



INTERNATIONAL CIVIL AVIATION ORGANIZATION
AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP
NINETEENTH MEETING (APIRG/19)
(Dakar, Senegal (28 to 31 October 2013))

Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation

3.4 Communications, Navigation and Surveillance (CNS)

SURVEILLANCE SYSTEMS

(Presented by the Secretariat)

| SUMMARY | |
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| This working paper presents the report of the Fifth Meeting of APIRG Communications, Navigation and Surveillance Sub-group (CNS/SG/6, Nairobi, Kenya, 16-19 September 2013) on Aeronautical Surveillance, for consideration by APIRG/19. | |
| Action by the meeting is at paragraph 3. | |
| REFERENCES : APIRG/18, Report | |
| <i>Strategic Objective(s):</i> | This working paper related to the Strategic Objectives A and C |

1. INTRODUCTION

1.1 The Fifth Meeting of the APIRG Communications, Navigation and Surveillance Sub-group (CNS/SG/6) was held in Nairobi, Kenya from 16 to 19 September 2013. It was attended by twenty two (22) delegates from ten (10) Contracting States and one (1) international Organization representing 16 other Contracting States.

1.2 This working paper presents the report of the CNS/SG/6 meeting on aeronautical surveillance systems.

2. DISCUSSION

2.1 The CNS Sub-Group reviewed the status of implementation of the current AFI Air Navigation Plan (ANP) requirements for aeronautical surveillance and the report of the third meeting of the AFI Surveillance Implementation Task Force (AFI/AS/I/TF/3).

Review of the status of implementation of the current aeronautical surveillance plan

2.1.1 The meeting reviewed the status of implementation of surveillance systems and related projects as reported by the AFI Aeronautical Surveillance Implementation Task Force (AFI/AS/I/TF/3). It noted that thirteen (13) AFI States¹ have implemented automatic dependent surveillance–contract (ADS-C)

¹ ADS-C procedures are operational in Accra, Antananarivo, Brazzaville, Dakar Terrestrial, Dakar Oceanic, Johannesburg, Mauritius, Ndjamena, Niamey, Sal Oceanic, and Seychelles flight information regions.

procedures, and that nine (9) other States have plans to implement the same in 2014 and 2015, in order to enhance situational awareness in oceanic and remote continental airspace.

2.1.2 The meeting further noted that ATS air-ground data link applications were being implemented without proper coordination of systems performance monitoring and reporting of anomalies. Based on experience gained in the South Atlantic (SAT), the CNS Sub-Group identified the need to explore the establishing a Data Link Central Monitoring Agency (DL/CMA) for data link applications in the AFI Region. The following draft conclusion was formulated:

DRAFT CONCLUSION 19/XX: ESTABLISHMENT OF A DATA LINK CENTRAL MONITORING AND REPORTING AGENCY (DL/CMRA)

That:

The ICAO Regional Offices explore with States and relevant organizations the available options for the establishment of a Data Link Central Monitoring and Reporting Agency (DL/CMRA) to ensure effective operation, monitoring and reporting of ATS data link applications in the AFI Region.

Review of the report of the Third meeting of the AFI Surveillance Implementation Task Force

2.2 The CNS Sub-Group reviewed the report of the Third meeting of the AFI Surveillance Implementation Task Force in light of the technology developed by the 12th Air Navigation Conference, and incorporated in the Global Air Navigation Plan. It noted the potential benefits of the emerging space-based ADS-B technology for the AFI Region.

2.3 The CNS Sub-Group was apprised of successful trials of ADS-B conducted in the Indian Ocean Region by ASECNA in cooperation with airspace users, and Air Traffic and Navigation Services (ATNS) of South Africa's plans to conduct similar trials on ADS-B and Multilateration.

2.4 The Sub-Group commended such initiatives and encouraged States to pursue the implementation of aeronautical surveillance requirements in accordance with the regional strategy adopted by the APIRG. In so doing, they should give due consideration to interoperability criteria to achieve an integrated surveillance system and seamless ATM operation within the areas of routing identified in the region.

2.5 The CNS Sub-Group acknowledged that the implementation of an integrated surveillance system meeting interoperability requirements could be facilitated with the support from regional/sub-regional economic integration institutions. The following draft conclusion was formulated.

DRAFT CONCLUSION 19/XX: INTEROPERABILITY OF AFI AERONAUTICAL SURVEILLANCE SYSTEMS

That, in order to enable seamless ATM operation within the AFI Region:

- a) **States and service providers take the necessary steps to ensure interoperability of the existing aeronautical surveillance systems and facilitate surveillance data sharing;**
- b) **AFCAC be requested to support the development of an integrated surveillance systems for continuous provision of aeronautical surveillance services the areas of routing identified by the APIRG; and**
- c) **ICAO continue to assist AFI States' initiatives towards the implementation of an integrated aeronautical surveillance system, through seminars, workshops and technical coordination meetings**

Terms and reference and future work programme of the Aeronautical Surveillance Implementation Task Force

2.6 The CNS Sub-Group reviewed and proposed the revised terms of reference and work programme of the AFI Surveillance Implementation Task Force as provided in **Appendix 3.4** to this working paper.

3. CONCLUSION

3.1 The meeting is invited to:

- a) note the report of the Fifth Meeting of the APIRG Communications, Navigation and Surveillance Sub-group on aeronautical surveillance systems as presented in this working paper;
- b) review and adopt the above draft Conclusions; and
- c) endorse the revised terms of reference of the and work programme of the AFI Surveillance Implementation Task Force as provided in **Appendix 3.4** to this working paper.

AGENDA ITEM 3.4 - APPENDIX 3.4

DRAFT TERMS OF REFERENCE OF THE AFI AERONAUTICAL SURVEILLANCE TASK FORCE (AFI ASI/TF)

Terms of Reference

- 1) Ensure that the implementation and operation of aeronautical surveillance systems meet ICAO Standards and Recommended Practices as specified in Annex 10 Volume IV[4]-Surveillance and collision avoidance Systems, the provision of the Aeronautical Surveillance Manual, Doc. 9924 and those of relevant ICAO Manuals related to surveillance operation and systems;
- 2) Develop the AFI regional criteria for the planning and implementation of aeronautical surveillance systems as key enablers to the improvement of the Performance of the Air Navigation System as defined in the Manual on Global Performance of the Air Navigation System (Doc. 9883);
- 3) Ensure that the AFI regional aeronautical surveillance implementation strategy and plans consider the regional ATM operational performance requirements along the AFI Routing Areas in line with the provisions contained in the Manual on ATM System Requirements (Doc. 9882);
- 4) Conduct timely assessment of the status of implementation, operation and sustainability of aeronautical surveillance systems in the AFI region for growth and technology development to support safety and operational effectiveness for current and future surveillance systems and allow for the transition between present and next generation technologies;
- 5) Ensure that appropriate mechanisms (Technical/operational interfaces, procedures, agreements) are developed to facilitate interconnectivity and interoperability of surveillance systems within and across the AFI region;
- 6) On the basis of the above and in the framework of the implementation of ICAO Aviation System Blocks Upgrades (ASBU), revise and coordinate AFI strategy and plan for the provision, the operation and the interoperability of aeronautical surveillance systems within the AFI Region in accordance with the Roadmap for the surveillance systems contained in the Global Air Navigation Plan (GANP, Doc.9750) and taking into account relevant additional ICAO provisions.

Considerations:

In addressing these terms of reference, the Task Force should consider, inter alia, the following aspects:

- a) Operational performance requirements for aeronautical surveillance in the AFI Region, en-route, terminal areas (TMAs) and aerodromes operations;
- b) Near term and long term benefits of relevant candidate surveillance systems.
- c) Strategy from legacy to future system including specific demand during transition
- d) Inter and intra-regional issues taking into consideration ICAO Aviation System Block Upgrades (ASBU) planning requirements (Interconnectivity, interoperability, Data sharing...);
- e) Personnel training for safe aeronautical surveillance system operation and maintenance;
- f) Minimized impact of market mechanism on aeronautical surveillance systems procurement and operation.

3-WORK PROGRAMME

| Task No. | ASBU Performance Improvement Area | ASBU Applicable Block 0 Modules | Subject | Target date |
|----------|--|--|---|---------------|
| 1 | PIA: 1-2-3-4 | All that apply | <p>Review of ICAO SARPs and Guidance Material</p> <p><u>Team Leader:</u> Secretariat</p> <p><u>Team members:</u> All AFI/ASI Core members</p> <p><u>References:</u></p> <ul style="list-style-type: none"> • ICAO Annex 10 (Vol. 4), Docs.4444 • ICAO Docs.: 8071; 9684; 9688; 9694; 9750; 9863. 9871;9882;9883;9924 | CNS/SG/6 : |
| 2 | PIA-1: Airport Operations | <p>APTA: Optimization of Approach Procedures including vertical guidance</p> <p>ACDM: Improved Airport Operations through Airport-CDM</p> | <p>Categorization of Aerodromes and Terminal Areas</p> <ul style="list-style-type: none"> • Data Collection: Statics parameters, Movement figures; • Statistics modeling and categorization <p><u>Team Leader:</u> ASECNA</p> <p><u>Team members:</u> All AFI States/ANSPs</p> <p><u>References:</u></p> <ul style="list-style-type: none"> • Surveillance Data collection Template • Statistics models | CNS/SG/6 : |
| 3 | PIA 2: Globally Interoperable Systems and Data - Through Globally Interoperable System Wide Information Management | <p>FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration</p> <p>FRTO: Improved Operations through Enhanced En-Route Trajectories</p> | <p>Categorization of en Route Airspaces</p> <ul style="list-style-type: none"> • Data Collection: Statics parameters, Movement figures; • Statistics modeling and categorization <p><u>Team Leader:</u> Seychelles-CACAS</p> <p><u>Team members:</u> All AFI States/ANSPs</p> <p><u>References:</u></p> <ul style="list-style-type: none"> • Surveillance Data collection Template • Statistics models | CNS/SG/6 : |
| 4 | PIA 2: Globally Interoperable Systems and Data - Through Globally Interoperable System Wide Information | FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration | <p>Development of guidelines for surveillance data sharing & exchange;</p> <p>Models of MoU and draft agreements</p> <p>Team Leader: Nigeria</p> <p>Team members: All AFI States/ANSPs</p> | |

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| | Management | FRTO: Improved Operations through Enhanced En-Route Trajectories | References: <ul style="list-style-type: none"> • <u>Current</u> models in other regions (EUR, SAM) • Technical interface documents | |
| | PIA 2: Globally Interoperable Systems and Data - Through Globally Interoperable System Wide Information Management | FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration FRTO: Improved Operations through Enhanced En-Route Trajectories | Development of regional strategies for coordination between States and stakeholders 1. Coordination with AFCAC <u>Team Leader:</u> Secretariat <u>Support:</u> 2. Coordination with Sub Regional Economic Unions a) ECOWAS/UEMOA <u>Team Leader:</u> Nigeria/ Ghana <u>Support:</u> ECOWAS/UEMOA AFI/FMG Members | CNS/SG/6 : |
| | PIA 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM | ASUR: Initial capability for ground surveillance ASEP: Air Traffic Situational Awareness(ATSA) OPFL: Improved access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B ACAS: ACAS Improvements SNET: Increased Effectiveness of Ground-Based Safety Nets | b) CEMAC <u>Team Leader:</u> Cameroon/ Congo <u>Support:</u> CEMAC AFI/FMG Members c) SADC <u>Team Leader:</u> South Africa/Botswana <u>Support:</u> SADC ASI Members d) EAC <u>Team Leader:</u> Kenya/Uganda <u>Support:</u> EAC ASI Members India Ocean | |
| 5 | PIA 2: Globally Interoperable Systems and Data - Through Globally Interoperable System Wide Information Management | FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration FRTO: Improved Operations through Enhanced En-Route Trajectories | Review and update Status of deployment of Surveillance systems <u>Team Leader:</u> Secretariat Team members: All AFI/ASI States members References: <ul style="list-style-type: none"> • Template on the collection of Status of current AFI surveillance systems | CNS/SG/6 : |

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| | PIA 3: Optimum Capacity and Flexible Flights – Through Global Collaborative ATM | <p>ASUR: Initial capability for ground surveillance</p> <p>ASEP: Air Traffic Situational Awareness(ATSA)</p> <p>OPFL: Improved access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B</p> <p>ACAS: ACAS Improvements</p> <p>SNET: Increased Effectiveness of Ground-Based Safety Nets</p> | | |
| 4 | PIA: 1-2-3-4 | All that apply | <p>Training on Surveillance Systems</p> <p>Organization of seminars/workshops on surveillance, :</p> <p><u>Team Leader: Secretariat</u></p> <p><u>Support:</u> ANSPs (ASECNA, ATNS, GCAA, NAMA) Regional /International Organization (ECOWAS/UEMOA, CEMAC, SADC, ITU, ATU, AFCAC) Industry (Intelsat, SITA, IATA.)</p> <p>References:</p> <ul style="list-style-type: none"> • Report on previous ASI TF and APIRG meetings • ICAO Annex 10 (Vol.4 • ICAO Training Manual (Doc. 7192 Part E-2 - Air Traffic Safety Electronic Personnel (ATSEP) | CNS/SG/6 |

3-COMPOSITION

Cores members:

Working Group for the development of the AFI ENROUTE Surveillance strategy

Team Leader: Seychelles/CACAS

Members: South Africa-Nigeria-Ghana-DRC -Mauritius-Angola-IATA

Working Group for the development of the AFI TERMINAL AREA Surveillance strategy

Team Leader: ASECNA

Members: Zambia-South Africa- Tanzania- IATA