International Civil Aviation Organization
CAR/SAM Regional Planning Implementation Group (GREPECAS)
Sixth Meeting of the GREPECAS Aerodromes and Ground Aids / Aerodrome Operational Planning Subgroup (AGA/AOP/SG/6)
San José, Costa Rica, 23 to 27 June 2008

Agenda Item 3 Review of AGA deficiencies

3.6 Annex 14 and the ICAO USOAP audits

(Presented by the Secretariat)

SUMMARY

The ultimate objective of the ICAO (USOAP) is to promote global aviation safety through auditing Contracting States, on a regular basis, to determine States' capability for safety oversight. This objective is accomplished by assessing the effective implementation of the critical elements of a safety oversight system and the status of their implementation of safety-relevant ICAO (SARPs), associated procedures, guidance material and safety-related practices. To understand the results of the audits conducted under the comprehensive systems approach, the information collected for the purposes of the audits and the findings identified during the audits must be systemically qualified and quantified.

This paper contains information based on the results of the first 53 Contracting States audited under the Comprehensive Systems Approach, with regard to the aerodromes area.

References:

- Universal Safety Oversight Audit Programme 2007. Comprehensive systems approach (CSA);
- Assembly Resolution A35/6 - Transition to a comprehensive systems approach for audits in the ICAO Universal Safety Oversight Audit Programme (USOAP); and
- Doc 9734 - Safety Oversight Manual, Part A - The Establishment and Management of a State's Safety Oversight System.

1. Introduction

1.1 The Audit Findings and Differences Database (AFDD) which is accessible to Contracting States, was developed to archive findings and differences arising from safety oversight audits carried out under the ICAO USOAP. Information provided by States on the level of aviation activity and on the status of compliance with ICAO Annex provisions, along with findings identified during an audit, allow for the conduct of detailed analysis with the aim of enabling ICAO to be more effective in promoting global aviation safety. The data collected enables ICAO to:

a) determine the level of aviation activity: by State, by region, by a select group of States, or globally;

b) determine Contracting States' level of implementation of SARPs for each of the safety-related ICAO Annexes, based on compliance checklists completed and submitted by States and audit results;

c) determine the percentage of lack of effective implementation broken down by the eight critical elements (CEs) of a safety oversight system: by State, by region, by a select group of States, or globally; and

d) determine the types of difficulties experienced by Contracting States in establishing an effective safety oversight system in each of the eight areas audited:

- primary aviation legislation and civil aviation regulations;
- civil aviation organization;
- personnel licensing and training;
- aircraft operations;
- airworthiness of aircraft;
- aircraft accident and incident investigation;
- air navigation services; and
- aerodromes

1.2 The analysis of the audit findings and differences will enable the identification and quantification of safety concerns for individual States and groups of States, at the regional and global levels. ICAO will then be able to evaluate their impact on safety and consider the various options available to improve conformance to the SARPs and assist States in establishing an effective safety oversight system. The resulting analysis will also allow the prioritization of actions required to resolve identified safety concerns.

2. Discussion

2.1 This paper presents the analysis based on the results of the first 53 safety oversight audits conducted under the comprehensive systems approach.

2.2 The critical elements CEs are essentially the safety defence tools of a safety oversight system required for the effective implementation of safety-related international standards and associated procedures. ICAO Contracting States, in their effort to establish and implement an effective safety oversight system that reflects the shared responsibility of the State and the aviation community, should address the eight CEs. The CEs encompass the whole spectrum of civil aviation activities, including personnel licensing, aircraft operations, airworthiness, air navigation services, aerodromes and aircraft accident and incident investigation. The level of effective implementation of the CEs is an indication of a State's capability for safety oversight.

2.3 ICAO has defined the following eight CEs of a State's safety oversight system:

CE-1. Primary aviation legislation. The provision of a comprehensive and effective aviation law consistent with the environment and complexity of the State's aviation activity and compliant with the requirements contained in the Convention on International Civil Aviation.

CE-2. Specific operating regulations. The provision of adequate regulations to address, at a minimum, national requirements emanating from the primary aviation legislation and providing for standardized operational procedures, equipment and infrastructures (including safety management and training systems), in conformance with the Standards and Recommended Practices (SARPs) contained in the Annexes to the Convention on International Civil Aviation.

CE-3. State civil aviation system and safety oversight functions. The establishment of a Civil Aviation Authority (CAA) and/or other relevant authorities or government agencies, headed by a Chief Executive Officer, supported by the appropriate and adequate technical and non-technical staff and provided with adequate financial resources. The State authority must have stated safety regulatory functions, objectives and safety policies.

CE-4. Technical personnel qualifications and training. The establishment of minimum knowledge and experience requirements for the technical personnel performing safety oversight functions and the provision of appropriate training to maintain and enhance their competence at the desired level. The training should include initial and recurrent (periodic) training.

CE-5. Technical guidance, tools and provision of safety-critical information. The provision of technical guidance (including processes and procedures), tools (including facilities and equipment) and safety-critical information, as applicable, to the technical personnel to enable them to perform their safety oversight functions in accordance with established requirements and in a standardized manner. In addition, this includes the provision of technical guidance by the oversight authority to the aviation industry on the implementation of applicable regulations and instructions.

CE-6. Licensing, certification, authorization and/or approval obligations. The implementation of processes and procedures to ensure that personnel and organizations performing an aviation activity meet the established requirements before they are allowed to exercise the privileges of a licence, certificate, authorization and/or approval to conduct the relevant aviation activity.

CE-7. Surveillance obligations. The implementation of processes, such as inspections and audits, to proactively ensure that aviation licence, certificate, authorization and/or approval holders continue to meet the established requirements and function at the level of competency and safety required by the State to undertake an aviation-related activity for which they have been licensed, certified, authorized and/or approved to perform. This includes the surveillance of designated personnel who perform safety oversight functions on behalf of the CAA.

CE-8. Resolution of safety concerns. The implementation of processes and procedures to resolve identified deficiencies impacting aviation safety, which may have been residing in the aviation system and have been detected by the regulatory authority or other appropriate bodies.

2.4 Figure 1 below shows the geographical distribution, by ICAO Regional Office, of the 53 Contracting States audited as of 31 May 2007 under the comprehensive systems approach. ICAO is on schedule to bring this total to 78 by the end of 2007, with 43 additional audits scheduled for 2008. The remaining Contracting States would be audited by the end of 2010.

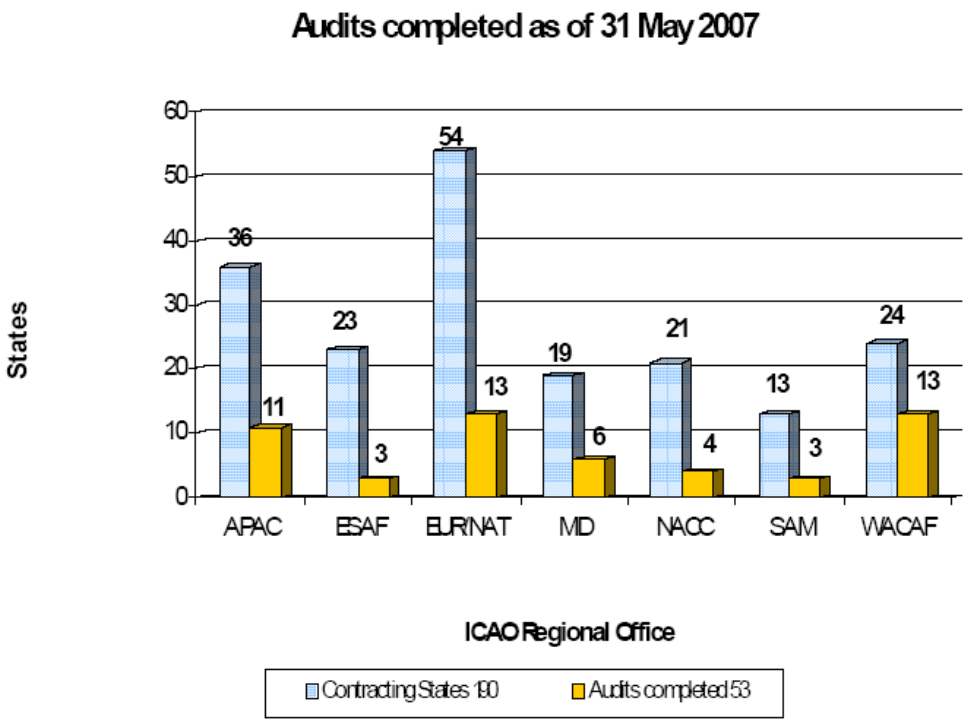


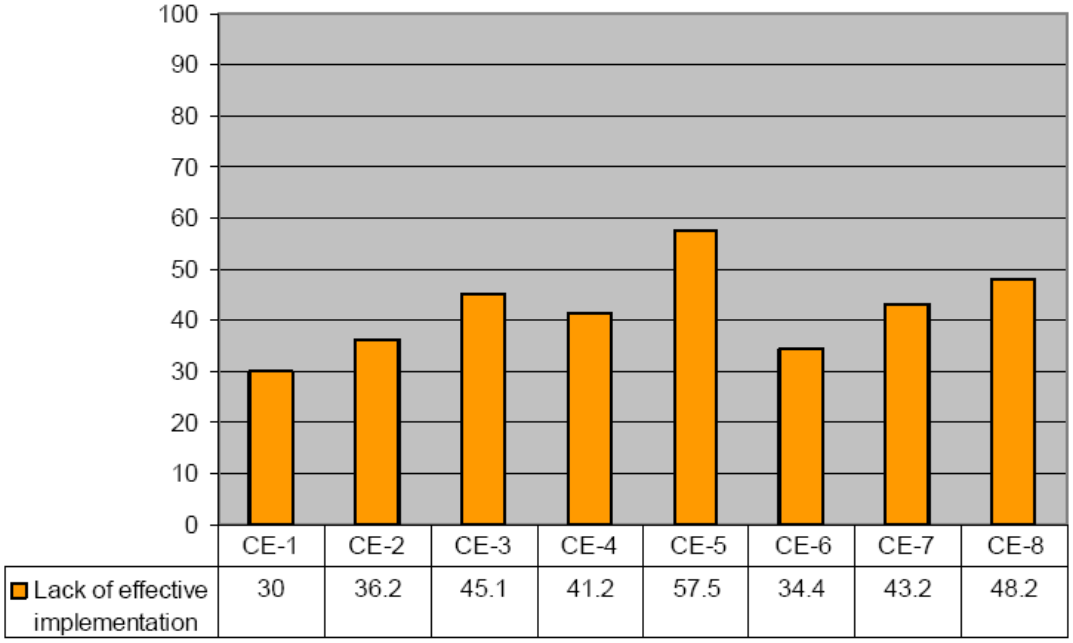
Figure 1

2.5 The results of the 53 safety oversight audits conducted under the comprehensive systems approach, as of 31 May 2007, covering the safety-related provisions in all safety-related Annexes, have been analyzed using the AFDD. Figure 2 below shows the level of lack of effective implementation of the eight critical elements of a safety oversight system for the 53 Contracting States audited, with an average of 41.3 per cent. Most of the audit findings relate to the newly audited areas, i.e. aerodromes, air navigation services (ANS) and aircraft accident and incident investigation.

2.6 Under the comprehensive systems approach, ICAO conducts the audits using audit protocol questions (found in ICAO Doc 9735 – *Safety Oversight Audit Manual*). Each protocol question is linked to a critical element and, when marked "not satisfactory", is used to support an audit finding. Audit findings must be based on at least one not satisfactory protocol question. A not satisfactory protocol question may also be referred to as a deficiency.

2.7 To facilitate the conduct of the audits and distribution of work amongst the audit team members, the audit protocol questions are grouped into eight separate questionnaires, based on the following areas: a) primary aviation legislation and civil aviation regulations; b) civil aviation organization; c) personnel licensing and training (Annex 1); d) aircraft operation certification and supervision (Annexes 6, 18); e) airworthiness of aircraft (Annexes 6, 7, 8, 16); f) aircraft accident and incident investigation (Annex 13); g) air navigation services (Annexes 2, 3, 4, 5, 10, 11, 12, 15); and h) aerodromes (Annex 14).

Global Audit Results
Lack of Effective Implementation of Safety Oversight System (%)



	CE-1	CE-2	CE-3	CE-4	CE-5	CE-6	CE-7	CE-8
Lack of effective implementation	30	36.2	45.1	41.2	57.5	34.4	43.2	48.2

Figure 2

Top-ten protocol questions directly related to Annex 14 Vol. 1 provisions not satisfactorily implemented by 53 Contracting States audited

Aerodromes

Audit protocol number

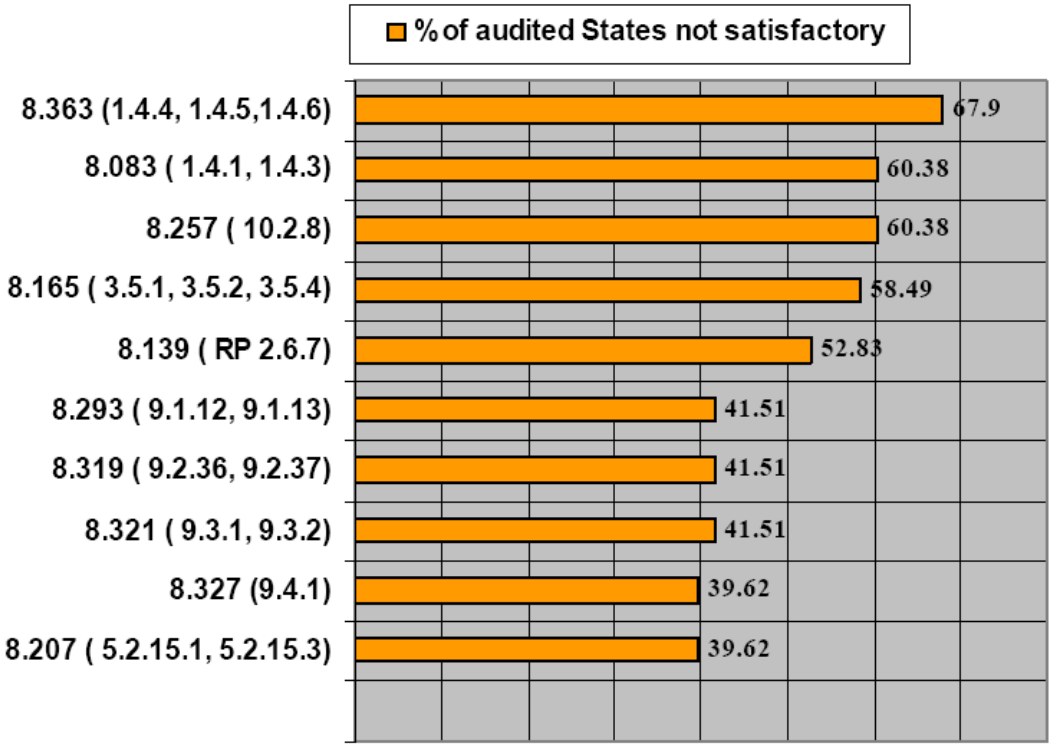


Figure 3

Figure 3 reflects the top-ten not-satisfactory aerodromes protocol questions related to an ICAO Annex Standard for the 53 States audited.

Audit Protocol No	Audit protocol question	Associated Annex provision	# of States audited not satisfactory	% of audited States not satisfactory
8.363	If the State does have a requirement for certified aerodromes to have a SMS in operation, has it been implemented	Annex 14 Vol 1 STD 1.4.4 STD 1.4.5 STD 1.4.6	36	67.9
8.083	Has the State established a process for the certification of aerodromes?	Annex 14 Vol 1 STD 1.4.1 STD 1.4.3	32	60.4
8.257	How does the State ensure that aerodrome operators maintain good friction characteristics and low rolling resistance on runways?	Annex 14 Vol 1 STD 10.2.8	32	60.4
8.165	If the requirements for RESAs have not been implemented at all aerodromes open to public use, how does the State satisfy itself that the runway surroundings are safe for use by aircraft in the event of an aircraft overrunning or undershooting the runway?	Annex 14 Vol 1 STD 3.5.1 STD 3.5.2 STD 3.5.4	31	58.5
8.139	Has the State established criteria and associated industry guidelines to regulate the use of a pavement by an aircraft with an aircraft classification number (ACN) higher than the reported pavement classification number (PCN)?	Annex 14 Vol 1 RP 2.6.7	28	52.8
8.293	Does the State require the periodic testing and review of aerodrome emergency plans?	Annex 14 Vol 1 STD 9.1.12 STD 9.1.13	22	41.5
8.319	How does the State ensure that there are sufficient trained personnel to operate all the necessary RFF equipment at maximum capacity, meet the minimum response times and maintain continuous agent application at the appropriate rate?	Annex 14 Vol 1 RP 9.2.36 RP 9.2.37	22	41.5
8.321	Does the State require and ensure that the aerodrome has adequate plans for the removal of disabled aircraft, including arrangements for coordinators to be designated, the rapid availability and deployment of salvage and removal equipment between aerodromes, and the protection of evidence, custody and the removal of aircraft in accordance with Annex 13?	Annex 14 Vol 1 RP 9.3.1 RP 9.3.2	22	41.5

Audit Protocol No	Audit protocol question	Associated Annex provision	# of States audited not satisfactory	% of audited States not satisfactory
8.327	Does the State require a bird strike hazard assessment for each of its aerodromes?	Annex 14 Vol 1 STD 9.4.1	21	39.6
8.207	Has the State assessed the effectiveness of road holding position markings for the purpose of preventing vehicles from unauthorized entry to a runway or a taxiway?	Annex 14 Vol 1 STD 5.2.15.1 STD 5.2.15.3	21	39.6

2.8 Overall, the 53 contracting States audited to date under the ICAO USOAP Comprehensive Systems Approach represent approximately 24 per cent of global air traffic capacity offered.

3. Conclusions

3.1 With respect to aerodromes, a large number of the States audited has not yet certified or established a process for the certification of aerodromes; this is reflected by the majority of the not-satisfactory protocol questions presented in the graph above. In particular, most States have not ensured that aerodrome operators implement an SMS as part of their aerodrome certification process. The provisions relating to runway friction, runway end safety areas, pavement use and the periodic testing and review of aerodrome emergency plans show a lack of compliance by a high percentage of the audited States. Other high percentages of not-satisfactory questions stem from weaknesses in a State's surveillance programme, including lack of expertise in highly specialized areas, such as rescue fire fighting and bird hazard control.

4. Recommendations

4.1 The Meeting is invited to

a) take note of the information provided in this working paper;

b) follow up on SARPs as well as its associated documents as guidelines for the certification process, the implementation of SMS, aerodrome emergency plans, rescue fire fighting and bird hazard control;

c) proceed with actions to resolve deficiencies as mentioned in paragraph 3.1 of this working paper; and

d) consider and recommend other appropriate action.

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