

IAATO Statement on the use of Remotely Piloted Aircraft Systems (RPAS)

The term Remotely Piloted Aircraft System (RPAS)¹ is used for any remotely piloted aircraft.

IAATO accepts the use of RPAS by their members, provided the following criteria are met:

- Recreational RPAS flights are not allowed in coastal areas;
- Commercial RPAS flights are not allowed in coastal areas unless the activity is covered by the IAATO Operator's permit/authorisation and/or the RPAS pilot has approval from the IAATO Operator with whom they are traveling, regardless of any personal authorisation they may have;
- RPAS flights for navigational safety or scientific purposes are allowed, if conducted with permission/authorisation from a competent authority in accordance with the Environmental Protocol and its Annexes;
- RPAS flights are allowed at deep field sites, including coastal areas bound by ice shelves, if conducted with the permission/authorisation from a competent authority in accordance with the Environmental Protocol and its Annexes.

Members who conduct RPAS flights should have Standard Operating Procedures in place that are specific to RPAS operation.

Any use of RPAS must be included in the operator's permit/authorisation conditions e.g. Advance Notification, Environmental Impact Assessment (EIA) and Waste Management Permit (WMP), where relevant.

ATCM Environmental Guidelines for operation of Remotely Piloted Aircraft Systems (RPAS) in Antarctica (v 1.1) (Resolution 4 (2018) Annex)² must be adhered to where applicable.

The best practice guidelines presented in the peer-reviewed article by Hodgson and Koh (2016) should be reviewed by all parties involved with RPAS operations³.

Points for Consideration for Operators' Standard Operating Procedures

In addition, for those instances where RPAS flights are allowed, Members agreed to provide the following information as points for consideration when setting up the activity.

1. Legal requirements⁴

- 1.1. The tour operator and pilot(s) must be familiar with, and adhere to, Antarctic Treaty System agreements and National legal requirements including Waste Management Permits if required.⁵
- 1.2. Waste Management procedures should be considered in the event that a RPAS is lost. Note that the batteries required to fly RPAS are considered hazardous waste.

2. General considerations

- 2.1. Consider the relative environmental advantages and disadvantages of RPAS and other alternatives, and consider the environmental characteristics of the RPAS and the values present at the proposed location(s) of operation, weighing both the benefits and environmental impacts of RPAS use.
- 2.2. Undertake detailed pre-flight planning, including thoroughly assessing the particularities of the operational site in advance of deployment, to ensure an appropriate understanding of its topography, weather and any hazards that may impact upon an environmentally sound operation. Where possible, carry out simulated flights using software tools.
- 2.3. Map out flight plans, prepare contingency plans for incidents or malfunctions, including alternative landing sites and plans for RPAS retrieval should there be a crash.
- 2.4. Assess the particularities and dynamics of the values that could be affected at the site. Where appropriate, adjust flight plans so that potential disturbance is minimised.
- 2.5. If you plan to operate RPAS from boats or ships, be aware of elevated risks of collisions with flying birds, that often follow ships, helicopters, air strips, station operations.

3. Flight Operations and Piloting of RPASs during the Expedition

- 3.1. All flights must be pre-approved by an authorised person such as the Expedition Leader or a designated ship's officer.
- 3.2. RPAS equipment should be inspected by an authorised person (e.g.EL) to ensure that it meets the requirements outlined in the authorised operating procedures.
- 3.3. RPAS should be of robust construction with suitable safety features for use in Antarctica. RPAS should be flown without any modifications to their manufacturer settings, unless it is specifically approved by the RPAS manufacturer.
- 3.4. The RPAS pilot should be well-trained and be able to demonstrate proficiency and experience in varied flying conditions in particular in regions of strong winds, the marine environment and wildlife rich zones.
- 3.5. If the RPAS will be operated in the immediate vicinity of the vessel's radar the risks should be discussed with the Captain before the flight takes place.
- 3.6. Every flight should adhere to the individual Members' Standard Operating Procedures and a risk assessment carried out in advance for the activity.
- 3.7. RPAS operations should comprise of an experienced pilot and at least one observer who is focused on the actual operation while the RPAS is in the air.
- 3.8. Pre-flight planning should include identifying an alternate landing area away from the launch site should the launch site become unusable. The authorised person/EL should be made aware of the alternate landing site before the flight begins.
- 3.9. A test flight should be undertaken to show the authorised person/EL that the equipment is fit for purpose, and the pilot is proficient in its operation.
- 3.10. Each flight should begin with an airborne test of the RPAS and its systems in an area away from people and wildlife. This should include testing the RPAS failsafe systems for auto-return. (It is noted that south of 65 degrees, in fjords, close to other radio frequencies, failsafe systems may be unreliable).
- 3.11. The pilot and designated observer should operate within Visual Line Of Sight (VLOS) with the RPAS at all times, unless the operation is approved by a competent authority to operate "Beyond Visual Line Of Sight (BVLOS).
- 3.12. The observer should maintain a lookout over the area for wildlife, people or other hazards, change in weather conditions and is responsible for monitoring signs of disturbance by wildlife.
- 3.13. The observer is responsible for maintaining VHF radio contact with the other staff (Authorised person/EL/ Bridge/ Communications team etc.). The pilot should not use a VHF radio while the RPAS is airborne.

4. Flight restrictions

- 4.1. Flights should be conducted in fair weather, with a cloud base sufficiently high that VLOS can be maintained with the RPAS at all times to ensure pilot control.
- 4.2. The pilot must have a way to monitor the flight battery voltage at all times during the flight. (It is noted that in colder conditions flight time will be controlled by battery life.)
- 4.3. Flights should not be started in winds exceeding the RPAS manufacturer's recommended maximum and should be aborted if winds exceed 25 knots.

5. Environmental restrictions

- 5.1. Be aware the lower the RPAS flight, the more likely wildlife will respond.
 - 5.1.1. RPAS should be flown at the maximum altitude practicable to achieve desired outcomes, and should not elicit a behavioural response.
- 5.2. RPAS should be launched, when possible, out of sight of wildlife.
- 5.3. RPAS should never be launched closer than 100 metres from wildlife.
- 5.4. RPAS must not be deliberately flown over or near to concentrations of wildlife on shore or at sea, or over concentrations of marine mammals and flying birds.
- 5.5. RPAS must not be flown over Antarctic Specially Protected Areas (ASPAs), Historic Sites and Monuments (HSMs) or Antarctic Specially Managed Areas (ASMAs) unless the activity is specifically allowed by the Operator's authorisation/permit.
- 5.6. RPAS must not be flown in the vicinity of operating scientific stations without the permission of the Base Commander.
- 5.7. If any wildlife indicates disturbance, unusual behaviour, or interest in the RPAS, the flight should be aborted immediately.
- 5.8. Keep RPAS out of the sight and hearing range of all nearby vessels at all times.
- 5.9. Any vessel involved in RPAS activities should notify other vessels within 5km of the RPAS Operation Site.

6. Post-flight Actions and Reporting

6.1. Actions

6.1.1. In the event of an unplanned forced landing

or crash, and mindful of the obligations for removal of waste from Antarctica in accordance with the Environmental Protocol (see Item 1.3), retrieve the RPA if:

- It is safe to do so;
- There is a risk that human life, wildlife or important environmental values are endangered, in which case notify the competent authority and as appropriate emergency procedures should be taken to neutralise the risk;
- The environmental impact of removal is not likely to be greater than that of leaving the RPA in situ;
- The RPA does not lie within an ASPA for which you do not have a Permit for entry, unless the RPA poses a significant threat to the values of the ASPA in which case notify the competent authority and as appropriate emergency procedures should be taken to neutralise the risk.

6.1.2. If a lost RPA cannot be retrieved, notify the competent authority and IAATO, providing details of the last known position (GPS coordinates) and the potential for any environmental impacts.

6.2. Record Keeping and Reporting

6.2.1. A log of all flights must be maintained, including location, length of flight, weather conditions, any crashes or unexpected landings.

6.2.2. RPAS flights must be recorded on the PVR (post-visit report), including the detail above and if there was any disturbance to wildlife.

6.2.3. Post-activity reporting should be completed in accordance with the EIA and/or permitting associated with the activity. Consider including details of any environmental impacts and consider how such impacts may be avoided in the future. Where practicable, consider using a standard format to report this information (eg, see forms provided in the COMNAP RPAS Operator's Handbook), and consider making the information accessible in order to improve RPAS environmental best practices in the future.

6.2.4. Make sure each individual flight is recorded appropriately in the Post Visit Reports (PVRs). This data is used to assist in discussions with Competent Authorities and National Programs.

¹ **A Remotely Piloted Aircraft System (RPAS)** is defined by the International Civil Aviation Authority (ICAO) (2015) as "A remotely piloted aircraft, its associated remote pilot station(s), the required command and control links and any other components as specified in the type design". A Remotely Piloted Aircraft (RPA) is "An unmanned aircraft which is piloted from a remote pilot station". RPAS are one class of Unmanned Aerial System (UAS), and they are often referred to as Unmanned Aerial Vehicles (UAVs), Unmanned Aircraft Systems (UAS) or 'drones'. In these guidelines RPAS is used for all types of remotely piloted drone systems and RPA is used to refer specifically to the aircraft itself.

- These guidelines are intended primarily for application to RPAS of small to medium size (≤ 25 kg in weight). While many of the principles and guidelines also apply to use of large RPAS (> 25 kg in weight), these operations may present additional potential risks in need of specific management procedures that should be addressed in project-specific EIAs.

² Reference ATCM Environmental Guidelines for operation of Remotely Piloted Aircraft Systems (RPAS) in Antarctica (IAATO Field Operations Manual Section – Section 7 – Activity Guidelines).

³ Reference RPAS Best Practice Paper (Hodgson and Koh (2016)).

⁴ Also see Annex to IAATO Statement on the use of RPAS.

⁵ **Requirements of the Environmental Protocol to the Antarctic Treaty and its Annexes**

- Any proposed activities undertaken in the Antarctic Treaty area shall be subject to the procedures set out in Annex I of the Environmental Protocol* for prior assessment of the impacts of those activities on the Antarctic environment.
- Flying or landing an aircraft in a manner that disturbs concentrations of birds and marine mammals is prohibited in Antarctica, except in accordance with a permit issued by an appropriate authority under Annex II to the Environmental Protocol[†].
- Removal of wastes from Antarctica, including electrical batteries, fuels, plastics, etc. is required by Annex III^{††}, which should be considered in contingency plans for lost or damaged RPAS as part of the Environmental Impact Assessment (EIA).

* As required by Art. 8 of the Environmental Protocol.

† As required by Art. 3 Annex II to the Protocol. This permit can only be granted under certain conditions.

†† As required by Art. 2 Annex III to the Protocol.