International Civil Aviation Organization
ICAO South American Regional Office
Twelfth Meeting of the Civil Aviation Authorities of the SAM Region (RAAC/12)
(Lima, Peru, 3 to 6 October 2011)

Agenda Item 4: Analysis of safety oversight level achieved in the SAM Region

a) Results in the application of the Universal Safety Oversight Audit Programme (USOAP)

COMPUTERIZED SYSTEM FOR THE CONTINUED SURVEILLANCE PROCESS IN THE BRAZILIAN AIRSPACE CONTROL SYSTEM (SISCEAB)

(Presented by Brazil)

SUMMARY

This Working Paper aims to present information on the implementation and effectiveness of a computerized solution for supporting the continued surveillance process of service providers of a safety oversight system.

References:

- Doc 8335 - Manual of Procedures for Operations Inspection, Certification and Continued Surveillance, 5th Ed. – 2010;
- Doc 9859 – Safety Management Manual, 2nd Ed. – 2006; and
- Doc 9735 – Part A - Safety Oversight Audit Manual, 2nd Ed. – 2006.

***ICAO Strategic Objective*:**	*A - Safety*

1 BACKGROUND

1.1 Taking into account the commitment to the safety of aviation activities, all ICAO Member State should ensure the establishment of an efficient safety oversight system. It is recognized that certain elements form a key part of this system and should be considered for the effective implementation of the state policy and safety related procedures. Thus, when a State establishes a structured safety oversight based on the following eight (08) Critical Elements (CE) it will be ensuring that their service providers develop their activities in accordance with the principles of the Chicago Convention and with the Standards and Recommended Practices (SARPs) of the Annexes:

CE-1 Primary Aviation Legislation
CE-2 Regulation
CE-3 Civil Aviation System and Safety Oversight Functions
CE-4 Technical Personnel Qualification and Training
CE-5 Guidance Material, Tools and the Provision of safety critical information
CE-6 Licensing, Certification, Authorization and/or Approval Obligations
CE-7 Surveillance Obligations
CE-8 Resolution of Safety Concerns

1.2 However, as the level of aviation activities of a State increases, the effort to maintain a proper periodic inspection process of Service Providers, as recommended by ICAO, may become an arduous and very complex task.

1.3 To better illustrate this complexity, in Brazil this process includes periodic inspections in 169 ANSP (Air Navigation Service Providers), including 43 providers which perform their tasks for the international civil aviation , involving 195 accredited inspectors to carry out continuous surveillance in all areas of air navigation: Air Traffic (ATS), Search and Rescue (SAR), Aeronautical Meteorology (MET), Aeronautical Information (AIS), Communications, Navigation and Surveillance (CNS), Cartography (CTG), Procedures for Air Navigation (PANS-OPS), Training (ENS) and Health (SAU).

1.4 All planning and implementation of safety inspections in the Brazilian Airspace Control System (SISCEAB) proceed in accordance with the principles and methods typically used in audit process of management systems in line with world best practices that include:

a) observation of the principles of legality, impersonality, morality, transparency, efficiency, timeliness and reasonableness;
b) three-stage process (pre-inspection, on-site inspection and post-inspection);
c) use of Inspection Protocols with questions formulated from all regulatory requirements of all areas involved;
d) forms for issuance of non-conformity;
e) risk analysis related to the impact on safety of non-compliance observed; and
f) demand that providers correct deficiencies identified through the preparation and implementation of a Corrective Action Plan (CAP).

1.5 Thus, considering the complexity of the process established and put into practice in Brazil, it was necessary to find a technological solution that would ensure efficiency and control of all phases of the safety inspections. For this purpose, the "**VIGILANTE"** was developed by a specialized firm hired under the coordination of specialists in the inspection process in Brazil.

2 Architecture and Description

2.1 The "VIGILANTE" is a software developed in the environment of the World Wide Web (WEB) and is intended to support the processes of coordination and control of the safety inspections of Air Navigation Services Providers. Its basic functions:

- Store all relevant information about safety inspections in SISCEAB;
- Control the inspections activities, both with respect to the inspector and the inspected organizations, and
- Control all non-conformities detected, as well as the implementation of appropriate corrective actions by monitoring the schedule of corrective action plans of the inspected Organizations.

2.2 The "VIGILANTE" incorporates the audit processes and terminology adopted by ICAO, through the application of protocol questions, with the identification of non-compliances, addressing them through Corrective Actions Plans and keeping track of the schedule. It adopts a network structure that could encompass elementary processes, such as: users profile (Fig 1), service providers information, etc), management of the protocols, inspection planning (Fig 2), inspection execution, non-conformity control, corrective actions plan management and collection of the feed back forms filled by the inspectors and by the providers with contribution for continuous improvement of the inspections process (Fig. 3).

Figure 1 – User Profile – Inspector

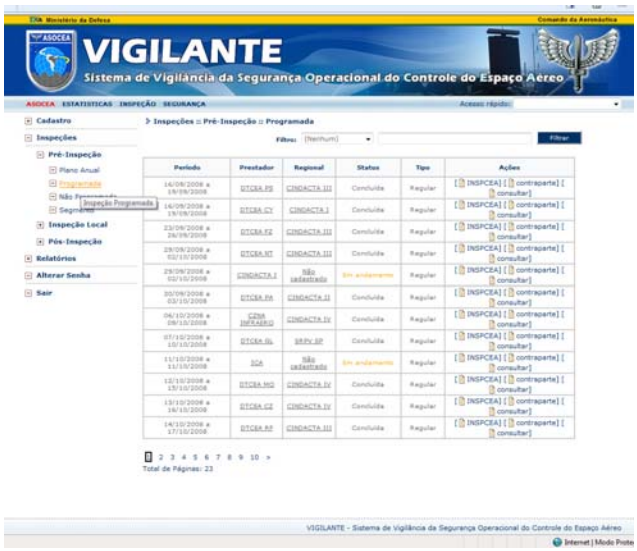

Figure 2 – Inspection planning

Figure 3 – Eletronic feedback form

2.3 Several utilities about inspection´s procedures in the "VIGILANTE" enhance the efficiency of inspector's daily tasks by making available online tools. Accessing the web-based system, an inspector may, with a portable computer, perform his inspection by completing the Inspection Protocol during interviews with the providers (Fig 4), completing and saving in the database the necessary documents as the Inspection Report (standardized document) and the Non-Conformities Records. Additionally, the System allows the provider to generate and control, in an automated way, the Corrective Action Plan (Fig. 5) to address the non-conformities.

Figure 4 – Online completion of the protocols and non-conformities record

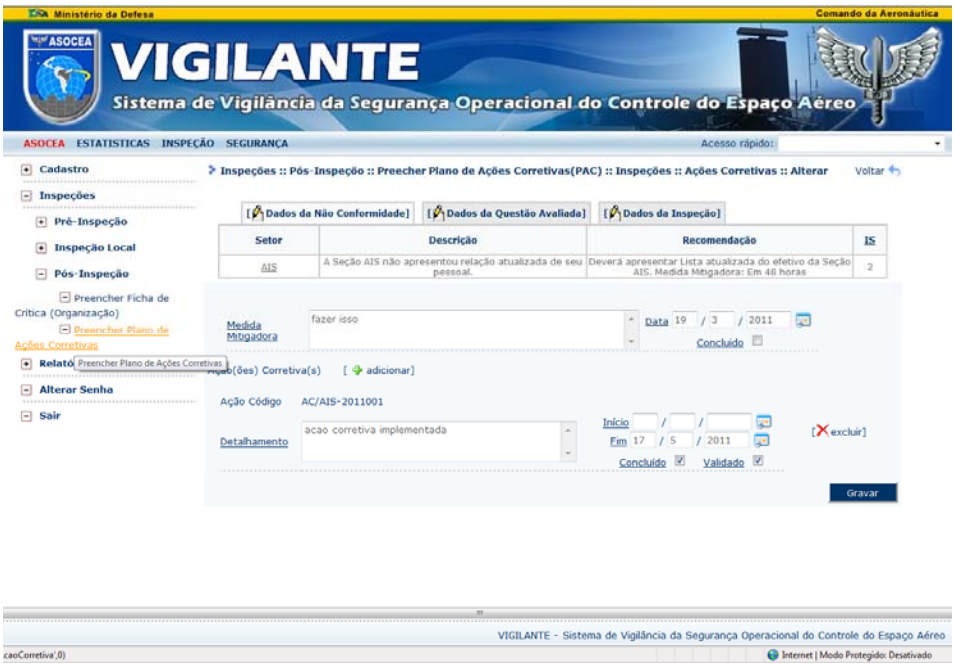

Figure 5 – Corrective Action Plan

3. Improvement

3.1 The “VIGILANTE” is in a continuous improvement process taking advantage of the experiences obtained by the inspectors and bye the providers. At present, new features are being developed to display the air navigation services safety indicators and to allow searches within the safety inspections database, generating tables, charts and graphics tailored to meet users needs, for example, as depicted in Figure 6.

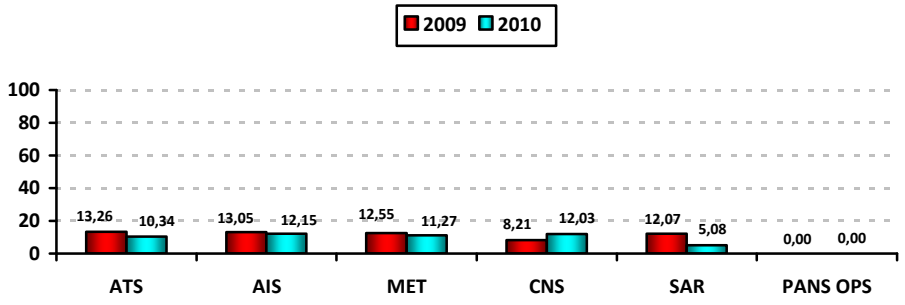

Figure 6 – Evolution of the non-compliance by ANS area (%)

3.2 These new features are critical to the development of the SISCEAB Annual Performance Analysis Report, responsible for ensuring the monitoring of the Acceptable Level of Safety defined in the Brazilian Safety Programme for the Air Navigation Services (SSP), according to the Brazilian legislation.

3.3 The collection of statistical information from inspections carried out using the VIGILANTE´s database will contribute to the evolution of the current inspection process, so far supported by prescriptive requisites, for a performance based process, prioritizing the efforts on the air navigation service providers which demonstrate a low performance. As such, it will also contribute to the revision and improvement of other issues involving, no only CE-7, but all eight Critical Elements of the Brazilian Safety Oversight System, in particular, the tendency to shift the regulatory requirements to a performance based approach, ensuring a safety oversight system that comply with the current risk management provisions for the international civil aviation activities, defined by ICAO.

4. Conclusion

4.1 Experience with the use of the VIGILANTE, a web based computer tool, which has been operating since 2009, demonstrated that its use ensures an efficient implementation of the process of continued surveillance (CE-7) of the PSNA in Brazil. This contribution to the process is due mainly to its ability to support the elaboration, even during the on-site inspection phase, of all documents that should be prepared by the inspectors and that will demonstrate the level of regulatory compliance and thus the level of safety of the PSNA activities.

4.2 Moreover, storage of the results of inspections in the database, gathering a wide variety of data, allows the development of features that will allow a performance based approach in the inspection process, by providing safety indicators of the air navigation services, as well as by monitoring the Acceptable Level of Safety as defined in the Brazilian Safety Programme for the Air Navigation Services (SSP).

5. Suggested Action

5.1 The Meeting is invited to:

a) take note of the information provided in this Working Paper; and

b) propose to the States of the region to adopt computerized solutions for safety inspections on ANSP to enable the gradual shift from the continued surveillance under prescriptive approach to a performance-based approach, by the statistical monitoring of the State safety levels.

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