8 May 2015) to assist in reviewing system safety performance.

6.1.12 In accordance with NAT SPG Conclusion 50/09 [*Additional Data for Use by the NAT Mathematicians' Working Group*], the NAT SOG was presented with the status on flight activity data reporting for Gander, Shanwick, New York, Reykjavik and Santa Maria OCAs. Although the data should be collected for operations on the 4th and 15th of each month that represented the requirement of a 24-day sample set, Gander, Shanwick and New York had provided 365 days of census data for the 2014 reporting year which would contribute to a robust estimation.

[1] *This database, designed on the Microsoft Access® platform, allowed stored information to be queried using multiple possible criteria in order to identify events such as GNEs, large height deviation (LHDs*) *stored in the database.*

6.1.13 The NAT SOG was presented with the latest estimates of Strategic Lateral Offset Procedure (SLOP) usage based on ADS-C position data during the period of October to December 2014. The NAT SOG was informed that the total offset usage for 2014 showed a slight decrease compared to 2013. The NAT SOG also noted that more than one third of the flights applied a 1 NM right offset and less than a third applied a 2 NM right offset. Based on the foregoing, the NAT SOG agreed that overall SLOP performance would be improved significantly if some operators would use the SLOP procedure in the optimal manner. Hence, the NAT SOG agreed to provide a feedback on the SLOP usage to the operators concerned through their appropriate State regulatory authorities and IATA.

6.2 NAT 2014 ANNUAL SAFETY REPORT & SAFETY PRIORITIES (ASR) AND TARGETS SUMMARY

6.2.1 The NAT SPG was presented with the *Draft 2014 Annual Safety Report & Safety Priorities (ASR) and Targets Summary* as reviewed and approved by at NAT SOG/12. The NAT SPG endorsed the document and agreed to the following:

NAT SPG Conclusion 51/10 – 2014 Annual Safety Report (ASR) and Safety Priorities and Targets Summary

That:

a) the *2014 Annual Safety Report & Safety Priorities and Targets Summary* as presented in **Appendix J** to this Report be endorsed;

b) the ICAO Regional Director, Europe and North Atlantic, take appropriate action to publish and promulgate the *2014 ASR & Safety Priorities and Targets Summary*.

6.2.2 The NAT SPG noted that Portugal, on behalf of the *Global Aviation Safety Plan* (GASP) alignment subgroup, presented the NAT SOG with a report regarding the *Annual Safety Report & Safety Priorities and Targets Summary* and its alignment with the GASP. The report underlined that one of the safety concepts (required by Safety Management System (SMS), State Safety Programme (SSP) and in accordance with the GASP) was the development of safety performance indicators and metrics. It was recalled that currently the NAT SPG had identified a number of useful indicators, but a limited number of safety targets. The reduced number of safety targets was explained by the amount of data needed to support the setting of targets. Meanwhile as the data became available, several additional targets could consequently be proposed and agreed by the NAT SOG. Therefore, the NAT SPG agreed to the following:

NAT SPG Conclusion 51/11 – Additional targets to the list of safety key performance indicators for the ICAO NAT Region

That the list of Key Performance Indicators (KPI) in the *NAT SPG Handbook* (NAT Doc 001) in the area of safety for the ICAO NAT Region be augmented with the following targets:

Key Performance Indicator		*Target*
(i)	number of hull loss events:	0;
(ii)	number of Airborne Collision Avoidance System (ACAS) Resolution Advisory (RA) events:	0;
(v)	number of minutes that data link equipped aircraft spend at the wrong flight level:	a10% reduction in comparison with a rolling average of the previous 3 years;
(vi)	number of minutes that non data link equipped aircraft spend at the wrong flight level:	a10% reduction in comparison with a rolling average of the previous 3 years;
(viii)	number of Gross Navigation Error (GNE) events involving data link equipped aircraft:	5;

Key Performance Indicator	*Target*
(ix) number of GNE events involving non data link equipped aircraft:	a 10% reduction in comparison with a rolling average of the previous 3 years;
(xi) number of losses of separation:	a 10% reduction in comparison with a rolling average of the previous 3 years.

6.2.3 The NAT SPG noted that the GASP prescribed 10 (ten) key aviation safety policy principles and a "tiered approach" to safety planning. As the NAT Region did not have a safety plan per se, the NAT SPG noted the NAT SOG's agreement to develop a safety plan to address both actual performance and emerging safety issues.

7. NAT DOCUMENTATION

7.1 PROGRESS ON THE NAT EANP - ALIGNMENT OF ANPS WITH 4TH EDITION OF GANP

7.1.1 The NAT SPG recalled that, at NAT SPG/50 (June 2014), new templates for the electronic *Regional Air Navigation Plan* (eANP) that had been developed by the ICAO Secretariat and approved by the Council on 18 June 2014 were presented. This action had been undertaken in follow-up to the AN-Conf/12 Recommendation 6/1 [*Regional performance framework – planning methodologies and tools*] regarding the alignment of the *regional air navigation plans* (ANPs) with the Fourth Edition of the *Global Air Navigation Plan* (GANP , Doc 9750). The NAT SPG/50 had also been presented with the new eANP templates of three Volumes and the format, table of contents and description of the contents of each Volume were also presented.

7.1.2 The NAT SPG also recalled that NAT SPG/50 noted that the PIRGs should further develop and populate the approved templates of their regional eANPs with the aim to obtain approval of all three Volumes by the end of 2015. In this respect, the NAT SPG agreed to NAT SPG Conclusion 50/01 [*Development and Endorsement of the NAT eANP*] in which it agreed that the development of the NAT eANP based on the Council-approved ANP templates be included in the work programme of the NAT SPG contributory bodies and that the relevant Parts of the NAT eANP be presented to NAT SPG/51 for endorsement when available.

7.1.3 In this respect, NAT SPG/50 agreed that the *NAT Service Development Roadmap* Document (NAT SDR, NAT Doc 009)) was already providing a mapping of the GANP versus the NAT planning and implementation activities and that this document could meet the intent of Volume III.

7.1.4 The NAT SPG was informed that the contents of the Introduction and Part I – General Planning Aspects (GEN) of the NAT eANP, Volumes I and II had been reviewed and endorsed at NAT IMG/45. It was also noted that the other Parts of Volume I and II were still being populated and would be presented to the relevant NAT SPG Contributory Bodies to review when completed.

7.1.5 The NAT SPG was informed that the current draft Volumes I and II had been uploaded as the working drafts of the NAT eANP on the ICAO EUR/NAT public website (www.icao.int/EURNAT/) following "EUR/NAT Documents" then "_New eANP NAT" for review. These drafts of Volumes I and II had been presented to the NAT ATMG/45 and NAT CNSG/12 and States concerned had been invited to review the Tables pertaining to their State and provide feedback to the ICAO Secretariat. Accordingly, updates to Tables AOP I-1 and AOP II-1 had been received from Denmark.

7.1.6 The NAT SPG noted that the Secretariat provided the NAT IMG/46 meeting with a status report of these drafts. It was recognised by NAT IMG that, in view of the work still outstanding, the final

versions of the NAT eANP could not be completed in time for the NAT SPG/51 meeting in June 2015 for endorsement and circulation of the relevant PfAs at the end of 2015.

7.1.7 In the ensuing discussions, the NAT SPG recognised the importance of the NAT eANP as the repository of the agreements made between NAT provider States and airspace users on the facilities and services that would be provided, which in turn served as the legal basis from which air navigation services charges were levied. Accordingly, it was underlined that the participation of the airspace users in this work was essential. Additionally, it was noted that drafting of Volume III, which was under the full management of the NAT SPG, had not yet begun and the drafting opportunity should be taken to provide the NAT SPG with the possibility to track future implementations.

7.1.8 Accordingly, the NAT SPG agreed that an ad-hoc NAT eANP Project Team (eANP PT), comprised of participants from the NAT SPG members and observers, as well as the NAT DMO, based on the Terms of Reference in **Appendix K** to this Report, be established in order to finalise the work on the NAT eANP for presentation to NAT IMG/47 in November 2015.

7.1.9 The NAT SPG also agreed that, after NAT IMG/47, the ICAO Secretariat would circulate the finalised drafts of the NAT eANP to the NAT SPG member States and Observers by correspondence for endorsement before formal processing of the Proposals for Amendment. Accordingly, the NAT SPG requested the ICAO Secretariat to make the necessary arrangements to convene the first meeting in summer 2015 and invited all States to nominate their participants in the work of the project team as soon as possible but not later than 15 July 2015. Based on this decision, the NAT SPG agreed that NAT SPG Conclusion 50/01 [*Development and Endorsement of the NAT eANP*] should be cancelled and replaced by the following:

NAT SPG Conclusion 51/12 – Establishment of NAT eANP Project Team (eANP PT)

That, in support of ICAO efforts to align the regional Air Navigation Plans (ANP) with the Fourth Edition of the *Global Air Navigation Plan* (GANP) (Doc 9750):

a) a NAT eANP Project Team with the Terms of Reference presented at **Appendix K** to this Report be created;

b) NAT SPG members be invited to nominate members to the NAT eANP Project Team by mid-July 2015;

c) the NAT eANP Project Team finalize its work and present its outcome to NAT IMG/47; and

d) after NAT IMG/47, the ICAO Secretariat circulate the final drafts of the NAT eANP to the NAT SPG member States and Observers by correspondence for endorsement before formal processing of the Proposals for Amendment.

7.2 PfA to the NAT SUPPs, on flight planned routes north of 80° N

7.2.1 The NAT SPG was presented with a PfA to the NAT SUPPs regarding flights planned on routes north of 80°N.

7.2.2 The NAT SPG recalled that in order to comply with the existing requirements specified in the NAT SUPPs regarding flights on routes north of 80N the aircraft operators sometimes would need to file very short flight legs, which was causing several problems, such as:

a) the route was detailed with so many points that the oceanic clearance could only be delivered by voice; the data link clearance (CLX) message could not be created as its size was limited (the data link oceanic clearance technical specification (ED-106A) allowed only 80 characters in the route field);

b) the short flight legs limited ATC intervention capability in case of route errors because position reports in such cases only provided short look-ahead times;

c) the numerous position reports loaded unnecessarily the high frequency (HF) communications.

7.2.3 The NAT SPG was informed that Iceland had already amended the flight planning provisions north of 80N in their Aeronautical Information Publication (AIP) as follows:

Requirements for Flight Plans on random route segments north of 80 degrees North

The planned tracks shall be defined by points of intersection of parallels of latitude expressed in degrees and minutes with meridians expressed in whole degrees. The distance between significant points shall, normally equate to not less than 30 and not more than 60 minutes of flying time.

7.2.4 In consideration of the above, the NAT SPG noted a proposal endorsed by NAT ATMG/44 and NAT IMG/46 to amend paragraphs 2.1.9.2.5 and 2.1.9.3.2 in the NAT SUPPs to align it with the Iceland AIP and agreed to the following:

NAT SPG Conclusion 51/13 – PfA to the SUPPs, on Flight Planned Routes north of 80°N

That:

a) the following proposed amendment to paragraphs 2.1.9.2.5 and 2.1.9.3.2 of the *NAT Regional Supplementary Procedures* (SUPPs, Doc 7030/5) be endorsed:

> "2.1.9.2.5 For flights operating north of 80°N, the planned tracks shall ~~normally~~ be defined by ~~significant~~ points ~~formed by the~~ of intersection of parallels of latitude expressed in degrees and minutes with meridians expressed in whole degrees. The distance between significant points shall~~, as far as possible, not exceed 60 minutes flight time~~ normally equate to not less than 30 and not more than 60 minutes of flying time."

[…]

> "2.1.9.3.2 For flights operating north of 80°N, the planned tracks shall ~~normally~~ be defined by ~~significant~~ points ~~formed by the~~ of intersection of parallels of latitude expressed in degrees and minutes with meridians expressed in whole degrees. The distance between significant points shall~~, as far as possible, not exceed 60 minutes flight time~~ normally equate to not less than 30 and not more than 60 minutes of flying time."; and

b) the ICAO Regional Director, Europe and North Atlantic, process the proposed amendment in accordance with the formal procedures.

7.3 PfA to the NAT SUPPs, on implementation of 30 NM or 50 NM longitudinal and 30 NM or 50 NM lateral separation minima in Santa Maria

7.3.1 The NAT SPG was presented with a revised PfA to the NAT SUPPs regarding the application of 50 NM lateral separation minima in Santa Maria Oceanic Control Area (CTA) (NAT SPG Conclusion 50/18 [*PfA to the SUPPs on 50 NM Lateral Separation in Santa Maria Oceanic CTA*] refers).

7.3.2 The NAT SPG recalled that the moratorium on PfAs to the SUPPs put in place by ICAO during the second half of 2014 until the beginning of 2015 had delayed the processing of PfAs to the SUPPs, including the one endorsed by NAT SPG Conclusion 50/18. With the progress of the implementation of new separations in Santa Maria, Portugal had proposed to withhold the initial PfA and replace it with a new one that encompassed all 30 NM or 50 NM longitudinal and lateral separation minima (reviewed and supported by NAT ATMG/45 and NAT SARSIG/21).

7.3.3 Therefore, the NAT SPG agreed to the following:

NAT SPG Conclusion 51/14 – PfA to the SUPPs, on implementation of 30 NM or 50 NM longitudinal and 30 NM or 50 NM lateral separation minima in Santa Maria

That:

a) the Proposal for Amendment (PfA) to the *NAT Regional Supplementary Procedures* (SUPPs, Doc 7030) provided at **Appendix L** to this Report be endorsed;

b) the PfA endorsed in a) above replace the PfA to the SUPPs on 50 NM Lateral Separation in Santa Maria CTA endorsed by NAT SPG Conclusion 50/18; and

c) the ICAO Regional Director, Europe and North Atlantic, process the proposed amendment in accordance with the formal procedures.

7.4 PFA TO THE NAT SUPPS, ON NAT POLICY FOR EQUIPAGE WITH AND OPERATION OF ACAS II

7.4.1 The NAT SPG was presented with a PfA to the NAT SUPPs regarding the NAT Region policy for the carriage and operation of ACAS II, subsequent to the removal of references to Minimum Equipment List (MEL) relief in the *North Atlantic Operations and Airspace Manual* (NAT Doc 007) by NAT SPG Conclusion 50/25 [*Proposal for Amendment to NAT Doc 007 to Remove References to MEL Relief*].

7.4.2 The NAT SPG noted that the proposed text was reviewed and endorsed by the NAT SOG/11 and NAT IMG/46 and would remove any ambiguity in regard to ACAS II Minimum Equipment List (MEL) relief in the NAT Region. It was also noted that as the existing policy in the NAT SUPPs (paragraph 5.3.1.1 refers) did not differentiate between commercial and general aviation (IGA) aircraft, the proposal would provide no change in ACAS equipage requirements for commercial aircraft. For IGA however this proposal would align NAT ACAS II equipage requirements with ICAO Annex 6, Part II.

7.4.3 In view of the above, the NAT SPG approved the following:

NAT SPG Conclusion 51/15 – PfA to the SUPPs, on NAT Region Policy for Equipage with and Operation of ACAS II

That:

a) the Proposal for Amendment (PfA) to the *NAT Regional Supplementary Procedures* (SUPPs, Doc 7030) provided at **Appendix M** to this Report be endorsed;

b) the ICAO Regional Director, Europe and North Atlantic, process the proposed amendment in accordance with the formal procedures.

7.5 PFA TO THE NAT SUPPS, ON SATVOICE

7.5.1 The NAT SPG was provided with information on various challenges to the satellite voice (SATVOICE) implementation, including the methods of ensuring the availability of SATVOICE short codes or PSTN numbers. It was noted that a PfA to Annex 4 and Annex 15, planned for adoption in November 2016, would require short codes and/or PSTN numbers to be provided in AIPs and published on aeronautical charts.

7.5.2 In this respect, the NAT SPG noted that provision of the SATVOICE codes in item 10 and the ICAO aircraft address (24-bit) in item 18 of the flight plan could resolve some of the foregoing challenges. It would also allow the NAT ACSG to address NAT CNSG task 10-18 to assess the number of aircraft not providing SATVOICE codes and not responding to SATVOICE calls and support the ADS-B implementation. Therefore, the following NAT SPG Conclusion was agreed:

NAT SPG Conclusion 51/16 – PfA to NAT SUPPs, on Provision of the ICAO aircraft address

That:

a) the following proposed change to paragraph 2.1.16 of the *NAT Regional Supplementary Procedures* (SUPPs, Doc 7030/5) be endorsed:

"2.1.16 Aircraft Registration and the ICAO 24-bit Aircraft Address

2.1.16.1 All aircraft intending to operate in the NAT Region shall insert ~~the aircraft registration~~ in Item 18 of the flight plan the aircraft registration and the ICAO 24-bit aircraft address after the appropriate indicators REG/ and CODE/ respectively.~~, following the REG/indicator.~~"

b) the ICAO Regional Director, Europe and North Atlantic, process the proposed amendment in accordance with the formal procedures.

7.6 UPDATE ON TRANSITION FROM NAT MNPS TO PBN

7.6.1 The NAT SPG recalled that a NAT MNPS to PBN transition Task Force had been established through NAT IMG Decision 44/1 in order to:

i) Clearly define the NAT MNPS to PBN transition process and milestones as currently defined in the Task List for the Transition from MNPS to PBN;

ii) Identify the necessary changes to ICAO documentation;

iii) Draft proposals for amendment supporting the transition from MNPS to PBN; and

iv) Finalize its work and report its outcome to NAT IMG/46.

7.6.2 The NAT SPG noted that NAT IMG/45 had received an interim report from the Task Force and approved Decision 45/2 on renaming of the NAT MNPS airspace to the NAT HLA as of 4 February 2016, and Decision 45/3 that set the expiry date for MNPS approvals as of 30 January 2020.

7.6.3 The NAT SPG also noted that the foregoing actions and previous approved related amendments to the NAT SUPPs had effectively enabled the Task Force to successfully address the subject of transition from MNPS to PBN in the NAT as pertains to the navigation specification part. The remaining issue was now the transition from MNPS airspace approval to HLA approvals. In this respect, the NAT SPG concurred with the NAT SOG on the need for States of Registry or States of Operator to grant operational approval for flights in NAT HLA. That would ensure a level of State oversight and standardization of operator training and operations manuals, equivalent to the existing ICAO Annex 6 requirements for Minimum Navigation Performance Specifications Airspace (MNPSA) authorizations.

7.6.4 The NAT SPG noted that the HLA approvals would essentially be equivalent to those for MNPSA as stipulated in the NAT SUPPs and in NAT Doc 007. Therefore, it was agreed that in order to formalise this agreement, a statement of equivalence of NAT MNPSA to NAT HLA in the NAT SUPPs should be sufficient to respond to the needs of the transition period from 2016 till 2020 (NAT IMG Decisions 45/2 and 45/3 refer). In addition, the appropriate NAT documentation (e.g. NAT Doc 007) would need to be modified to reflect the renaming of MNPSA to HLA. The NAT SPG invited the Secretariat and NAT DMO to take appropriate actions to amend these documents in a timely manner for Milestone 1 of the transition plan (NAT IMG Decision 45/2 refers).

7.6.5 In this regard, the NAT SPG noted that the current NAT Region provisions covered several exemptions applicable for specific geographical areas and ATS services provided within. Therefore, it was agreed that the NAT HLA should also accommodate for exemptions similar to those currently applicable within the MNPS airspace. The NAT SPG agreed that the envisaged exemptions would be addressed by the NAT IMG in coordination with NAT SOG and support of NAT DMO.

7.6.6 The NAT SPG agreed that prior to Milestone 2 of the NAT MNPS to PBN plan (NAT IMG Decision 45/3 refers), the appropriate NAT SUPPS provisions be reviewed to take into account future developments, e.g. satellite-based ADS-B, improvements in ADS-B coverage, new ICAO provisions. The ultimate goal of the NAT MNPS to PBN plan would be to eliminate the need for specific MNPS airspace approvals after 2020, also taking into account the new ICAO provisions on PBN and PBCS requirements for aircraft operators.

7.6.7 It was agreed that the foregoing would be coordinated by the Secretariat with the NAT IMG and the Task Force.

7.7 UPDATES TO THE NORTH ATLANTIC SYSTEMS PLANNING GROUP HANDBOOK (NAT DOC 001)

7.7.1 The Secretariat presented the NAT SPG with a series of suggestions to amend the current (NAT Doc 001).

Reference Documentation

7.7.2 The NAT SPG recalled that the section *Reference Documents* currently contained three sub-sections on NAT Documents promulgated by the NAT SPG, Detailed Oceanic Event Reports Content, and Occurrence Classification Codes. The official documentation of the NAT Region was listed under "*NAT Documents promulgated by the NAT SPG*", and was currently a mix of:

a) proper NAT Documents, with numbers of their own;

b) NAT Operational (NAT OPS) Bulletins, including a subset called NAT Oceanic Errors Safety Bulletins and Supplements; and

c) Inter-regional documentation such as the *Global Operational Data Link Document* (GOLD), or the *Satellite Voice Guidance Material* (SVGM).

7.7.3 For some documents, such as the *North Atlantic Operations and Airspace Manual* (NAT Doc 007) having the potential to be updated on a more frequent basis than currently allowed (i.e. by an annual review at the NAT SPG plenary meeting) the granularity of the configuration management did not seem adequate. Therefore for this type of documents, the configuration management (approvals) of the core content could be dissociated from that of specific identified parts, where appropriate, as proposed below:

a) configuration management of identified parts (other than the core content) could be allocated/delegated for approval to a lower level body (e.g. Attachment 6 [*Flight Level Allocation Scheme*] to the NAT Doc 007 could be approved at the level of the NAT IMG);

b) the changes to the identified parts (under separate configuration management from the core content) would result in a revision to the document without requiring a full formal amendment process by NAT SPG; and

c) consequently, a Document would be identified by an Edition number, an Amendment number (for core content changes) and a revision number (for a change to identified parts), for example, the NAT SPG Handbook, "NAT Doc 001, First Edition – Amendment 3", will be renamed as "NAT Doc 001, Version 1.3.0".

7.7.4 In this vein, the NAT SPG agreed to amend the NAT Doc 001 according to the above principles (paragraph 7.7.3 refers) as follows:

a) the "*NAT Documents promulgated by the NAT SPG*" section be adapted as suggested in **Appendix N**;

b) the status on "current edition/version" be moved to an annex to NAT Doc 001 (to be created), which would be kept up to date by the Secretariat each time a new revision of a document was approved in accordance with the formal process described in NAT Doc 001; and

c) the *list of NAT SPG Representatives* section would be kept up to date by the Secretariat each time a nomination was received and therefore managed separately from the core content.

7.7.5 Based on the foregoing, the NAT SPG agreed to the following:

NAT SPG Conclusion 51/17 – Amendment to NAT Doc 001, about NAT Document configuration management

That:

a) the *NAT Documents promulgated by the NAT SPG* section of the *North Atlantic Systems Planning Group* (NAT SPG) *Handbook* (NAT Doc 001) be amended as indicated at **Appendix N** to this Report;

b) an Appendix A to NAT Doc 001 be created as indicated at **Appendix O** to this Report, to provide the status of the NAT Documentation in accordance with the configuration management process referenced in a) above; and

c) the ICAO Regional Director, Europe and North Atlantic, take appropriate action to publish and promulgate the updated NAT Doc 001.

NAT SPG Conclusions in NAT Doc 001

7.7.6 The NAT SPG recalled that the Conclusions in the section *NAT SPG Policies* were reproduced "as is" for records, sometimes based on an explicit instruction, but more often based on a Secretariat's "best guess" on the potential interest to record a NAT SPG Conclusion in NAT Doc 001, especially when it was perceived that the Conclusion was related to the purpose of the Handbook. Additionally, some of these NAT SPG Conclusions were later amended, which usually led to the replication of both versions of the Conclusions.

7.7.7 The Secretariat underlined that the way of managing NAT SPG Conclusions in NAT Doc 001 was somewhat different from the practice for amendments to other NAT Documents, and therefore proposed the following revised procedure:

a) Remove the NAT SPG Conclusions in NAT Doc 001 – *NAT SPG Policies* section that were obsolete, complete or no longer valid;

b) in the NAT Doc 001 – *NAT SPG Policies* section, retain only the title of the Conclusion (e.g. "Operational Status of the FANS 1/A ADS and CPDLC Trials" would replace the current "NAT SPG Conclusion 42/06 – Operational Status of the FANS 1/A ADS and CPDLC Trials"). The title would thus become the title of a policy; to ensure the traceability, the Conclusion(s) number would be referenced between parenthesis (e.g. C42/06) after the title; and

c) the text of the policy (former text of NAT SPG Conclusion) resulting from b) above would be adapted to be consistent and self-standing. Inter alia reporting date/meeting would be removed.

7.7.8 The NAT SPG agreed that this change would make the management of NAT Doc 001 consistent with that of the other NAT documents. Additionally, future NAT SPG Conclusions that concern NAT SPG policies would have to mention explicitly the amendment of NAT Doc 001 – *NAT SPG Policies* section, and how, as was already the case with other NAT Documents.

7.7.9 Therefore, the NAT SPG agreed to the following:

NAT SPG Conclusion 51/18 – Amendment to NAT Doc 001, about NAT SPG Policies

That:

a) the *NAT SPG Policies* section of the *North Atlantic Systems Planning Group* (NAT SPG) *Handbook* (NAT Doc 001) be reviewed and amended as indicated at **Appendix P** to this Report; and

b) the ICAO Regional Director, Europe and North Atlantic, take appropriate action to publish and promulgate the updated NAT Doc 001.

NAT Doc 001 numbering and structural markers

7.7.10 The NAT SPG acknowledged that reference to elements of NAT Doc 001 would be greatly facilitated by a numbering scheme, to be applied at least to the main sections and sub-sections, as well as to the elements of the section and sub-sections (paragraphs, etc.) as appropriate. Therefore, the NAT SPG agreed to the following:

NAT SPG Conclusion 51/19 – Amendment to NAT Doc 001, about numbering and structural markers

That:

a) a numbering scheme be applied to the *North Atlantic Systems Planning Group* (NAT SPG) *Handbook* (NAT Doc 001) for ease of reference to sections and sub-sections, and where appropriate, to subdivisions of the above; and

b) the ICAO Regional Director, Europe and North Atlantic, take appropriate action to publish and promulgate the updated NAT Doc 001.

7.8 VOLCANIC ASH CONTINGENCY PLAN – NORTH ATLANTIC REGION (NAT DOC 006)

7.8.1 The NAT SPG recalled the NAT SPG Conclusion 50/20 [*New NAT Volcanic Ash Contingency Plan*] and its agreement that several issues related to volcanic ash information were still to be clarified, especially their status as official ICAO products. The NAT SPG/50 had invited the NAT IMG, in coordination with the NAT SOG, to discuss with the European Air Navigation Planning Group (EANPG) Programme Coordinating Group (COG) in order to promote harmonization of the NAT and EUR Volcanic Ash Contingency Plans (VACP) where possible. Gaps identified in this forum could be assigned for assessment and possible resolution to a future EUR/NAT volcanic ash task force if deemed necessary.

7.8.2 The NAT SPG noted the current status of the VACP that was still under development. Considering the shift in responsibility when flying in volcanic ash (VA) contaminated airspace previously from air traffic controllers (ATCOs) to the flight crew, the NAT SPG noted the NAT IMG/46 agreement that, as proposed in the common draft VACP, the new document would encompass flight operation aspects, which were not accounted for in the current NAT VACP. The NAT SPG also noted the NAT IMG/46 support to the position expressed by IATA that the provisions in the main body of the plan should be applicable globally, to the furthest extent possible, and that the terminology used in the main body should be aligned with the globally used language, such that any region specific terminology should lie in the relevant annex.

7.8.3 The NAT SPG was informed that the EANPG COG/62 meeting (25-29 May 2015) was presented with an update on the status of the significant work completed by the EUR/NAT Volcanic Ash Task Force (VATF) on behalf of the EANPG and took a series of decisions to progress the work. Regarding the terminology to be used, the EANPG COG/62 agreed the term "ash" should be retained for the current version that is under development. The EANPG COG/62 agreed that the VACP should be structured such

that the main body text would only contain material applicable to both Regions, while specific regional or sub-regional provisions would be contained in the Appendices and Attachments.

7.8.4 The NAT SPG noted that the EANPG COG/62 re-confirmed the desire to reach the consensus on a single plan to cover the two Regions and its agreement that efforts should be focused on the optimum way to achieve this goal. In this respect it was agreed that, in advance of the full meeting of the VATF, a small group of experts representing those States providing services in the two Regions and the Rapporteur of the VATF, with the support of the Secretariat should meet end of August or early September to advance the work, under the co-Chairmanship of the Chairmen of EANPG COG and the NAT IMG. The Secretariat agreed to work together with the VATF Rapporteur to provide a "clean" copy of the plan (including the proposed Appendices and Attachments). This "clean" copy would constitute the base-line working document to be considered by the small group of experts. The subsequent version of the VATF document would be made available to the full meeting of the VATF and a final draft version would be circulated to EANPG COG members ahead of the EANPG COG/63 meeting (13-16 October 2015).

7.8.5 The NAT SPG noted that the EANPG COG/62 VACP session had been attended by the Chairman of the NAT IMG which confirmed the aim to move towards a common plan applicable to both Regions. It was noted that the final draft EUR/NAT VACP would be reviewed and eventually endorsed at the EANPG COG/63 meeting.

7.8.6 The NAT SPG noted the information presented and invited the Secretariat to keep the NAT IMG and NAT SOG updated with the VACP development, as updated by the VATF and present the final draft EUR/NAT VACP for revision and eventually endorsement by the NAT IMG/47. Subsequently, the final agreed draft of the EUR/NAT VACP would be approved by NAT SPG by correspondence, before the end of 2015.

7.9 NAT OPERATIONS AND AIRSPACE MANUAL (NAT DOC 007)

7.9.1 The NAT SPG was presented with several amendments to the *North Atlantic Operations and Airspace Manual* (NAT Doc 007) addressing various aspects.

RNP values

7.9.2 The NAT SPG noted that as a follow-up to NAT IMG Decision 44/11 [*FMC monitoring and alerting conformance with RNP 4/RNP 2 as filed in flight plan*], the NAT CNSG and NAT OPS/AIR developed amendments to the NAT Regional documents to highlight the need for aircrew to verify that RNP 4/RNP 2 value needed for separation purposes would be set in the aircraft Flight Management Computer (FMC) when entering the ICAO NAT Region. In response to NAT IMG Decision 44/11, the NAT SPG noted the NAT IMG agreement to include some guidance material in the *North Atlantic Operations and Airspace Manual (*NAT Doc 007) and the *Oceanic Checklist*. Therefore, NAT SPG agreed to the following:

NAT SPG Conclusion 51/20 – Verifying RNP Value

That:

a) the NAT DMO update the *North Atlantic Operations and Airspace Manual* (NAT Doc 007) and the *Oceanic Checklist* to reflect the following:

"*Operators intending to conduct PBN operations must be authorized for such operations. They should file R (PBN approved) in Item 10, and "PBN/" followed by the descriptors indicating RNAV/RNP capabilities in Item 18 of the ATC flight plan. Flight crews shall verify that the corresponding RNP value is entered in the Flight Management Computer, either by default or through manual input, in order to enable aircraft navigation system monitoring and alerting against the most stringent oceanic RNP capability filed in the ATC flight plan*."

b) the ICAO Regional Director, Europe and North Atlantic, take appropriate action to publish and promulgate the updated NAT Doc 007 and the *Oceanic Checklist*.

Updates to the NAT Flight Level Allocation Scheme (FLAS)

7.9.3 The NAT SPG noted that other proposed updates were related to the NAT Flight Level Allocation Scheme (FLAS), to make it more responsive to the evolving needs and changing traffic patterns of North Atlantic flight operations. The proposed changes included a number of small administrative updates together with the following two operational aspects:

a) that a level be released from tracks south of the Shannon Oceanic Transition Area (SOTA) to facilitate early TANGO traffic.

b) the Opposite Direction Level (ODL) FL360 be swapped with FL340.

7.9.4 Other proposed changes to the NAT FLAS included:

a) updating the North Datum Line and the landfall fix of the Night Datum Line;

b) updating language in the introduction, removing first sentence under ”General Procedures”,

c) updating the definition of “New York Tracks and the definition and procedures for “Iberian Tracks”;

d) changing allowed flight levels (FLs) for the delegated Opposite Direction Levels (ODLs) for eastbound flow, to create a more manageable spread of available FLs for westbound traffic during the eastbound flow; and

e) changing availabilities of FLs for eastbound tracks which exit the Shanwick OCA at positions OMOKO and south, to facilitate flight planning for TANGO operators.

7.9.5 Based on the endorsement of the NAT IMG/46, the NAT SPG agreed to the following:

NAT SPG Conclusion 51/21 – Updates to Flight Level Allocation Scheme within NAT Doc 007

That:

a) Attachment 6 (*Flight Level Allocation Scheme (*FLAS)) to the *North Atlantic Operations and Airspace Manual* (NAT Doc 007) be updated as indicated at **Appendix Q** to this Report; and

b) the ICAO Regional Director, Europe and North Atlantic, take appropriate actions to publish and promulgate the updated NAT Doc 007.

Consistency with globally applicable provisions

7.9.6 The NAT SPG recalled the NAT IMG’s previous concern that the current use of NAT Doc 007 as a single repository had the side effect of including in this document a duplicate of ICAO SARPs and guidance material, but often worded in a slightly different way from the referenced text, with the potential for discrepancies. Although the NAT Doc 007 was created to respond to the ICAO NAT Region specific operational practices it was acknowledged that currently the NAT Region was aiming at adopting more and more existing global SARPs.

7.9.7 Therefore the NAT SPG noted the NAT IMG’s recommendation for its contributory bodies to compare the guidance material in NAT Doc 007 with globally applicable provisions, with a goal to eliminate potentially conflicting or confusing content, and agreed to the following:

NAT SPG Conclusion 51/22 – Compare NAT Doc 007 with globally applicable provisions

That the:

a) NAT DMO continuously compare the guidance material in the *North Atlantic Operations and Airspace Manual* (NAT Doc 007) with globally applicable provisions, with a view to identify potential conflicting or confusing content;

b) NAT IMG Contributory Bodies process the result of a) above and propose amendments to NAT Doc 007 as appropriate; and

c) NAT IMG review the amendments from b) above, and coordinate with the NAT SOG as appropriate.

Consistency with NAT Operational Bulletins and NAT Oceanic Error Safety Bulletins

7.9.8 The NAT IMG noted that both NAT IMG/46 and the NAT SOG/12 received information from the NAT DMO regarding variations in the detail of some of the guidance being promoted via Chapter 8 of NAT Doc 007 and in the "Sample Oceanic Checklist" (SOC) and "Sample Expanded Oceanic Checklist" (SEOC) published as North Atlantic Oceanic Error Safety (OES) Bulletins and Supplements.

7.9.9 The NAT DMO expressed its concern that these variations could be (perceived as) "discrepancies" and suggested that one way to alleviate this risk could be to provide the SOC and SOEC, as attachments to NAT Doc 007, which would therefore be adapted accordingly, possibly in addition to being published as standalone NAT OES Bulletins.

7.9.10 The NAT SPG noted that although the NAT IMG/46 did not object to the above proposal, the consequence to the management and approval process of the SOC and SEOC, should this be agreed, would need to be assessed. In particular, the practicalities should not imply a lengthier approval process, as it was currently the case. Additionally, the NAT IMG/46 was in favour of having the SOC and SOEC as both attachments and separate bulletins. The NAT IMG position was supported by NAT SOG/12.

7.9.11 Based on the foregoing, the NAT SPG agreed to the following:

NAT SPG Conclusion 51/23 – Consistency of NAT OES Bulletins with NAT Documentation

That:

a) NAT DMO, NAT IMG and NAT SOG continuously assess the consistency between the guidance material in the NAT Documentation, especially the *North Atlantic Operations and Airspace Manual* (NAT Doc 007), with North Atlantic Oceanic Error Safety (OES) Bulletins and Supplements (NAT OES Bulletins); and

b) NAT IMG and NAT SOG process the results of a) above and propose amendments to the appropriate NAT documents.

7.9.12 Based on the foregoing, the NAT SPG invited the Secretariat to ensure that the above new tasks would be reflected accordingly in the ToRs of the contributory bodies when the new structure of the NAT SPG would be developed.

NAT Consolidated Reporting Responsibilities Handbook - Provisional Version (NAT Doc 010)

7.9.13 The NAT SPG noted that the NAT SOG was presented with a provisional version of the *NAT Consolidated Reporting Responsibilities Handbook* (NAT Doc 010) for review and endorsement. Based on the approval of the document by the NAT SOG, the NAT SPG agreed to the following:

NAT SPG Conclusion 51/24 – Promulgation of NAT Consolidated Reporting Responsibilities Handbook (NAT Doc 010)

That:

a) the NAT DMO be tasked to ensure the currency and consistency of the NAT Doc 010;

b) the ICAO Regional Director, Europe and North Atlantic, take the necessary steps to promulgate and publish the Provisional Version of the *NAT Consolidated Reporting Responsibilities Handbook* (NAT Doc 010) on the ICAO EUR/NAT website, (**Appendix R** to this Report refers), and add the NAT Doc 010 to the list of NAT documents promulgated by the NAT SPG; and

c) the NAT SOG and NAT IMG be tasked to periodically review the document and propose changes if necessary.

8. WORK PROGRAMME INCLUDING SUB-GROUPS

8.1 NAT IMG OUTCOME

8.1.1 The NAT SPG noted that the NAT IMG met twice since NAT SPG/50 (NAT IMG/45 took place from 10 to 13 November 2014 in Paris, France and NAT IMG/46 was held from 11 to 14 May 2015 in Paris, France). The outcomes of these meetings had been reported in various parts of this report. In addition, the NAT SPG was presented with the full text of the NAT IMG/45 and NAT IMG/46 Decisions and related appendices.

Future NAT IMG meetings

8.1.2 The NAT SPG agreed that the NAT IMG/47 meeting would take place in Dublin, Ireland from 2 to 5 November 2015 and that the NAT IMG/48 meeting would take place in the ICAO EUR/NAT Office in Paris, France from 9 to 12 May 2016.

8.2 REPORT OF THE NAT SOG

8.2.1 The NAT SPG was presented with the outcome of the NAT SOG/12 meeting that was held in Paris, France, from 1 to 4 June 2015. The NAT SPG noted that the NAT SOG addressed several issues, including the "*Alignment of work programmes to support future implementation*", discussed at NAT SPG Symposium (NAT SPG SYMP/15), and the "*Trial Implementation of Reduced Lateral Separation Minima (RLatSM) in the ICAO NAT Region*".

Future NAT SOG meetings

8.2.2 The NAT SPG agreed that the NAT SOG/13 takes place in Bodø, Norway, from 30 November to 4 December 2015 and noted that NAT SOG/14 would take place in Paris, France, at the EUR/NAT Office of ICAO from 24 to 27 May 2016. Additionally, for its fifteenth meeting (NAT SOG/15), IATA has very kindly offered to hold it in Miami, United States, at IATA's premises, in cooperation with the United States from 28 November to 02 December 2016.

8.3 REPORT OF THE NAT EFG

8.3.1 The NAT SPG was presented with the outcome of the NAT EFG/27 meeting that was held in Oslo, Norway, from 24 to 26 September 2014, and the NAT EFG/28 meeting that was held in Paris, France, from 28 to 30 April 2015. The NAT SPG recalled that, as part of its regular work programme, the NAT EFG provides economic assessments for the NAT Region on various aviation related subjects, such as the NAT DLM, the planned separation reductions in the ICAO NAT Region, and Space-Based ADS-B (SB ADS-B).

Traffic levels/patterns

8.3.2 The NAT SPG noted that as part of its regular work programme, the NAT EFG was receiving updates from the United States concerning traffic levels and trends, as part of a briefing regarding economic and performance trends that could affect the ICAO NAT Region. The briefing included wide information on past and present indicators, economic or aviation related, as well as projected trends for various aviation sectors, some of them at a global scale. At NAT EFG/28, the global outlook pointed to an uneven economic recovery. Global growth was projected 'up' for advancing economies on lower oil prices but offset by weak investment and steady or declining prices. The NAT SPG was informed that, based on a NAT EFG decision, the information on the North Atlantic Performance Trends (NAT EFG/28 Summary of Discussions, Appendix D refers) was published in the EUR/NAT Office public website (www.icao.int/EURNAT/) as "North Atlantic Performance Trends", following "EUR/NAT Documents", then "NAT Documents", in folder "NAT Economic, Finance and Forecast supporting documents".

Economic impact of aviation on the NAT Region

8.3.3 The NAT SPG noted that the presentation on the preliminary economic impact of civil aviation on the NAT Region was updated with induced economic impact figures using economic impact multipliers supplied by IATA and Oxford Economics. The total economic impact (gross output) was revised down to 552 billion USD for 2012, instead of 600 billion USD reported at previous meetings. The revised estimate represented nearly fourteen percent of the global air transportation gross domestic product, the value added by air transportation. The updated economic impact of civil aviation on the NAT Region for 2012 was published in the EUR/NAT Office public website (www.icao.int/EURNAT/) as "Economic Impact of Civil Aviation on the ICAO NAT Region for 2012", following "EUR/NAT Documents", then "NAT Documents", in folder "NAT Economic, Finance and Forecast supporting documents".

Space-Based ADS-B; NATSAM III Modelling Enhancements

8.3.4 The NAT SPG was informed that both NAT EFG/28 and NAT EFG/29 meetings progressed the Business Case Assessment on SB ADS-B as a follow-up to its NAT EFG Decision 26/1 [*Initial Space Based ADS-B Business Case Analysis*] and to NAT SPG Conclusion 50/07 [*Space-Based ADS-B Initiative*]. The selected base scenario for the business case was an operating environment with RLatSM fully in place, i.e. 25 NM reduced lateral separation minima with gentle slope rule and 5 minutes longitudinal separation.

8.3.5 The NAT SPG noted that Canada and the United States had started to discuss modelling assumptions and data needs, and would have quarterly meetings beginning June 2015, where NAT EFG members' participation was encouraged. It was expected that modeling scenarios, timeline implementation, service availability, and service area assumptions would be finalized during 2015.

8.3.6 The NAT SPG was informed that the North Atlantic Systems Analysis Model version III (NATSAM III) tool developed by the United States to estimate potential benefits from operational changes in the ICAO NAT Region was refined to estimate SB ADS—B potential benefits, and now included a model of the dynamics of random flights, improved animation capability, with a simple Graphic User Interface (GUI) designed to help manage case runs. The modelling approach was extended to provide multiple levels of optimization for a single flight, and to include NAT Region conflict detection and resolution algorithms.

NAT Traffic Forecast

8.3.7 As a follow-up to NAT SPG Conclusion 50/21 [*Provision of NAT Traffic Forecast by the NAT EFG*], NAT EFG/27 reviewed the method used by the NAT Traffic Forecast Group (NAT TFG) for the traffic forecast it made every two years, and the issues that currently affected the NAT TFG traffic forecast. In this respect the NAT SPG noted that a new methodology was discussed at NAT EFG/28 using inputs from IATA and all members, in the form of two types of biannual traffic forecast, in June and in December. This new methodology would support the NAT SPG and NAT IMG implementation initiatives and ANSP fee charging schedule, as follows:

a) A new forecast primarily focusing on a 5 year look-ahead period. This would reflect business decisions of individual carriers and would also rely on individual carrier announcements about their network and fleet and market conditions. This approach has been used to project operations for the National Airspace System (NAS) in the United States; and

b) A longer term forecast, relying on trend analysis as well as economic expectations, tempered by known operational constraints: this would be very similar to the current methodology, but with constraints added.

Future NAT EFFG meetings

8.3.8 The NAT SPG noted that NAT EFFG/29 would take place in Toronto, Canada, from 31 August to 4 September 2015, for a five day meeting with the first two days dedicated to establishing traffic forecasting practices; the NAT EFFG/30 would take place in the ICAO EUR/NAT Office in Paris, France, from 18 to 20 May 2016, between the spring NAT IMG and NAT SPG meetings.

9. ANY OTHER BUSINESS

9.1 ELECTION OF NAT SPG CHAIRMAN

9.1.1 The NAT SPG recalled that the NAT SPG/49 (24 to 28 June 2013) agreed to a common approach to the review of the Chairmen and vice-Chairmen of the NAT SPG and its Contributory Bodies for inclusion in the NAT SPG Handbook and a calendar of nomination/review of Chairman/Rapporteur (NAT SPG Conclusions 49/26 and 49/27 refer).

9.1.2 As 2105 was an election year for its Chairmanship, the NAT SPG noted that as of 28 April 2015, one candidate for Chairman, Mr Asgeir Palsson, was submitted to the ICAO EUR/NAT Office by Iceland, and supported by Canada, Norway, United Kingdom and United States. No other nominations had been received. The NAT SPG applauded the election in unanimity of Mr Asgeir Palsson as its Chairman and wished him all the success for the next four years.

9.2 NEXT MEETING

9.2.1 The Group agreed to convene its Fifty-Second Meeting at the EUR/NAT Office of ICAO in Paris, France, from 27 to 30 June 2016.

APPENDIX A — LIST OF PARTICIPANTS

(Paragraph 0.3 refers)

CHAIRMAN
Ásgeir PÁLSSON

CANADA
Rob THURGUR
Jean-Pierre COTE
Jeff DAWSON

DENMARK
Peter MAJGARD NORBJERG

FRANCE
Christophe GUILPAIN

ICELAND
Hlín HÓLM
Leifur HAKONARSON

IRELAND
Peter KEARNEY
Sean PATRICK

NORWAY
Roald A. LARSEN
Per Harald PEDERSEN

PORTUGAL
Albano COUTINHO
Carlos ALVES

UNITED KINGDOM
Stuart LINDSEY
Alastair MUIR *(NAT IMG Chairman)*

UNITED STATES
Heather HEMDAL
Anthony FERRANTE *(NAT SOG Chairman)*
David CHIN *(NAT EFG Chairman)*
Kevin HAGGERTY

IATA
Jeffrey T. MILLER

IBAC
Peter INGLETON

IFALPA
Michael HYNES

NAT CMA
Apologies

NAT DMO
Alan R.L. GILBERT

ICAO
Luis FONSECA DE ALMEIDA
(NAT SPG Secretary)
George FIRICAN *(NAT IMG secretary)*

Arkadii MERKULOV
Blandine FERRIER
Celso FIGUEIREDO
Christopher KEOHAN
Elkhan NAHMADOV
Rodolphe SALOMON
Sarantis POULIMENAKOS
Patricia CAVISTON
Patricia CUFF

APPENDIX B — REVISED TERMS OF REFERENCE (TORS) OF THE NORTH ATLANTIC IMPLEMENTATION MANAGEMENT GROUP (NAT IMG)

(paragraph 1.1.7 refers)

NORTH ATLANTIC IMPLEMENTATION MANAGEMENT GROUP (NAT IMG)

(as approved at NAT SPG/51)

Terms of Reference

The NAT IMG is responsible to the NAT SPG for the identification, development and coordinated implementation of safe and efficient programmes supporting the aviation system within the ICAO NAT Region, and will:

1. In line with the *Global Air Navigation Plan* (GANP), *Global Aviation Safety Plan* (GASP) and Aviation System Block Upgrades (ASBU), develop and manage the *NAT Services Development Roadmap* (NAT SDR, NAT Doc 009), including recommending implementation priorities and updating timetables and associated milestones for NAT SPG approval.
2. Identify, detail and recommend allocation of tasks and resources required to fulfil coordinated implementation of safety and efficiency improvements affecting operations in the ICAO NAT Region and as appropriate, approve or amend the terms of reference of NAT IMG contributory bodies and to direct their work programmes.
3. In coordination with the NAT Economic, Financial and Forecast Group (NAT EFFG), develop and/or assess business-case analysis of planned implementations proposed under the NAT SPG work programme.
4. In coordination with NAT Safety Oversight Group (NAT SOG), assess the safety performance of the aviation system within the ICAO NAT Region.
5. Ensure the necessary co-ordination and/or consultation with NAT Provider States, other States, NAT Users and appropriate international organizations.
6. Propose amendments to the *North Atlantic Air Navigation Plan*, the *North Atlantic Regional Supplementary Procedures* (Doc 7030), and all other relevant NAT-developed documents as directed by the NAT SPG.
7. Address other issues as directed by the NAT SPG.
8. Provide reports and recommendations concerning the above tasks to the NAT SPG.

Composition

The NAT IMG is composed of representatives of the NAT SPG member States. In order to ensure that NAT users' views are represented and to provide valuable operational experience, NAT IMG meetings are also attended by representatives from IACA, IATA, IBAC, IFALPA and IFATCA.

The NAT IMG might invite other participants as and when required in order to ensure that the relevant expertise is available when addressing specific tasks. The Rapporteurs of the new Contributory Bodies may also be invited to attend as per agenda items.

The Chairmanship and vice-Chairmanship of the NAT IMG will be reviewed by an election every four years and confirmed by the NAT SPG[2].

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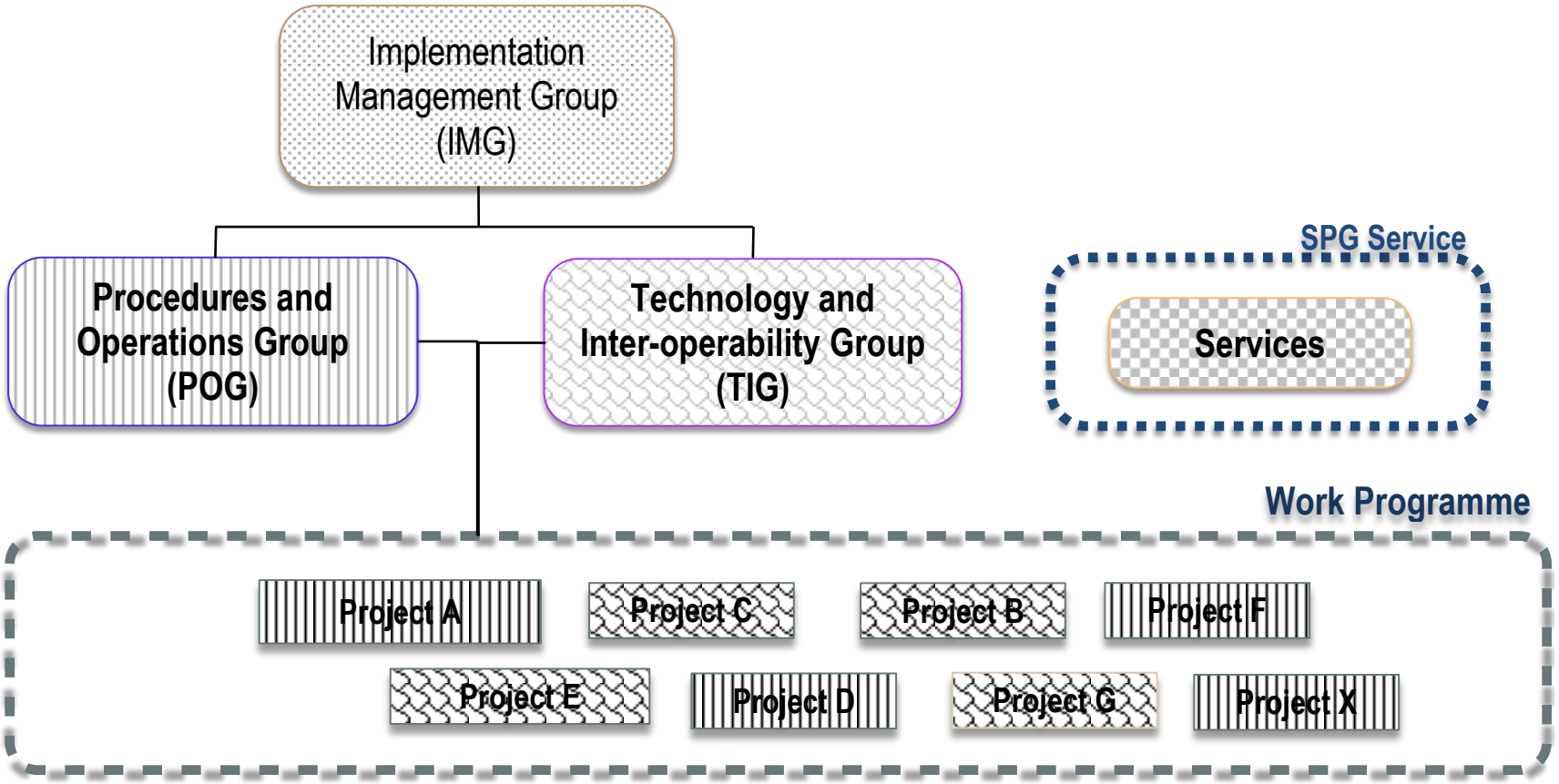
[2] NAT SPG Conclusion 49/27 refers.

APPENDIX C — NAT IMG NEW ORGANISATIONAL STRUCTURE DIAGRAM

(paragraph 1.1.10 refers)



APPENDIX D — CURRENT STRUCTURE MAPPING OF THE FUNCTION ATTRIBUTES FROM THE CURRENT CONTRIBUTING BODIES TO THE PROPOSED GROUPS POG AND TIG

(*paragraph 1.1.11 refers*)

Function	Current structure	Potential future structure
The Operations / Procedures function would develop proposals for new and amended procedures supporting air navigation services provision and aircraft operations in the ICAO NAT Region. This work would be carried out under the direction, and to support the work programme, of the NAT IMG. The following is a non-exhaustive list of on-going tasks to be carried out:		
i. Developing proposed procedures and guidance material to respond to planned technological changes and CNS/ATM implementations affecting operations in the ICAO NAT Region;	ATMG in coordination with SARSIG and CNSG (incl OPS/AIR and ACSG)	POG in coordination with TIG
ii. Developing proposed amendments so as to maintain the currency of the procedures and guidance detailed in: ICAO Regional Supplementary Procedures - North Atlantic Region (NAT SUPPs, Doc 7030), NAT Operations Bulletins and documents promulgated by the NAT SPG;	ATMG in coordination with SARSIG and CNSG(incl OPS/AIR and ACSG)	POG in coordination with TIG
iii. Developing proposals to respond to identified deficiencies in the safety or efficiency of NAT operations and identify areas where harmonisation with other ICAO Regions would be beneficial;	ATMG in coordination with SARSIG and CNSG(incl OPS/AIR and ACSG)	POG in coordination with TIG
iv. Reviewing the procedural and operational aspects of safety assurance and safety risk management material (safety case) presented to support proposed changes affecting operations in the ICAO NAT Region;	SARSIG	POG
v. Providing reports on, and recommendations arising from, the above tasks to the NAT IMG; and	ATMG in coordination with SARSIG and CNSG(incl OPS/AIR and ACSG)	POG in coordination with TIG
vi. Addressing other tasks as directed by the NAT IMG.	As applicable	As applicable

Function	Current structure	Potential future structure
The Technology / Inter-operability function would develop proposals to harmonise implementation and increase interoperability between systems supporting air navigation services provision and aircraft operations in the ICAO NAT Region. This work would be carried out under the direction, and to support the work programme, of the NAT IMG. The following is a non-exhaustive list of on-going tasks to be carried out:		
i. Developing proposed guidelines for harmonised implementation and interoperability to respond to planned technological changes and CNS/ATM implementations affecting operations in the ICAO NAT Region;	CNSG (incl OPS/AIR and ACSG) in coordination with ATMG and SARSIG	TIG (with a voice com project team) in coordination with POG
ii. Developing proposed amendments so as to maintain the currency of the technical information detailed in: ICAO Regional Supplementary Procedures - North Atlantic Region (NAT SUPPs, Doc 7030), NAT Operations Bulletins and documents promulgated by the NAT SPG;	CNSG (incl OPS/AIR and ACSG) in coordination with ATMG and SARSIG	TIG (with a voice com project team) in coordination with POG
iii. Developing proposed mechanisms for monitoring and reporting on the performance of CNS/ATM systems and automation supporting operations in the ICAO NAT Region;	CNSG, DLMA, ACSG	TIG (with a voice com project team), DLMA,
iv. Reviewing and analysing monitored performance of CNS/ATM systems (as per c) above) and reported problems to identify deficiencies and developing proposals to respond to identified deficiencies in the safety, efficiency and interoperability of CNS/ATM systems or automation supporting NAT operations;	CNSG, DLMA, ACSG	TIG (with a voice com project team), DLMA,
v. Reviewing the technical aspects of safety assurance and safety risk management material (safety case) presented to support proposed changes affecting operations in the ICAO NAT Region;	CNSG in coordination with SARSIG	TIG in coordination with POG
vi. Providing reports on, and recommendations arising from, the above tasks to the NAT IMG; and	CNSG (incl OPS/AIR and ACSG) in coordination with ATMG and SARSIG	TIG in coordination with POG
vii. Addressing other tasks as directed by the NAT IMG.	As applicable	As applicable

APPENDIX E — TERMS OF REFERENCE (TORS) FOR THE NORTH ATLANTIC ECONOMIC, FINANCIAL AND FORECAST GROUP (NAT EFFG)

(*paragraph 1.2.3 refers*)

NORTH ATLANTIC ECONOMIC, FINANCIAL AND FORECAST GROUP (NAT EFFG)

(as approved at NAT SPG/51)

Terms of Reference

The NAT EFFG is responsible to the NAT SPG for providing economic, financial and traffic forecasting advice to the NAT SPG in order to ensure the cost-effective management of the aviation system within the ICAO NAT Region and will:

1. Provide the NAT SPG with appropriate financial management expertise and advice in the areas of, inter alia, cost identification, cost allocation models, performance and productivity indicators, variance analyses and standardised financial reporting.
2. Provide advice to the NAT SPG as to best practice in the area of cost recovery and charging for the provision of air navigation services.
3. Develop proposals addressing financial and their related organisational aspects for implementing multinational facilities and services employed by provider States in the ICAO NAT region.
4. In coordination with the NAT IMG, develop and/or assess business-case analysis of planned implementations proposed under the NAT SPG work programme.
5. Provide NAT traffic forecasts.
6. Address other issues as directed by the NAT SPG.
7. Report to the NAT SPG.

Composition

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

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

The Chairmanship of the NAT EFFG will be reviewed by an election every four years and confirmed by the NAT SPG[3].

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[3] NAT SPG Conclusion 49/27 refers.

APPENDIX F — TERMS OF REFERENCE (TOR) FOR THE NORTH ATLANTIC MATHEMATICIANS' WORKING GROUP (NAT MWG)

(*paragraph 1.3.3 refers*)

NORTH ATLANTIC MATHEMATICIANS' WORKING GROUP (NAT MWG)

(as approved at NAT SPG/51)

Terms of Reference

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

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

Composition

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

The Rapporteur of the NAT MWG will be chosen by the State having the risk calculation responsibility. The term limit for the MWF Rapporteur will be one calendar year from 1 July to 30 June.

Working Methods

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

APPENDIX G — TASK LIST SUPPORTING THE TRIAL IMPLEMENTATION OF RLATSM IN THE ICAO NAT REGION

(*paragraph 4.1.5 refers*)

Note The "*Task List Supporting the Trial Implementation of* RLatSM *in the ICAO NAT Region*" is managed under the umbrella of the NAT SARSIG, with input from the NAT SPG working structure (*NAT IMG/36 Summary of Discussions*, paragraph 4.6 refers).

Editorial Note *Completed tasks or sub-tasks are shown with greyed out background, with white background kept on the part of the task where changes have been made compared to the last published version. In cases where only part of a Task is completed, only the associated sub-task will be shown in a greyed out box.*
*Compared to the previously published version (v-2015-1), text deleted uses grey strikeout (~~text deleted~~), and text added is with grey shading (*text inserted*).*

	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 Phase 1 - complete Phase 2 - complete Phase 3 -	NAT ATMG	NAT SARSIG NAT OPS/AIR (½ degree waypoints) - **COMPLETED**	Develop and coordinate Concept of Operations (CONOPS) 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. CONOPS for Phase 2 **complete** (NAT IMG Decision 43/04 refers). Note: This relates to Task 12
3	**Cost/Benefit Analysis (CBA)**	Phase 1 - complete Phase 2 - Phase 3 -	NAT EFG		Complete CBA/Business Case. **Completed** for Phase 1 (NAT EFG/24 SoD, para.3.4, 5.5 & 5.16 refer.

	SUBJECT	**COMPLETION DATE**	**LEAD(S)** *NOTE: leads will coordinate with groups identified in next column*	**COORDINATION**	**KEY IMPLEMENTATION TASKS**
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**	**COMPLETED**	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. **COMPLETED (**NAT SARSIG/19 SoD para. 3.7 a))
6	**Role of RCP and Surveillance Specifications**	May 2011 Phase 1 - complete **COMPLETED**	NAT SARSIG, NAT CNSG	NAT SOG	Establish role of RCP and RSP in RLatSM implementation plan. To be documented in NAT Performance Based Communication and Surveillance (PBCS) Implementation Plan. **COMPLETED** (NAT SPG Conclusions 48/07 & 49/05, and RLatSM Plan paragraph 8.1.5 refer)
7	**Coordination with ICAO HQ/SASP**		NAT IMG		NAT SPG/50 Report para 1.6.3 and 7.1.11 refers
8	**Recommend target implementation dates for 25 NM lateral separation**	Phase 1 - complete Phase 2 – complete Phase 3 -	NAT IMG	NAT ATMG, NAT SARSIG, NAT CNSG	Establish target implementation dates for RLatSM implementation. Phase 1 – 12 November 2015, harmonized to NAT MNPS to PBN transition plan. Phase 2 approximately one year after commencement of Phase 1 provided approval by NAT IMG. Phase 3 – to be determined.

	SUBJECT	COMPLETION DATE	LEAD(S) *NOTE: leads will coordinate with groups identified in next column*	COORDINATION	KEY IMPLEMENTATION TASKS
9	**Recommend conditions required to proceed to each implementation phase**	Phase 1 – complete Phase 2 – complete Phase 3 –unnecessary **COMPLETED**	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 **COMPLETED** (NAT ATMG/43 SoD, para. 3.1 b))
10	**Operator/aircraft fleet readiness projection**	Phase 1 – Complete Phase 2 – ongoing Phase 3 -	NAT CNSG,	NAT OPS/AIR *via* NAT CNSG	Status of percentage of flights that filed RNP4 in the NAT. Communication and surveillance equipage is routinely monitored by NAT CNSG NAT OPS/AIR could contribute RNP4 approval status of operators and aircraft from State authorities. Initial assessment of RNP 4 approval status provided at CNSG/12 (*CNSG/12 SoD* App. D). All data available, **Complete** for phase 1, suggested to hand that over to CNSG. since this is now monitored by CNSG
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	**NAT Safety Assessment**	Prior to trial Phase 1 – Complete Phase 2 – ongoing Phase 3 -	NAT SARSIG	NAT SOG	Complete the NAT Safety Management System (SMS) required documents (e.g., Safety Assessment/Collision Risk Modelling) to be available prior to trial. Confirmation of the basic CRM parameter assumptions as stated in the RLatSM analysis for the area of expected application under current /proposed conditions *SARSIG/20 SoD*, para 3.5 to 3.11, *SARSIG/21 SoD*, para 3.12 Task 13 also refers
13	**Coordination with NAT Safety Oversight Group**	Prior to trial Phase 1 - Complete Phase 2 - Phase 3 -	NAT IMG	NAT SARSIG	As they develop (Task 12 refers), coordinate safety cases with SOG and present completed safety cases to SOG to support changes to the NAT air navigation system. *NAT SOG/12 SoD*, para 5.20

	SUBJECT	**COMPLETION DATE**	**LEAD(S)** *NOTE: leads will coordinate with groups identified in next column*	**COORDINATION**	**KEY IMPLEMENTATION TASKS**
14	**Data Link System Performance**	Prior to trial **COMPLETED**	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. NAT Performance Based Communication and Surveillance Implementation Plan, Task 13 and **Task 17** refer. System is being measured against RCP240 and RSP180 and the 95% safety requirement is being met (NAT SPG Conclusion 49/05 refers). **COMPLETED**
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 for current separations. Performance acceptability for reduced separations for Iridium as well as all other data link media will be monitored as component of Task 14 and Task 36.**
16	**Safety Management System (SMS) Document**(s)		NAT ANSPs	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	Identify steps necessary to introduce ½ degree track spacing: Steps identified: Task considered **COMPLETED** (NAT IMG Decision 45/01 refers) Consider accommodations necessary at the domestic interfaces; consider steps necessary to incorporate changes into ATC systems (see also Task 11). This Task is linked to Task 18 and Task 32.

	SUBJECT	COMPLETION DATE	LEAD(S) *NOTE: leads will coordinate with groups identified in next column*	COORDINATION	KEY IMPLEMENTATION TASKS
18	**Plan and schedule for aeronautical chart data publication**		NAT ATMG	NAT PROVIDER STATES NAT CNSG (OPS/AIR), NAT SOG	**1.** Develop plan and schedule for publication of revised aeronautical charts. Boundary fixes between Canada domestic airspace and Gander OCA established and approved, to be published Boundary fixes between Shanwick and Scottish/Brest Domestic airspace in the process of approval, to be published Common AIRAC date to be coordinated for publication between Shanwick, Gander and Brest, **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. Coordination should be limited only to the coordination process as ICAO and State documents are the source material for aeronautical charts: third party commercial service providers and operators/users of this information are responsible for the accuracy of information on these charts. *Note* – this prepares the work plan for Task 32. This Task is linked to Task 17.
19	**Information Dissemination Program**		AS DIRECTED BY NAT IMG	NAT SOG	**1.** Create RLatSM area in NAT Documentation section of ICAO EUR/NAT web site. **Complete**: included in "EUR & NAT Documents", "NAT Documents", under "Planning documents supporting separation reductions and other initiatives" **2.** Develop distribution list for State and industry organizations and key individuals. **3.** Distribute ICAO State letters, as necessary. (Include Training Centers). EUR/NAT 14-0098.TEC (10 February 2014) EUR/NAT 14-0078.TEC (10 February 2014) EUR/NAT 14-0263.TEC (15 April 2014) Support expected form States (*IMG/46 SoD*, para 4.22)

	SUBJECT	**COMPLETION DATE**	**LEAD(S)** *NOTE: leads will coordinate with groups identified in next column*	**COORDINATION**	**KEY IMPLEMENTATION TASKS**
20	**Job Aids for ADS-C, CPDLC, RNP 4 Authorization Process**	Phase 1 – Complete **COMPLETED**	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 web site. **3.** Ensure current PBN Manual and GOLD references incorporated. **COMPLETED** (NAT IMG Decisions 43/02 and 43/03 refer) No other official RCP/RSP other than GOLD publication to base job aids on: **Fully COMPLETED** Update to RNP 4 Job Aid provided endorsed by NAT IMG Decision 46/2 (*IMG/46 SoD*, *para 4.20* & App. E).
21	**Advance notice to User States and Operators**	1 year prior to expected start date of Trial Phase 1 - complete Phase 2 - Phase 3 -	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 22 and Task 23 **COMPLETED for phase 1** (NAT IMG Decision 43/05 and EUR/NAT SL 14-0098.TEC refer) AIC from Canada to inform of delay in Phase 1 trial date, to be published for 16 October 2014 AIRAC date
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 To be updated with the new date (no sooner than 12 November 2015).

	SUBJECT	COMPLETION DATE	LEAD(S) *NOTE: leads will coordinate with groups identified in next column*	COORDINATION	KEY IMPLEMENTATION TASKS
23	**Draft ICAO State Letter**	1 year prior to expected start date of Trial Phase 1 - complete Phase 2 - Phase 3 -	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 web site. 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 **COMPLETED for phase 1** (NAT IMG Decision 43/05 and EUR/NAT SL 14-0078.TEC refer)
24	**Operational Policy & Procedures documents (AICs, AIP Supps, NAT OPS Bulletins)**	At least 2 AIRAC cycles prior to commencement of Trial for AICs AIPs Approximately. 1 year prior for NAT OPS Bulletins	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. AIC completed (NAT ATMG/45 SoD para. 3.4 This task follows Task 21 This task is closely related to Task 25 Include NAT OPS bulletin with Special Emphasis Item
25	**Publication of Operational Policy & Procedures documents**	At least 2 AIRAC cycles prior to commencement of Trial	NAT PROVIDER STATES DOMESTIC INTERFACE STATES	NAT SOG	Publish Provider State AIC's or AIP Supps developed in task 24 above. This task is closely related to Task 24
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.

	SUBJECT	**COMPLETION DATE**	**LEAD(S)** *NOTE: leads will coordinate with groups identified in next column*	**COORDINATION**	**KEY IMPLEMENTATION TASKS**
27	**Pre-implementation Safety Assessment & Implementation Decision**	No later than 2 months before implementation date Phase 1 - Phase 2 - Phase 3 -	NAT IMG	NAT SOG	Update and complete final Safety Assessment and Implementation Readiness Review. Make a Go/No go decision for each Phase. No further work to be contributed from SARSIG (SARSIG/21 SoD para 3.24c)) Update the status of the basic Collision Risk Modelling parameter estimates as compared to the RLatSM safety analyses for the area of expected application under current/proposed conditions: (SARSIG/21 SoD para 3.12)
28	**Plan for Post Implementation Performance Monitoring**	Pre-trial No later than NAT SARSIG/22	NAT SARSIG, NAT CNSG	NAT SOG	Development of a set of initial critical system performance parameters that, if met, will yield confidence that the foundations for the safe application of RLatSM are met. The plan shall include roles of NAT DLMA, NAT CMA and NAT Provider States and any special data recollection requirement necessary to support the operational trial.
29	**Final Notice of decision to implement**	After NAT SPG/51	NAT SPG, NAT IMG	NAT SOG	Provide notification to Provider and User States and operators of decision to implement. NAT IMG agreed to proceed with Phase 1 (*IMG/46 SoD*, para 4.23) Follows Task 27
30	**Operator Notification of decision to implement**		NAT PROVIDER STATES	NAT SOG	Announce decision to implement. See Task 29
31	**State controller training**	Pre-trial	NAT PROVIDER STATES DOMESTIC INTERFACE STATES	NAT SOG	States train controllers.

	SUBJECT	**COMPLETION DATE**	**LEAD(S)** *NOTE: leads will coordinate with groups identified in next column*	**COORDINATION**	**KEY IMPLEMENTATION TASKS**
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, NAT CNSG (OPS/AIR)	**1.** Publish and distribute revised aeronautical chart and navigation information. **2.** Coordinate with industry chart providers. Coordination should be limited only to the coordination process as ICAO and State documents are the source material for aeronautical charts: third party commercial service providers and operators/users of this information are responsible for the accuracy of information on these charts. Note – Task 18 prepares the work plan for this task. This Task is linked to Task 17.
33	**Provider State ATC automation systems**	Pre-trial	NAT PROVIDER STATES DOMESTIC INTERFACE STATES	NAT SOG	Modify ATC automation systems and programs, as necessary.
34	**Operator readiness**	**DELETED**	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 Task **deleted** (NAT IMG/43 SoD, para.4.18 refers) and merged with Task 10
35	**Formally agree target Implementation Dates**	Phase 1 – no later than NAT SPG/51 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. Note: GOLD performance monitoring is carried out as part of the NAT PBCS plan and NAT DLMA
37	**½ degree regulatory requirements**	**DELETED**	NAT SOG	NAT SOG	Consider State's regulatory requirements to be established for operational approval to use ½ degree track spacing This Task is related to Task 17 Task **deleted** (NAT IMG/44 SoD, para.4.35 & 4.36 refer)

APPENDIX H — BUSINESS CASE ANALYSIS OF REDUCED LATERAL SEPARATION MINIMA (RLATSM) PHASE 2 IN THE NORTH ATLANTIC – INFORMATION PAPER PRESENTED AT NAT EFG/28

(paragraph 4.1.16 refers)

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NORTH ATLANTIC ECONOMIC AND FINANCIAL GROUP

TWENTY-EIGHTH MEETING

(Paris, France, 28 to 30 April 2015)

Agenda Item 4: Update on NAT EFG Action List

b) RLatSM Cost and Benefits Analysis – Update

Business Case Analysis of Reduced Lateral Separation Minima (RLatSM) Phase 2 in the North Atlantic

(Presented by Canada and the United Kingdom)

SUMMARY

This paper provides an overview of the Business Case Analysis for Reduced Lateral Separation Minima (RLatSM) Phase 2 in the Gander and Shanwick Oceanic Control Areas. RLatSM Phase 2 proposes the introduction of half a degree lateral separation from the current one degree lateral separation over the NAT Organized Track System within the vertical limits applicable to the airspace associated with the NAT Region Data Link Mandate. The purpose of the analysis was to describe, quantify, and compare the benefits and costs of RLatSM Phase 2 in the Gander and Shanwick OCAs with two years of benefits. The benefits were measured in terms of fuel savings and reduced Greenhouse Gas (GHG) emissions. RLatSM Phase 1 benefits and costs are also presented in the Outcome section of this report. This paper addresses NAT EFG Follow-Up Action 25-02 "Provide RLatSM cost and benefits analyses showing implementation phase specific results for phases after Phase 1".

1. Introduction

1.1 Canada and the United Kingdom collaborated on the Business Case Analysis for RLatSM Phase 1 and presented the results at NAT EFG/24.[1] This collaboration has been extended to the Business Case Analysis for RLatSM Phase 2. Both RLatSM Phase 1 and Phase 2 are included in the scope of this analysis and presented in this paper. The NAT Systems Planning Group (NAT SPG) supports RLatSM Phase 2 proceeding with either positive support from NAT customers or a positive analytical outcome.[2]

[1] *NAT EFG/24 WP/03 and* NAT EFG/25 Summary of Discussions, *paragraph 5.16*

[2] ***Draft Implementation Plan for the Trial Application of RLatSM in the NAT Region as updated at NAT SPG/49*** *"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. In this regard, the term 'business case' was meant to be interpreted broadly to mean either a clear indication from the airspace users that such an expansion was desirable or a more quantified benefits analysis."*

1.2 RLatSM Phase 2 proposes the introduction of half a degree lateral separation from the current one degree lateral separation over the NAT Organized Track System (NAT OTS) within the vertical limits applicable to the airspace associated with the NAT Region Data Link Mandate (NAT DLM).

2. Discussion

Business Case Analysis Scope

2.1 The RLatSM Phase 2 Business Case Analysis identified and quantified the benefits of RLatSM Phase 2 in the Gander and Shanwick OCAs for NAT customers for two years starting in 2017 and the costs to Air Navigation Services Providers (ANSPs) associated with RLatSM starting in 2015. This analysis compared the benefits and costs of RLatSM Phase 2 where a positive result was defined as fuel and GHG savings for NAT customers as a result of RLatSM Phase 2 exceeding the costs of implementation and ongoing operational costs. The benefit timeline for RLatSM Phase 2 will be quantified for two years post implementation.

2.2 The following assumptions were made:

a) The NAT DLM will be implemented in 2015 to cover FL350 to FL390 across the entire NAT OTS;

b) Implementation costs are limited to the ANSPs as costs to NAT customers have already been incurred due to the NAT DLM Phase 2A;

c) FANS-1/A equipage is 86% as of December 2014[3] and an equipage level of 90% is assumed for 2017 and onwards. It is reasonable to assume with updated fleets and the NAT DLM more flights will be equipped with FANS-1/A in 2017;

d) The changes in fleet mix will not adversely affect the benefits generated by RLatSM;

e) The daily proportion of flights expected to benefit from RLatSM Phase 2 will remain constant;

f) Flights benefiting from RLatSM Phase 2 will generate 80% of the fuel savings estimated through simulation in the RLatSM Phase 1 Business Case Analysis. While Eastbound RLatSM Phase 2 flights will be brought considerably closer to the jet stream and Westbound flights will avoid it, these flights will not be operating identically to RLatSM Phase 1 and will have slightly less fuel savings;

g) Given the operational realities of flight planning and weather forecasts, Eastbound tracks aligned with the jet stream 83% of the year, or 304 days, and Westbound tracks avoided the jet stream 85% of the year, or 310 days;

h) The annual NAT traffic growth will be 2% per year for the analysis timeline;

i) The price per litre of jet fuel is $0.80/L CAD based on the recent drop in jet fuel price. The International Air Transport Association (IATA) fuel price is projected to average $0.78/L CAD in 2015.[4] A sensitivity analysis on the impact of fuel price variation on benefits follows in paragraphs 2.20 to 2.22, Table 4; and

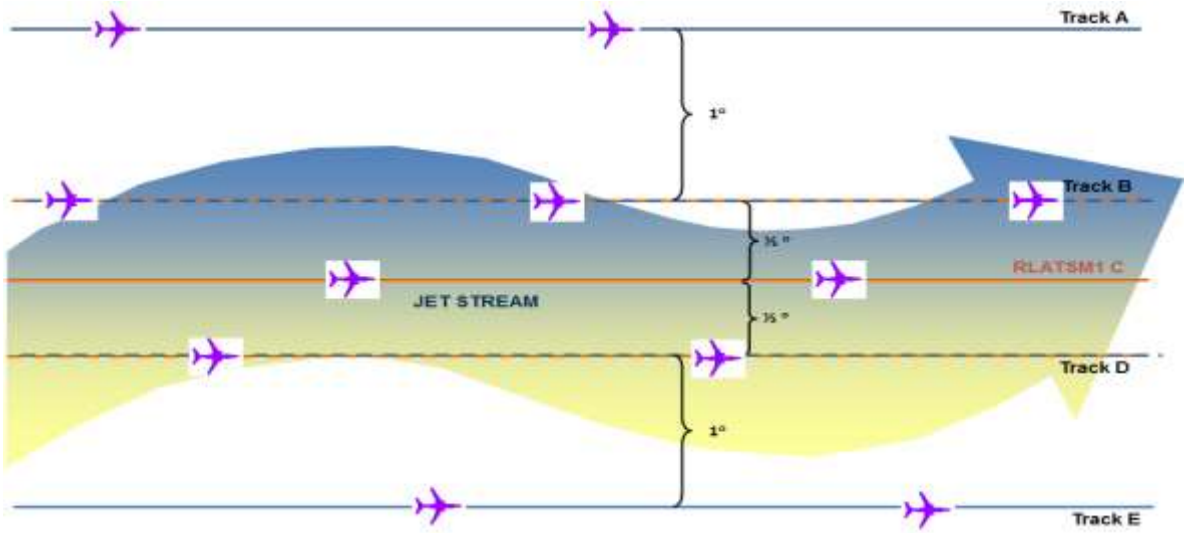
j) Greenhouse Gas (GHG) emissions are 2.557 kilograms of CO_2 equivalent per litre of fuel.

2.3 The RLatSM Phase 2 Business Case is predicated on the results of RLatSM Phase 1 benefits. The methodology will undergo independent validation by IATA. RLatSM Phase 1 involves the insertion of a single unidirectional track between the two core tracks of the NAT OTS with ½ degree spacing within the vertical limits applicable to the airspace associated with the NAT DLM. Only RLatSM eligible aircraft will be permitted to fly on the three RLatSM Tracks. Those not RLatSM eligible would be able to operate on the

[3] *Flight equipage extracted from filed flight plans in GAATS+*
[4] *http://www.iata.org/pressroom/pr/Pages/2014-12-10-01.aspx*

remaining tracks of the NAT OTS or above or below the vertical limits of the NAT DLM airspace on the core tracks. RLatSM Phase 1 is illustrated in Figure 1.

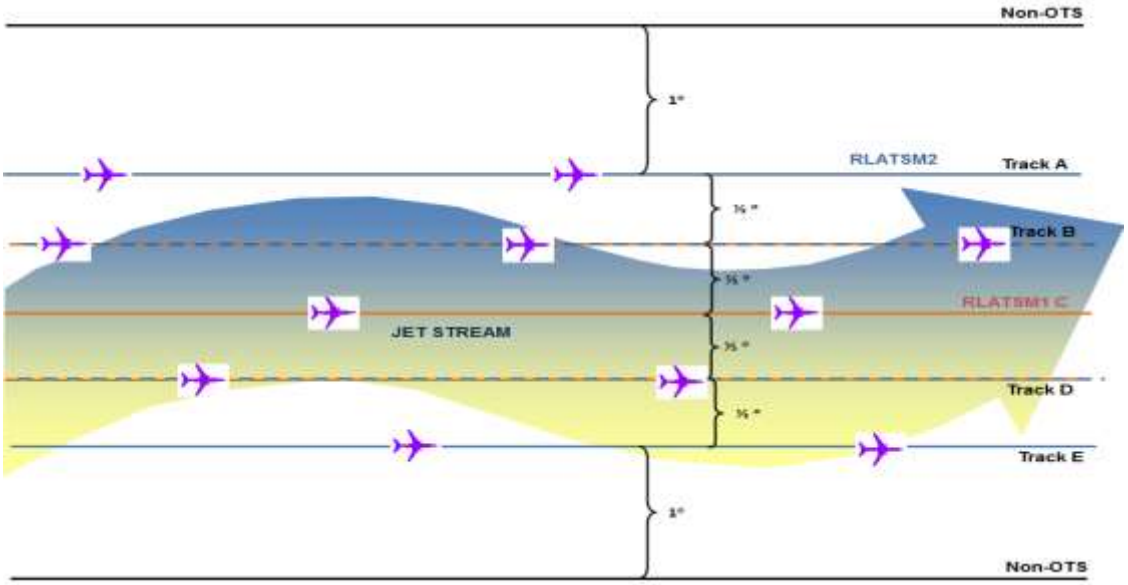
Figure 1: Depiction of RLatSM Phase 1



RLatSM Phase 2 Option Case

2.4 RLatSM Phase 2 proposes reducing the separation between the Tracks throughout the NAT OTS to ½ degree from one degree within the NAT DLM airspace in order to decrease the geographical footprint of the NAT OTS. Only RLatSM eligible aircraft would be permitted to fly on the NAT OTS at NAT DLM flight levels. Those flights not RLatSM eligible would be able to operate on the NAT OTS above or below the NAT DLM flight levels or off the NAT OTS entirely. RLatSM Phase 2 is illustrated in Figure 2.

Figure 2: Depiction of RLatSM Phase 2



Methodology

2.5 This Business Case Analysis described, quantified, and compared the benefits and costs of RLatSM Phase 2 in the Gander and Shanwick OCAs. The benefits and costs were quantified and compared in order to determine the merits of the Business Case.

2.6 In order to determine the number of flights per year that would benefit from RLatSM Phase 2, four sample traffic days (two Eastbound and two Westbound) were chosen to represent the year. Sample days were chosen by analyzing OTS flights from Ocean Entry Point to Ocean Exit Point over the Peak NAT OTS Period on relatively busy days. The Peak NAT OTS Period was defined as the four busiest consecutive hours during the respective flow (01:30z to 05:30z at Ocean Entry Point for Eastbound; 11:30z to 15:30z at 20^{o} West for Westbound).

2.7 On the sample days, the flight profile (route and flight level) planned and actually received by the flight were compared. Flights were moved to their flight planned profile when increased opportunities created in the Base and Option Cases permitted. These represented the flights generating benefits. Only flights with incremental benefits from the Base Case were considered in the Option Case.

2.8 The per flight fuel savings estimated in the RLatSM Phase 1 Business Case Analysis formed the basis for the RLatSM Phase 2 benefits. As per the RLatSM Phase 1 Business Case Analysis, an average Eastbound RLatSM Phase 1 flight saved 104 litres of fuel and an average Westbound RLatSM Phase 1 flight saved 368 litres of fuel. While the RLatSM Phase 2 flights won't generate as great a benefit as those in RLatSM Phase 1, it was considered reasonable to assume that 80% of those RLatSM Phase 1 benefits could be generated through more efficient profiles providing average benefit figures of 83 litres for Eastbound flights and 294 litres for Westbound flights as used in Figures 3 and 4. These results were annualized based on the number of flights per year flying during the peak NAT OTS period. As a result of the existing operational reality for planning and filing OTS tracks, the Eastbound tracks are expected to align with the jet stream 83% of the year, or 304 days, and the Westbound tracks are expected to avoid the jet stream 85% of the year, or 310 days. Rather than account for benefits every day of the year, RLatSM Phase 2 flights were expected to accrue benefits only on those days.

Benefits

2.9 The following figures outline the steps taken to calculate the benefits generated by RLatSM Phase 2 for two years starting in 2017. The source for the number of flights in 2014 and the sample day flights is GAATS+. The remaining calculations were completed using the Assumptions presented in paragraph 2.2 above.

2.10 The Eastbound results are detailed in Table 1:

Table 1: Eastbound RLatSM Phase 2 results

Eastbound RLatSM Phase 2 Results		
FANS-1/A Capable Flights During Peak OTS Period for Sample Days	388	Flights During Peak OTS Period on Sample Days x 90% FANS-1/A Equipage
FANS-1/A Capable Flights Benefiting from RLatSM Phase 2	111	Flights Replanned and Expected to Benefit
Percentage of FANS-1/A Capable Flights Benefiting from RLatSM Phase 2	28.6%	111 / 388
Total 2014 Flights During Peak OTS Period	97,594	2014 GAATS+ Traffic Data
Total 2014 FANS-1/A Capable Flights During Peak OTS Period	87,835	97,594 x 90% FANS-1/A Equipage
2014 FANS-1/A Capable Flights During Peak OTS Period on Days When Tracks Align With Jet Stream	72,903	87,835 x 83% (304 days)
2014 FANS-1/A Flights Benefiting from RLatSM Phase 2	20,856	72,903 x 28.6%
Average Fuel Savings (Litres) per Flight	83	104 L x 80%
2014 Fuel Savings (Litres) During Peak OTS Period	1,735,235	20,856 x 83 L
2017 Fuel Savings (Litres) During Peak OTS Period	1,841,445	2% per year for 3 years
2018 Fuel Savings (Litres) During Peak OTS Period	1,878,274	2% per year for 4 years

2.11 Two year fuel savings for Eastbound flights at $0.80 CAD per litre of jet fuel was estimated to be $3 million CAD with an associated reduction of 9,500 metric tonnes of GHG emissions.

2.12 The Westbound results are detailed in Table 2:

Table 2: Westbound RLatSM Phase 2 results

Westbound RLatSM Phase 2 Results		
FANS-1/A Capable Flights During Peak OTS Period for Sample Days	312	Flights During Peak OTS Period on Sample Days x 90% FANS-1/A Equipage
FANS-1/A Capable Flights Benefiting from RLatSM Phase 2	88	Flights Replanned and Expected to Benefit
Percentage of FANS-1/A Capable Flights Benefiting from RLatSM Phase 2	28.2%	88 / 312
Total 2014 Flights During Peak OTS Period	83,165	2014 GAATS+ Traffic Data
Total 2014 FANS-1/A Capable Flights During Peak OTS Period	74,849	83,165 x 90% FANS-1/A Equipage
2014 FANS-1/A Capable Flights During Peak OTS Period on Days When Tracks Avoid Jet Stream	63,621	74,849 x 85% (310 days)
2014 FANS-1/A Flights Benefiting from RLatSM Phase 2	17,944	63,621 x 28.2%
Average Fuel Savings (Litres) per Flight	294	368 L x 80%
2014 Fuel Savings (Litres) During Peak OTS Period	5,282,846	17,944 x 294 L
2017 Fuel Savings (Litres) During Peak OTS Period	5,606,198	2% per year for 3 years
2018 Fuel Savings (Litres) During Peak OTS Period	5,718,322	2% per year for 4 years

2.13 Two year fuel savings for Westbound flights at $0.80 CAD per litre of jet fuel was estimated to total $9 million CAD with an associated reduction of 29,000 metric tonnes of GHG emissions.

2.14 Total RLatSM Phase 2 benefits over two years are $12 million CAD.

Costs

2.15 Costs to implement RLatSM Phase 1 and RLatSM Phase 2 include air traffic controller (ATC) training, frequencies, project management and enhancements to GAATS+ for Gander and Shanwick.

2.16 Total implementation costs of RLatSM Phase 1 and Phase 2 are not expected to exceed $6.8 million CAD.

Outcome

2.17 The benefits and costs of RLatSM Phase 1 and Phase 2 are presented over a four year period beginning in 2015. RLatSM Phase 1 will be implemented by the beginning of 2016 and RLatSM Phase 2 will be introduced one year later in 2017.

2.18 The net benefit after subtracting the estimated implementation cost of $6.8 million CAD totals approximately $9.6 million CAD and a reduction in CO_2 equivalent of over 52,000 metric tonnes of GHG emissions. In 2016, approximately $1.4 million CAD in fuel savings is generated by RLatSM Phase 1. From the beginning of 2017 to the end of 2018, approximately $12 million CAD and 36,000 metric tonnes are contributed by RLatSM Phase 2 alone with the additional benefit of $2.8 million CAD contributed by RLatSM Phase 1.

Table 3: Benefits and Costs of RLatSM

Benefits and Costs of RLatSM (000)					
	2015	2016	2017	2018	Total ($CAD)
Costs	$6,800				$6,800
Benefits		$1,368	$7,353	$7,651	$16,372
Net Fuel Savings for RLatSM Phase 1 and RLatSM Phase 2					**$9,572**
Reduced GHG Emissions (Tonnes)		**4,372**	**23,501**	**24,450**	**52,323**

2.19 There is a positive Business Case for RLatSM Phase 2 in the Gander and Shanwick OCAs with fuel savings of $9.6 million CAD and a reduction of over 52,000 metric tonnes in GHG emissions, the equivalent of saving 14,000 trips from New York JFK to London Heathrow operating a Boeing 767-300.

Sensitivity Analysis on Jet Fuel Prices

2.20 The extent of the benefits generated by RLatSM depends on the price of fuel. While costs remain the same, a significant change in jet fuel price will directly impact the outcome. Recent fluctuations in oil prices make predicting a short-term jet fuel price challenging. IATA forecasts a 2015 fuel price of $0.78 CAD per litre.[5]

2.21 This report assumed a jet fuel price of $0.80 CAD per litre over the timeframe of the analysis. Table 4 presents the total and net benefits of RLatSM at different jet fuel prices which indicate the net benefit of RLatSM remains positive.

Table 4: Sensitivity on fuel price

Fuel Price per Litre ($CAD)	Total Benefit (000)	Net Benefit (000)
1.00	$20,465	$13,665
0.80	$16,372	$9,572
0.60	$12,279	$5,479

2.22 Average jet fuel price would have to drop to below $0.35 CAD per litre for the net benefit of RLatSM to become negative. Each $0.05 CAD per litre change in jet fuel price represents an approximate $1 million CAD change in expected net benefits.

3. Action by the Meeting

3.1 The NAT EFG is invited to note the information provided.

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[5] *http://www.iata.org/pressroom/pr/Pages/2014-12-10-01.aspx*

APPENDIX I — NAT DATA LINK PERFORMANCE REPORT 2014

(paragraphs 4.2.1 and 4.2.5 refer)

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1. Introduction

1.1 Data link performance in the ICAO North Atlantic (NAT) Region is monitored by the NAT Communications, Navigation and Surveillance Group (NAT CNSG) using regular reports from the NAT Data Link Monitoring Agency (NAT DLMA) and NAT air traffic service providers (ATSPs). Information is compiled from the reports and discussions of the CNSG meetings by the ICAO Secretariat into this working paper, which constitutes an annual NAT data link performance report for review by the the NAT Implementation Management Group (NAT IMG) and NAT Systems Planning Group (NAT SPG).

1.2 This report is organized as follows:

i) **Section 2 – Data Link Usage and Equipage** contains a summary of the usage and equipage related to various aspects of the data link system as observed from operational position data and flight plan data from the NAT ATSPs;

ii) **Section 3** – **Data Link Performance** contains a high level summary of the performance of the system using the methods defined in the ICAO Document 9869, performance based communication and surveillance (PBCS) Manual from the NAT ATSPs;

iii) **Section 4 – NAT DLMA Report** contains a summary of the report from the NAT DLMA;

iv) **Section 5 – CNSG Actions Related to Improvement in Data Link Performance** contains information related to on-going data link performance improvement actions discussed by the CNSG and updates by the communication service providers (CSPs); and

v) **Attachments A** through **E** contain equipage templates submitted by individual ATSPs; and

vi) **Attachments F** through **I** contain PBCS templates submitted by individual ATSPs.

2. Data Link Usage and Equipage

2.1 Data link usage and equipage reports for the 12-month period from 1 January to 31 December 2014 were provided by the United States, Portugal, Canada, the United Kingdom and Iceland in the common template format agreed by the NAT CNSG (**Attachments A to E** refer). The reports provide the current ADS-C and CPDLC usage and filing levels, the RNP4 filing levels and the ADS-B usage and filing levels as recorded by the NAT service providers during the past year, including a breakdown of each statistic by aircraft operators.

2.2 Table 1 provides a summary of the data link usage and equipage statistics for Reykjavik, Santa Maria, Gander, New York (eastern oceanic only), and Shanwick as of December 2014. The statistics are provided for all observed flights as well as for the subpopulation of flights using the OTS. Figure 1 provides the usage and equipage data for all 12 months in 2014 as reported by each ATSP.

Table 1. Usage and Equipage statistics for NAT ATSPs as of December 2014

FIR	ALL FLIGHTS							
	Total Flights	**% Using ADS-C**	**% Filing ADS-C**	**% Using CPDLC**	**% Filing CPDLC**	**% Filing RNP4**	**% Using ADS-B**	**% Filing ADS-B**
Reykjavik	6,528	77%	77%	76%	78%			
Santa Maria	10,126	73%	72%	72%	74%	46%		59%
Gander	28,187	83%	87%	83%	88%	63%		56%
New York East	10,316	83%	80%	84%	83%	51%		50%
Shanwick	30,915	80%	78%	82%	79%	57%		
FIR	**OTS FLIGHTS**							
	% of Total Flights	**% Using ADS-C**	**% Filing ADS-C**	**% Using CPDLC**	**% Filing CPDLC**	**% Filing RNP4**	**% Using ADS-B**	**% Filing ADS-B**
Reykjavik	71%	97%	96%	96%	97%			
Santa Maria	8%	90%	90%	90%	92%	59%		70%
Gander	46%	92%	92%	92%	93%	64%		54%
New York East	21%	91%	91%	92%	92%	63%		58%
Shanwick	40%		93%		94%	66%		

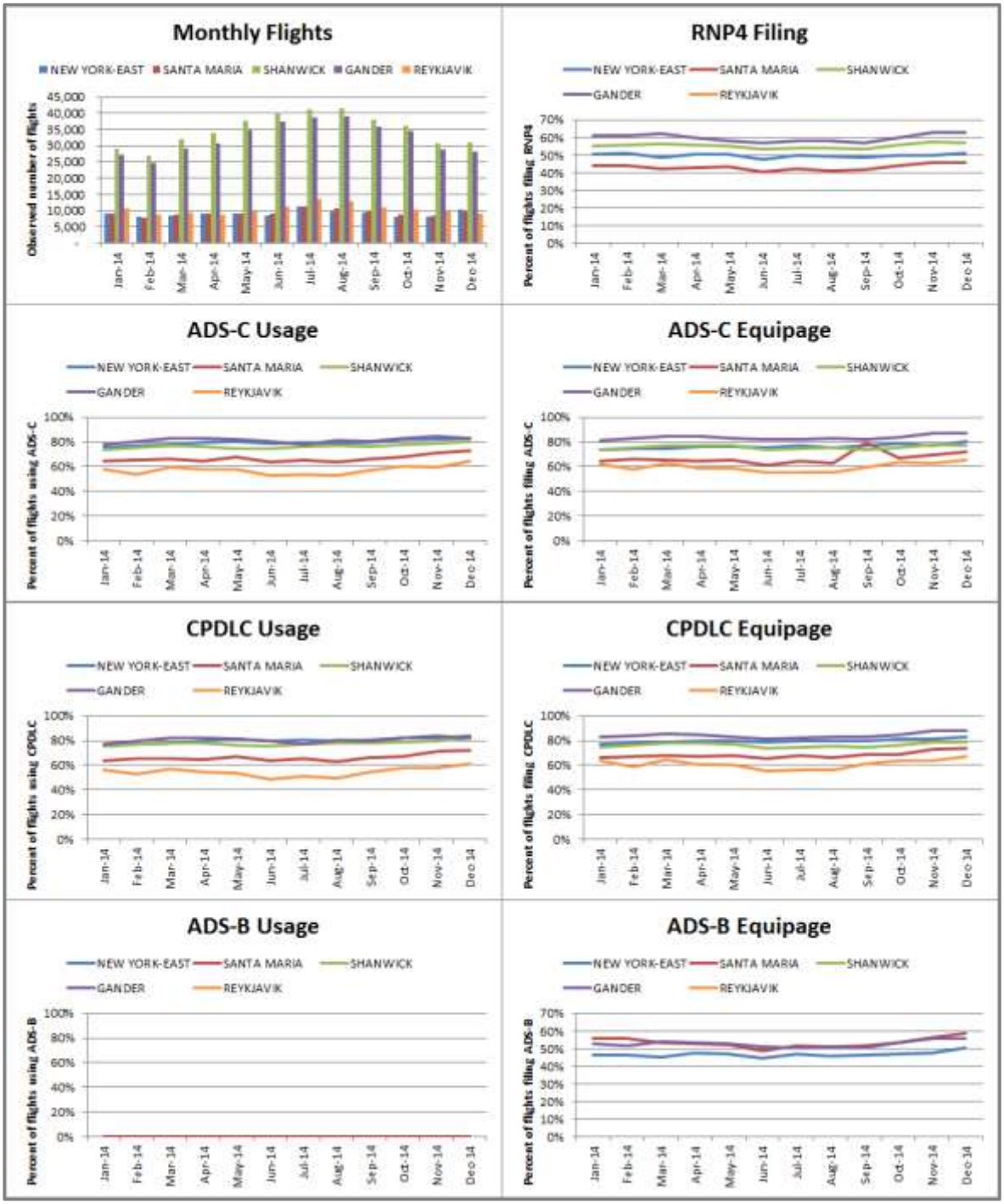

Figure 1. NAT Data link equipage and usage statistics for 2014

2.3 Conclusions regarding data link usage and equipage in the NAT:

i) The rates of usage and filing of equipage have increased for all 5 NAT ATSPs during 2014.

ii) The rates of usage and filing of equipage are observed to be greater within the OTS subpopulation for all 5 NAT ATSPs.

iii) Inconsistencies between data link capabilities filed in the flight plan and actual usage of data link have continued to be observed. IATA and IBAC have been invited to communicate this information to their members for follow up to avoid future inconsistencies.

3. Data Link Performance

3.1 Data link performance reports for the 6-month periods from 1 January 2014 to 30 June 2014 and from 1 July 2014 to 31 December 2014 were provided by the United States, Portugal, Canada, the United Kingdom and Iceland in the common template format agreed by the NAT CNSG (**Attachments F to I** provide the results for 1 July 2014 to 31 December 2014). In line with the ICAO Document 9869, PBCS Manual, the template provides a means to assess the actual surveillance performance (ASP) against the required surveillance performance (RSP) 180 requirements and the actual communication performance (ACP) against the required communication performance (RCP) 240 specification.

3.2 Tables 2 and 3 provide a summary of the aggregate ASP and aggregate ACP, respectively, over all media types, as reported by each NAT ATSP for the two 6-month reporting periods in 2014.

Table 2. NAT ASP

REQUIRED SURVEILLANCE PERFORMANCE						
Time Period	2014 January-June			2014 July-December		
Region	NAT			NAT		
Performance Measure	ASP			ASP		
Performance Criteria	RSP180			RSP180		
	No. Messages	Criteria		No. Messages	Criteria	
		95% (% < 90 sec)	99.90% (% < 180 sec)		95% (% < 90 sec)	99.90% (% < 180 sec)
Aggregate NAT	***5,582,604***	***98.3%***	***99.3%***	***6,354,843***	***98.3%***	***99.4%***
Reykjavik	507,979	97.4%	98.9%	616,428	97.9%	99.4%
Santa Maria	656,197	98.6%	99.4%	741,124	98.5%	99.5%
Gander	1,792,796	98.2%	99.3%	2,022,207	98.2%	99.3%
New York East	1,148,696	98.1%	99.3%	1,286,267	98.2%	99.3%
Shanwick	1,476,936	98.6%	99.5%	1,688,817	98.6%	99.5%

Table 3. NAT ACP

REQUIRED COMMUNICATION PERFORMANCE									
Time Period	2014 January-June					2014 July-December				
Region	NAT					NAT				
Performance Measures	ACP, ACTP					ACP, ACTP				
Performance Criteria	RCP240					RCP240				
	No. Messages	ACP Criteria		ACTP Criteria		No. Messages	ACP Criteria		ACTP Criteria	
		95% (% < 180 sec)	99.90% (% < 210 sec)	95% (% < 120 sec)	99.90% (% < 150 sec)		95% (% < 180 sec)	99.90% (% < 210 sec)	95% (% < 120 sec)	99.90% (% < 150 sec)
Aggregate NAT	***216,705***	***98.5%***	***98.9%***	***99.3%***	***99.6%***	***249,820***	***98.8%***	***99.1%***	***99.4%***	***99.6%***
Reykjavik	30,976	98.6%	99.1%	99.4%	99.7%	34,619	98.5%	99.0%	98.3%	99.0%
Santa Maria	23,175	99.0%	99.3%	99.5%	99.7%	26,571	99.1%	99.5%	99.5%	99.7%
Gander	28,087	98.9%	99.3%	99.4%	99.6%	31,389	99.1%	99.4%	99.5%	99.7%
New York East	38,837	98.9%	99.2%	99.5%	99.7%	45,754	99.0%	99.3%	99.7%	99.8%
Shanwick	95,630	98.1%	98.6%	99.2%	99.4%	111,487	98.7%	99.0%	99.5%	99.6%

3.3 Table 4 provides the data link performance analysis conclusions based on what is presented in Tables 2 and 3 and **Attachments F** through **I**:

Table 4. PBCS analysis conclusions

NAT PBCS Analysis Conclusions **Period:** January 1, 2014 to December 31, 2014 (12 months)
Aggregate NAT
• During both 6-months report periods in 2014: o the 95% criteria were met for RSP 180 and RCP240 in the aggregate NAT and for the individual NAT FIRs; o the 99.9% criteria were met for RSP 180 and RCP240 at the targeted level of 99.0% in the aggregate NAT and for the individual NAT FIRs.
Media type
• During both 6-months report periods in 2014: o The 95% criteria for RSP180 ASP and RCP240 ACTP, ACP and PORT are met for the aggregate as well as both satellite and VHF media populations; o The 99.9% criteria for RSP180 ASP and RCP240 ACTP, ACP are met at the targeted 99.0% level; o Neither the 95% nor the 99.9% criteria for RSP400 ASP or RCP240 ACTP, ACP are met for HF during this period; o The ACP criteria are not met for any subpopulations of mixed media RCP transactions.
Remote Ground Station (RGS) / Ground Earth Station (GES)
• The performance for the paths corresponding to Iridium satellites improved overall during this analysis period, but is still struggling to meet the 95% criteria for RSP180 ASP in several of the NAT FIRs. • There is observed to be a significant variation in performance by operator/aircraft type, with the performance criteria for RSP180 and RCP240 being met at the required levels for some operators.
Uplink Message (UM) Elements
• Although most uplinks and uplink combinations in all NAT FIRs meet the 95% performance targets for RCP240 ACP, ACTP and PORT as well as the 99.0% performance targets for RCP240 ACP and ACTP, the uplinks involving conditional clearance and uplinks containing 3 or more elements are observed to have lower PORT performance.
CSP / Network
• Based on the information from the outages reported by the CSPs, the availability is struggling to be met in the Atlantic Ocean Region.
Pilot / Operator
• Several operators were identified as not meeting the 95% criteria for RSP180 ASP or RCP240 ACP, ACTP and PORT.
Aircraft Type
Attachement A – The GLF6 aircraft type has been observed below the 95% criteria for RSP180 ASP in all NAT FIRs. A PR has been submitted with the DLMA for this aircraft type.

3.4 The NAT data link performance in 2014 met the requirements as established by NAT SPG Conclusion 48/07 and 49/05 on applicability of required communication performance (RCP) 240 and required surveillance performance (RSP) 180 to 25 NM lateral separation minimum (RLatSM) and 5 min longitudinal separation minimum (RlongSM) implementations. In line with NAT SPG Conclusion 49/05:

a) When the actual communication transaction time or surveillance data delivery time does not meet the 95% values, appropriate action should be taken to improve performance to an acceptable level before providing the air traffic service (ATS) function predicated on RCP/RSP.

b) When performance falls below 99 % contact the data link monitoring agency (DLMA), operator and/or communications service provider (CSP) to determine any action that can improve the performance.

c) When the actual communication transaction time or surveillance data delivery time does not meet the 99.9% target value, the air navigation service provider (ANSP) should assess the effects of actual performance against local factors, such as increased controller workload, increases in fleet equipage and expanded use of the data link services and implement appropriate controls and mitigation measures as appropriate.

4. NAT DLMA Report

4.1 Since NAT CNSG/10, 319 problem reports (PRs) have been submitted at the global level, via the problem reporting website (http://www.ispacg-cra.com/). Table 5 provides a summary of the NAT DLMA reports presented to CNSG/11 and CNSG/12 meetings, respectively.

Table 5. Summary of NAT DLMA PRs

	Between CNSG/10 and CNSG/11	Between CNSG/11 and CNSG/12
PRs submitted for NAT region	89	63
Number of old NAT PRs with updated information	3	4
Number of new NAT PRs considered significant	42	17
Number of new PRs outside NAT but of interest for NAT	6	8

4.2 Based on analysis by the DLMA of the PRs submitted during the past several years, the Group noted that the number of PRs is steadily increasing.

5. CNSG Actions Related to Improvement in Data Link Performance

5.1 Actions are undertaken in the following areas that can further improve performance:

a) CPDLC transfer of authority failures.

b) Termination of ADS-C contracts.

c) PORT studies.

d) Delivery of CPDLC uplink messages

e) Undeliverable uplink messages

f) Incorrect timestamps in CPDLC messages

g) CPDLC message elements usage

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Attachment A — United States Report on Equipage in NAT

United States FAA Reporting on Equipage in New York FIR - EAST Period: **Jan 01, 2014 to Dec 31, 2014 (12 months)**								
Month	**ALL FLIGHTS**							
	Total Flights	**% Using ADS-C**	**% Filing ADS-C**	**% Using CPDLC**	**% Filing CPDLC**	**% Filing RNP4**	**% Using ADS-B**	**% Filing ADS-B**
Jan-14	9,048	75%	73%	76%	77%	50%		47%
Feb-14	8,021	77%	74%	77%	78%	51%		46%
Mar-14	8,478	78%	75%	78%	79%	49%		45%
Apr-14	8,914	79%	76%	80%	80%	50%		47%
May-14	9,040	80%	76%	81%	80%	50%		47%
Jun-14	8,314	79%	75%	79%	79%	48%		45%
Jul-14	11,407	80%	77%	80%	79%	50%		47%
Aug-14	9,914	79%	76%	80%	80%	49%		46%
Sep-14	9,245	80%	77%	80%	80%	48%		47%
Oct-14	8,103	82%	78%	82%	82%	50%		47%
Nov-14	8,023	82%	78%	82%	81%	50%		48%
Dec-14	10,316	83%	80%	84%	83%	51%		50%
Average	***9,069***	***80%***	***76%***	***80%***	***80%***	***50%***		***47%***
Month	**OTS FLIGHTS**							
	% of Total Flights	**% Using ADS-C**	**% Filing ADS-C**	**% Using CPDLC**	**% Filing CPDLC**	**% Filing RNP4**	**% Using ADS-B**	**% Filing ADS-B**
Jan-14	17%	86%	88%	86%	89%	64%		54%
Feb-14	17%	89%	89%	89%	90%	69%		56%
Mar-14	12%	88%	89%	89%	89%	64%		56%
Apr-14	20%	89%	89%	89%	89%	60%		59%
May-14	23%	88%	89%	89%	89%	61%		60%
Jun-14	16%	90%	91%	90%	91%	60%		54%
Jul-14	31%	87%	89%	88%	87%	61%		54%
Aug-14	21%	90%	92%	91%	91%	64%		56%
Sep-14	26%	89%	90%	89%	90%	59%		57%
Oct-14	12%	89%	90%	90%	89%	60%		56%
Nov-14	12%	92%	91%	92%	92%	63%		61%
Dec-14	21%	91%	91%	92%	92%	63%		58%
Average	***19%***	***89%***	***90%***	***90%***	***90%***	***62%***		***57%***
Month	**NON-OTS FLIGHTS**							
	% of Total Flights	**% Using ADS-C**	**% Filing ADS-C**	**% Using CPDLC**	**% Filing CPDLC**	**% Filing RNP4**	**% Using ADS-B**	**% Filing ADS-B**
Jan-14	83%	73%	70%	73%	75%	47%		45%
Feb-14	83%	74%	71%	75%	76%	47%		44%
Mar-14	88%	76%	73%	77%	77%	46%		44%
Apr-14	80%	77%	73%	78%	78%	48%		45%
May-14	77%	78%	73%	79%	77%	47%		43%
Jun-14	84%	77%	72%	77%	77%	45%		43%
Jul-14	69%	77%	72%	77%	76%	45%		44%
Aug-14	79%	76%	71%	76%	77%	45%		43%
Sep-14	74%	77%	72%	77%	76%	45%		43%
Oct-14	88%	81%	77%	81%	81%	48%		46%
Nov-14	88%	81%	76%	81%	80%	48%		46%
Dec-14	79%	81%	77%	82%	81%	48%		49%
Average	***81%***	***77%***	***73%***	***78%***	***78%***	***47%***		***45%***

United States FAA Reporting on Equipage in New York Oceanic FIR - EAST by Operator Period: **January 2015**									
Operator (3-ltr ICAO Code)	Total Flights	% OTS	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% Filing RNP4	% Using ADS-B	% Filing ADS-B
AFR	853	14%	99%	99%	100%	100%	100%	0%	99%
IBE	676	1%	82%	82%	82%	82%	0%	0%	0%
BAW	666	21%	89%	89%	90%	91%	1%	0%	98%
AAL	467	32%	99%	97%	100%	99%	99%	0%	0%
DAL	430	24%	95%	95%	97%	95%	95%	0%	35%
CFG	385	10%	69%	65%	71%	70%	69%	0%	0%
KLM	375	2%	100%	99%	100%	99%	100%	0%	98%
VIR	339	15%	100%	97%	99%	98%	0%	0%	88%
AEA	332	2%	97%	100%	98%	100%	0%	0%	33%
BER	295	17%	93%	83%	98%	96%	97%	0%	83%
TOM	280	2%	98%	81%	98%	92%	0%	0%	61%
FWI	269	0%	100%	100%	100%	100%	0%	0%	0%
AVA	262	0%	24%	0%	24%	0%	2%	0%	0%
DLH	245	16%	99%	100%	100%	100%	100%	0%	99%
UAL	205	29%	99%	98%	100%	100%	68%	0%	57%
AZA	158	23%	98%	85%	99%	85%	0%	0%	97%
SWR	154	43%	100%	100%	99%	100%	100%	0%	100%
XLF	149	5%	99%	97%	99%	100%	80%	0%	77%
TAP	146	0%	99%	96%	99%	98%	99%	0%	96%
CRL	136	0%	100%	94%	100%	100%	0%	0%	69%
RCH	129	1%	85%	87%	85%	88%	88%	0%	1%
AWE	127	46%	80%	81%	80%	80%	0%	0%	70%
TFL	121	3%	90%	86%	90%	100%	0%	0%	71%
SAA	118	0%	100%	100%	100%	100%	100%	0%	0%
AMX	110	1%	100%	87%	100%	99%	99%	0%	44%
TCX	107	10%	66%	77%	67%	82%	1%	0%	91%
NOS	84	4%	74%	67%	74%	69%	1%	0%	0%
MPH	82	7%	0%	0%	0%	0%	0%	0%	0%
TSO	81	1%	67%	75%	74%	84%	94%	0%	19%
BPA	74	7%	0%	0%	0%	0%	1%	0%	0%
RAM	71	0%	0%	0%	0%	0%	99%	0%	99%
GTI	69	20%	99%	99%	99%	100%	100%	0%	94%
JAF	60	3%	77%	67%	77%	98%	0%	0%	67%
QTR	59	20%	98%	98%	100%	100%	98%	0%	0%
UAE	54	24%	96%	91%	98%	94%	98%	0%	91%
LPE	53	0%	11%	0%	11%	0%	0%	0%	0%
RZO	43	0%	0%	0%	0%	0%	0%	0%	0%
ISS	35	0%	0%	0%	0%	0%	0%	0%	0%
CLX	35	6%	97%	91%	97%	100%	100%	0%	91%
CUB	34	0%	0%	0%	0%	0%	35%	0%	0%
EDW	31	39%	100%	100%	100%	100%	100%	0%	0%
EVE	31	0%	90%	87%	90%	94%	6%	0%	13%
SLM	30	0%	83%	80%	83%	80%	0%	0%	80%
ETH	30	0%	83%	37%	83%	37%	83%	0%	0%
LNE	28	0%	0%	0%	0%	11%	0%	0%	0%
CMB	27	0%	85%	85%	85%	85%	85%	0%	41%
MON	27	0%	37%	0%	37%	70%	4%	0%	0%
BWA	26	0%	0%	0%	0%	0%	0%	0%	0%
PLM	26	4%	77%	0%	81%	96%	0%	0%	50%
NAX	25	4%	96%	96%	96%	100%	100%	0%	96%

Attachment B — Portugal Report on Equipage in NAT

NAV Portugal Reporting on Equipage in the NAT
Aggregate Period: **Jan 01, 2014 to Dec 31, 2014 (12 months)**

Month	ALL FLIGHTS							
	Total Flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% Filing RNP4	% Using ADS-B	% Filing ADS-B
Jan-14	8941	64.2%	64.5%	63.8%	66.5%	44.0%	----	55.5%
Feb-14	7910	65.8%	66.3%	65.2%	67.4%	44.2%	----	55.7%
Mar-14	8831	65.9%	65.2%	65.3%	68.3%	42.1%	----	53.7%
Apr-14	9203	64.9%	64.2%	64.4%	66.9%	43.0%	----	53.0%
May-14	9017	67.7%	65.5%	67.3%	68.0%	43.3%	----	52.0%
Jun-14	9032	63.7%	61.6%	63.4%	65.3%	40.4%	----	48.8%
Jul-14	11346	65.5%	64.6%	65.1%	68.0%	42.2%	----	51.9%
Aug-14	10585	63.9%	63.3%	63.3%	66.4%	40.8%	----	50.9%
Sep-14	9643	66.7%	79.3%	66.4%	68.7%	41.9%	----	51.6%
Oct-14	8839	67.6%	66.7%	67.4%	68.9%	44.3%	----	53.7%
Nov-14	8429	71.4%	70.0%	71.2%	72.7%	45.6%	----	56.5%
Dec-14	10126	72.8%	72.0%	72.5%	74.0%	45.7%	----	59.0%
Average	***9325***	***66.7%***	***66.9%***	***66.3%***	***68.4%***	***43.1%***	***----***	***53.5%***
Month	**OTS FLIGHTS**							
	% of total flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% Filing RNP4	% Using ADS-B	% Filing ADS-B
Jan-14	4.5%	86.0%	90.0%	86.0%	89.3%	55.3%	----	62.5%
Feb-14	4.6%	80.9%	84.7%	81.5%	83.7%	62.1%	----	73.0%
Mar-14	1.3%	89.1%	91.6%	89.9%	92.4%	37.0%	----	47.1%
Apr-14	4.9%	88.4%	89.7%	87.7%	90.3%	52.7%	----	69.7%
May-14	5.5%	88.2%	89.2%	89.0%	89.8%	51.6%	----	67.7%
Jun-14	3.9%	85.6%	88.7%	85.3%	90.1%	43.3%	----	56.4%
Jul-14	8.9%	87.5%	89.8%	87.5%	90.3%	58.3%	----	66.4%
Aug-14	5.3%	85.4%	89.7%	84.7%	90.4%	53.6%	----	68.2%
Sep-14	8.1%	88.7%	93.1%	88.7%	91.8%	53.0%	----	71.3%
Oct-14	3.5%	91.3%	93.3%	91.3%	93.9%	62.2%	----	63.5%
Nov-14	2.9%	87.3%	89.0%	87.3%	89.4%	55.1%	----	71.4%
Dec-14	8.1%	90.0%	90.5%	89.7%	92.3%	58.7%	----	69.7%
Average	***5.1%***	***87.4%***	***89.9%***	***87.4%***	***90.3%***	***53.6%***	***----***	***65.6%***
Month	**NON-OTS FLIGHTS**							
	% of total flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% Filing RNP4	% Using ADS-B	% Filing ADS-B
Jan-14	95.5%	63.2%	63.3%	62.8%	65.4%	43.5%	----	55.2%
Feb-14	95.4%	65.0%	65.4%	64.4%	66.6%	43.3%	----	54.8%
Mar-14	98.7%	65.6%	64.9%	65.0%	68.0%	42.2%	----	53.8%
Apr-14	95.1%	63.7%	62.9%	63.2%	65.7%	42.5%	----	52.1%
May-14	94.5%	66.5%	64.2%	66.1%	66.7%	42.8%	----	51.1%
Jun-14	96.1%	62.8%	60.5%	62.5%	64.3%	40.2%	----	48.5%
Jul-14	91.1%	63.3%	62.2%	62.9%	65.8%	40.6%	----	50.5%
Aug-14	94.7%	62.7%	61.8%	62.1%	65.1%	40.1%	----	49.9%
Sep-14	91.9%	64.7%	78.1%	64.4%	66.7%	40.9%	----	49.8%
Oct-14	96.5%	66.7%	65.8%	66.5%	68.0%	43.6%	----	53.3%
Nov-14	97.1%	70.9%	69.5%	70.8%	72.2%	45.3%	----	56.1%
Dec-14	91.9%	71.3%	70.3%	71.0%	72.3%	44.5%	----	58.0%
Average	***94.9%***	***65.5%***	***65.7%***	***65.1%***	***67.2%***	***42.5%***	***----***	***52.8%***

NAV Portugal Reporting on Equipage by Operator in the NAT									
Aggregate Period: **Jan 01, 2014 to Dec 31, 2014 (12 months)**									
Operator (3-ltr ICAO Code)	**Total Flights**	**% OTS**	**% Using ADS-C**	**% Filing ADS-C**	**% Using CPDLC**	**% Filling CPDLC**	**% Filing RNP4**	**% using ADS-B**	**% Filing ADS-B**
SAT	10897	0%	0%	0%	0%	0%	0%	-----	0%
IBE	9819	3%	88%	76%	87%	88%	0%	-----	0%
AFR	8077	4%	99%	100%	99%	100%	100%	-----	100%
NOP	5264	0%	19%	20%	18%	21%	31%	-----	17%
BAW	5901	11%	91%	92%	91%	92%	0%	-----	99%
TAP	5625	0%	58%	62%	57%	59%	100%	-----	100%
RZO	5240	0%	0%	3%	0%	0%	0%	-----	2%
AEA	4550	1%	96%	92%	96%	100%	0%	-----	39%
AAL	3914	11%	93%	98%	92%	98%	100%	-----	6%
DAL	3929	14%	89%	97%	90%	96%	90%	-----	17%
KLM	4076	2%	99%	100%	99%	100%	100%	-----	100%
UAL	2842	19%	97%	100%	96%	100%	43%	-----	37%
FWI	2769	0%	99%	91%	99%	100%	1%	-----	1%
AVA	2469	0%	6%	8%	6%	0%	2%	-----	0%
TCX	2657	3%	3%	11%	3%	6%	3%	-----	97%
DLH	2576	11%	99%	100%	99%	100%	100%	-----	100%
VIR	2543	10%	99%	100%	99%	100%	0%	-----	91%
AWE	2032	18%	68%	70%	68%	70%	0%	-----	70%
TOM	2439	2%	66%	76%	64%	76%	0%	-----	71%
CFG	2273	8%	66%	77%	66%	76%	80%	-----	92%
RCH	1624	0%	75%	79%	74%	80%	74%	-----	0%
BER	1555	15%	89%	93%	91%	92%	100%	-----	100%
TAM	1513	0%	99%	95%	98%	100%	100%	-----	0%
SAA	1059	0%	99%	100%	99%	100%	100%	-----	99%
RAM	1433	0%	0%	8%	0%	0%	95%	-----	95%
CRL	1322	0%	99%	99%	99%	100%	0%	-----	99%
EXS	1211	0%	0%	2%	0%	0%	0%	-----	0%
RYR	1161	0%	0%	8%	0%	0%	0%	-----	100%
AZA	1076	22%	93%	93%	92%	93%	0%	-----	100%
XLF	1025	6%	89%	86%	89%	98%	86%	-----	97%
MON	1072	0%	1%	7%	1%	6%	1%	-----	18%
AMX	1023	4%	83%	76%	82%	84%	84%	-----	23%
TFL	1024	2%	65%	76%	64%	77%	0%	-----	32%
LAN	771	0%	98%	98%	97%	100%	0%	-----	100%
VKG	787	0%	7%	17%	7%	9%	87%	-----	20%
EIN	725	3%	4%	12%	4%	4%	100%	-----	33%
LPE	686	0%	3%	7%	3%	0%	0%	-----	78%
SWR	600	40%	100%	100%	99%	100%	100%	-----	100%
TSC	594	2%	18%	24%	18%	18%	0%	-----	17%
BPA	554	8%	1%	1%	1%	1%	73%	-----	0%
JAF	526	3%	64%	85%	62%	81%	0%	-----	99%
MPH	521	14%	1%	9%	1%	1%	1%	-----	100%
QTR	518	12%	97%	100%	97%	100%	100%	-----	100%
EVE	477	1%	94%	31%	94%	39%	2%	-----	0%
SLM	445	0%	93%	87%	92%	94%	0%	-----	94%
UAE	391	22%	98%	100%	97%	99%	100%	-----	100%
CLX	389	4%	94%	100%	95%	100%	100%	-----	100%
PLM	361	0%	73%	2%	74%	83%	1%	-----	32%
GTI	329	14%	96%	99%	95%	97%	100%	-----	100%
LNE	283	0%	0%	8%	0%	5%	0%	-----	85%
ETH	276	0%	86%	38%	84%	30%	91%	-----	100%
ARA	310	0%	80%	8%	76%	94%	100%	-----	100%
CUB	307	0%	7%	0%	7%	7%	98%	-----	7%
NOS	311	3%	6%	12%	6%	6%	0%	-----	0%
PRI	305	0%	0%	8%	0%	0%	0%	-----	0%
BWA	298	0%	0%	0%	0%	0%	0%	-----	0%
CMB	275	2%	56%	54%	54%	57%	64%	-----	57%
TSO	258	2%	38%	47%	37%	50%	78%	-----	3%
TVS	213	0%	0%	8%	0%	0%	0%	-----	74%
ETD	220	15%	99%	100%	99%	100%	100%	-----	100%
ELY	204	12%	88%	85%	89%	94%	0%	-----	92%
VCV	204	0%	39%	39%	39%	55%	26%	-----	33%
ISS	215	6%	0%	0%	0%	4%	0%	-----	4%
NVR	204	1%	9%	11%	9%	10%	75%	-----	75%
TCV	181	0%	0%	0%	0%	0%	0%	-----	0%
BOV	179	0%	0%	8%	0%	0%	0%	-----	0%

EDW	180	26%	99%	100%	100%	99%	100%	-----	100%
CNV	156	0%	37%	44%	37%	44%	5%	-----	7%
WHT	167	0%	1%	1%	1%	1%	13%	-----	1%
NJE	149	0%	73%	58%	67%	76%	0%	-----	21%
MSR	145	20%	100%	100%	100%	100%	0%	-----	100%
SVA	125	14%	99%	99%	99%	100%	0%	-----	2%
GEC	148	3%	99%	100%	98%	100%	100%	-----	100%
ROU	121	7%	48%	50%	45%	50%	0%	-----	50%
ACA	123	13%	41%	49%	49%	49%	0%	-----	49%
BLX	125	0%	10%	10%	10%	10%	0%	-----	48%
RRR	102	0%	18%	18%	17%	18%	14%	-----	18%
ATN	109	0%	3%	0%	4%	0%	0%	-----	0%
TUI	116	0%	12%	17%	12%	18%	0%	-----	2%
AFL	111	0%	99%	100%	98%	99%	100%	-----	100%
EGY	75	0%	0%	0%	0%	0%	0%	-----	0%
FIN	100	0%	2%	10%	2%	2%	92%	-----	90%
THY	85	32%	92%	78%	92%	92%	92%	-----	92%
TGM	86	0%	55%	46%	56%	43%	0%	-----	46%
RJA	80	1%	55%	15%	55%	58%	7%	-----	100%
NAX	82	5%	45%	17%	45%	49%	65%	-----	64%
EJM	53	0%	45%	35%	46%	39%	8%	-----	21%
CTM	69	0%	22%	31%	20%	23%	76%	-----	31%
GES	66	0%	12%	4%	10%	0%	0%	-----	0%
VJT	56	0%	86%	83%	84%	75%	0%	-----	92%
VDA	50	0%	0%	0%	0%	0%	0%	-----	0%
BOS	57	31%	0%	0%	0%	0%	0%	-----	0%
CFC	51	0%	16%	16%	16%	16%	45%	-----	19%
LCO	60	2%	83%	8%	83%	0%	0%	-----	83%
EXU	52	0%	44%	0%	44%	0%	0%	-----	14%
ICE	51	0%	0%	8%	0%	1%	4%	-----	75%
LOT	54	2%	56%	58%	56%	57%	16%	-----	8%
AME	52	0%	0%	8%	0%	0%	0%	-----	19%
AJU	45	0%	0%	0%	0%	0%	0%	-----	0%
GAF	42	0%	16%	20%	12%	15%	55%	-----	0%
UPS	42	3%	79%	83%	79%	83%	83%	-----	83%
CKS	43	2%	62%	62%	62%	62%	92%	-----	51%
DAH	16	3%	75%	83%	67%	83%	58%	-----	83%
SVW	42	1%	34%	3%	34%	24%	6%	-----	1%
FDX	38	0%	92%	92%	92%	92%	92%	-----	92%
LIN	36	0%	0%	0%	0%	0%	0%	-----	0%
CWC	27	12%	0%	0%	0%	0%	3%	-----	0%
AUA	27	44%	67%	67%	67%	67%	67%	-----	37%
PEG	25	0%	0%	8%	0%	0%	92%	-----	7%
MMZ	28	0%	0%	0%	0%	0%	0%	-----	0%
AOJ	24	0%	35%	13%	35%	13%	0%	-----	0%
ARG	21	0%	11%	0%	11%	7%	0%	-----	0%
SIA	26	39%	75%	75%	74%	75%	75%	-----	75%
CAZ	25	8%	14%	15%	15%	15%	0%	-----	15%
JTG	25	0%	0%	8%	0%	0%	0%	-----	58%
NAF	18	0%	0%	27%	0%	25%	27%	-----	23%
SAM	23	2%	50%	49%	36%	56%	40%	-----	0%
UAF	23	0%	53%	65%	53%	65%	65%	-----	0%
DLI	21	0%	0%	0%	0%	0%	0%	-----	58%
LXJ	19	0%	0%	0%	0%	0%	0%	-----	0%
ADB	20	0%	0%	4%	0%	0%	0%	-----	6%
IFA	19	0%	0%	0%	0%	0%	0%	-----	0%
HZA	17	0%	13%	13%	17%	33%	29%	-----	17%
MMD	18	0%	6%	7%	7%	7%	7%	-----	7%
PSK	18	0%	0%	0%	0%	0%	52%	-----	0%
ABP	17	0%	0%	0%	0%	0%	0%	-----	0%
EXH	19	0%	0%	8%	0%	0%	0%	-----	18%
LAE	19	4%	75%	8%	73%	0%	0%	-----	75%
CLS	18	0%	0%	0%	0%	0%	0%	-----	42%
XAA	11	0%	25%	13%	25%	6%	4%	-----	0%
CRV	14	0%	50%	50%	47%	50%	0%	-----	0%
ICV	14	17%	46%	50%	46%	50%	50%	-----	50%
JNY	14	0%	0%	0%	0%	0%	0%	-----	0%
KFS	14	0%	0%	0%	0%	0%	0%	-----	0%
VJS	16	0%	0%	0%	0%	0%	0%	-----	0%
BEL	12	22%	20%	23%	20%	20%	42%	-----	0%

FYG	16	0%	25%	40%	33%	42%	42%	-----	40%
KAC	16	36%	42%	50%	39%	44%	0%	-----	0%
AEY	14	1%	0%	0%	0%	0%	0%	-----	0%
GMB	14	0%	0%	0%	0%	0%	0%	-----	0%
GMI	14	0%	0%	0%	0%	0%	0%	-----	17%
NCR	13	0%	22%	8%	22%	0%	42%	-----	4%
SVF	12	0%	0%	0%	0%	0%	0%	-----	0%
BOX	12	8%	67%	67%	67%	67%	67%	-----	46%
KYE	13	2%	0%	8%	0%	0%	0%	-----	0%
LNX	14	0%	0%	0%	0%	0%	0%	-----	0%
QAF	14	4%	20%	0%	20%	20%	0%	-----	0%
EFF	13	0%	8%	17%	8%	17%	17%	-----	0%
IAM	13	0%	0%	0%	0%	0%	5%	-----	5%
LMJ	13	0%	3%	0%	3%	0%	25%	-----	0%
MOV	12	0%	0%	8%	0%	0%	0%	-----	17%
ROJ	13	0%	21%	0%	21%	0%	50%	-----	42%
VMP	13	0%	16%	34%	16%	28%	42%	-----	17%
WRC	12	0%	0%	0%	0%	0%	8%	-----	8%
GTH	9	0%	0%	8%	0%	0%	0%	-----	0%
SAS	10	0%	0%	8%	0%	0%	0%	-----	33%
VAL	10	0%	10%	13%	2%	21%	21%	-----	0%
GMA	11	4%	8%	0%	8%	0%	0%	-----	8%
IAF	7	0%	0%	0%	0%	0%	0%	-----	0%
LUC	11	0%	54%	58%	54%	58%	58%	-----	8%
XPE	10	0%	4%	13%	4%	8%	17%	-----	4%
BBR	10	0%	0%	0%	0%	0%	8%	-----	7%
KAY	9	0%	0%	0%	0%	0%	4%	-----	0%
NWS	9	0%	8%	11%	11%	11%	22%	-----	3%
ORB	9	0%	17%	0%	17%	0%	17%	-----	17%
PJS	8	0%	6%	17%	7%	17%	17%	-----	17%
DHK	7	0%	42%	8%	42%	42%	0%	-----	42%
EDG	9	0%	0%	0%	0%	0%	0%	-----	0%
JCB	8	0%	33%	33%	33%	33%	33%	-----	33%
JDI	9	0%	0%	0%	0%	0%	0%	-----	0%
LEA	9	0%	8%	0%	8%	0%	0%	-----	0%
LGT	8	0%	0%	0%	0%	0%	25%	-----	0%
PRD	9	0%	0%	0%	0%	0%	0%	-----	0%
TJS	9	0%	0%	0%	0%	3%	39%	-----	14%
TWY	7	0%	17%	21%	17%	17%	13%	-----	25%
DAF	6	0%	0%	0%	0%	0%	0%	-----	0%
DJT	8	18%	0%	8%	0%	0%	0%	-----	0%
DUK	8	0%	0%	0%	0%	0%	0%	-----	0%
EAV	8	0%	4%	0%	4%	0%	0%	-----	0%
FAE	8	0%	0%	0%	0%	0%	8%	-----	0%
FIX	8	0%	39%	0%	39%	33%	0%	-----	17%
FLC	8	0%	0%	0%	0%	0%	0%	-----	0%
GAJ	7	0%	0%	0%	0%	0%	0%	-----	0%
GLJ	8	0%	21%	8%	21%	21%	4%	-----	4%
GNJ	8	0%	29%	50%	29%	33%	0%	-----	8%
HRN	6	0%	0%	0%	0%	0%	0%	-----	0%
JAV	8	0%	0%	0%	0%	0%	0%	-----	0%
KEY	7	0%	0%	0%	0%	0%	0%	-----	33%
AOV	6	0%	0%	0%	0%	0%	0%	-----	0%
AUH	7	0%	15%	8%	15%	8%	0%	-----	0%
BFA	7	0%	0%	0%	0%	0%	0%	-----	0%
FAF	6	0%	0%	0%	0%	0%	0%	-----	3%
JAI	7	33%	33%	33%	33%	33%	0%	-----	33%
JAS	4	0%	8%	8%	8%	8%	8%	-----	8%
MLM	7	0%	19%	0%	19%	27%	27%	-----	10%
OAE	6	0%	0%	0%	0%	0%	0%	-----	0%
OBS	6	0%	0%	0%	0%	0%	10%	-----	0%
TTF	6	0%	0%	0%	0%	0%	0%	-----	0%
AYY	6	0%	0%	0%	0%	0%	0%	-----	0%
BRK	6	8%	25%	25%	25%	25%	25%	-----	0%
BSK	4	0%	0%	0%	0%	0%	0%	-----	0%
BVR	6	0%	42%	42%	42%	42%	42%	-----	42%
CGC	6	0%	33%	25%	33%	33%	0%	-----	25%
HGR	5	0%	0%	0%	0%	0%	0%	-----	0%
HYP	6	0%	14%	0%	14%	0%	0%	-----	0%
LMG	6	0%	8%	8%	8%	0%	17%	-----	8%

NGR	6	0%	0%	0%	0%	0%	0%	-----	0%
SIO	3	0%	25%	17%	25%	17%	0%	-----	0%
TAF	6	0%	0%	0%	0%	0%	0%	-----	0%
TAY	4	8%	17%	33%	17%	33%	0%	-----	33%
ABW	5	0%	33%	33%	33%	33%	0%	-----	33%
IJM	5	0%	0%	0%	0%	0%	19%	-----	0%
MJF	4	0%	8%	0%	8%	17%	17%	-----	17%
NAO	5	8%	0%	0%	0%	0%	25%	-----	0%
PVJ	5	0%	25%	25%	25%	25%	0%	-----	0%
SAZ	5	0%	0%	0%	0%	0%	0%	-----	17%
SOO	4	3%	14%	0%	14%	17%	17%	-----	17%
TFF	5	0%	0%	0%	0%	0%	0%	-----	0%
AIB	4	0%	17%	8%	17%	8%	17%	-----	17%
CXB	4	0%	0%	0%	0%	0%	0%	-----	33%
DRC	4	0%	0%	0%	0%	0%	0%	-----	0%
EDC	4	0%	0%	0%	0%	0%	0%	-----	0%
FAV	4	0%	0%	8%	0%	8%	8%	-----	8%
FNY	2	0%	0%	0%	0%	0%	0%	-----	0%
FPG	4	0%	0%	0%	0%	0%	17%	-----	0%
GAM	4	0%	0%	0%	0%	0%	0%	-----	0%
ICL	2	0%	0%	0%	0%	0%	0%	-----	0%
JCT	4	0%	0%	0%	0%	0%	0%	-----	0%
JEI	4	0%	0%	0%	0%	0%	0%	-----	0%
KZN	4	0%	0%	0%	0%	0%	0%	-----	0%
MCD	4	0%	0%	0%	0%	0%	0%	-----	0%
PAC	4	21%	25%	25%	25%	25%	25%	-----	25%
PHA	2	0%	0%	0%	0%	0%	8%	-----	0%
POT	4	0%	0%	0%	0%	0%	0%	-----	0%
VVV	4	0%	0%	0%	0%	0%	0%	-----	0%
WWI	4	0%	0%	0%	0%	0%	17%	-----	0%
ART	3	0%	0%	0%	0%	0%	0%	-----	8%
AWC	3	0%	0%	0%	0%	0%	0%	-----	0%
AZW	1	0%	0%	0%	0%	0%	0%	-----	0%
BEN	3	0%	0%	0%	0%	0%	0%	-----	0%
BJS	2	0%	0%	0%	0%	0%	0%	-----	0%
CGA	1	0%	0%	0%	0%	0%	0%	-----	0%
CHD	1	0%	0%	0%	0%	0%	0%	-----	0%
EAU	3	0%	0%	0%	0%	0%	0%	-----	0%
EFT	3	0%	0%	0%	0%	0%	25%	-----	0%
EQG	3	0%	17%	0%	17%	17%	0%	-----	0%
HFY	3	0%	0%	0%	0%	8%	17%	-----	8%
KQA	2	0%	8%	8%	8%	17%	17%	-----	8%
MDX	3	0%	0%	0%	0%	0%	8%	-----	0%
RJD	2	0%	17%	17%	17%	17%	17%	-----	17%
TKK	3	0%	0%	0%	0%	0%	0%	-----	8%
AAB	2	0%	8%	8%	8%	8%	0%	-----	8%
ABX	2	0%	0%	0%	0%	0%	0%	-----	0%
ADN	2	0%	0%	0%	0%	0%	0%	-----	0%
ARL	2	0%	0%	0%	0%	0%	0%	-----	0%
AUI	2	8%	0%	0%	0%	0%	0%	-----	0%
AVL	2	0%	8%	8%	8%	8%	8%	-----	0%
BRS	2	0%	0%	0%	0%	0%	4%	-----	0%
CAO	2	0%	8%	8%	8%	8%	0%	-----	8%
CCA	2	0%	8%	0%	8%	0%	0%	-----	8%
CMR	2	0%	8%	0%	8%	0%	8%	-----	0%
CPI	1	0%	0%	0%	0%	0%	0%	-----	0%
DCM	2	0%	0%	0%	0%	0%	0%	-----	0%
DCS	2	0%	0%	0%	0%	0%	0%	-----	0%
ELJ	2	0%	8%	8%	8%	8%	8%	-----	0%
ELL	2	0%	0%	8%	0%	0%	0%	-----	0%
EUW	2	0%	4%	0%	4%	0%	8%	-----	0%
GCT	2	0%	8%	8%	8%	8%	8%	-----	0%
KAI	2	0%	0%	0%	0%	0%	17%	-----	0%
KCE	0	0%	0%	0%	0%	0%	0%	-----	0%
OAV	2	0%	0%	0%	0%	8%	0%	-----	0%
PAT	2	0%	8%	17%	8%	8%	8%	-----	17%
QAJ	2	0%	0%	0%	0%	0%	0%	-----	0%
RAU	1	0%	0%	8%	0%	8%	0%	-----	0%
RBY	1	0%	0%	0%	0%	0%	0%	-----	0%
REU	2	0%	8%	8%	8%	8%	8%	-----	8%

SMJ	2	0%	0%	0%	0%	0%	0%	-----	0%
TYW	2	0%	0%	0%	0%	0%	0%	-----	0%
WOA	2	0%	0%	0%	0%	0%	0%	-----	0%
ABR	1	0%	0%	0%	0%	0%	0%	-----	0%
AJZ	1	0%	8%	8%	8%	8%	8%	-----	8%
ANX	0	0%	0%	0%	0%	0%	0%	-----	0%
ARV	1	0%	8%	0%	8%	0%	0%	-----	0%
BAH	1	0%	8%	8%	8%	8%	0%	-----	8%
BMW	1	0%	8%	0%	8%	0%	0%	-----	0%
CLU	0	0%	0%	0%	0%	0%	0%	-----	0%
DSO	1	0%	0%	0%	0%	0%	0%	-----	0%
DTA	0	0%	0%	0%	0%	0%	0%	-----	0%
FYL	1	0%	0%	0%	0%	0%	0%	-----	0%
GBB	0	0%	0%	0%	0%	0%	0%	-----	0%
GIA	1	0%	0%	8%	0%	0%	8%	-----	8%
IRM	1	0%	0%	8%	0%	0%	0%	-----	8%
IVY	1	0%	0%	0%	0%	0%	0%	-----	0%
JAG	1	0%	0%	0%	0%	0%	0%	-----	0%
KAF	1	0%	0%	0%	0%	0%	8%	-----	0%
LJB	1	8%	0%	0%	0%	0%	8%	-----	0%
MGO	1	0%	0%	0%	0%	0%	8%	-----	0%
MJE	0	0%	0%	0%	0%	0%	0%	-----	0%
PGN	1	0%	0%	0%	0%	0%	0%	-----	0%
PIA	1	0%	8%	8%	8%	8%	8%	-----	8%
ROT	1	0%	0%	0%	0%	0%	8%	-----	0%
SIS	0	0%	0%	0%	0%	0%	0%	-----	0%
SJT	1	0%	8%	0%	8%	0%	0%	-----	8%
SQC	1	0%	8%	8%	8%	8%	8%	-----	8%
TRA	1	0%	0%	0%	0%	0%	0%	-----	8%
WGT	1	0%	0%	0%	0%	0%	0%	-----	0%
WOW	1	0%	0%	0%	0%	0%	0%	-----	0%
XJC	0	0%	0%	0%	0%	0%	0%	-----	0%
YZR	1	0%	0%	8%	0%	8%	8%	-----	8%

Attachment C — Canada Report on Equipage in NAT

NAV CANADA Reporting on Equipage in the NAT
Period: **Jan 01, 2014 to Dec 31, 2014 (12 months)**

Month	ALL FLIGHTS							
	Total Flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% Filing RNP4	% Est. Equipped ADS-B	% Filing ADS-B
Jan-14	27,229	78%	81%	77%	83%	61%	84%	53%
Feb-14	24,761	80%	83%	80%	84%	61%	83%	52%
Mar-14	29,033	83%	85%	82%	86%	62%	84%	54%
Apr-14	30,715	83%	85%	83%	85%	60%	86%	54%
May-14	35,016	82%	83%	81%	83%	58%	86%	53%
Jun-14	37,550	80%	82%	80%	81%	57%	89%	51%
Jul-14	38,636	78%	82%	77%	82%	58%	90%	51%
Aug-14	38,882	81%	83%	81%	83%	58%	92%	51%
Sep-14	35,832	81%	82%	80%	83%	57%	90%	50%
Oct-14	34,538	83%	84%	82%	85%	60%	91%	53%
Nov-14	28,934	85%	87%	84%	88%	63%	91%	56%
Dec-14	28,187	83%	87%	83%	88%	63%	92%	56%
Average	***32,443***	***81%***	***84%***	***81%***	***84%***	***60%***	***88%***	***53%***
Month	**OTS FLIGHTS**							
	% of total flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% Filing RNP4	% Est. Equipped ADS-B	% Filing ADS-B
Jan-14	51%	86%	87%	86%	87%	62%	88%	53%
Feb-14	54%	88%	89%	88%	90%	63%	89%	53%
Mar-14	50%	90%	91%	90%	91%	63%	89%	53%
Apr-14	51%	90%	92%	90%	91%	62%	86%	51%
May-14	55%	88%	90%	88%	89%	60%	89%	50%
Jun-14	52%	87%	88%	87%	87%	60%	91%	47%
Jul-14	52%	86%	88%	86%	87%	61%	92%	49%
Aug-14	55%	87%	89%	88%	88%	60%	92%	49%
Sep-14	49%	88%	89%	88%	88%	60%	92%	48%
Oct-14	50%	89%	89%	89%	89%	62%	93%	51%
Nov-14	50%	93%	92%	93%	93%	64%	93%	55%
Dec-14	46%	92%	92%	92%	93%	64%	94%	54%
Average	***51%***	***89%***	***90%***	***89%***	***89%***	***62%***	***91%***	***51%***
Month	**NON-OTS FLIGHTS**							
	% of total flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% Filing RNP4	% Est. Equipped ADS-B	% Filing ADS-B
Jan-14	49%	69%	75%	68%	78%	59%	79%	53%
Feb-14	46%	71%	76%	70%	77%	59%	77%	51%
Mar-14	50%	75%	79%	74%	81%	61%	79%	55%
Apr-14	49%	76%	78%	74%	80%	58%	79%	56%
May-14	45%	74%	76%	73%	77%	57%	81%	56%
Jun-14	48%	74%	75%	72%	76%	55%	87%	54%
Jul-14	48%	69%	75%	68%	76%	55%	88%	53%
Aug-14	45%	74%	76%	73%	77%	54%	89%	54%
Sep-14	51%	74%	76%	72%	78%	54%	88%	52%
Oct-14	50%	76%	79%	75%	80%	58%	88%	55%
Nov-14	50%	77%	81%	76%	82%	62%	88%	56%
Dec-14	54%	76%	82%	75%	84%	63%	90%	57%
Average	***49%***	***74%***	***77%***	***73%***	***79%***	***58%***	***85%***	***54%***

NAV CANADA Reporting on ADS-C/CPDLC Equipage and Usage by Operator (Top 50)

Aggregate Period: **Jan 01, 2014 to Dec 31, 2014**

Operator	Total Flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC
1	45,715	97%	100%	97%	100%
2	38,668	93%	98%	93%	93%
3	34,186	81%	83%	81%	84%
4	20,824	92%	98%	92%	98%
5	20,663	95%	99%	95%	99%
6	16,184	94%	100%	93%	100%
7	14,835	91%	92%	91%	92%
8	13,478	66%	68%	67%	67%
9	11,817	91%	94%	89%	94%
10	10,934	83%	90%	83%	90%
11	6,699	97%	100%	97%	100%
12	5,817	99%	100%	98%	100%
13	5,646	92%	100%	92%	100%
14	5,591	30%	31%	31%	27%
15	5,586	92%	82%	92%	94%
16	4,920	82%	86%	81%	86%
17	4,914	0%	0%	0%	0%
18	4,634	85%	95%	85%	95%
19	4,599	90%	100%	90%	100%
20	4,534	89%	100%	90%	98%
21	4,497	80%	84%	80%	84%
22	3,791	97%	99%	98%	99%
23	3,130	98%	100%	98%	100%
24	3,094	92%	100%	92%	100%
25	2,853	95%	100%	95%	100%
26	2,851	83%	98%	81%	99%
27	2,801	96%	100%	95%	100%
28	2,693	61%	78%	60%	79%
29	2,468	78%	28%	78%	84%
30	2,424	82%	78%	82%	87%
31	2,314	96%	99%	95%	92%
32	2,066	85%	81%	84%	90%
33	2,031	92%	100%	91%	100%
34	2,023	94%	99%	94%	99%
35	1,952	94%	100%	94%	100%
36	1,794	87%	100%	87%	100%
37	1,759	97%	100%	97%	100%
38	1,718	95%	98%	95%	87%
39	1,576	0%	0%	0%	0%
40	1,545	64%	69%	64%	69%
41	1,521	12%	16%	12%	26%
42	1,458	96%	99%	99%	99%
43	1,332	87%	89%	87%	89%

44	1,288	33%	2%	33%	35%
45	1,263	88%	100%	87%	100%
46	1,191	98%	0%	98%	100%
47	1,108	61%	61%	61%	61%
48	1,059	85%	89%	84%	89%
49	1,012	2%	2%	2%	2%
50	985	60%	80%	58%	81%

Attachment D — United Kingdom Report on Equipage in NAT

United Kingdom Reporting on Equipage in the NAT
Period: **Jan 01, 2014 to Dec 31, 2014 (12 months)**

Month	ALL FLIGHTS							
	Total Flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% Filing RNP4	% Using ADS-B	% Filing ADS-B
Jan-14	29094	73.8%	74.1%	75.4%	75.0%	55.5%		
Feb-14	26827	75.7%	75.4%	77.0%	76.2%	55.5%		
Mar-14	31898	76.9%	77.0%	78.1%	77.7%	56.2%		
Apr-14	33823	76.5%	77.1%	78.1%	77.7%	55.5%		
May-14	37636	74.8%	76.8%	76.6%	77.0%	55.1%		
Jun-14	40238	74.6%	74.1%	75.9%	74.0%	53.7%		
Jul-14	41126	76.6%	74.6%	76.9%	75.0%	53.9%		
Aug-14	41693	76.9%	75.4%	77.7%	75.8%	53.7%		
Sep-14	38188	76.6%	74.2%	77.6%	74.9%	53.4%		
Oct-14	36285	77.6%	75.7%	78.8%	76.4%	55.6%		
Nov-14	30708	78.5%	77.9%	80.1%	79.0%	57.5%		
Dec-14	30915	80.4%	77.5%	82.4%	79.1%	57.0%		
Average	***34869***	***77.8%***	***75.8%***	***76.6%***	***76.5%***	***55.2%***		

Month	OTS FLIGHTS							
	% of total flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% Filing RNP4	% Using ADS-B	% Filing ADS-B
Jan-14	42.4%		87.7%		87.9%	62.0%		
Feb-14	44.6%		90.1%		90.3%	62.9%		
Mar-14	42.1%		92.0%		91.9%	62.5%		
Apr-14	44.3%		92.2%		91.7%	61.6%		
May-14	47.4%		90.1%		89.1%	59.5%		
Jun-14	44.1%		89.2%		88.1%	60.4%		
Jul-14	43.8%		89.4%		88.5%	61.3%		
Aug-14	46.9%		89.6%		88.7%	60.4%		
Sep-14	43.9%		89.6%		89.1%	61.2%		
Oct-14	43.4%		89.5%		89.7%	63.2%		
Nov-14	41.9%		93.3%		93.7%	65.2%		
Dec-14	39.8%		93.1%		93.9%	65.8%		
Average	***43.7%***		***90.5%***		***90.2%***	***62.2%***		

Month	NON-OTS FLIGHTS							
	% of total flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% Filing RNP4	% Using ADS-B	% Filing ADS-B
Jan-14	57.6%		63.5%		65.1%	50.5%		
Feb-14	55.4%		63.5%		64.8%	49.6%		
Mar-14	57.9%		66.1%		67.4%	51.6%		
Apr-14	55.7%		65.2%		66.6%	50.7%		
May-14	52.6%		64.8%		66.2%	51.3%		
Jun-14	55.9%		62.2%		63.0%	48.4%		
Jul-14	56.2%		61.5%		63.1%	47.5%		
Aug-14	53.1%		62.9%		64.4%	47.8%		
Sep-14	56.1%		62.2%		63.9%	47.3%		
Oct-14	56.6%		65.1%		66.2%	49.8%		
Nov-14	58.1%		66.9%		68.4%	51.9%		
Dec-14	60.2%		67.2%		69.4%	51.2%		
Average	***56.3%***		***64.2%***		***65.7%***	***49.8%***		

United Kingdom Reporting on ADS-C/CPDLC Equipage and Usage by Operator Aggregate Period: **Jan 01, 2014 to Dec 31, 2014 (12 months)**					
Operator (3-ltr ICAO Code)	**Total Flights**	**% Using ADS-C**	**% Filing ADS-C**	**% Using CPDLC**	**% Filing CPDLC**
UAL	43912		99.93%		99.93%
BAW	43408		83.64%		84.04%
DAL	38003		97.99%		94.11%
AFR	24063		99.97%		99.51%
AAL	21943		97.79%		97.65%
DLH	21767		98.87%		98.85%
KLM	15344		92.71%		92.39%
ACA	15253		91.94%		91.96%
VIR	14386		94.13%		94.13%
AWE	14322		66.88%		65.26%
EIN	13470		58.21%		58.24%
THY	12248		52.80%		62.18%
SWR	10032		93.59%		93.59%
RCH	7087		85.16%		85.28%
ICE	6267		0.00%		0.00%
TSC	6064		38.19%		34.52%
TOM	5744		74.83%		70.67%
AUA	5284		99.53%		99.53%
BER	5238		96.66%		95.21%
TCX	4963		6.55%		10.13%
AZA	4722		84.33%		84.33%
CFG	4589		75.25%		75.14%
CLX	4384		99.91%		100.00%
RYR	4200		0.10%		0.00%
FDX	3858		98.52%		99.04%
EXS	3805		0.00%		0.00%
UAE	3687		99.97%		99.97%
MON	3340		0.00%		8.02%
UPS	3294		99.73%		99.73%
QTR	3091		100.00%		100.00%
WOW	2781		0.00%		0.00%
XLF	2614		91.78%		94.68%
NAX	2598		19.82%		59.05%
EZY	2484		0.00%		0.00%
ETD	2377		100.00%		100.00%
BEL	2374		40.19%		40.14%
AFL	2331		98.97%		98.97%
FWI	2227		99.64%		98.83%
SVA	2200		98.32%		99.00%
JAI	2124		99.29%		99.29%
ELY	2088		79.17%		88.94%
SAS	2066		92.69%		92.69%
GEC	1912		99.74%		100.00%

IBE	1856		79.42%		89.17%
TFL	1787		81.14%		81.37%
GTI	1776		98.25%		86.71%
RJA	1775		2.08%		36.51%
AMX	1677		88.31%		88.37%
BOS	1611		0.00%		0.00%
ETH	1536		35.74%		35.74%
CRL	1481		99.12%		100.00%
LOT	1467		97.55%		92.37%
MPH	1330		1.35%		1.35%
CKS	1278		85.92%		85.76%
DHK	1212		0.00%		99.92%
TSO	1142		62.70%		62.61%
EDW	1090		65.60%		65.60%
TAM	1069		96.26%		99.91%
VKG	1042		14.59%		14.59%

Attachment E — Iceland Report on Equipage in NAT

Isavia Reporting on ADS-C/CPDLC Equipage and Usage
Period: **Jul 01, 2014 to Dec 31, 2014 6 months)**

Month	ALL FLIGHTS					OTS FLIGHTS					NON-OTS FLIGHTS				
	Total Flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% of total flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC	% of total flights	% Using ADS-C	% Filing ADS-C	% Using CPDLC	% Filing CPDLC
Jan-14	10,561	58.1%	62.0%	56.6%	63.5%	61.0%	76.0%	81.4%	75.0%	82.9%	39.0%	30.1%	31.7%	27.8%	33.3%
Feb-14	8,652	54.1%	57.6%	52.5%	58.9%	58.7%	73.9%	79.3%	73.0%	80.5%	41.3%	25.9%	26.9%	23.4%	28.2%
Mar-14	9,346	59.4%	62.8%	56.7%	64.3%	50.3%	82.6%	87.5%	80.8%	88.6%	49.7%	36.0%	37.8%	32.3%	39.8%
Apr-14	8,743	58.0%	59.0%	54.7%	60.7%	47.3%	86.4%	87.7%	84.2%	89.3%	52.7%	32.4%	33.1%	28.2%	35.0%
May-14	9,683	57.8%	58.7%	53.9%	60.8%	47.8%	87.6%	88.8%	84.5%	90.9%	52.2%	30.4%	31.2%	25.9%	33.1%
Jun-14	11,274	52.8%	55.3%	48.4%	55.1%	41.6%	86.0%	88.5%	82.6%	88.4%	58.4%	29.2%	31.8%	24.1%	31.4%
Jul-14	13,604	53.6%	55.7%	51.4%	56.3%	50.5%	84.0%	86.4%	82.2%	88.0%	49.5%	22.5%	24.3%	20.0%	24.1%
Aug-14	12,984	52.7%	55.1%	49.8%	56.3%	50.1%	81.3%	84.7%	78.7%	87.0%	49.9%	23.9%	25.5%	20.8%	25.5%
Sep-14	10,947	57.5%	59.4%	54.2%	61.3%	49.9%	84.3%	87.4%	81.8%	89.3%	50.1%	30.7%	31.6%	26.8%	33.4%
Oct-14	10,347	60.2%	63.4%	57.5%	63.9%	53.7%	85.5%	89.8%	83.4%	90.6%	46.3%	30.9%	32.7%	27.5%	32.9%
Nov-14	9,841	59.8%	63.1%	58.3%	64.0%	57.9%	82.3%	86.6%	81.4%	87.7%	42.1%	28.9%	30.8%	26.5%	31.5%
Dec-14	8,924	64.5%	65.8%	61.5%	67.0%	51.5%	91.7%	91.5%	89.4%	93.2%	48.5%	35.5%	38.5%	31.9%	39.2%
Total:	124,906	57.0%	59.5%	54.3%	60.7%	51.5%	83.4%	86.6%	81.3%	88.0%	48.5%	29.3%	30.9%	25.9%	31.8%

Isavia Reporting on ADS-C/CPDLC Equipage and Usage by Operator Aggregate Period: **Jan 01, 2014 to Dec 31, 2014 (6 months)**					
Operator (3-ltr ICAO Code)	**Total Flights**	**% Using ADS-C**	**% Filing ADS-C**	**% Using CPDLC**	**% Filing CPDLC**
ICE	18,662	0%	0%	0%	0%
UAL	8,981	85%	97%	82%	97%
DAL	6,601	79%	98%	75%	92%
BAW	6,170	67%	68%	61%	68%
DLH	6,162	86%	89%	81%	89%
UAE	5,256	85%	99%	75%	99%
SAS	5,025	83%	84%	82%	84%
private	4,793	23%	21%	21%	23%
ACA	4,165	82%	85%	77%	85%
WOW	3,481	0%	0%	0%	0%
KLM	3,036	81%	84%	75%	84%
AFL	2,934	98%	99%	94%	99%
NAX	2,651	68%	22%	65%	72%
FLI	2,599	0%	0%	0%	0%
QTR	2,292	96%	98%	96%	98%
THY	2,182	96%	91%	95%	98%
AAL	2,142	76%	89%	71%	89%
ETD	2,134	92%	99%	90%	99%
AFR	1,885	82%	87%	79%	86%
LOT	1,773	98%	99%	91%	91%
VIR	1,762	78%	81%	74%	81%
AIC	1,673	98%	100%	96%	100%
EZY	1,434	0%	0%	0%	0%
CPA	1,325	98%	100%	93%	100%
TSO	1,315	70%	73%	67%	74%
BER	1,303	61%	64%	61%	63%
TSC	1,177	78%	81%	77%	77%
SWR	1,070	89%	96%	86%	96%
FIN	912	94%	95%	92%	95%
CFG	856	80%	93%	77%	93%
ELY	804	81%	80%	81%	85%
RCH	722	44%	51%	41%	51%
GRL	687	0%	0%	0%	4%
FDX	619	62%	65%	61%	66%
AWE	568	38%	51%	38%	51%
BBD	530	0%	0%	0%	0%
SIA	528	96%	96%	96%	96%
AUA	507	83%	94%	82%	94%
GEC	506	74%	78%	70%	78%
CLX	487	86%	90%	84%	90%
PIA	444	95%	99%	95%	99%
PRI	443	0%	0%	0%	0%
NWS	427	80%	25%	76%	34%

UPS	424	65%	72%	64%	72%
EIN	408	76%	81%	71%	81%
RJA	376	22%	1%	22%	27%
ANZ	361	92%	96%	84%	96%
THT	315	95%	97%	87%	97%
SVA	287	78%	83%	75%	83%
ABW	285	91%	95%	87%	95%
AZA	227	66%	70%	62%	70%
CKS	219	68%	74%	68%	74%
DHK	211	73%	0%	69%	81%
GTI	207	71%	79%	68%	75%
DAF	198	0%	0%	0%	0%
EZS	194	0%	0%	0%	0%
GWI	188	0%	0%	0%	0%
CMB	181	9%	8%	9%	8%
MSR	158	87%	89%	86%	89%
BOX	151	76%	79%	66%	79%
EDW	147	78%	86%	78%	86%
UZB	142	0%	0%	0%	0%
NJE	142	38%	31%	33%	42%
EJM	136	36%	35%	33%	36%
AUI	133	0%	0%	0%	0%
IFA	133	1%	0%	1%	0%
TCX	130	2%	2%	2%	3%
ROU	127	54%	57%	47%	57%
FNA	124	0%	0%	0%	0%
ATN	122	0%	0%	0%	0%
DNM	119	0%	0%	0%	0%
CFC	113	25%	34%	24%	34%
PCH	106	0%	0%	0%	0%
VKG	104	29%	22%	29%	23%
TVF	102	0%	0%	0%	0%
SOO	101	91%	95%	56%	97%

United States FAA Reporting on ADS-C performance
Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key:
Meets criteria
99.0%-99.9%
Under criteria

		Message Counts	95% RSP 180 Benchmark RSP <=90 sec	99.9% RSP 180 Benchmark RSP <=180 sec
Media Type				
SATCOM		1,019,933	98.10%	99.33%
VHF		261,232	98.81%	99.47%
HF		5,096	91.97%	94.54%
All		1,286,267	98.15%	99.30%
Remote Ground Station (RGS) / Ground Earth Station				
AOW2	SAT	363,010	98.60%	99.53%
XXW	SAT	182,744	97.04%	98.99%
AME1	SAT	156,886	99.07%	99.61%
AOE2	SAT	108,587	98.62%	99.36%
XXN	SAT	91,465	98.89%	99.59%
XXH	SAT	47,467	97.29%	99.23%
BDA	VHF	45,863	99.55%	99.74%
IGW1	SAT	42,950	94.69%	98.24%
BDA1	VHF	29,745	99.67%	99.77%
IG1	SAT	16,048	92.68%	97.26%
YHZ1	VHF	12,744	99.34%	99.76%
YHZ	VHF	10,914	99.23%	99.67%
EUA1	SAT	9,966	98.58%	99.44%
FPO	VHF	8,958	96.97%	99.01%
PTP1	VHF	8,401	99.83%	99.94%
ACK	VHF	5,608	97.61%	99.16%
SXM	VHF	5,576	98.67%	99.39%
BOS	VHF	5,564	98.98%	99.59%
ILM1	VHF	5,453	98.13%	99.21%
FLW1	VHF	5,010	98.12%	98.82%
JFK	VHF	4,186	98.64%	99.02%
PLS	VHF	4,003	98.80%	99.58%
NAS	VHF	3,818	98.17%	99.82%
FPOV	VHF	3,412	98.68%	98.80%
NAS1	VHF	3,372	98.40%	99.11%
FPO1	VHF	3,236	98.36%	99.38%
YQY	VHF	3,151	97.24%	98.95%
ACK1	VHF	3,143	98.31%	98.95%
YYT	VHF	3,076	94.44%	97.82%
ANU1	VHF	3,028	99.27%	99.77%
BOS1	VHF	2,451	99.84%	99.92%
MIA	VHF	2,399	99.50%	99.75%
SJU1	VHF	2,117	99.29%	99.43%
CHS	VHF	2,071	97.30%	99.37%
JFKV	VHF	1,907	98.48%	98.85%
BQN	VHF	1,905	97.01%	99.16%
STX1	VHF	1,826	99.89%	99.95%
ISP	VHF	1,741	97.65%	99.48%
BOS7	VHF	1,732	99.88%	99.94%

United States FAA Reporting on ADS-C performance
Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key:
Meets criteria
99.0%-99.9%
Under criteria

		Message Counts	95% RSP 180 Benchmark RSP <=90 sec	99.9% RSP 180 Benchmark RSP <=180 sec
ORF	VHF	1,724	98.09%	99.30%
EWR	VHF	1,570	99.24%	99.49%
H04	HF	1,563	79.14%	90.15%
BQN1	VHF	1,410	97.09%	98.37%
BDA2	VHF	1,361	99.56%	99.71%
ACKV	VHF	1,335	99.40%	99.63%
H03	HF	1,327	70.08%	84.10%
PTP	VHF	1,327	99.55%	100.00%
PHF	VHF	1,145	95.11%	98.52%
MCO7	VHF	1,114	99.82%	100.00%
MCO	VHF	1,087	98.62%	99.82%
SDQ1	VHF	1,045	99.52%	99.71%
HPN	VHF	1,036	97.49%	99.32%
ILM	VHF	1,026	93.18%	97.47%
PLS1	VHF	991	97.78%	98.99%
JAX	VHF	941	99.79%	100.00%
SJUV	VHF	914	98.58%	99.45%
HYA1	VHF	912	99.23%	99.89%
POP1	VHF	885	99.55%	99.55%
BOS4	VHF	876	99.77%	100.00%
FDF1	VHF	865	100.00%	100.00%
EWR3	VHF	847	99.29%	99.53%
EWN	VHF	847	91.85%	97.87%
LGA	VHF	826	99.76%	100.00%
RIC	VHF	820	100.00%	100.00%
SDQ	VHF	817	100.00%	100.00%
SJU	VHF	817	98.16%	99.51%
MIAV	VHF	804	99.63%	99.88%
PBI1	VHF	798	99.62%	100.00%
CHS1	VHF	792	97.47%	99.87%
LRM1	VHF	776	99.10%	99.48%
XXF	SAT	744	99.19%	99.60%
PWM	VHF	728	99.18%	99.86%
MYR	VHF	726	99.04%	99.45%
SKB	VHF	701	99.57%	99.71%
H17	HF	663	64.25%	79.94%
EWR7	VHF	638	98.28%	99.53%
SXM1	VHF	637	99.84%	99.84%
EWR1	VHF	600	98.00%	99.17%
PVD	VHF	579	98.62%	99.65%
YHZ2	VHF	570	100.00%	100.00%
ANU	VHF	567	97.71%	99.65%
EIS	VHF	555	98.56%	99.28%
SBY	VHF	551	95.64%	99.27%
ANUV	VHF	541	99.82%	100.00%
H07	HF	540	74.26%	85.37%

United States FAA Reporting on ADS-C performance
Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key:
Meets criteria
99.0%-99.9%
Under criteria

		Message Counts	95% RSP 180 Benchmark RSP <=90 sec	99.9% RSP 180 Benchmark RSP <=180 sec
PSE1	VHF	538	99.81%	99.81%
PBIV	VHF	531	99.06%	99.06%
ISPV	VHF	524	98.86%	99.24%
AZS1	VHF	523	98.28%	98.85%
YQY1	VHF	515	95.73%	96.50%
BQNV	VHF	484	96.28%	98.55%
MYR1	VHF	471	99.15%	99.79%
YYT1	VHF	450	96.00%	97.33%
MIA7	VHF	441	99.77%	99.77%
PHL	VHF	439	98.41%	99.09%
JFK7	VHF	426	99.53%	99.53%
SBYV	VHF	415	98.07%	98.80%
UVF1	VHF	396	99.75%	99.75%
H11	HF	395	71.90%	86.84%
ORF3	VHF	394	100.00%	100.00%
STT	VHF	392	97.96%	97.96%
IAD	VHF	385	99.48%	99.74%
MLB1	VHF	382	99.74%	99.74%
MCO3	VHF	380	99.74%	100.00%
JFK8	VHF	362	100.00%	100.00%
EWN1	VHF	361	100.00%	100.00%
HVN	VHF	340	99.12%	99.71%
BGI1	VHF	334	100.00%	100.00%
GGT	VHF	331	95.77%	99.70%
ORF7	VHF	331	99.70%	100.00%
ORH1	VHF	323	99.38%	100.00%
MIA1	VHF	301	100.00%	100.00%
MCO1	VHF	279	97.49%	99.28%
CLT	VHF	272	100.00%	100.00%
H01	HF	268	79.85%	90.67%
STT1	VHF	263	98.48%	98.48%
SLU	VHF	260	100.00%	100.00%
BWI	VHF	256	98.83%	100.00%
GSO	VHF	245	100.00%	100.00%
BGI	VHF	244	98.36%	98.36%
PBI	VHF	239	99.16%	100.00%
MIA3	VHF	227	100.00%	100.00%
PUJ	VHF	218	97.71%	100.00%
PLSV	VHF	211	100.00%	100.00%
YHZV	VHF	205	98.54%	99.02%
MYRV	VHF	197	99.49%	100.00%
DAB1	VHF	189	97.88%	100.00%
FRGV	VHF	183	99.45%	100.00%
H13	HF	183	68.85%	81.97%
BOSV	VHF	179	100.00%	100.00%
OAJ	VHF	178	93.82%	98.31%

United States FAA Reporting on ADS-C performance
Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key:
Meets criteria
99.0%-99.9%
Under criteria

		Message Counts	95% RSP 180 Benchmark RSP <=90 sec	99.9% RSP 180 Benchmark RSP <=180 sec
EWRV	VHF	174	96.55%	97.70%
DAB	VHF	171	98.25%	100.00%
SAVV	VHF	168	100.00%	100.00%
PHL7	VHF	166	98.80%	100.00%
PHFV	VHF	164	98.78%	100.00%
HOR	VHF	163	100.00%	100.00%
DCA3	VHF	163	100.00%	100.00%
ORF1	VHF	160	97.50%	98.13%
FRG1	VHF	156	98.08%	100.00%
PBI2	VHF	154	100.00%	100.00%
MIA2	VHF	153	99.35%	100.00%
PDL1	VHF	151	99.34%	100.00%
BWI1	VHF	150	100.00%	100.00%
ILG	VHF	149	95.97%	98.66%
CCS1	VHF	144	99.31%	99.31%
TEB	VHF	144	100.00%	100.00%
CCS2	VHF	140	99.29%	99.29%
ACY1	VHF	138	94.20%	98.55%
PHLA	VHF	138	98.55%	98.55%
YYZ	VHF	137	98.54%	99.27%
HVNV	VHF	133	100.00%	100.00%
HAV1	VHF	128	99.22%	100.00%
PHL1	VHF	122	99.18%	99.18%
PWM1	VHF	121	98.35%	99.17%
STX	VHF	119	100.00%	100.00%
JFKN	VHF	114	100.00%	100.00%
BOS3	VHF	113	100.00%	100.00%
PAP1	VHF	110	98.18%	99.09%
FRG	VHF	103	98.06%	100.00%
MLB	VHF	102	92.16%	99.02%
LGA7	VHF	102	98.04%	100.00%
Aircraft Type (100 messages or more)				
B763		214,042	97.44%	99.03%
A332		185,770	99.01%	99.55%
A333		166,297	99.02%	99.57%
B772		148,332	97.59%	99.20%
B77W		114,260	98.63%	99.71%
B744		95,363	97.49%	99.38%
B788		66,433	98.43%	99.22%
A346		58,217	99.05%	99.42%
B764		47,982	97.28%	99.09%
A343		40,599	99.29%	99.61%
B77L		38,951	97.86%	99.21%
B752		26,473	95.35%	97.85%
A388		16,186	99.16%	99.67%
C17		13,450	98.83%	99.58%

United States FAA Reporting on ADS-C performance
Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key:
Meets criteria
99.0%-99.9%
Under criteria

		Message Counts	95% RSP 180 Benchmark RSP <=90 sec	99.9% RSP 180 Benchmark RSP <=180 sec
GLF5		8,815	96.13%	98.67%
B748		7,570	97.89%	99.14%
MD11		6,696	95.39%	98.09%
GLEX		6,295	97.43%	99.43%
A345		3,736	94.33%	95.80%
FA7X		3,639	97.31%	98.79%
K35R		2,541	98.23%	98.94%
GLF4		2,515	96.70%	99.13%
GL5T		2,188	97.44%	99.59%
GLF6		2,023	93.33%	96.59%
C5		1,568	97.77%	98.28%
B737		974	96.20%	98.67%
B722		371	99.19%	99.46%
B773		281	99.64%	100.00%
F2TH		277	96.03%	98.92%
F900		276	97.46%	99.64%
A319		185	99.46%	99.46%
B753		176	86.36%	88.64%
A318		168	91.07%	93.45%
B738		147	100.00%	100.00%
FA50		122	91.80%	96.72%
E135		111	99.10%	99.10%
Operator (100 messages or more)				
AAL		148,467	97.66%	99.01%
AFR		120,612	99.19%	99.83%
DAL		108,020	98.36%	99.47%
UAL		74,607	96.13%	98.38%
IBE		63,851	99.17%	99.47%
KLM		62,662	99.41%	99.82%
BAW		60,264	97.90%	99.39%
DLH		48,648	99.55%	99.81%
VIR		42,901	96.41%	98.95%
BER		38,428	99.19%	99.49%
AEA		36,659	99.20%	99.62%
CFG		35,812	95.61%	98.39%
TAP		28,575	99.31%	99.79%
TAM		27,943	97.63%	99.40%
AWE		27,712	98.43%	99.48%
SAA		26,920	97.99%	99.00%
TOM		24,905	98.02%	99.09%
SWR		24,742	99.42%	99.73%
AMX		22,122	98.34%	99.59%
FWI		20,933	99.68%	99.80%
RCH		15,758	98.76%	99.48%
AZA		14,738	99.31%	99.61%
GLF		13,860	95.66%	98.40%

United States FAA Reporting on ADS-C performance
Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key:
Meets criteria
99.0%-99.9%
Under criteria

		Message Counts	95% RSP 180 Benchmark RSP <=90 sec	99.9% RSP 180 Benchmark RSP <=180 sec
QTR		11,819	98.36%	99.53%
XLF		10,853	99.50%	99.83%
CRL		10,552	99.17%	99.50%
GTI		10,437	96.61%	98.74%
TFL		9,985	95.95%	98.78%
ACA		9,481	94.73%	98.51%
BOM		8,483	97.43%	99.47%
NAX		8,039	99.32%	99.74%
UAE		7,673	98.21%	99.54%
CLX		7,438	97.22%	99.14%
EVE		6,903	98.28%	98.96%
TSO		5,516	96.08%	98.86%
JAF		5,409	98.45%	99.28%
EDW		5,368	98.98%	99.39%
THY		5,025	99.10%	99.80%
UPS		4,176	94.42%	97.10%
GEC		3,978	96.88%	99.02%
DAS		3,915	97.32%	98.85%
TCX		3,621	98.56%	99.75%
ARA		3,294	93.56%	95.23%
PLM		3,114	99.58%	99.81%
ETH		3,105	99.07%	99.68%
NWS		2,993	91.05%	95.26%
AVA		2,946	97.73%	98.81%
ELY		2,834	98.24%	99.61%
AFL		2,784	98.13%	99.07%
TSC		2,649	99.36%	99.81%
CMB		2,295	96.60%	98.87%
ETD		2,170	99.26%	99.86%
EIN		2,063	97.82%	99.81%
MIL		2,050	97.71%	98.49%
SLM		1,753	100.00%	100.00%
ROU		1,599	92.18%	96.56%
AUA		1,533	98.70%	99.67%
SVA		1,440	99.58%	99.86%
MSR		1,396	99.57%	99.93%
VCV		1,342	98.14%	98.81%
IGA		1,217	96.63%	98.52%
SIA		1,170	98.89%	99.40%
LAE		1,112	97.57%	99.55%
CKS		1,099	95.63%	99.36%
VKG		1,007	95.93%	98.41%
LCO		975	96.82%	99.38%
LOT		937	97.33%	99.15%
NVR		821	99.39%	99.88%
FDX		659	98.18%	99.85%

United States FAA Reporting on ADS-C performance
Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key: Meets criteria 99.0%-99.9% Under criteria		Message Counts	95% RSP 180 Benchmark RSP <=90 sec	99.9% RSP 180 Benchmark RSP <=180 sec
TUI		597	92.46%	99.00%
NOS		522	95.79%	98.28%
ICV		509	95.87%	98.43%
BEL		412	99.76%	99.76%
BOX		391	97.95%	99.23%
RJA		363	96.14%	99.72%
JAI		333	96.40%	98.80%
FIN		328	99.70%	99.70%
DHK		318	98.11%	100.00%
DAH		291	96.91%	99.31%
KAC		286	97.90%	97.90%
TAY		282	97.52%	99.29%
SAM		264	98.48%	99.62%
NCR		208	99.52%	100.00%
SOO		199	94.97%	96.98%
WJA		182	91.21%	98.35%
MON		171	99.42%	99.42%
QAF		166	94.58%	95.18%
ABW		130	99.23%	99.23%
BLX		130	98.46%	100.00%
LPE		127	98.43%	99.21%
PAC		125	97.60%	100.00%
PIA		124	85.48%	95.16%
CNV		113	97.35%	99.12%
UAF		107	97.20%	99.07%

United States FAA Reporting on CPDLC performance

Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key:
Meets criteria
99.0%-99.9%
Under criteria

			95% RCP 240 benchmark		99.9% RCP 240 benchmark		
		Message Counts *(Wilco Received)*	ACP <=180 sec	ACTP <=120 sec *Network*	ACP <=210 sec	ACTP <=150 sec *Network*	PORT <=60 sec *Pilot Response*
Media Type							
SATCOM		41,822	99.07%	99.70%	99.34%	99.78%	96.51%
VHF		3,529	99.21%	99.91%	99.38%	99.94%	96.94%
HF		5	100.00%	80.00%	100.00%	100.00%	80.00%
VHF-SATCOM		262	92.75%	93.13%	94.27%	96.95%	91.22%
SATCOM-VHF		94	90.43%	97.87%	93.62%	97.87%	78.72%
SATCOM-HF		30	90.00%	83.33%	90.00%	86.67%	96.67%
HF-SATCOM		11	90.91%	90.91%	100.00%	100.00%	63.64%
HF-VHF		1	100.00%	100.00%	100.00%	100.00%	100.00%
All		45,754	99.02%	99.66%	99.30%	99.76%	96.46%
Remote Ground Station (RGS) / Ground Earth Station (GES) (100 messages or more)							
AOW2	SAT	15,580	99.13%	99.80%	99.35%	99.75%	96.70%
AME1	SAT	7,212	99.27%	99.83%	99.46%	99.76%	97.09%
AOE2	SAT	5,984	99.47%	99.73%	99.70%	99.63%	97.39%
XXW	SAT	5,199	98.81%	99.63%	99.02%	99.52%	95.83%
XXN	SAT	3,051	98.89%	99.80%	99.21%	99.74%	96.20%
XXH	SAT	2,474	98.50%	99.84%	99.03%	99.60%	94.91%
IGW1	SAT	1,581	97.60%	99.62%	98.74%	99.11%	93.74%
BDA	VHF	705	99.57%	100.00%	99.72%	100.00%	98.01%
IG1	SAT	652	97.55%	99.23%	98.31%	98.47%	93.40%
BDA1	VHF	615	98.86%	99.84%	99.02%	99.84%	98.21%
YHZ	VHF	405	98.02%	99.75%	98.52%	99.75%	95.06%
YHZ1	VHF	366	99.45%	100.00%	99.45%	100.00%	95.90%
EUA1	SAT	341	100.00%	100.00%	100.00%	100.00%	98.24%
FPO	VHF	223	98.65%	100.00%	99.10%	100.00%	93.27%
PTP1	VHF	202	100.00%	100.00%	100.00%	100.00%	98.02%
ANU1	VHF	138	99.28%	100.00%	99.28%	100.00%	97.83%
ACK	VHF	109	99.08%	100.00%	100.00%	100.00%	96.33%
ILM1	VHF	104	98.08%	100.00%	98.08%	100.00%	94.23%
Uplink Messages (UM) (100 messages or more)							
U20 U129		17,822	99.35%	99.70%	99.57%	99.78%	97.82%
U26 U129		15,183	99.30%	99.68%	99.52%	99.78%	97.12%
U106		2,232	99.10%	99.78%	99.51%	99.78%	97.76%
U74		1,716	98.43%	99.42%	99.01%	99.65%	94.76%
U27 U129		1,052	98.00%	99.62%	98.86%	99.71%	94.77%
U28 U129		635	97.64%	99.69%	97.95%	99.69%	92.91%
U19 U21 U26 U129		485	98.76%	99.59%	98.97%	99.79%	89.69%
U26 U129 U166		456	98.46%	100.00%	99.12%	100.00%	93.20%
U19		446	97.98%	99.10%	98.43%	99.33%	97.31%
U23 U129		423	98.82%	100.00%	99.05%	100.00%	96.22%
U29 U129		385	98.18%	100.00%	98.44%	100.00%	93.77%
U30		381	99.48%	99.74%	99.48%	100.00%	98.43%
U31		250	100.00%	100.00%	100.00%	100.00%	98.80%
U111		245	99.59%	99.59%	99.59%	99.59%	97.96%
U166 U26 U129		245	99.59%	99.18%	99.59%	99.59%	96.33%
U113		206	99.51%	99.51%	99.51%	100.00%	98.06%
U166 U129 U26		205	98.54%	99.51%	99.02%	99.51%	93.66%

United States FAA Reporting on CPDLC performance
Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key:
Meets criteria
99.0%-99.9%
Under criteria

		Message Counts (Wilco Received)	95% RCP 240 benchmark ACP <=180 sec	95% RCP 240 benchmark ACTP <=120 sec Network	99.9% RCP 240 benchmark ACP <=210 sec	99.9% RCP 240 benchmark ACTP <=150 sec Network	PORT <=60 sec Pilot Response
U77		186	97.31%	98.39%	97.31%	98.92%	90.86%
U28 U129 U166		177	97.18%	99.44%	97.18%	100.00%	89.83%
U19 U129 U26 U21		143	100.00%	100.00%	100.00%	100.00%	92.31%
U166 U28 U129		116	95.69%	99.14%	95.69%	99.14%	86.21%
U20 U129 U148		112	89.29%	100.00%	91.96%	100.00%	64.29%
Aircraft Type (100 messages or more)							
A333		8,207	99.24%	99.73%	99.49%	99.82%	96.50%
A332		6,354	99.04%	99.80%	99.31%	99.86%	95.51%
B772		5,561	99.30%	99.62%	99.53%	99.68%	98.02%
B763		5,486	98.41%	99.58%	98.98%	99.76%	95.13%
B744		4,360	98.81%	99.68%	99.11%	99.86%	95.25%
B77W		4,264	99.70%	99.88%	99.77%	99.95%	98.29%
A346		2,334	98.93%	99.66%	99.31%	99.66%	97.39%
B788		2,201	99.45%	99.55%	99.59%	99.68%	98.77%
A343		1,784	99.44%	99.83%	99.44%	99.83%	96.24%
B77L		1,187	98.82%	99.16%	99.33%	99.24%	98.48%
B764		1,123	99.02%	99.55%	99.20%	99.73%	96.79%
B752		659	97.12%	97.72%	97.72%	98.48%	96.05%
A388		492	99.59%	100.00%	99.59%	100.00%	98.17%
C17		342	97.95%	100.00%	97.95%	100.00%	90.35%
B748		227	99.12%	99.12%	99.12%	99.56%	98.24%
GLF5		225	95.11%	100.00%	97.33%	100.00%	88.00%
GLEX		166	96.99%	100.00%	97.59%	100.00%	90.96%
FA7X		150	98.00%	99.33%	98.00%	99.33%	90.00%
MD11		142	98.59%	98.59%	98.59%	98.59%	98.59%
Operator (100 messages or more)							
AFR		5,557	99.69%	99.89%	99.77%	99.95%	97.82%
IBE		3,424	99.27%	99.65%	99.53%	99.71%	97.87%
DAL		3,373	98.81%	99.53%	99.14%	99.67%	96.47%
BAW		3,317	99.07%	99.55%	99.37%	99.61%	97.35%
AAL		3,003	99.00%	99.60%	99.33%	99.70%	96.90%
VIR		2,376	98.70%	99.71%	99.12%	99.87%	94.70%
AEA		2,274	99.30%	99.91%	99.52%	99.91%	96.09%
KLM		2,188	99.27%	99.91%	99.41%	100.00%	97.07%
UAL		1,942	98.30%	98.87%	98.66%	99.28%	96.81%
FWI		1,613	99.75%	99.81%	99.81%	99.94%	97.95%
DLH		1,454	99.17%	99.86%	99.45%	99.86%	96.91%
BER		1,168	99.57%	99.83%	99.74%	99.91%	95.98%
CFG		1,091	97.89%	99.08%	98.99%	99.54%	95.42%
TOM		1,066	99.44%	99.91%	99.53%	99.91%	97.75%
SWR		852	98.94%	99.88%	99.41%	99.88%	95.19%
CRL		810	99.26%	99.63%	99.63%	99.63%	96.67%
TAP		785	98.85%	99.75%	99.36%	100.00%	96.31%
AWE		771	97.92%	99.61%	98.44%	99.61%	92.48%
SAA		732	99.59%	99.73%	99.59%	99.73%	97.95%
AZA		639	99.69%	99.84%	99.69%	99.84%	97.50%
AMX		495	98.99%	99.60%	98.99%	99.60%	96.57%

United States FAA Reporting on CPDLC performance
Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key:
Meets criteria
99.0%-99.9%
Under criteria

			95% RCP 240 benchmark		99.9% RCP 240 benchmark		
		Message Counts *(Wilco Received)*	**ACP <=180 sec**	**ACTP <=120 sec** *Network*	**ACP <=210 sec**	**ACTP <=150 sec** *Network*	**PORT <=60 sec** *Pilot Response*
TFL		490	**98.78%**	**99.18%**	**99.18%**	**99.80%**	**95.10%**
RCH		424	**98.11%**	**100.00%**	**98.11%**	**100.00%**	**91.27%**
TAM		401	**98.75%**	**99.75%**	**99.00%**	**99.75%**	**95.51%**
EVE		352	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**98.30%**
GTI		348	**98.85%**	**99.43%**	**99.14%**	**99.71%**	**95.98%**
XLF		330	**99.39%**	**99.70%**	**99.70%**	**99.70%**	**97.58%**
GLF		324	**95.06%**	**99.38%**	**96.91%**	**99.69%**	**87.96%**
QTR		296	**98.99%**	**100.00%**	**98.99%**	**100.00%**	**97.30%**
CLX		243	**99.18%**	**99.59%**	**99.59%**	**99.59%**	**96.30%**
JAF		232	**98.28%**	**98.28%**	**98.28%**	**98.28%**	**99.14%**
EDW		214	**98.60%**	**99.53%**	**99.07%**	**99.53%**	**96.26%**
BOM		201	**97.01%**	**100.00%**	**97.51%**	**100.00%**	**90.05%**
UAE		185	**99.46%**	**99.46%**	**99.46%**	**99.46%**	**97.30%**
NAX		181	**99.45%**	**99.45%**	**100.00%**	**100.00%**	**97.79%**
PLM		170	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**97.65%**
TCX		161	**99.38%**	**100.00%**	**99.38%**	**100.00%**	**95.03%**
DAS		160	**97.50%**	**99.38%**	**97.50%**	**99.38%**	**89.38%**
TSO		153	**99.35%**	**99.35%**	**99.35%**	**100.00%**	**85.62%**
ACA		134	**97.01%**	**99.25%**	**98.51%**	**99.25%**	**94.03%**
ELY		131	**98.47%**	**100.00%**	**99.24%**	**100.00%**	**98.47%**
GEC		126	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**99.21%**
SLM		116	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
AVA		116	**87.93%**	**100.00%**	**89.66%**	**100.00%**	**71.55%**

United States FAA Reporting of CSP notified and ATSP detected outages

Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

CSP Name	Media Type	Number of Unplanned Outages >10 min	Sum of Unplanned Outage (min)
Outages			
ARINC I-4 EMEA	SATCOM	4	72
ARINC IRIDIUM	SATCOM	1	23
SITA IRIDIUM	SATCOM	6	621
IRIDIUM Global	SATCOM	1	12
SITA I-3 AOW/AOE	SATCOM	1	41
Total (Sum):		**13**	**769**

RCP 240/RSP180 Availability criteria

Efficiency at 99.99%		*Max 4 per year*	*Max 52 per year*
Safety at 99.9%		*Max 48 per year*	*Max 520 per year*

Attachment G — Portugal Report on CPDLC and ADS C Performance

NAV Portugal Reporting on CPDLC performance

Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key:
Meets criteria
Under criteria

			95% RCP 240 benchmark		99.9% RCP 240 benchmark		
		Message Counts *(Wilco Received)*	**ACP <=180 sec**	**ACTP <=120 sec** *Network*	**ACP <=210 sec**	**ACTP <=150 sec** *Network*	**PORT <=60 sec** *Pilot Response*
Media Type							
SAT		18576	**98,99%**	**99,41%**	99,45%	99,63%	**95,90%**
VHF		7485	**99,82%**	**100,00%**	**99,92%**	**100,00%**	**97,33%**
VS		311	**96,95%**	**97,01%**	**97,79%**	**98,91%**	**89,39%**
SV		160	**92,20%**	**94,65%**	**94,11%**	**97,36%**	**79,06%**
SH		27	**83,42%**	**75,08%**	**92,61%**	**90,33%**	**90,12%**
HS		8	**75,28%**	**79,30%**	**78,13%**	**85,16%**	**52,38%**
HF		2	**0,00%**	**0,00%**	**0,00%**	**0,00%**	**0,00%**
VH		2	**86,14%**	**72,09%**	**100,00%**	**100,00%**	**100,00%**
All	All	26571	**99,12%**	**99,47%**	99,50%	99,68%	**96,09%**
Ground Earth Station (GES) with 100 messages or more (99%) in the period							
AOE2	SAT	7.470	**99,13%**	**99,52%**	99,60%	99,71%	**96,13%**
FLW1	VHF	4.893	**99,75%**	**99,93%**	99,88%	**99,99%**	**96,93%**
EUA1	SAT	3.036	**99,01%**	**99,35%**	99,50%	99,48%	**96,25%**
AOW2	SAT	2.608	**99,33%**	**99,81%**	99,61%	99,89%	**96,74%**
XXN	SAT	1922	**98,79%**	**99,58%**	99,13%	99,82%	**94,33%**
XXW	SAT	1.197	**98,53%**	**99,35%**	**98,98%**	99,40%	**95,41%**
PDL1	VHF	1.101	**99,94%**	**99,95%**	**100,00%**	**100,00%**	**97,91%**
AME1	SAT	867	**99,08%**	**99,46%**	99,54%	99,50%	**97,35%**
HOR	VHF	767	**99,56%**	**99,90%**	99,74%	**99,97%**	**96,22%**
XXH	SAT	552	**99,64%**	**99,08%**	99,82%	99,62%	**94,20%**
IGW1	SAT	472	**97,10%**	**97,19%**	**98,75%**	**98,94%**	**92,69%**
IG1	SAT	325	**93,76%**	**94,23%**	**96,10%**	**97,14%**	**88,31%**
TER	VHF	314	**99,70%**	**100,00%**	99,82%	**100,00%**	**95,86%**
XXF	SAT	312	**98,52%**	**99,53%**	**98,83%**	**100,00%**	**93,80%**
VGO	VHF	160	**98,37%**	**99,92%**	**98,87%**	**100,00%**	**95,00%**
FNC1	VHF	154	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**97,66%**
FNC7	VHF	113	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**98,87%**
All	All	26.263	**99,14%**	**99,50%**	99,52%	99,70%	**96,08%**
Uplink Messages (UM) with 100 messages or more (99%) in the period							
U20 U129		18.252	**99,34%**	**99,47%**	99,65%	99,68%	**97,65%**
U20 U46 U129		3.301	**98,52%**	**99,54%**	99,17%	99,72%	**91,23%**
U106		1.899	**99,62%**	**99,84%**	99,79%	99,89%	**98,39%**
U34 U129		733	**98,48%**	**99,03%**	99,17%	99,17%	**96,55%**
U23 U46 U129		475	**95,94%**	**98,93%**	**96,58%**	99,15%	**84,62%**
U19		376	**98,90%**	**98,90%**	99,73%	99,45%	**97,81%**
U30		354	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**99,43%**
U23 U129		288	**98,59%**	**99,29%**	99,65%	99,29%	**96,82%**
U53		260	**98,82%**	**99,22%**	99,22%	**100,00%**	**89,02%**
U52		252	**98,39%**	**99,60%**	99,19%	**100,00%**	**86,69%**
U19 U22 U129 U46		249	**97,19%**	**99,60%**	**97,59%**	99,60%	**74,30%**
U19 U22 U129		223	**97,71%**	**98,17%**	**98,62%**	99,54%	**85,32%**
Total		26.200					
Negative Value Messages Removed							
U20 U129		328	**98,78%**	**88,41%**	99,09%	**93,29%**	
U20 U46 U129		52	**98,08%**	**92,31%**	**98,08%**	**92,31%**	
U106		34	**100,00%**	**91,18%**	**100,00%**	**97,06%**	
U19		11	**100,00%**	**81,82%**	**100,00%**	**100,00%**	
U34 U129		8	**100,00%**	**87,50%**	**100,00%**	**87,50%**	
U23 U46 U129		7	**100,00%**	**71,43%**	**100,00%**	**71,43%**	
U19 U22 U129		5	**100,00%**	**80,00%**	**100,00%**	**100,00%**	
U23 U129		5	**100,00%**	**80,00%**	**100,00%**	**80,00%**	
U53		5	**100,00%**	**80,00%**	**100,00%**	**80,00%**	
U52		4	**100,00%**	**100,00%**	**100,00%**	**100,00%**	
U30		3	**100,00%**	**66,67%**	**100,00%**	**66,67%**	
U26 U129		2	**100,00%**	**100,00%**	**100,00%**	**100,00%**	
U68		1	**0,00%**	**0,00%**	**0,00%**	**0,00%**	
Total		465					

NAV Portugal Reporting on CPDLC performance
Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key:
Meets criteria
Under criteria

		95% RCP 240 benchmark		99.9% RCP 240 benchmark		
	Message Counts *(Wilco Received)*	**ACP <=180 sec**	**ACTP <=120 sec** *Network*	**ACP <=210 sec**	**ACTP <=150 sec** *Network*	**PORT <=60 sec** *Pilot Response*
Aircraft Type with 100 messages or more (98%) in the period						
A333	5.070	**99,42%**	**99,68%**	99,73%	99,84%	**96,33%**
A332	4.622	**99,47%**	**99,79%**	99,64%	99,88%	**95,91%**
B77W	3.594	**99,30%**	**99,75%**	99,62%	99,86%	**97,55%**
B772	2.686	**99,13%**	**99,56%**	99,62%	99,71%	**96,84%**
B763	2.031	**98,55%**	**98,95%**	99,24%	99,39%	**95,03%**
A346	2.012	**99,06%**	**99,33%**	99,53%	99,51%	**95,97%**
B744	1.934	**98,91%**	**98,96%**	99,42%	99,43%	**95,40%**
A343	1.794	**99,64%**	**99,85%**	**99,90%**	99,88%	**96,38%**
B788	841	**98,69%**	**99,15%**	99,39%	99,43%	**97,34%**
B752	509	**97,00%**	**96,91%**	**98,06%**	**98,36%**	**93,71%**
B764	285	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**96,26%**
C17	261	**96,05%**	**99,87%**	**96,70%**	**99,98%**	**86,32%**
B748	213	**99,08%**	**98,30%**	99,17%	**98,69%**	**97,97%**
B77L	202	**98,51%**	**99,56%**	99,03%	99,74%	**94,88%**
All	26.054	**99,14%**	**99,47%**	99,52%	99,68%	**96,15%**
Operators with 100 messages or more (97%) in the period						
AFR	4.207	**99,45%**	**99,85%**	99,75%	**99,92%**	**97,20%**
NOP	3.094	**99,05%**	**99,53%**	99,30%	99,73%	**95,64%**
IBE	3048	**99,18%**	**99,36%**	99,65%	99,58%	**96,46%**
AEA	1.929	**99,74%**	**99,90%**	**99,90%**	**99,92%**	**96,47%**
BAW	1868	**98,93%**	**99,12%**	99,58%	99,27%	**97,00%**
KLM	1327	**99,28%**	**99,73%**	99,53%	99,87%	**97,06%**
TAP	1.311	**99,55%**	**99,62%**	99,64%	99,84%	**96,03%**
DAL	909	**99,72%**	**99,77%**	99,80%	**100,00%**	**97,54%**
DLH	804	**99,24%**	**99,43%**	99,37%	99,53%	**97,14%**
TAM	765	**99,43%**	**100,00%**	99,50%	**100,00%**	**95,56%**
UAL	721	**97,33%**	**97,40%**	**98,36%**	**98,57%**	**94,04%**
AAL	718	**98,90%**	**99,60%**	99,21%	99,65%	**95,26%**
CRL	687	**99,60%**	**99,87%**	**99,91%**	**99,92%**	**96,65%**
VIR	650	**99,58%**	**99,52%**	99,71%	**99,92%**	**94,15%**
CFG	597	**98,21%**	**98,28%**	99,35%	99,47%	**96,59%**
SAA	327	**99,14%**	**99,19%**	99,70%	99,33%	**96,79%**
BER	309	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**98,15%**
RCH	301	**96,58%**	**99,89%**	**97,14%**	**99,98%**	**88,46%**
AWE	287	**97,74%**	**99,80%**	**98,97%**	**100,00%**	**91,11%**
LAN	282	**99,00%**	**99,18%**	**100,00%**	99,71%	**97,04%**
AMX	278	**99,43%**	**99,66%**	99,63%	99,70%	**95,68%**
SLM	259	**99,72%**	**99,82%**	99,78%	**99,95%**	**98,65%**
EVE	228	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**98,68%**
AZA	200	**99,54%**	**99,53%**	99,87%	99,69%	**95,63%**
TFL	174	**99,15%**	**99,46%**	99,46%	99,53%	**96,67%**
SWR	147	**99,01%**	**99,40%**	**100,00%**	99,66%	**95,93%**
CLX	144	**100,00%**	**99,76%**	**100,00%**	**100,00%**	**97,52%**
PLM	104	**100,00%**	**99,91%**	**100,00%**	**100,00%**	**98,24%**
All	25.675	**99,17%**	**99,49%**	99,53%	99,68%	**96,27%**

NAV Portugal Reporting on ADS-C performance
Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

Color key: Meets criteria / Under criteria		Message Counts	95% RSP 180 Benchmark RSP <=90 sec	99.9% RSP 180 Benchmark RSP <=180 sec
Media Type				
SAT		525.450	**98,26%**	99,42%
VHF		213.191	**99,46%**	99,71%
HF		2.483	**69,71%**	**84,58%**
	All	741.124	**98,51%**	99,45%
Ground Earth Station (GES) providing 1000 or more (98%) messages in the period.				
AOE2	SAT	176.978	**98,63%**	99,59%
EUA1	SAT	82.805	**97,92%**	99,34%
FLW1	VHF	81.773	**99,72%**	99,87%
AOW2	SAT	77.231	**98,98%**	99,58%
XXN	SAT	64.382	**98,90%**	99,59%
XXW	SAT	41.919	**98,34%**	99,35%
PDL1	VHF	34.732	**99,72%**	99,83%
AME1	SAT	29.916	**98,86%**	99,38%
XXH	SAT	16.396	**98,69%**	99,53%
HOR	VHF	15.654	**99,54%**	99,78%
XXF	SAT	12.610	**96,86%**	99,28%
IGW1	SAT	12.434	**91,15%**	**97,94%**
IG1	SAT	10.640	**93,20%**	**97,24%**
OPO	VHF	9.976	**99,45%**	99,65%
TER	VHF	6.942	**99,72%**	99,80%
VGO1	VHF	6.308	**98,41%**	99,43%
VGO	VHF	5.598	**98,79%**	99,63%
PDL	VHF	5.414	**99,66%**	99,70%
OPO1	VHF	4.593	**99,89%**	**99,94%**
FNC1	VHF	4.417	**98,42%**	**98,83%**
FNC7	VHF	4.391	**99,61%**	99,74%
LIS	VHF	4.361	**99,71%**	99,81%
MNT1	VHF	3.489	**98,01%**	99,24%
OPO7	VHF	2.508	**99,57%**	99,82%
MNT7	VHF	2.022	**99,46%**	**99,92%**
LCG1	VHF	1.957	**98,88%**	99,59%
LIS7	VHF	1.535	**99,71%**	99,82%
FOI1	VHF	1.457	**96,40%**	99,02%
VGO7	VHF	1.247	**99,28%**	99,71%
SCQ1	VHF	1.208	**99,10%**	99,68%
FOI7	VHF	1.046	**99,17%**	**100,00%**
	All	725.939	**98,61%**	99,52%

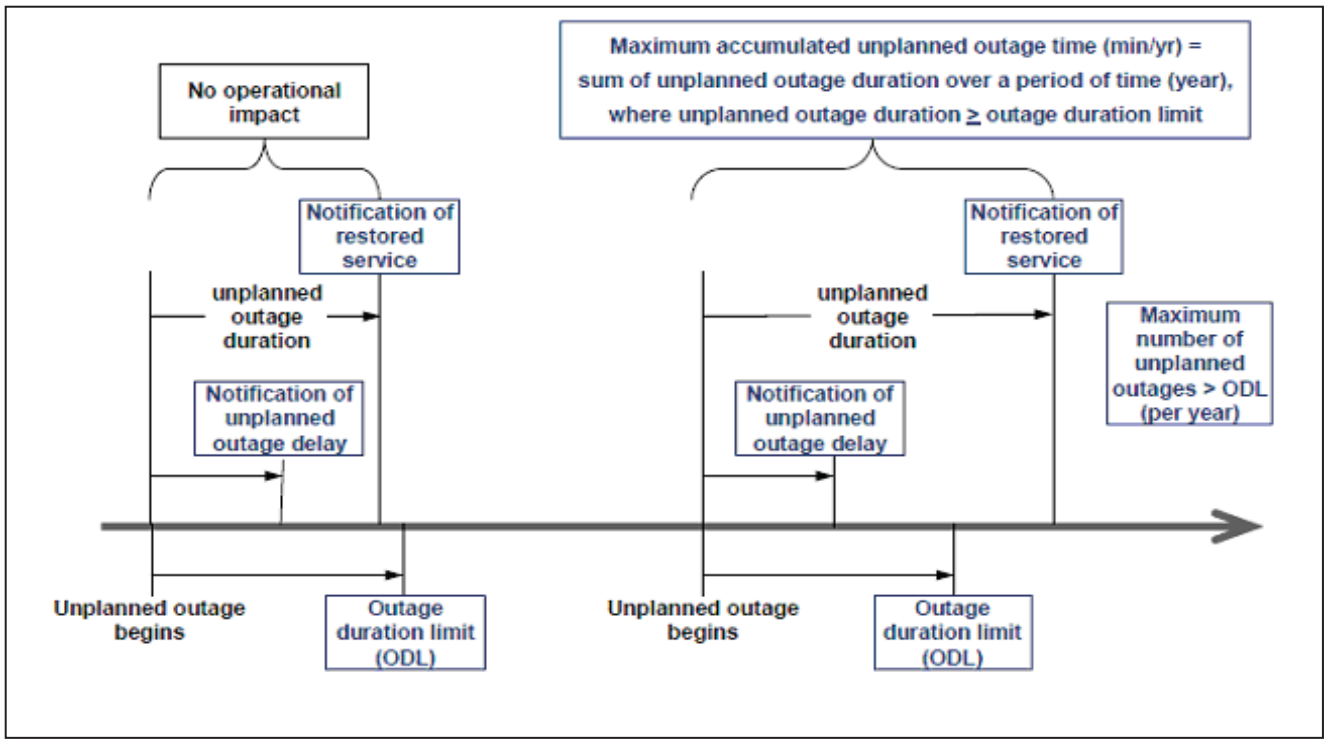
NAV Portugal Reporting of CSP notified and ATSP detected outages

Period: **Jul 01, 2014 to Dec 31, 2014 (6 months)**

CSP Name	Media Type	Number of Unplanned Outages >10 min	Sum of Unplanned Outage (min)
Outages			
SITA	All	1	611
	Total (Sum):	**1**	**611**

RCP 240 Availability criteria

Efficiency at 99.99%	*Max 4 per year*	*Max 52 per year*
Safety at 99.9%	*Max 48 per year*	*Max 520 per year*



Attachment H — Canada Report on CPDLC and Performance

NAV CANADA Reporting on CPDLC performance
Period: **July 01, 2014 to December 31, 2014 (6 months)**

Color key:
Meets criteria
Under criteria

			95% RCP 240 benchmark		99.9% RCP 240 benchmark		
		Message Counts *(Wilco Received)*	ACP <=180 sec	ACTP <=120 sec *Network*	ACP <=210 sec	ACTP <=150 sec *Network*	PORT <=60 sec *Pilot Response*
Media Type							
SATCOM		25,164	**99.14%**	**99.55%**	99.45%	99.72%	**96.84%**
VHF		5,532	**99.69%**	**99.96%**	99.77%	**99.96%**	**98.23%**
SV		354	**96.33%**	**97.74%**	**97.46%**	**98.31%**	**90.11%**
VS		190	**93.68%**	**95.26%**	**95.26%**	**96.84%**	**92.63%**
HS		72	**86.11%**	**91.67%**	**90.28%**	**97.22%**	**76.39%**
SH		52	**86.54%**	**76.92%**	**88.46%**	**86.54%**	**94.23%**
HF		22	**50.00%**	**45.45%**	**50.00%**	**50.00%**	**59.09%**
HV		3	**33.33%**	**66.67%**	**66.67%**	**66.67%**	**33.33%**
All		31,389	**99.08%**	**99.48%**	99.38%	99.66%	**96.90%**
Remote Ground Station (RGS) / Ground Earth Station (GES)							
AOW2	SATCOM	5,519	**99.26%**	**99.51%**	99.53%	99.75%	**99.75%**
AOE2	SATCOM	5,269	**99.53%**	**99.83%**	99.64%	99.83%	**99.83%**
XXW	SATCOM	4,251	**98.80%**	**99.55%**	99.22%	99.76%	**99.76%**
XXN	SATCOM	3,957	**99.22%**	**99.70%**	99.57%	99.85%	**99.85%**
AME1	SATCOM	1,814	**99.45%**	**99.56%**	99.72%	99.78%	**99.78%**
IG1	SATCOM	1,723	**97.68%**	**98.20%**	**98.43%**	**98.78%**	**98.78%**
UAK2	VHF	1,449	**99.52%**	**99.79%**	99.72%	99.79%	**99.79%**
EUA1	SATCOM	1,080	**99.17%**	**99.54%**	99.44%	99.63%	**99.63%**
UAK	VHF	1,032	**99.71%**	**99.90%**	99.71%	**99.90%**	**99.90%**
XXH	SATCOM	900	**98.78%**	**99.33%**	99.11%	99.67%	**99.67%**
UAK1	VHF	885	**99.77%**	**100.00%**	99.77%	**100.00%**	**100.00%**
IGW1	SATCOM	738	**97.56%**	**98.64%**	**98.24%**	99.05%	**99.05%**
KUS	VHF	492	**98.98%**	**99.59%**	99.39%	99.80%	**99.80%**
YAY	VHF	463	**99.14%**	**100.00%**	99.78%	**100.00%**	**100.00%**
YYT1	VHF	329	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
YYT	VHF	320	**99.69%**	**99.69%**	99.69%	99.69%	**99.69%**
YAY1	VHF	249	**99.60%**	**100.00%**	99.60%	**100.00%**	**100.00%**
XXF	SATCOM	185	**98.92%**	**99.46%**	**100.00%**	99.46%	**99.46%**
FLW1	VHF	111	**100.00%**	**99.10%**	**100.00%**	**100.00%**	**100.00%**
KEF	VHF	106	**99.06%**	**100.00%**	99.06%	**100.00%**	**100.00%**
YYT2	VHF	102	**98.04%**	**99.02%**	99.02%	99.02%	**99.02%**
YAY2	VHF	65	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
YHO	VHF	58	**98.28%**	**98.28%**	**98.28%**	**98.28%**	**98.28%**
YQX	VHF	48	**97.92%**	**100.00%**	**97.92%**	**100.00%**	**100.00%**
H03	HF	43	**76.74%**	**72.09%**	**79.07%**	**79.07%**	**79.07%**
SFJ	VHF	30	**96.67%**	**96.67%**	**96.67%**	**96.67%**	**96.67%**
YHO1	VHF	25	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
AGM1	VHF	25	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
YYTV	VHF	20	**95.00%**	**100.00%**	**95.00%**	**100.00%**	**100.00%**
AGM2	VHF	18	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
H07	HF	18	**77.78%**	**66.67%**	**77.78%**	**72.22%**	**72.22%**
YHO2	VHF	18	**88.89%**	**100.00%**	**88.89%**	**100.00%**	**100.00%**
REK1	VHF	15	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
H17	HF	8	**62.50%**	**37.50%**	**62.50%**	**62.50%**	**62.50%**
UAK4	VHF	6	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
HOR	VHF	5	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
YHOV	VHF	3	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
UAK3	VHF	2	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
H11	HF	2	**50.00%**	**50.00%**	**50.00%**	**50.00%**	**50.00%**
H04	HF	2	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
AGM4	VHF	1	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
H13	HF	1	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
REK2	VHF	1	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
YQX2	VHF	1	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

NAV CANADA Reporting on CPDLC performance
Period: **July 01, 2014 to December 31, 2014 (6 months)**

Color key:
Meets criteria
Under criteria

		95% RCP 240 benchmark		99.9% RCP 240 benchmark		
	Message Counts *(Wilco Received)*	**ACP <=180 sec**	**ACTP <=120 sec** *Network*	**ACP <=210 sec**	**ACTP <=150 sec** *Network*	**PORT <=60 sec** *Pilot Response*
Uplink Messages (UM)						
U027 U129	26,247	**99.09%**	**99.51%**	99.38%	99.69%	**96.79%**
U111	1,761	**99.20%**	**99.49%**	99.66%	99.66%	**98.18%**
U113	1,428	**98.88%**	**99.09%**	99.37%	99.44%	**97.97%**
U020 U129	1,312	**99.01%**	**99.31%**	99.24%	99.31%	**97.64%**
U029 U129	368	**99.18%**	**99.46%**	99.18%	99.73%	**94.57%**
U111 U027 U129	141	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**92.91%**
U113 U027 U129	39	**97.44%**	**97.44%**	**100.00%**	**100.00%**	**94.87%**
U026 U129	36	**97.22%**	**100.00%**	**97.22%**	**100.00%**	**94.44%**
U023 U129	30	**96.67%**	**100.00%**	**96.67%**	**100.00%**	**96.67%**
U111 U020 U129	7	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
U111 U029 U129	4	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
U019 U021 U046 U129	3	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
U019 U022 U046 U129	3	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**33.33%**
U019 U022 U129	2	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
U113 U029 U129	2	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
U113 U023 U129	2	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
U113 U030	1	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
U113 U020 U129	1	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
U111 U023 U129	1	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
U028 U129	1	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
Negative Value Messages Removed						
U027 U129	341					
U111	39					
U113	33					
U020 U129	26					
U029 U129	9					
U026 U129	1					
U111 U027 U129	1					
U127	1					
Aircraft Type						
A333	4,815	**99.27%**	**99.73%**	99.52%	99.88%	**99.88%**
B772	3,666	**99.40%**	**99.56%**	99.65%	99.70%	**99.70%**
A332	3,249	**99.38%**	**99.82%**	99.69%	99.88%	**99.88%**
B763	3,248	**98.71%**	**99.54%**	99.01%	99.66%	**99.66%**
B744	3,200	**99.06%**	**99.47%**	99.31%	99.72%	**99.72%**
B77W	2,763	**99.46%**	**99.78%**	99.60%	99.86%	**99.86%**
B752	2,334	**98.41%**	**98.54%**	**98.97%**	99.01%	**99.01%**
B764	1,423	**99.23%**	**99.51%**	99.44%	99.79%	**99.79%**
A343	953	**99.48%**	**99.79%**	99.69%	99.90%	**99.90%**
B788	934	**98.07%**	**98.29%**	**98.29%**	**98.39%**	**98.39%**
B77L	900	**99.33%**	**99.44%**	99.44%	99.67%	**99.67%**
A388	742	**99.33%**	**99.33%**	99.60%	99.46%	**99.46%**
A346	487	**99.18%**	**99.38%**	99.38%	99.79%	**99.79%**
B748	362	**99.45%**	**99.45%**	99.72%	99.72%	**99.72%**
C17	322	**98.14%**	**100.00%**	**98.14%**	**100.00%**	**100.00%**
B773	277	**100.00%**	**99.64%**	**100.00%**	**100.00%**	**100.00%**
MD11	258	**98.84%**	**99.61%**	**98.84%**	**100.00%**	**100.00%**
GLF5	235	**98.72%**	**99.15%**	**100.00%**	99.57%	**99.57%**
GLEX	128	**98.44%**	**99.22%**	99.22%	99.22%	**99.22%**
GLF4	111	**94.59%**	**98.20%**	**97.30%**	**98.20%**	**98.20%**
B737	111	**98.20%**	**98.20%**	**98.20%**	99.10%	**99.10%**
B762	98	**98.98%**	**98.98%**	**98.98%**	**98.98%**	**98.98%**
B777	86	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

NAV CANADA Reporting on CPDLC performance
Period: **July 01, 2014 to December 31, 2014 (6 months)**

Color key:
Meets criteria
Under criteria

		95% RCP 240 benchmark		99.9% RCP 240 benchmark		
	Message Counts *(Wilco Received)*	**ACP <=180 sec**	**ACTP <=120 sec** *Network*	**ACP <=210 sec**	**ACTP <=150 sec** *Network*	**PORT <=60 sec** *Pilot Response*
B767	81	98.77%	98.77%	100.00%	98.77%	97.53%
FA7X	67	95.52%	97.01%	100.00%	98.51%	89.55%
A310	60	96.67%	100.00%	100.00%	100.00%	96.67%
B747	57	100.00%	100.00%	100.00%	100.00%	96.49%
GL5T	48	100.00%	100.00%	100.00%	100.00%	91.67%
C5	45	100.00%	100.00%	100.00%	100.00%	95.56%
K35R	43	95.35%	100.00%	97.67%	100.00%	95.35%
GLF6	43	93.02%	95.35%	95.35%	95.35%	93.02%
A345	28	100.00%	100.00%	100.00%	100.00%	92.86%
F900	27	100.00%	100.00%	100.00%	100.00%	88.89%
B753	22	100.00%	100.00%	100.00%	100.00%	100.00%
B733	17	94.12%	94.12%	94.12%	100.00%	94.12%
A330	17	100.00%	100.00%	100.00%	100.00%	100.00%
N772	17	100.00%	100.00%	100.00%	100.00%	88.24%
F2TH	13	100.00%	100.00%	100.00%	100.00%	100.00%
BLCF	12	100.00%	100.00%	100.00%	100.00%	91.67%
B789	12	100.00%	100.00%	100.00%	100.00%	100.00%
	12	100.00%	100.00%	100.00%	100.00%	100.00%
A318	7	100.00%	100.00%	100.00%	100.00%	85.71%
A319	6	100.00%	100.00%	100.00%	100.00%	100.00%
B722	5	100.00%	100.00%	100.00%	100.00%	100.00%
B742	5	100.00%	100.00%	100.00%	100.00%	80.00%
E135	5	100.00%	100.00%	100.00%	100.00%	100.00%
CI7	4	100.00%	100.00%	100.00%	100.00%	100.00%
C40A	4	100.00%	100.00%	100.00%	100.00%	100.00%
A342	4	75.00%	100.00%	100.00%	100.00%	50.00%
B738	3	100.00%	100.00%	100.00%	100.00%	100.00%
C130	3	100.00%	100.00%	100.00%	100.00%	66.67%
CL60	3	100.00%	100.00%	100.00%	100.00%	100.00%
G280	3	100.00%	100.00%	100.00%	100.00%	100.00%
CL30	2	100.00%	100.00%	100.00%	100.00%	100.00%
B7W	2	100.00%	100.00%	100.00%	100.00%	100.00%
B736	2	100.00%	100.00%	100.00%	100.00%	100.00%
A288	2	100.00%	100.00%	100.00%	100.00%	100.00%
A320	1	100.00%	100.00%	100.00%	100.00%	100.00%
B774	1	100.00%	100.00%	100.00%	100.00%	100.00%
DC10	1	100.00%	100.00%	100.00%	100.00%	100.00%
ZZZZ	1	100.00%	100.00%	100.00%	100.00%	100.00%
GLF	1	100.00%	100.00%	100.00%	100.00%	100.00%
K35A	1	100.00%	100.00%	100.00%	100.00%	100.00%

NAV CANADA Reporting on ADS-C performance
Period: **July 01, 2014 to December 31, 2014 (6 months)**

Color key: Meets criteria / Under criteria		Message Counts	95% RSP 180 Benchmark RSP <=90 sec	99.9% RSP 180 Benchmark RSP <=180 sec
Media Type				
SATCOM		1,418,243	**97.95%**	99.32%
VHF		595,508	**99.39%**	99.62%
HF		8,456	**60.04%**	**78.00%**
All		2,022,207	**98.22%**	99.32%
Ground Earth Station (GES) providing 1000 or more (representing 99.10%) messages in the period.				
AOW2	SATCOM	296,890	**98.36%**	99.50%
AOE2	SATCOM	285,150	**98.76%**	99.57%
XXW	SATCOM	255,885	**97.36%**	99.26%
XXN	SATCOM	212,843	**98.69%**	99.58%
AME1	SATCOM	106,133	**98.36%**	99.41%
YAY	VHF	89,765	**99.58%**	99.76%
YYT1	VHF	81,893	**99.81%**	99.88%
IG1	SATCOM	80,911	**94.55%**	**98.28%**
EUA1	SATCOM	74,476	**97.86%**	99.13%
UAK2	VHF	59,210	**99.56%**	99.77%
YAY1	VHF	57,524	**99.84%**	**99.91%**
YYT	VHF	47,936	**99.40%**	99.71%
XXH	SATCOM	47,261	**97.88%**	99.19%
UAK	VHF	42,495	**99.37%**	99.71%
IGW1	SATCOM	40,991	**95.45%**	**97.95%**
UAK1	VHF	33,024	**99.26%**	99.59%
KUS	VHF	19,627	**99.37%**	99.65%
KEF	VHF	19,127	**98.79%**	99.46%
XXF	SATCOM	17,669	**97.45%**	**98.95%**
YQX	VHF	17,113	**99.77%**	99.87%
YYT2	VHF	13,293	**99.63%**	99.74%
YHO	VHF	12,694	**99.13%**	99.35%
YHO1	VHF	11,589	**99.75%**	99.89%
YAY2	VHF	10,113	**99.27%**	99.57%
BLY	VHF	9,184	**99.28%**	99.32%
REK1	VHF	8,618	**99.16%**	99.59%
YYTV	VHF	7,851	**99.90%**	**99.94%**
SFJ	VHF	6,769	**98.77%**	99.42%
FLW1	VHF	6,068	**98.52%**	99.49%
H03	HF	5,207	**62.72%**	**80.28%**
BRR1	VHF	2,706	**98.08%**	**98.41%**
AGM1	VHF	2,588	**98.34%**	**99.00%**
BYT	VHF	2,537	**98.50%**	**98.66%**
VEY	VHF	2,409	**99.05%**	99.38%
YIF	VHF	2,062	**100.00%**	**100.00%**
AGM2	VHF	1,851	**98.00%**	99.03%
SYY	VHF	1,822	**99.67%**	**100.00%**
REK2	VHF	1,708	**98.24%**	**98.77%**
YHO2	VHF	1,625	**98.15%**	**98.46%**
YFB1	VHF	1,571	**99.49%**	99.55%
H07	HF	1,438	**58.83%**	**76.98%**
YIFV	VHF	1,261	**100.00%**	**100.00%**
YHOV	VHF	1,120	**99.82%**	99.82%
YQX1	VHF	1,064	**97.65%**	**98.12%**
BRR7	VHF	1,018	**99.80%**	**100.00%**

NAV CANADA Reporting of CSP notified and ATSP detected outages

Period: **July 01, 2014 to December 31, 2014 (6 months)**

CSP Name	Media Type	Number of Unplanned Outages >10 min	Sum of Unplanned Outage (min)
Outages			
SITA	INMARSAT	3	384
ARINC	INMARSAT	2	40
	Total (Sum):	**5**	**424**

RCP 240 Availability criteria

Efficiency at 99.99%	*Max 4 per year*	*Max 52 per year*
Safety at 99.9%	*Max 48 per year*	*Max 520 per year*

Shanwick Reporting on CPDLC performance

Period: July 1st 2014 to December 31st 2014 (6 months)

Color key:
Meets criteria
Under criteria

			95% RCP 240 benchmark		99.9% RCP 240 benchmark		
		Message Counts *(Wilco Received)*	ACP <=180 sec	ACTP <=120 sec *Network*	ACP <=210 sec	ACTP <=150 sec *Network*	PORT <=60 sec *Pilot Response*
Media Type							
All		111,487	98.66%	99.48%	98.97%	99.63%	96.20%
SATCOM		100,975	98.69%	99.52%	98.99%	99.66%	96.28%
VHF		10,244	99.07%	99.79%	99.29%	99.84%	96.21%
HF		268	70.52%	75.00%	76.49%	82.46%	65.30%
SATCOM+HF							
SAT+VHF							
VHF+SAT							
HF+VHF							
VHF+HF							
Remote Ground Station (RGS) / Ground Earth Station (GES)							
H03	HF	137	66.42%	72.26%	72.99%	79.56%	59.85%
AOE2	SATCOM	38,689	98.85%	99.75%	99.12%	99.83%	96.56%
XXW	SATCOM	18,470	98.52%	99.56%	98.83%	99.63%	96.09%
EUA1	SATCOM	12,723	99.13%	99.54%	99.36%	99.61%	97.55%
XXN	SATCOM	11,460	98.75%	99.77%	99.09%	99.90%	95.35%
AOW2	SATCOM	5,772	99.08%	99.48%	99.27%	99.60%	97.04%
IG1	SATCOM	5,315	97.37%	98.23%	97.95%	98.85%	94.13%
XXF	SATCOM	4,286	98.79%	99.32%	99.14%	99.63%	96.15%
IGW1	SATCOM	3,107	96.88%	97.91%	97.39%	98.58%	94.46%
AME1	SATCOM	633	99.53%	99.84%	99.84%	99.84%	96.84%
XXH	SATCOM	515	98.45%	98.45%	99.03%	98.83%	96.89%
BYT	VHF	1,738	99.08%	99.71%	99.14%	99.71%	96.49%
BRR1	VHF	1,539	99.61%	100.00%	99.81%	100.00%	96.56%
BLY	VHF	1,076	98.79%	99.63%	99.07%	99.81%	95.91%
SYY	VHF	871	99.31%	100.00%	99.43%	100.00%	96.56%
FAE	VHF	626	98.88%	99.84%	98.88%	99.84%	96.81%
KEF	VHF	611	98.69%	100.00%	99.02%	100.00%	96.24%
LCG	VHF	438	99.54%	100.00%	99.77%	100.00%	97.49%
VEY	VHF	436	98.39%	98.39%	98.85%	99.08%	97.02%
LCG1	VHF	410	98.29%	99.27%	98.54%	99.27%	95.12%
SCQ	VHF	336	98.81%	100.00%	99.11%	100.00%	93.15%
VGO	VHF	331	100.00%	100.00%	100.00%	100.00%	94.26%
TRE	VHF	319	98.75%	100.00%	98.75%	100.00%	95.61%
BRR7	VHF	192	100.00%	100.00%	100.00%	100.00%	98.96%
REK1	VHF	186	100.00%	100.00%	100.00%	100.00%	98.39%
SCQ1	VHF	158	96.20%	100.00%	98.73%	100.00%	89.87%
OVD	VHF	121	100.00%	100.00%	100.00%	100.00%	97.52%
VGO1	VHF	105	97.14%	100.00%	98.10%	100.00%	93.33%
Uplink Messages (UM)							
U119		85,361	98.50%	99.48%	98.82%	99.61%	95.92%
U27 U129		11,877	99.25%	99.53%	99.49%	99.73%	96.92%
U20 U129		8,487	99.41%	99.66%	99.65%	99.75%	98.27%
U111		1,601	98.94%	99.19%	99.38%	99.56%	97.31%
U113		1,300	98.69%	99.23%	99.23%	99.54%	97.38%
U27 U129 U169		729	98.49%	99.04%	99.04%	99.59%	93.00%
U20 U129 U169		383	99.22%	99.48%	99.48%	99.48%	94.78%
U82 U127		332	98.19%	98.49%	98.80%	99.40%	97.59%
U29 U129		251	98.01%	99.60%	98.80%	100.00%	95.22%
U23 U129		244	98.77%	99.59%	99.18%	99.59%	96.31%
U113 U169		104	97.12%	98.08%	97.12%	98.08%	96.15%
U111 U169		74	97.30%	98.65%	97.30%	98.65%	97.30%
U111 U27 U129		72	100.00%	100.00%	100.00%	100.00%	84.72%
U82		70	98.57%	100.00%	100.00%	100.00%	94.29%
Negative Value Messages Removed							
Aircraft Type							
B763		15,325	97.75%	99.29%	98.19%	99.51%	97.01%
A333		15,312	98.94%	99.80%	99.22%	99.90%	98.17%
B772		14,461	99.17%	99.56%	99.41%	99.62%	99.02%
B744		12,905	98.16%	99.38%	98.68%	99.54%	97.13%
B77W		10,956	99.44%	99.65%	99.58%	99.81%	99.11%
A332		9,381	99.02%	99.81%	99.21%	99.87%	98.18%
B752		5,381	97.34%	98.18%	97.79%	98.68%	97.58%
B764		4,254	98.38%	99.74%	98.73%	99.86%	97.09%
B77L		3,881	99.36%	99.48%	99.46%	99.69%	99.07%
B788		3,824	98.69%	98.90%	99.03%	99.01%	99.32%
A343		3,519	98.92%	99.89%	99.03%	99.89%	98.07%
A388		2,771	99.31%	99.60%	99.53%	99.82%	99.28%
A346		2,558	99.14%	99.92%	99.34%	99.96%	98.32%
B748		1,925	99.53%	99.64%	99.69%	99.64%	99.64%
MD11		1,111	97.66%	99.37%	98.11%	99.82%	97.21%
C17		855	98.83%	99.88%	99.18%	99.88%	95.91%
GLF5		718	97.49%	98.19%	98.19%	98.47%	98.19%
GLEX		507	98.22%	99.61%	98.42%	99.80%	96.06%
B737		258	98.84%	100.00%	99.61%	100.00%	97.67%
K35R		230	99.13%	99.57%	99.13%	99.57%	96.96%
FA7X		229	98.69%	98.25%	99.13%	98.69%	99.56%
GLF4		194	98.45%	97.94%	98.97%	98.97%	97.42%
GL5T		192	95.83%	100.00%	97.40%	100.00%	94.27%
GLF6		176	95.45%	95.45%	97.73%	97.16%	97.73%
A318		105	91.43%	99.05%	92.38%	100.00%	90.48%

Shanwick Reporting on ADS-C performance
Period: July 1st 2014 to December 31st 2014 (6 months)

Color key: Meets criteria Under criteria		Message Counts	95% RSP 180 Benchmark RSP <=90 sec	99.9% RSP 180 Benchmark RSP <=180 sec
Media Type				
All		1,688,817	98.57%	99.51%
SATCOM		1,356,379	98.49%	99.50%
VHF		326,018	99.55%	99.82%
HF		6,420	65.98%	85.59%
Ground Earth Station				
H03	HF	3,711	67.64%	87.12%
H07	HF	1,401	65.45%	87.58%
AOE2	SATCOM	435,348	98.68%	99.67%
XXW	SATCOM	227,761	98.74%	99.53%
XXN	SATCOM	187,203	98.66%	99.61%
AOW2	SATCOM	157,549	99.24%	99.71%
EUA1	SATCOM	129,923	98.41%	99.40%
IG1	SATCOM	72,367	96.19%	98.55%
AME1	SATCOM	44,090	98.97%	99.54%
IGW1	SATCOM	40,683	96.09%	98.35%
XXF	SATCOM	37,665	97.57%	99.31%
XXH	SATCOM	23,552	98.53%	99.49%
BLY	VHF	49,294	99.62%	99.84%
KEF	VHF	27,122	99.34%	99.77%
BYT	VHF	24,170	99.19%	99.73%
BRR1	VHF	18,416	99.21%	99.69%
SYY	VHF	12,911	99.85%	99.95%
REK1	VHF	12,577	99.48%	99.82%
TRE	VHF	8,408	99.89%	99.96%
VEY	VHF	7,885	99.59%	99.82%
BRR7	VHF	6,941	99.83%	99.96%
FLW1	VHF	6,622	99.00%	99.62%
UAK2	VHF	6,238	99.90%	99.95%
BES3	VHF	6,131	99.97%	99.98%
SYY1	VHF	6,122	99.40%	99.97%
BES	VHF	5,658	99.88%	99.98%
REK2	VHF	5,555	99.64%	99.84%
UAK	VHF	5,544	99.84%	99.95%
GLA3	VHF	5,500	99.96%	99.98%
LEQ1	VHF	5,413	99.58%	99.74%
LEQ7	VHF	4,714	99.94%	99.96%
LCG1	VHF	4,065	99.26%	99.78%
JER	VHF	3,744	99.87%	99.95%
UAK1	VHF	3,474	99.80%	99.91%
NCL	VHF	3,428	99.91%	99.97%
ORK1	VHF	3,301	98.49%	99.00%
OVD7	VHF	3,003	99.80%	99.97%
BES1	VHF	2,965	99.70%	99.97%
SYY7	VHF	2,878	99.79%	99.93%
BLYV	VHF	2,864	99.69%	99.93%
VGO	VHF	2,794	99.25%	99.75%
FAE	VHF	2,792	99.79%	99.96%
BYTV	VHF	2,704	99.85%	99.85%
NCL7	VHF	2,581	99.96%	100.00%
JER7	VHF	2,578	99.92%	99.96%
EMA	VHF	2,035	100.00%	100.00%
DUB7	VHF	1,989	100.00%	100.00%
LHR3	VHF	1,969	100.00%	100.00%
SCQ	VHF	1,933	99.43%	99.74%
OXF	VHF	1,908	99.79%	99.95%
KUS	VHF	1,596	99.19%	99.62%
SNN3	VHF	1,545	100.00%	100.00%
TREV	VHF	1,490	99.53%	99.60%
BFS1	VHF	1,251	99.36%	100.00%
LCY	VHF	1,215	100.00%	100.00%
VGO1	VHF	1,150	97.65%	99.22%
SCQ1	VHF	1,112	98.74%	99.55%
OVD1	VHF	1,080	99.63%	100.00%
LRT1	VHF	1,077	99.54%	99.81%
LCG	VHF	1,071	99.07%	99.72%
NQY1	VHF	1,006	99.40%	99.90%

APPENDIX J — 2014 ANNUAL SAFETY REPORT & SAFETY PRIORITIES AND TARGETS SUMMARY

(*paragraph 6.2.1 refers*)

- RESTRICTED -

This Appendix is provided separately.

APPENDIX K — TERMS OF REFERENCE OF THE NAT eANP PROJECT TEAM

(*paragraph 7.1.8 refers*)

NORTH ATLANTIC AIR NAVIGATION PLAN (eANP) PROJECT TEAM (NAT eANP PT)

Terms of Reference

The NAT eANP Project Team is established by the NAT SPG to enable the timely completion of the proposals for amendments of the new eANP of the ICAO NAT Region. Its terms of reference include the following:

1. Further refine and finalise the currently developed templates of the NAT eANP Volumes I and II and propose future changes of the existing templates;
2. Collect data for the tables in Volume II and submit all necessary changes to the Secretariat;
3. Develop Volume III in accordance with direction provided by NAT SPG with regards to further work to the relevant NAT Documents; and
4. Finalize the three Volumes for presentation to NAT IMG/47 (Fall 2015) and further endorsement by NAT SPG for proposals for amendments to be processed.

Composition

The NAT eANP Project Team is composed of experts nominated by the NAT SPG members, observers and ICAO Secretariat, supported by the NAT DMO.

Working methods

The NAT eANP Project Team conducts its meetings via electronic communications means as far as practicable and face to face meetings, when required.

The *Rapporteur* of the NAT eANP Project Team will be provided by the ICAO Secretariat.

The NAT eANP Project Team reports to the NAT SPG.

APPENDIX L — PFA TO THE SUPPS, ON IMPLEMENTATION OF 30 NM OR 50 NM LONGITUDINAL AND 30 NM OR 50 NM LATERAL SEPARATION MINIMA IN SANTA MARIA

(*paragraph 7.3.3 refers*)

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

a) **Regional Supplementary Procedures:**

Doc 7030/5 – **Error! Unknown document property name.**

b) **Proposed by:**

North Atlantic Systems Planning Group

c) **Proposed amendment:**

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

1. *Modify* the following in NAT SUPPs, Chapter 4 – Navigation, *4.1.1 Area navigation (RNAV) specifications*:

4.1.1 Area navigation (RNAV) specifications

4.1.1.1 RNAV 10 (RNP 10)

Note.— RNAV 10 retains the RNP 10 designation, as specified in Doc 9613, 1.2.3.5.

4.1.1.1.1 The RNP 10 specification shall be applicable to navigation systems used to support the separation minima specified in 6.2.1.1 ~~c)~~ b) when published in State AIPs. Additionally, the navigation performance shall be measured to ensure that the following criteria are met in order for this separation minima to be utilized in the New York Oceanic East FIR and Santa Maria Oceanic FIR:

a) the proportion of the total flight time spent by aircraft 46 km (25 NM) or more off the cleared track shall be less than 9.11×10^{-5}; and

b) the proportion of the total flight time spent by aircraft between 74 and 111 km (40 and 60 NM) off the cleared track shall be less than 1.68×10^{-5}.

…

2. *Modify* the following in NAT SUPPs, Chapter 4 – Navigation, *4.1.2 Required navigation performance (RNP) specifications*:

4.1.2 Required navigation performance (RNP) specifications

4.1.2.1 RNP 4

4.1.2.1.1 The RNP 4 specification shall be applicable to navigation systems used to support the separation minima specified in 6.2.1.1 a) and b) and 6.2.2.2 a) when published in State AIPs. Additionally, the navigation performance shall be measured to ensure that the following criteria are met in order for this separation minima to be utilized in the New York Oceanic East FIR and Santa Maria Oceanic FIR:

1) the proportion of the total flight time spent by aircraft 28 km (15 NM) or more off the cleared track shall be less than 5.44×10^{-5}; and

2) the proportion of the total flight time spent by aircraft between 44 and 67 km (24 and 36 NM) off the cleared track shall be less than 1.01×10^{-5}.

…

3. Modify the following in NAT SUPPs, Chapter 6 – Air Traffic Services, *6.2.1 Lateral* and *6.2.2 Longitudinal*:

6.2 SEPARATION

6.2.1 Lateral
(A11 – Attachment B; P-ATM – Chapter 5)

6.2.1.1 Minimum lateral separation shall be:

a) 55.5 km (30 NM) between aircraft operating within the control area of the New York Oceanic East FIR and Santa Maria Oceanic FIR provided that the following conditions are met:

1) navigation – RNP 4 specification in accordance with the provisions of 4.1.2.1;

2) communication – CPDLC shall be monitored against RCP 240; and

3) surveillance – ADS-C shall be monitored against RSP 180.

Note – Guidance concerning RCP and RSP specifications, application and performance requirements can be found in the Global Operational Data Link Document (GOLD).

b) 93 km (50 NM) between aircraft operating in the New York Oceanic East FIR and Santa Maria Oceanic FIR meeting RNP 10 or RNP 4 specification in accordance with the provisions of 4.1.1.1 or 4.1.2.1, respectively.

c) 110 km (60 NM) between aircraft which meet the minimum navigation performance specifications (MNPS) provided that a portion of the route of the aircraft is within, above, or below MNPS airspace;

Note.— NAT MNPS airspace is defined in 4.1.1.5.1.1.

d) 167 km (90 NM) between aircraft operating outside the MNPS airspace and at least one aircraft does not meet the MNPS:

1) between the Iberian Peninsula and the Azores Islands; and

2) between Iceland and points in Scandinavia and in the United Kingdom;

e) 167 km (90 NM) between aircraft not approved RNP 10 or RNP 4 operating outside MNPS airspace where no portion of the route of the aircraft is within, above, or below MNPS airspace:

1) between the United States/Canada and Bermuda; and

2) west of 55°W between the United States, Canada or Bermuda and points in the

CAR Region;

Note.— MNPS airspace is defined in 4.1.1.5.1.1

f) 223 km (120 NM) between other aircraft;

except that lower minima in 5.4.1.1.2 of the PANS-ATM may be applied, or further reduced in accordance with 5.11 when the conditions specified in the relevant PANS-ATM provisions are met (see 5.4).

6.2.1.2 In the practical application of the minima in 6.2.1.1 c), d), e) and f), tracks may be spaced with reference to their difference in latitude, using one degree instead of 110 km (60 NM); one and one-half degrees instead of 167 km (90 NM); and two degrees instead of 223 km (120 NM), provided that in any interval of ten degrees of longitude, the change in latitude of at least one of the tracks does not exceed:

a) three degrees at or south of 58°N;

b) two degrees north of 58°N and south of 70°N; and

c) one degree at or north of 70°N and south of 80°N.

At or north of 80°N, or where the above rates of change of latitude are exceeded, the required lateral separation must be ensured by reference to the track spacing expressed in nautical miles.

6.2.2 Longitudinal
(P-ATM – Chapter 5)

6.2.2.1 Minimum longitudinal separation based on time between turbo-jet aircraft shall be:

a) 15 minutes; or

b) 10 minutes, provided the Mach number technique is applied whether in level, climbing or descending flight; and the aircraft concerned have reported over a common point to follow continuously diverging tracks until some other form of separation is provided; and:

1) at least 10-minute longitudinal separation exists at the point where the tracks diverge; and

2) at least 5-minute longitudinal separation exists where lateral separation is achieved; and

3) lateral separation will be achieved at or before the next significant point (normally ten degrees of longitude along track(s)) or, if not, within 90 minutes of the time the second aircraft passes the common point or within 1 112 km (600 NM) of the common point, whichever is estimated to occur first.

Note.— The minima contained in 6.2.2.1 b) are in addition to those found in the PANS-ATM, 5.4.2.4.

6.2.2.2 Minimum longitudinal separation based on distance between turbo-jet aircraft shall be:

a) 93 km (50 NM) between aircraft operating within the control area of the New York Oceanic East FIR and Santa Maria Oceanic FIR provided that the following conditions are met:

1) navigation – RNP 10 or RNP 4 specification in accordance with the provisions of 4.1.1.1 or 4.1.2.1, respectively;

2) communication – CPDLC shall be monitored against RCP 240; and

3) surveillance – ADS-C shall be monitored against RSP 180.

Note – Guidance concerning RCP and RSP specifications, application and performance requirements can be found in the Global Operational Data Link Document (GOLD).

b) 55.5 km (30 NM) between aircraft operating within the control area of the New York Oceanic East FIR and Santa Maria Oceanic FIR provided that the following conditions are met:

1) navigation – RNP 4 specification in accordance with the provisions of 4.1.2.1;

2) communication – CPDLC shall be monitored against RCP240; and

3) surveillance – ADS-C shall be monitored against RSP 180.

Note.– Guidance concerning RCP and RSP specifications, application and performance requirements can be found in the Global Operational Data Link Document (GOLD).

d) **Date when proposal received:**

26 June 2015

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

1. In accordance with ICAO Doc 4444, the distance-based separation minima values available for application in oceanic and remote airspace are 50 NM longitudinal, 30 NM longitudinal, 50NM lateral and 30 NM lateral, provided that a set of requirements are met or exceeded which includes that aircraft be authorized for RNP-10 or RNP-4, have direct pilot-controller voice communication or CPDLC and provide ADS-C position reports.
2. This proposed amendment follows the Concept of Operations for the application of 30 NM or 50 NM longitudinal separation and 30 NM or 50 NM lateral separation in the control area (CTA) of Santa Maria Oceanic FIR which was endorsed by the NAT IMG and contributory sub-groups, available on the ICAO NAT/EUR website.
3. The use of these separation standards has been implemented within the New York East Oceanic FIR adjacent to Santa Maria Oceanic FIR since December 2013, thus alignment of the application of the same separation minima is a relevant driver for submitting this proposal.
4. The application of the reduced separation minima enables level changes to transition through or to transition to the level of a longitudinally adjacent aircraft not presently available with the 10-minute longitudinal separation standard with Mach Number Technique (MNT) thus allows enhancement of airspace efficiency significantly.

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

Upon approval by Council

g) **Action by the Secretary General:**

The proposal has been circulated to the following States and international organizations.

To be completed by Secretariat.

h) **Secretariat's comments:**

To be completed by Secretariat.

APPENDIX M — PFA TO THE SUPPS, ON NAT REGION POLICY FOR EQUIPAGE WITH AND OPERATION OF ACAS II

(*paragraph 7.4.3 refers*)

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

a) **Regional Supplementary Procedures:**

Doc 7030/5 – **Error! Unknown document property name.**

b) **Proposed by:**

North Atlantic Systems Planning Group

c) **Proposed amendment:**

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

Modify the NAT SUPPs, Chapter 5 – Surveillance, 5.3.1 *Carriage and operation of ACAS II* as follows:

5.3.1 Carriage and operation of ACAS II

(A2 – Chapter 3; A6, Part I – Chapter 6; A6, Part II – Chapter 3.6; A10, Vol IV; A11- Chapter 2; P-OPS, Part III, Vol. I; P-ATM – Chapters 4 and 10)

~~5.3.1.1 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.~~ Nil.

d) **Date when proposal received:**

26 June 2015

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

Adopting the word "Nil" for paragraph 5.3.1.1 would harmonize the NAT Region with the other ICAO regions by relying on ICAO Annex 6 Part I and Part II global standards for aircraft ACAS equipage and ICAO Doc 8168 (PANS OPS) direction for ACAS II operation.

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

Upon approval by Council

g) **Action by the Secretary General:**

The proposal has been circulated to the following States and international organizations.

To be completed by Secretariat.

h) **Secretariat's comments:**

To be completed by Secretariat.

APPENDIX N — PROPOSED NEW "NAT DOCUMENTS PROMULGATED BY THE NAT SPG" SECTION

(paragraph 7.7.4 refers)

NAT DOCUMENTS PROMULGATED BY THE NAT SPG

~~NUMBER~~ REFERENCE	TITLE	~~TITLE & *notes on*~~ *Configuration management and notes*	~~CURRENT EDITION/VERSION~~
NAT Doc 001	NAT SPG Handbook	Amendments approved by NAT SPG. New revisions as follows: - *NAT SPG Representatives*: kept up-to-date by the Secretariat upon reception of nomination to the NAT SPG. - *Appendix A – Status of Documents*: kept up-to-date by the Secretariat upon approval or revision of a NAT Document promulgated by the NAT SPG.	~~First Edition Amendment 3 - July 2014~~
NAT Doc 002	The North Atlantic Common Coordination Interface Control Document (NAT CC ICD)	Kept under review by NAT CNSG - Amendments approved by NAT IMG	~~Version 1.3.1 September 2012~~ ~~Version 1.3.0 - September 2011 becomes effective 15 November 2012~~
NAT Doc 003	High Frequency Management Guidance Material for the North Atlantic Region	Kept under review by NAT ACSG of the NAT CNSG - Amendments approved by NAT IMG	~~Version 2.0 November 2012~~
NAT Doc 004	Common Aeradio Communications Interface Control Document	Kept under review by NAT CNSG - Amendments approved by NAT IMG	~~Version 1.4 November 2011~~
NAT Doc 005	Future ATM Concept of Operations for the North Atlantic Region	Kept under review by NAT IMG - Amendments approved by NAT SPG	~~*2nd Edition, November 2012*~~

~~NUMBER~~ **REFERENCE**	**TITLE**	~~TITLE & *notes on*~~ ***Configuration management and notes***	~~CURRENT EDITION/VERSION~~
NAT Doc 006	Part I – Air Traffic Management Operational Contingency Plan – North Atlantic Region	Kept under review by NAT IMG - Amendments approved by NAT SPG	~~First Edition Amendment 07, July 2013~~
	Part II – Volcanic Ash Contingency Plan – ~~EUR and~~ NAT Region~~s (also designated as EUR Doc 019)~~	Kept under review by NAT IMG - Amendments approved by NAT SPG	~~December 2010~~
NAT Doc 007	*North Atlantic Operations and Airspace Manual*	Kept under review by the NAT DMO - Amendments approved by NAT SPG. New revisions as follows: *- Attachment 6 – Flight Level Allocation Scheme (FLAS):*: kept under review by the NAT ATM, revision approved by the NAT IMG *new name as of 2012, NAT SPG Conclusion 48/24 refers. Former name "Guidance Concerning Air Navigation In and Above the North Atlantic MNPS Airspace"*	~~Edition 2013 Amendment 1~~
NAT Doc 008	Application of Separation Minima – North Atlantic Region (NAT ASM)	Application of Separation Minima – North Atlantic Region *Kept under review by NAT ATMG - Amendments approved by NAT IMG after coordination with NAT SOG*	~~1st Edition Amendment 2, June 2013~~
NAT Doc 009	Service Development Roadmap – North Atlantic Region (NAT SDR)	Service Development Roadmap – North Atlantic Region (NAT SDR) *Kept under review by the NAT IMG and its contributory groups - Amendments approved by NAT SPG*	~~1st Edition August 2013~~
	Minimum Monitoring Requirements: North Atlantic RVSM ~~Including the West Atlantic Route System~~	Minimum Monitoring Requirements: North Atlantic RVSM Including the West Atlantic Route System *Kept under review by NAT CMA - Amendments approved by NAT SOG*	~~29 June 2010~~

~~NUMBER~~ **REFERENCE**	**TITLE**	~~TITLE & *notes on*~~ ***Configuration management and notes***	~~CURRENT EDITION/VERSION~~
NAT OPS Bulletins have individual serial numbers	NAT Operations Bulletins	Content is managed by originators - originators are noted on the cover pages Note – The NAT OPS Bulletins Checklist lists the currently valid NAT OPS Bulletins ~~Content is managed by originators - originators are noted on the cover pages~~	~~NAT OPS Bulletins have individual validity dates~~
	NAT Oceanic Errors Safety Bulletin	Kept under review by NAT SG - Amendments approved by NAT SOG ***Note:*** *the NAT Oceanic Error Safety (OES) Bulletin (NAT OESB) is used to distribute information on best practices used to avoid errors when operating in the NAT Region. The NAT OESB is mainly addressed to the attention of pilots and dispatchers. The material contained in the NAT OESB is developed within the working structure of the NAT SPG and reviewed on a regular basis*	~~Regularly updated and issued as NAT OES Bulletins~~
	NAT Sample Oceanic Checklists (NAT OES Bulletin Supplements)	Kept under review by NAT SG - Amendments approved by NAT SOG ***Note:*** *the NAT Sample Oceanic Checklist (NAT SOC) is a companion document of the NAT OESB. The material contained in the NAT SOC is developed within the working structure of the NAT SPG and reviewed on a regular basis*	~~Regularly updated and issued as NAT OES Bulletin Supplements~~
~~GOLD~~	~~*Global Operational Data Link Document*~~	~~The NAT SPG has adopted the *Global Operational Data Link Document* (GOLD) as regional guidance for use by States and airspace users as the basis for operating Automatic Dependent Surveillance-Contract (ADS-C) and Controller Pilot Data Link Communications (CPDLC) in the ICAO NAT Region. This document has also been endorsed by the Asia/Pacific Air Navigation Planning and Implementation Management Group (APANPIRG). Configuration control is, accordingly, subject to coordination and not solely under the control of the NAT SPG.~~	~~Edition 2.0 (2013)~~
~~SVGM~~	~~Satellite Voice Guidance Material~~		~~Edition 1 – 24 July 2012~~

APPENDIX O — NEW APPENDIX A TO NAT DOC 001 – STATUS OF NAT DOCUMENTS PROMULGATED BY THE NAT SPG

(paragraph 7.7.4 refers)

REFERENCE	TITLE	CURRENT EDITION/VERSION/REVISION
NAT Doc 001	NAT SPG Handbook	~~First Edition – Amendment 3~~ Version 1.3 July 2014
NAT Doc 002	North Atlantic Common Coordination Interface Control Document (NAT CC ICD)	Version 1.3.1 September 2012
NAT Doc 003	High Frequency Management Guidance Material for the North Atlantic Region	Version 2.0 November 2012
NAT Doc 004	Common Aeradio Communications Interface Control Document	Version 1.4 November 2011
NAT Doc 005	Future ATM Concept of Operations for the North Atlantic Region	*2nd Edition,* *November 2012*
NAT Doc 006	Part I – Air Traffic Management Operational Contingency Plan – North Atlantic Region	~~First Edition – Amendment 08~~ Version 1.8 November 2014
	Part II – Volcanic Ash Contingency Plan –NAT Regions	Edition Provisional 2014
NAT Doc 007	*North Atlantic Operations and Airspace Manual* Kept under review by the NAT DMO - Amendments approved by NAT SPG* ** new name as of 2012, NAT SPG Conclusion 48/24 refers. Former name "Guidance Concerning Air Navigation In and Above the North Atlantic MNPS Airspace"*	Edition 2014/2015 ~~Amendment 1~~
NAT Doc 008	Application of Separation Minima – North Atlantic Region *Kept under review by NAT ATMG - Amendments approved by NAT IMG after coordination with NAT SOG*	~~1st Edition – Amendment 4~~ Version 1.4 June 2015
NAT Doc 009	Service Development Roadmap – North Atlantic Region (NAT SDR)	~~1st Edition – Amendment 2~~ Version 1.2 August 2014
	Minimum Monitoring Requirements: North Atlantic RVSM Including the West Atlantic Route System	29 June 2010
NAT OPS Bulletins have individual serial numbers	NAT Operations Bulletins	NAT OPS Bulletins have individual validity dates: The NAT OPS Bulletins Checklist lists the currently valid NAT OPS Bulletins
	NAT Oceanic Errors Safety Bulletin	Regularly updated and issued as NAT OES Bulletins
	NAT Sample Oceanic Checklists (NAT OES Bulletin Supplements)	Regularly updated and issued as NAT OES Bulletin Supplements

REFERENCE	TITLE	CURRENT EDITION/VERSION/REVISION
~~GOLD~~	~~*Global Operational Data Link Document*~~	~~Edition 2.0 (2013)~~ ~~***Note:** the GOLD Edition 2.0 is frozen in order to allow the progress of the work at global level aiming at approving GOLD as a global ICAO document. (NAT SPG Conclusion 49/20 refers)*~~
~~SVGM~~	~~Satellite Voice Guidance Material V-1~~	~~Edition 1 – 24 July 2012~~ ~~***Note:** revised cover page : 3 April 2013*~~

APPENDIX P — REVISED "NAT SPG POLICES" SECTION OF NAT DOC 001

(paragraph 7.7.9 refers)

IMPLEMENTATION OF DATA LINK POLICIES

NAT SPG Conclusion 42/06 – Operational Status of the FANS 1/A ADS and CPDLC Trials

That the Future Air Navigation Systems (FANS) Automatic Dependent Surveillance (ADS) Waypoint Position Report (WPR) and Controller Pilot Data Link Communications (CPDLC) trials be declared operational with the following provisos:

a) phase IV CPDLC has been implemented;

b) the current strategic operating concept remains the basis for service provision;

c) the current HF system remains;

d) continuous monitoring of system performance is carried out by the FCMA, with at least an annual report being provided to the SMCG.

NAT SPG Conclusion 44/06 – Data Link Harmonisation Strategy

That the Secretariat update the entries in the NAT SPG Handbook to replace NAT SPG Conclusion 43/1 with the following:

a) Any additional aircraft implementation of Automatic Dependent Surveillance – Contract (ADS-C) should either;

i) utilise without change the existing DO-258A/ED-100A1 (FANS 1/A) ADS-C, or

ii) move to the full implementation of the internationally agreed common technical definition that will be defined based on relevant provisions and guidance material (Manual of Air Traffic Services Data Link Applications (Doc 9694)) developed by ICAO and its technical bodies

Partial or divergent aircraft data link evolutions should not be pursued, as they will continue to promote divergent paths to the detriment to the broader community. Interim steps or phases toward full implementation of the common technical definition in ground systems should only be pursued on a regional basis, after coordination between all States concerned.

b) Any additional aircraft implementation of Controller Pilot Data Link Communications (CPDLC) should either;

i) utilise without change the existing DO-258A/ED-100A (FANS 1/A) or DO-280B/ED-110B (ATN) CPDLC for ACM/ACL/AMC data link services, or

ii) move to the full implementation of the internationally agreed common technical definition, based on Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444), and other operational material as appropriate

Partial or divergent aircraft data link evolutions that result in excluding messages from aircraft systems should not be pursued, as they will continue to promote divergent paths to the detriment to the broader community. Interim steps or phases toward full implementation of the common technical definition in ground systems should only be pursued on a regional basis, after coordination between all States concerned.

[1] *RTCA/EUROCAE Interoperability Requirements for ATS Applications Using ARINC 622 Data Communications (FANS 1/A INTEROP Standard)*

c) Harmonization of operational procedures for implementation of the above packages is considered essential. States, planning and implementation regional groups, air navigation services providers and other ATS coordinating groups should adopt common procedures to support seamless ATS provision across flight information region boundaries, rather than each State or Region developing and promulgating unique procedures for common functions.

NAT SPG Conclusion 45/12 – Inter-regional coordination of data link requirements

That the ICAO Regional Director, Europe and North Atlantic, on behalf of the NAT SPG:

a) coordinate with adjacent regions to facilitate a mutual understanding and harmonisation of data link equipage requirements and implementation plans between the NAT and adjacent regions; and

b) provide updates to the NAT SPG to support maintenance of the NAT data link implementation plan.

NAT SPG Conclusion 46/02 – NAT Region Data Link Mandate

That:

a) the United Kingdom submit the North Atlantic Regional Supplementary Procedures proposal for amendment (PfA) regarding a NAT Region data link mandate, as provided at Appendix F to this report, to the European and North Atlantic Office of ICAO as soon as possible;

b) the ICAO Regional Director, European and North Atlantic, process the submitted PfA in accordance with the formal procedure;

c) the NAT Implementation Management Group (NAT IMG) undertake a study to determine the vertical and horizontal limits of the area of application of the NAT Region data link mandate;

d) the NAT IMG undertake a study to specify the accommodation procedures for aircraft unable to equip in the framework of the NAT Region data link mandate;

e) the NAT IMG develop guidance material on the application of the NAT Region data link mandate to operators and aircraft; and

f) the NAT IMG report progress to NAT SPG/47.

NAT SPG Conclusion 47/01 – Vertical and horizontal limits of airspace associated with the ICAO NAT Region Data Link Mandate (C 47/01)

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

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 below and identified as such on the NAT Track Message.

~~Appendix D of the NAT SPG/47 Report:~~

~~Appendix D~~ Designation of Core Tracks

(*NAT SPG/47 Report*, Paragraph 3.1.4 refers)

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

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

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

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

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

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

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

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

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

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

~~NAT SPG Conclusion 48/10 –~~ Acceptability of various sub-networks' performance for FANS 1/A data link services (C 48/10, C 49/13)

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.

~~NAT SPG Conclusion49/13 – Acceptability of I4 Classic Aero sub-network for FANS 1/A data link services~~

That FANS 1/A over Inmarsat I4 Classic Aero sub-network demonstrate performance acceptable for the use of data link services on a continuous basis.

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SAFETY RELATED POLICIES

~~**NAT SPG Conclusion 42/01**~~ **ICAO provisions with specific applicability dates (C 42/01)**

~~That:~~

a) States ~~be~~ are invited to take appropriate action to achieve timely implementation of the ICAO provisions having a specific applicability date;

b) States experiencing difficulties to achieve timely implementation of those provisions ~~be~~ are invited to seek assistance and advice from the Regional Office with a view to overcome the difficulties; and

c) the ICAO Regional Director ~~identify means to~~ provides assistance and advice as appropriate as provided for in the unified strategy.

~~**NAT SPG Conclusion 43/04 Determination of an appropriate value for the safety case to support a reduction to ½ degree track spacing**~~

~~That the NAT Implementation Management Group (NAT IMG) ensure that all safety analyses supporting the implementation of ½ degree track spacing use a value that accommodates the requirements of the Gentle Slope Rules for the proposed lateral spacing between tracks.~~

~~**NAT SPG Conclusion 45/5**~~ **Exchange of safety management related information (C 45/05)**

That, recognising the importance of all NAT SPG contributory groups being aware of safety management issues in the NAT Region and thereby maximising contributions to the resolution of these issues and to facilitate the exchange of safety management information, each meeting of every NAT SPG contributory group shall:

a) review the safety management sections of the most recent reports of all other NAT SPG contributory groups; and

b) document any relevant comments in the safety management section of their own report.

~~**NAT SPG Conclusion 45/14**~~ **Convening NAT users meeting (C 45/14)**

That ICAO, on the basis of a recommendation from the NAT Implementation Management Group (NAT IMG) or of the NAT Safety Oversight Group (NAT SOG) and with the assistance of NAT service providers convene Conferences from time to time to explain to those directly involved with operations in the NAT Region current and future developments, especially those that affect safety.

~~**NAT SPG Conclusion 45/17**~~ **Establishment of a NAT Data Link Monitoring Agency (NAT DLMA) (C 45/17)**

~~That the:~~

a) The United States established by 31 December 2009 a NAT DLMA;

b) NAT Implementation Management Group coordinates all safety related matters with the NAT Safety Oversight Group; and

~~c) NAT IMG provide a report to NAT SPG/46.~~

~~**NAT SPG Conclusion 45/25 –**~~ **Implementation of Air Traffic Services (ATS) Inter-Facility Data Communication (AIDC) throughout the NAT Region (C 45/25)**

~~That:~~

a) all States ~~make arrangements to~~ fully implement AIDC, including the re-negotiation function~~, by 15 November 2012~~;

~~b) the NAT Implementation Management Group (NAT IMG) oversee the development of a detailed implementation plans to assist Air Navigation Service Providers (ANSP) to meet the 15 November 2012 date;~~

~~c)~~b) the NAT IMG direct its contributory groups to assist in the development of a harmonised multi-regional AIDC Interface Control Document (ICD);

~~d)~~c) the NAT Safety Oversight Group keep under review the impact that the gradual implementation of AIDC may have on reducing risk; and

~~e)~~d) the NAT SPG be provided with regular progress reports.

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

~~That the NAT SPG:~~

~~a) adopts the safety Key Performance Indicators (KPI) in the area of safety for the ICAO NAT Region as amended by NAT SPG Conclusion 49/02 below;~~

~~b) adds 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.~~

~~**NAT SPG Conclusion 49/02 – Amendments to the**~~ **list of safety key performance indicators for the ICAO NAT Region (C 48/18, C 49/02)**

That the list of Key Performance Indicators (KPI) in the area of safety for the ICAO NAT Region ~~be amended~~ is as follows:

(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 involving data link equipped aircraft;

(iv) number of LHD events involving non data link equipped aircraft;

(v) number of minutes that data link equipped aircraft spend at the wrong flight level~~;~~

(vi) number of minutes that non data link equipped aircraft spend at the wrong flight level;

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

(viii) number of Gross Navigation Error (GNE) events involving data link equipped aircraft;

(ix) number of GNE events involving non data link equipped aircraft;

(x) performance in the lateral dimension against the lateral TLS; and

(xi) number of losses of separation.

~~**NAT SPG Conclusion 48/21 –**~~ **Lateral deviation classifications (C 48/21)**

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 iIntervention 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 pPrevention 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.

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IMPLEMENTATION PLANNING POLICIES

~~**NAT SPG Conclusion 27/22 –**~~ **Definition of ~~a~~ Target Level~~s~~ of Safety (TLS) ~~for the Implementation of the Reduced VSM in the NAT Region~~ (C 27/22, C 33/06, C 47/04)**

~~That~~ the TLS ~~be~~ is defined) for the Implementation of the Reduced VSM in the NAT Region as follows:

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

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

~~**NAT SPG Conclusion 33/06 – Target Level of Safety (TLS) to support reductions in longitudinal separation minima**~~

~~That~~ a TLS of 5.0 x 10^{-9} fatal accidents per flight hour ~~be~~ is used for planning purposes in carrying out the work required to sustain reductions in longitudinal separation minima.

~~**NAT SPG Conclusion 47/04 – Target Level of Safety (TLS) to support reductions in lateral separation minima**~~

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

~~**NAT SPG Conclusion 43/05 –**~~ **Changes to the NAT IMG work programme to take account of global planning (C 43/05)**

~~That~~ the NAT Implementation Management Group (NAT IMG) shall:

a) adjust its work programme to include specific reductions in lateral and longitudinal separation minima based on definable improvements to Communications Navigation Surveillance (CNS) performance; and

b) provide the NAT SPG with regular updates.

~~**NAT SPG Conclusion 48/02 – Updated**~~ **NAT RLatSM Concept of Operations (C 48/02)**

~~That:~~

~~a) the NAT Implementation 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 1 July 2012; and~~

~~c) this conclusion supersedes NAT SPG Conclusion 47/02.~~

~~a)~~ ~~Appendix D of the NAT SPG/48 Report~~:

~~***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* NAT MNPS to PBN Transition Plan for the ICAO NAT Region.

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

Note 1 – 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).*

~~NAT SPG Conclusion 47/06 –~~ ADS-B Eligibility List for the ICAO NAT Region (C 47/06)

~~That~~ Canada shall 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.

~~NAT SPG Conclusion 47/05 –~~ Approval of the *NAT Performance Based Communication and Surveillance Implementation Plan* (former NAT RCP and ADS-C Surveillance Performance based operations implementation plan)[2] (C 47/05)

~~That:~~

~~a)~~ the *NAT Performance Based Communication and Surveillance Implementation Plan* (former NAT RCP and ADS-C Surveillance Performance based operations implementation plan ~~(Appendix G [of the NAT SPG/47 report] refers)~~ ~~be~~ is 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.~~

~~NAT SPG Conclusion 49/03 – Updated NAT PBCS Implementation Plan~~

~~That the ICAO Regional Director, Europe and North Atlantic take appropriate actions to publish and promulgate the updated NAT Performance Based Communication and Surveillance (PBCS) Implementation Plan V.2013.1 and the NAT PBCS Status Report V.2013.1.~~

~~NAT SPG Conclusion 48/07 –~~ Applicability of communication and surveillance performance specifications (C 48/07)

~~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,

[2] ~~re titled "*NAT Performance Based Communication and Surveillance Implementation Plan*" (NAT IMG/40 2012)~~

the *NAT Performance Based Communication and Surveillance Implementation Plan* would be amended.

~~**NAT SPG Conclusion 49/05 —**~~**RCP and RSP for RLatSM and RLongSM (C 49/05)**

~~That~~ the Required Communication Performance (RCP) 240 and Required Surveillance Performance (RSP) 180 are applicable to 25 NM lateral separation minimum (RLatSM) and 5 min longitudinal separation minimum (RlongSM) implementations in the NAT with the following additional provisos:

a) When the actual communication transaction time or surveillance data delivery time does not meet the 95% values, appropriate action should be taken to improve performance to an acceptable level before providing the air traffic service (ATS) function predicated on RCP/RSP;

b) The 99.9% values provide a target value for design changes to the overall system to improve performance;

Note 1 – Guidance concerning RCP and RSP specifications, application and performance requirements, including elements to be considered when calculating the 99.9% value, can be found in the Global Operational Data Link Document (GOLD);

Note 2 – With regards to the 99.9% criteria, if the performance is less than 99 % contact the data link monitoring agency (DLMA), operator and/or communications service provider (CSP) to determine any action that can improve the performance;

and

c) When the actual communication transaction time or surveillance data delivery time does not meet the 99.9% target value, the air navigation service provider (ANSP) should assess the effects of actual performance against local factors, such as increased controller workload, increases in fleet equipage and expanded use of the data link services and implement appropriate controls and mitigation measures as appropriate.

~~**NAT SPG Conclusion 49/09 – Completion of ½ degree coordinates hazard analysis**~~

~~That:~~

~~a) the Safety Analysis of Input and Display of ½ Degree Coordinates in Support of Reduced Lateral Separation Minima (RLatSM) meets the requirements set forth in NAT SPG Conclusion 45/22; and~~

~~b) NAT IMG work programme be updated to include actions to address the mitigation of ½ degree misconstrued flight routes, and to facilitate the use of automated systems to upload routes directly into the flight management computer (FMC).~~

NAT SPG Conclusion 49/19 – Mapping of the NAT SDR with the ICAO GANP/ASBU (C 49/10)

~~That:~~

~~a)~~ the NAT Service Development Roadmap (SDR) and executive summaries ~~(Appendix A to this [NATSPG/49] Report)~~ is ~~endorsed as~~ a formal document providing a mapping of the NAT Region implementation plans with the ICAO Global Air Navigation Plan (Doc 9750) and Aviation System Block Upgrades (ASBU) modules, identifying priorities and setting targets~~; and~~

~~b) the ICAO Regional Director, Europe and North Atlantic, take appropriate actions to amend the *NAT SPG Handbook*, the ICAO *NAT Air Navigation Plan* (Doc 9634) and *Facilities and Services Implementation Document* (Doc 9635) to include a reference to the *NAT Service Development Roadmap* (SDR) and its executive summaries.~~

APPENDIX Q — UPDATES TO ATTACHMENT 6 OF NAT DOC 007 REGARDING FLAS

(paragraph 7.9.5 refers)

*Editorial Note: Text proposed are arranged to be deleted is shown as boxed text using strikeout (~~text to be deleted~~), and text proposed to be added is with grey shading (*text to be inserted*).*

ATTACHMENT 6

NORTH ATLANTIC FLIGHT LEVEL ALLOCATION SCHEME

Flight Level Availability

1. Introduction

Following statistical analysis and discussions between the NAT ATSUs, the North Atlantic Flight Level Allocation System has been agreed to:

(i) Utilise additional levels, made available by RVSM expansion.

(ii) Standardise the flight level profiles available for eastbound traffic, originating in the New York/ Santa Maria areas, during the eastbound flow, with a view to incorporating the functionality of ADT links.

(iii) Ensure that economic profiles are available for westbound aircraft routing from Reykjavik OACC.

The procedures entail the establishment of a Night Datum Line, south of which is reserved principally for traffic originating in New York/ Santa Maria.

The procedures entail the establishment of a North Datum Line, on or north of which is reserved for late running westbound traffic from Reykjavik to Gander.

Aircraft Operators are advised that the altitude scheme described herein should primarily be used ~~to~~ for Flight Planning using the flight levels specified in this document, relative to their particular flight(s). However, final altitude assignments will be assigned tactically by ATC, reference traffic, and that any requested altitude profile changes will be processed and approved if available.

Procedures

2. *General*

~~These procedures involve the dedication of particular levels for use by Eastbound traffic and the allocation of these levels to specific OACC's by the use of a Night Datum line.~~

The westbound OTS signal will be published by Shanwick using FL310 to FL390. Gander will publish the eastbound OTS signal using FL310 to FL400. However, FL310 will only be used for "New York Tracks" as described in "*Eastbound Traffic originating in New York/Santa Maria, during the eastbound OTS*", especially its 4th paragraph.

The activation times of the westbound OTS shall be published as 1130z to 1900z at 30W.

The activation times of the eastbound OTS shall be published as 0100z to 0800z at 30W.

3. Delegated Opposite Direction Levels (ODLs)

Gander will accept FL310 as a westbound level H24 subject to eastbound CAR/SAM traffic, as described in "*Eastbound Traffic originating in New York/Santa Maria, during the eastbound OTS*".

During the eastbound OTS, a static Datum Line, known as the Night Datum Line, is established with the following co-ordinates:

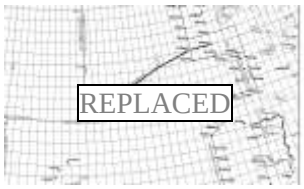
45N030W 49N020W SOMAX ATSUR ~~KENUK~~.

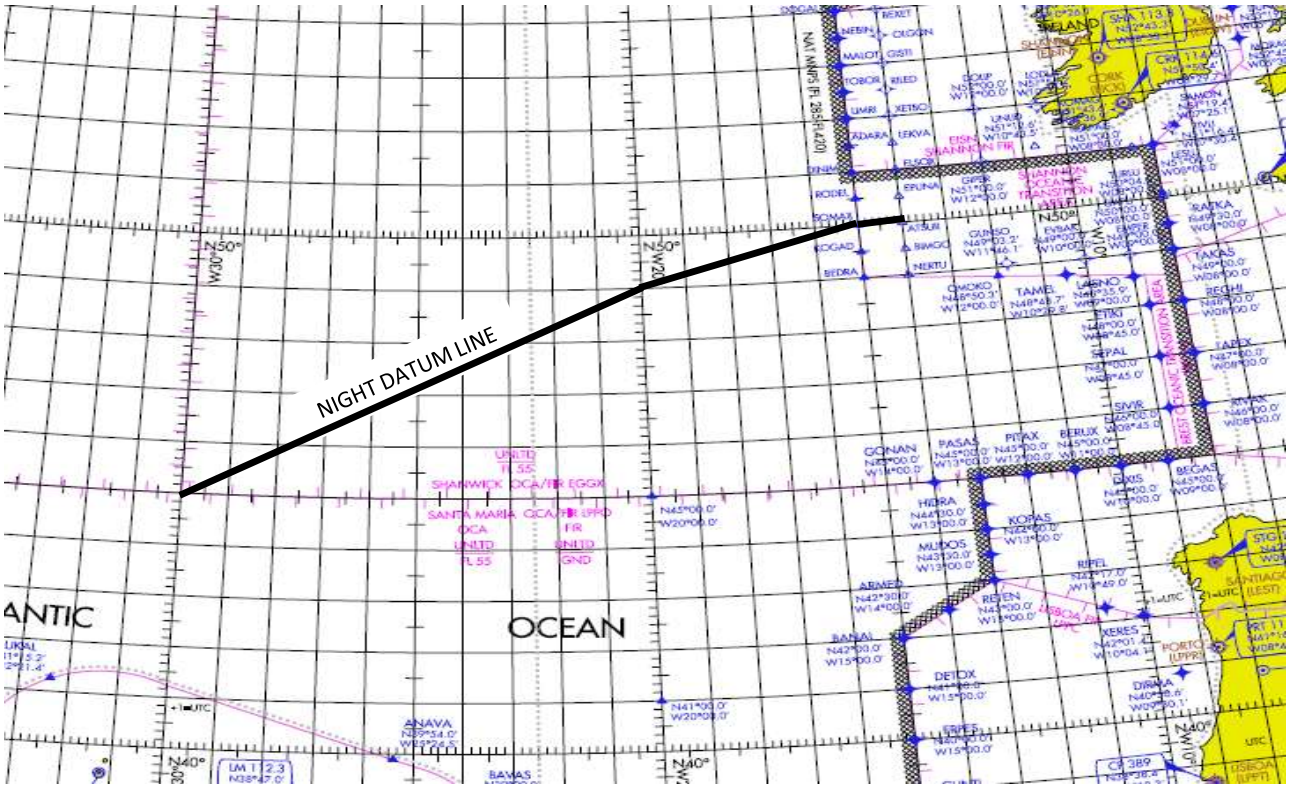
On and to the north of the Night Datum Line FL3~~6~~40 and FL380 are delegated to Gander for use by Eastbound traffic.

To the south of the Night Datum Line FL3~~6~~40 will not be used for Gander eastbound traffic.

To the south of the Night Datum Line or the eastbound OTS, whichever is further South, FL340 and FL380 will not be used for Gander eastbound ``traffic.

During the westbound OTS, FL330 is delegated by Gander to Shanwick for use by westbound traffic.





Between 0300Z and 0700Z, a static Datum Line, known as the North Datum Line, is established with the following coordinates:

~~LOMTA~~ ~~MOATT~~ URTAK 60N50W 62N40W 63N30W

On and to the north of the North Datum Line FL380 is delegated to Reykjavik for use by Westbound traffic.

In the event of a high volume of North Random Flights and/or OTS Tracks the North Datum Line may be suspended to accommodate the dominant Eastbound flow.

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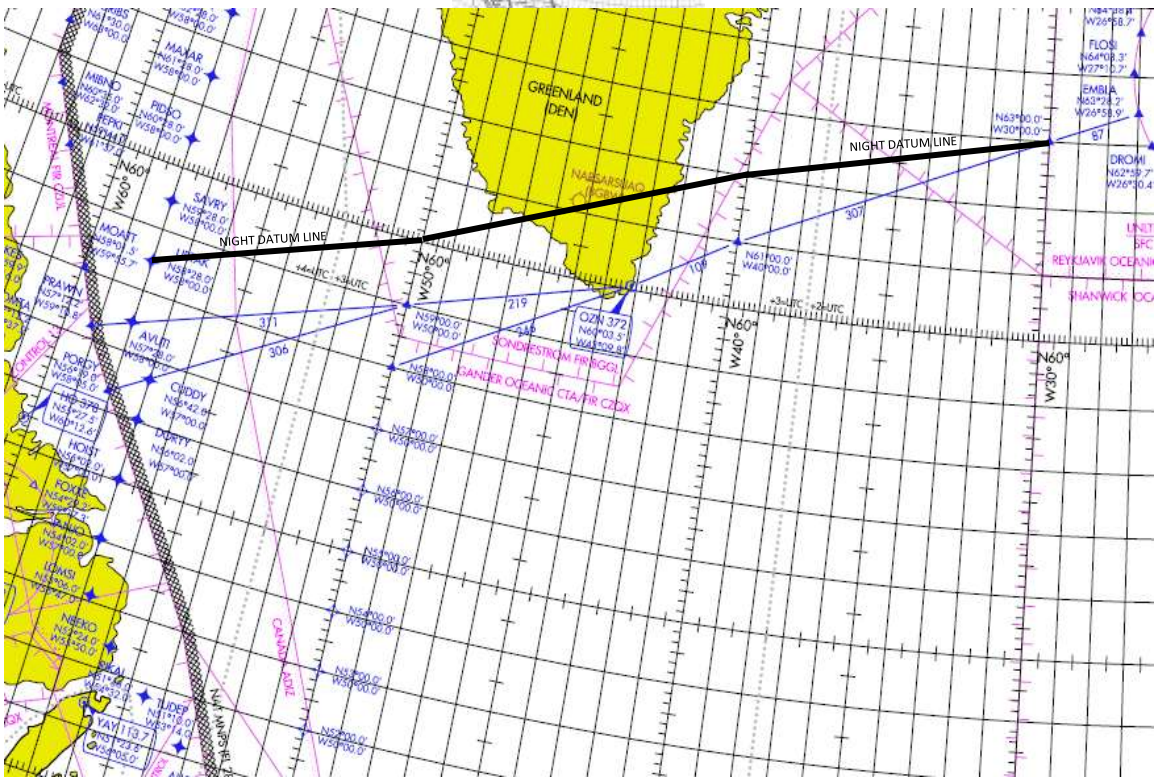

4. Eastbound Traffic originating in New York/Santa Maria, during the eastbound OTS

Eastbound traffic routing, both south of the Night Datum Line, and the main OTS, should flight plan using FL310, FL340, FL360 or FL380.

Eastbound traffic remaining south of the Night Datum Line should flight plan using FL310 ~~or FL360~~, FL340 FL380 or FL400.

The levels allocated to New York Tracks entering Shanwick which cross, or route south of, the Night Datum Line, may be any combination of FL310, FL340, FL360, ~~or~~ FL380, or as otherwise agreed between Santa Maria and New York. Additional levels will be allocated to New York Tracks if the core OTS is located in that area.

For this procedure, "New York Tracks" are any eastbound OTS Tracks which originate in the New York area and enter Gander or Shanwick OACC ~~and are separated from the main OTS by more than one degree at 30W~~.

5. Iberian Tracks

Iberian Tracks are eastbound or westbound organised Tracks, routing between New York and Santa Maria, and lying south of the core OTS, which do not enter Gander or Shanwick airspace.

The Flight Levels allocated to Iberian Tracks will normally be limited to FL350 and FL370, and can be adjusted to accommodate traffic if necessary as agreed between Santa Maria and New York ~~be any combination of FL330, 350 and/or FL370, as agreed between Santa Maria and New York.~~

OTS Design & Use

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

During the westbound OTS validity times, Shanwick shall not clear westbound aircraft which landfall at or north of ~~PRAWN~~AVUTI at FL340, except random flights that remain clear of the OTS and Gander OCA. Such flights may be cleared at FL340 without prior coordination with Reykjavik.

Note: The effect of this particular ATS co-ordination restriction on Operators is that NAT flights originating from the Shanwick OCA which landfall at or between ~~PRAWN~~AVUTI and ~~KENKI~~ AVPUT should not be flight planned at FL340.

FL320 on eastbound OTS lying south of Shannon Oceanic Transition Area (SOTA) and which exit the Shanwick OCA at positions OMOKO or south, will be published as not being available as track levels after 0600z at 30W.

Note that Shanwick may tactically release FL320 back to Gander should there be insufficient demand on the TANGO routes, or that the demand on the eastbound tracks is sufficiently greater.

6. Summary

The availability of RVSM levels, between 0100z and 0800z (at 30W), is summarised in the following diagrams.

Diagram 1 below illustrates the use of the Night Datum line (coloured red) in a situation when there are no Gander eastbound NAT Tracks in the vicinity.

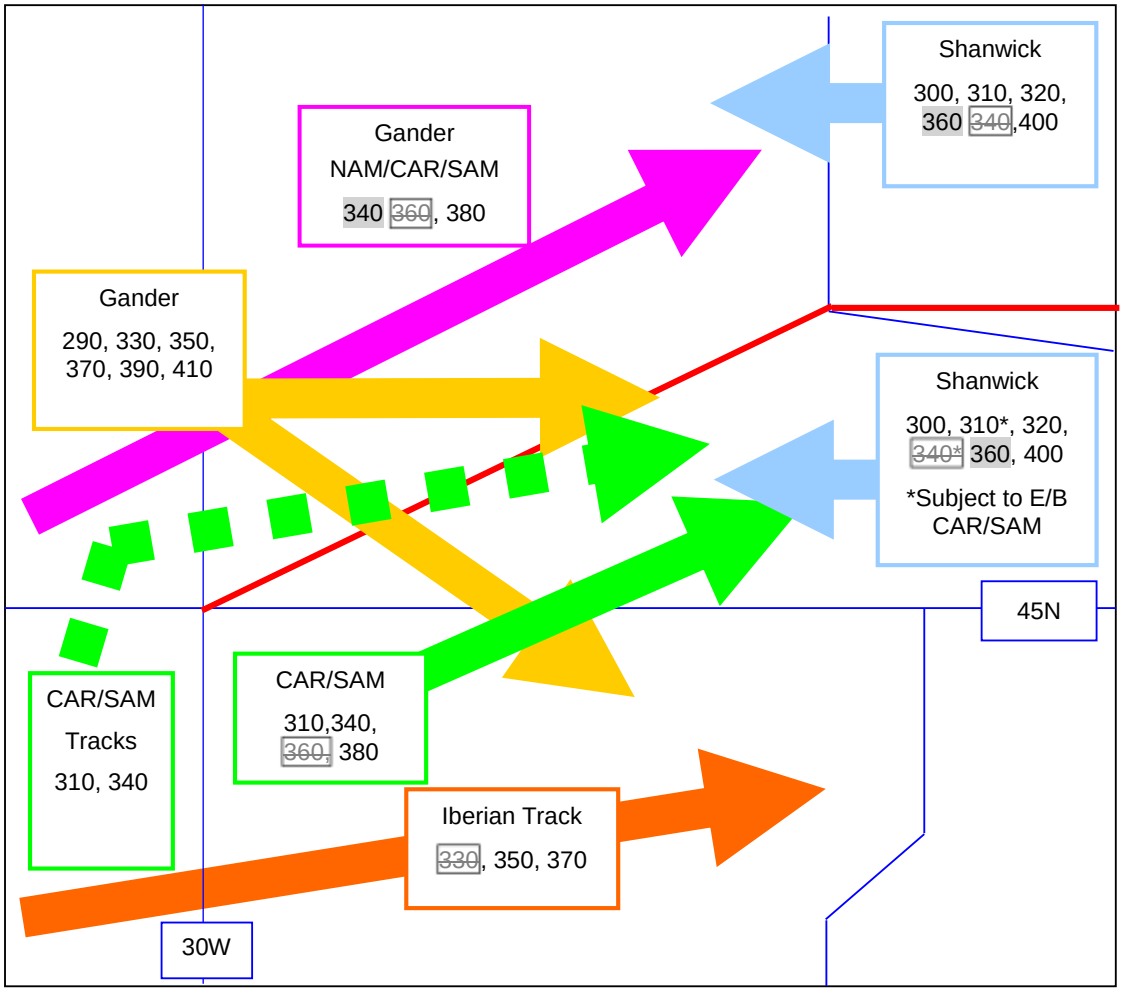

Diagram 1

Diagram 2 illustrates the situation when there are Gander eastbound NAT Tracks in the vicinity.

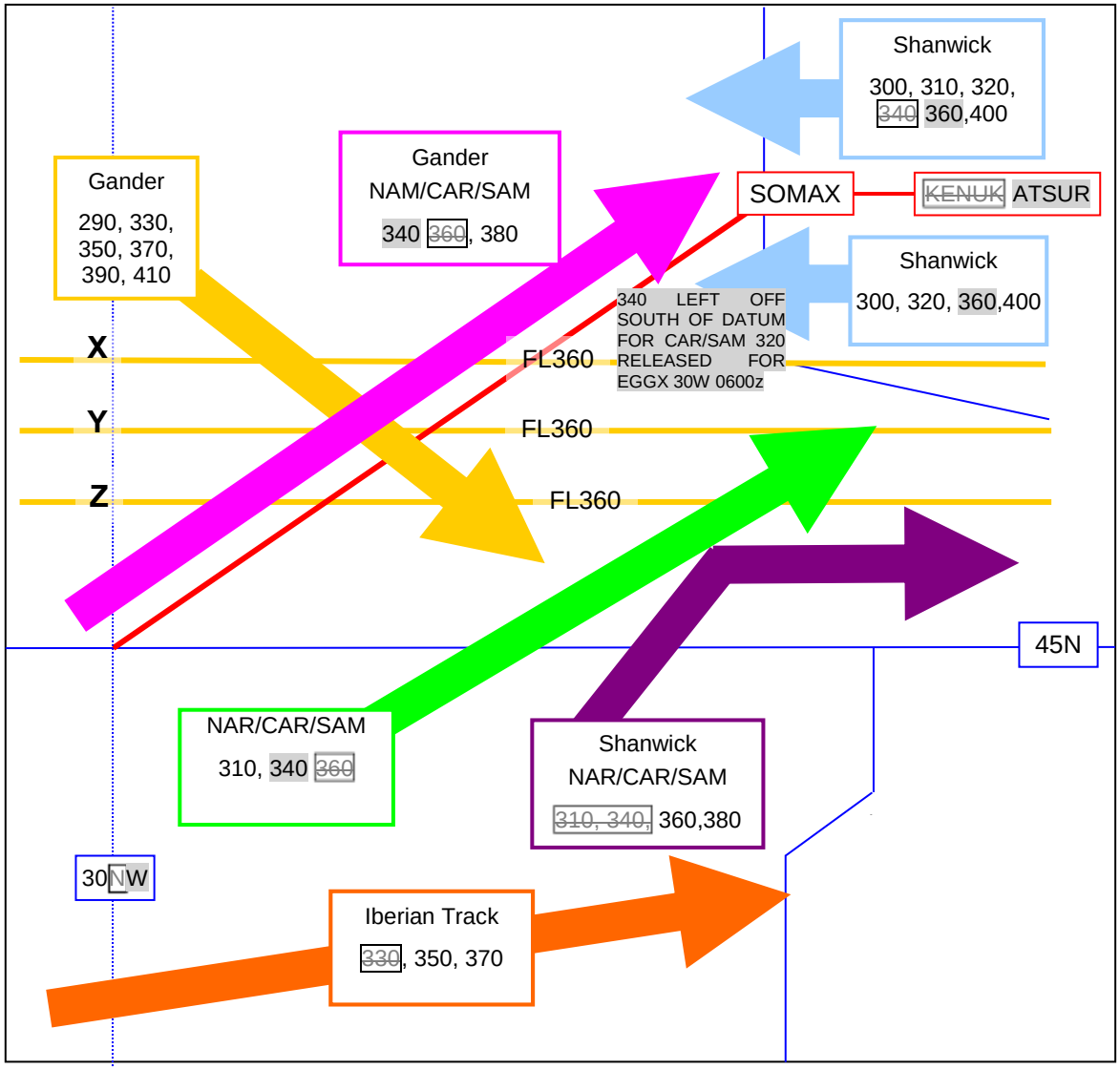

Diagram 2

Transition Periods

The time period between one set of OTS expiring and another set commencing is known as the transition period. The following procedures are in place to accommodate the majority of aircraft:

7. Basic Principles:

All times relate to 30W.

OTS Transition rules apply between 0801z to 1129UTCz and 1901z to 0059UTCz. During these times flight levels shall be applied in accordance with direction of flight other than as stated below.

8. General principles:

Westbound traffic crossing 30W, 2230z to 0059UTCz, shall remain clear of the incoming OTS and shall not use delegated ODLs (FL3460 and FL380). After 2230z, the OTS and ODLs (F3460 and FL380) are released to Gander, who may clear eastbound aircraft, taking cognisance of, and giving priority to, already cleared westbound aircraft.

Eastbound traffic crossing 30W 1000z to 1129~~UTC~~z, shall remain clear of the incoming OTS at FL350 and shall not use delegated ODL (FL330). After 1000z, the OTS (at FL330 and FL350) and ODL (FL330) are released to Shanwick, who may clear westbound aircraft, taking cognisance of, and giving priority to, already cleared eastbound aircraft.

Eastbound traffic, at FL370 and FL390, crossing 30W 1030z to 1129~~UTC~~z, shall remain clear of the incoming OTS. After 1030z, the OTS (at FL370 and FL390) are released to Shanwick, who may clear westbound aircraft, taking cognisance of, and giving priority to, already cleared eastbound aircraft.

At the day-OTS end-time, Westbound aircraft crossing 30W up to 1900z, at ODL~~s~~ (FL330) or on the OTS, shall have priority over eastbound aircraft. Eastbound aircraft shall be cleared, taking cognisance of, and giving priority to, already cleared westbound aircraft.

At the night-OTS end-time, Eastbound aircraft crossing 30W up to 0800z, at ODLs (F340, FL380) or on the OTS, shall have priority over westbound aircraft. Westbound aircraft shall be cleared, taking cognisance of, and giving priority to, already cleared eastbound aircraft.

The table below summarises the above:

Level	Time	Direction
FL430	H24	Westbound. May be Flight Planned as eastbound by non-RVSM aircraft.
FL410	H24	Eastbound.
FL400	0801 – 2229	Westbound.
	2230 – 0059	Westbound (avoiding OTS). Eastbound OTS (subject to westbounds).
	0100 – 0800	Westbound (avoiding OTS). Eastbound (OTS).
FL390	1901 – 1029	Eastbound.
	1030 – 1129	Eastbound (avoiding OTS). Westbound OTS (subject to eastbounds).
	1130 – 1900	Eastbound (avoiding OTS). Westbound (OTS).
FL380	0300 – 0700	Westbound (ODL, on and to the North of the North datum line).
	0801 – 2229	Westbound.
	2230 – 0059	Eastbound (subject to westbounds).
	0100 – 0800	Eastbound (OTS and ODL).
FL370	1901 – 1029	Eastbound.
	1030 – 1129	Eastbound (avoiding OTS). Westbound OTS (subject to eastbounds).
	1130 – 1900	Eastbound (avoiding OTS). Westbound (OTS).
FL360	0801 – 2229	Westbound.
	2230 – 0059	Westbound (avoiding OTS.) Eastbound OTS (subject to westbounds).
	0100 – 0800	Westbound (avoiding OTS). Eastbound (OTS ~~and ODL~~).
FL350	1901 – 0959	Eastbound.
	1000 – 1129	Eastbound (avoiding OTS). Westbound OTS (subject to eastbounds).
	1130 – ~~19~~2000	Eastbound (avoiding OTS). Westbound (OTS).
FL340	0801 – 2229	Westbound.
	2230 – 0059	Eastbound (subject to westbounds)~~Westbound (avoiding OTS)~~. Eastbound OTS (subject to westbounds).
	0100 – 0800	~~Westbound~~ Eastbound (~~avoiding~~ OTS and ODL). ~~Eastbound (OTS).~~
FL330	1901 – 0959	Eastbound.
	1000 – 1129	Westbound (subject to eastbounds).
	1130 – 1900	Westbound (OTS and ODL).

Level	Time	Direction
FL320	0801 – 2229	Westbound.
	2230 – 0059	Westbound (avoiding OTS). Eastbound OTS (subject to westbounds).
	0100 – 0800	Westbound (avoiding OTS). Eastbound (OTS).
FL310	H24	Westbound. (ODL).
FL300	H24	Westbound.
FL290	H24	Eastbound.

APPENDIX R — NAT CONSOLIDATED REPORTING RESPONSIBILITIES HANDBOOK (NAT DOC 010)

(paragraph 7.9.13 refers)

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European and North Atlantic Office

NAT DOC 010

Consolidated Reporting Responsibilities Handbook

North Atlantic Region

Provisional Edition - 2015

Prepared by the ICAO European and North Atlantic Office

on behalf of the North Atlantic Safety Oversight Group (NAT SOG)

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NAT Consolidated Reporting Responsibilities Handbook

1. Foreword

This document is for guidance only. Regulatory material relating to North Atlantic Region (NAT) operations is contained in relevant *ICAO Annexes, PANS-ATM (ICAO Doc 4444), Regional Supplementary Procedures (ICAO Doc 7030),* State *Aeronautical Information Publications (AIPs)* and current Notices to Airmen (NOTAMs), which should be read in conjunction with the material contained in this document.

1.1 This document is primarily for the information of the ICAO North Atlantic Region States and their air navigation service providers (ANSPs). It compiles relevant reporting requirements and guidance in response to the NAT Systems Planning Group (NAT SPG), **Conclusion 48/20 - Consolidated ICAO NAT Region safety occurrence reporting requirements document,** which directed the NAT Safety Oversight Group (NAT SOG) to develop a document in which all region-specific safety occurrence reporting requirements are consolidated for presentation to NAT SPG/49. The NAT SPG agreed the document would cover not only incidents, errors and data, but take account of the relationship between the NAT Data Link Monitoring Agency (NAT DLMA) and the NAT CMA.

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1.2 This manual has been produced on behalf of the NAT SPG; a North Atlantic regional planning body established under the auspices of the International Civil Aviation Organization (ICAO). This group is responsible for developing operational requirements, specifying the necessary services and facilities, and defining the aircraft and operator approval standards employed in the NAT Region. Further information on the functions and working methods of the NAT SPG, together with the NAT Regional Safety Policy Statement, are contained in the NAT SPG Handbook, which is available from the ICAO website: under "Regional Offices," "Paris," the location of the European and North Atlantic Regional Office.

1.3 This document can be accessed and downloaded from the ICAO website **http://portal.icao.int/ as** described in the paragraph above. This website will also include any noted post publication errata (changes) or addenda (additions) to the current edition. The document will be reissued on a recurrent basis as needed.

1.4 To assist with the editing of this manual and to ensure the currency and accuracy of future editions it would be appreciated if readers would submit their comments and/or suggestions for possible amendments and/or/additions to the ICAO EUR/NAT Office at the email address: **icaoeurnat@paris.icao.int**.

2. Annotated Bibliography

2.1 This document compiles relevant region-specific reporting requirements and guidance related to events or occurrences within the ICAO NAT Region. Below is an annotated bibliography that summarizes the reporting requirements used to develop this manual.

– ***Annex 19, Safety Management Systems,*** outlines the Standards and Recommended Practices (SARPs) are applicable to safety management functions related to, or in direct support of, the safe operation of aircraft. Chapter 5 – Safety Data Collection, Analysis and Exchange, outlines the specifications to support safety management activities by collection and analysis of safety data and by exchange of safety

information, as part of the State Safety Program (SSP). It is complemented by Attachment B - Legal guidance for the protection of information from safety data collection and processing systems.

- ***Procedures for Air Navigation Services, Air Traffic Management (PANS-ATM) (Doc 4444)***, paragraph 16.3 requires occurrences such as aircraft proximity (AIRPROX) or other serious difficulty resulting in a hazard to aircraft caused by (among others, faulty procedures, non-compliance with procedures, or failure of ground facilities) to be reported. The document also provides a model air traffic incident report which is helpful for determining degree of risk involved in an aircraft proximity incident.
- ***NAT Regional Supplementary Procedures (Doc 7030)*** establishes the target level of safety (TLS) in each dimension and requires the safety level to be determined by an appropriate safety assessment as described in the *Manual on Airspace Planning Methodology for the Determination of Separation Minima (Doc 9689)*, *the Safety Management Manual (SMM) (Doc 9859)* and Annex 19.
- ***Manual of Aircraft Accident and Incident Investigation (Doc 9756), Part I*** — *Organization and Planning*, contains guidance material concerning the preparation of notification messages and the arrangements to be made for their prompt delivery to the addressee. It also includes a sample notification.
- ***Manual on a 300 m (1 000 ft.) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive (Doc 9574)***, provides regional planning groups with a basis for the revision of documents, procedures and programs to enable the maintenance of a 300 m (1 000 ft.) VSM, between FL 290 and FL 410 inclusive within their particular regions in accordance with the criteria and requirements developed by ICAO. This manual also provides: guidance to State aviation authorities on those measures necessary to ensure that the criteria and requirements are met within their area of responsibility and background information for operators for the development of operating manuals and flight crew procedures. It indicates that there is a need for system performance monitoring during planning, implementation and operational use of RVSM.
- ***Regional Monitoring Agency Manual*** was issued in May 2004 in response to Doc 9574, *Manual on a 300 m (1 000 ft.) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive*. In all regions where RVSM has been implemented, Regional Monitoring Agencies (RMA) have been established by the appropriate Planning and Implementation Regional Groups (PIRGs) to undertake the functions described in this manual. The objectives of the RVSM monitoring programme include, inter alia:

  a) Verification that the RVSM approval process remains effective;
  b) Verification that the target level of safety will be met on implementation of RVSM, and will continue to be met thereafter;
  c) Monitoring the effectiveness of the altimetry system modifications which have been implemented to enable aircraft to meet the required height-keeping performance criteria; and
  d) Evaluation of the stability of altimetry system error (ASE).

The Regional Monitoring Agency Manual was developed to provide guidance for RMAs in the performance of these functions.

- ***Air Traffic Services Planning Manual (Doc 9426)*** was published in 1984 to supplement the provisions governing ATS as specified in Annex, *Rules of the Air*, Annex 11, *Air Traffic Services* and PANS –ATM, Part II, Chapter 3, ATS Incident Reporting, is concerned with the reporting and investigation of an air traffic incident, i.e., an occurrence involving air traffic such as a near collision, a difficulty caused by faulty procedures, the lack of compliance with applicable procedures, or a failure of ground facilities resulting in a hazard to aircraft. It also reproduces a form for use by pilots and controllers when submitting or receiving a report regarding an air traffic incident. In Part II- Methods of application employed by Air Traffic Services, Section 2, Chapter 4- Minimum navigation performance specifications, the manual explains that "States of Registry which have approved MNPS operations should continue to monitor operations so approved." It also explains why the Central Monitoring Agency was developed, i.e., in part to determine whether a general or partial degradation of navigation performance was taking place and what corrective action is required.

- ***Safety Management Systems Manual (Doc 9859)*** is intended to provide States with guidance for the development and implementation of a State Safety Programme (SSP), in accordance with the International Standards and Recommended Practices (SARPs) contained in Annex 1 — *Personnel Licensing*, Annex 6 — *Operation of Aircraft*, Annex 8 — *Airworthiness of Aircraft*, Annex 11 — *Air Traffic Services*, Annex 13 — *Aircraft Accident and Incident Investigation* and Annex 14 — *Aerodromes, Volume I — Aerodrome Design and Operations*. It explains the need for States to implement a SSP). Element 3.2 Safety data collection, analysis and exchange) which ensures the capture and storage of data on hazards and safety risks at both an individual and aggregate State level, as well as to establish mechanisms to develop information from the stored data, and to actively exchange safety information with service providers and/ or other States as appropriate.
- ***North Atlantic operations and airspace manual (NAT Doc 007)*** explains that as the result of 60NM lateral separation minima, special importance will have to be placed on monitoring and assessment of navigation performance. It was therefore agreed that there was a need to collect, collate and circulate to States participating in the monitoring programme, data regarding navigation performance in the NAT Region. To meet this requirement, the NAT CMA was established. The document captures relevant ICAO SARPs and guidance.
- ***NAT SPG Conclusions.*** Any reporting requirements agreed to by the Member States that make up the NAT SPG as outlined in its conclusions from its first meeting in 1965 to its forty-ninth meeting in June 2013, are referenced in the table. One-time reporting requests or requirements are not included. The NAT reporting requirements have gradually expanded to meet the needs of system risk assessments, understanding of operational errors, and informing the safety assessments involved with reductions in separation. The SPG conclusions tend to supplement the documents above and add a measure of regional standardization.

Region-Specific Reporting Responsibilities

Report the following to the NAT CMA in a timely manner if the event occurred in NAT oceanic airspace via email, or the North Atlantic Deviations and Error Monitoring Application (NAT DEMA)

Type of Information	Contents:	Reference
Incidents □□Near collisions requiring an avoidance maneuver to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate. [ACAS RA events] **Occurrences/Events** □ Non-MNPS Certified aircraft in MNPS airspace □ Any actual deviation from the cleared track (SLOP (strategic lateral offset procedure) is not a deviation) □ A Gross Navigation Error (GNE) □ An ATC Intervention □ An ATC Prevention □ Turnback or contingency procedure □ Instances of poor or non-existent co-ordination □ Large Height Deviations (LHD) □ Time/speed-related Errors □ Incorrect application of SLOP □ Losses of separation □ Erosion of longitudinal separation in MNPS of 3 mins or more □ Discrepancies of 5 minutes or more between an ETA/ATA at a waypoint □ Erosions of lateral separations □ ATC loop errors and incorrect clearances □ Deviations due to MET conditions NOTE: The CMA will forward to the DLMA any report described above that involves data link issues per NAT SPG conclusion 48/17	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.	-For required content of the report, see NAT SPG Conclusion 48/19 and 22, Appendix L. -See NAT Doc 001, for occurrence reporting codes. -When notifying air operators of an occurrence include the OESB per NAT SPG 49/15; -Additional requirements are referenced in at least the following documents: for no-MNPS cert. aircraft in MNPS airspace, see__; or non-HF equipped aircraft, see___; for deviations see **NAT SPG 48/21;** for turnback or contingency reporting see SPG **41/4;** for poor or non-existent coordination, see **NAT SPG 41/15**; for reporting LHD, see the RMA manual of 2004 and **SPG 38/10;** for time/speed related errors see **SPG 48/22, App. L;** for contingency procedures see **SPG 41/4**; for incorrect application of SLOP, see **NAT Doc. 007 par.11.7.14**; for losses of separation, see **Doc. 4444 par. 16.3;** for erosion of long. separation and discrepancies of 5 minutes or more see **NAT Doc. 007 par. 11.7.14;** for erosions of lateral separations see_; for loop errors, incorrect clearances, deviations due to MET, see **Doc 9574**; Timeframe: with the least possible delay, per **Doc 007 par. 11.7.12**

As new mitigations are implemented, report them to the NAT CMA via email or through the North Atlantic Deviations and Error Monitoring Application (NAT DEMA)

Type of Information	Contents:	Reference
Implementation of new mitigations (to vertical risk) and report the effects	Explain the implementation of new mitigations to vertical risk and report the effects (share best practices)	See **NAT SPG conclusion 41/20**

Report to the United Kingdom National Air Traffic Services, Ltd. (NATs UK)

Type of Information	Contents:	Reference
Wake Turbulence Events	Use the Wake Turbulence Reporting Form Information goes into the Wake Vortex database and is compiled and sent to the CMA periodically	**North Atlantic operations and airspace manual (NAT Doc 007) Attachment 3**

Report traffic activity data from the 4th and 15th day of each month to NAV Canada.

Type of Information	Contents:	Reference
Traffic Activity Data	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; iv) in comma-separated-variable (CSV) format;	**NAT SPG conclusion 48/17**

Report the following to the NAT MWG, estimates proposed annually, using a 24-hour day annual sample comparing Reykjavik, Gander, and Shandwick daily traffic.

Type of Information	Contents:	Reference
Traffic Count (for the determination of future estimates of lateral error rates)		**NAT SPG Conclusion 44/19**

Report the following to the DLMA through the website, **http://www.ispacg-cra.com**.

Type of Information	Contents:	Reference
Data Link Issues	Required content: **http://www.ispacg-cra.com**.	**NAT SPG Conclusion 46/3**

OCCURRENCE CLASSIFICATION CODES

General

CF	Communications failure
CI	Crew Injury
CR	Crew Request
CW	Cracked window
DW	Destination Weather
ED	Engine Defect
ES	Engine Shutdown
F	Fire
FL	Fuel Leak
FPD	Fuel Pump Defect
FS	Fuel shortage
HP	Hydraulic Problem
IRSF	IRS Failure
LFT	Low Fuel Temperature
ME	Medical Emergency
PD	Passenger Disturbance
PEI	Precautionary-Engine Indication
PR	Pressurisation problem
S	Smoke
SIC	Smoke in Cockpit
TP	Technical Problem
W	Weather

Contingency Action	CA
CF	Communications failure
CI	Crew Injury
CR	Crew Request
CW	Cracked window
DW	Destination Weather
ED	Engine Defect
ES	Engine Shutdown
F	Fire
FL	Fuel Leak
FPD	Fuel Pump Defect
FS	Fuel shortage
HP	Hydraulic Problem
IRSF	IRS Failure
LFT	Low Fuel Temperature
ME	Medical Emergency
PD	Passenger Disturbance
PEI	Precautionary-Engine Indication
PR	Pressurisation problem
S	Smoke
SIC	Smoke in Cockpit
TP	Technical Problem
W	Weather

Diversion	DIV
D	Failed to comply with restriction in clearance
L	ATC error

Horizontal Separation Erosion	HSE
C	Crew error
ISO	Followed flight plan iso clearance
L	ATC error
L4	ATC Co-ordination error

Intervention	INT
A	Committed by aircraft not certified for operation in MNPS airspace
B1	ATC Loop Error - Controller error
B2	ATC Loop Error - Poor information exchange between CONTROLLER and the third party communicator
B3	ATC Loop Error - Poor information exchange between PILOT and the third party communicator
B4	ATC Loop Error - Poor centre to centre co-ordination
C	Crew error
C1	Equipment control error encompassing incorrect operation of fully functional FMS or navigation system.
C2	Incorrect transcription of ATC clearance or re-clearance into the FMS.
C3	Wrong information faithfully transcribed into the FMS e.g. flight plan followed rather than ATC clearance or original clearance followed instead of re-clearance
D	Other with failure to notify ATC in time for action
E	Other with failure to notify ATC too late for action
F	Other with failure not notified/received by ATC
G	Inter-facility co-ordination problem
ISO	Followed flight plan iso clearance
L	ATC error
W	Weather
Lateral Deviation <25nm	L
Lateral Deviation <15nm	L15
A	Committed by aircraft not certified for operation in MNPS airspace
B1	ATC Loop Error - Controller error
B2	ATC Loop Error - Poor information exchange between CONTROLLER and the third party communicator
B3	ATC Loop Error - Poor information exchange between PILOT and the third party communicator
B4	ATC Loop Error - Poor centre to centre co-ordination
C1	Equipment control error encompassing incorrect operation of fully functional FMS or navigation system.

C2	Incorrect transcription of ATC clearance or re-clearance into the FMS.
C3	Wrong information faithfully transcribed into the FMS e.g. flight plan followed rather than ATC clearance or original clearance followed instead of re-clearance
D	Other with failure to notify ATC in time for action
E	Other with failure to notify ATC too late for action
F	Other with failure not notified/received by ATC
G	Inter-facility co-ordination problem
W	Weather

GROSS NAVIGATION ERRORS

The GNE occurred in MNPS airspace and the aircraft was observed exiting the ocean through the windows and the deviation >= 30Nm.

Alpha (eta)

The GNE occurred in MNPS airspace and the aircraft was observed exiting the ocean through the windows and the deviation >= 50Nm or >= 1 deg., as appropriate.

Alpha
(zeta, risk- bearing)

The GNE occurred in MNPS airspace, was NOT observed exiting the ocean through the windows and the deviation >=25Nm or WAS observed exiting the ocean through the windows and the deviation >=30Nm. — B

The GNE occurred above or below MNPS airspace (not necessarily at the windows) and the deviation >=25Nm — C

C	Crew error
D	Failed to comply with restriction in clearance
E	Climb/descent without ATC clearance.
L	ATC error
W	Weather

Longitudinal Separation Erosion — LSE

C	Crew error
L	ATC error
MA	Mach no.
WP	Waypoint

Time-Related Incident — TRI

CF	Communications failure
CI	Crew Injury
CR	Crew Request
CW	Cracked window
DW	Destination Weather
ED	Engine Defect
ES	Engine Shutdown
F	Fire
FL	Fuel Leak
FPD	Fuel Pump Defect
FS	Fuel shortage

HP	Hydraulic Problem
IRSF	IRS Failure
LFT	Low Fuel Temperature
ME	Medical Emergency
PD	Passenger Disturbance
PEI	Precautionary-Engine Indication
PR	Pressurization problem
S	Smoke
SIC	Smoke in Cockpit
TP	Technical Problem
W	Weather

Turnback TB

A	Contingency action due to engine fault
B	Contingency action due to pressurization failure
C	Contingency action due to other cause
D	Failure to climb/descend as cleared
E	Climb/descent without ATC clearance
F	Entry to RVSM airspace at an incorrect level
G	ATC FL re-clearance resulting in a loss of lateral or longitudinal separation
H	Deviation due to TCAS
I	Aircraft unable to maintain level
J	ATC failure to correctly record, coordinate, or follow through on FL changes and/or other clearances.
K	Aircrew not maintaining level as cleared.
L1	ATC failure to capture incorrect read back of control instructions.
L2	ATC failure to maintain situational awareness
L3	ATC failure to resolve transposed call signs
L4	ATC Co-ordination error
M	Actions taken due to mechanical or equipment failure
O	Other
W	Weather

Final level within RVSM airspace	1
Final level above RVSM airspace	2
Final level below RVSM airspace	3

LIST OF ACRONYMS

ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACI	Airports Council International
ADS	Automatic Dependent Surveillance
ADS-B	Automatic Dependent Surveillance – Broadcast
ADS-C	Automatic Dependent Surveillance – Contract
AFI	(ICAO) Africa-Indian Ocean (Region)
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
ANC	Air Navigation Commission
AN-Conf/12	ICAO Twelfth Air Navigation Conference
ANP	*Air Navigation Plan*
ANS	Air Navigation Services
ANSP	Air Navigation Service Provider
ASBU	Aviation System Block Upgrades
ASR	Aviation Safety Report
ATC	Air Traffic Control
ATCO	Air Traffic Controller
ATM	Air Traffic Management
ATS	Air Traffic Service
ATSP	Air Traffic Service Provider
AVSECP	Aviation Security Panel
BCA	Business Case Analysis
CAD	Canadian dollar
CAEP	Committee on Aviation Environmental Protection
CANSO	Civil Air Navigation Services Organisation
CAR	(ICAO) Caribbean (Region)
CO_2	carbon dioxide
COG	*see* EANPG COG
CONOPS	Concept of Operations
CPDLC	Controller Pilot Data Link Communications
CPWG	Cross Polar Working Group
CRA	Central Reporting Agency
CTA	Control Area
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 Navigation Services - Aircraft Operations* (PANS-OPS)
Doc 8400	*Procedures for Air Navigation Services – ICAO Abbreviations and Codes* (PANS-ABC)
Doc 8973	*ICAO Aviation Security Manual*
Doc 9750	*Global Air Navigation Plan* (GANP)
Doc 9985	*ICAO Air Traffic Management Security Manual*
eANP	Electronic *Regional Air Navigation Plan*

eANP PT	North Atlantic eANP Project Team
EANPG	European Air Navigation Planning Group
EANPG COG	EANPG Programme Coordinating Group
EUR	(ICAO) European (Region)
EUR (EAST) VOLCEX/SG	Volcanic Ash Exercises Steering Group for the (far) Eastern part of the EUR Region
EUR/NAT	European and North Atlantic
EUR/NAT VOLCEX SG	European and North Atlantic Volcanic Ash Exercises Steering Group
FANS	Future Air Navigation System
fapfh	Fatal Accidents Per Flight Hour
FASID	*Facilities and Services Implementation Document*
FIR	Flight Information Region
FL	Flight Level
FLAS	Flight Level Allocation Scheme
FMC	Flight Management Computer
GANP	*Global Air Navigation Plan* (Doc 9750)
GASP	Global Aviation Safety Plan
GHG	Green House Gas
GLAD	Global Aviation Dialog
GNE	Gross Navigation Error
GOLD	*Global Operational Data Link Document*
HF	High Frequency
HLCAS	High-level Conference on Aviation Security
IATA	International Air Transport Association
IBAC	International Business Aviation Council
ICCAIA	International Coordinating Council of Aerospace Industries Associations
IFALPA	International Federation of Air Line Pilots Associations
IFATCA	International Federation of Air Traffic Controllers' Associations
IGA	General Aviation Aircraft
IHLG	Industry High-level Group
IT	Information Technology
km	Kilometre
KPI	Key Performance Indicator
LHD	Large Height Deviation
LoA	Letter of Agreement
MEL	Minimum Equipment List
MID	(ICAO) Middle East (Region)
MNPS	Minimum Navigation Performance Specifications
MNPSA	Minimum Navigation Performance Specifications Airspace
NAT	(ICAO) North Atlantic (Region)
NAT ACSG	North Atlantic Aeronautical Communications Subgroup
NAT ATMG	North Atlantic Air Traffic Management Group
NAT CMA	North Atlantic Central Monitoring Agency
NAT CNSG	North Atlantic Communications Navigation Surveillance Group
NAT DEMA	North Atlantic Deviations and Errors Monitoring Application
NAT DLMA	North Atlantic Data Link Monitoring Agency
NAT DMO	North Atlantic Document Management Office

NAT Doc	North Atlantic Document
NAT Doc 001	*North Atlantic Systems Planning Group Handbook*
NAT Doc 006, Part II	*Volcanic Ash Contingency Plan* (VACP)
NAT Doc 007	*North Atlantic Operations and Airspace Manual*
NAT Doc 009	*NAT Service Development Roadmap* (NAT SDR)
NAT Doc 010	*NAT Consolidated Reporting Responsibilities Handbook*
NAT EFFG	North Atlantic Economic, Financial, and Forecast Group (*formerly* NAT EFG)
NAT EFG	North Atlantic Economic and Financial Group (*evolved into* NAT EFFG)
NAT IMG	North Atlantic Implementation Management Group
NAT IMG SCMPT	NAT IMG Structure Change Management Project Team
NAT MWG	North Atlantic Mathematicians' Working Group
NAT OPS/AIR	North Atlantic Operations and Airworthiness Subgroup
NAT OTS	North Atlantic Organized Track System
NAT SARSIG	North Atlantic Safety Analysis and Reduced Separation Implementation Group
NAT SG	North Atlantic Scrutiny Group
NAT SOG	North Atlantic Safety Oversight Group
NAT SPG	North Atlantic Systems Planning Group
NAT TFG	North Atlantic Traffic Forecast Group
NAT HLA	NAT High Level Airspace
NAT SDR	*NAT Service Development Roadmap* (NAT Doc 009)
NCLB	ICAO initiative "No Country Left Behind"
NM	Nautical Mile (approximately 1852 m)
NOPAC	Northern Pacific
OCA	Oceanic Control Area
OTS	*see* NAT OTS *or* PACOTS
PAC	(ICAO) Pacific (Region)
PACOTS	Pacific Organized Track System
PANS	Procedures for Air Navigation Services
PANS-ABC	*Procedures for Air Navigation Services – ICAO Abbreviations and Codes* (Doc 8400)
PANS-ATM	*Procedures for Air Navigation Services – Air Traffic Management* (Doc 4444)
PANS-OPS	*Procedures for Air Navigation Services - Aircraft Operations* (Doc 8168)
PBCS	Performance-Based Communication and Surveillance
PBHSM	Performance-Based Horizontal Separation Minima
PBN	Performance Base Navigation
PfA	Proposal for Amendment
PIRG	Planning and Implementation Regional Group
PORT	Pilot Operational Response Time
PR	Problem Report
RA	Resolution Advisory
RASG	Regional Aviation Safety Group
RCP	Required Communication Performance
RLatSM	25 nautical miles (NM) Reduced Lateral Separation
RLatSM Plan	Implementation Plan for the Trial Application of RLatSM in the NAT Region
RLatSM Task List	Task List Supporting the Trial Implementation of RLatSM in the ICAO NAT Region
RLongSM	5 minutes (min) Longitudinal Separation Minimum
RMA	Regional Monitoring Agency
RNP	Required Navigation Perfomance
RSP	Required Surveillance Performance

SAM	(ICAO) South America (Region)
SARPs	ICAO Standards and Recommended Practices
SATVOICE	Satellite Voice Communications
SB ADS-B	Space-Based ADS-B
SLOP	Strategic Lateral Offset Procedure
SMS	Safety Management System
SOTA	Shannon Oceanic Transition Area
SSP	State Safety Programme
SUPPs	*Regional Supplementary Procedures* (Doc 7030)
SVOM	*Satellite Voice Operations Manual*
TLS	Target Level of Safety
ToRs	Terms of Reference
USD	United States dollar
VA	Volcanic Ash
VACP	*Volcanic Ash Contingency Plan* (NAT Doc 006, Part II)
VATF	EUR/NAT Volcanic Ash Task Force
VOLCEX SG	*see* EUR/NAT VOLCEX SG, *or* EUR (EAST) VOLCEX SG
WG/SRP	Working Group for Strategic Review and Planning (of the ANC)
WGTR	(AVSECP) Working Group on Threat and Risk

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