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Agenda Item No. 33: Aviation safety and air navigation monitoring and analysis

REPORT ON THE GLOBAL AVIATION SAFETY PLAN OBJECTIVES, THE GLOBAL AIR NAVIGATION PLAN PRIORITIES AND THE IMPLEMENTATION OF THE UNIVERSAL SAFETY OVERSIGHT AUDIT PROGRAMME CONTINUOUS MONITORING APPROACH

(Presented by the Council of ICAO)

EXECUTIVE SUMMARY

This paper provides a report on the status of the objectives and enablers of the 2014-2016 edition of the Global Aviation Safety Plan (GASP). It also provides a report on the status of the 2013-2028 Global Air Navigation Plan (GANP) priorities. In addition, this paper includes an overview of the status and results of the Universal Safety Oversight Audit Programme Continuous Monitoring Approach (USOAP CMA).

Action: The Assembly is invited to:

a) note the current status of the objectives, priorities and enablers of the GASP, the priorities of the GANP and the status and results of USOAP CMA;
b) encourage States to take action on achieving the objectives of the GASP and aligning with the priorities of the GANP;
c) encourage States to support the regional aviation safety groups (RASGs) and planning and implementation regional groups (PIRGs) in implementing regional priorities and to provide data on their progress and status of implementation; and
d) urge States to report their progress in implementing USOAP corrective action plans (CAPs) on the online framework (OLF) in a timely manner.

Strategic Objectives:	This working paper relates to the Safety and Air Navigation Capacity and Efficiency Strategic Objectives.
Financial implications:	The activities referred to in this paper were undertaken subject to the resources available in the 2014-2016 Regular Programme Budget and/or from extra budgetary contributions.
References:	State letter AN 8/3-15/46 Electronic Bulletin EB 2015/56 Doc 10004, *Global Aviation Safety Plan 2014-2016* Doc 9750, *Global Air Navigation Plan 2013-2028* Doc 9735, *Universal Safety Oversight Audit Programme Continuous Monitoring Manual* *Air Navigation Report 2016 Edition* (available at http://www.icao.int/airnavigation/pages/Air-Navigation-Report.aspx) *ICAO Safety Report 2016 Edition* (available at http://www.icao.int/safety/Pages/Safety-Report.aspx) *Report on USOAP CMA Results 2016 Edition* (available at https://portal.icao.int/icao-net/safetyoversight/Pages/default.aspx)

(9 pages)

1. INTRODUCTION

1.1 The latest edition of the Global Aviation Safety Plan (GASP) for 2014-2016 was published in 2013. The GASP is a high-level strategy that assists States in their aviation safety policy, planning and implementation activities through safety objectives, a planning framework for improvements in safety, and implementation strategies and best practices guidance material.

1.2 The current edition of the Global Air Navigation Plan (GANP) and its associated aviation system block upgrades (ASBUs) represent a rolling, fifteen-year strategic methodology for integrated aviation planning solutions at both regional and State levels. It identifies issues related to the financial aspects of aviation system modernization and highlights the importance of collaboration and partnerships in dealing with multidisciplinary challenges ahead.

1.3 Regional aviation safety groups (RASGs) and planning and implementation regional groups (PIRGs) have established the regional priorities, implementation indicators and targets in aviation safety and air navigation for the regional implementation of the GASP and GANP. This is reflected in the work programmes of RASGs and PIRGs. Implementation progress is reported in the annual regional aviation safety reports as well as the annual global aviation safety report at http://www.icao.int/safety/Pages/Safety-Report.aspx, and the annual global air navigation report at http://www.icao.int/airnavigation/pages/Air-Navigation-Report.aspx. Implementation progress is also presented in the regional dashboards available at https://portal.icao.int/space/Pages/Regional-Safety-Briefing.aspx and http://www.icao.int/SAFETY/Pages/Regional-Targets.aspx.

1.4 The Universal Safety Oversight Audit Programme Continuous Monitoring Approach (USOAP CMA) allows ICAO to continuously monitor the safety oversight capabilities of States and their implementation of the ICAO Standards and Recommended Practices (SARPs). The CMA incorporates principles of safety management using safety risk factors and indicators and provides a mechanism for ICAO to collect safety information from Member States and other stakeholders and to analyse this information, resulting in improvements in safety performance of States and global aviation. More information on the status of USOAP CMA and an overview of its results are provided in the appendix.

1.5 This paper provides a report on the current status of the GASP objectives and the GANP targets and priorities, and results of USOAP CMA activities since the 38th Session of the Assembly. Additional details are published periodically in the *State of Global Aviation Safety Report*, *Air Navigation Report* and *Report on USOAP CMA Results*.

2. GASP OBJECTIVES, PRIORITIES AND ENABLERS

2.1 Global aviation safety priorities

2.1.1 Reducing the number of accidents and fatalities related to runway safety, loss of control in-flight (LOC-I) and controlled flight into terrain (CFIT) were set as priorities in the 2014-2016 GASP. The number of accidents in all three categories has decreased over the last years from 61 in 2013 to 52 in 2015, in line with a global decrease in the number of accidents. Fatalities in these categories for 2015 were one third of those suffered in 2013 (46 in 2015 vs 138 in 2013). It should be noted that no CFIT accidents occurred in 2015 for scheduled commercial operations. LOC-I accidents are still the category generating the most fatalities. Data on accidents is available on iSTARS/SPACE at http://www.icao.int/safety/iStars.

2.2 Near-term GASP objectives – Continuous safety system improvement

2.2.1 As a near-term objective, the GASP requires all States without fundamental safety oversight capabilities to implement an effective safety oversight system by the end of 2017. A key indicator of this target is the number of States that have achieved an effective implementation (EI) rate

above 60 per cent. As of 31 March2 016, only 61 per cent of States have achieved this global target. The regional breakdown of this indicator shows significant differences among various regions. Detailed data an analysis on EI are available through ICAO's online tool, iSTARS/SPACE at http://www.icao.int/safety/iStars.

2.2.2 Another near-term objective of the GASP calls for States with EI rates above 60 per cent to fully implement the State safety programme (SSP) by the end of 2017, thereby addressing risks to their aviation systems. All other States are required to fully implement SSP by 2022. All States were invited to use the SSP gap analysis tool on iSTARS as the first phase of SSP implementation. Currently, of States with EI above 60 per cent, 69 per cent have started the SSP implementation process. Two States have indicated that they have fully implemented SSP. Details about each State and their progress in implementing SSP can be found through the gap analysis tool on iSTARS/SPACE.

2.2.3 The effective implementation of SSP will be assessed through the USOAP audit of the new protocol questions (PQs) related to the provisions of Annex 19 — *Safety Management* (and related guidance material). Those audits were planned to start in January 2016 in States with EI above 60 per cent. States had one year until the end of 2015 to conduct self-assessment on the new SSP-related PQs. However, in practice, very few States have performed a self-assessment on the new SSP-related PQs and recorded results in the USOAP CMA online framework (OLF, http://www.icao.int/usoap). As a result, data on the new SSP-related PQs is not available yet.

2.2.4 Considering the lack of readiness of most States for effective implementation of SSP and the fact that an updated version of the *Safety Management Manual* (SMM) (Doc 9859) would be published in all ICAO working languages in the third quarter of 2017 (State letter AN 8/3-15/46 refers), it was decided to postpone the audit of the new SSP-related PQs to January 2018 (EB 2015/56 refers).

2.3 GASP enablers

2.3.1 In order for States to achieve the near-term objective of establishing effective safety oversight systems, the GASP includes nineteen enablers related to standardization, collaboration, resources and safety information exchange.

2.3.2 Limited data is available on the application and implementation of most of these initiatives, except in relation to the following enablers related to standardization which are measured and available through USOAP CMA indicators.

a) *Consistent implementation of international Standards*: on average, States have implemented approximately 63 per cent (±22 per cent)[1] of international Standards. Large variations also exist among regions.

b) *Application of consistent regulatory oversight*: with regard to the competences related to certification and licensing (critical element 6), on average, State have implemented 67 per cent (±26 per cent)[1] of the Standards. Large variations exist among regions.

c) *Implementation of effective accident and incident investigation*: on average, States have implemented around 55 per cent (±30 per cent)[1] of international Standards related to accident and incident investigation (Annex 13 — *Aircraft Accident and Incident Investigation*). Large variations exist among regions.

d) *Identification of differences with ICAO SARPs*: only 25 per cent of States have effectively developed and implemented procedures for identifying and notifying

[1] The information in brackets shows the standard deviation of values taken from all audited States.

differences between ICAO Standards and national regulations. The implementation level of this initiative is consistent throughout all regions.

e) *Establishment of a process to maintain current and relevant national regulations in line with SARPs*: only 30 per cent of States have effectively developed and implemented procedures for the amendment of their specific regulations taking into consideration ICAO provisions and their amendments. The implementation level of this initiative is consistent throughout all regions.

Global results by area and critical elements in the context of the foregoing are presented in the appendix to this working paper as well as on the iSTARS/SPACE system.

2.4 Mid- and long-term GASP objectives

2.4.1 The mid- and long-term objectives of the GASP involving all States fully implementing SSP components and States developing predictive risk controls that support real-time decision-making processes are due by 2022 and 2027, respectively. Progress on these targets will be reported in the future as States gradually achieve them and data become available.

3. GANP PRIORITIES

3.1 The goal of the GANP is to support the achievement of an interoperable global air traffic management system for all users during all phases of flight that meets agreed levels of safety, provides for optimum economic operations, is environmentally sustainable and meets national security requirements. In order to achieve this goal, the ASBUs have been defined as a framework for operational improvements. ASBUs include several modules which are organized into a series of four Blocks (0, 1, 2 and 3) and constitute five-year increments starting in 2013 and continuing through 2028 and beyond. As a structured approach, the GANP and associated ASBU modules provide a basis for sound investment strategies and will generate commitment from States, equipment manufacturers, operators and service providers.

3.2 Performance-based navigation (PBN)

3.2.1 The GANP identifies PBN as being of the highest priority. Even before the development of the ASBU framework, ICAO focused its efforts on the development and implementation of PBN at international aerodromes, supported by the second High-level Safety Conference (HLSC) in 2015, PBN is also recognized as a means to help reduce the probability of runway excursions and controlled flight into terrain (CFIT) through the implementation of approach procedures with vertical guidance.

3.2.2 Assembly Resolution A37-11 called for States to complete a PBN implementation plan that achieves PBN approach procedures to all instrument runway ends by end of 2016 (with an intermediate objective of 70 per cent implementation by the end of 2014). The PBN implementation plan is essential as it is a key indicator of the commitment by all stakeholders within a State to improve safety and operational efficiency and reduce environmental impact. As of 31 March 2016, 60 per cent of all international instrument runways have published PBN approach procedures. The regional breakdown of the implementation level shows significant differences among various regions.

3.2.3 The ICAO PBN web-site at http://www.icao.int/safety/pbn/Pages/PBN-Implementation.aspx and the ICAO iSTARS/SPACE site at http://www.icao.int/safety/iStars provide further details on the status of implementation.

3.3 Air traffic flow management (ATFM)

3.3.1 Air traffic flow management (ATFM) is an enabler of air traffic management (ATM) efficiency and effectiveness. It contributes to the safety, efficiency, cost effectiveness and environmental

sustainability of an ATM system. ATFM aims at enhancing safety by ensuring the delivery of safe densities of traffic and by minimizing traffic surges. Its purpose is to balance traffic demand and available capacity.

3.3.2 To support ATFM implementation, ICAO established provisions setting a common reference for ATFM and is now placing significant emphasis on training activities worldwide. The number of States that manage traffic flows and implement ATFM procedures is growing steadily. Currently, around 50 per cent of all flight information regions have at least some form of ATFM in place within their area control centres (ACCs). The regional breakdown of the implementation level shows significant differences among various regions. Details on ATFM implementation can be found on the ICAO GIS portal: http://gis.icao.int/ATFMviewer/.

3.4 Block 0

3.4.1 Block 0 is composed of modules containing technologies and capabilities which are available for implementation as of 2013. Implementation of those modules is not mandatory but encouraged as applicable to specific operational needs of States. Block 0 contains eighteen modules for performance improvement related to airport operations, globally interoperable systems and data, optimum capacity and flexible flights, and efficient flight paths. Limited data is available on the progress of States in implementing most of the modules, except for the following:

a) *Optimization of approach procedures including vertical guidance (B0-APTA)*: refer to section 3.2 above on PBN.

b) *Improved flow performance through planning based on a network-wide view (B0-NOPS)*: refer to section 3.3 above on ATFM.

3.5 Blocks 1, 2 and 3

3.5.1 Supporting provisions and associated technologies which would allow implementation of modules within Blocks 1 through 3 will be available beginning in 2019 and beyond. Therefore, data on implementation related to those modules is not available yet.

4. CONCLUSION

4.1 In order to measure the implementation of GASP objectives and enablers and GANP priorities, including ASBU modules, States are invited to take action on achieving the objectives of GASP and implementing the priorities of GANP and to support the regional aviation safety groups (RASGs) and planning and implementation regional groups (PIRGs) in implementing regional priorities and to provide data on their progress and status of implementation.

4.2 States are also invited to take timely measures to implement corrective action plans (CAPs) to resolve USOAP CMA findings and to report their progress in implementing those CAPs on the USOAP CMA online framework (OLF).

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APPENDIX

INFORMATION, SUMMARY OF RESULTS AND ANALYSIS OF DATA FROM ACTIVITIES WITHIN THE USOAP CMA

1. OVERVIEW

1.1 This appendix includes information and a summary of results and analysis of data from activities within the Universal Safety Oversight Audit Programme Continuous Monitoring Approach (USOAP CMA) conducted over a three-year period since the launch of the CMA on 1 January 2013 until 31 December 2015. The data and safety information collected from Member States and other stakeholders through the USOAP CMA allow ICAO to use a risk-based approach for monitoring and assessing States' safety oversight capabilities through various on-site and off-site monitoring activities.

1.2 Subsequent to the full-scale implementation of CMA in January 2013, the following numbers of USOAP CMA activities, including USOAP CMA audits, ICAO Coordinated Validation Missions (ICVMs), off-site validations and seminar/workshops on the USOAP CMA online framework (OLF), have been conducted since 2014:

USOAP CMA Activity	2014	2015	2016*
USOAP CMA Audits	5	10	5
ICAO Coordinated Validation Missions (ICVMs)	15	18	9
Off-site Validation Activities	15	21	7
Seminar/workshops	12	10	7
Total	47	59	28

*Data reported as of 8 July 2016.

1.3 This report uses data from the USOAP CMA OLF (http://icao.int/usoap/). The OLF is the main tool for collecting, continuous monitoring and reporting of USOAP CMA data. This report also uses various analyses of USOAP CMA data generated by ICAO's Integrated Safety Trend Analysis and Reporting System (iSTARS/SPACE at http://www.icao.int/safety/iStars) platform.

1.4 USOAP CMA activities conducted during the reporting period from 1 January 2013 to 31 December 2015 (including CMA audits, ICVMS and off-site validation activities), verified that the global average EI increased from 61.64 per cent to 63.22 per cent.

2. GLOBAL RESULTS BY CRITICAL ELEMENT

2.1 As of the end of 2015, CE-4 – *Qualified technical personnel* remains the critical element (CE) with the lowest effective implementation (EI) rate at the global level and CE-1 – *Primary aviation legislation* remains the CE with the highest EI rate. In the three-year reporting period, the EI for all CEs from CE-1 to CE-5 have increased. However, the EI rates for all CEs related to the actual implementation

of the State's safety oversight system, i.e. CE-6 – *Licensing, certification, authorization and/or approval obligations*, CE-7 – *Surveillance obligations* and CE-8 – *Resolution of safety issues*, have decreased.

2.2 A number of factors cause a decrease in EI rates. One of them is that a deterioration of the safety oversight system was observed in some States where the established system was not sufficiently sustainable. This was particularly the case where the State had not been able to retain some of its qualified and experienced technical staff. Some other States had gone through periods of instability which had impacted the system established within the CAA. Finally, the level of aviation activity in some States had significantly increased, with the CAA not sufficiently staffed to effectively perform all necessary additional certification, surveillance and enforcement activities.

2.3 Another factor that contributed to the decrease of the EI for CE-6, CE-7 and CE-8 is that some States had not been able to ensure the implementation of new or amended SARPs by their service providers, which normally require not only amendments to the regulations but also additional evaluations during initial approval and continuous surveillance activities.

2.4 The CEs with the highest increase in the three-year reporting period are CE-4 and CE-5 – *Technical guidance, tools and provision of safety-critical information*. During this period, ICAO was able to validate (through both on-site and off-site activities) the establishment of training-related documentation, such as training policy and programmes, as well as the establishment of procedures by States. These are typically issues that can be addressed in an easier and faster manner (i.e. "low hanging fruits") which, unlike the amendment of regulations or legislation, do not normally require lengthy drafting, consultation and promulgation processes.

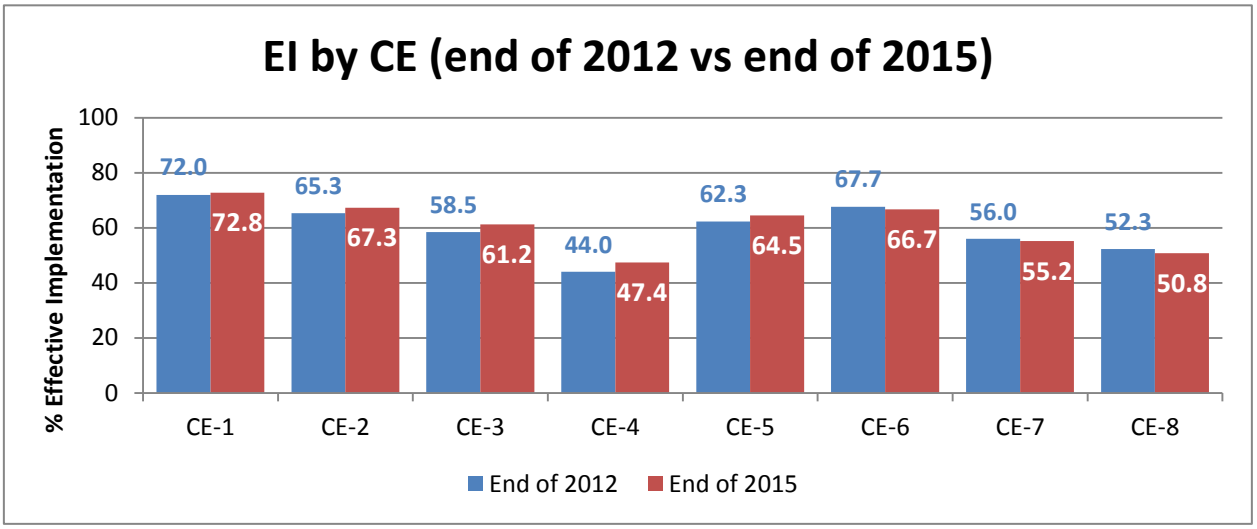

Figure A-1. Average global level of effective implementation (EI) by critical element (CE)

3. GLOBAL RESULTS BY AUDIT AREA

3.1 As of the end of 2015, the three audit areas with the lowest EI rates at the global level are AIG, ANS and AGA, partly due to the fact that ICAO only started to perform USOAP audits in these areas in 2005 (as opposed to 1999 for the PEL, OPS and AIR areas). AIR remains the area with the highest and AIG the one with the lowest EI. In the three-year reporting period, the global EI level in AIR,

AIG, ANS and AGA increased, while the EI in PEL and OPS showed a slight decrease. The highest increase of EI was in the ANS area.

3.2 Detailed analysis of USOAP CMA results, including changes and improvements in States' EI, is reflected in the *Report on USOAP CMA Results* available at https://portal.icao.int/icao-net/safetyoversight/Pages/default.aspx.

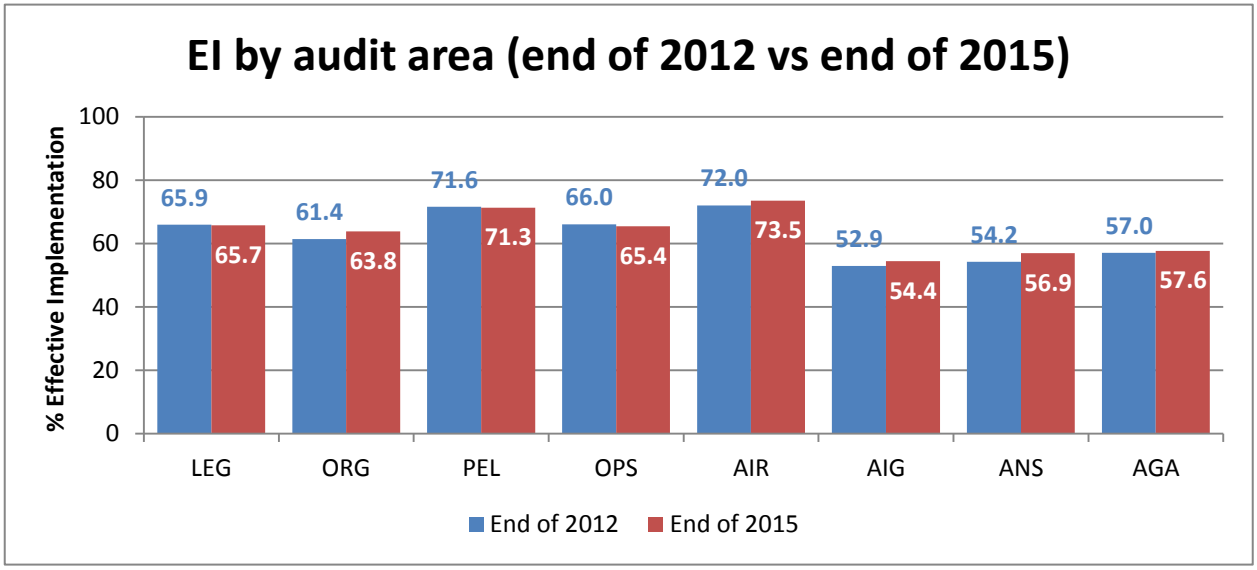

Figure A-2. Average global level of effective implementation (EI) by audit area

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