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***On importance of human factors training to aviation maintenance technicians for ensuring airworthiness***

*Proper maintenances operation is dealt to all components of security in aviation transportation as civil as cargo providing steady functioning of a profitable economy branch along with quality of airworthy services. Human factors studies for quality of training of aviation specialists are in demand for all contracting states of ICAO.*

Modern aviation industry includes not only aircraft as transportation means but numerous branches and services in it. The industrial countries have tackled with steady development and modernization of aviation. The mankind has relied on security of air transportation. The quality of air service depends on a proper function of all the multileveled departments such as manufacturing plants, design bureaus, aviation proficient institutions and colleges, mastering in proficiency of aviation trainers in aviation education establishments. But except these above mentioned components, of course, aviation institutions rely on personal traits, abilities and capabilities of their students or trainees, their potential to proficient upgrading during lifelong work.

Serviceability of aviation industry is provided by numerous personnel from technicians services on the ground to pilots in a crew of aircraft during flight in the air. All categories of personnel in aviation have been taught in aviation institutions, colleges with wide range of subjects not only their majors. For example, the objective of the studies for Aircraft Maintenance proficiency is fulfilled by all EU Commission Regulation 2042/2003 aircraft maintenance personnel training requirements. The studies include two compulsory sections and proficient subject sections in Curriculum. The first one is Introduction to aviation which consists of serious technical subjects from Mathematics to Basic Aerodynamics. The second compulsory one is Aircraft Maintenance technology that consists of material and hardware, Maintenance Practices, Human Factor, Aviation legislation. Then they have to study the proficient subjects [1].

The goal of learning of Human Factor as health, safety, ability to function can be assessed through observation matter that can affect flight safety and human factor in activity and in practical training. Students must be assessed through skills in following instructions, working in team, ensuring safety of materials and tools, removing and repairing faulty tools, taking consideration of health for planning work, maintaining safety in working process and environmental ergonomics.

They have to pass special tests to satisfy qualification for special jobs. Their theoretical and practical courses teach them to handle with their duties according approved ICAO standards and requirements for work instructions which they follow during maintaining operation to serviceability of aircraft. Among a long list with job positions in aviation it is stated all positions are quite important to provide service

for customers but such positions as aviation maintenance technicians are worth of considering more close [2].

Due to improper replacement of any spare part in some aircraft unit the malfunction of the latter can bring a catastrophe in the air. To prevent lost of human lives and aircraft the aviation authorities have implemented the replacement procedures, associated regulations for handling proper maintenance practice.

The most significant place in this chain possesses the role of human factor in aviation. The problem is being studied since the beginning of the 20th century till nowadays. Even in 1956 the Human factors society was founded in the USA which tasks were dealt with understanding and realizing human characteristics that can be applicable in three components system model of interdependence as people, machine and environments. The information was gathered about human abilities and limitations, searching as a goal how to apply it for producing safe and productive human use of devices, machines, task strategies with crew and maintenance resources in their working environment.

The objective of nowadays human factor study is to diminish human errors and prevention them through managing system improving safety and performance with provision training process for updating knowledge and needed skills. In the latest decades of twentieth century the ICAO implemented a so-called SCHELL model to present human factor pattern. Each component of this model follows a special goal to benefit company success. So, software as a component stands for operational procedures. Such component as culture optimizes interactions in organisations. Hardware is responsible for equipment and technology for work, environment stands for working conditions, live work force deals with human aspects in system working operations and the last component, live ware stands for interpersonal relationships in working environment [3].

The research of human factors influences on accidents, workers injuries, wasted time in aviation industry is being considered steady by aviation authorities of leading aviation companies and airlines. All the cases were investigated by aviation inspectors and government commissions according to the standardised practices of ICAO. The studies and investigations of aviation accidents found that near 80 percent of accidents and incidents happened due to different components of human factors. According to human factors studies the reliable functioning of all aviation branches depends on such human factors components as mental, emotional, physical states, human capabilities and limitations, environmental conditions. All these are dealt with human errors. It was documented that human errors are the most significant contributors of aviation accidents [4].

To recognize and realize human factors for fruitful usage in aviation industry the researchers studied a lot of subjects that have been incorporated in human factors technology. This technology has combined interdisciplinary ties from different sciences and especially with different branches of Psychology. Clinical, Experimental, Organisational, and Educational Psychologies are in favour for such studies. The received knowledge can deepen the understanding human capabilities for operation as aviation engineers or maintenance technicians, focusing on physical, psychological, physiological and psychosocial components of human factors.

To prevent consequences as from unintentional or intentional errors as from active and latent ones that can be done in aviation, Transport Canada authorities developed a list with twelve human factors in 1990s. Research of each of them gave fundamental basis for training aviation personnel. Each of these twelve human factors can affect safe functioning of aviation industry. Numerous of them depend on many characteristics, conditions of work, health state of crew engineers or maintenance technicians. The task of air companies personnel to learn these factors participating in special training. They have to recognize these factors, to prevent and avoid accidents and incidents in aviation industry.

Human factors specialists can suggest even aviation professionals with graduated degree on Good2 or even Excellent 3 and having basic knowledge on technical subjects and such subject as Human Factor for aviation colleges must have competency-based trainings for updating knowledge and skills to handle proficiently with new equipment and spare parts, requirement for maintenance of new models of aircraft, new regulations and documentations.

Along with proficient courses the ICAO regulations for operators (CAO 82.3 or 82.5) requires to provide regular special trainings on human factors to skilled level for aviation safety-critical personnel (pilots, cabin crew, maintenance technicians, dispatchers) to prevent human errors and manage consequences of human errors. The aviation authorities provide crews with crew resource management programs and maintenance technicians with maintenance errors management programs. The objective of human factor training is to teach aviation personnel with non-technical skills such as a decision making and social skills. Using Information technology the training programs are accompanied with DVD for ensuring recall information at working place in office after training [5].

The useful thing for better apprenticeship that learning process is supported with simulators, trainees have access to virtual maintenance trainer, virtual test equipment and practical assessment tools. The advantage of nowadays proficiency training and human factor training programs includes WEB based training and virtual instructor courses to reduce training costs. Such WEB trainings have aimed to refresh trainings, recurrent trainings and continuation trainings.

## **Conclusion**

Study of analysing productive experience of aviation human factor training for various air services has suggested the fruitful results from such training. Due to close attention of aviation authorities to specific human factors errors, aviation personnel have opportunity to participate in practical training to improve proficient skills and human factor capabilities to ensure success operation of aviation teams. Taking various kinds of airworthiness measures the aviation industry has maintained reliability and benefits of air transportation.

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