

## China UAS regulations

\*BVLOS セクションのみ日本語に翻訳

Flight Standards Division of Civil Aviation Administration of China

Advisory Circular: No. AC-91-FS-2015-31

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### Interim Provisions for

### Low Level Operation of Light and Small Unmanned Aircraft Systems

#### CONTENT

1. Purpose

In recent years, the unmanned aircraft industry has been rapidly expanding. Especially low altitude, low speed, light and small unmanned aircrafts increase significantly, accounted for the majority of civil unmanned aircrafts. This advisory circular is to standardize low level operation of light and small unmanned aircrafts in accordance with CCAR-91.

2. Applicability and categories

This advisory circular (AC) applies to:

- 2.1 Unmanned aircraft systems (UAS) of Visual line-of-sight (VLOS) and Beyond visual line-of-sight (BVLOS) operations with an unloaded weight not greater than 116kg, the maximum take-off weight not greater than 150kg and a calibrated air speed not greater than 100 km/h;
- 2.2 Agricultural UAS with maximum take-off weight not greater than 5,700 kg and the height to drug's receiving surface is not higher than 15 meters;
- 2.3 Unmanned airships of a volume of envelope not more than 4600 cubic meters;
- 2.4 The operation and management for applicable UAS is categorized in the table below

Category	Unloaded Weight(kg)	Maximum Take-off Weight (kg)
I	$0 < \text{Weight} \leq 1.5$	
II	$1.5 < \text{Weight} \leq 4$	$1.5 < \text{Weight} \leq 7$
III	$4 < \text{Weight} \leq 15$	$7 < \text{Weight} \leq 25$
IV	$15 < \text{Weight} \leq 116$	$25 < \text{Weight} \leq 150$
V	Agricultural UAS	
VI	Unmanned airships	
VII	UAS of category I and II operated beyond VLOS and operated out of 100	

meters.

Notes:

1: If the operation of UAS can be categorized in more than one category listed above, the category with higher requirement shall apply.

2: If a UAS is operated in fleet or as a group, the fleet is categorized according to the total weight

3: If the weight threshold for category I and category II is required more strictly by local authority (e.g. public security department) than this advisory circular, the requirement of local authority will prevail.

2.5 Operators of category I shall operate the UAS in a safe manner to avoid any unsafe situations of other airspace users or persons, could exempt from related articles in this advisory circular.

2.6 This advisory circular is not applicable to radio controlled model aircrafts. However, if model aircrafts are equipped with autopilot devices, command and control data link or autonomous flight equipment, such aircraft shall comply with this advisory circular.

2.7 This advisory circular is not applicable to UAS operations in segregated space (eg. indoor or in a confined space). If the segregated space is crowded, the pilots shall take measures to ensure the safety of people.

### 3. 定义

定義

3.1 无人机 (UA: Unmanned Aircraft), 是由控制站管理 (包括远程操纵或自主飞行) 的航空器, 也称远程驾驶航空器 (RPA: Remotely Piloted Aircraft)。

無人航空機 (UA : Unmanned Aircraft) は、飛行制御装置で飛行させる制御ステーションで管理している航空機であり、別名は遠隔操縦航空機 (RPA : Remotely Piloted Aircraft)。

3.2 无人机系统 (UAS : Unmanned Aircraft System), 也称远程驾驶航空器系统 (RPAS: Remotely Piloted Aircraft Systems), 是指由无人机、相关控制站、所需的指令与控制数据链路以及批准的型号设计规定的任何其他部件组成的系统。

無人航空機システム (UAS : Unmanned Aircraft System) は、遠隔操縦航空機システムとも呼ばれている。無人航空機、関連の制御ステーション、必要な指令とコントロールデータリンクおよび認められているコンポーネントで構成されたシステムである。

3.3 无人机系统驾驶员, 由运营人指派对无人机的运行负有必不可少责任并在飞行期间

适时操纵无人机的入。

無人航空機システムの操縦者は運営者に指定され、無人航空機の運航に対し責任を負い、飛行期間中に適切で操縦を行う。

- 3.4 无人机系统的机长，是指在系统运行时间内负责整个无人机系统运行和安全的驾驶员。

無人航空機システムの機長は、システム運行中に、無人航空機システムの運航と安全の全責任を負う運航者である。

- 3.5 无人机观测员，由运营人指定的训练有素的人员，通过目视观测无人机，协助无人机驾驶员安全实施飞行。

無人航空機監視観察員は、運営者に指定された訓練されている人員で、目視で無人航空機を監視観察し、無人航空機の操縦者に安全運航の実施を協力する。

- 3.6 运营人，是指从事或拟从事航空器运营的个人、组织或者企业。

運営者は、航空機の運営または運営する予定の個人、組織または企業である。

- 3.7 控制站（也称遥控站、地面站），无人机系统的组成部分，包括用于操纵无人机的设备。

制御ステーション（別称リモートコントロールステーション、地上~~地面~~ステーション）は、無人航空機システムの一部であり、無人航空機を操縦する設備も含む。

- 3.8 指令与控制数据链路（C2: Command and Control data link），是指无人机和控制站之间为飞行管理之目的的数据链接。

~~指令と~~コントロールデータリンク（C2: Command and Control data link）は、無人航空機と制御ステーションの間で飛行管理を目的とするデータリンクのこと。

- 3.9 视距内运行（VLOS: Visual Line of Sight Operations），无人机驾驶员或无人机观测员与无人机保持直接目视视觉接触的操作方式，航空器处于驾驶员或观测员目视视距内半径 500 米，相对高度低于 120 米的区域内。

目視~~範囲~~内運航（VLOS: Visual Line of Sight Operations）は、無人航空機操縦者或いは無人航空機監視観察員が目視範囲内で無人航空機を操縦する運航方法で、無人航空機は操縦者或いは監視観察員の目視範囲半径 500 メートル、相対高さ 120 メートル以内の範囲である。

- 3.10 超视距运行（BVLOS: Beyond VLOS），无人机在目视视距以外的运行。

目視~~範囲~~外運航（BVLOS: Beyond VLOS）は、無人航空機を目視~~範囲~~外で運航することである。

- 3.11 融合空域，是指有其它航空器同时运行的空域。

融合空域は、一般航空機が同時に運航している空域

- 3.12 隔离空域，是指专门分配给无人机系统运行的空域，通过限制其它航空器的进入以规避碰撞风险。

隔離空域は、無人航空機専用の空域で、衝突リスクを回避するために一般~~そのた~~航

空機を制限する。

- 3.13 人口稠密区，是指城镇、村庄、繁忙道路或大型露天集会场所等区域。感想人口密集区は、町、村、混雑した道路、大規模な開放集会など。
- 3.14 重点地区，是指军事重地、核电站和行政中心等关乎国家安全的区域及周边，或地方政府临时划设的区域。  
重点地区は、軍事地域、原子力発電所と行政センター等国家安全保障に関わる地域およびその周辺地域、または地方政府の一時的に使う地域。
- 3.15 机场净空区，也称机场净空保护区域，是指为保护航空器起飞、飞行和降落安全，根据民用机场净空障碍物限制图要求划定的空间范围。  
空港クリアランスエリア、空港クリアランス保護区域とも呼ばれ、航空機の離陸、飛行と安全着陸を保護し、民間空港のクリアランス障害物制限図の要件によって区切る。
- 3.16 空机重量，是指不包含载荷和燃料的无人机重量，该重量包含燃料容器和电池等固体装置。  
乾燥重量は、燃料容器や電池などの固体装置を含む負荷や燃料を含まない無人航空機の重量を指している。
- 3.17 无人机云系统（简称无人机云），是指轻小型民用无人机运行动态数据库系统,用于向无人机用户提供航行服务、气象服务等，对民用无人机运行数据（包括运营信息、位置、高度和速度等）进行实时监测。接入系统的无人机应即时上传飞行数据，无人机云系统对侵入电子围栏的无人机具有报警功能。  
無人航空機クラウドシステム（略称無人機クラウド）は、軽小型民用無人航空機の運航データベースシステムで、無人航空機ユーザーに運航サービス、気象サービス等を提供し、民用無人航空機運航データ（運営情報、位置、高度、速度など）に対してリアルタイムモニタリングを実施する。システム利用の無人航空機は即時飛行データをアップロードし、無人航空機クラウドシステムは電子フェンスに侵入した無人航空機に対しアラームをする。
- 3.18 电子围栏，是指为阻挡即将侵入特定区域的航空器，在相应电子地理范围中画出特定区域，并配合飞行控制系统、保障区域安全的软硬件系统。  
電子フェンスとは、特定~~な~~区域に侵入しそうな無人航空機を阻止するため、~~相對~~の電子地理範囲中に、特定~~な~~区域を設定し、飛行コントロールシステムと連携して保障区域安全のシステムを保障する。
- 3.19 主动反馈系统，是指运营人主动将航空器的运行信息发送给监视系统。  
自主フィードバックシステムは、運営者が自主的に航空機の運航情報を監視システムに送ることを指している。
- 3.20 被动反馈系统,是指航空器被雷达、ADS-B 系统、北斗等手段从地面进行监视的系统,该反馈信息不经过运营人。

受動的フィードバックシステムは、航空機がレーダー、ADS-B システム、北斗等で地面から監視されるシステムを指している、該当情報は運営者に送らない。

4. Responsibility and authority of the pilot in command.
  - 4.1 The pilot in command of a civil UAS is directly responsible for the operation of that aircraft, and he has the final authority.
    - 4.1.1 When there is an emergency during flight:
      - a. The pilot in command should take appropriate emergency measures to the prevailing circumstances.
      - b. If emergency measures should be taken immediately during flight, the pilot in command of the UAS can deviate from any provisions in this advisory circular, provided such deviation does not endanger any people on the ground,
    - 4.1.2 In situations involving circumstances that might endanger ground personnel, the pilot in command may take measures that deviate from local regulations and procedures shall report to the local authority immediately.
  - 4.2 The pilot in command shall report any aircraft accident that resulted in heavy injuries or death of ground personnel or/and severe loss of ground property to the nearest civil aviation authority or government in the fastest and available manner.
5. Civil UA pilot qualification and certification

Based on the category of UAS, the civil UA pilot should meet the requirements regarding the licenses, certificates, ratings, training, examinations, inspections and aviation experience in advisory circular of “The Temporary Pilot Management Regulations for Civil UAS” (AC-61-FS-2013-20).
6. Requirements of the manual of civil UAS
  - 6.1 Use proper languages that the pilot in command, pilot and observer can understand correctly.
  - 6.2 Manuals of Category V aircrafts shall contain agricultural requirements and specifications.
7. 禁止粗心或鲁莽的操作任何人员在操作民用无人机时不得粗心大意和盲目蛮干，以免危及他人的生命或财产安全。  
他人の生命または財産の危険にならぬように、不注意或いは無謀的な操作を

禁止する。

8. 摄入酒精和药物的限制民用无人机驾驶员在饮用任何含酒精的液体之后的 8 小时之内或处于酒精作用之下或者受到任何药物影响及其工作能力对飞行安全造成影响的情况下，不得驾驶无人机。  
アルコールと薬物の摂取に関して、無人航空機の操縦者はアルコールを摂取した後の 8 時間以内、またはアルコールが抜けていない状況で、または何かの薬物で仕事能力に影響して飛行安全に影響される可能性がある場合、無人航空機の運航を禁止する。
  9. Preflight preparation  
Before every flight, the pilot in command should:
    - 9.1 Know the meteorological conditions in his task area;
    - 9.2 Make sure that the operating place meets requirements in UAS manuals;
    - 9.3 Check the condition of all units, fuel or batteries, communication signals to ensure that the UAS satisfies the operational requirements. For users of UACS, make sure that UAS connects to UACS.
    - 9.4 Formulate a plan for handling emergency situations. This plan should include information about alternative landing point.
  10. Restricted Area  
The pilot in command must make sure that UAS operations meet the requirements of the relevant departments and avoid entering the restricted area:
    - 10.1 The UACS users should conform to the restrictions in system;
    - 10.2 For users that are not registered in UACS should inquire the concerned/relevant departments about the information of the restriction area. The UA should not enter airport obstacle limitation surface, forbidden zone, unapproved restriction area and danger area.
  11. VLOS operations
    - 11.1 The pilot or observer must operate an UA within the visual line of sight;
    - 11.2 The pilot must operate an UA during daytime (official sunrise to official sunset, local time);
    - 11.3 The pilot must give right of way to other aircrafts.
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- 12. BVLOS operations.
  - 12. BVLOS の運用
  - 12.1 The pilot must give right of way to other manned aircrafts;
  - 12.1 パイロットは他の航空機と同様、右方優先を守ること;
  - 12.2 If the flight endangers other users in the same airspace, the property and people on the ground, or if the UA can't operate in accordance with the requirements in this advisory circular, the pilot shall stop flying immediately;
  - 12.2 もし、同じ空域の他のユーザーや地上の所有物、人に危険を及ぼす飛行が生じた場合、或いは無人機がアドバイザリーサーキュラー（CAA 刊行）に沿わない状態に陥った場合、パイロットは直ちに飛行を停止させること;
  - 12.3 The pilot shall be able to control his UA at any time. If the UA is operated in autonomous mode, it should be overridden by the pilot at any time.
  - 12.3 パイロットは常時、無人機をコントロールできる状態にいること。もし無人機が自律飛行をしている場合、パイロットによっていつでもそれを無効にできる状態にあること。
  - 12.3.1 Once a UA is uncontrollable, the pilot shall execute corresponding plans which include the following:
    - a. UA emergency recovering procedure.
    - b. UACS user shall upload the flight data and other related information in the system;
    - c. For user not registered in UACS, it must contact the air traffic control service department and report the name list of the responsible persons according to the procedure above.
  - 12.3.1 無人機がコントロール不能に陥った場合、パイロットは下記対応策を実行すること:
    - a. 無人機緊急回収手順に沿う
    - b. UACS (クラウドサービス) に接続している場合はフライトデータとその他システムの関連情報をアップロードする;
    - c. UACS に接続されていない場合、航空管理局に連絡を取り、上記手順に則って責任者の名簿を報告すること
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- 13. Requirements of instruments, equipment and marks for UAS operations
  - 13.1 Operating UAS should equipped with effective air-ground C2 link;
  - 3.2 UA real time flight data which includes the position, altitude and speed should be displayed or indicated on the ground station or control equipment.
  - 13.3 UA should be equipped with a data record system for recording, replaying and

analyzing each flight data system, which should be kept for at least three months (applicable for categories III, IV, VI and VII).

- 13.4 For UACS users, the UA should be meet the requirements of the interface specification of UACS;
- 13.5 For operators who have not registered in UACS, the operating UA should be marked with its type, serial number, name of owner and contact information, thus the UA owner or the operator can be contacted quickly in case of any crash situation.

#### 14. Management

Since various UAS operated in different ways and they use much more airspace than manned aircrafts in China, it is therefore necessary to implement categorical management. The management of light and small unmanned aircrafts could be done in the following ways due to the state of technology of UAS.

##### 14.1 Operation management of civil UA

###### 14.1.1 Electronic fence

- a. For UAS of categories III, IV, VI and VII, the electronic fence should be installed and used.
- b. For UAS of categories II and V operated in key areas or airport clear zone, the electronic fence should be installed and used.

###### 14.1.2 Civil UA registered in UACS

- a. UAS of categories II and V operated in key areas or airport clear zone should be connected to UACS or send the position of ground control equipment to UACS at intervals of at least once per minute;
- b. UAS of categories III, IV, VI and VII should be connected to UACS and report its flight date once per second in populous areas and once per thirty seconds in low population density areas.

- c. UAS of category IV, should be equipped with passive feedback systems.

###### 14.1.3 Civil UA not registered in UACS

Before each operation, the operator should submit an application to the authority for operation approval and provide an effective surveillance method.

##### 14.2 The management of UAS operators

According to “Civil Aviation Law of PRC”, the operator of a civil aircraft shall be covered by insurance against liability for third parties on the surface or obtain corresponding guarantee.



15. Requirements for the UACS provider
  - 15.1 The UACS provider shall meet the following requirements:
    - 15.1.1 The provider has set up an independent organization.
    - 15.1.2 The provider has established QMS (Quality Management System) and SMS (safety management system) of UACS;
    - 15.1.3 The provider has built a database of UA pilots, operators and the dynamic database of UAS operation, in order to manage certificate holders conveniently and monitor operation status timely.
    - 15.1.4 The provider shall maintain contact with corresponding control authority airport and provide them with data input interface; meanwhile the provider shall give airspace application information service for users as required.
    - 15.1.5 The provider shall establish a data sharing mechanism with relevant departments and open a key data sharing platform with other UACS providers.
    - 15.1.6 The provider shall adhere to laws and regulations of local NPC or government and obey announces and no-fly orders released by military for national security consideration.
    - 15.1.7 The provider shall obtain approval for trial operation from aviation authority/CAAC;
  - 15.2 The provider is required to update his system regularly, to maintain data reliability, low delay, effectiveness and user-friendliness for the UA operators.
  - 15.3 The provider must report to the aviation authority every six months. The report shall contain information about the number of aircrafts registered in UACS, the number of operators, technology evolution, difficulties, problems, accidents and incidents.
16. Agricultural UA operating requirements
  - 16.1 The flight operation of agricultural UA specifies to the following flights:
    - 16.1.1 Spraying pesticides;
    - 16.1.2 Spraying any other materials for fertilizing, soil treatment, crops reproduction and insect control;
    - 16.1.3 Working on spraying missions that will directly affect agriculture, gardening or forest protection, spreading insects is excluded.
  - 16.2 Personnel requirements
    - 16.2.1 The operator can appoint one or more persons responsible for the work. The person responsible should hold a civil unmanned aircraft certificate that has

corresponding ratings. In addition, the persons responsible shall be trained and shall have knowledge or experience on the following areas as mentioned below.

a. Theoretical knowledge;

(1) The necessary procedures before flight, including operation area investigation;

(2) The knowledge on dealing with toxic drugs and the methods to handle used containers of toxic drugs;

(3) The effect and influence of pesticides and chemicals to human beings, animals and plants. The emphasis lies on the regularly used drugs in operation and the precautions for using toxic drugs;

(4) The main symptoms of human beings after poisoning, necessary emergency measures to be taken and positions of hospitals;

(5) The performance and operating restriction of UA;

(6) Safely flying and operating procedures.

b. Flight proficiency. The person responsible should be capable of UA taking off, en route flying and finish flying task with maximum take-off weight;

16.2.2 The person responsible shall give theoretical training, skill training and tests specified in 16.2.1 to personnel who are involved in spraying. The person responsible shall specify the tasks and responsibility in operation;

16.2.3 The person responsible is in charge of spraying, and other personnel should follow the instructions of the responsible person:

16.2.4 For the independent personnel of spraying operation or the personnel whose UA operating altitude is above 15 meters, a UA pilot certificate is mandatory.

16.3 Spraying restrictions

Measures should be taken to ensure the safety of people and property on ground.

16.4 Record keeping

The operator who conducts spraying shall maintain and keep the following information at main operating base:

16.4.1 The name and address of each person for whom the services are provided;

16.4.2 The service date;

16.4.3 The name and quantity of the material sprayed during each flight;

16.4.4 The name, address and certificate number (if applicable) of the pilot who conducts spraying; the date that the person responsible met the theoretical and skill requirements.