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## **ПЕРЕДАЧА ИНФОРМАЦИИ И КОММУНИКАЦИЯ КАК ЧЕЛОВЕЧЕСКИЙ ФАКТОР, ИМЕЮЩИЙ РЕШАЮЩЕЕ ЗНАЧЕНИЕ В ПРОЦЕССЕ ТЕХНИЧЕСКОГО ОБСЛУЖИВАНИЯ ВОЗДУШНЫХ СУДОВ**

В статье рассматривается одна из значимых проблем в авиации – языковая. Существует множество инструкций и документации по техническому обслуживанию воздушных судов иностранного производства, что требует от специалиста уверенного владения авиационным английским языком. Ни для кого не секрет, что авиационно-технический английский язык сильно отличается от стандартного английского. Автор статьи рассматривает вопрос о том, как же создать те условия и какой методикой нужно владеть, чтобы отвечать всем предъявленным требованиям и построить гармонично курс изучения авиационного английского языка, чтобы гарантировать должный уровень языковой компетенции персонала, вовлеченного в техническое обслуживание воздушных судов иностранного производства.

**Ключевые слова:** авиационный технический язык, человеческий фактор, коммуникация, техническое обслуживание воздушного судна, шкала ИКАО, должный уровень языковой компетенции, воздушные суда зарубежного производителя.

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## **TRANSMISSION OF INFORMATION AND COMMUNICATION AS A HUMAN FACTOR CRUCIAL IN AIRCRAFT MAINTENANCE**

In this article is noted that one of the important problem in aviation is language. There is a set of instructions and documentation for the maintenance of aircraft of foreign manufacture which requires specialist with confident language proficiency in aviation English. It's no secret that aviation and technical English language differs from standard English used for everyday communication. The author considers how to create the conditions and what the procedure need to be to meet all requirements and make a harmonious course of aviation technical English to ensure the proper level of language competence of the personnel involved in the maintenance of aircraft of foreign manufacture.

**Key words:** aviation technical English, human factor, communication, aircraft maintenance, ICAO scale, proper level of language competence, aircraft of foreign manufacture.

The term «human factor» is often used during the investigation of aircraft accidents. Absolutely incorrect to relate it only to the actions of the crews, because it is present at all stages - from the design of the aircraft, its production and maintenance to the education and training of personnel - and, of course, from the control system and the people to ensure the safety of flights. At each of these stages a person must have a high level of professionalism and sense of responsibility [Reason, 1990, c. 18].

Now more and more risks are caused by related factors - is, above all, a new level of interaction between technical engineer with the onboard computer while preparing to fly, and the pilot and the onboard computer during the flight. A number of accidents confirm this. Aircraft have become more automated and more complex. Aircraft of the current generation of «Boeing-747-400» and «Airbus-A340» have two or three redundant flight control systems. This may reduce the load on the flight crew, but it increased the demand for technicians servicing the aircraft who have received basic training in the field of mechanical, rather than modern control systems based on the use of computer technology [Шабкунова, 2004, c. 159].

It is noted that one of the important problem in aviation is language. This applies not only often poor knowledge of the English language, but also the difference in the rules. For example, domestic pilots flying over Russia say in Russian, the height is measured in meters, speed - in kilometers. However it is necessary to cross the border - English is used in conversations; speed is measured in miles, and height - in feet. According to recent estimates, in the airspace of Russia today there are more than 500 differences between ICAO standards and «exclusive» national flight rules. The most terrible «controller's» disaster in the modern history of the Russian aircraft was a collision over Lake Constance aircraft Tu-154 «Bashkir airlines» and cargo «Boeing-757» by DHL company. Guilty of disaster costed the lives of 71 people, including 52 children, the Swiss air traffic controller was found [Мельниченко, 2016].

The latest generation of aircraft is much more reliable than, for example, a quarter of a century ago. There have been a lot of changes in navigation systems, in aircraft design, in engine assembly. Accordingly, there was a set of instructions and documentation for the maintenance of aircraft of foreign manufacture which requires specialist with confident language proficiency in aviation English.

It's no secret that aviation and technical English language differs from standard English used for everyday communication: stricter sentence formation rules, specific professional terms for names of units, systems and components, consisting of several words [Murphy, 1995]. In addition, the complexity in understanding is that the each aircraft manufacturer often names even the same components of identical systems differently. And grammar rules are also important: the passive voice, infinitive constructions and verbal participle phrases, gerund [Huwings, 2001, c. 10]. ICAO scale helped to harmonize the requirements for pilots and controllers training and, thanks to a multi-level system certain requirements and educational standards for aviation English training were made. However, it cannot be said relatively to aviation English for the technical staff.

Sometimes for information transmission related to maintenance not the best equivalents are chosen. Aircraft technicians familiar with this situation: regarding certain operations in the maintenance bulletin indicated that it «proscribed» (i.e. за-

прещена). After reading the technician misunderstood that it was «prescribed» (i.e. предписана), and proceeded to perform the banned manufacturing operation.

Such problems are now becoming dominant because aircraft are made in different parts of the world. Sometimes the technical language of the manufacturer is not easy to translate the technical language of the buyer, so that can be made difficult to understand maintenance documentation. As written in the English language is so much information on the service, there is every reason to use the «easy» English. Words that have a specific value for a single reader must have the same value as any other reader.

How to be Russian technicians forced by virtue of certain circumstances, work on aviation equipment, the instructions for which are often written only in English? But often in the same company for repair and maintenance of aircraft of foreign production work is carried out on different aircraft types from different manufacturers [Шокросс, 2009, с. 6].

The question arises - how to create the conditions and what the procedure need to be to meet all requirements and build a harmonious course of aviation technical English, to ensure the proper level of language competence of the personnel involved in the maintenance of aircraft of foreign manufacture? How to focus the attention of students (course participants) in the lexical, grammatical and syntactical features of aviation technical English and to ensure a proper understanding of procedures and maintenance tasks described in the technical documentation? [Судовцев, 1993, с. 176]

First, during the lessons video films about aircraft systems developed by the manufactures themselves and giving each language theme the absolute objectivity and clarity should be used, demonstrating the correct speech patterns and the necessary phraseology as well as improving understanding of fluent object-oriented speech to the hearing, and preparing students (trainees) of the language course to a successful further training of any types of aircraft.

Second, harmoniously combine classroom forms of work: students perform learning tasks as a part of the whole group, as well as in individual and pair works; inde-

pendently prepare oral presentations as the final consolidation of linguistic material of each course subject and act with them before groupmates perform practical tasks of troubleshooting systems on the aircraft flight simulators, where all commands are displayed only in English.

Third, you need to build the educational system correctly in compliance with the principle of an integrated presentation of grammatical, syntactic and lexical material. Important cyclical and ordering its repetition in the future sessions (assuming that the material learned in the beginning, will be repeated on a new level of complexity in the later sessions, which contributes to a significant consolidation of lexical material and grammatical-syntactical constructions).

There is a proposed learning algorithm for each lexical theme:

1. Theoretical introduction and initial consolidation of lexical material (aircraft maintenance documentation, training manuals, charts, tables, pictures, handouts, etc.).

2. Introduction and initial consolidation of grammatical or syntactic material, improvement of structures, training on flight simulators [Murphy, 1995, c. 65–67].

3. The practical part is based on consolidating and outputting material in written and spoken language.

4. Listening is necessary on each stage of learning.

What should I expect from the students (trainees) at the end of aviation English course studying? What competencies should they have to transfer information and communication, considered as the human factor, which is crucial in the maintenance of aircraft? You can list the following:

1. Read, understand, translate and describe the various aircraft systems and the procedure set out in the technical documentation.

2. To achieve the necessary level of language competence through the ability to understand the grammar, syntax and word-building features of technical aviation English, specific vocabulary, etc., used in the aircraft maintenance of foreign manufacture.

3. To tell or request the necessary information about their daily professional and official duties, about the features of various aviation professions.

4. To have enough lexical vocabulary to describe the structure and functional features of the basic systems of aircraft and their components.

5. To be engaged in self-education actively, as well as successfully studying the following courses on different types of foreign aircraft both native and English languages [КАЛМЫКОВА, 2000, с. 2].

ICAO Document 9806 Human Factors Guidelines for Safety Audits Manual indicates that the communication and information processing in the maintenance process is very vulnerable to errors of four main categories [ICAO, Doc 9806 AN/763, 2002, с. 6–1]:

a) Reading. The content of the technical documentation should be directed to technicians for servicing aircraft in all parts of the world that are engaged in performing routine maintenance of aircraft, as well as the diagnosis and repair of aircraft. Most of this documentation may be provided in a language that is not their native language maintenance technicians [МУСНИЦКАЯ, 2000, с. 52–53];

b) Speaking. Aircraft maintenance technicians must be able to accurately represent the oral detailed technical information and provide a high level of understanding. This may require professional speaker accurately translate written in the language of the original technical documentation in the native language of the audience;

c) Listening. Aircraft maintenance technicians must possess effective listening skills to accurately assimilate detailed technical information;

d) Writing. Aircraft maintenance technicians must be able to provide accurate analysis of written instructions in order to keep accurate records of the technical discrepancies, works and so on.

The English language is an important means of professional communication and information, technical aviation personnel serving aircraft of foreign manufacture. Therefore, in addition to the basic technical knowledge every specialist should be given high-quality language training in both domestic and international air routes by the ICAO standards. Ignorance of the language, the inability to accurately, rapidly

and unequivocally perform all operations (exchange of information for maintenance equipment, rectify faults, etc.) can lead to tragedy. Cost of errors is human life.

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