

Session 3: Performance-based Communication and Surveillance (PBCS)

North Atlantic (NAT) PBCS Transition Strategy

Presented to: Operational Data Link Seminar
(Bangkok, Thailand)

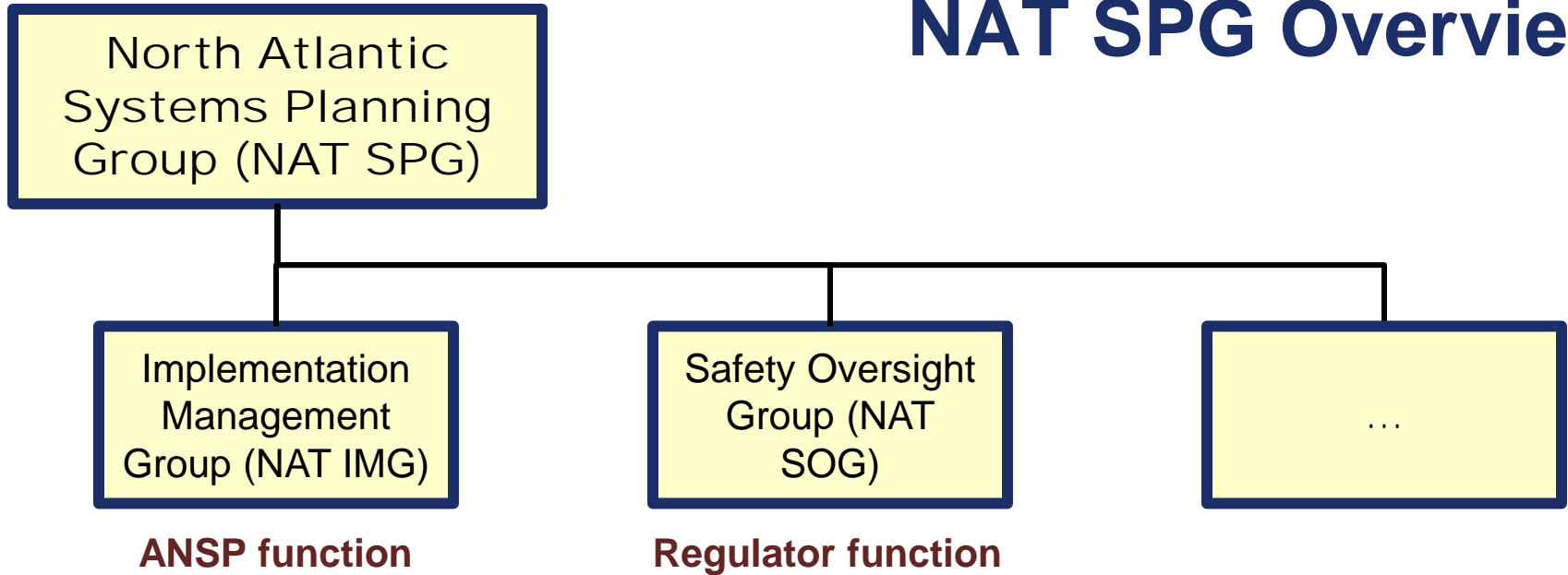
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**Federal Aviation
Administration**

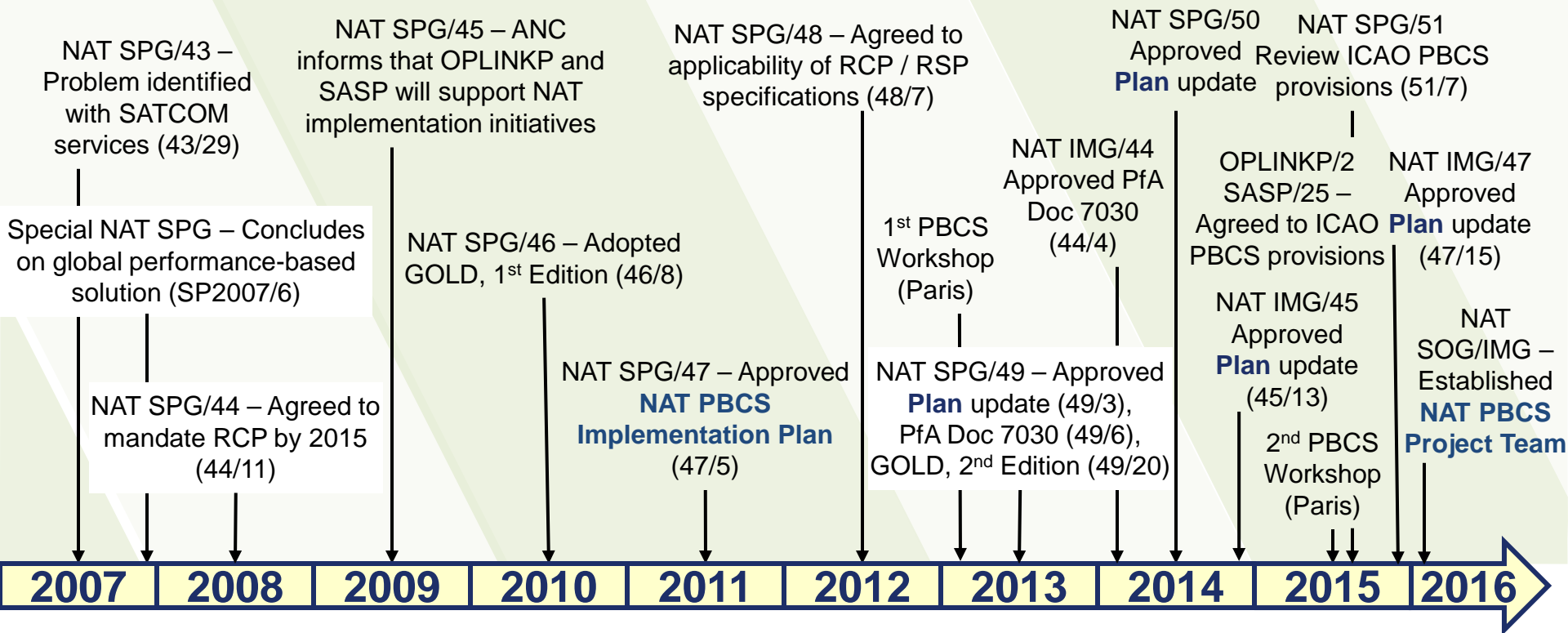
NAT SPG Overview



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 – 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 with ISPACG and IPACG**
 - 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



Review the ICAO PBCS Provision

PBCS is a shared responsibility, but accountability is clear

In accordance with the ICAO PBCS Provision, State	In accordance with State policies	
	ANSP	Operator
<ul style="list-style-type: none">❑ 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)	<ul style="list-style-type: none">❑ Provides RCP / RSP-compliant services❑ Recognizes RCP / RSP capabilities in air traffic control (ATC) automation❑ Establishes PBCS monitoring program	<ul style="list-style-type: none">❑ Prepares to file RCP / RSP capabilities in flight plan❑ Participates in ANSP PBCS monitoring programs

Review 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)



Review NAT PBCS Implementation Plan

- **Endorsed at NAT SPG/47 (2011)**
 - Called for PBCS implementation by February 2015 – **Not completed**
 - 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
 - Target date for implementation revised to **November 2016**, consistent with ICAO applicability date for PBCS provisions and associated applications

Will we make it?



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)

So What's the Situation in the NAT?

- **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**



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)

NAT PBCS Transition Strategy - Intro

- **NAT PBCS transition strategy will address 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
- **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

PBCS Operator Requirements in the NAT

PIRG Conclusion – Proposed for NAT SPG/52 (June 2016)

That, in view of the ICAO amendments on PBCS and reduced separations with applicability in November 2016 and ongoing NAT implementation, 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 enable operators conducting flights in the NAT Region to start using RCP / RSP flight plan designators as soon as possible. This should take into account:

- a) time for the operator to comply with the States' policies; and**
- b) need for the ANSP to distribute data from NAT PBCS monitoring programs, as necessary.**

RLatSM and RLongSM Transition

- **Adjacent FIRs that are applying a particular separation minimum need to agree among themselves on a common date when to begin to use the RCP / RSP flight plan designators to avoid mid-ocean issues**
- **After the agreed common date, “trials” will transition to “operational implementation”**
 - RLatSM → 42.6 km (23 NM) lateral separation minimum on ½ degree tracks in the Organized Track System (OTS) and
 - RLongSM → 5-minute longitudinal separation minimum

30 NM Lat and 30/50 NM Long Transition

- **Procedures for applying distance-based separation minima have been amended (Doc 4444, Chapter 5)**
 - 50 NM and 30 NM longitudinal separation minima, and
 - 23 NM lateral separation minimum (formerly 30 NM)
- **These separation minima are not in “trials” nor are they addressed in the NAT PBCS Implementation Plan**
 - They are subject to the ICAO PBCS provision

30 NM Lat and 30/50 NM Long Transition

- **Options considered**

- Stop applying the separation minima until PBCS is fully implemented
 - use of RCP / RSP flight plan designators beginning November 2016 would, in effect, stop applying the separation minima if many operators are not RCP / RSP eligible
- Consider them to be “trial” status
- Continue with the operational implementation under certain conditions.

30 NM Lat and 30/50 NM Long Transition

- **These separation minima are currently being applied to a relatively small proportion of eligible aircraft pairs**
 - Such flights are already subjected to PBCS monitoring
- **The application of these separation minima should continue on the condition that PBCS is fully implemented as soon as practically possible**



RCP / RSP Flight Plan Designators

Proposed NAT IMG/48 Decision (May 2016)

That

- a) **the NAT ANSPs that plan to apply 42.6 km (23 NM) lateral separation minimum on ½ degree tracks in the Organized Track System (OTS) and 5-minute longitudinal separation minimum implement the capability to process ICAO PBCS flight plan designators by XX/XX/XXXX (this date would signify the date that RLatSM and RLongSM would transition from trial status to operational implementation); and**
- b) **the relevant NAT ANSPs that plan to apply 30 NM and 50 NM longitudinal separation minima, and/or generally a 23 NM lateral separation minimum (currently 30 NM) implement the capability to process ICAO PBCS flight plan designators by XX/XX/XXXX (this date would signify the date that existing distance-based separations would be implemented under the newly amended ICAO provision)**

Next Steps

- **NAT PBCS PT needs to complete the following items**
 - Proposal for amendment (PfA) to the NAT Regional SUPPS (Doc 7030/5)
 - Common language for State documents, such as Aeronautical Information Circulars (AICs)
- **The contents of this proposal represent the views of the NAT PBCS PT and require coordination with the NAT IMG, SOG and SPG**

NAT Coordinating Group	Dates	Location
NAT IMG/48	9-13 May 2016	Paris, France
NAT SOG/14	24-27 May 2016	Paris, France
NAT SPG/52	27-30 June 2016	Paris, France





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**

References / Background

Jun 2007	NAT SPG/43	Identified problem needing urgent attention (43/29)
Nov 2007	Special NAT SPG	Established RCP Task Force (SP2007/6)
Jun 2008	NAT SPG/44	Agreed to mandate RCP by 2015 (44/11)
Jun 2010	NAT SPG/46	Endorsed GOLD (46/8)
Jun 2011	NAT SPG/47	Endorsed NAT PBCS Implementation Plan (47/5)
Jun 2012	NAT SPG/48	Reinforced RCP – RSP (48/7)
Jun 2013	NAT SPG/49	PfA to Doc 7030 – RCP / RSP (49/6 & Apx F)
May 2014	NAT IMG/44	PfA to Doc 7030 – data link requirements (44/4 & Apx G)
Jun 2014	NAT SPG/50	Updated NAT PBCS Implementation Plan (50/02)
Jun 2015	NAT SPG/51	Review ICAO PBCS provisions – This PT (51/07)
Nov 2015	NAT IMG/47	NAT IMG Decision 47/15 – Updated NAT PBCS plan v.2015_2
Jun 2016	NAT SPG/52	Plans to endorse NAT PBCS Transition Strategy



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 <ul style="list-style-type: none"> 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	1 st Workshop 2013 2 nd Workshop 2015	ICAO, States	ONGOING. Completed 1 st workshop in 2013 and 2 nd 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, 2 nd 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.

