Session 4 - Implementation issues, challenges, lessons learned, successes and solutions

North Atlantic (NAT) – Asia-Pacific PBCS Transition Strategies

Presented to: ICAO Operational Data Link Seminar (Accra, Ghana)

By: Tom Kraft, FAA
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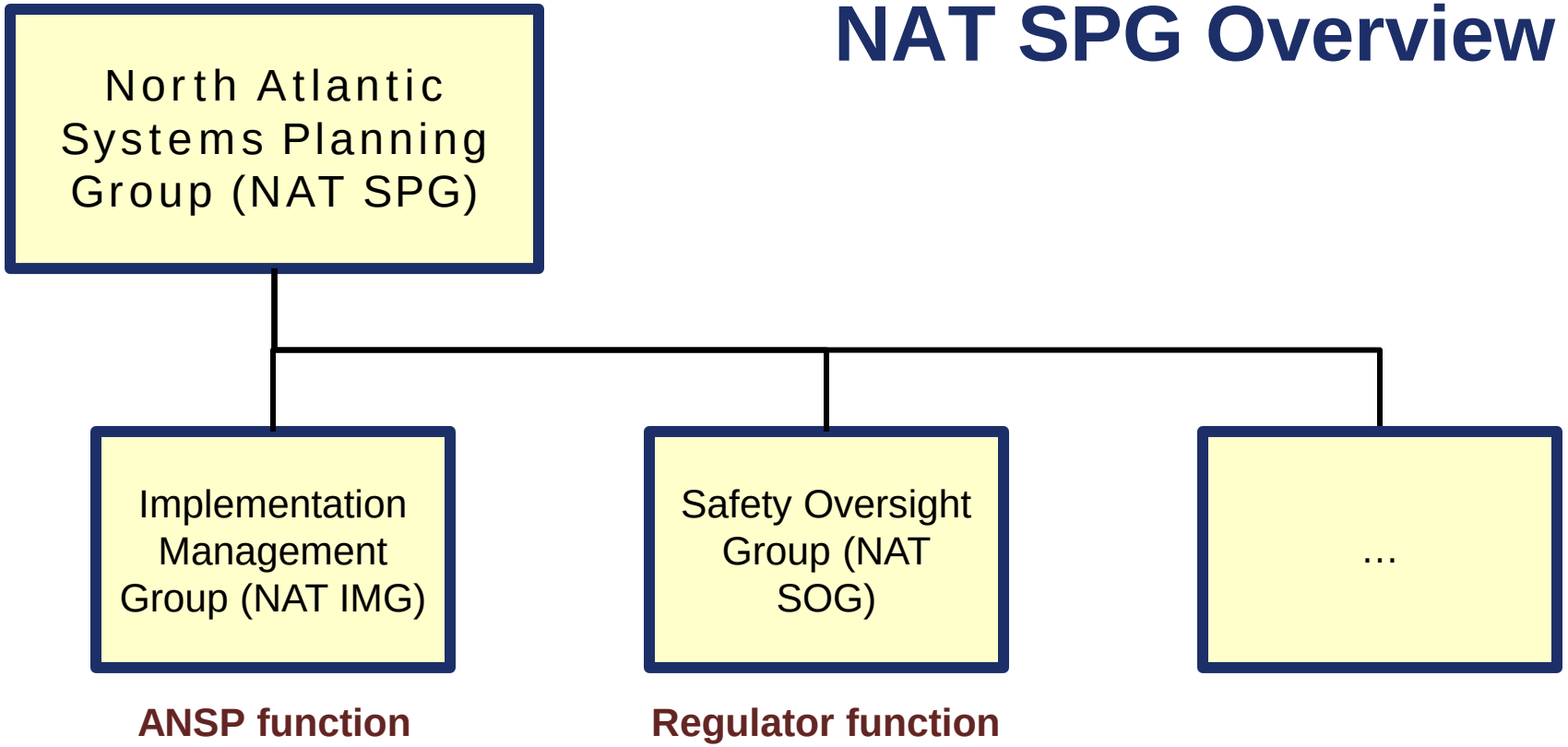
Date: 8 – 12 August 2016

Federal Aviation Administration

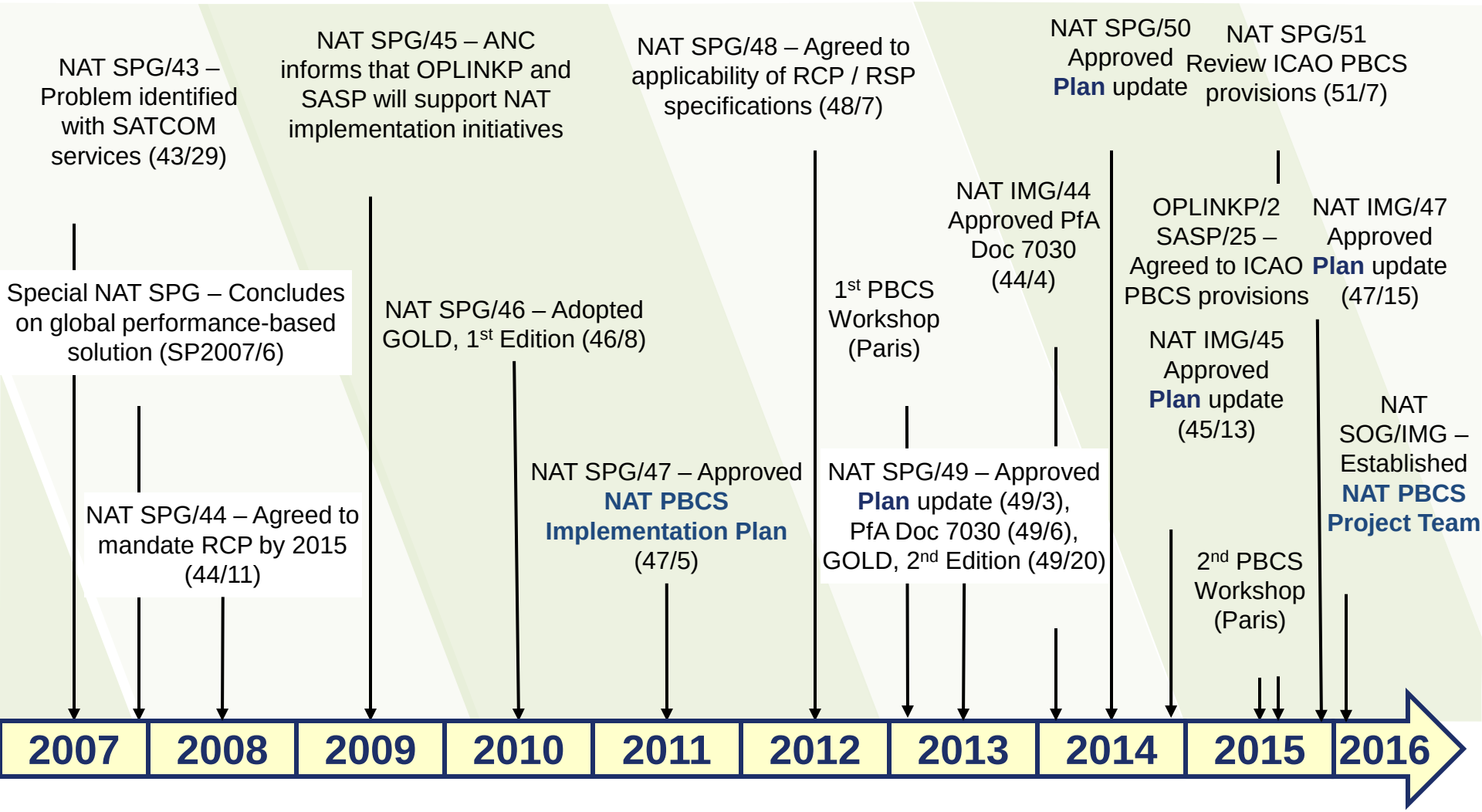
NAT SPG Overview



NAT IMG and NAT SOG are parent groups to other groups not shown

NAT groups establish Project Teams as needed to address specific issues (short lived)

NAT PBCS Implementation Plan – History



NAT PBCS Project Team

- **North Atlantic Performance-based Communication and Surveillance Project Team (NAT PBCS PT)**
- **Parent Group is NAT SPG**
- **Supervisory body is NAT SOG / NAT IMG**
- **Tom Kraft is lead**
- **Meets virtually and uses email**

NAT PBCS Project Team Representation

NAT State	ANSP	Regulator
Canada	✓	✓
Iceland	✓	✓
Ireland	✓	✓
Portugal	✓	
U.K.	✓	✓
U.S.	✓	✓

Organization	HQ	Region
ICAO	✓	✓

Organization	Industry
IATA	✓
IFALPA	✓
Iridium	✓

NAT PBCS Project Objective

NAT SPG Conclusion 51/07 (June 2015) – 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 noncompliance 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.

NAT PBCS Project Timeline and Outcome

- **Timeline – until NAT SPG/52 (June 2016)**
- **Outcome**

  1) Impact assessment
  2) Transition strategy
  3) Proposal for Amendment (PfA) to NAT Regional SUPPs (Doc 7030/5)

Coordination Outside NAT Region

- **U.S. is informally coordinating NAT efforts with ISPACG and IPACG (and now South Atlantic)**
  - PBCS is essential to ensure safe and efficient ATM operations
  - ICAO Regions should cooperate to develop their implementation plans to transition to PBCS – based on PBCS implementation plan checklist contained in the *PBCS Manual* (Doc 9869), Appendix A, and coordinate with ICAO Headquarters
  - Cooperation from operators, communication service providers, aircraft manufacturers, other industry and regulators will be essential to the success of PBCS implementation

The ICAO PBCS Provision

State, ANSP **and** Operator **each have responsibility**

In accordance with the ICAO PBCS Provision, State	**In accordance with State policies**	
	ANSP	Operator
❑ Establishes PBCS policies for ANSP, operator, airworthiness, etc. ❑ Prescribes RCP/RSP specifications in the applicable airspace for the relevant operations ❑ Publishes PBCS requirements in aeronautical information publication (AIP)	❑ Provides RCP/RSP-compliant air traffic services* ❑ Recognizes RCP/RSP capabilities in air traffic control (ATC) automation ❑ Establishes PBCS monitoring program	❑ Prepares to file RCP/RSP capabilities in flight plan ❑ Participates in ANSP PBCS monitoring programs

* RCP/RSP specifications include allocated criteria to the communication service provider (CSP). These criteria are applied to the CSP through service agreements with the ANSP and/or operator.

The ICAO PBCS Provision

- **The PBCS ICAO provision prescribes RCP240 / RSP180 to communication and surveillance capability required to apply the following performance-based horizontal separation minima**
  - 30 NM, 50 NM and 5 minute longitudinal (currently RLongSM trials)
  - 23 NM lateral (formerly 30 NM lateral and supports RLatSM)
- **Supporting Manuals**
  - GOLD Manual (Doc 10037)
  - PBCS Manual (Doc 9869)
  - Manual on Monitoring the Application of Performance-based Horizontal Separation Minima (Doc [PBHSM])
    - Formerly and often still referred to as en route monitoring agency (EMA)

So What's the Situation in the NAT?

NAT PBCS Implementation Plan

- **Endorsed at NAT SPG/47 (2011)**

Did not happen

  - Called for PBCS implementation by February 2015, per NAT SPG/44 (2008)
  - Operational implementation of RLatSM and RLongSM is conditional on PBCS implementation—trials can proceed with PBCS monitoring alone

- **Last updated at NAT IMG/47 (2015)**
  - Aligned NAT tasks with PBCS planning checklist provided in Doc 9869 to facilitate global coordination of PBCS implementation

Will they make it?

  - Target date for implementation revised to November 2016, consistent with ICAO applicability date for PBCS provisions and associated applications

PBCS Implementation Plan – Checklist

Task ID	Task Descriptor
Group A tasks – State/Region preparation	
A-1	AIP – Prescription of an RCP/RSP specification
A-2	ANSP – PBCS policies, objectives supporting safety oversight
A-3	Operator and Aircraft System – PBCS policies, objectives supporting safety oversight
A-4	Regional Supplementary Procedures (Doc 7030) for PBCS operations, if applicable
Group B tasks – ANSP general project development and management	
B-1	PBCS Implementation Plan
B-2	Target dates for PBCS and relevant ATM operations
B-3	RCP/RSP specifications
B-4	PBCS awareness
Group C tasks – ANSP implementation activities – ATS service provision	
C-1	Operational concepts and procedures for PBCS operations
C-2	ATC automation changes to use flight plan RCP/RSP indicators
C-3	ATC automation changes for PBCS monitoring
C-4	Confirm initial ANSP compliance with RCP/RSP specifications
Group D tasks – Aircraft operator, Aircraft type/system (airworthiness) eligibility	
D-1	Aircraft operator readiness
D-2	Confirm initial operator and/or aircraft type/system compliance with RCP/RSP specifications
Group E tasks – All stakeholders – post-implementation monitoring	
E-1	PBCS monitoring – post-implementation

North Atlantic Data Link Mandate

NAT DLM → CPDLC and ADS-C (FANS 1/A)

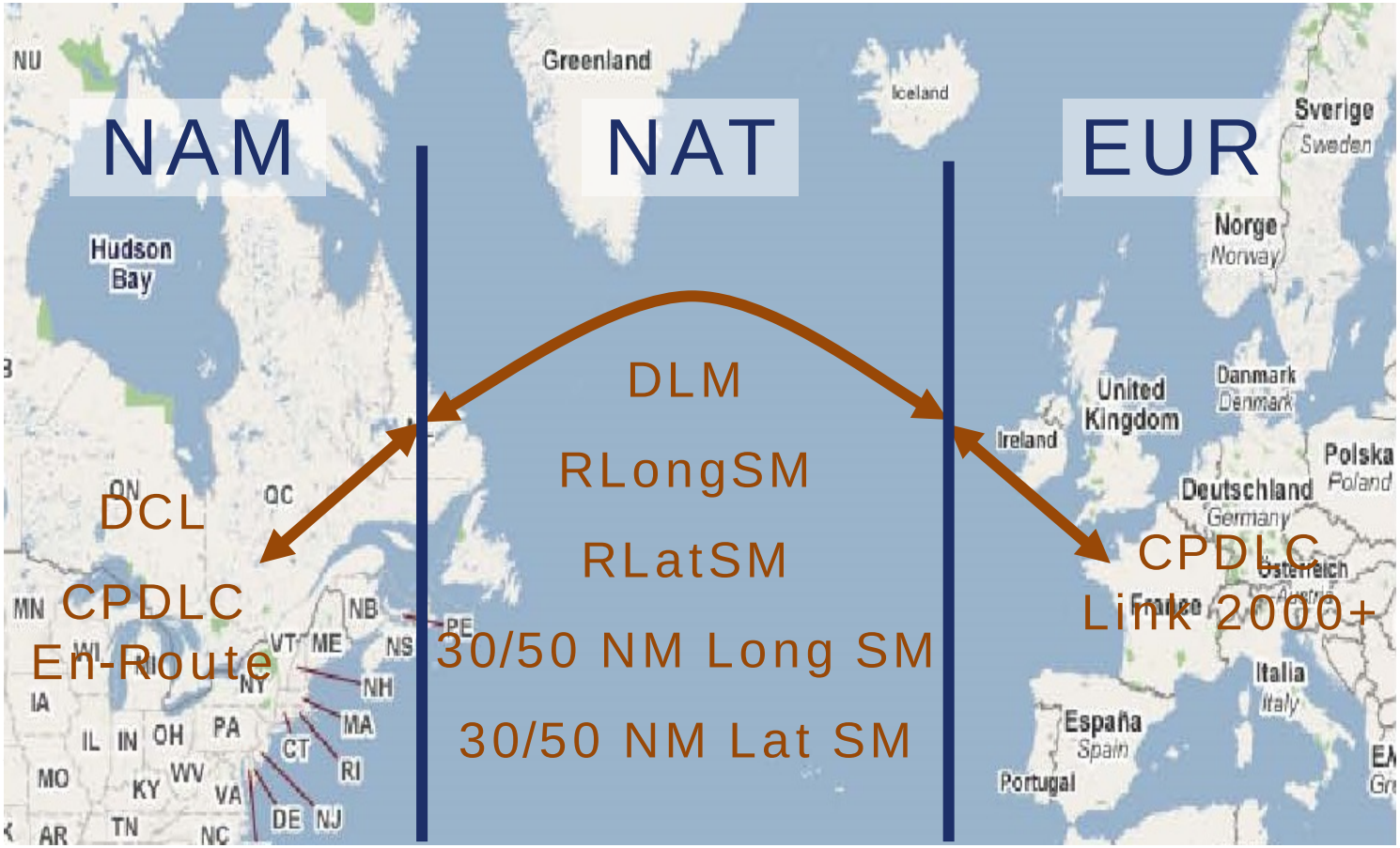
- ✓ **Phase 1, began 7 February 2013 – FL360 to FL390 on no more than two specified tracks within the NAT organized track system (OTS)**
- ✓ **Phase 2A, began 5 February 2015 – FL350 to FL390 within the NAT OTS**
  - Applies to all aircraft operating on or at any point along the tracks

- ❑ **Phase 2B, beginning 7 December 2017 – FL350 to FL390 in ICAO NAT Region**
- ❑ **Phase 2C, beginning 30 January 2020 – FL290 and above in ICAO NAT Region**

Additional Considerations

- **RLongSM (5 minutes longitudinal) and RLatSM (23 NM lateral on ½ degree tracks in NAT Organized Track System (Gander and Shanwick)) are considered in the NAT PBCS Implementation Plan**
- **30 NM and 50 NM longitudinal and 30 NM lateral (amended to 23 NM lateral) are also being applied in New York Oceanic and planned for Santa Maria Oceanic**
- **NAT PBCS transition strategy will consider the prescription of RCP240 / RSP180 to communication / surveillance capability supporting the application of all relevant separation minima in the NAT Region**
  - in accordance with ICAO PBCS provision (Doc 4444, Chapter 5)

Air traffic management operations are becoming more dependent on reliable communication and surveillance



North Atlantic High Level Airspace (HLA)

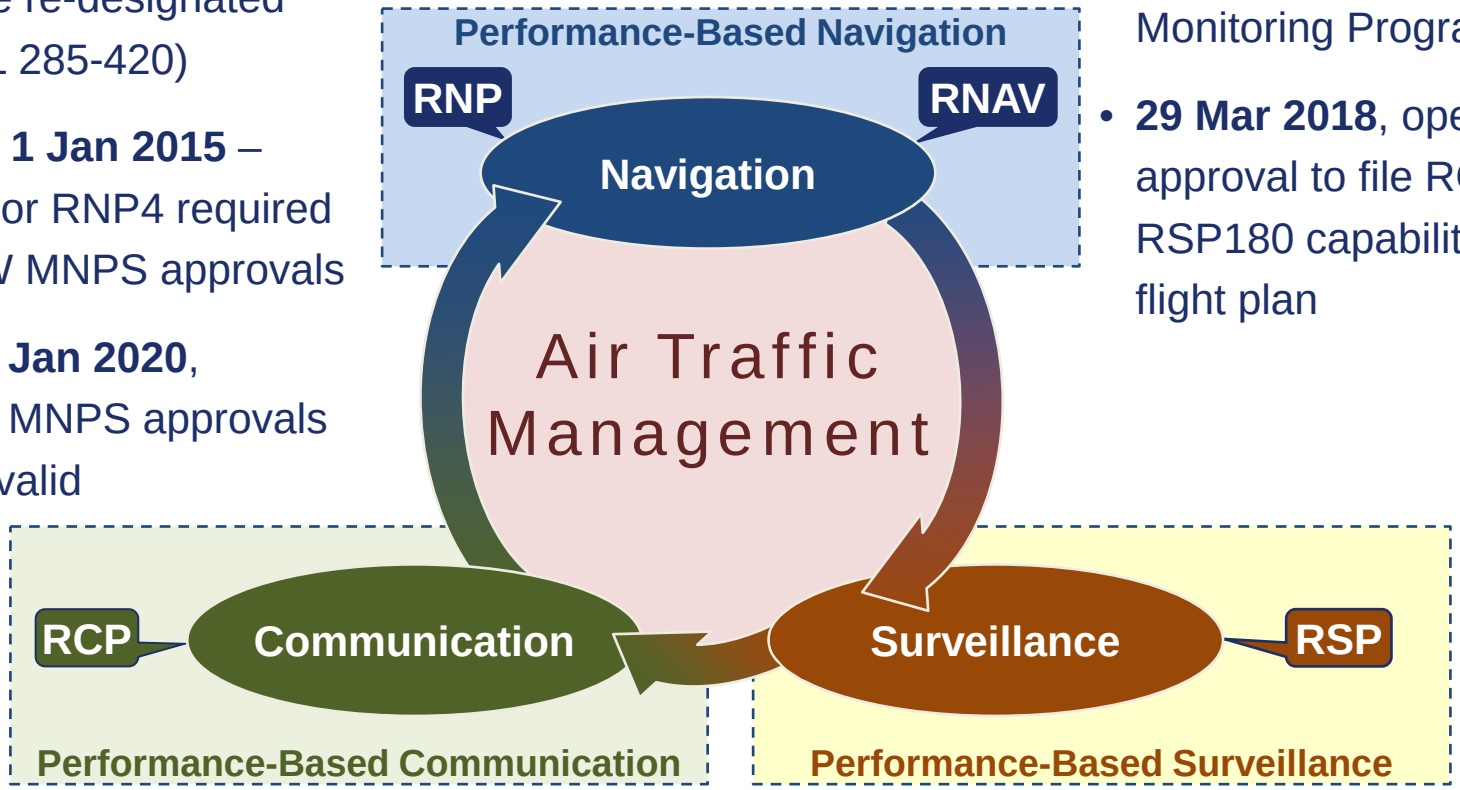
NAT MNPS transition to NAT HLA

NAV

- **4 Feb 2016** – MNPS airspace re-designated HLA (FL 285-420)
- Starting **1 Jan 2015** – RNP10 or RNP4 required for NEW MNPS approvals
- Until **30 Jan 2020**, existing MNPS approvals remain valid

COMM and SURV

- **In place** – PBCS Monitoring Program
- **29 Mar 2018**, operational approval to file RCP240 / RSP180 capability in flight plan



NAT will not make November 2016 for full PBCS implementation

so

What's the NAT PBCS Transition Strategy?

PBCS Monitoring and Planning

- **Post implementation PBCS monitoring has been in place for some time and is on going by the NAT ANSPs**
- **NAT PBCS Implementation Plan pending tasks are associated with**
  - Establishing State policies for PBCS implementation and approval
  - Operator preparation and eligibility to file RCP / RSP capability
  - ANSP automating the processing of flight plan RCP / RSP designators

Items to Complete by November 2016

- **States, including those not in the NAT Region, need to establish their policies for their operators to be eligible to file RCP / RSP capability in the flight plan**
- **Operators need to prepare to be eligible and update their systems to insert the RCP / RSP designators in the flight plan**
- **NAT ANSPs may need to provide PBCS monitoring data to relevant parties to make a compliance finding for operational approval**
- **NAT ANSPs need to modify their systems to use RCP / RSP designators when applying performance-based separation minima**
- **NAT States need to coordinate on NAT SUPPs (Doc 7030/5) and prescribe relevant RCP / RSP specifications in AIP**

NAT PBCS Transition Strategy - Intro

- **Most significant issue – States of the Operator (or Registry) and the operators are not likely to be ready to file RCP / RSP flight plan designators for NAT operations by November 2016**
  - Also, some NAT ANSPs will not be ready to use RCP / RSP flight plan designators by November 2016
- **NAT PBCS transition strategy will address PBCS operational approval and use of RCP / RSP flight plan designators for performance-based separations**
  - Use of RNP flight plan designators are addressed by the transition strategy from MNPS to PBN

Status – Establish Operator Requirements

- **Canada, U.K. and U.S. are developing advisory circulars for operators to be eligible to file RCP240 / RSP180 in the flight plan**
  - Targeting September 2016 for completion
  - Other States could benefit from this work
- **Some differences in approach to determine eligibility**
  - Design approval and condition of operator's operations and maintenance programs
  - But may also require PBCS monitoring data
- **Specific approach is a matter for the States (Operator or Registry)**
  - Standardization of States' PBCS policies is promoted through guidance material contained in the PBCS Manual (Doc 9869)

PBCS Operator Requirements in the NAT

NAT SPG Conclusion 52/19 – PBCS Operator Requirements in the NAT Region

That, in view of the ICAO amendments on performance-based communications and surveillance (PBCS) and reduced separations with applicability date in November 2016 and ongoing NAT implementations, the ICAO Regional Director, Europe and North Atlantic, urge States of the Operator (or Registry) to take appropriate measures to develop, establish and implement necessary policies and procedures to ensure that their operators conducting flights in the NAT Region can be compliant with PBCS requirements, by 29 March 2018.

RCP / RSP Flight Plan Designators

NAT SPG Conclusion 52/20 – RCP/RSP Flight Plan Designators

That, the NAT States/ANSPs that plan to apply 42.6 km (23 NM) lateral separation minimum and/or 55.5 km (30 NM), 93 km (50 NM) and/or 5-minute longitudinal separation minima implement the capability to process and apply ICAO PBCS flight plan designators to determine aircraft eligibility for performance-based horizontal separation by 29 March 2018.

PANS-ATM Change from 30 to 23 NM Lateral

- **30 NM lateral separation minimum provision added in 2002**
- **2016 amendment change from 30 NM to 23 NM lateral separation**
  - Specifies RCP240 and RSP180
  - Otherwise, requirements for 23 NM lateral separation minimum are the same as the original requirements for 30 NM lateral separation minimum (2002)
- **For the lateral separation, the date when the actual separation minimum (i.e. 25 NM (RLatSM) or 30 NM) would change to 23 NM may occur after but not before** 29 March 2018
  - Date when ANSPs will use ICAO PBCS flight plan designators
  - PBCS implementation date is 29 March 2018, regardless of whether 30 NM or 23 NM lateral separation is being applied.

What are the next steps for NAT PBCS Project Team?

Next Steps

- **NAT PBCS PT needs to complete the following items**
  - Proposal for amendment (PfA) to the NAT Regional SUPPS (Doc 7030/5)
  - Other regional documentation
  - Common language for State documents, such as Aeronautical Information Circulars (AICs)

NAT Regional SUPPS – Chapter 2

NAT PBCS PT Draft Proposal under Review

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

2.1.14.1All FANS 1/A CPDLC-capable aircraft planning to operate in the NAT Region ~~and intending to use data link services~~ shall insert the appropriate descriptor(s) (J2, J3, J4, J5 and/or J7) in Item 10a of the flight plan ~~to indicate FANS 1/A interoperable equipment~~.

2.1.15 Required communication performance (RCP) specifications

2.1.15.1All FANS 1/A CPDLC RCP 240 capable aircraft intending to operate in the NAT Region shall insert the descriptor P2 in Item 10a of the flight plan.

2.1.16 Automatic dependent surveillance – contract (ADS-C)

2.1.16.1All FANS 1/A ADS-C-capable aircraft planning to operate in the NAT Region shall insert the D1 descriptor in Item 10b of the flight plan.

2.1.17 Required surveillance performance (RSP) specifications

2.1.17.1All FANS 1/A ADS-C RSP 180-capable aircraft planning to operate in the NAT Region shall insert SUR/RSP180 in Item 18 of the flight plan.

NAT Regional SUPPS – Chapter 3

NAT PBCS PT Draft Proposal under Review

3.1 PERFORMANCE-BASED COMMUNICATION (PBC)

(A6, Part I – Chapter 7; A6, Part II – Chapter 2.5; A6, Part III, Sections II and III – Chapter 5; A11 – Chapters 2, 3 and 6; A15 – Chapter 7, P-ATM – Chapters 4 and 5, and Appendix 2)

Note.— Additional guidance can be found in the ICAO Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).

3.1.1 Required communication performance (RCP) specifications

3.1.1.1 RCP 400

Nil.

3.1.1.2 RCP 240

3.1.1.2.1 The RCP 240 specification shall be applicable to controller-pilot data link communications (CPDLC) service and aircraft capability described in para 3.4 and used to support the separation minima specified in 6.2.1.1 a), and 6.2.2.3.

Means of compliance

3.1.1.2.2 The aircraft operator shall:

a) participate in the NAT PBCS monitoring programmes; and

b) from 29 March 2018, be approved by the State of the Operator or the State of Registry, as appropriate, to file the RCP 240 flight plan designator.

3.1.1.2.3 NAT air navigation service providers shall:

a) establish PBCS monitoring programmes; and

b) from 29 March 2018, apply the RCP 240 flight plan designator to determine aircraft eligibility for relevant separation minima.

NAT Regional SUPPS – Chapter 5

NAT PBCS PT Draft Proposal under Review

5.1 PERFORMANCE-BASED SURVEILLANCE (PBS)

(A6, Part I – Chapter 7; A6, Part II – Chapter 2.5; A6, Part III, Sections II and III – Chapter 5; A11 – Chapters 2, 3 and 6; A15 – Chapter 7, P-ATM – Chapters 4 and 5, and Appendix 2)

Note.— Additional guidance can be found in the ICAO Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).

5.1.1 Required surveillance performance (RSP) specifications

5.1.1.1 RSP 400

Nil.

5.1.1.2 RSP 180

5.1.1.2.1 The RSP 180 specification shall be applicable to automatic dependent surveillance – contract (ADS-C) service and aircraft capability described in para 5.5 and used to support the separation minima specified in 6.2.1.1 a), and 6.2.2.3.

Means of compliance

5.1.1.2.2 The aircraft operator shall:

a) participate in the NAT PBCS monitoring programmes; and

b) from 29 March 2018, be approved by the State of the Operator or the State of Registry, as appropriate, to file the RSP 180 flight plan designator.

5.1.1.2.3 NAT air navigation service providers shall:

a) establish PBCS monitoring programmes; and

b) from 29 March 2018, apply the RSP 180 flight plan designator to determine aircraft eligibility for relevant separation minima.

NAT Regional SUPPS – Chapter 6 (Lateral)

NAT PBCS PT Draft Proposal under Review

6.2.1 Lateral

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

6.2.1.1 Minimum lateral separation shall be:

a) 42.6 km (23 NM) ~~55.5 km (30NM)~~ between aircraft operating within the control area of the Gander Oceanic FIR, New York Oceanic East FIR, Reykjavik Oceanic FIR, Shanwick Oceanic FIR and Santa Maria Oceanic FIR, except in some airspace 55.5 km (30 NM) may be applied instead, as published by the States concerned in national AIPs. These minima are applied in accordance with 5.4.1.2.1.6 b) of PANS-ATM and the following: ~~provided that the following conditions are met:~~

1) communication – CPDLC RCP 240 per para. 3.1.1.2;

~~2~~1) navigation – RNP 4 ~~specification in accordance with the provisions of~~ per para.4.1.2.1; and

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

3) surveillance – ADS-C ~~shall be monitored against~~ RSP 180 per para. 5.1.1.2.

~~*Note – Guidance concerning RCP and RSP specifications, application and performance requirements can be found in Performance based Communication and Surveillance (PBCS) Manual (Doc 9869).*~~

NAT Regional SUPPS – Chapter 6 (Long)

NAT PBCS PT Draft Proposal under Review

6.2.2.32Performance-based longitudinal separation minima ~~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. This minimum is applied in accordance with 5.4.2.9 of PANS-ATM and the following:; ~~provided that the following conditions are met:~~

1) communication – CPDLC RCP 240 per para. 3.1.1.2;

2~~1~~) navigation – RNP 10 or RNP4 ~~specification in accordance with the provisions of~~ per paras, 4.1.1.1 and .4.1.2.1, respectively; and

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

3) surveillance – ADS-C ~~shall be monitored against~~ RSP 180 per para. 5.1.1.2.

~~*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 Oecanic FIR. This minimum is applied in accordance with 5.4.2.9 of PANS-ATM and the following; and

1) communication – CPDLC RCP 240 per para. 3.1.1.2;

2~~1~~) navigation – RNP4 ~~specification in accordance with the provisions of~~ per para, 4.1.2.1; and

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

3) surveillance – ADS-C ~~shall be monitored against~~ RSP 180 per para. 5.1.1.2.

c) 5 minutes between aircraft operating in the Gander Oceanic FIR, Reykjavik Oceanic FIR, Shanwick Oceanic FIR and Santa Maria Oceanic FIR. This minimum is applied in accordance with 5.4.2.9 of PANS-ATM and the following::.

1) communication – CPDLC RCP 240 per para. 3.1.1.2;

2) navigation – RNP 10 or RNP4 per paras, 4.1.1.1 and .4.1.2.1, respectively; and

3) surveillance – ADS-C RSP 180 per para. 5.1.1.2.

NAT Regional SUPPS – Chapter 7

NAT PBCS PT Draft Proposal under Review

Chapter 7. SAFETY MONITORING

…

7.2 AIRSPACE MONITORING

…

7.2.4 PBCS

7.2.4.1 Adequate monitoring of flight operations in the NAT Region shall be conducted to assist in the assessment of continuing compliance of aircraft with PBCS requirements.

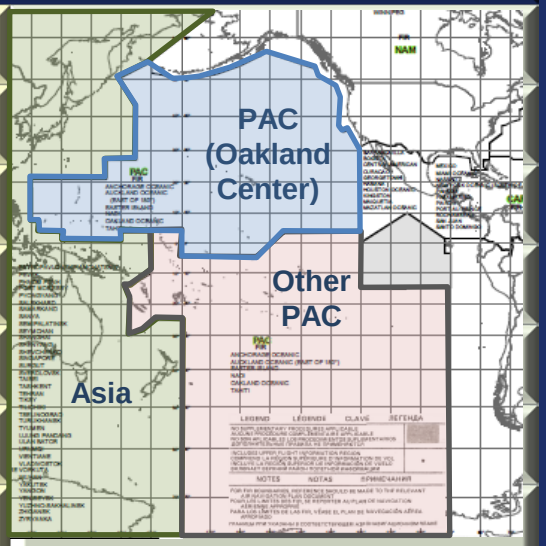
Note.— Additional guidance can be found in the ICAO Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).

How does NAT PBCS transition strategy relate to PBCS implementation in the Asia-Pacific Regions?

How might it facilitate PBCS implementation planning in the AFI Region?

Planning and Implementation

- **(Formal) North Atlantic Systems Planning Group (NAT SPG)**
- **(Formal) Asia-Pacific Air NavigationPlanning and Implementation Regional Group**
- **Informal South Pacific ATS Coordinating Group (ISPACG)**
- **Informal Pacific ATC Coordinating Group (IPACG)**

North Atlantic (NAT) Region		Asia-Pacific (APAC) Regions	
Canada		Australia	
Iceland		Chile	
Ireland		Fiji	
Norway		French Polynesia	
Portugal		Japan	
United Kingdom		New Zealand	
United States		United States	

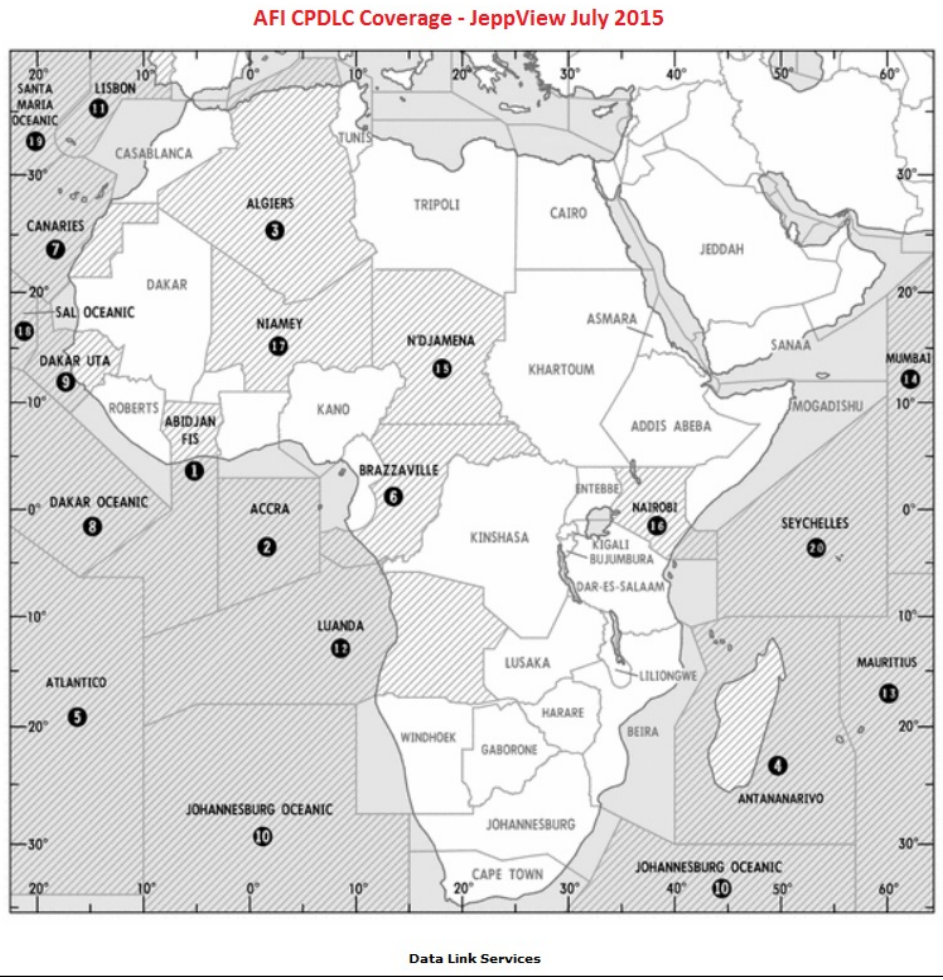
Asia-Pacific Region

- **2009 and 2012 – Satellite Operational Continuity Meetings**
- **2013 March and May – Data Link and PBCS Seminar**
- **2016 May – Operational Data Link Seminar**
  - Use PBCS Implementation Plan – Checklist (Doc 9869, Appendix A)
  - Example provided by NAT PBCS Implementation Plan
  - Coordinate APANPIRG conclusions similar to those made by NAT SPG/52 → Common Date 29 March 2018
  - Develop Proposal for Amendment to APAC Regional SUPPs, similar to NAT Regional SUPPs (Doc 7030)
  - Common language for AIPs

African-Indian Ocean (AFI) Region

- **(Formal) African-Indian Ocean Planning and Implementation Regional Group (APIRG)**

Needs updating



AFI Region Seminars/Outcomes

- **2015 November – Operational Data Link Seminar (Nairobi) → Outcome**
  - APIRG Decision 20/08: Measures to Support CPDLC/ADS-C implementation in the AFI Region
  - APIRG Conclusion 20/09: Implementation of ICAO PBCS Manual (DOC 9869) and GOLD Manual (DOC 10037)
  - APIRG Conclusion 20/24 to establish Central Monitoring Agency

Nov 2015 Seminar → APIRG Decision 20/08

Decision 20/08: Measures to Support CPDLC/ADS-C implementation in the AFI Region

That the Secretariat should develop a Project under APIRG framework of AFI Region CPDLC/ADS-C Implementation Planning Continuous Improvement (CPDLC/ADS-C IPCI)

Nov 2015 Seminar → APIRG Conclusion 20-09

Conclusion 20/09: Implementation of ICAO PBCS manual (DOC 9869) and GOLD Manual (DOC 10037)

That:

a) States, Air Navigation Service Providers (ANSPs) and users take necessary action to apply the technical and operational guidance provided in the Second Edition of Doc 9869 (Performance Based Communication and Surveillance (PBCS) Manual) and the Global Operational Datalink (GOLD) Manual (Doc 10037) once published;

b) States and ANSPs that have already implemented CPLDC/ADS-C review their systems performance using PBCS Manual and take immediate action where remedial measures are necessary; and

c) ICAO should provide assistance to States facing implementation challenges under the No Country Left Behind (NCLB) initiative to ensure that communication and surveillance requirements are met by all AFI States.

Nov 2015 Seminar → APIRG Conclusion 20/24

Conclusion 20/24: Establishment of a Project Team for the implementation of a data link central monitoring and reporting agency (DL/CMRA)

That:

a) A Project Team comprised of Cabo Verde (as Team Leader), Ghana, ASECNA, South Africa, Seychelles, AFRAA and IATA be established to identify and propose the main functions of an AFI DL/CMRA, the appropriate organizational framework and a suitable cost effective funding mechanism; and

b) The Project Team Leader should provide a report of the activities of the project, which are to be mainly done through electronic conferences to the Secretariat for submission to the APCC and the outcome should subsequently be submitted to APIRG/21.

What do we want for outcome of this Seminar?

ICAO
Operational Data Link Seminar
Accra, Ghana
8-12 August 2016

Considerations for Session 5

- **Use PBCS Implementation Plan – Checklist (Doc 9869, Appendix A)**
  - Example provided by NAT PBCS Implementation Plan
- **Establish lead, target date and interdependencies for each task → highlights include**
  - Most urgent matter – local and regional PBCS monitoring programs
  - Use PBCS flight plan designators by 29 March 2018 (NAT and APAC)
  - Develop Proposal for Amendment to AFI Regional SUPPs, similar to NAT Regional SUPPs (Doc 7030)
  - Amend other regional documentation, as appropriate?
  - Develop common language for AIPs

PBCS Implementation Plan – Checklist

Task ID	Task Descriptor
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Group E tasks – All stakeholders – post-implementation monitoring	
E-1	PBCS monitoring – post-implementation

Prepare for APIRG/21

- **Recall related conclusions from previous APIRG meetings and update as necessary**
- **Develop and coordinate draft conclusions for APIRG/21, similar to those made by NAT SPG, for example**
  - NAT SPG Conclusion 47/5 – Approval of the NAT RCP and ADS-C Surveillance Performance based operations implementation plan
  - NAT SPG Conclusion 52/19 – PBCS Operator Requirements in the NAT Region
  - NAT SPG Conclusion 52/20 – RCP/RSP Flight Plan Designators

Additional slides

- **The slides that follow provide**
  - history in tabular form
  - An overview of the NAT PBCS Implementation Plan
- **They are supplemental to the presentation**

NAT PBCS Implementation Plan – Notes

- **Application of RCP and RSP specifications are associated with:**
  - NAT Data Link Mandate (CPDLC and ADS–C)
  - RLongSM (5-minute longitudinal separation minimum)
  - RLatSM (23 NM lateral separation minimum on ½ degree tracks in OTS
- **Application of performance-based horizontal separation minima includes**
  - Prescription of RCP / RSP specifications for communication and surveillance capabilities
  - State policies for aircraft operator to be eligible to file RCP / RSP capabilities in the flight plan
  - ANSP to apply separation minima only to eligible aircraft pairs
  - PBCS post-implementation monitoring, including analysis and corrective action
- **Capability filed in flight plan comprises serviceable equipment, flight crew qualifications and operational approval (Doc 4444, Appendix 2, Item 10)**

NAT PBCS Implementation Plan – Tasks

Completed | Ongoing | Pending

GENERAL PROJECT DEVELOPMENT & MANAGEMENT				
ID	**DESCRIPTOR**	**COMPLETE BY**	**LEAD**	**STATUS**
A-1 (Old 11)	**AIPs/other State documents supporting NAT SUPPS/ PANS–ATM**	Consistent with Task A-4 (Old Task 10)	States	**PENDING** completion of Task A-4 (Old 10).
A-2 (New)	**ANSP – PBCS policies, objectives supporting safety oversight**	Prior to operational implementation of RLongSM and RLatSM	NAT CNSG, OPS/AIR, States, Users	**PENDING** a) Draft ICAO provisions are available. b) Complete Tasks A-1 (Old 10) and A-4 (Old 11). c) Update Data Link Job Aid. Template to include RCP240 / RSP180. d) Inform States of example RCP / RSP approval documents published by other States. e) Notify States by State letter of date by which operators/aircraft must be approved.

NAT PBCS Implementation Plan – Tasks

Completed Ongoing Pending

GENERAL PROJECT DEVELOPMENT & MANAGEMENT				
ID	**DESCRIPTOR**	**COMPLETE BY**	**LEAD**	**STATUS**
A-3 (Old 16)	**Operator and Aircraft System – PBCS policies, objectives supporting safety oversight**	Prior to operational implementation of RLongSM and RLatSM	NAT CNSG OPS/AIR States Users	**PENDING** a) Draft ICAO provisions are available. b) Complete Tasks A-1 (Old 10) and A-4 (Old 11). c) Update Data Link Job Aid. Template to include RCP240 / RSP180. d) Inform States of example RCP / RSP approval documents published by other States. e) Notify States by State letter of date by which operators/aircraft must be approved.
A-4 (Old 10)	**PfA for NAT Regional Supplementary Procedures**	NAT SPG/49 (2013)	NAT CNSG NAT ATMG	**PENDING** outcome of the ICAO provisions. PfA was drafted in Feb 2013. In light of ICAO PBCS Provision, PfA needs to be reviewed.

NAT PBCS Implementation Plan – Tasks

Completed Ongoing Pending

GENERAL PROJECT DEVELOPMENT & MANAGEMENT				
ID	**DESCRIPTOR**	**COMPLETE BY**	**LEAD**	**STATUS**
B-1 (Old 1)	**PBCS Implementation Plan**	NAT SPG/47 (2011)	NAT CNSG	**COMPLETE**. Initial draft approved at NAT SPG/47. Plan is reviewed and updated, as necessary.
B-2 (Old 2)	**Target Dates and Relevant ATM Operations**	Nov 2016 target date	NAT IMG	**PENDING**. NAT SPG Conclusion 44/11 targeted RCP mandate for 2015. ICAO PBCS provisions for RLongSM and RLatSM are targeted Nov 2016.
B-3 (Old 3)	**RCP / RSP Specifications**	NAT SPG/48 (2012)	NAT SARSIG	**COMPLETE**. RCP240 / RSP180 for RLongSM and RLatSM. Only monitor for trials and Data Link Mandate.
B-4 (Old 4)	**PBCS awareness**	1st Workshop 2013 2nd Workshop 2015	ICAO, States	**ONGOING**. Completed 1st workshop in 2013 and 2nd in 2015. More workshops will be convened, as needed.

NAT PBCS Implementation Plan – Tasks

Completed Ongoing Pending

DOCUMENTATION (1 of 2)				
ID	**DESCRIPTOR**	**COMPLETE BY**	**LEAD**	**STATUS**
C-1a (Old 5)	**Operational concepts**	NAT SPG/49 (2013)	NAT ATMG NAT CNSG	**COMPLETE.** For Data Link Mandate, RLatSM and RLongSM. See Task C1b (Old 6).
C-1b (Old 6)	**Concepts – GOLD amendments**	NAT SPG/49 (2013)	GOLD Ad–Hoc Working Group	**COMPLETE.** For GOLD, 2nd Edition, 23 Apr 2013; ICAO GOLD Manual (Doc 10037) will supersede end 2015. Includes Tasks C-1a and C-1c through C-1f and C-2a.
C-1c (Old 7)	**Concepts – Contingency procedures**	NAT SPG/49 (2013)	NAT ATMG NAT CNSG	**COMPLETE**. See Task C-1b (Old 6).
C-1d (Old 8)	**Concepts – Restoration of service**	NAT SPG/49 (2013)	NAT ATMG NAT CNSG	**COMPLETE**. See Task C-1b (Old 6).
C-1e (Old 14)	**GOLD proposal for RCP / RSP compliance determination**	NAT SPG/49	NAT CNSG	**COMPLETE**. Task C-1b (Old 6) GOLD material moved to PBCS Manual (Doc 9869).
C1-f (Old 15)	**GOLD proposal for operator eligibility**	NAT SPG/49	OPS/AIR	**COMPLETE**. Task C-1b (Old 6) GOLD material moved to PBCS Manual (Doc 9869).

NAT PBCS Implementation Plan – Tasks

Completed Ongoing Pending

DOCUMENTATION (1 of 2)				
ID	**DESCRIPTOR**	**COMPLETE BY**	**LEAD**	**STATUS**
C-2a (Old 9)	**Flight plan requirements**	PfA to Doc 4444 (Nov 2016)	NAT CNSG ICAO (Global)	**COMPLETED**. PfA to Doc 4444. See also Task C-1b (Old 6) and C-2b (Old 12b).
C-2b (Old 12b)	**ATC automation changes to use flight plan designators**	Prior to operational implementation of RLongSM and RLatSM	NAT ANSPs	**PENDING** flight plan related functions – pending Doc 7030 and Doc 4444 amendments. See Task C-2a (Old 9).
C-3 (Old 12a)	**ATC automation changes for monitoring**	Before the start of operational trials of RLongSM or RLatSM.	NAT ANSPs	**COMPLETE.** NAT ANSPs report results of PBCS monitoring at CNSG meetings.
C-4 (Old 13)	**Confirm actual CPDLC and ADS–C performance**	Prior to operational implementation	NAT ANSPs DLMA CNSG	**COMPLETED**. CPDLC and ADS–C performance is viable for RCP240 and RSP180. See Task E-1 (Old 17).

NAT PBCS Implementation Plan – Tasks

Completed | Ongoing | Pending

IMPLEMENTATION ACTIVITIES				
ID	**DESCRIPTOR**	**COMPLETE BY**	**LEAD**	**STATUS**
D-1 (Old 16)	**Aircraft operator readiness**	Prior to operational implementation of RLatSM or RLongSM	NAT CNSG OPS/AIR States Users	**PENDING** a) Draft ICAO provisions are available. b) Complete Tasks A-1 (Old 10) and A-4 (Old 11). c) Update Data Link Job Aid. Template to include RCP240 / RSP180. d) Inform States of example RCP / RSP approval documents published by other States. e) Notify States by State letter of date by which operators/aircraft must be approved.
D-2 (Old 13)	**Confirm aircraft operator/aircraft type actual CPDLC and ADS–C performance**	Prior to operational implementation	NAT ANSPs DLMA CNSG	**COMPLETED**. CPDLC and ADS–C performance is viable for RCP240 and RSP180. See Task E-1 (Old 17).

NAT PBCS Implementation Plan – Tasks

Completed Ongoing Pending

POST IMPLEMENTATION TASKS				
ID	**DESCRIPTOR**	**COMPLETE BY**	**LEAD**	**STATUS**
E-1 (Old 17)	**Post-implementation monitoring**		NAT ANSPs DLMA CNSG	**ONGOING**. ANSPs, DLMA and NAT CNSG provide reports on a regular basis.