



**INFORMATION PAPER**

**OPERATIONAL DATA LINK WORKING GROUP (OPDLWG)**

**Agenda Item 3 : Review of ADS/CPDLC programmes and implementation activities in SAT FIRs**

**REGIONAL DATA LINK EVENTS**

(Presented by the Secretariat)

**SUMMARY**

This paper presents the result of the regional data link events held with participation of OPDLWG members and advisors since OPDLWG/2.

**1. INTRODUCTION**

1.1 During the second meeting of the Operational Data Link Working Group (OPDLWG/2), held in Langen from 19-23 October 2015, the group was briefed on the Secretariat's implementation support activities and requested to support and assist in these initiatives, especially delivering regional data link events.

1.2 Since OPDLWG/2, three regional data link events were held and many of the OPDLWG members/advisors participated as a guest speaker. Additional workshop for the AFI and SAM regions is being organized for this year. General information of these events are summarized in Table 1. This paper presents the outcome of the events that took place so far for consideration by the OPDLWG of the areas where further guidance may be required to assist and promote the optimum ATS data link operations.

**2. OBJECTIVE AND SCOPE**

2.1 The main objectives of the regional events were to provide knowledge, guidance and tools necessary for planning and implementation of ATS data link. The events also introduced specific technical and operational documents including ICAO Annex provisions and relevant guidance material to facilitate effective application. The participants of the events had an opportunity to discuss challenges, issues and lessons learned from their experience in data link operations.

2.2 While a common agenda for all regional events was prepared as follows, the presentations were customized to address specific areas of interest for each seminar depending on the audience of the event and data link implementation status and an implementation plan in each region.

- understanding of data link planning and implementation status in the region

- overview of ATS data link including benefits
- ICAO provisions (GANP, Annexes, PANS and Guidance Material) with an highlight on the amendments that will become applicable in 2016
- preparation for data link implementation
- performance-based communication and surveillance
- implementation issues, challenges and lessons learned
- recommendations to Planning and Implementation Regional Groups (PIRGs)

**Table 1 - Regional Data Link Events**

Region	Title (Link to the event website)	OPDLWG Participation
ESAF 2-6 Nov 2015 Nairobi, Kenya	Operational Data Link Familiarization Seminar ( <a href="http://www.icao.int/ESAF/Pages/OP-%20Data%20Link-2015.aspx">http://www.icao.int/ESAF/Pages/OP-%20Data%20Link-2015.aspx</a> )	Tom Kraft, US
NAM/CAR/SAM 18-21 Apr. 2016 Philipsburg, Sint Maarten	ATS Data Link Implementation Seminar ( <a href="http://www.icao.int/NACC/Pages/meetings-2016-ats.aspx">http://www.icao.int/NACC/Pages/meetings-2016-ats.aspx</a> )	Shelley Bailey, Canada Tom Kraft, US David Issac, Eurocontrol Jerome Condis, ICCAIA Rip Torn, IFALPA Scott Conde, US
APAC 2-4 May 2016 Bangkok, Thailand (ICAO Regional Office)	Operational Data Link Seminar ( <a href="http://www.icao.int/APAC/Meetings/Pages/2016-FIT-Asia5.aspx">http://www.icao.int/APAC/Meetings/Pages/2016-FIT-Asia5.aspx</a> )	Tom Kraft, US Paul Radford, New Zealand Natsuki Ibe, Japan Chin Lin Kwek, Singapore Dung Q. Nguyen, ICCAIA
AFI/SAM 8-12 August 2016	GOLD/PBCS/Data Link Workshop (Provisional title)	Tom Kraft, US (Confirmed) Others (TBD)

### 3. MAIN OUTCOME

(ESAF Operational Data Link Seminar)

3.1 The participants stressed on the importance of the following aspects. Subsequently relevant recommendations were made for consideration by APIRG.

- effective implementation of Global Operational Datalink (GOLD) Manual (Doc 10037) and training for controllers, technicians, managers, and supervisors;
- need for systems performance monitoring in accordance with Performance Based Communication and Surveillance Manual (PBCS Doc 9869), to identify and timely resolve problems and shortcomings
- establishment of a central reporting agency (CRA) for the AFI region to address system performance on a regional basis, ensuring harmonization and essential interoperability
- taking advantage of CPDLC implementation to facilitate automatic/silent handovers of air traffic between air traffic services units, in order to reduce traffic coordination failures and accordingly improve safety.

3.2 The outcome of the seminar was reported to Twentieth Meeting of the Africa-Indian Ocean Planning and Implementation Regional Group (APIRG/20) whereby the following decision and conclusion were adopted:

**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).

**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.

*(NAM/CAR/SAM ATS Data Link Implementation Seminar)*

3.3 The participants reaffirmed that ATS data link operation is a fundamental enabler for realizing the concept of future operations (FF-ICE, TBO and SWIM) as well as brings significant safety and efficiency benefits. The seminar agreed on the following conclusions and recommendations:

- a) **Planning and installation**
  - The establishment of an ATM operational concept in a State is the starting point for data link implementation. The States are not isolated and in the seamless airspace concept, regional and global initiatives (in that order) must be considered. The NAM/CAR (RPBANIP) and SAM (SAM PBIP) Performance-based regional Plans and the Global Air Navigation Plan (GANP) (Doc 9750) should be taken into account from the beginning.
  - To ensure global standardization, it is important that development is done using recommendations in the ICAO Doc 10037 (GOLD) (guidelines for service provision, aircraft preparation, controller procedures, flight crew procedures and State aircraft procedures) to ensure any particular needs are considered, documented and shared with all stakeholders and to make sure implementations comply with the applicable standards and guidance materials (avoid misinterpretations).
  - The institutions related to air traffic management (CAA, ANSP) should develop an evolutionary strategy aimed at providing benefits to the ATM community, through an orderly, safe, and cost-efficient implementation. It should be noted that the evolutionary implementation of the concept is related to the installed capacity on board aircraft.
  - ICAO CPDLC / ADS-C “operational” can be supported by either FANS 1/A and ATN B1 but they are not interoperable. However, the GOLD Manual provides guidance to prepare for and establish the policies and procedures to use either technology within a global standardization operational framework. Operators always stress the importance of global harmonization of CPDLC / ADS-C procedures and the GOLD Manual is the best resource to facilitate achieving.
  - Other challenges that need to be considered for an effective implementation of CPDLC/ADS-C are the correction and accurate filing of the flight plan information,

delays in messages (FPL, RCL, AFN) and the appropriate CPDLC/ADS-C performance monitoring (active evaluation of problems and timely recommend solutions).

- Take the time to carefully plan any datalink implementation and only implement those services for which there is an operational need and where the service will meet safety objections.
- Continued participation at the regional and international level adds to the pool of experience and knowledge. It is important to share the learnings and solutions discovered, to lend support to other states wherever possible and seek guidance from the different groups when required.

**b) Monitoring**

- Per Annex 6, operators will need to establish policies and procedures to support PBCS monitoring program for CPDLC and ADS-C operations.
- PBCS is essential to ensure ATC systems, operator systems, communication service provider systems and aircraft systems together will provide reliable CPDLC and ADS-C service suitable for advanced ATM operations. ANSPs should plan for PBCS implementation at the same time when it plans for CPDLC and ADS-C implementation. States will need to establish PBCS policies for its operators even if they are not implementing CPDLC, ADS-C or PBCS in their airspace.
- CPDLC and ADS-C systems are very complex systems for use by pilots and controllers to ensure smooth operations, these systems require to be supported by monitoring agencies that investigate reported problems. These monitoring agencies function under the PBCS monitoring program provision contained Annex 11.

**c) Training**

- It is important to invest time and effort into training before implementation and anticipate interoperability tests campaigns with aircraft systems (Setup large scale trials with multiple partner Airlines for pre-operational validation of the datalink services when possible and participate to in-service monitoring agencies).

**d) Support COCESNA CPDLC AIDC implementation**

- The seminar noted that CPDLC and ADS-C service in the Central American FIR is on trials since 2014 where the percentage of aircraft equipped is still low. IATA and FAA expressed their support to COCESNA to seek ways of promoting this service with improve safety/ business cases and an equipped-best served principle.

**e) AIDC**

- In order to optimize AIDC implementation, States should consider taking action to mitigate/resolve filed flight plan (FPL) issues. It was recommended that regional efforts be consolidated in order to coordinate mitigation actions between the CAR and SAM Regions. This aspect includes the total update of FPL converters
- Close cooperation is required among States in order to achieve the interconnection of automated systems, for instance, the agreement of the ICD to apply, amendment to operational agreement letter, and definition of common aspects to be implemented.
- AIDC implementation has shown its advantages in terms of safety and efficiency:
  - ✓ significantly reduces the need for oral coordination between ATS units
  - ✓ reduces controller workload
  - ✓ reduces repetition/readback errors during coordination
  - ✓ reduces coordination errors and "controller-to-controller" language barrier issues
  - ✓ mitigates LHDs, thus avoiding mid-air collisions

- Greater support to performance-based navigation initiatives and emerging technologies through automation
- It was recognized the importance of evaluating each operational scenario involving AIDC implementation and management of desirable messages, and subsequently assessing its impact on controller workload and its end results in order to select the most appropriate AIDC ICD for implementation.
- The preferred ICD for the CAR and NAM Regions is the NAM ICD, and the PAN ICD for the SAM Region.
- AIDC implementation represents the initial phase towards ground-ground integration and FF/ICE implementation (FPLs exchange, coordination and radar handover).
- The non-compliance with the AIDC procedures established by ICAO to manage flight plans and associated messages brings increased flow of unnecessary messages in system operation.

**f) AMHS**

- Even though AMHS implementation had a good implementation rate in SAM region, just a few States in CAR Region are actually operational.
- The seminar took note of the experience on the use of MET data using the XML format as described by United States, and recommended to use these experiences for the CAR/SAM testing and assessment of XML using the AMHS System.

***(APAC Operational Data Link Seminar)***

3.4 The seminar took an opportunity to assess the impact of the amendments to ICAO Annexes and Procedures for Air Navigation Services (PANS) concerning PBCS that are applicable by November 2016 and determine a transition strategy for the Asia – Pacific Regions to accommodate possible noncompliance with the PBCS provision by November 2016. The seminar participants agreed to recommend, as part of a transition strategy, the following to the 27th Meeting of Asia/Pacific Air Navigation Planning and Implementation Regional Work Group (APANPIRG/27).

**Proposed APANPIRG Conclusion 27/[n1] (September 2016) regarding PBCS Operator Requirements**

That, States are urged to take appropriate measures to develop, establish and implement necessary policies and procedures to enable operators conducting flights in Flight Information Regions (FIRs) where separations are dependent on performance-based communication and surveillance (PBCS) to start using required communication performance (RCP) / required surveillance performance (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 PBCS monitoring programs, as necessary.

**Proposed APANPIRG Conclusion 27/[n1] (September 2016) regarding RCP/RSP Flight Plan Designators**

That, 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. This common date should be decided to be no later than [AIRAC date] November 2017.

That, the relevant 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 [AIRAC date] (this date would signify the date that existing distance-based separations would be implemented under the newly amended ICAO provision and be no later than November 2017).

3.5 Another workshop is being organized for the States who already use CPDLC/ADS-C for communications and surveillance, in particular for those in the AFI and SAM regions which border the South Atlantic and have been delegated the Oceanic airspace. This workshop will be held in Accra, Ghana from 8 to 12 August 2016 and a special emphasis will be given for consideration of establishing a task force to study lessons learned from the North Atlantic's work to harmonize the South Atlantic volume of airspace.

#### **4. CONCLUSION**

4.1 The regional data link events were well received by the participants as contributing factor to facilitate an effective implementation of ATS data link by providing necessary information, guidance and tools. In addition, the expertise and experience of the OPDLWG members and advisors who contributed to these events were well recognized and appreciated by all participants including the ICAO regional officers.

4.2 The OPDLWG is invited to take into consideration the outcome of the regional events in developing and improving relevant guidance material (GOLD, PBCS and AIDC manuals) and to continue to share the expertise and experience in the operational data link implementation by actively participating in the regional data link events.

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