





THE LABOR MEDICINE OF CIVIL AVIATION PERSONNEL IN THE RUSSIAN FEDERATION: SCHEDULE OF JOB AND RECREATION

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ABSTRACT

Recently, the incidence of civilian aircraft crashes has increased. These disasters lead to many casualties. Around the world, safety is a priority in regulating air transport. But flight safety is closely related to pilot fatigue. In this regard, the pilot load standards must be clearly verified. The aim of the article is to analyze the possibility of increasing the sanitary norms of the flight load and at the same time reducing the annual leave for the crew members of civil aviation personnel in Russia. The methods used are both empirical (analysis and synthesis, induction and deduction, systematization), and theoretical. Each airline must develop an effective risk management system based on those developed abroad. This system should include control over the rest of the pilots, ensure uninterrupted vacation for at least three weeks, take into account the quality of the inter-shift rest of the pilots, fly in unusual situations.

Keywords: Schedule of job and recreation. Civil aviation. Norms of flight load. Risk management system.

A MEDICINA DO TRABALHO DO PESSOAL DA AVIAÇÃO CIVIL NA FEDERAÇÃO DA RÚSSIA: CRONOGRAMA DE TRABALHO E RECREAÇÃO

LA MEDICINA LABORAL DEL PERSONAL DE AVIACIÓN CIVIL EN LA FEDERACIÓN DE RUSIA: HORARIO DE TRABAJO Y RECREACIÓN

RESUMO

Recentemente, a incidência de acidentes de aeronaves civis aumentou. Esses desastres causam muitas vítimas. Em todo o mundo, a segurança é prioridade na regulamentação do transporte aéreo. Mas a segurança de vôo está intimamente relacionada à fadiga do piloto. A este respeito, os padrões de carga piloto devem ser claramente verificados. O objetivo do artigo é analisar a possibilidade de aumentar as normas sanitárias da carga de vôo e ao mesmo tempo reduzir as férias anuais dos tripulantes do pessoal da aviação civil na Rússia. Os métodos utilizados são empíricos (análise e síntese, indução e dedução, sistematização) e teóricos. Cada companhia aérea deve desenvolver um sistema de gerenciamento de risco eficaz baseado naqueles desenvolvidos no exterior. Este sistema deve incluir o controle sobre o restante dos pilotos, garantir férias ininterruptas por pelo menos três semanas, levar em consideração a qualidade do descanso entre os turnos dos pilotos, voar em situações inusitadas.

Palavras-chave: Cronograma de trabalho e recreação. Aviação civil. Normas offlight load. Sistema de gerenciamento de risco.

RESUMEN

Recientemente, ha aumentado la incidencia de accidentes de aviones civiles. Estos desastres provocan muchas víctimas. En todo el mundo, la seguridad es una prioridad en la regulación del transporte aéreo. Pero la seguridad de vuelo está estrechamente relacionada con la fatiga del piloto. En este sentido, los estándares de carga piloto deben verificarse claramente. El objetivo del artículo es analizar la posibilidad de incrementar las normas sanitarias de la carga de vuelo y al mismo tiempo reducir las vacaciones anuales para los tripulantes del personal de la aviación civil en Rusia. Los métodos utilizados son tanto empíricos (análisis y síntesis, inducción y deducción, sistematización) como teóricos. Cada aerolínea debe desarrollar un sistema de gestión de riesgos eficaz basado en los desarrollados en el extranjero. Este sistema debe incluir control sobre el resto de los pilotos, asegurar vacaciones ininterrumpidas durante al menos tres semanas, tener en cuenta la calidad del resto de los pilotos entre turnos, volar en situaciones inusuales.

Palabras-clave: Horario de trabajo y recreación. Aviación civil. Normas de carga ligera. Sistema de gestión de riesgos.

INTRODUCTION

Saving time, high comfort, sometimes adrenaline and euphoria after landing - all this accompanies the emotional side of the flight for passengers. However, for flight personnel, this is a hard job, which greatly affects the health of pilots and flight attendants.

Flights at high altitudes, flights associated with flight overloads, flights at low and extremely low altitudes, night flights, flights in adverse meteorological conditions, long flights, flights in hot and cold climates, and others - all of these are enormous health risks for the crew and especially pilots. Aviation medicine/ Ed. Rudny N.M. and others. Moscow: Medicine; p. 597.

Inside, flights are performed under conditions of constant stress, high intellectual, sensory, visual and auditory loads, due to increased responsibility for flight safety and personal risk to life [Surina,1986]. For flight work is also characterized by pronounced monotony and irregular shift working hours, working hours of more than 12 hours and nighttime activities.

The body of the pilots wears out faster - on average, after 20 years of flight work, the biological age of the flight personnel exceeds the passport age by 10 years. The mortality rate in the group of up to 25 years work experience two times lower as in general in this age group, and at 45 was already the same. At 50 years old and over the mortality rate, is 1.5 time higher than that of persons of non-flying specialties (BELLOV, 1986). The growing rate of the incidences of the cardiovascular system with age in the flying composition is 5 to 7 times higher than in the control group (<http://www.ktr.su/content/news/detail.php?ID=6056>).

Thus, the work of flight personnel of civil aviation is a complex and dangerous activity. This activity is characterized by a high intensity of labor, the performance of a large number of basic and corrective movements when operating an aircraft. In Russia, according to the results of the conducted research, the intensity of the flight work of the crews of civil aviation aircraft was assigned to grade 3, grade 2. All this makes it necessary to regulate the work and rest schedule of pilots, based both on medical indicators and on survey data and sociological surveys [Combat stress: medical and psychological rehabilitation of persons of dangerous professions, 2010].

METHODS

The main methods used during the writing of this work are as follows: comparative legal method, complex analysis method, interpretation method, sociological method, system analysis method, and intersectoral approach method.

RESULTS

- 1) An increase in the sanitary norms of flight load over what is written in Order No. 139 will threaten the safety of flights, the social status of flight crew members, and adversely affect pilots' fatigue;
- 2) Regulatory bodies should be especially careful to check the voluntary consent of civil aviation pilots to increase standards up to 90 hours per calendar month, up to 270 hours per quarter, up to 900 hours per calendar year. Supervisory authorities should apply effective response measures to employers who force pilots to write these statements;
- 3) Reduction of vacation time for members of flight crews is unacceptable and will lead to negative results indicated in clause n. 1;
- 4) Each airline must develop an effective risk management system based on those developed abroad. This system should include control over the rest of the pilots, ensure uninterrupted vacation for at least three weeks, take into account the quality of the inter-shift rest of the pilots, fly in unusual situations. To do this, changes to the Labor Code of the Russian Federation or provisions in the collective agreements of airlines must be made.

DISCUSSION

Airlines and regulatory agencies pay more and more attention to the issues of pilot fatigue because this problem is one of the most important for ensuring flight safety. It is known that a pronounced pilot fatigue can lead to an increase in the risk of errors leading to aircraft accidents and disasters related to the so-called "human factor" (https://www.atsb.gov.au/media/28363/sir199604_001.pdf). International Civil Aviation Organization (ICAO) cites data that 90% of pilots consider fatigue and lack of sleep to be one of the key problems of their work. According to the National Transportation Safety Bureau (NTSB, is an independent U.S. government investigative agency), about 50% of the sun commanders are prone to errors in flights longer than 12 hours, and according to FAA statistics, about 20% of accidents are associated with fatigue (<http://www.shpls.org/press/video/1761/view>).

Here are some examples of disasters associated with fatigue as the main cause:

- 1993 Kalitta International, DC-8-61F at Guantanamo Bay, Cuba
- 1997 Korean Air, 747-300 at Guam
- 1999 American Airlines, MD-82 at Little Rock, AR
- 2004 MK Airlines, 747-200F at Halifax, Nova Scotia
- 2004 Corporate Airlines, BAE Jetstream31 at Kirksville, USA
- 2004 Med Air, Learjet35A at San Bernadino, CA
- 2005 Loganair, B-N Islander at Machrihanish, UK
- 2006, 27th Aug, Comair, CRJ100 at Lexington, KY
- 2007, 25th June, Cathay Pacific 747F at Stockholm, Sweden
- 2007, 28th Oct, JetX, 737-800TF-JXF Keflavik airport, Icelan.

In, ICAO has developed a special standard 2011To reduce fatigue — Fatigue Risk Management System, (FRMS) (<https://www.icao.int/safety/fatiguemanagement/FRMS%20Tools/FRMS%0>. In Europe and the United States, the FRMS standards have been already came into force, with the initial initiative for their implementation coming from airlines, and not from state agencies. The first carrier used the new approach to planning the work and recreation of flight crew members was Air New Zealand, whose pilots were forced to make long flights (LUSHKIN, 2017). In 2007, the FRMS principles on short- and medium-haul routes were first used by the low-fare airline EasyJet, admitted to flights with a departure from the established working hours and rest (FTL).

According to the requirements of the ICAO, each state must independently impose working time limits and rest time requirements for aircraft flight crews. The standard, according to which the rules of regulation are drawn up, should include: restrictions on flight time and official flight time (duration of the flight shift), the minimum rest time for members of the flight crew. A situation must be ensured in which "... the fatigue arising from the performance of one flight, several flights in a row or accumulated over a period of time does not threaten the safety of flight" (<https://www.icao.int/safety/fatiguemanagement/FRMS%20Tools/FRMS%0>).

Due to the current lack of scientific substantiation of quantitative indicators of permissible flight load and the adequacy of rest, ICAO does not provide quantitative criteria for work and rest schedules, leaving the problem to the member-states.

In Russia, the Order of the Ministry of Transport of the Russian Federation on November 21, 2005 N 139 "On Approval of the Regulations on the working hours and rest time of crew members of civil aircraft of the Russian Federation" (HEREINAFTER Order, n.139) has protected pilots from overwork (LUSHKIN, 2017). According to clause 11 of Order n. 139, the duration of flight time when performing flights on all types of aircraft cannot exceed 80 hours per calendar month, 240 hours per quarter, 800 hours per calendar year. Clause 12 specifies that the flight time duration established by clause 11 of these Regulations, with the written consent of the crew member and taking into account the opinion of the employee's representatives, may be increased up to 90 hours per calendar month, up to 270 hours per quarter, up to 900 hours per calendar year (LUSHKIN, 2017).

The employee has the right to refuse to perform flight work with an increased standard flight time, notifying the employer in writing no later than one month before the into force of the monthly work schedule and rest of the crews of the aircraft of the flight unit. Due to the high workload, the intensity of flight work, accumulated fatigue and vacation debt, pilots can use their right to refuse increased flight time. The refusal of increased flight time is made out by signing an additional agreement to the employment contracts (<http://www.shpls.org/press/video/1761/view>). In Russia, this tendency took place at PJSC "Aeroflot". According to the new calculations of the Flight Operations Department of PJSC "Aeroflot", the annual rate of these employees reaches 883 hours per calendar year (<http://www.shpls.org/press/video/1761/view>).

At the same time, the Order of the Ministry of Transport of Russia from 21.11.2005. Number 139, considering national peculiarities, provides for a lower workload for flight crew members than in other large aviation countries (USA, European Community) (LUSHKIN, 2017). In the European Union, the rate of flight is 900 hours per year; in the United States - 1000 hours, and in China and some other countries of Southeast Asia - 1200 hours [Garcia,2018]. Regulatory documents defining the working time and rest time of the flight personnel of most foreign air carriers provide for a longer duration of flight time and flight shift, a shorter rest period as compared to Russia. This provides for more detailed regulation of rest periods depending on the duration of flights at night, as well as during the month and quarter to combat accumulated fatigue.

In the opinion of the Association of Air Transport Operators of Russia, this situation is detrimental to the competitiveness of domestic aviation in the international air transport market, so she appealed to the Minister of Transport of Russia to revise upwardly some of the established flight standards. In turn, the Ministry of Transport of Russia, noting the lack of scientifically based data on the effect of increasing the maximum permissible duration of flight time, instructed to conduct the necessary studies to assess the possibility of making appropriate changes to the current regulation (RODIONOV, 2009).

As noted earlier, with the written consent of the crew members, the flight time can be increased up to 90 hours per calendar month, up to 270 hours per quarter, up to 900 hours per calendar year. However, will there be any forcing pilots to increase the load? How to prove the abuse of the rights of the employer and the lack of free will of the pilot? In the labor code of the Russian Federation there is a principle of good faith in the implementation of labor rights. However, if there are labor disputes, it is rather difficult, and sometimes impossible, to prove abuse on the employer's side. In practice, there were cases when the employer independently registered the annual sanitary standard of flights. However, in accordance with the requirements of Order n. 139, the employer is obliged, for safety purposes, to ensure compliance with the established maximum duration of flight time for crew members for a specific month, quarter and year. The court of civil affairs of the Moscow City Court came to this conclusion (Determination of September 20, 2011 in case n. 33-26438). In the case of pilots, this may endanger flight safety (<https://www.mos-gorsud.ru/mgs/search>).

Some scientists believe that an increase in flight time of up to 90 hours in 28 consecutive days and 900 hours in 12 consecutive months does not lead to negative changes in the health status of civil aviation pilots (RODIONOV, 2009). The data given on the example of PJSC "Aeroflot" show that over 5 years of use of increased flight load standards in the airline, the frequency of medical disqualification of pilots for diseases of internal organs and the nervous system has decreased (RODIONOV, 2009). The social situation of Aeroflot employees, the availability of a developed system of medical control and rehabilitation bring the conditions of their activity closer to the working conditions in the largest foreign airlines using higher flight rates for flight crews of the same aircraft (<http://rspp.ru/12/8939.pdf>). The introduction of an increase in flight time of up to 90 hours in consecutive 28 days, as well as more than 900 hours in 12 consecutive months into the practice of work and rest of flight crew members did not lead to an increase in safety decline indicators (accidents, frequency of aviation incidents according to the human factor, deviations and violations of the established flight regulations). With a raid of 90 or more hours in 28 days, as well as more than 900 hours in 12 months, the factor of accumulated fatigue dominates over the factor of the duration of the flight shift. Exceeding these flight time values leads to manifestations of accumulated fatigue (chronic fatigue) and should not be resolved.

However, it is necessary to consider the data of the subjective perception by pilots of such loads.

Russian pilots with great experience in civil aviation have anonymously given the following characteristic of the intensity of their work: "now I fly into the night, then into the day, then early in the morning, then very late, and on the day off I just sleep for the whole week?. We are already working at the limit, and I can't imagine how we can be even more strained," one of the pilots said.

The most difficult thing is shot down biorhythms, sometimes you no longer understand what is now behind the window. You have no friends, no family, you can not plan anything in advance, because you can be put on a flight at any time. (...) I do not want to kill myself, taking with me another 120-150 people on board, and if you always think about one thing, how can you not fall asleep?" (<https://theins.ru/confession/91372>).

And here we are talking – not appropriate language not only about increasing standards, but also about reducing vacations for civil aviation pilots. Working six days a week with one day off, even considering the 70-days' vacation, pilots and flight attendants spend 112 days a year in total. And this is 24 days less than an office worker, working the usual five-days a week (they used to say 40 hours a week instead of '5 days'), who does not have several hundred lives behind him, was counted in the Sheremetyevo trade union of flight personnel.

Here is what the spouse of a civil aviation pilot told: "This is very hard work, I can not imagine what will happen to us all if it would be even less days off than it is now. Those who are lobbying that do not imagine the lifestyle of the crew members at all, they do not understand how much their responsibility is, what a huge strain it is. When you know the situation from the inside, you are not surprised when a disaster happens. You are surprised that they do not happen every day" (www.svoboda.org/a/29430145.html).

SUMMARY

When regulating the work and rest schedule of pilots, it is necessary to take into account the fatigue factor of the flight crew. The fatigue of the flight crew is significantly affected by the duration of the night time during the flight shift. During the night arrival at the airport, the greatest degrees of fatigue are observed at the stages "before descending" and "after landing". The existing provision on the possibility of using such flight shifts 3 times in a row carries the risk of the development of pronounced accumulated fatigue (chronic fatigue).

As for the load norms abroad, the FRMS operates there. Due to this, the rest of pilots is also standardized and controlled. The pilots in Russia, according to them, often have to spend the night at the airports between shifts. Further, it should be noted that a number of domestic airlines have already begun to put into practice the independently developed FRMS methodology to minimize the risks associated with pilot fatigue.

Thus, the Volga-Dnepr airlines introduced controlled sleep recommended by international practice (napping) in the cockpit, conducted an audit of hotels where pilots rest, organized delivery of flight personnel from home, and conducted a range of other activities (<http://admdir.ru/wp-content/uploads/04/Zdorovyj-ofis.ppt>). In addition, Volga-Dnepr was included in the ICAO fatigability working group.

S7 Airlines also believes that a broader approach is needed to reduce pilot fatigue. To be limited to using only the rationing of flight and flight time and reducing the number of flights within the work shift is insufficient. This does not allow rational use of pilot resources. S7 Airlines has long been using its own risk management system, which also includes an automated time management system for flight and cabin crews AIMS (<http://bizavnews.ru/236/15429>). This, along with other factors allows airlines to control loads as accurately as possible. AIMS also eliminates the human factor when planning and assigning crews to operate flights. In addition, this approach considers geographical factors (for example, place of residence) and many other aspects affecting the performance of employees, including the personal wishes of the crewmembers on a weekend schedule. airline's command and management personnel is analyzed Daily in the morning, then the information is discussed on the number of crew replacements made and their reasons. Risks related to flight planning for pilots are analyzed monthly. The analysis considers the compliance of the actual number of employees required for flight planning, planned and unplanned vacations, etc. (<http://bizavnews.ru/236/15429>).

CONCLUSIONS

Today, this issue is highly debated in the aviation industry, but in order to move effectively further, we need a clear policy in the field of managing the risks associated with fatigue pilots. Until the state implements this standard, carriers will not be able to fully take advantage of the new approaches to adapt labor and leisure standards to the individual operational characteristics of each particular operator, experts in the field of safety emphasize.

According to experts, the initiative of air carriers can become the basis for the document, which will later be adopted at the legislative level. Regulators also need to develop this document. All this will only have a positive

effect, the level of flight safety will be improved, the working capacity of staff will be optimized (<http://www.shpls.org/press/video/1761/view>).

In conclusion, it is important to note that the scientific and methodological substantiation of quantitative indicators of the workload of flight crew members should include a study of international experience, indicators of the dynamics of health, a subjective assessment of the degree of fatigue of the flight crew.

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