



DANGEROUS GOODS PANEL (DGP) WORKING GROUP MEETING (DGP-WG/25)

Delhi, India, 21 to 25 April 2025

**Agenda Item 6: Dangerous goods provisions to support RPAS operations (Ref: Job Card
DGP.007.02)**

DANGEROUS GOODS PROVISIONS TO SUPPORT REMOTELY PILOTED AIRCRAFT SYSTEMS: PRINCIPLES ON WHICH THE DEVELOPMENT OF ANNEX 6, PART IV WAS BASED

(Presented by the Rapporteur of the DGP-WG Dangerous Goods Provisions to
Support RPAS Operations – M Ranito)

SUMMARY

This information paper explains the principles on which the development of Annex 6 — *Operation of Aircraft, Part IV — International Operations – Remotely Piloted Aircraft Systems* was based. It contains a presentation delivered by the Remotely Piloted Aircraft Systems Panel (RPASP) at the third virtual meeting of the DGP Working Group on RPAS (DGP-WG/RPAS) held in April 2023 to provide information on the Standards and Recommended Practices that are contained in Annex 6, Part IV for International Operations by RPAS.

1. INTRODUCTION

1.1 The DGP Working Group on Remotely Piloted Aircraft Systems (DGP-WG/RPAS) was presented with a copy of State letter AN 11/61-22/70 seeking comments from States and international organizations on proposed new Standards and Recommended Practices (SARPs) developed for inclusion in Annex 6 – *Operation of Aircraft* as a new Part IV – *International Operations – Remotely Piloted Aircraft Systems* and consequential amendments to Annex 1 – *Personnel Licensing*, Annex 2 – *Rules of the Air* and Annex 8 – *Airworthiness of Aircraft* related to international remotely piloted aircraft systems (RPAS) operations in controlled airspace/aerodromes arising from the eighteenth meeting of the Remotely Piloted Aircraft Systems Panel (RPASP/18). The SARPs were envisaged for applicability on 26 November 2026.

1.2 The integration of RPAS operations into the existing international air navigation system involves SARPs in all nineteen Annexes of the Chicago Convention. Annex 6, Part IV, is one of the

components of this regulatory framework. It excludes fully autonomous aircraft and operations, very low altitude airspace operations, very high-altitude operations (above FL600) and the carriage of persons.

1.3 Whilst there is a relationship to the other parts of Annex 6, in that SARPS were leveraged from Parts I, II and III, it is a standalone part to Annex 6, because it applies to both remotely piloted aeroplanes and remotely piloted helicopters, referred to as remotely piloted aircraft (RPA).

1.4 The SARPs in Annex 6, Part IV are applicable to the operation of RPAS certificated in accordance with Annex 8 by operators authorized to conduct international operations. The foreword of the proposed Part IV includes a categorization scheme to clarify the applicability of the material contained therein, which describes three categories of unmanned aircraft systems operations, these being open, specific and certified.

1.5 Annex 6, Part IV only applies to the certified category. Operators of remotely piloted aircraft systems for which applicable international Standards are not contained in Annex 8, such as those in the open or specific categories, would require approval prior to initiating cross-border operations, in accordance with the national regulations of each State involved.

1.6 The practice described in paragraph 1.5 is valid for other categories of aircraft, both conventional and remotely piloted (e.g. airships, light sport aircraft), for which international airworthiness Standards are not contained in Annex 8.

1.7 As with conventional aviation, it is important to understand the roles and responsibilities of the various States involved in issuing/approving applicable certificates. For RPAS operations, some of these roles and responsibilities remain the same as with conventional aviation, such as the State of Registry issuing certificates of airworthiness and the State of the Operator issuing the appropriate operator certificates and approvals. However, due to the unique nature of RPAS operations, the responsibilities of States have changed or been expanded. For example, the introduction of RPAS into the aviation regulatory framework has necessitated the identification of the State of remote pilot station (RPS) service provider.

1.8 Whilst State Letter 2022/70 has not been included in this information paper, panel members wishing to have access to the information may request it from the Secretariat. However, it should be noted that the SARPs contained in Annex 6, Part I with regards to the transport of dangerous goods, namely Chapters 14 and 15, have been replicated in Part IV.

1.9 It should be brought to the attention of DGP-WG/25 that similar to what is contained in Annex 6, Part I, Annex 6, Part IV recommends that international Standards and Recommended Practices set forth in Chapter 14, should be applied by all Contracting States in the case of domestic commercial air transport operations.

2. WORK OF DGP-WG/RPAS

2.1 At the beginning of the work developed by DGP-WG/RPAS, all its members were tasked with making themselves familiar with the content of State Letter 2022/70 with regard to Annex 6, Part IV, in order to be informed of the scope of work that needed to be completed.

2.2 Additionally, the Secretary of the DGP arranged for a presentation to be made by RPAS experts to DGP-WG/RPAS so as to provide additional clarification on its content. This presentation is made available to DGP by including it in the appendix to this information paper, so as to provide a view on the foundations and principles leading to the drafting of the SARPS contained in Annex 6, Part IV.

2.3 As part of the work plan, a member of the DGP-WG/RPAS with airworthiness and certification subject matter expertise was asked to provide information on the specific certification requirements for aircraft and helicopters cargo compartments contained in Annex 8.

3. CONCLUSION

3.1 The DGP-WG is invited to consider the information contained in this information paper as part of the feedback requested in DGP-WG/25-WP/26 on the proposed draft provisions for the Technical Instructions and proposed guidance material contained in DGP-WG/25-IP/3.

APPENDIX

**THE DEVELOPMENT OF Annex 6, Part IV:
PRESENTATION BY RPAS EXPERT TO DGP-WG/RPAS**



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Annex 6, Part IV, *International RPAS Operations*

DGP
April 2023





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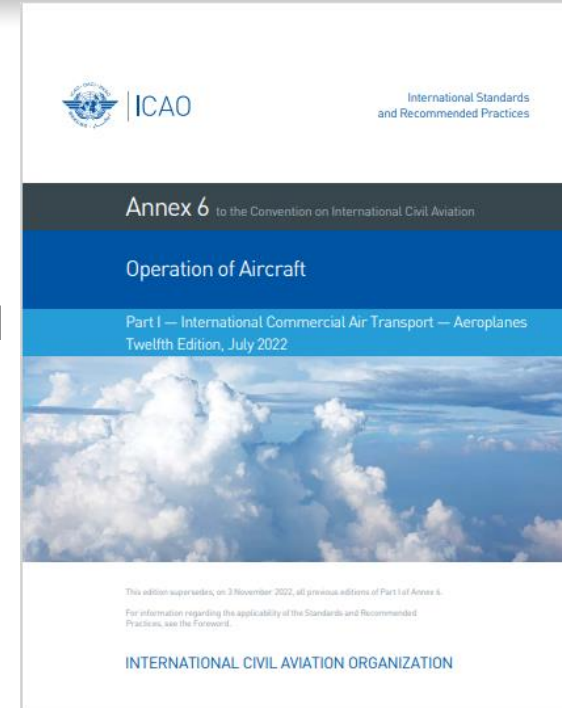
Foundations



- **RPAS Panel - WG5 working arrangements**
 - Work on operations and operator SARPs in parallel
 - Safety Management System (SMS) related issues developed with SMP
 - Contributions from relevant working groups and expert groups (e.g. DGP)
- **Gap analysis against Annex 6, Parts I, II and III**
- **Didn't recreate the wheel**
 - Where existing provisions/terminology made sense no need to change

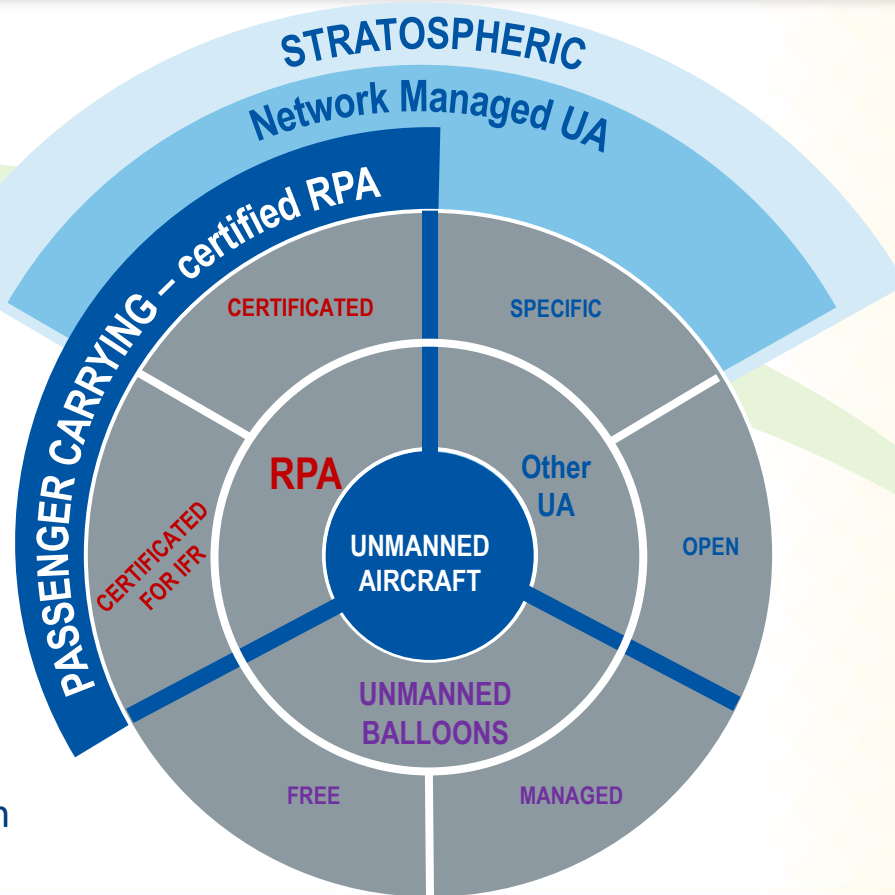


- **Follows same flow and format as Annex 6, Part I**
 - Assists with cross-referencing of Standards with other Parts
 - Varies only when needed
- **Numerous provisions duplicated from Parts I and III**
- **As with other parts to Annex 6, several Appendices and Attachments included with additional provisions**
 - Some left “for future use” in anticipation of future operations (e.g. passengers on board)





- **International operations by RPAS certified IAW Annex 8**
- **Guiding principles:**
 - Minimize hazards to persons, property and other aircraft
 - Address the protection of society from collisions between aircraft and crashes
 - Provisions apply equally to commercial air transport and general aviation (incl. aerial work) conducted by RPAS
 - Integrate in existing aviation system, without negatively effecting manned aviation. If not possible restrict to specific conditions or areas



Unmanned aircraft:
 an aircraft which is intended to be operated with **no pilot on board** - (Annex 7, 2.2)



Categories

Open – Low risk

Specific – Medium risk / regulated lower risk

Certified – Traditional aviation approach



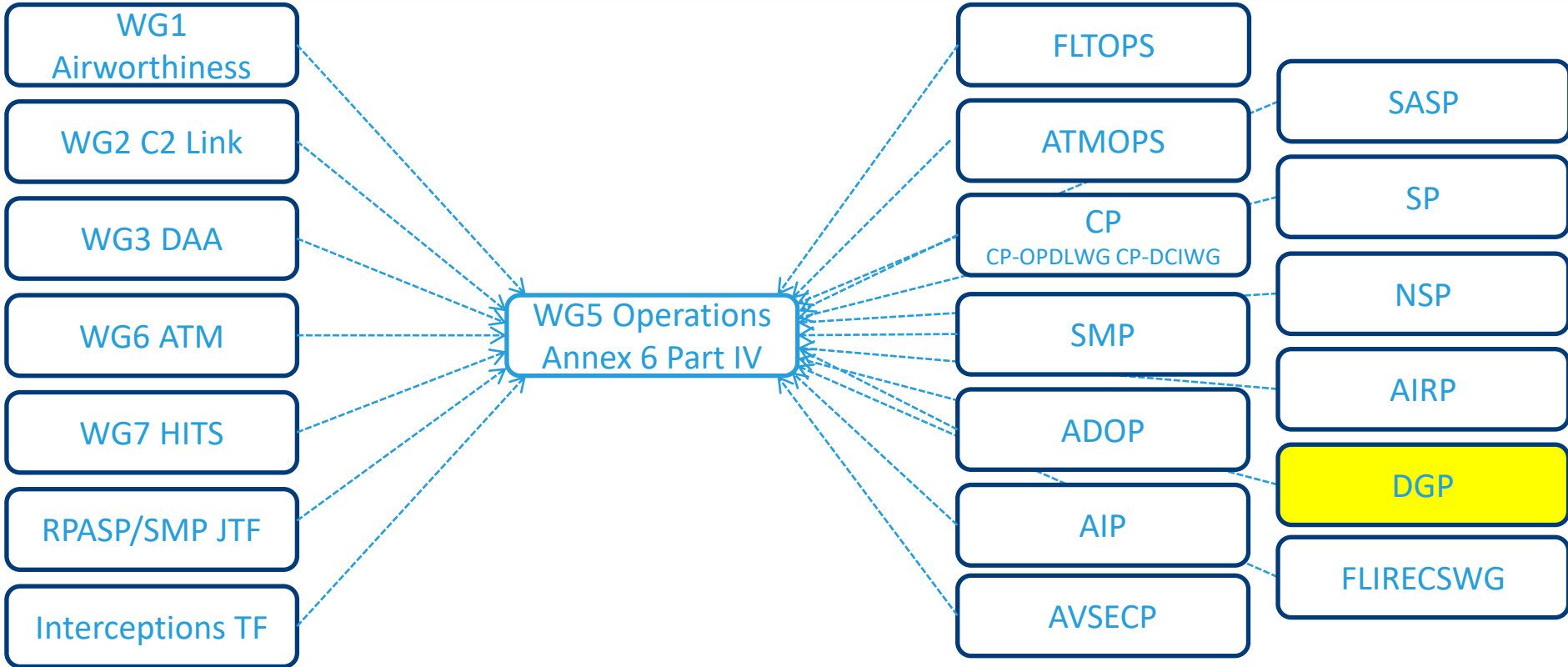
- IFR RPAS operations within controlled airspace, and controlled aerodromes
- RPAS operators will require an RPAS Operator Certificate (ROC)
- Content to cover other RPAS operations might be generated
- RPAS operator will be responsible that C2 Link services meet appropriate performance requirements
- During flight, RPAS control may be transferred from one RPS to another



<p style="text-align: center;">1</p> <p style="text-align: center;">INTERNATIONAL</p> <p style="text-align: center;">HIGH RISK (CERTIFIED)</p> <p>a) Operations: international RPAS b) Regulation: full certification in accordance with Annexes 1, 6 and 8</p>	<p style="text-align: center;">2</p> <p style="text-align: center;">INTERNATIONAL</p> <p style="text-align: center;">MEDIUM/LOW RISK (SPECIFIC/OPEN)</p> <p>a) Operations:<ul style="list-style-type: none">• cross-border UAS• high seas UASb) Regulation:<ul style="list-style-type: none">• Annex 6, Part IV <u>not</u> applicable• future SARPs (Annexes 6 and 8)?• future SARPs (Annex 2, new App.)?• certificates scaled to fit</p>
<p style="text-align: center;">3</p> <p style="text-align: center;">DOMESTIC</p> <p style="text-align: center;">HIGH RISK (CERTIFIED)</p> <p>a) Operations: domestic certified RPAS b) Regulation:<ul style="list-style-type: none">• national regulations• States encouraged to use Annex 6, Part IV</p>	<p style="text-align: center;">4</p> <p style="text-align: center;">DOMESTIC</p> <p style="text-align: center;">MEDIUM/LOW RISK (SPECIFIC/OPEN)</p> <p>a) Operations: domestic UAS b) Regulation:<ul style="list-style-type: none">• national regulations• future ICAO guidance?• impact from quadrant 2</p>



- **Majority of definitions already adopted in other ICAO Annexes and Documents**
- **Some notes added to existing definitions to clarify applicability to RPAS**
- **Only three (3) new definitions introduced**





- **State Letter 2022/70 released on 23 August**
 - Responses/comments due by 23 February 2023
 - Currently adjudicating inputs/comments.
- **Air Navigation Commission (ANC) final review - Q3 2023**
- **Adoption - Q1 2024**
- **Effective - Q3 2024**
- **Applicability - Q4 2026**



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RPAS Rules



■ RPAS specific operating rules

- Flight plans are required in accordance with Annex 2.
- Performance and equipment requirements for the operational airspace.
- Similar requirements for operations from other than aerodromes/heliports.
- Operation of launch and recovery equipment ensures no impact on safety.
- Changed Annex 6, Part I, Night IMC equipage requirements to requirements for knowledge of procedures for flights over heavily populated areas.



■ Remote Flight Crew

- Licensed crew members are charged with duties essential to the operation of a remotely piloted aircraft system during a remote flight duty period.
- Crew composition, duties, training Standards similar to other Parts of Annex 6
- Provides that remote crew members be at and remain at their stations except when their absence is necessary for the performance of duties
- Specific standards established for RPAS related to handovers, multiple RPICs



■ RPS

- Multiple PICs, inflight change of Remote Pilot in Command (RPIC)
 - Requires each RPA to have an RPIC
 - Does not limit the number of RPICs over a single flight
- Multiple RPS
 - Provides for more than one RPS to control an RPA in both nominal and off-nominal
 - Ensures safety is not compromised as control of the RPA transfers between RPs
- Handovers
 - Passes control of the RPA from one RPS to the next
 - Requires the operator to have operational control of both RPS
 - Requires operators to develop procedures for RPS transfers
 - Includes transfer of key documents (i.e. NOTOC) – Whenever Remote-PIC changes





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Oversight



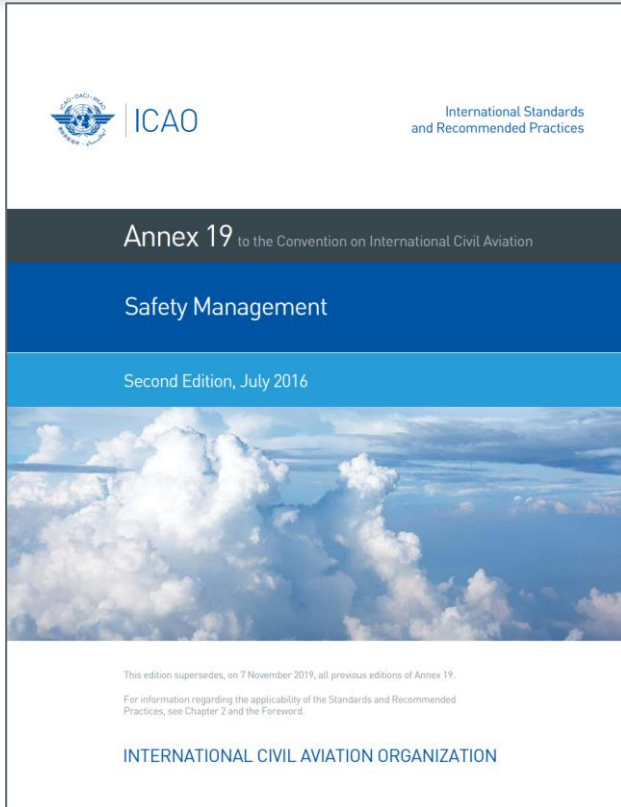
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RPAS Operators Certificate

- **RPAS Operator Certificate (ROC)**
- **Certification/supervision**
- **RPAS operator requirements**
- **ROC format/content**
- **Credits for existing AOC holders.**





- **RPAS Operator requires an SMS**
 - Does not diverge from Annex 19 principles
 - recognizes the potential for significant 3rd party service provision beyond that seen in conventionally piloted aviation
- **Safety-critical service providers either fall under RPAS operators' SMS or need to have their own SMS**
 - C2CSP, RPS service provider, etc.
- **Fatigue risk management**



- **Manuals, logs, electronic documents, etc.**
 - Flight manual
 - Operator's maintenance control manual
 - Maintenance programme
 - Journey logbook
 - Operator record-keeping
 - DG related documentation
 - Flight recorder records





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DG Specific Considerations



- **Incident reporting**
- **Documentation**
 - DG paperwork at the RPS (All)
- **Remote flight crew training programs**
- **Ops Manual Requirements**
- **Chapter 14 dedicated to DG**
 - Similar to other Parts of Annex 6
- **Attachment J – Similar to Part I**
 - Some differences regarding COMAT/Cargo other than cargo



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Dakar

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(APAC) Sub-office
Beijing

Asia and Pacific
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THANK YOU