INTERNATIONAL CIVIL AVIATION ORGANIZATION

WESTERN AND CENTRAL AFRICA OFFICE

Fourth Meeting of the APIRG Communications, Navigation and Surveillance Sub-group

(Dakar, Senegal, 25-29 July 2011)

Agenda Item 7: Aeronautical Surveillance

GLOBAL OPERATIONAL DATA LINK DOCUMENT (GOLD)

(Presented by the Secretariat)

<table>
<tr><td align="center">SUMMARY</td></tr>
<tr><td>This working paper presents the Global Operational Data Link Document (GOLD) and invites the AFI CNS/SG/4th meeting to review the GOLD, with the aim its adoption for surveillance (CPDLC) operation within the ICAO AFI Region and participate in the further inter-regional (global) GOLD amendment process.</td></tr>
<tr><td>Action by the meeting is at paragraph 3.</td></tr>
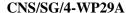<tr><td>References :
Report on the second meeting of AFI Aeronautical surveillance Task Force
ICAO and other relevant documents provided in Appendix B
Note: AFI Reference can be downloaded from www.icao.int/wacaf.</td></tr>
<tr><td>Related ICAO Strategic Objective A: Safety and C: Environmental Protection and Sustainable Development of Air Transport.</td></tr>
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1.   Introduction

1.1   This working paper presents the work and status of the Global Operational Data Link Document (GOLD), which was developed over the last two years within the Regions. The First Edition, completed in June this year, has since been formally adopted by the North Atlantic and Asia-Pacific Regions, and parts of the African-Indian Ocean Region.

1.2   The GOLD, provided as

1.3

1.4 APPENDIX A to this paper, contains *guidance material for procedures and technical provisions, i.e., performance specifications and post-implementation monitoring, to directly support global harmonization of data link operations.*

1.5 The paper invites the CNS SG to review the GOLD, participate in the inter-regional (global) amendment process, with the aim of adopting the GOLD within the AFI Region.

2. Discussion

Background

2.1 Late 2007, the North Atlantic and Asia-Pacific Regions reviewed their guidance material to address issues with degrading satellite communication performance and the closure of Goonhilly ground earth station, in 2008, which effectively eliminated backup capability for satellite communication services. This raised serious safety concerns to the extent that the North Atlantic and Asia-Pacific Regions held special meetings, i.e. the North Atlantic in November 2007, and Asia-Pacific in August 2009.

2.2 In October 2007, RTCA/EUROCAE had just published DO-306/ED-122, which provides the criteria for automatic dependent surveillance – contract (ADS-C) and controller pilot data link communications (CPDLC) applicable to reduced separations. At the special meetings, the NAT and APAC regions accepted DO-306/ED-122 as the global benchmark for assessing the degraded satellite communication performance.

2.3 These events provided the justification for both regions to endorse a work programme to develop the Global Operational Data Link Document (GOLD). The GOLD work programme is executed by an **Ad Hoc Working Group**, which comprises subject matter experts from all participating regions to represent air navigation service providers, operators, satellite companies, communication service providers, equipment suppliers and aircraft manufacturers.

Completion and adoption of GOLD

2.4 In September 2009, the Asia-Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/20) agreed that the GOLD, when completed, would replace the Future Air Navigation System (FANS 1/A) Operations Manual (FOM), an Asia-Pacific regional document (APANPIRG Conclusion 20/74 refers). On 28 June, the Director of the ICAO Asia and Pacific Regional Office acknowledged the completion of the GOLD, First Edition, as a significant step toward global harmonization and requested administrations to promulgate GOLD within the Asia and Pacific Regions to the fullest extent possible.

2.5 On 25 June 2010, the North Atlantic Systems Planning Group (NAT SPG/46,) adopted the GOLD as a replacement for the Guidance Material for Air Traffic Data Link Services in North Atlantic Airspace (NAT Data Link GM), a North Atlantic regional document (NAT SPG Conclusion 46/8 refers).

2.6 On 18 May, the South Atlantic (SAT) Sub-Region, supported the introduction of the GOLD and that planning and implementation regional groups (PIRGs) approve the GOLD (SAT FIT Conclusion 5/7 refers). The South Atlantic sub-region is part of the African-Indian Ocean (AFI) Region, and the GOLD Ad Hoc Working Group has begun coordination with the ICAO regional office in Dakar.

2.7 The International Air Transport Association (IATA), International Business Aviation Council (IBAC), and the International Federation of Airline Pilots' Associations (IFALPA) fully support the GOLD. Operators are beginning to use the GOLD to develop their training programmes for their flight crews. The FAA recognized the GOLD in its recently issued Advisory Circular (AC)

20-140A, Guidelines for Design Approval of Aircraft Data Link Communication Systems Supporting Air Traffic Services (ATS), and AC 120-70B, Operational Authorization Process for Use of Data Link Communication System.

Description of GOLD contents

2.8   The GOLD is available free of charge and without the need for user ID or password on the following web sites:

   a)   http://www.paris.icao.int/documents_open/subcategory.php?id=106;

   b)   http://www.ispacg-cra.com; and

   c)   http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/enroute/oceanic/data_link/.

2.9   The Global Operational Data Link Document (GOLD) provides guidance material for airspace planners to provision air traffic data link services and for operators to ensure appropriate aircraft equipage and preparation for operational use, e.g., flight crew training. It includes guidelines for controller and flight crew procedures. It also includes technical criteria contained in required communication performance (RCP) and surveillance performance specifications. These specifications allocate criteria to the air traffic service provider, communication service provider, aircraft system and the operator. Finally, the GOLD includes guidance material for post-implementation monitoring, analysis, and corrective action to ensure continued operational safety.

2.10   The GOLD merges the *Guidance Material for ATS Data Link Services in North Atlantic Airspace* (NAT Data Link GM) and *FANS 1/A Operations Manual* (FOM, used in Asia-Pacific, and parts of South Atlantic and South American Regions), with the aim of providing a basis for guidance material to support expanding data link operations in continental airspace.

2.11   The GOLD is not intended to be FANS 1/A specific. In addition to the merging of NAT data link GM and FOM, the GOLD includes a definition of existing implementations, including ATN Baseline 1 (ATN B1)—or Link 2000+. The following sections of the GOLD should be noted:

   a)   Chapter 2.1 defines ATN B1, refers to RTCA/EUROCAE Standards, O-280B/ED-110B, DO-290/ED-120, Changes 1 and 2, and Eurocontrol specification 0116 (per the EC data link Implementing Rule (IR)), and the relevant ICAO EUR SUPPs (Doc 7030) provisions;

   b)   Chapter 2.4 includes a provision to describe ATN B1 further;

   c)   Appendix A precisely defines the ATN B1 message set; and

   d)   Appendix E provides specific information for three control areas (CTAs) — Amsterdam, Bruxelles, and Hannover—in Europe, where Maastricht Upper Area Control Centre is currently providing data link services to FANS 1/A and pioneer Link 2000+ aircraft.

      a)

On-going work

2.12   The GOLD has set a precedent for the development of global guidance material. While it is maintained as a regional document by each of the participating regions, any region must first globally coordinate any amendments and obtain agreement with participating regions before it can be incorporated into the next edition of the GOLD.

2.13   This is advantageous in that the people in the regions who use the document also participate in its development in a timely manner. They have established good working relationships with their peers in other regions. ICAO has supported this new way of operating. However, until

ICAO has established a global configuration management process for the GOLD, the participating Regions have requested the GOLD Ad Hoc Working Group to remain active and facilitate the global coordination of amendments to the GOLD.

2.14   Since the GOLD has been adopted, several items may affect implementation that may require follow-up actions. For example, further clarification or changes to current practices may be necessary to address the following:

a)   Specific ANSP registration procedures for aircraft operators using data link services;

b)   Operational authorizations to use data link, maintenance, training and flight crew qualification;

c)   Awareness of GOLD procedures for operators and air navigation service providers;

d)   Proposals for Amendments to Regional Supplementary Procedures (SUPPs) and aeronautical charts;

e)   Post-implementation monitoring and corrective action, including data collection, exchange of information and analysis, relationship of the NAT DLMA to other NAT groups, e.g., Aeronautical Communications Study Group (ACSG) and the Central Monitoring Agency (CMA);

f)   Position reporting requirements, given ADS-C environments, and ADS contract management; and

g)   Items specific to any airspace user or Region that has adopted or is planning to adopt the GOLD.

2.15   For timely release of the First Edition of the GOLD, several initiatives were deferred. Some of these items include:

a)   Use of CPDLC to report severe and moderate turbulence (JCAB);

b)   Use of CPDLC for automatic dependent surveillance – broadcast (ADS-B) in trail procedures (ITP) (Airbus, RTCA SC-214/EUROCAE WG-78);

c)   Use of CPDLC for reroutes and for out-of-conformance inquiries and instructions (NAT);

d)   Clarification on revised estimated time of arrival and use of CPDLC in airspace with VHF coverage (ETA) (Delta);

e)   Appendix D updates to clarify analysis of outages, notifications, and missing ADS-C reports (U.S. and New Zealand);

f)   Appendix E updates to include focal points for CTA/FIR, AIDC capability, DARP, and to add new CTA/FIRs as Regions become participants (GOLD editor);

g)   Oceanic clearance delivery using ACARS ATS or FANS 1/A data link applications (NAT, Portugal);

h)   Departure clearance and other ACARS ATS applications (AEEC DLUF); and

i)   CPDLC application in Europe (Eurocontrol).

2.16   Follow-on work for the GOLD Ad Hoc Working Group includes:

a)   Soliciting proposals for amendments to the GOLD among participating regions and airspace users;

b)   Coordinating proposed amendments across the regions;

c)   Providing interpretation and further clarification to GOLD guidelines, as necessary;

d)   Facilitating implementation of standardized data link operations, post-implementation monitoring, and corrective actions;

e) Developing a proposal for ICAO on establishing a global configuration management process for the GOLD.

2.17 The GOLD Ad Hoc Working Group will process amendments to the First Edition of the GOLD using processes and forums similar to change processes used prior to the First Edition. For example, the GOLD coordinator will continue to use a master comment matrix to track candidates for proposed amendments. The matrix will be distributed for coordination and comment via email. Teleconferences/Web Ex sessions and meetings will be arranged, as needed.

2.18 It is envisaged that a new edition of the GOLD will be issued every one or two years. Amendments can be accepted as individual packages until such time that a new edition of the GOLD is issued.

2.19 In view of the foregoing, it would be important that the ICAO AFI Region also adopts the GOLD as regional/global guidance material to assist airspace planners in data link communications planning and implementation. It will ensure global harmonization of the current data link implementations and provide a path to the convergence of the future data link communications systems. Therefore, the following draft CNS SG /4 Conclusion is proposed:

Why	Adoption of the GOLD in the ICAO AFI Region by APIRG/18
What	Establish a Working Group of the AFI Surveillance Implementation Task Force to review the GOLD, with an aim to adopt it as an ICAO AFI regional guidance document by APIRG/18, and determine the ICAO AFI mechanisms for providing the proposals for amendments to the GOLD through a global coordination process.
Who	ICAO AFI
When	Establish the Working Group of the Task Force, 1 August 2011. The task force to complete its work and report to the secretariat by 31 October 2011 for submission to APIRG/18

Draft CNS SG/4 Conclusion XXXX/ Establishment of a GOLD review and adoption Working Group of the AFI Surveillance Implementation Task Force

That,

Acknowledging the current status and aim of the GOLD to globally harmonize and converge data link implementation:

a) *A Working Group of AFI Surveillance Implementation Task Force is established, to review the GOLD as provided at Appendix A with an aim to adopt it as a ICAO AFI guidance material by APIRG/18 and determine the ICAO AFI mechanisms for developing proposals for amendments to the GOLD for global coordination;*

b) *States and International organisations should nominate their representatives to assist in this work that should be completed en reported to the CNS SG Secretariat by 31 October 2011 for submission to adoption by APIRG/18.*

**3.	Action by the meeting**

3.1 The meeting is invited to:

a) Note the information in this paper; and

B) Endorse the draft AFI Conclusion proposed in this working paper.

APPENDIX A - GOLD, First Edition

[Provided as a separate file]

-END-

APPENDIX B

GOLD Reference Documents

a) ICAO Annex 1 — Personnel Licensing

b) ICAO Annex 2 — Rules of the Air

c) ICAO Annex 4 — Aeronautical Charts

d) ICAO Annex 6 — Operation of Aircraft – Part I — International Commercial Air Transport — Aeroplanes

e) ICAO Annex 10 — Aeronautical Telecommunications – Volume II — Communication Procedures including those with PANS status

f) ICAO Annex 10 — Aeronautical Telecommunications – Volume III — Communication Systems

g) ICAO Annex 11 — Air Traffic Services

h) ICAO Annex 15 — Aeronautical Information Services

i) Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, ICAO Doc 4444)

j) Regional Supplementary Procedures (Regional SUPPs, ICAO Doc 7030)

k) Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, ICAO Doc 8400)

l) Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services (ICAO Doc 8585).

m) Aircraft Type Designators (ICAO Doc 8643)

n) Manual on Airspace Planning Methodology for the Determination of Separation Minima (ICAO Doc 9689)

o) Performance-based Navigation Manual (PBN) (ICAO Doc 9613)

p) Manual on Required Communication Performance (RCP) (ICAO Doc 9869)

q) Safety and Performance Standard for Air Traffic Data Link Services in Oceanic and Remote Airspace (Oceanic SPR Standard, RTCA DO-306/EUROCAE ED-122).

r) Safety and Performance Standard for Air Traffic Data Link Services in Continental Airspace (Continental SPR Standard, RTCA DO-290/EUROCAE ED-120, Change 1 and Change 2).

s) Interoperability Requirements for ATS Applications Using ARINC 622 Data Communications (FANS 1/A INTEROP Standard, RTCA DO-258A/EUROCAE ED-100A).

t) Interoperability Requirements Standard for Aeronautical Telecommunication Network Baseline 1 (ATN B1 INTEROP Standard, RTCA DO-280B/EUROCAE ED-110B).

u) Future Air Navigation System 1/A — Aeronautical Telecommunication Network Interoperability Standard (FANS 1/A — ATN B1 INTEROP Standard, RTCA DO-305/EUROCAE ED-154).

APPENDIX C

Terms of Reference, Composition and Work Programme of the AFI GOLD Approval Working Group

1.   Term of Reference

The AFI Aeronautical Surveillance GOLD Approval Working Group terms of reference are to:

1. Review the GOLD with an aim to adopt it as a ICAO AFI guidance material by APIRG/18;
2. Determine the ICAO AFI mechanisms for developing future proposals for amendments to the GOLD for global coordination.
3. Identify and emphasis benefits of GOLD for AFI Region.

Note: *The Working Group should submit the results of its work to the Secretariat of CNS SG for submission to the Approval of next APIRG/18 meeting.*

2.   Composition

Team Leader:

Core members: *ATNS (South Africa), ASECNA, IATA, IFALPA, Seychelles, Algeria, Ghana, Kenya, Nigeria, DRC, Tanzania and IFALPA*.

 States operating or planning to operate CPDLC

3.   Work Programme (Terms of Reference refers)