

Session 1- Global and regional ICAO and industry provisions

ICAO Standards, Recommended Practices and Guidance Material

NAT PBCS Seminar

Paris, France. February 20-22, 2013



PBCS – an introductory history (1)

- In 1991, the 10th ANC endorse the Future Air Navigation System concept.
 - This becomes known as the communications, navigation, surveillance/air traffic management (CNS/ATM) systems concept.
- In 1996, at the 4th meeting of the Aeronautical Mobile Communications Panel (AMCP/4) recognises the absence of objective criteria to evaluate communications performance.
- In 2000 AMCP is renamed the Operational Data Link Panel (OPLINKP)
- In 1997, the Air Navigation Commission tasks OPLINKP to develop the concept of Required Communications Performance (RCP).
- In 2001, OPLINKP completed a concept of RCP and the Air Navigation Commission solicit State comment.
- In 2002, OPLINKP were tasked to develop a manual on RCP and as necessary develop SARP's and procedures relating to the use of RCP in ATS.



PBCS – an introductory history (2)

- In 2003, the 11th ANC endorse recommendations to :
 - Confirm development of RCP
 - Investigate further areas including:
 - Relationship of RCP to separation studies and interoperability
 - RCP Types and Allocations
 - Safety performance monitoring
- In 2007, Annex 6 - Operation of Aircraft,
 - Amended to introduce concept of RCP in the provision of ATS.
- In 2007, Annex 11 – Air Traffic Services and Doc 4444 PANS - ATM,
 - Amended to introduce definitions and associated procedures for RCP.



PBCS – an introductory history (3)

- In 2007, RTCA DO-306/EUROCAE ED-122 Safety and Performance Standard for Air Traffic Data Link Services in Oceanic and Remote Airspace (Oceanic SPR Standard) is published.
 - Provides operational, safety, and performance requirements for data link services that support specific ATS functions in oceanic and remote airspace.
 - Specifically provides RCP/RSP allocations for reduced separation standards
- In 2008, ICAO Doc 9869 Manual on Required Communications Performance is published.
- In 2010, ICAO Global Operational Data Link Document (GOLD) is published.
 - Appendix B – RCP Specifications
 - Appendix C - RSP Specifications
 - Appendix D – Post Implementation Monitoring and Corrective Actions

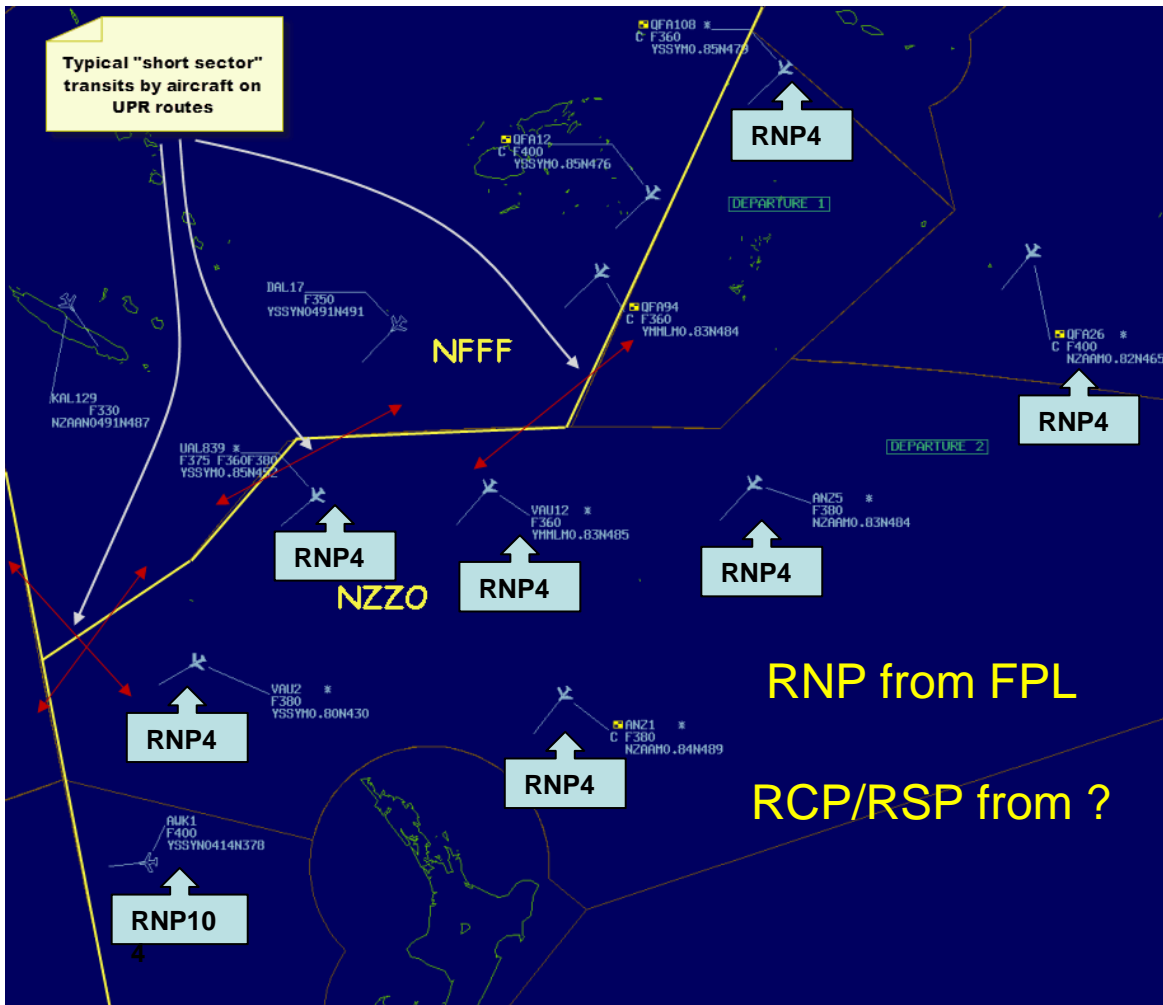


RCP – Required Communications Performance

- **RCP concept seeks to manage the performance of communications supporting evolving ATM concepts and emerging technologies. This is achieved by:**
 - **Determining an RCP type for the communications capabilities supporting an ATM function; then**
 - **Prescribing the RCP type(s) related to the communications system(s) supporting the ATM functions within that airspace; and**
 - **Complying with the prescribed RCP type(s) through analysis, operational assessments, and performance monitoring of the communications systems**



Why PBCS?



- VDL2?
- VHF?
- POA?
- RCP240?
- RCP400?
- SATCOM?
- RSP180?
- RSP400?
- HFDL?
- SATCOM +HFDL?
- Inmarsat I3?
- Inmarsat I4?
- Iridium?
- MTSAT?

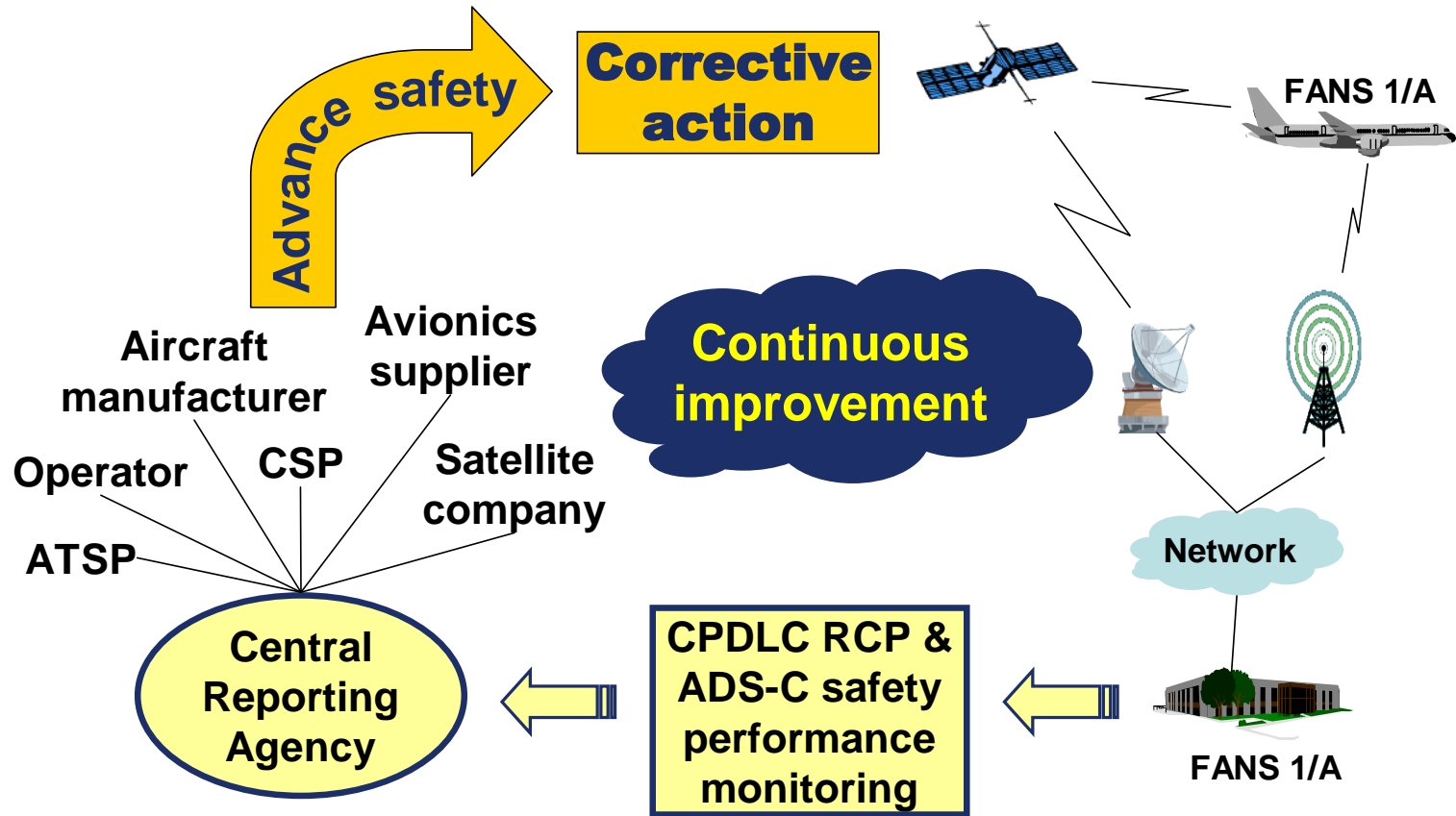


A performance based approach

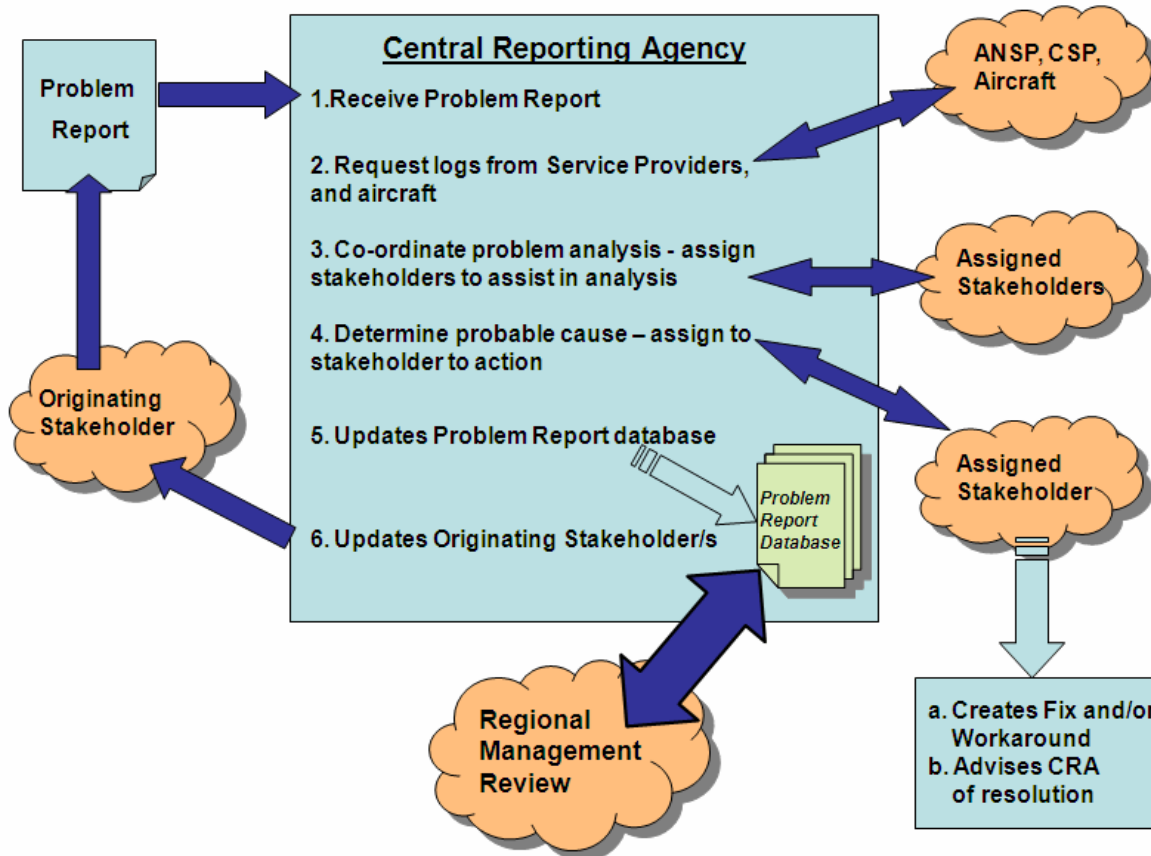
- **Doc 9883 Manual on Global Performance of the Air Navigation System**
 - Notion of a performance based air navigation system emanated from industry practices that have evolved for many years outside of aviation.
 - Based on following principles:
 - Strong focus on desired/required results through adoption of performance objectives and targets
 - Informed decision making, driven by the desired/required results; and
 - Reliance on facts and data for decision making.
 - Assessment is periodically checked through performance review, which requires adequate performance measurement and data collection capabilities.
 - Performance based approach is a pragmatic tool in
 - Planning changes
 - Developing changes
 - Optimising the System (Continuous Performance Improvement)



Data link - A Performance Based System



Continuous performance improvement



Annex 6 – Operation of Aircraft

“7.1.3 For flights in defined portions of airspace or on routes where an RCP type has been prescribed, an aeroplane shall in addition to the requirements specified in 7.1.1

- a) be provided with communications equipment which will enable it to operate in accordance with the prescribed RCP type(s); and**
- b) be authorized by the state of the operator for operations in each airspace”**

Note: provides reference to Doc 9869 RCP Manual



Annex 11 – Air Traffic Services

2.8 Required communication performance (RCP)

2.8.1 RCP types shall be prescribed by states. When applicable, the RCP type(s) shall be prescribed on the basis of regional air navigation agreements.

2.8.2 The prescribed RCP type shall be appropriate to the air traffic services provided in the airspace concerned.

Note: provides reference to Doc 9869 RCP Manual



Annex 11 – Air Traffic Services

6.1 Aeronautical Mobile Service (air-ground)

6.1.1.2 Where RCP types have been prescribed by states for ATM functions, ATS units shall, in addition to the requirements specified in 6.1.1.1 be provided with communication equipment which will enable them to provide ATS in accordance with the prescribed RCP types.

6.2 Aeronautical Fixed Service (ground-ground)

6.2.1.2 Where RCP types have been prescribed by states for ATM functions, ATS units shall..... (as per 6.1.1.2)



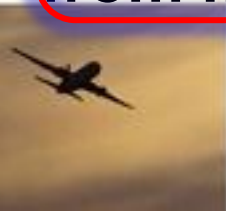
Annex 11 – Air Traffic Services

2.27 Safety Management

2.27.5 Any significant safety related change to the ATS system, including the implementation of a reduced separation minima or a new procedure, shall only be effected after a safety assessment has demonstrated that an acceptable level of safety has been met. When appropriate, the responsible authority shall ensure that adequate provision is made for post implementation monitoring to verify that the defined level of safety continues to be met.

3.3 Operation of air traffic control service

3.3.5.2 Arrangements shall be put in place, through inter-regional agreement, for the sharing between regions of data from monitoring programs.



Doc 4444 – PANS-ATM

4.4.1.4 An operator shall, prior to departure:

(c) ensure that, where the flight is intended to operate where an RCP type is prescribed, the aircraft has an appropriate RCP approval, and that all conditions applying to that approval will be satisfied.



Doc 4444 – PANS-ATM

5.4.1.2.1.6 *Lateral separation of aircraft on parallel or non-intersecting tracks or ATS routes.....*

b) for a minimum spacing between tracks of 55.5 km (30 NM) a navigational performance of RNP 4 shall be prescribed.

Note 2.— Guidance material for implementation of communication capability supporting 93 km (50 NM) and 55.5 km (30 NM) lateral separation is contained in the Manual on Required Communication Performance (RCP) (Doc 9869). Information regarding RCP allocations for these capabilities is contained in RTCA DO-306/EUROCAE ED-122 Safety and Performance Standard for Air Traffic Data Link Services in Oceanic and Remote Airspace (Oceanic SPR Standard).



Doc 4444 – PANS-ATM

5.4.2.6.4 LONGITUDINAL DISTANCE-BASED SEPARATION MINIMA IN AN RNP RNAV ENVIRONMENT USING ADS-C

RCP240

5.4.2.6.4.3.2 The communication system provided to enable the application of the separation minima in 5.4.2.6.4.3 shall allow a controller, within 4 minutes, to intervene and resolve a potential conflict by contacting an aircraft using the normal means of communication. An alternative means shall be available to allow the controller to intervene and resolve the conflict within a total time of 10½ minutes, should the normal means of communication fail.

RSP180

5.4.2.6.4.3.3 When an ADS-C periodic or waypoint change event report is not received within 3 minutes of the time it should have been sent, the report is considered overdue and the controller shall take action to obtain the report as quickly as possible, normally by ADS-C or CPDLC. If a report is not received within 6 minutes of the time the original report should have been sent, and there is a possibility of loss of separation with other aircraft, the controller shall take action to resolve any potential conflict(s) as soon as possible. The communication means provided shall be such that the conflict is resolved within a further 7½ minutes.



RSP/RCP – ICAO 2012 FPL

- **Currently, there is potential for an ATSP to misapply Air Traffic Services to an operator or aircraft type.**
- **Current ICAO Flight Plan 2012 makes provision for RCP allocation in Item 10 but does not assign values to the designators.**
- **No similar provision was made for RSP allocation in Item 10 but does mention use of SUR/ in Item 18.**
- **ICAO OPLINKP have agreed that:**
 - **For RCP Field 10a - P1 = RCP400 and P2 = RCP240**
 - **For RSP Field 18 use SUR/RSP180 or SUR/RSP400**
- **This is work in progress**



Other Guidance

- **Information on:**
 - **RTCA DO-306/EUROCAE ED-122 – Safety and Performance Standard for Air Traffic Data Link Services in Oceanic and Remote Airspace (Oceanic SPR Standard)**
 - **Global Operational Data Link Document (GOLD)**
- **Will be covered in other presentations during this session.**





Thank you

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