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On the impact of legal regulation of remote pilots on aviation safety

The article deals with the issue of aviation safety in the context of professional activity of remote pilots of civil aviation. The gaps in the legal regulation of professional training of remote pilots, their liability, and aviation risk insurance are investigated.

Rapid technological progress in the creation and development of unmanned aircraft and their widespread use in various fields of activity have led to the need to introduce regulatory influence of legal norms on relations related to the use and maintenance of these new civil aviation objects. The question also arises about complex objects, such as unmanned aircraft systems, the legal status of which has already been reflected in the provisions of the Air Code of Ukraine (hereinafter - the ACU) [1].

The key entity that ensures the operation of an unmanned aerial vehicle (UAV) or unmanned aerial system (UAS) is a remote pilot. As defined in part 31-2 of Article 1 of the ACU, a remote pilot is an individual responsible for the safe flight of an UAV, who manually operates its controls or monitors the course of an autonomous flight of an UAV, while remaining able to intervene and change its course at any time.

A remote pilot is a subject of aviation activity, as according to part 97 of Article 1 of the ACU, a subject of aviation activity is an individual and legal entity, regardless of ownership, departmental subordination, that carry out activities in the field of civil aviation. Aviation entities directly carry out measures to ensure aviation safety and are responsible for it (part 8 of Article 10 of the ACU).

As provided for in Article 118 of the ACU, such entities are obliged to insure civil aviation risks. However, the mentioned Code does not define any obligation to ensure the risk of liability for damage caused to third parties for a remote pilot, which is a gap in the law. The Aviation Rules of Ukraine “Procedure and Conditions for Civil Aviation Risk Insurance” also do not stipulate any risk insurance obligations for remote pilots. Therefore, there is a necessity to improve the content of Article 118 of the ACU and to provide for the obligation to ensure aviation risk of a remote pilot and to make appropriate changes to aviation rules.

An UAV or UAS may be subject to acts of unlawful interference or may pose a threat to civil aviation safety by interfering with it. Remote pilots may be used for such purposes, and therefore clear rules on their liability, up to and including criminal liability, should be established. On the other hand, remote pilots can and should take actions to prevent acts of unlawful interference and obstruction. Therefore, a clear algorithm of actions is needed for them to take measures to protect themselves in such cases.

Part 2 of Art. 86 of the ACU stipulates that aviation entities, on the basis of the State Aviation Security Program for Civil Aviation, develop and regularly update their aviation security programs and take measures to protect civil aviation from acts

of unlawful interference. Therefore, a clear algorithm of actions is needed for them to undertake protection measures in such cases.

In terms of the safety of civil aviation's air traffic control systems, great importance is attached to the skills and abilities of the remote pilot.

Regarding to the state aviation, the requirements for the control of UAV were first defined in the Order of the Ministry of Defense of Ukraine of 08.12.2016 No. 661 [2]. In the meaning of this act, the control of an UAV is the actions of an external pilot (operator) of an UAS aimed at piloting, navigation, combat use and operation of the UAV. Order No. 661 also establishes qualification requirements for operators of an UAS. The basic qualification of an external pilot (operator) of an UAS consists of four basic qualification levels that meet the requirements of the International Civil Aviation Organization for manned aircraft and NATO standards for the training of external pilots (operators) of UAVs.

The question of the need to distinguish the profession of remote pilot in civil aviation and introduce a corresponding professional standard has arisen.

The Order of the Ministry of Economy of Ukraine No. 810-21 of 25.10.2021 amended the Classifier of Occupations DK 003:2010 of the National Classifier of Ukraine, resulting in the emergence of new professions: remote pilot of UAVs; remote commander of UAVs; remote pilot-test pilot of UAVs; remote pilot-instructor of UAVs [3]. Since then, the search for better standards for training in such professions has been ongoing.

The version of the professional standard for remote pilots of the UAV developed by the National Aviation University passed the approval procedure and was included in the Register of Qualifications on May 27, 2024. The occupation code is 3144 [4]. According to this standard, the professional qualification of a remote pilot is acquired by obtaining a bachelor's degree in the specialties of Air Transport, Aviation and Rocket and Space Engineering. It also sets out the competencies of a remote pilot. The professional qualification will be confirmed on the basis of the issued bachelor's degree and certificate. The diploma and certificate will include the type(s) and, if necessary, the maximum takeoff weight of the UAS piloted by the remote pilot. For this purpose, the classification of UAS types will be used, which will be approved by state aviation regulatory documents and structures that are responsible for regulating the flights of unmanned aircraft. This standard also provides for an additional condition for the admission of remote pilots of UAVs to flights - the availability of medical certificates (certificates) required for pilots of light aircraft.

The implementation of this standard requires qualified specialists to provide training for remote pilots of UAVs. To this end, the National Aviation University has developed and approved a professional standard for a remote pilot-instructor of an unmanned aircraft, which was approved and entered into the Register on 12.04.2024 [5]. It is the pilot-instructors who must provide theoretical, simulator and flight training for remote pilots of civilian unmanned aircraft. Similarly, the National Aviation University has proposed and submitted to the National Qualifications Agency a professional standard for a remote pilot-test pilot of an unmanned aircraft [6].

In Ukraine, there are hundreds of schools and several professional training centers for training external pilots. And the problem with this training is the variety

of programs and the lack of its regulatory framework. After all, neither the time for training, nor the basic disciplines, nor the requirements for competencies are defined.

The professional literature provides examples of how regulation can improve the training of remote pilots of UAS. In particular, it is stated that "the number of Japanese external UAV pilots increased 18-fold between 1993 and 2005 to approximately 14,000 after the entry into force of regulations on the use of UAVs in agriculture. In France, the initial regulation of the regulatory framework for the use of UAS led to an increase in the number of external pilots from 80 people in 2012 to more than 400 people in 2014" [7; 213].

International experience shows not only different approaches and content of training for external pilots and operators depending on the areas of application of an UAS, but also allows us to identify commonalities. For example, a comparison of training in the United Kingdom, the United States, and Canada shows that the training includes separate modules: airspace use, air navigation, meteorology, aircraft maintenance procedures, etc. [7; 209].

Taking into account the practice of training external pilots in state aviation and its bylaws, the experience of various domestic schools for training remote pilots, taking into account ICAO requirements and positive international experience, it seems that Ukraine has created sufficient prerequisites for the formation of legal requirements for the training of remote pilots for civil aviation.

Thus, the issue of legal regulation of the peculiarities and content of remote pilot training for civil aviation remains relevant. It seems quite logical to solve the problem by regulating the relevant requirements for such professional training at the level of aviation regulations and educational standards.

The draft law No. 3716 of 30.06.2021, which was adopted as a basis and is being prepared for the second reading, proposes to supplement Article 52 of the ACU with part four, which states that "the requirements for the competencies of a remote pilot, his training, retraining, confirmation/renewal and advanced training are established by the aviation rules of Ukraine. The requirements of this part do not apply to out-of-school education students and participants in sports events organized by the relevant sports federations" [8].

Although there are ongoing discussions around the legal regulation of remote pilot training, it seems that its implementation will help to increase the level of safety when using the UAV.

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