Defence Infrastructure Organisation

Service Delivery Training

J7 Training

STANDING OPERATING INSTRUCTION Number: J7 No 33

Subject:
USE OF COMMERCIAL REMOTELY PILOTED AIR SYSTEMS (RPAS) ON THE DIO SD TRAINING ESTATE

Summary/Purpose
This SOI explains the regulations and responsibilities applicable to any units that wish to employ Commercial Off the Shelf (COTS) RPAS on the training estate. These regulations are NOT applicable to Beyond Visual Line of Sight (BVLOS) RPAS operations.

Policy/Key Principle
To ensure that the use of RPAS on DIO SD Trg estate is compliant with the MAA regulations and that RPAS are safe to operate and are being operated safely.

ISR Platforms. All in-service Intelligence, Surveillance and Reconnaissance (ISR) platforms such as Watchkeeper, Desert Hawk, Raven and any 'nano' RPAS are already compliant with the requirements of Reference A. Any new ISR platforms will be subject to the categorization process, which will be the responsibility of the relevant project team and user.

Useful References
A. RA 1600-Remotely Piloted Air Systems (RPAS).
B. RA 1020 Roles & Responsibilities: Aviation Duty Holder (ADH) and ADH-Facing Organisations
C. RA 2321 - Class I(b) Remotely Piloted Air Systems - Operator Qualifications and Requirements
D. Civil Aviation Publication (CAP) 722 - Unmanned Aircraft System Operations in UK Airspace

Supporting DIO Process Maps
NIL

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Introduction

1. There are now many low-cost RPAS[1] systems available through commercial outlets which are potentially of great benefit to both civilian companies and military organisations. However, the operation of RPAS by unqualified personnel, or without the appropriate technical assurance, may be hazardous to other aviators or to personnel in the vicinity. It is NOT therefore permissible for any person to fly an RPAS on MOD land without the appropriate authorisation. The Civil Aviation Authority (CAA) has produced regulations for commercial use of RPAS - these are also used as the template for the Military Regulatory Publications (MRPs). This SOI is published for the guidance of Regional Commanders, Training Safety Officers and Industry Partners who may receive requests to operate RPAS within their area of responsibility.

2. RPAS use by military or Civil Service staff on or over MOD land is considered to be within the Defence Air Environment[2] (DAE) and therefore remains strictly regulated in accordance with the MOD policy regarding Risk to Life (RtL) and the obligation to mitigate risk to As Low As Reasonably Practicable (ALARP). Essentially, each military-owned RPAS must be 'categorized' by the MAA, all risk is to be managed by a Duty Holder and personnel are to be appropriately trained. Paragraphs 4 – 9 provide further details.

3. The use of civilian-owned and operated RPAS in the Defence environment now becoming commonplace. The operation of RPAS by civilian operators falls outside of the application of the MRPs, therefore, in compliance with the CAA regulations, a Permission for Commercial Operations (PfCO) (previously known as a Permit for Aerial Work) is issued to approved commercial operators. All contracted operators must be in possession of this certificate.

Visual Line Of Sight (VLOS) Flying Regulations

4. All training areas are approved for COTS RPAS flying, however, such platforms are to be flown within Visual Line Of Sight (VLOS). There is **no requirement** for NOTAMs to be submitted for these events. The regulations, of which the operators should already be aware, are:

a. The operator is legally responsible for the safe conduct of each flight and must ensure that the RPAS is not only safe to fly but is flown in a manner that does not endanger anyone or anything.

b. The RPAS should remain in sight at all times (normally taken to be within 500 m horizontally and 400 ft vertically).

c. The RPAS must not be operated:

(1) Over or within 150 m of any congested or restricted area. There are a number of useful resources online for identifying such areas.

(2) Over or within 150 m of an organised open-air assembly of more than 1,000 persons.

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[1] It is recognised that the terms UAS/UAV/Drone and RPAS are used interchangeably to describe unmanned and remotely piloted aircraft systems. For the purpose of regulation the MAA uses the term RPAS and will be similarly referred to in future DIO SD Trg documentation.

[2] The Defence Air Environment encompasses all organizations and activities related to the operation and support, both engineering and supply, of military-registered aircraft, including Military Registered Civil-Owned Aircraft (MRCOA), or airborne equipment by, or on behalf of, the MOD.

(3) Within 50 m of any vessel, vehicle or structure which is not under the control of the person in charge of the aircraft.

(4) Within 50 m of any person except during take-off or landing, the aircraft must not be flown within 30 m of any person except for the person in charge of the aircraft.

MILITARY USE REQUIREMENTS

Equipment Procured for Military Use by Military/Civil Service Staff

5. The revised regulations have introduced a classification for COTS RPAS weighing 200g – 20kg (known as Class 1(b)), which includes most of those systems now obtainable through commercial outlets. Any units wishing to procure a Class 1(b) RPAS in support of activities on DIO training estate are to comply with References A to D, as applicable, to achieve the appropriate categorization. This process requires completion of an extensive Safety Checklist (Annex B to Reference A). The Checklist provides the Safety Case for the continuous safe operation of the RPAS and endorsed categorization will only be awarded upon satisfactory completion of all sections. The Checklist is entirely the responsibility of the user, who should expect a turnaround time of at least 30 days from submission to MAA endorsement. Certain platforms, such as Phantom IV, have already been categorized, which will significantly reduce the workload for applicants.

Duty Holder Responsibility

6. In addition to the categorization of the RPAS, responsibility regarding RtL for the systems must also be in accordance with Reference B. A Class 1(b) Duty Holder (DH) must be nominated, who should be at least OF4 or B2 Civil Servant for a non-Service TLB. The DH will be answerable to a designated OF5/B1 Capability Owner within the chain of command. The Capability Owner is responsible to the Senior Duty Holder (TLB Head) for the risks associated with the operation of the RPAS and is responsible for ensuring that the systems are operated in accordance with the Safety Checklist. Due to the lower RtL, no Operating Duty Holder (ODH) is required.

7. In most cases, the unit commander may be appointed as the DH as they already own the risk to personnel under their command. Due to the non-core aviation use of RPAS, DHs do not need to have previous aviation experience in order to fill the role, but should have sufficient training (via an MAA course or briefing) to understand the risk being held. The MAA may stipulate this requirement as part of the categorization process.

SQEP[3] Requirements

8. **Senior Operator.** A Subject Matter Expert (SME), known as the Senior Operator, is required who should have completed an approved RPAS training package that is either conducted by a Nationally Qualified Entity (NQE) or is a Defence Systems Approach to Training (DSAT) compliant course. He is to have relevant RPAS experience will be the focal point for all RPAS issues within that particular unit/brigade.

[3] SQEP – Suitably Qualified & Experienced Personnel

9. **Class 1(b) RPAS Operator Qualification and Competence.** At present, there are no RPAS pilot licenses recognized in aviation law. However, it is essential that pilots of any aircraft have at least a basic understanding of the applicable regulations, in particular the Air Navigation Order and Rules of the Air Regulations. Therefore, the CAA require any potential RPAS operator (mil or civil) to demonstrate pilot competence before any operating permission is issued. All RPAS operators, as per Reference C, are to comply with the following training requirements:

a. Class 1(b) RPAS operators should complete the classroom and flying assessment elements of a training course provided by a Civil Aviation Authority (CAA) approved National Qualified Entity (NQE) or an equivalent Defence sponsored course as listed in 2017DIN07-008.

b. Organizations seeking categorization of Class 1(b) RPAS should outline in their Categorization Submission how operators will gain experience in order to successfully complete a flying assessment.

c. In accordance with their Safety Checklist, Class 1(b) operators should:

(1) Maintain a level of competence appropriate to the tasks required to be conducted.

(2) Maintain a record of RPAS training and flying activity.

(3) Ensure familiarity with all publications and processes required to safely operate the RPAS.

Exemptions

10. There are certain exemptions to the requirements of this document.

a. **ISR Platforms.** This SOI does not apply to RPAS such as Watchkeeper and Desert Hawk/Raven, which are already compliant with the current regulations, and may continue to operate in accordance with their Release to Service authorisation. 'Nano' systems, such as Black Hornet, at less than 200g, are broadly acceptable on all ranges and exempt from further mitigation.

b. **Use of Class 1(b) RPAS by Foreign Forces.** The MAA do not regulate foreign aircraft or RPAS, therefore it is incumbent upon the Responsible Officer (Range/Exercise Controller) to ensure that the RPAS is approved for use by the visiting nation's aviation authority and that the appropriate assurance documentation is readily available. This should be equal to, or exceed, the safety standards of an equivalent MAA-approved RPAS. Any requirements for Diplomatic Clearance to fly the platform should also be considered.

Assurance

11. The requirements of the References must be adhered to in order to assure both DIO SD Trg and the MAA that the systems being used are safe to operate and being operated safely. Failure to comply with the MAA regulations may render an individual accountable and potentially liable for any incident that might occur. Compliance is the absolute responsibility of the RPAS users and their Safety Checklist is the means of demonstrating to the MAA and the DH that they have a full understanding of the safe operation of the RPAS. An example of the procedures for RPAS operations on ranges is included at Annex A for RAUs to include into their Standing/Range Orders.

This is a template only and should be tailored as required to reflect individual situations.

CIVILIAN USE REQUIREMENTS

Use of Contracted Civilian RPAS Companies for Military Tasks

12. The military regulations do not apply to civilian operators, who must therefore follow the CAA methods of Assurance. All civilian operators working under contract to the MOD must be in receipt of a 'Permission for Commercial Operations (PfCO) or Permission for Aerial Work (PfAW) certificate. This confirms that the company and its RPAS operators are trained and competent to fly. Reference D contains full details. However, the MOD continues to owe a duty of care to its employees and other potentially affected third parties in the contracting of work to civilian companies, based on its statutory and common law duty of care. Contracting officers or HoE should review a civilian organisation's CAA permission for RPAS work, including the risk assessment and insurance, prior to contracting or permitting them to operate. If a civilian RPAS operator is to be contracted for activity that is not within the scope of their CAA PfCO or PfAW, then the contracting entity should contact the MAA for advice.

3rd Party Income Generation (3PIG).

13. Civilian companies may be granted permission to use Defence property for 3PIG evolutions under existing licensing rules and the CAA regulations as per Para 12 above. This allows for commercial use of the training estate for non-military purposes. It also includes use by tenant farmers in the execution of their work under the conditions specified in their licence. Again, from Para 12, the MOD continues to owe a duty of care to its employees and other potentially affected third parties. All 3PIG events require the organiser to be in possession of the appropriate DIO Licence (issued by LSS). 3rd Party insurance is mandatory as required under the licence and the RPAS are to be flown in accordance with CAA regulations (see below).

14. All training areas are approved for COTS RPAS flying. To ensure that the event is separated from other aircraft operations, a Restricted Operating Zone (ROZ) should be established. This is simply a designated area to be avoided by other aircraft during the times that the RPAS are being used. It should be a minimum radius of 1000m from the operating point and up to 1000ft above ground level. Prominent landmarks of similar distances may also be used. Alternatively, if there are no expected aircraft movements, the whole Air Danger Area may be designated as active for the period. In either case, there is **no requirement** to NOTAM the Danger Area for the event.

15. Where RPAS training of new pilots is taking place, instruction may only be given by a qualified person who is authorised to do so under the terms of his CAA permissions/NQE licence or equivalent military qualification.

16. If the operator is undertaking commercial work (ie being paid for operating the RPAS) then it must be conducted in accordance with the CAA permission granted in the PfCO/PfAW.

Additional Considerations

Use of Private RPAS

17. The use of private RPAS on the training estate is forbidden within published Air Danger Areas or wherever there is any provision for aviation activity, except by authorized clubs, who are to be in possession of a DIO Licence, Form 5662 – Occasional Use of MOD Recreational Facilities. The use of COTS RPAS outside of these areas is at the discretion of the Head of Establishment, who has a legal duty of care to protect the health and safety of personnel under their charge. Instructions should be included in Unit Standing Orders. The RPAS are to be flown in accordance with CAA regulations (Reference D).

Data Protection and Privacy

18. If the RPAS has a camera attached then care must be taken to ensure that privacy laws or the Data Protection Act 1998 are not breached. There is no specific legislation in European Member States on the data protection implications of RPAS use. However, in certain circumstances, photographs and film may constitute personal data, particularly if they are held along with other personal data about the individual, and may even be said to constitute sensitive personal data. Particular attention should be paid by commanding officers of cadet units where filming may include accommodation sites or ablution facilities. There are specific offences, under the Sexual Offences Act 2003, that could be used against the MOD where voyeurism may be suspected, therefore, where any doubt exists, units should consider conducting a Privacy Impact Assessment.

Privacy Impact Assessment (PIA)

19. A PIA is a process for evaluating and identifying the potential effects upon privacy and data protection compliance. It examines how any detrimental effects might be overcome and to ensure that activities comply with data protection principles. The Data Protection Act 1998 does not oblige organisations to conduct PIAs, but conducting a PIA is a good practice for a RPAS operator to help flag issues that may otherwise have been missed. The PIA will allow it to make changes to the way it intends to process or otherwise handle personal data to reduce or manage any risks to privacy. It is possible to show by a PIA that an organisation assessed the risks of processing personal data, took measures to mitigate those risks, or otherwise identified the reasons why it decided to proceed with certain projects - despite data protection risks being present.

Incident Reporting

20. All incidents involving RPAS are to be reporting by a Defence Air Safety Occurrence Report (DASOR) using the Air Safety Information Management System (ASIMS) available via the link. Range staff should also record the incident in the Untoward Occurrence Log.

Summary

21. It is appreciated that the processes above may initially frustrate many potential users. However, all RPAS flying regulations in respect of MOD property are clearly defined in the References to ensure that the required standards of safety are maintained. RAUs should question the authenticity of activities if non-compliance is suspected. It is unacceptable for any unit to use an RPAS without the appropriate authorisation in accordance with the MAA or CAA Regulations.

Enquiries

22. All enquiries relating to this SOI should be addressed to:

Lt Cdr R I Carter RNR
SO2 Air Safety
Email:DIO SD Trg-HQ TrgSafety Air
Civ: 01985 222849
Mil: 94381 2849

Annex:

A – EXAMPLE OF THE REGULATIONS FOR THE USE OF CLASS 1(b) REMOTELY PILOTED AIR SYSTEMS (RPAS) ON THE TRAINING AREA (for inclusion in Standing Orders as required)

Annex A to
SOI J7 No 33
Dated 27 Apr 17

EXAMPLE OF THE REGULATIONS FOR THE USE OF CLASS 1(b) REMOTELY PILOTED AIR SYSTEMS (RPAS) ON THE TRAINING AREA

Reference:

A. MAA Regulatory Article (RA) 1600
B. MAA Regulatory Article (RA) 1410

Introduction

1. The operation of all RPAS within the Military Air Environment (MAE)/Defence Air Environment (DAE) is strictly regulated by the Military Aviation Authority in accordance with Reference A. These articles are to be read in conjunction with Standing/ Range Orders. Provided the requirements of Reference A are completed, ranges may operate RPAS inside the boundary of the training area. The RAU is the overriding authority for the control of movement within the training area.

Restricted Operating Zone (ROZ)

2. To ensure the maintenance of Air Safety, all RPAS should be flown in airspace which is planned for exclusive use by the RPAS. Within larger training areas, RPAS operations may be limited to a Restricted Operating Zone (ROZ). In the absence of any defined boundaries, a temporary ROZ, which is a 3-dimensional area, is to be established within the training area during the planned RPAS operating times. This should either be a radius distance from the pilot's control area or physical landmarks. The ROZ should be no higher than 1000ft above ground level (AGL). This is to allow for safe separation and coordination with other air users. In the event of an incursion into the ROZ, all RPAS are to land immediately and remain on the ground until the aircraft is clear.

Conduct of RPAS Flying

3. RPAS are to be flown in accordance with the operating limits specified below. The RPAS Officer in Command of Practice (RPAS OIC-P) and RPAS Pilot (RPAS-P) must be SQEP to conduct fly operations in accordance with Reference A. The RPAS OIC-P and RPAS-P must have liaised and de-conflicted (through the RAU – see Para 8) with all other training area users before RPAS flights begin.

Operating Limitations

4. The following operating limitations should be adhered to unless a safety case to extend the limits has been approved by the MAA and Class 1(b) DH as articulated in the Letter of Endorsed Categorization:

a. Flown to a height of no more than 400ft AGL.

b. Operated within Visual Line of Sight (VLOS) of the Operator up to a maximum range of 500 m.

c. Not operated over or within 150m of any congested area.

d. Not operated within 50m of any person, vessel, vehicle or structure not under the control of the operator except during take-off or landing when this limit may be reduced to 30m for the operator or any other individual necessarily present in connection with the launch or recovery of the RPAS.

Duties of the RPAS OIC-P

5. On arrival at the training area, the RPAS OIC-P is to:

a. Provide the RAU with a Statement of Range Practice (SORP) that must contain the following information:

(1) Trace showing the RPAS Operating Area – The RPAS OIC-P must also submit a trace of the intended operating area in accordance with the RAU.

(2) Appointments, qualifications, competency and currency.

(3) RPAS Categorization Authorization.

(4) Flight Safety plan.

(5) Emergency Flight Termination Plan.

(6) Post Crash Management procedures.

(7) Medical and emergency procedures.

(8) Confirmation that Max operating height of the RPAS is 400ft AGL.

b. Enter details in the unit flying log.

c. Confirm flying times.

d. Ensure that all other units on the training area are aware of flight timings and the operating area.

e. Be able to communicate with the RAU.

6. On arrival at the launch site, the RPAS OIC-P is to:

a. Establish communication with the RAU.

b. Ensure that all personnel involved in the activity are briefed on the intended use of the RPAS and any restrictions to personnel movements.

c. Obtain permission from the RAU to launch the RPAS.

d. Inform the RAU that the RPAS is launching and estimated time of flight.

e. Inform the RAU when the RPAS has been recovered.

7. On completion of flying, the RPAS OIC-P is to:

a. Inform the RAU that the RPAS is on the ground and that all flying is complete for the day.

b. Ensure that the launch and recovery site is left clean and tidy.

c. Enter details in the unit flying log.

Coordinating Instructions

8. The RAU is responsible for the coordination of all activities. The following points should be addressed:

a. The RPAS OIC-P is to provide details of the requirements to the RAU in advance (in line with the RAU policy).

b. The RPAS OIC-P must ensure that he is fully aware of the emergency procedures for injury to personnel or incidents on the training area.

c. Any loss or damage of an airframe in must be reported in accordance with the relevant MAA Regulatory Articles. The RAU is to be informed immediately of any incidents. In the event of a serious accident/incident, the Post Crash Management Plan (PCMP) will be directed from the RAU.

d. All RPAS activities must be co-ordinated with other air users by the RAU. All aircrew are to be briefed on the ROZ/RPAS activity and the following criteria applied:

(1) Aircraft should remain well clear of the ROZ by applying their own visual separation as required to maintain flight safety.

(2) No aircraft is to enter an active RPAS ROZ.

(3) The ROZ should not be overflown by other aircraft where avoidable.

e. If communication with the RAU is lost, the RPAS must be landed immediately.

f. Due to the VLOS requirement in Para 4b above, air sentries are not required.

g. When Live Fire Tactical Training (LFTT) is in progress, the RPAS is permitted to fly over the Range Danger Area (RDA) in support of the training serial. If a flight is terminated and lands inside the RDA, the RPAS must remain in situ until cleared by Range Control to be recovered.

System Failure

9. The RPAS OIC-P is to ensure that the Risk Assessment includes robust mitigation such that, in the event of a failure of the control system, the RPAS will not cause significant injury to personnel.

Air Incursion

10. In the event of any aircraft infringing the ROZ, the RPAS OIC-P must terminate flying immediately and report the matter to the RAU. The RAU is to attempt to identify

the aircraft. The incident is to be reported using a Defence Air Safety Occurrence Report (DASOR) on the Air Safety Information Management System (ASIMS) in accordance with Reference B. The RPAS OIC-P is to report to Range Control to seek approval to re-launch.

Administration

11. Exercise administration may be carried out at the launch and recovery site.

12. Security of the launch and recovery site is a unit's responsibility and must be carefully controlled.

Medical

13. Units are to ensure they provide medical cover consistent with the training that is being carried out and the hazards identified in their risk assessment. Units must ensure the tasking of those providing medical cover enables them to respond immediately to any accident. All personnel on the exercise should be aware of the medical cover provided within the unit and how to activate it if required. Guidance on medical cover is contained in Pamphlet 21. Medical cover must not be below that recommended.