



ICAO

**Twenty First Meeting of the Africa-Indian Ocean Planning and Implementation Regional Group
(APIRG/21)
(Nairobi, Kenya, 9 – 11 October 2017)**

Agenda Item 5: Regional Air Navigation Deficiencies

5.2. Industry initiatives and other air navigation matters

**OUTCOME OF THE AFI SYMPOSIUM AND THE REGIONAL WORKSHOP ON
RPAS**

(Presented by the Secretariat)

SUMMARY

This paper presents the outcome of the AFI Symposium and the Regional Workshop on Remotely Piloted Aircraft Systems (RPAS), held in Abuja, Nigeria from 17 to 21 July 2017 and discusses issues related to the safe integration of RPAS in the AFI non-segregated airspaces.

Action by the meeting is at paragraph 3:

REFERENCE(S):

- Doc 9750, 5th Edition *Global Air Navigation Plan*
- Doc 10019, Manual on Remotely Piloted Aircraft Systems (RPAS)
- Summary Outcome on the Global Symposium on RPAS
- Key notes from the Workshop

Related ICAO Strategic Objective(s) and ASBU Key Performance Indicators and B0 Modules:

Strategic Objective(s): *A – Safety, B – Air Navigation Capacity and Efficiency, D – Economic Development of Air Transport.*

ASBU KPIs & B0 Modules: All applicable to ATM and CNS

1. INTRODUCTION

1.1 The AFI symposium and the first AFI regional workshop on Remotely Piloted Aircraft Systems (RPAS) were held back to back in Abuja, Nigeria from 17 to 21 July 2017 with the objective to share experiences in in RPAS operations across the Africa and Indian Ocean region.

1.2 The events also provided the platform to discuss challenges to be overcome and benefits to be obtained from RPAS operations whilst identifying how existing rules need to evolve in order to facilitate entrance of the RPAS community into the civil aviation system through examining and alignment between ongoing RPAS development and supporting regulatory provisions.

1.3 Hosted by the Government of Nigeria through the Federal Ministry of Transportation (Aviation Sector) and attended by more than four hundred (400) representatives from 12 States, international organizations and various stakeholders, the Symposium showcased opportunities that will be created by the integration of RPAS into the global civil aviation system and provided participants with a greater understanding of the complex issues that need to be addressed collectively to facilitate integration.

2. DISCUSSION

Fast growing RPAS technology, increase of RPAS utilization and need for a harmonized Regulatory framework

2.1 The symposium noted amongst others that there is a high industry demand for Remotely Piloted Aircraft Systems exponential phenomenon and that the utilization of unmanned aircraft in the AFI Region is increasingly getting diverse and complex posing challenges to safety of other aircraft and controlled airspace in general.

2.2 In order to address the challenges of the disparity between the fast growing RPAS technology, commensurate regulatory framework should be innovatively developed to establish a harmonized system and the development and harmonization of regulations with relevant RPAS provisions under the framework of Regional safety oversight organizations (RSOs) should be undertaken.

2.3 In this regard, States were encouraged to embrace training, including Computer based training of personnel to address the challenges of RPAS technology and associated systems that require high level of knowledge of their operations and maintenance.

Safe integration of RPAS operations in the AFI ATM environment

2.4 The symposium also noted that in the AFI Region, the increased utilization of RPAS for military operations justifies the need for harmonized data driven regulatory processes that integrates military/civil aviation coordination.

2.5 It was also pointed out that the utilization of RPAS by various economic and social sectors (mining, agriculture, environment, health, humanitarian relief operations etc....) and the future international/commercial operations of RPAS require a cohesive strategy to ensure appropriate compliance with requirements and practices and oversight while maintaining effective integration of RPAS with ATM systems.

2.6 For a seamless integration of RPAS operations and ATM in a harmonized Air Navigation Services environment to achieve non segregated airspace, it was proposed to segregate RPAS and drones operations in an organized and effectively regulated environment and to develop standardized operations approval process that will allow a comprehensive RPAS oversight, including the adoption of delegated authority practice and or integration of such systems within the CAA regulatory framework.

2.7 The Symposium suggested that an AFI Regional Task Force be established to ensure systematic and strategic monitoring and oversight, and investigation of incidents and accidents of RPAS and drones operation. The Task Force will establish an effective RPAS monitoring mechanism and develop and share documentation.

Technology in support to RPAS Operation in the AFI Region

2.8 The Symposium agreed that operations of RPAS should be done within the framework of global harmonization of spectrum for Unmanned Aircraft Systems (UAS) and other services and applications in accordance with ITU Resolution 155-WRC 15 and invited AFI States to promote and maintain support for protection of aviation spectrum and or explore expansion of spectrum availability in future, in collaboration with National Authority of Regulation of Communication as applicable.

2.9 It was also agreed that in order to cope with the rapid advancement, volume and scope of RPAS operation, appropriate investment should be done to accommodate the digitization and automation of associated systems.

Regional Workshop on RPAS

2.10 The Regional Workshop on RPAS was attended by Fifty Five (55) participants. The Workshop gave an overview of ongoing development of Standards and Recommended Practices (SARPs) related to Remotely Piloted Aircraft Systems (RPAS) along with the associated guidance material and gave opportunity for rule-making authorities, air navigation service providers, industry partners, international organizations and other stakeholders to share knowledge and experiences.

2.11 The Workshop reviewed the provision of ICAO RPAS Manual Doc. 10019 through a Grid for Unmanned Aircraft Operations, a sample highlighting the relevant provision of ICAO Annexes to be considered for RPAS operation.

2.12 It appeared that provisions of all Annexes to the Chicago Convention apply to UAS operation with a need for revision /update of SARPs except for those emanating from Annex 5. ICAO is currently working in this direction through the RPAS Panel, meanwhile, States should consider the guidance material contained in Doc 10019 in order to develop provisional Regulation that takes into account the safe operation of UAS in a non-segregated air space.

2.13 The Workshop reviewed the conditions of integration and operations of Remotely Piloted Aircraft into ATM procedures in non-segregated, controlled and uncontrolled airspace and noted that operational (Flight Safety), equipment (Airworthiness) and Concept of Operations -CONOPs-(ATM) requirements of RPAS with the required CNS infrastructure, will be governed by the airspace classifications that are defined in Annex 11— *Air Traffic Services*.

2.14 RPAS operation in a non-segregated airspace will also fulfill certain conditions such as:

- **Compliance with right-of-way:** RPAS are obliged to comply with the Annex 2- *Right of-way rules* (Annex 2- 3.2.2);
- **Compliance with flight plan filing:** RPAS operators will need to file flight plans in accordance with Annex 2 (*until aircraft type designators are defined, “ZZZZ” should be entered in item 9 of the flight plan & the RPA type specified in item 18*);
- **Management of loss of Command and control link (C2 link):** RPAS operator should define loss of C2 link procedures that are acceptable to the ANSP and regulator.

It was also noted that it may be difficult for ATCOs, pilots of manned aircraft and other remote pilots to acquire visual contact with the RPA due to low conspicuity.

2.15 Aerodrome operation by RPAS may also fulfil some specific conditions:

- RPAS integration will require technology to allow the remote pilot to safely operate the RPA and identify, in real-time, the physical layout and operational situation of the aerodrome and associated equipment, such as aerodrome lighting and markings during operations at aerodromes opened to public use;
- The RPAS needs to have the ability to communicate and manoeuvre in a manner that will not disrupt routine airport operations;
- States may consider establishing aerodromes to serve RPAS operations only.

2.16 The workshop therefore conducted through three operational scenarios, Cases studies involving multidisciplinary teams in order to share different regulatory approaches and best practices and to propose limitations for the operation.

2.17 The Cases studies Scenarios considered the operator and his request (*including the type of operation, the class of airspace and aerodromes considerations.*), aircraft specifications, CAA considerations, and filled the Grid with regard to the provision of the relevant Annexes.

2.18 The outcome enabled participants to have reference for the establishment of a national framework for the regulation and operation of RPAS in a non-segregated airspace.

2.19 The ICAO Team renewed the commitment of the Organization to develop Standards, Recommended Practices and guidance material to augment industry efforts to ensure appropriate training, licensing of personnel and operation and oversight of unmanned aircraft operations.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Take note of the information presented in this working paper, highlighting the outcome of the AFI Symposium and regional Workshop on Remotely Piloted Aircraft System (RPAS);
- b) Encourage States to establish national multidisciplinary Teams tasked to develop a Framework (including regulatory and operational aspects) for the safe integration of RPAS operation in non-segregated airspace;
- c) Urge States to embrace in this regard training of personnel, including Computer based training, to address the challenges of first RPAS technology and associated systems that require high level of knowledge of their operators and maintenance;
- d) Task the AFI Traffic Forecasting Working Group, the APIRG Airspace and Aerodrome Operation Sub/Group-**AAO/SG** and the APIRG Infrastructure and Information Sub/Group - **IIM/SG** to include in their Terms of Reference (**ToRs**) and Future Work programmes, the safe integration of RPAS operation in non-segregated airspace and address the related planning, implementation, operation and monitoring issues in the framework of the regional project approach adopted by APIRG.
- e) Encourage ICAO, AFCAC and regional stakeholders (Integration institutions, Industry associations, Funders...) to continue their assistance to States through the provision of guidance materials, training, workshops / seminars.

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