

Human Factors in Aviation

The human factor is often referred to as the cause of aviation accidents. In order to reduce the rate of accidents, the issue of human influence in aviation needs to be systematically analyzed, and knowledge of the impact of human factors on all aspects of aviation, particularly security, should be widespread and proactively used. Knowledge about the impact of human factors should be applied and incorporated into the process of designing, constructing and certifying all systems, especially during the certification process of operating personnel, before all essential systems become operational. Expanding awareness of the importance of human factors enables the international aviation community to increase efficiency and safety and flight. The purpose of this project is to give an overview of all human factor influences in aviation.

Since the time people began to use tools, several thousand years ago, the application of elemental ergonomics has improved the efficiency of work. But in the last hundred years, the modern ergonomic development is oriented towards human factors. The need for optimization of manufacturing production and the task of training thousands of novices more effectively for military duties during World War I, as well as the fact that during the II. World War II sophisticated equipment outperformed human ability to work with maximum efficiency, provided further impetus to human potential development prospects. Access to selection and training of staff has also become more scientific. However, it can be said that the interest in contributing to human factors in air safety is a reactive response to technological constraints that prevailed at that time. Thus, human abilities have been expanded to the maximum through the application of knowledge of human factors, sometimes even at the cost of neglecting human limitations. Human Resources Institutionalization was the founding of several associations such as the ERG (Ergonomics Research Society) Association in 1949, the Human Factors Society (HRS), which is now the Human Factors and Ergonomics Society's Association in 1957 and the International Ergonomics Association (IEA) in 1959.

Human resources need to be clearly defined, because when used, these words often concern and are applied to any human factor. The human element is the most flexible, most adaptable and most valuable part of the overall aviation system, but it is also the most sensitive to impacts that can negatively affect its operation. Over the past decades three of the four accidents were a result of human error, or human factor. The term 'human error' is not a great help in preventing an accident, although it may indicate where the firing system occurred, but it does not provide any guidance as to why the firing occurred. Causes of problem, failure, and accidents attributable to human error in the system may be caused by errors in construction, execution or maintenance, or caused by insufficient training, poorly conceived procedures, or poorly conceived schedules of control lists or manuals. Furthermore, the term 'human error' allows to conceal the underlying factors that need to emerge if they are an accident that needs to be prevented. Modern security strategies are based on the fact that the human factor should be the starting point for all considerations, although this does not automatically mean that this is the main cause of the accident. The terms 'human aspects' and 'human elements' in their

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common use are useful alternatives to avoid ambiguity and help to better understand the human factors. The multifaceted factors are common. Psychology data helps understand how people handle information and make decisions. Sensory processes can be explained in the field of psychology and physiology as means of detection and transmission of information about the human environment. Body measures and movements are essential in optimizing the design and performance of controls and other work features in the cockpit that binds to anthropometry and biomechanics. Biology and its increasingly important sub-discipline, chronobiology, contribute to understanding the nature of body rhythms and sleep, and their effects on night flights and changes in time zones. The quality analysis and display of data from different surveys and research is impossible without understanding basic statistics. Human factors are practical in nature, rather than discipline. Human factors deal with people and their life and work situations; their relationships with machines, procedures and environments in which they are located; and their relationships with other people. One human factor definition, suggested by Professor Edward, states that understanding human factors serves to understand the relationship between people and their activities, with the systematic application of humanities, integrated within the system of engineering. The goals are system efficiency, which includes security and efficiency, and the well-being of the individual. Human activities show interest in communicating between individuals and the behavior of individuals and groups.

Influence of human factors, i.e. human resources in aviation operations and procedures, is extremely large and their systematic research is one of the foundations of efficiency and safety in aviation. For example, human error control requires two different approaches. First, it is necessary to reduce the occurrence of errors, to ensure a high level of staff training, to design control that is consistent with human traits, to provide appropriate checklists, procedures, manuals, charts, charts, SOPs ... At the same time, minimize all other negative impacts noise, vibration, extreme temperatures and other stress conditions. Training programs aimed at increasing collaboration and communication between crew members will reduce the number of errors (a complete elimination of human error is not possible because it is part of human behavior). Another approach to controlling a human error is to reduce the consequences of tracking mistakes and those resulting from the co-operation or lack of crew. Processing information - before a person can react to information, they should first be sensed; the potential for error exists even at this stage here because the sensory systems work in narrow ranges. After receiving information, it comes to the brain where it is processed and comes to a conclusion about the nature and meaning of the received message or information. This interpretative activity is called perception and is a fertile ground for errors. Expectation, experience, attitude, motivation, excitement also have a certain influence on perception and possible sources of error. Furthermore training - education and training are considered through two different aspects of the teaching process. Education encompasses a broad set of knowledge, values, attitudes and skills needed as a basis for which more specific skills can be acquired later. Training is a process geared towards the development of certain

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skills, knowledge or attitudes to a particular job or task. Proper and effective training cannot be done if pre-education has not laid the foundation for the development of specific skills, knowledge and attitudes. Leadership - leader is a person whose ideas and activities influence the thinking and behavior of other members. Through the use of examples, persuasions and understanding of the goals and wishes of the group, it becomes an important factor of change and influence. A distinction should be made between the leadership that has been gained and the authority assigned to it. The optimal situation exists when these two leads are combined. Leadership involves teamwork and leadership quality depends on the success of a leader or team. Personality attitudes - features of each person and attitudes influence the way people spend their lives at home and at work. The most important are born or acquired in the early stages of life. They are deeply rooted in each person and are very stable and resistant to change. Features such as aggression, ambition and domination can be seen as a reflection of personality. Attitudes are learned. They can favorably or unfavorably affect other people, organizations, and decisions. The attitude is that a person responds in a certain way. It is believed that attitudes give a cognitive image of the world in which people live, allowing them to make quick decisions about what to do when people are faced with certain situations. Communication - effective communication, involving all information transfers, is essential for safe flight operations. The information message can be transmitted through speech, written words, various symbols and views, instruments, CRT (Cathode-Ray Tubes) or non-verbal means such as gestures and body language. The quality and efficiency of communication determines the degree of comprehensibility.

References



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