International Civil Aviation Organization

FOURTEENTH MEETING OF THE COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND METEOROLOGY SUB-GROUP OF APANPIRG (CNS/MET SG/14)

Jakarta, Indonesia, 19 – 22 July 2010

Agenda Item 4: Aeronautical Mobile Services (AMS)

FAA DATA LINK HARMONIZATION POLICY STATEMENT

(Presented by the United States of America)

SUMMARY

This paper provides the FAA's policy on harmonizing its data communication programs within the National Airspace System (NAS) and the international airspace it serves. This policy is consistent with ICAO's Global Air Traffic Management Plan and the Data Link Harmonization Strategy.

1. Background

1.1 In 1995, States in the South Pacific oceanic sub-region began implementation of data communication services supported by controller pilot data link communications (CPDLC) and automatic dependent surveillance – contract (ADS-C) using the Future Air Navigation System (FANS 1/A) (defined in RTCA DO-258A/EUROCAE ED-100A). Since that time, the use of CPDLC and ADS-C has proliferated throughout oceanic and remote airspace in the Asia-Pacific and North Atlantic Regions to provide communication and surveillance capabilities needed to reduce separations, increase airspace capacity, and provide more efficient and environmentally-friendly operations.

1.2 In the late 1990s, Eurocontrol initiated plans to implement CPDLC within Europe using the aeronautical telecommunication network (ATN). To minimize costs and to provide incentives for operators to equip their aircraft, the ATN implementation, referred to as ATN baseline 1 (ATN B1) (defined in RTCA DO-280B/EUROCAE ED-110B), comprises only a partial CPDLC application and does not include the ADS-C application. The data link services are intended to support increases in capacity and more efficient operations within Europe's continental airspace. A European implementing rule to mandate data link services using CPDLC is in place and will be effective starting in 2011. Within core Europe, the implementing rule will require air traffic service providers to provide CPDLC services and aircraft operators to equip their fleets with CPDLC capability. While the CPDLC application will be based on ATN baseline 1 (ATN B1), operators with aircraft equipped with FANS 1/A prior to 2014 will be exempt from the implementing rule for the life of the aircraft, and the air traffic service providers may voluntarily provide CPDLC service to FANS 1/A aircraft.

1.3 In 2004, the operators requested the European Air Navigation Planning Group (EANPG) and the North Atlantic Systems Planning Group (NAT SPG) to assess the feasibility for FANS 1/A ground systems in the NAT Region to provide CPDLC service to ATN B1 aircraft in the North Atlantic (NAT) Region. Both groups had agreed that having two different incompatible data link systems between the two regions (and globally) was problematic. As a result, the ICAO EUR/NAT Office established a joint EUR/NAT Data Link Steering Group (DLSG) to develop a harmonized data link service (EANPG Conclusion 46/21 and NAT SPG Conclusion 40/7).

1.4 In 2007, the DLSG concluded that it was not feasible for FANS 1/A ground systems in the NAT Region to provide data link service to ATN B1 aircraft and agreed on a draft strategy for data link harmonization (attached). The ICAO EUR/NAT Office transmitted the strategy to States and appropriate international organizations for comment. The FAA responded favorably to the strategy, but indicated the need for standards that would provide a converged operational and technical definition for next generation data communication services and aircraft equipage needed to support longer term initiatives, such as NextGen and SESAR. The FAA promoted RTCA and EUROCAE as the forum for providing a definition that could serve as a basis for further coordination and promulgation through ICAO.

1.5 That year, RTCA/EUROCAE published a standard, RTCA DO-305/EUROCAE ED-154, that includes additional requirements for an ATN B1 ground system to provide CPDLC service to FANS 1/A aircraft in European continental airspace.

1.6 In the same year, the FAA requested RTCA to initiate a new special committee to develop standards for advanced air traffic data communication services supporting NextGen, which would work jointly with EUROCAE to collaborate on a common set of standards that would also support SESAR initiatives and promote harmonization of data link services with the U.S. and Europe. RTCA and EUROCAE established the joint group Special Committee SC-214/Working Group WG-78.

1.7 Since 2007, governments, air traffic and communication service providers, and industry have been assessing solutions to address degraded performance of Aero Classic Satellite Services owing to increased use of the Inmarsat I3 aeronautical network, aging components in the ground-earth stations (GESs), and closure of a number of backup GESs that were supporting Aero Classic as secondary functions. These services are fundamental to CPDLC and ADS-C applications in oceanic and remote airspace.

1.8 In 2008, the NAT SPG and the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) identified the need, and concluded on a work program for an Ad Hoc Working Group, comprising participants from both regions, operators and other interested stakeholders, to develop a global operational data link document (GOLD) intended for those who are involved in planning and implementation of data link services, and day-to-day operations. The goal is to harmonize existing data link operations and resolve regional and/or State differences impacting seamless operations to the greatest extent possible. The GOLD will be key to resolving degrading satellite services supporting CPDLC and ADS-C and harmonizing oceanic and continental (domestic) data link operations worldwide. The U.S. is coordinating the effort.

1.9 In early 2009, the Air Navigation Commission (ANC) reviewed the strategy, as part of their review of the NAT SPG/44 Report and agreed that ICAO circulate the strategy, via State letter, to all States and international organizations, as guidance.

1.10 In early 2009, the ANC agreed to reconvene the Operational Data Link Panel (OPLINKP) to progress the standards, recommended practices and guidance material needed to leverage current data link operations and transition to future operations consistent with the data link harmonization strategy. Its work program included coordinating RTCA/EUROCAE data communication standards, driven by U.S. (NextGen) and European (SESAR) initiatives, with other States and regions that have similar initiatives. ICAO would serve as a "global repository" and facilitator for the recognition and/or development of global documents and training programs. In addition to the RTCA/EUROCAE products, the OPLINKP would consider other products, such as the GOLD, solutions to address degraded performance of Aero Classic Satellite Services, and satellite voice communications.

1.11 In early 2009, the FAA responded favorably to ICAO's proposed work program for OPLINKP and indicated that it was consistent with FAA needs. Furthermore, the FAA acknowledged ICAO's assumption that users should only need one upgrade cycle to equip their aircraft with the new capabilities planned for 2015-2025 is also consistent, and that, NextGen intends to use existing data link applications, some of which may be modified based upon the work of bodies such as RTCA/EUROCAE SC-214/WG-78. The FAA does not envision any new applications needing to be developed at this point and the OPLINKP work plan as proposed has the flexibility and latitude to address any necessary changes to performance standards.

2. Discussion

2.1 In today's national airspace system (NAS), air traffic control (ATC) depends on voice communication between the flight crew and controller. The use of voice communication limits the ability of the NAS to effectively meet future traffic demand. Through Next Generation Air Transportation System (NextGen) initiatives, data communication will assume an ever increasing role to attain operational improvements. Data communication services will contribute significantly to meet operational needs in the FAA's domestic and international airspace.

2.2 The FAA requested RTCA to work jointly with EUROCAE and in cooperation with ICAO to develop standards for advanced air traffic data communication services. The standards should enable the FAA to expand its existing data communication services into its domestic airspace, consistent with data communication services planned for continental Europe and worldwide. In domestic airspace, the FAA expects to initially provide data communication capabilities that will improve ATC communications, transfers at sector boundaries, taxi, departure, reroutes and arrivals, and enable initial trajectory-based operations.

2.3 The FAA has committed to implement in its domestic and international airspace data communication services that will initially leverage existing aircraft and infrastructure capabilities. The implementation will enable transition to globally harmonized data communication services that meet the needs of NextGen.

2.4 The FAA will leverage aircraft with CPDLC and ADS-C based on FANS 1/A in its domestic and international airspace.

2.5 The FAA will implement performance-based concepts. Initially, it will provide data communication services in its domestic airspace using data link applications over the very high frequency data link (VDL) Mode 2 sub-network. In its international airspace, the FAA will sustain data communication services over existing sub-networks. However, it will ensure infrastructure is in place to provide levels of service to eligible operators with mixed-capable fleets based on international performance standards, such as RCP 240 or RCP 400. The FAA will eventually expand

data communication services in its domestic airspace, based on international performance standards, and promote the development of these standards for this purpose.

2.6 The FAA will promote the use of RTCA, EUROCAE, and ICAO to internationally standardize the operational and technical definition for next generation data communication services that meet the operational needs in its domestic and international airspace. The FAA envisions that operators will only need one upgrade cycle to equip their aircraft to benefit from the next generation data communication capabilities planned for 2015-2025 in international and domestic airspace.

3. Conclusion

3.1 RTCA SC-214 and EUROCAE WG-78 are working jointly to develop standards for next generation data communication services. Currently, the scope of their work includes the development of standards for data communication services supporting NextGen and SESAR initiatives in continental (domestic) airspace. The work will leverage CPDLC and ADS-C capability of FANS 1/A aircraft and assess viable solutions for ground systems to provide data link service to these aircraft as air traffic service providers introduce new data link services in continental (domestic) airspace. However, the work program will need to include the development of standards for ground systems to provide data link service to aircraft with next generation data link capability in oceanic and remote airspace. The joint group expects to complete the standards by December 2011.

3.2 APANPIRG/20 adopted the GOLD First Edition in September 2009. NAT SPG/46 adopted the GOLD First Edition in June 2010. All subordinate ATS coordinating groups (formal and informal) in Asia-Pacific and NAT Regions have adopted and support the GOLD. GOLD supersedes both FOM and NAT Data Link.

3.3 The OPLINKP had planned to reconvene its first meeting in April 2009. However, it was postponed, until further notice owing to personnel changes within the ICAO Secretariat.

3.4 It would be desired that OPLINKP would take up this "guidance" over the next year and work towards a draft Assembly Resolution for a future Assembly, which would more clearly hold States to the intent of the strategy. Even if OPLINKP does not do this, a State or group of States could do the same thing.

3.5 The reason for the Policy is to promote ALL regions to follow us on convergence of services using 214/78 in their FANS systems.

3.6 The meeting is invited to note the information in this paper.

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