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Airworthiness and Environment: An Opinion

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We will deal here with a controversial issue, namely that of the relationship between the Airworthiness System and the Environment System. First of all, we want to make clear that it is our opinion on the subject. There is controversy, we know, but that's part of healthy discussions.

Most people believe that the Airworthiness Authority (in the case of Brazil, ANAC) only worry about the environment in terms of noise and fuel pollution. This undoubtedly is true, but not only that; There is much more to be considered.

Our vision will be systemic; so, first of all, we have to analyze the concept of system that we have presented in the IYK 29, a concept accepted by famous actors of Engineering Systems, mentioned in the references cited in the IYK and repeated here.

System is a set of components, working together, according to certain rules, to achieve one or more objectives.

The word "set" herein can mean a set with various elements or a single element, in this case called unitary set as defined in the Set Theory of Mathematics.

If, for example, we consider the set of rational animals, we will have one unitary set whose

However, when we care about the human being in its physical complexity, he becomes a system with multiple elements or components (brain, heart, lungs, kidneys, stomach, etc.), all working together, according to pre-defined rules, looking *MSC* 47 – *08 JUN 2014*

for to achieve the goals of survival and comfort of human system.

There are natural systems and systems developed by humans being. Among the natural systems we can cite the environment system, which we will discuss in this MSC.

Another important concept related to the concept of system is the life cycle of a system. All systems have a life cycle. They are designed, developed, manufactured, operated (used) and discarded (death).

Every system has a main component. All other components of the system work for the benefit of this major component, in order to lead it to perform its functions and achieve its objectives. This is called "harmony of the system."

In our day to day work in the area of Airworthiness, we focus on three systems: Aeronautical Systems, Airworthiness System and Environment System. This concentration is due to the fact that we are convinced that there is a strong relationship between these systems.

All these systems work, ultimately, work for the safety of human beings, in terms of survival and comfort.

Let's analyze these systems and explain this interrelationship.

The aeronautical system has the aircraft as its main component. Its main goal is to transport humans (passengers) safely. Their other components (the technical support factors) must work for the safety of flight of the aircraft. Its life cycle comprises the steps for design, integrated development of all its components, production, operation and disposal or disposition of the system (death of the system).

The airworthiness system, which is operated by the Airworthiness Authority (ANAC, in the case of Brazil), has its life cycle in step with the Aeronautical System. In its first phase, develops the activity called Type Certification (TC) of the aircraft design that ends at the end of the development phase. The goal is just the safety of flight, seeking to make it safe, not only for passengers, but for everything that are in the ground.

Under the imposition of Authority, the company that develops an Aeronautical System must allocate, in its project, the safety requirements established by this Authority and must demonstrate that, in fact, did it, to ensure, in the operational phase, a very low probability of catastrophic accidents, which lead to death of the occupants of the aircraft, the death of humans being, fauna and destruction of the local flora, on the ground, through the direct impact of the aircraft and a subsequent fire caused by burning fuel. In such circumstances, the extension of the damage in this part of the environment is not predictable.

The concern for safety continues throughout the life cycle of the Aeronautical System, with continued monitoring of the Airworthiness Authority, who, among other actions, audits all aircraft maintenance workshops relative to safety aspects. This is called continued airworthiness. The goal is always safety.

On the other hand, the Environment System has visibly as the main component the human being. The remaining components (air, flora, fauna, etc..) must be kept in balance in order to maintain the balance of the human being. The human being is only concerned with the other elements of the environment for your own comfort and survival. Clearly he knows that he needs of the other components of the environment and must therefore preserves them. It is clear, therefore, in our opinion, the ratio of Airworthiness System with the Environment System, especially in the certification of the aircraft design stage, where, as we said, the Airworthiness System seeks to mitigate the likelihood of catastrophic accidents, by imposing safety requirements for aircraft designs.

Finally, we have to understand that all of these systems aim to safety of human beings in terms of their survival and comfort. The key word is safety.

For these reasons, we consider the mistaken assertion that the certification has nothing to do with the environment. We apologize to people who make such a claim, inviting them to reflect, to reassess their conception. We accept with pleasure any balanced opinion that may change our opinion.

Thank you. See you.

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