Ukraine UAV regulation

Proived by Ukraine Chapter on August 19,2019.

Note: If there is an omission, please leave a message to indicate .For the people who work on UAV industry please find more reference before doing any decison.

Regulations for the operation and management of unmanned aircraft vehicles (National Aviation University, Kyiv, Ukraine) Prof. Volodymyr Isaienko.

Unmanned aircraft are developing rapidly and require international regulation to be used safely and effectively.

The objective of developing this international regulatory framework is to ensure the performance of safe, coordinated and effectively integrated flights of remotely piloted aircraft (**RPA**) in a manner similar to the manned aircraft (**MA**) flights within an aviation transport system.

To apply the unmanned aircraft vehicles (UAV) management rules it is necessary to classify UAVs properly. They are classified in various categories according to their **weight** and **risk of loss**.

Considering risk of loss UAV sare classified into **"open", "specific" and "certified" categories** with low, medium and high risk of loss respectively. UAVs are also classified into the following **weight categories**: toy, micro, very small, small, light, medium, heavy, super heavy. For example, all operations related to the **"open" category** must be carried out within certain limits: the UAV should not operate at an altitude exceeding 150 m above ground or water surface; the pilot is responsible for the safe intervals from any other **airspace user (AS)** and frees the airspace on the path of another AS user etc.

The following issues concerning UAV management rules are considered: **UAV and operator certification; UAV registration; rules for UAV operations; communication with the UAV; training of personnel for the UAV operation; emergency situations with UAV and flight safety; legal issues.**

1. **UAV certification, type certificate (TC) and operator certification**.

The initial issue of the aircraft TC by the state is proof that design of this aircraft type isexamined and considered compliant with the appropriate airworthiness requirements. The same principle applies to the RPAS, RPA, remote piloting point (RPP), C2 lines (data transfer line for control purposes between the RPA and RPP) etc.

The **certification** takes into account system configuration, use, environment, system's hardware and software. It is possible to use technical standards to certify specific components.

The operation of the RPAS requires that remote pilot can control the flight in real time using C2 line. It should be noted that when using communication tools such as **satellites**, interruptions or loss of service can lead to simultaneous disruption of several UAVs operations.

Activities related to airspace (AS) use, as well as activities which may threaten flight safety, are allowed only after obtaining a permit.

UAVs always perform flights within the Temporarily Reserved Airspace (TSA / TRA, R, D) or its equivalent. Any Temporarily Reserved Area (TSA / TRA, R, D) published in the sections **AIP ENR 5.1 and ENR 5.2** can be used for UAV flights at the request of

Ukraine UAV regulation

Proived by Ukraine Chapter on August 19,2019.

Note: If there is an omission, please leave a message to indicate .For the people who work on UAV industry please find more reference before doing any decison.

airspace user.

Civil Aviation (CA) UAVs are divided into autonomous and remotely piloted. CA UAV should be industrially manufactured and have the appropriate certificate.

The applicant chooses the operators team handling the operation of CA UAV depending on its type, purpose and operating conditions. **The regulations for the UAV operator** are formed by state standards and meet the following requirements:

a) have citizenship of the country where the UAV is operating;
b) be at the age no less than 18 years;
c) have a medical certificate;
d)have a special training on the UAV operation and management;
e) know the country's legislation on the airspace use;
c) demonstrate the level of knowledge and skills which allows operating the UAV.

The state authorities regulate management and control of airspace used by CA UAV. Their use is allowed only after following necessary security measures, obtaining appropriate permission and only in dedicated airspace. UAVs and unmanned aerial systems (UAS) can be integrated into a single airspace with manned aircraft only under the condition of remote piloting from the control point and being the only UAV. However, you do not need to receive permission to use airspace with toy aircraft models. People who violate the requirements of these Regulations are liable in accordance with the established procedure.

2. **UAV registration**:

1. UAVs are the subject to registration in civil and state aviation authorized bodies.
2. People, who receive UAVs for the purpose of exploitation, apply for registration with the CA authorized body with the following documents:
- application;
- a copy of a constituent or an identity document;
- a notarized copy of any document confirming the ownership;
- a notarized copy of any document confirming the right to use the UAV;
- a copy of the manufacturer's document on UAS specifications;
- UAVs passport;
- a type certificate copy or equivalent document (if any);
- documenton the exclusion of UAV (if the UAV was registered in a foreign state) from the registration in a foreign state;
- confirmation thatthere is no military and intercepting equipment on board.
3.The UAVs with a maximum take-off weight of **more than 1 kg** must be registered.
4. In case of UAV registration, the authorized body issues a registration **certificate**.
5.**The UAV registration** is conducted by an authorized body in a special journal or electronic register.
6. In case of **commercial use of the UAV**, remote pilot certificate is also provided.

3. **Operating conditions of the UAV：**

Ukraine UAV regulation

Proived by Ukraine Chapter on August 19,2019.

Note: If there is an omission, please leave a message to indicate .For the people who work on UAV industry please find more reference before doing any decison.

1. The UAV operation should minimize the threat to life or health of people, damage of property or other aircraft.
2. The operator is required to obtain a permit for the UAV flight in a **controlled airspace**.
3. UAV's flight information is not sent to the **air traffic services unit (ATS)** if the altitude of planned flight does not exceed 50 meters from the ground surface, and the route does not pass closer than 5.5 km to the aerodrome boundary.
4. UAV flights are performed:
a) within the boundaries of **class G**airspace, provided that visibility is not less than 1500 meters horizontally and the clouds lower boundary is not less than 300 meters vertically);
b) **in a controlled airspace** (with the exception of the provisions specified in subparagraphs c) and d));
c) **in a control area** - with the exception of performance of aviation works and mass demonstration flights on UAVs;
d) **in the aerodrome flight zone** of an **uncontrolled** aerodrome located in the **class G** airspace or in controlled airspace.
5. The UAV operator should not allow the discharge of any cargo or animals (without a special parachute) from the UAV to avoid threat to people or property.
6. In cases where short-term restrictions are not established the UAV operator must maintain direct visual contact without any assistance, sufficient to control the path and the location of the UAV relative to other objects to avoid collision.
7. **The UAV should not be operated:**
a) during take-off and landing - closer than 50 meters horizontally from any person (except for the UAV's operator) or another object;
b) during the flight - closer than 100 meters horizontally from any person (except for UAV's operator) or another object;
c) in all cases closer than 150 meters horizontally from the mass gathering of people and (or) vehicles;
d) in prohibited and dangerous zones, zones of flights restriction.
8. CA aircraft, which **are not the subject for registration**, are:
1) aircraft which take-off is performed with the help of the pilot's legs (hang-gliders, paragliders, etc.);
2) meteorological radiosondes and pilot balloons which are used for meteorological needs;
3) unmanned uncontrolled balloons without payload;
4) UAV which maximum take-off weight does not exceed 20 kilograms and is used for entertainment and sports activities.

4. **Communication with the UAV**

The equipment for transmitting **command and telemetric information** is intended for the low-speed transmission of command information from the RPPto the UAV and the low-speed transmission of telemetric information from the UAV to the RPP. The equipment

Ukraine UAV regulation

Proived by Ukraine Chapter on August 19,2019.

Note: If there is an omission, please leave a message to indicate .For the people who work on UAV industry please find more reference before doing any decison.

for transfer of **payload** information is intended for one-way high-speed transmission from the UAV. The choice of equipment for control and data transmission from the UAV is made considering the class of apparatus, its functional purpose, communication range. **Cellular networks** can act as a control data transmission channel between the UAV and the operator.

The UAV registration and monitoring process:

- Each UAV must be equipped with a **specialized system of periodic data transmission** of its location.
- Registration of a new UAV must occur when it is manufactured / purchased by submitting relevant records including a unique identifier of the UAV registration and monitoring system **(IMEI data transmission system**) to the specialized database.
- When the UAV takes off, the device registers in the cellular operator's network (**GSM, 3G, LTE, 5G, etc**.), depending on the cellular networks available.

During the UAV operation, the vehicle location coordinates are periodically transmitted.

In ADS-C mode, the aircraft uses on-board navigation systems to determine its location and other data. The ground-based **ATS air traffic management system** concludes a contract with this aircraft on the provision of such information regularly or after certain events. Information is transmitted through a data link in two-way communication. The aircraft operator and the ATM service provider will enter into separate agreements with the **ADS-C** Message Delivery Service Provider.

The Automatic Dependent Surveillance in Broadcast (**ADS-B) and Multilateration (MLAT) systems** are additional forms of electronic surveillance. Currently, ADS-B and MLAT systems can be deployed in areas that are either not serviced at all or partially serviced by radar.

5. **Training of personnel for the operation of the UAV** is carried out for all categories:

***Open category (low risk)*.**The rules for licensing the UAS operators are minimal. The **competence** of the UAS operator should be demonstrated by completing the appropriate course.

Specific category (medium risk). The UAS operators professional training is mandatory and is confirmed by a **ROC (Remote Operator Certificate).**

Certified category (high risk). Operators of this category must obtain a license from the national aviation administration and a ROC type certificate.

The main purpose of these rules is to ensure that the activities of the UAS operators comply with industry standards. Operators of UAS are studying the basic rules of performing UAV flights in **normal conditions, complicated conditions, emergency situations**.

6.**UAV emergency situations and flight safety.**

The most important task is that the integration of the RPA in the airspace does not cause an increase in the risk level to the manned aircraft safety. The procedure for the UAS operator’s actions in case of an emergency is determined in accordance with the **Manual on RPA Flight Operations**, is studied and practised when training the UAV operator.

Ukraine UAV regulation

Proived by Ukraine Chapter on August 19,2019.

Note: If there is an omission, please leave a message to indicate .For the people who work on UAV industry please find more reference before doing any decison.

Requirements for a remote pilot include knowledge from the areas: identification of **hazardous meteorological conditions** and procedures to prevent entering them; the procedure for performing and manoeuvring in **abnormal and emergency situations, software failure, loss of C2 line, failures and malfunctions, limited RAP, failure of communication facilities etc.**

RPA Flight planning should foresee the possibility of UAV emergency landing in places where the risk to the safety of people or property on the ground will be minimal. As part of the **pre-flight planning, alternate aerodromes / sites** should be determined. Starting from the **"small"** class, the UAV must have **a search indicator**.

To organize **flight safety**, the relevant ATS unit includes an additional procedure**» emergency situation with UAV"** to the list of compulsory ATC procedures **in special cases during the flight**.

7. **Legal issues**

CA UAV flights are carried out according to the **Flight rules** requirements. The UAV owners are responsible for the safe use of vehicles in accordance with the law. The **investigation of accidents** with UAVs and UAS of civil and state aviation are in the jurisdiction of the relevant state bodies. In case of rules and operating conditions violation, the owners / operators of the UAV are liable in accordance with the legislation.

The relevant **state bodies** are monitoring the performance of UAV flights.

Notes

[1] Regulations for the operation and management of unmanned aircraft vehicles are compiled in accordance with the recommendations and documents of ICAO, EASA, the experience of other countries, scientific publications of NAU employees

[2]Definitions of the phrases (words) **in bold** will be included in the full normative document of ICAO.