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WORKING PAPER

ASSEMBLY — 41ST SESSION

EXECUTIVE COMMITTEE

Agenda Item 15: Audit Programmes – Continuous Monitoring Approach

USING A WHOLESOME THEORETICAL AND PRACTICAL APPROACH TO TRAIN PERSONNEL INVOLVED IN AIRCRAFT ACCIDENT AND INCIDENT INVESTIGATIONS

(Presented by the African Civil Aviation Commission (AFCAC) on behalf of 54 African States[1])

EXECUTIVE SUMMARY

This working paper proposes the creation of a learning environment through innovation and technology that will assist States to address all the requirements of the ICAO aircraft accident and incident investigation (AIG) Protocol Questions (PQs). In addition, it addresses the shortage in human resources required to conduct ICAO Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA) audits in AIG and improve the response time to conduct safety audits or ICAO Coordinated Validation Missions (ICVMs) whenever requested by States. The working paper also proposes to address the shortage in trained and qualified personnel through the establishment of Regional Accident and Incident Investigation Organizations (RAIOs).

Action: The Assembly is invited to:

a) consider the new training approach of using this wholesome theoretical and practical approach to conduct aircraft accident and incident investigations;
b) commission a working group for the development of this new AIG approach with the goal of being endorsed by ICAO to assist States in achieving an effective implementation (EI) above the global average in AIG audit results;
c) commission a working group to conduct a gap analysis of AIG PQs for the most affected States especially in developing States to establish the common deficiencies; and
d) review, and amend as necessary, AIG PQs to take advantage of innovations, currently available technology.

Strategic Objectives	This working paper relates to the Strategic Objectives of Safety and of Air Navigation Capacity and Efficiency
Financial Implications	Cost-benefit analysis by each State

[1] Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Togo, Tunisia, Uganda, United Republic of Tanzania, Zambia and Zimbabwe

References	Annex 13 – *Aircraft Accident and Incident Investigation* Annex 1 – *Personnel Licensing* Doc 9946 – *Manual on Regional Accident and Incident Investigation Organization* Doc 9841 – *Manual on the Approval of Training Organizations*

1. INTRODUCTION

1.1 Most aircraft accident and incident investigation (AIG) training courses cover theory and some practical exercises including accident and incident causes and their effects. They typically cover Annex 13 Standards and Recommended Practices (SARPs), relevant ICAO documents and various case studies. In some instances, these courses include fixed mock-up for some practical and psychological experience.

1.2 This working paper focuses on specific training necessary to assist in adequately addressing AIG PQs and the use of simulators to create accident or incident scenarios and associated case studies based on the PQs. It will by no means compromise the requirements of the AIG PQs. However, for some States, particularly African States, a different methodology may need to be incorporated, focusing on the understanding of PQ requirements to satisfactorily answer them. Technology and innovation in flight simulation training devices (FSTDs) have enabled the wide and safe improvement of flight training and operations since its inception in the 1910s.

1.3 The same can be said in design and manufacturing of aircraft where constant improvement in safety research and implementation, has led to a decrease in aircraft accidents and incidents. It is becoming increasingly impractical for States to wait for an accident or serious incident to happen in order to close AIG PQs. In addition, this may not be an accurate determination of a State's safety oversight capability in AIG nor a realistic measure of a safe aviation environment. When a State has not experienced an aircraft accident or serious incident it should not be judged as lacking the capability or capacity to handle the accident and incident investigations successfully.

1.4 In any case, the lack of aircraft accidents or serious incidents may as well indicate a robust safety and oversight system. There needs to be a paradigm shift where States can proactively and satisfactorily address the requirements of AIG PQs without waiting for an actual aircraft accident or serious incident to happen in order to answer questions regarding implementation or close any corresponding AIG audit findings.

1.5 During investigations, States tend to act reactively to recognize benefits of hindsight to diagnose roots and embedded causes which would lead to foresight safety challenges and demands which tend to be more proactive for safety concerns.

2. DISCUSSION

2.1 Instead of requiring satisfactory evidence to be provided based on real accident investigations, evidence can, where appropriate, be obtained through theoretical case studies and practical scenarios which take advantage of level D FSTDs to simulate aircraft accidents and incidents. Under the current ICAO USOAP CMA, a State may not satisfactorily answer all the AIG PQs because of lack of demonstration of evidence related to aircraft accident and incident investigation and the status of such PQs remains "Not Satisfactory."

2.2 The proposed training approach will be based on three main objectives set forth in ICAO Annexes, documents, Assembly Resolutions, the Chicago Convention, and the ICAO no country left behind (NCLB) initiative.

2.3 The first objective is for the training to be designed using Annex 1 – *Personnel Licensing*, Appendix 2 – Approved Training Organization, Doc 9841 – *Manual on the Approval of Training Organizations* and other ICAO supplementary documents.

2.4 The second objective is to incorporate Assembly Resolution A40-27 on Innovation, taking into account the original intention of ICAO as set out in Article 44 and Article 37 of the *Convention on International Civil Aviation*. The third objective is to contribute towards and incorporate the objective of the ICAO NCLB initiative, which includes the need to assist States in implementing ICAO SARPs and to resolve Significant Safety Concerns (SSCs).

3. WHOLESOME THEORETICAL AND PRACTICAL APPROACH

3.1 A wholesome theoretical approach takes into consideration the accident/incident holistically, i.e. taking all parts as being closely interconnected.

3.2 The approach should encompass readily available tools which include case studies of accidents and incidents located in the ICAO database, AIG PQs, and ICAO Annexes and documents related to AIG.

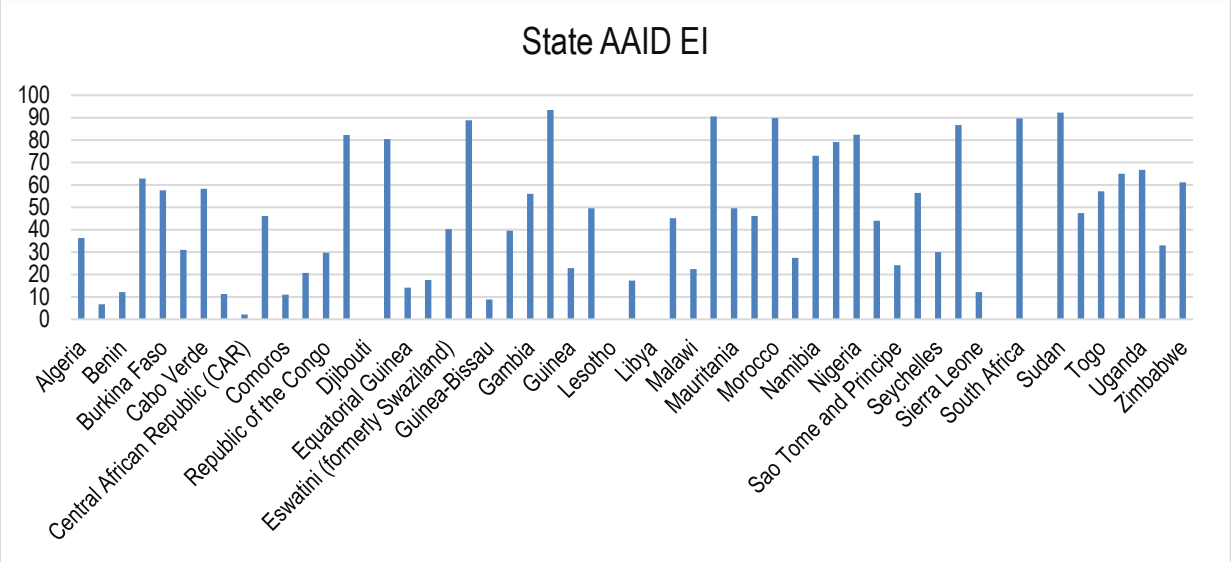
3.3 It also includes appropriate training up to the level of ICAO AIG auditors and instructors. For the Africa-Indian Ocean (AFI) Region, experts from Member States with above average audit results should be given priority to become instructors. This can be facilitated through the already established philosophy of Regional Safety Oversight Organization (RSOO) sharing of expertise schemes.

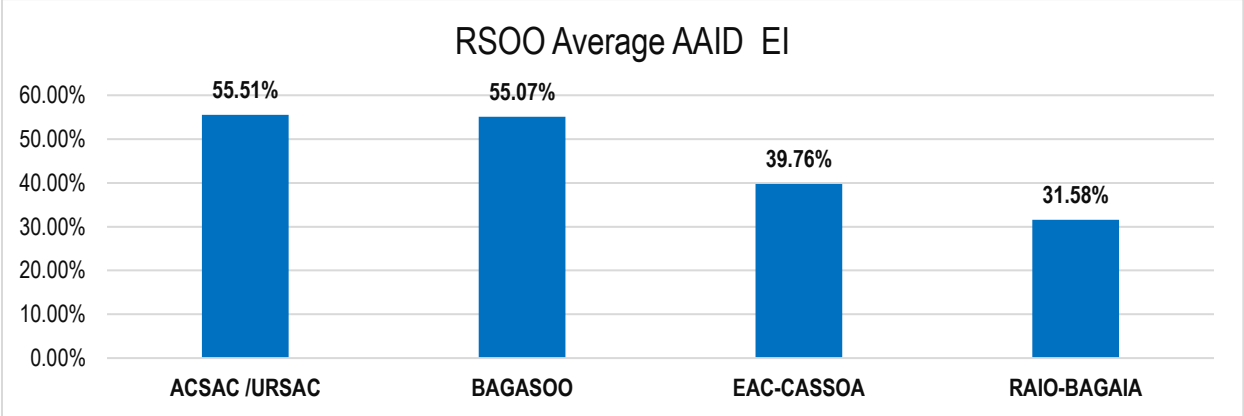
3.4 Practical approach incorporating the use of readily available materials and tools in a pragmatic manner includes use of simulators like those used for the training of airmen. The same approach can be used to construct and analyse accidents and incidents.

3.5 As part of the training, instructors can create or simulate FSTD scenarios leading to an accident or an incident. The simulated event will not be limited to an “air crash” but will involve all personnel or departments involved in an investigation to carry out their responsibilities as specified in the corresponding PQs.

3.6 Enhancing coordination among Member States will provide African States involved with a global range of solutions for delegating safety functions or activities and allow for more effective use of limited resources.

4. ANALYSIS OF AIG EI FOR AFRICAN STATES





5. CONCLUSION

5.1 There is a need for concerted effort to develop a course of action to help improve the EI of African States by structuring a gap analysis of AIG PQs that will focus on the most challenging questions at a continental level.

5.2 ICAO auditors/instructors should be used to providing training on the understanding of the requirements of PQs with emphasis on those PQs that have the highest number of common findings. Consideration for personnel to qualify as AIG auditors and instructors should be given to African States that have had positive results in AIG audits. This can be facilitated through the already established philosophy of RSOO sharing of expertise.

5.3 It is necessary to review and amend as necessary AIG PQs to take advantage of innovations, currently available technology. Reassess AIG PQs still hold value given the introductions of said innovations and technology readily available.

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