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民航處

Civil Aviation Department
The Government of the Hong Kong Special Administrative Region

Small Unmanned Aircraft Advisory Circular No. AC-012

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Operations of Model Aircraft under Small Unmanned Aircraft Order

1. Background

1.1 The Small Unmanned Aircraft Order (“SUA Order”), Chapter 448G of the Laws of Hong Kong, will come into operation on 1 June 2022. It is a piece of subsidiary legislation made under the Civil Aviation Ordinance that aims to provide a flexible and forward-looking regime for the regulation and development of small unmanned aircraft (“SUA”) operations in Hong Kong.

1.2 Under the SUA Order, an “unmanned aircraft” means :

“a power driven machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth’s surface, which is operated with no pilot on board”.

An unmanned aircraft is an SUA in respect of a flight ***if its weight does not exceed 25 kg at all times during the flight, including everything installed in, carried by and attached to the aircraft.***

1.3 In line with the above definitions, a model aircraft is an SUA if its weight does not exceed 25 kg at all times during the flight. Model aircraft falling within this category will be subject to the provisions and regulations of the SUA Order.

1.4 The Civil Aviation Department (“CAD”) notes that model aircraft operation, or aeromodelling, is a hobby that has been practised by many enthusiasts, and it has also assisted in cultivating aviation interests and the development of aviation technology in Hong Kong. Taking these and also the vastly different operational circumstances of model aircraft from other SUAs into account, the CAD will adopt a risk-based approach with special facilitating considerations given to model aircraft operations, that aim to protect the aviation and public safety on one hand, while on the other, provide flexibility to these operations.

- 1.5 This Advisory Circular (“AC”) aims to provide some general guidance for model aircraft operations under the new regulatory regime. Model aircraft operators are also advised to take note of the safety requirements and applicable operating requirements stipulated in the SUA Order and Safety Requirements Documents (“SRD”) published by the CAD.
- 1.6 This AC also provides information on the procedures and requirements for making relevant applications for conducting the model aircraft operations which are detailed in the ensuing paragraphs where applicable.

2. **Regulations Applicable to Model Aircraft Operations**

- 2.1 Prior to the commencement of the SUA Order on 1 June 2022, model aircraft are governed, as far as aviation safety is concerned, by the Air Navigation (Hong Kong) Order 1995 (“AN(HK)O”), Chapter 448C of the Laws of Hong Kong. Model aircraft weighing not more than 7 kg *without its fuel* are subject to several provisions¹ of AN(HK)O, whilst those weighing more than 7 kg without its fuel are required to comply with various requirements stipulated in the AN(HK)O similar to those for large aircraft.
- 2.2 With the coming into operation of the SUA Order with effect from 1 June 2022, model aircraft weighing not more than 25 kg at all times during the flight, including everything installed in, carried by and attached to the aircraft (i.e. inclusive of its fuel) will be governed by the SUA Order. The related provisions in AN(HK)O will cease to be applicable to these model aircraft.
- 2.3 Model aircraft operators can continue to conduct operations under the new regulatory regime **built in with flexibility and facilitation**. As with all other SUA operations, they can be in the form of “Standard Operations” and “Advanced Operations”. The applicable regulatory requirements including but not limited to aircraft registration and labelling, remote pilot registration, training and assessment, equipment (including safety system), insurance as well as applicable operating requirements.

2.4 **Standard Operations**

- 2.4.1 Operations of model aircraft that falls under Category A1 SUA and Category A2 SUA² weighing not more than 7 kg including its fuel and everything installed in, carried by and attached to the aircraft conducted within applicable operating requirements

¹ Articles 48, 70, 98(1), 98(8) and 100 of the AN(HK)O apply to model aircraft weighing not more than 7 kg without its fuel.

² “**Category A1 SUA**” is the SUA with its weight does not exceed 250 g at all times during the flight. “**Category A2 SUA**” is the SUA with its weight exceeds 250 g at any time during the flight but does not exceed 7 kg at all times during the flight. In determining the weight of an SUA, regardless of its category, everything installed in, carried by or attached to the SUA is to be taken into account.

stipulated in section 16 of the SUA Order are regarded as “standard operations”. Prior permission from the CAD is not required for this category of operations. Please refer to Chapter 2, 7 and 8 of the SRD for more details of the categorisation of SUA operations and the corresponding regulatory requirements.

2.5 **Advanced Operations**

2.5.1 The CAD recognises that there may be operational circumstances for SUA including model aircraft operations under which certain operating requirements might not be met. Some examples include operations that exceeds the specified flying altitude (section 16(1)(c) of the SUA Order³) and operations of model aircraft exceeding the specified dimension (section 16(1)(k) of the SUA Order⁴). These operations are categorised as a form of “advanced operations”. Operations of model aircraft falling under Category B SUA⁵ (weighing more than 7kg) (section 11(1)(g) of the SUA Order) are also categorised as “advanced operations”.

2.5.2 Due to the higher risks involved, advanced operations shall be subject to more stringent safety and regulatory requirements specified in the SUA Order and the SRD. Prior permission from the CAD in accordance with section 37 of the SUA Order is required. Detailed requirements are provided in paragraphs 3 to 5 below.

3. **Operating Requirements for Model Aircraft Advanced Operations**

3.1 Unless otherwise permitted in the permission issued by CAD (e.g. operations with excessive height, operations of model aircraft exceeding the specified dimension), all model aircraft are expected to operate in accordance with the operating requirements stipulated in section 16 of the SUA Order, including but not limited to maintaining the flying at daylight hours, maintaining lateral separation with any uninvolved person and vehicle, vessel or structure, the maximum dimension of SUA, etc. Other applicable regulatory requirements, including SUA registration and labelling and remote pilot registration shall also be observed. Details are available in the Safety Requirements Document (“SRD”) published by the CAD.

3.2 The maximum flying altitude is 100 feet above ground level (“AGL”) for Category A1 SUA, and 300 feet AGL for Category A2 SUA, unless otherwise specified in the permission.

³ The flying altitude as specified in the Gazette Notice issued under section 17(2) of the SUA Order is 100 feet above ground level for Category A1 Aircraft and 300 feet above ground level for Category A2 Aircraft.

⁴ The maximum dimension of the aircraft (including everything installed in, carried by or attached to the aircraft) as specified in the Gazette Notice issued under section 17(2) of the SUA Order is 1 m, except that the longest distance between any two rotor blade tips can be up to 1.2 m.

⁵ “**Category B SUA**” is the SUA with its weight exceeds 7 kilograms at any time during the flight but does not exceed 25 kilograms at all times during the flight.

- 3.3 The operating area shall be segregated from the spectators, uninvolved people, as well as structures, vehicles or vessels not under the control of the remote pilot.
- 3.4 The operation must be carried out within Visual Line of Sight (VLOS).
- 3.5 The operation shall not involve any overflight of uninvolved people.
- 3.6 Nothing shall be dropped from the SUA during the operation.
- 3.7 A valid insurance policy must be in force that insures against third-party liability (for bodily injury and/or death) arising out of or caused by the operation.
- 3.8 The operation must comply with the regulations and directives set by Office of the Communications Authority (“OFCA”) on the use of radio frequencies and to ensure that no radio-frequency interference is caused.
- 3.9 Operating Area
- 3.9.1 The operations shall be conducted in accordance with the site plan, operational control procedures, emergency procedures, risk assessment and safety mitigation measures documented in an Operations Manual (“OM”) accepted by the CAD.
- 3.9.2 The permission of the land / property owner on whose land / property the model aircraft operation is intended to take place must be obtained.
- 3.9.3 The operating area (and the airspace involved) in which the model aircraft are to be operated, shall be under the full and proper control of the remote pilot or the site manager and set up in accordance with the OM.
- 3.9.4 The flights must take place only within the operating area specified in the OM. Public access to the operating area by uninvolved people of the intended model aircraft operations must be controlled.
- 3.9.5 A risk assessment must be conducted prior to the operation in accordance with the OM. The risk mitigation and emergency procedures stipulated in the OM must be established and adhered to during operation.
- 3.9.6 Depending on the scale of model aircraft operations, agreement / permission / license from relevant Government Bureaux/ Departments may be required. The remote pilot or the site manager shall ensure that all necessary permission from relevant authorities are obtained before conducting the operation. The remote pilot or the site manager must ensure that all relevant requirements by the relevant authorities are observed for the conduct of the operations.

4. Personnel Requirements

- 4.1 For the purpose of conducting advanced operations under a permission issued by the CAD, the remote pilots are required to obtain an Advanced Rating under the SUA Order.
- 4.2 Apart from means detailed in the SRD for obtaining an advanced rating, model aircraft operators who can demonstrate established records of model aircraft flying experience and professional experiences (such as the membership of a model aircraft club or association) may apply for assignment of advanced rating by submitting the necessary documents as an alternative means of compliance. Depending on the circumstances, additional information or requirements may be requested by the CAD to facilitate the assessment of the applicant's knowledge, experience and competence if necessary.
- 4.3 The remote pilot, visual observer and/or supporting crew, where applicable, shall possess the necessary skills for conducting safe operation in the operating area and be familiar with the standard and emergency procedures as per its OM accepted by the CAD.

5. Application for Permission

- 5.1 Applications can be made to the CAD for a permission for advanced operations in regards the operations of model aircraft described under paragraph 2.4. The model aircraft operations shall observe all conditions attached with the permission granted.
- 5.2 The applicant is required to submit the following documents **at least 28 calendar days** before the date of the flight :
- a) An application letter;
 - b) A site plan (see paragraph 5.7);
 - c) An OM (see paragraph 5.8); and
 - d) A safety risk assessment (see paragraph 5.9 and **Appendix A**).
- 5.3 As the time required for the processing of the application would depend on the **completeness** and **readiness** of the submission, applicants should ensure that the submissions are in order to facilitate the processing of applications. The CAD can only process the application with all required information; whilst application with insufficient details may lengthen the application process.
- 5.4 Subject to the complexity of the proposed operation, the CAD may require the applicant to perform an on-site assessment and/or flight demonstration regarding the setup of the operating area and cordoning arrangement in considering the application (see paragraph 5.10).

5.5 If the operation is within a Restricted Flying Zone (RFZ), a separate application for operations within RFZ shall be submitted simultaneously unless the relevant permission has already been obtained.

5.6 The CAD may refuse to grant the permission if the applicant cannot demonstrate the compliance with the guidelines and requirements set out in this AC.

5.7 Site Plan

5.7.1 The flight plan shall include (but is not limited to) the following details. Any information that is subject to further changes should be clearly indicated.

- a) The operating area for model aircraft which may include the take-off, taxi, landing, pit, shelter areas, etc.;
- b) The geographical location and dimensions of the operating area; and
- c) The maximum height of the model aircraft operation AGL.

5.8 Operations Manual (OM)

5.8.1 The application shall include an OM that consists of information and procedures necessary to enable the site manager to perform the duties safely and effectively.

5.9 Safety Risk Assessment

5.9.1 The applicant must conduct and submit a safety risk assessment with the application. The assessment should identify any hazards and failure modes, the associated safety risks as well as the mitigations to bring the risks to a tolerable or acceptable level.

5.9.2 The safety risk assessment must include the following failure modes:

- a) The loss of control of the model aircraft;
- b) The loss of VLOS during operation;
- c) The loss of minimal separation between model aircraft and uninvolved persons;
- d) Flyway of model aircraft; and
- e) Any other single points of failure.

A Safety Risk Assessment Template is provided at **Appendix A**.

5.10 On-site Assessment

5.10.1 During the application process, the applicant may be required to arrange an on-site assessment for the CAD to verify the setup of the operating area and cordoning arrangement.

5.10.2 The applicant is responsible for making the necessary arrangement for the flight with the following requirements met :

- a) The flight must be carried out in an operating area permitted for model aircraft operation, in which the applicable separation from uninvolved people, structures, vehicles or vessels not under controlled can be maintained; and
- b) The applicant shall be able to demonstrate the normal operation and emergency procedures.

5.10.3 The relevant provisions of measures, particularly those which are being relied upon as safety mitigations, must be demonstrated.

5.11 Excessive Height Operations

5.11.1 As one of the operating requirements specified in the Gazette Notice, the flying altitude which the SUA is operated for a flight shall not be higher than 100 feet AGL for Category A1 SUA, and 300 feet AGL for Category A2 SUA.

5.11.2 Notwithstanding the above, in exceptional circumstances, if flying above the maximum flying altitude is unavoidable, in addition to the application requirements set out in the previous paragraphs, applications for permission may be made to the CAD with full justifications, details of operation (including the site plan and intended flying altitude, etc.) and the corresponding safety mitigation measures.

5.11.3 Applicants should also note that excessive height operations are subject to thorough assessment by air traffic control and are therefore strongly advised to critically review whether there is a genuine need for such excessive height operations.

5.12 Applications Made by Site Manager

5.12.1 Applications may also be made by the site manager who has full and proper control of the operating site as detailed under paragraph 3.9 for a permission from CAD to cover model aircraft operations by different remote pilots within the dedicated operating site subject to the following requirements :

5.12.2 The site manager must show evidence that the permission of the land/ property owner or venue management for the intended model aircraft operations is obtained.

5.12.3 The site manager has the overall responsibility for ensuring the safe operations of the model aircraft. Amongst others, the site manager shall be responsible for setting up the venue, rules and procedures, and implementing any arrangements necessary for conducting the operations in a safe and coordinated manner, and for ensuring that no person or property would be endangered by the model aircraft at all times.

- 5.12.4 The site manager shall ensure the requirements provided in this AC, which comprise operating requirements (paragraph 3), personnel requirements (paragraph 4), as well as all other legal and regulatory requirements are observed for the conduct of the model aircraft operations.
- 5.12.5 The site manager shall develop and maintain an OM for acceptance by the CAD and shall ensure that all operations will be conducted according to the OM. In particular, safety and quality assurance system shall be in place to ensure that the said requirements are fully observed for the model aircraft operations at the operating site.
- 5.12.6 The site manager shall develop operating procedures and appropriate safety measures, and shall ensure that safety risk assessment is conducted to mitigate the risks of model aircraft operations and the surrounding airspace. Such procedures and information shall be documented in the OM accepted by the CAD.
- 5.12.7 A system shall be maintained to keep track of information of the remote pilots, the model aircraft, and their operations. Procedures shall be in place to ensure that the remote pilots, visual observers and/or supporting crew, where applicable, possess the necessary rating and skills for conducting safe operation at the operating site as per its OM accepted by the CAD.
- 5.12.8 Requirements of aircraft specifications allowed should be defined in the OM, including but not limited to the weight, size, type, design, material, propulsion, etc. The model aircraft shall also be required to be equipped with a fail-safe mode which can immediately cease the operations under emergency scenario. Relevant code of practices and international safety guidelines applicable to model aircraft operations should be followed.
- 5.12.9 The contact point identified in the application is the single point of contact with the CAD along the application process, and is responsible for the necessary coordination and liaison among the remote pilots and supporting crew of model aircraft operations, the site owner, authorities and/or other relevant parties.
- 5.12.10 Relevant information and documents required in this AC shall be retained by the site manager for a minimum of two (2) years.

6. Exemption from Specific Requirement under the SUA Order

- 6.1 The CAD notes that some existing model aircraft may not be equipped with the safety system (i.e. the geo-awareness and flight log functions) required under the SUA Order. The attention of model aircraft operators is drawn to the relevant equipment and

information keeping requirements under sections 11, 13 and 14 of the SUA Order and the guidelines given below.

- 6.2 To ensure aviation and public safety, all SUA should as far as practicable be equipped and operated in compliance with the requirements of the SUA Order. However, in special circumstances where there are unavoidable practical and operational difficulties in fully complying with the requirements, such as the abovementioned safety system requirement for model aircraft, the applicant may consider making an application to the CAD for seeking an exemption under section 68 of the SUA Order from the specific requirement.
- 6.3 It must be emphasised that compliance with requirements is not optional and exemptions will only be considered under special circumstances. In the case of safety system, exemption from the requirement may be considered if the following general guiding principles are met :
- a) there is a genuine practical and operational need for the exemption and the exemption is on balance with the interest of other parties being affected;
 - b) the associated risks are managed by other means or control measures, including any additional safety and protection measures proposed by the applicant which could practicably be complied with;
 - c) the exemption does not conflict with the industry best practices; and
 - d) a level of safety equivalent to that established by the requirement can be ensured.

The applicant shall indicate on the application letter and provide justification with the required information in an organised manner.

- 6.4 To assist further, some useful examples of the information that may be provided for paragraph 6.3 b) to d) are listed below for reference by applicants and site managers of model aircraft operations :
- a) information on how the details of the model aircraft operations can be adequately recorded and retained for safety assurance and traceability purposes in the absence of a safety system;
 - b) the additional safety procedures and risk mitigation measures that have been put in place to ensure safe model aircraft operations within a proposed site despite the equipage; and
 - c) any additional training, assessment or personnel qualification required for operators or remote pilots operating within a proposed site to ensure that they are equipped with an enhanced level of knowledge and competency required for safe operations in the absence of safety system. This may include the additional qualification and training required, such as the flying skill assessment or minimum hours of flying experience with the model aircraft.

- 6.5 The application may be made together with the permission for advanced operations (if applicable) as detailed above to allow the CAD to perform a holistic assessment of the proposed model aircraft operations involved.
- 6.6 The model aircraft operation shall be conducted in accordance with the conditions stated in the exemption, as well as in the relevant permission for the operations where appropriate. Relevant information and documents required in this AC shall be retained for a minimum of **two (2) years**.

7. Enquiries

- 7.1 This AC will be subject to review and update from time to time in the light of the advancement of technology and increasing popular use of model aircraft. It should also be noted that the safety requirements provided above are not meant to be exhaustive. It shall be the responsibility of the operators, remote pilots or site manager, as the case may be, to comply with all applicable regulatory requirements, put in place appropriate safety precautions and risk mitigating measures for the subject model aircraft operation, as well as to follow the requirements and guidelines set out by any property owner and/or manager to ensure the safe operations of model aircraft at all times.
- 7.2 This AC should be read in conjunction with the SUA Order, SRD and other SUA related documents published by the CAD.
- 7.3 For enquiries, please contact the Unmanned Aircraft Office of the CAD at sua@cad.gov.hk.

Appendix A – Safety Risk Assessment for Operations of Model Aircraft at a Proposed Site

The applicant shall identify risks specific to the proposed operations of model aircraft and propose effective risk mitigation measures so that the risks are mitigated to an acceptable level. A template of risk assessment is available in the sample of Operations Manual. The following is an example of safety risk assessment for operations of model aircraft and some anticipated risks to be addressed. Applicant should note that the list is not exhaustive. Any other risks associated with the proposed operation shall be identified and addressed.

Risk No.	Identified Hazard	Associated Risk (What & How)	Existing Mitigation	Current Risk Rating	Further Mitigation	Revised Risk Rating
1.	<i>Loss of control of the model aircraft</i>	<i>Fail to ensure safe operations of model aircraft and avoid collision from the uninvolved</i>	<i>Remote pilot to conduct pre-flight check on flight controls and C2 link</i>	4C	<i>Proper arrangement of site and public access</i>	1C
2.	<i>Loss of VLOS during operation</i>					
3.	<i>Loss of minimal separation between model aircraft and uninvolved persons</i>					
4.	<i>Flyway of model aircraft</i>					
5.	<i>Any other single points of failure</i>					

– END –