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Director of Unmanned Aircraft Systems Division

Manual for Preparation of On-site Inspection Procedure Manual for UAS

Note: It is noted that if there is a translation difference between English and Japanese, then Japanese should be the official language to refer to.

1. Purpose

In the case of an unmanned aircraft system that has obtained UAS certification under Article 132-13, paragraph 1 of Article 132-13 of the Civil Aeronautics Act (Act No. 231 of 1952; hereinafter, the "Act"), it is permitted under Article 132-13, Paragraph 5, item 2 of the Act and Article 132-13, Paragraph 6, item 2 of the Act to, depending on the certification category, to omit part or all of the inspection with respect to its design, manufacturing process and current conditions to prove conformity to the "Standards concerning Strength, Structure, and Performance to Ensure Safety" (hereinafter, "Safety Standards") prescribed under Article 236-15 of the Ordinance for Enforcement of the Civil Aeronautics Act (hereinafter, the "Regulation").

This Manual sets forth the basic policy to be followed when preparing a document stating matters related to the method of renewal inspection, etc. (hereinafter, "On-site Inspection Procedure Manual") when, in principle, an unmanned aircraft system with a maximum take-off weight of less than 25 kg undergoes inspection for Class 2 UAS Certification under Article 132-13, paragraph 2, Item 2 of the Act.

2. Related laws, etc.

(1) Article 132-13 of the Civil Aeronautics Act

(2) Articles 236-12 to 236-15 of the Ordinance for Enforcement of the Civil Aeronautics Act (Order of the Ministry of Transport No. 56 of 1952)

(3) General Policy Regarding Inspection of Unmanned Aircraft System (KOKU-KU-MUKI-237030)

3. Applicability

This Manual applies to On-site Inspection Procedure Manual for use when, in principle, an unmanned aircraft system with a maximum take-off weight of less than 25 kg undergoes inspection for renewal of Class 2 UAS Certification under Article 132-13, Paragraph 2, Item 2 of the Act. The applicant may apply This Manual for any purpose other than renewal of Class 2 UAS Certification by adding necessary changes in items, procedures, etc. in light of the certification category and weight category of the unmanned aircraft system in question.

4. Structure of On-site Inspection Procedure Manual

(1) The On-site Inspection Procedure Manual shall consist of the items listed below. This Manual must be verified by the JCAB in conjunction with the establishment of the document for UAS maintenance procedure before obtaining UAS type certification for the unmanned aircraft system. If the unmanned aircraft system has not obtained UAS type certification, the On-site Inspection Procedure Manual must be established by the time the unmanned aircraft system obtains the first UAS certification and must be verified by the JCAB.

[1] General appearance inspection for unmanned aircraft system

[2] Verification of functionality and performance through ground function test

[3] Verification of functionality and performance through flight test

[4] Verification of functionality and performance for configuration with optional equipment corresponding to the type of intended operations for each flight mode specified in the Concept of Operation (CONOPS)

(2) During an on-site inspection, verification shall be conducted to confirm the functionality and performance of optional equipment, etc. installed for each flight mode, in addition to those of the basic configuration of the unmanned aircraft system Therefore, in addition to the basic inspection procedure for an unmanned aircraft system with the basic configuration (hereinafter, the "basic procedure"), the On-site Inspection Procedure Manual shall set forth the procedure that has been established by supplementing or modifying the basic procedure (hereinafter, the "supplementary procedure"). Inspection for current conditions of an unmanned aircraft system, the basic procedure and the supplementary procedure are implemented to individually verify the functionality and performance of the basic and supplementary configurations. However, these procedures may be combined and implemented in combination.

The On-site Inspection Procedure Manual shall be accompanied by detailed photos (six sides) of the appearance of the unmanned aircraft system and the design drawings to facilitate judgement by comparison with the normal state, photos by which the display of the UAS type certification under Article 132-19 of the Act (by which the entry items, the order of entries, format, etc. can be confirmed) and its location can be confirmed, a list of optional equipment that can be installed, etc.

5. Matters to Be Stated in On-site Inspection Procedure Manual

The matters to be stated in the On-site Inspection Procedure Manual shall be set by taking into account the following. It is not necessary to set inspection items that require testing by intentionally causing malfunctions or destroying the unmanned aircraft system. In addition, with respect to inspection items related to functions such as emergency operations, it suffices to set only those that can be checked while the unmanned aircraft system is placed on the ground.

For each inspection item, criteria necessary for pass/fail judgment, including acceptable range, shall be clearly stated.

(1) General appearance inspection of unmanned aircraft system

The appearance of the unmanned aircraft system shall be visually inspected for any defect.

Examples of the above inspection items (Basically, pre-flight inspection items may be selected.)

・ Scratches, dents, cracks, missing parts, condition of installation, etc. on the exterior of the unmanned aircraft system

(2) Verification of functionality and performance through ground function test

[1] Inspection to confirm that the unmanned aircraft system, controller system, and other systems function properly

[2] For unmanned aircraft system equipped with an engine, inspection to confirm that the engine functions properly.

[3] Other functional inspection items that are reasonable to perform on the ground

(Examples of the above inspection items)

・ Condition of the battery, self-monitor (for any abnormalities), GPS receiving condition, emergency stop function, etc.

(3) Verification of functionality and performance through flight test

Inspection of the overall condition of each system and equipment that are used in normal operations, such as takeoff, ascent, descent, and landing, shall be implemented.

[1] Examples of inspection items for rotary-wing unmanned aircraft system.

・ The range of the flight area, hovering altitude, and functional check altitude shall be specified by the designer of the unmanned aircraft system, taking safety into consideration.

・ The unmanned aircraft system shall be flown at an altitude that is outside of the ground effect, which is basically achieved by making it hover at eye level. If the controller has a function to display altitude above the ground, the unmanned aircraft system may hover at a point above eye level.

・ After starting hovering, the unmanned aircraft system shall perform a low-speed horizontal forward flight to a position 5 meters forward in front of it and stop, and then perform a low-speed horizontal backward flight and stop.

・ The unmanned aircraft system shall perform a low-speed horizontal rightward flight to a position 5 meters from original point, and then perform a low-speed horizontal leftward flight and stop.

・ From a stopped state, the unmanned aircraft system shall veer its nose 90 degrees to the right or left and stop, and then veer back to the original position and stop.

・ From a hovering state, the unmanned aircraft system shall ascend to the designated altitude, stop, and then descend to the original altitude.

・ The unmanned aircraft system shall make a figure-8 turning flight at eye-level altitude.

[2] Examples of inspection items for fixed wing unmanned aircraft system

・ The range of the flight area and the altitude for performance verification shall be specified by the designer of the unmanned aircraft system, taking safety into consideration.
・ The unmanned aircraft system shall be checked for climbability and stability during takeoff, and then climb to the specified altitude.
・ The unmanned aircraft system shall fly in a horizontal straight line at a specified altitude and distance.
・ The unmanned aircraft system shall make a figure-8 turning flight.
・ When landing, the unmanned aircraft system shall be stable from the time of approach to the runway until it touches down, and be able to land smoothly without bouncing during landing.

(4) Tests related to (1) to (3) above shall also be conducted in the supplementary procedure as well; provided, however, that items that overlap with the basic procedure may be omitted.

6. Revision of On-site Inspection Procedure Manual

(1) If an unmanned aircraft system that falls into any of the categories of unmanned aircraft systems listed in Article 132-13, paragraph 5, item 2 and paragraph 6, item 2 of the Act, and that has not obtained UAS type certification, has been modified etc. after obtaining UAS certification, then the unmanned aircraft system shall, in conjunction with the inspection for UAS certification, undergo verification by the JCAB with regard to partial changes or additions to the document for UAS maintenance procedure corresponding to the modification made to the unmanned aircraft system.

(2) If an unmanned aircraft system that has obtained UAS type certification undergoes design changes involving additions or changes to the document for UAS maintenance procedure applicable to the said unmanned aircraft system, and if, as a result, additions or changes are made to the UAS On-site Inspection Procedure Manual, the On-site Inspection Procedure Manual for UAS, the unmanned aircraft system shall undergo verification by the JCAB in conjunction with the inspection for UAS certification.

7. Others

Detailed matters necessary to implement This Manual may be separately stipulated by the Unmanned Aircraft Systems Division.

Supplementary Provisions (first issue in 2022: KOKU-KU-MUKI-237031)

This Manual shall come into effect from December 5, 2022.

For any questions or comments regarding this Circular, contact the following:

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