

AUDIT IN THE X-4000 SYSTEM OF RADAR TREATMENT AND VISUALIZATION

WHAT IS THE X-4000 SYSTEM?

It is a System used by the Department of Airspace Control (*Departamento de Controle do Espaço Aéreo*, or *Decea*), of the Air Force Command, to help air traffic controllers provide service of radar surveillance. It is responsible for receiving and dealing with data proceeding from radar equipment; matching them with data proceeding from aircraft flight plan; and generating visualization of necessary information for providing air traffic control service.

WHY TCU CARRIED OUT THIS AUDIT

After the accident involving the flights N600XL and GOL 1907, that occurred on September 29th, 2006, several problems involving the Brazilian aviation system came up and gave rise to the so called Brazilian Aviation Crisis. Under these circumstances, errors in the X-4000 system of radar visualization were pointed out by air traffic controllers, in the media and in the Brazilian Chamber of Deputies Investigating Committee, as one of the factors that contributed to the referred accident. In December 2006, the Court of Audit carried out a survey that evaluated the situation of the Brazilian air traffic control system (*Sistema de Controle do Espaço Aéreo Brasileiro*, or *Sisceab*) and ordered the execution of a system audit, focusing on operability, reliability and effectiveness of the X-4000 system.

TCU'S MAIN FINDINGS

Thirteen audit findings were identified, among them the existence of failures and inconsistencies in the presentation, on the computer screen, of information generated by the X-4000 system, such as the presentation of false aircrafts; multiplication and duplication of aircrafts' presentation; improper alterations of direction, altitude and speed of aircrafts; failures in aircrafts' detection and loss of radar contact; activation of collision avoidance system with false aircrafts and no activation with real aircrafts; automatic change of flight level without controllers' acquiescence; and loss of the altimetry indicated by the transponder equipment, which is used in the communication between aircrafts and radars of the air traffic control agencies.

Deficiencies were also detected in maintenance of system equipments and lack of spare parts in sufficient number; system's improper treatment to exception; lack of standardization of its equipments, software versions and training given to its users; improper management of changes; and nonexistence of formal contingency plan for actives who work on information technology.

TCU'S RECOMMENDATIONS

As a result of the findings, recommendations were proposed aimed at improving the planning and management of the X-4000 system. In addition, it was recommended to Decea the adoption of measures to reduce the amount of failures displayed on the radar visualization console and improve the quality and availability of the information generated by the system. Thus, the Court of audit expects to contribute to the increase of safety and punctuality of Brazilian air traffic.

TCU DELIBERATION

Sentence No. 1.722/2008 – TCU – Plenário
Rapporteur: Minister Benjamin Zymler

Business

External auditing of information technology governance
in the federal government.

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Vision

To be a unit that achieves excellence in improving and
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