



**WORKING PAPER**

**THIRTEENTH AIR NAVIGATION CONFERENCE**

**Montréal, Canada, 9 to 19 October 2018**

**COMMITTEE A**

**Agenda Item 5: Emerging issues**

**5.3: Remotely piloted aircraft system (RPAS)**

**RPAS — WHAT'S IN THE NAME**

(Presented by Canada)

**EXECUTIVE SUMMARY**

This paper presents Transport Canada's decision to refer to drones at large as remotely piloted aircraft systems (RPAS), instead of unmanned aircraft systems (UAS) or unmanned aerial vehicles (UAV). Whereas ICAO uses the term RPAS to describe a specific type of 'unmanned aircraft' –one that can be integrated into airspace with traditional 'manned' aviation, Canada has taken the approach that all drones fall under the RPAS umbrella; and has replaced the term 'unmanned' with 'remotely piloted.' Informed by the public's perception of drones, international trends in nomenclature, a reflection on the technology itself and perhaps most importantly, gender considerations, Canada's regulatory designation for drones is gender-neutral and describes a technology that men *and women* are welcome to pilot.

**Action:** The Conference is invited to agree to the recommendation in paragraph 3.4

**1. INTRODUCTION**

1.1 In December 2015, a working paper from the ICAO Remotely Piloted Aircraft Systems Panel (RPASP) noted that the terms “unmanned aircraft (UA)/unmanned aircraft systems (UAS), remotely piloted aircraft (RPA)/remotely piloted aircraft systems (RPAS), drones, and unmanned aerial vehicles (UAVs) [were] being used interchangeably” by various parties, potentially causing confusion and discord between national regulations and ICAO Standards<sup>1</sup>. Since that paper's publication, ICAO has employed the term “unmanned aircraft” to describe “any aircraft intended to be flown without a pilot on board”– providing a larger catch-all term for drones, unmanned free balloons, etc.. RPAS, on the other hand, are considered by ICAO to be a non-autonomous sub-category of unmanned aircraft that can be integrated into airspace with traditional “manned” aviation<sup>2</sup>.

1.2 For a number of reasons, Canada has taken a different approach to drone nomenclature. Given the novelty of the drone industry and its rapidly changing nature, Canada posits that the terminology used to describe drones must adapt accordingly, and reflect changes occurring within

<sup>1</sup> Working Paper presented by the secretariat “Use of ICAO Terminology Related to Unmanned Aircraft” December 14-18 2015.

<sup>2</sup> “The ICAO UAS Toolkit.” <https://www.icao.int/safety/UA/UASToolkit/Pages/FAQ.aspx#Q1> <accessed June 12, 2018>

contemporary society and the international context. For reasons further explained below, Canada has discontinued referring to drones as “unmanned” aircraft and instead, uses the term RPAS. Qualifiers can then be added to RPAS to distinguish subsets of this category of aircraft, for example, small RPAS; beyond visual line of sight RPAS; or instrument flight rules (IFR) RPAS.

## 2. DISCUSSION

2.1 Different countries, regions, and organizations use various nomenclature to describe what is commonly referred to in the vernacular as a ‘drone.’ The United States and the United Kingdom use the term unmanned aircraft systems (UAS), whereas New Zealand uses the term unmanned aerial vehicle (UAV). Australia, on the other hand, uses the term RPAS. Although many of these countries also employ the word ‘drone’ in their public communications, as does the public media, France uses it as the primary name<sup>3</sup>.

2.2 Some might argue that naming conventions are not altogether important; however, given the history of drones alone, names do matter (gender considerations will follow). Canada has taken the position that the socialization of drone technology is important in order for the Canadian economy to realize the full potential of the drone industry, and not be hampered by undue public concern. As civilian applications for drones increase, the message of “drones for good” is gaining traction. Canada’s safety and education promotion campaign to support the RPAS regulations will use the word “drone”, given the predominance of this term in popular use, and incorporates positive messaging.

2.3 Although Canada has chosen to use the word ‘drone’ in its communications with the public, for legal and regulatory purposes it uses RPAS. One consideration in this decision is the position of former military pilots who operated drones. Some of these pilots object to the term ‘unmanned’ because it suggests that drones are operating independent of a human being; instead, these pilots advocate for the use of “remotely piloted” because it is more reflective of the human skill required to operate drones.<sup>4</sup> As David Deputla, a retired lieutenant general of the United States Airforce stated, “there is nothing unmanned about an unmanned system.”<sup>5</sup>

2.4 Gender is also a significant factor in the decision to discard the term ‘unmanned’ and replace it with ‘remotely piloted.’ The Government of Canada continues to actively prioritize gender equality through its federal policies and budgets; similarly, the G7, United Nations and even ICAO have highlighted gender equality and the participation of women in the workplace as a matter of ongoing importance.<sup>6</sup>

<sup>3</sup> Dyson, Steve. “Euronaval note: Of UAVs, UASs, RPAs, RPASs, drones and more.” November 5, 2014. <http://steve-dyson.blogspot.com/2014/11/euronaval-note-unmanned-aerial-vehicle.html> <accessed December 4, 2017>

<sup>4</sup> Shoaps, Robin and Stanley, Sarah. “Don’t say drone”: Hits and misses in a rhetorical project of naming.” December 2015. [https://www.researchgate.net/publication/280092195\\_Don%27t\\_say\\_drone\\_Hits\\_and\\_misses\\_in\\_a\\_rhetorical\\_project\\_of\\_naming](https://www.researchgate.net/publication/280092195_Don%27t_say_drone_Hits_and_misses_in_a_rhetorical_project_of_naming) <accessed December 5, 2017>; Tech Sgt. Chris Powell, “We are not drones,” *Almaogordo Daily News*. November 25, 2013 <https://www.suasnews.com/2013/11/we-are-not-drones/> <accessed December 12, 2017>; Matisek, Jaraha “Drop Zone: What’s in a name? Redefining drones in the professional lexicon.” September 1, 2017. <https://othjournal.com/2017/09/01/drop-zone-whats-in-a-name-redefining-drones-in-the-professional-lexicon/> <accessed December 1, 2017>

<sup>5</sup> Gosztola, Kevin. “Don’t use the ‘D’ Word...” Shadowproof. October 11, 2013. <https://shadowproof.com/2013/10/11/dont-use-the-word-drones-theyre-uavs/> <accessed November 29, 2017>

<sup>6</sup> See *G7 Guiding Principles of capacity Building of Women and Girls*, priority 1: “building the capacity of women and girls towards sustainable, inclusive and equitable economic growth”; and *Report of the UN Secretary-General’s High-Level Panel on Women’s Economic Empowerment* –under “enabling environment for women’s economic empowerment.”

2.5 The term “unmanned” (or conversely, ‘manned’) holds strong gender connotations, namely, that this is a male space.<sup>7</sup> Over the course of the last two decades, it has become ill-fitting to describe members of the police or fire service as a policemen or firemen as this suggests that these positions are held by men only. In a movement towards inclusivity, to reflect the work force and to signify that these jobs are open to women, gender-neutral titles have been introduced, such as police officer and fire fighter.

2.6 As one language blogger has advised, “one way to improve gender equality is through language.”<sup>8</sup> The National Aeronautics and Space Administration (NASA) heeded this call in 2006 through the NASA History Program Office style guide which stated that “references referring to the space program should be non-gender specific,” and advocated against the use of the words *manned* and *unmanned*.<sup>9</sup> Instead, NASA introduced alternative gender-neutral terms: crewed and uncrewed. Notably, however, these have not caught on within the media (or established dictionaries).<sup>10</sup>

2.7 Women comprise a significant minority of commercial pilots in traditional aviation, amounting to approximately 5 per cent of the workforce;<sup>11</sup> the limited statistics available for women in the drone industry suggest a similar gender disparity.<sup>12</sup> Just like the rest of aviation, drones fall into the STEM (Sciences, Technology, Engineering and Mathematics) sphere. Women in STEM have historically been underrepresented for many reasons, including marginalization, a hostile male-dominated environment, and a lack of female mentorship.<sup>13</sup> Gendered language is not harmless; it sends underlining messages of exclusion and subordinates the achievement and role of women. In male-dominated professional environments, men traditionally hold a privileged position and thus have the power to change the terminology, yet, such a privileged position means that they are the least likely to notice the inherent biases.<sup>14</sup> The role of men is important in creating a gender-neutral space, and this can start with gender-neutral language.

2.8 Inclusive naming signals that all are welcome to participate –in aerospace, in STEM, and in aviation. Given the pilot shortage in aviation, it makes sense to tap into the entire population for recruitment, not just a limited subset. To increase the presence of women in the drone industry (and STEM in general), efforts need to start early, which means beginning education and inclusionary practices young.<sup>15</sup> Self-perception has been identified as one of the reasons why girls drop out of STEM-related

<sup>7</sup> Oman-Reagan, Michael P. “Unmanning Space Language,” *Sapiens*. March 7, 2013

<https://www.sapiens.org/column/wanderers/outer-space-and-gendered-language/> <accessed December 4, 2017>

<sup>8</sup> Carey, Stan. “Why you should use gender-neutral language in the workplace.” *Totaljobs*.

<https://www.totaljobs.com/insidejob/gender-neutral-language-in-the-workplace/> <accessed July 12, 2018>

<sup>9</sup> Lakdawalla, Emily. “Finding new language for space missions that fly without humans.” *The Planetary Society*. October 5, 2015. <http://www.planetary.org/blogs/emily-lakdawalla/2015/10050900-finding-new-language.html> <accessed December 4, 2017>; Oman-Reagan, Michael P. “Unmanning Space Language,” *Sapiens*. March 7, 2013

<https://www.sapiens.org/column/wanderers/outer-space-and-gendered-language/> <accessed December 4, 2017>

<sup>10</sup> Lakdawalla

<sup>11</sup> Marie-Line Germain, Mary Jean Ronan Herzog & Penny Rafferty Hamilton “Women employed in male-dominated industries: lessons learned from female aircraft pilots, pilots-in-training and mixed-gender flight instructors.” *Human Resource Development International*, 2012. 15:4, 435-453, DOI: [10.1080/13678868.2012.707528](https://doi.org/10.1080/13678868.2012.707528)

<sup>12</sup> Walk-Morris, Tatiana and Inno, Chicago. “She highlights women flying high with drones” *Bizwomen*. March 9, 2018.

<https://www.bizjournals.com/atlanta/bizwomen/news/profiles-strategies/2018/03/she-highlights-women-flying-high-with-drones.html?page=all> < accessed June 18, 2018>; internal Transport Canada statistics.

<sup>13</sup> Yatskiv, Irina. “Why don’t women choose STEM? Gender equality in STEM careers in Latvia.” *International Journal on Information Technologies & Security*. 2017 Supplement, p79-88; Caranci, B. “Women and STEM.” September 12, 2017.

<https://economics.td.com/women-and-stem-bridging-divide> <accessed June 17, 2018>; Garr-Schultz, Alexandra Gardner, Wendi L. Gardner. “Strategic Self-Presentation of Women in STEM.” *Soc. Sci.* 2018, 7(2), 20; <https://doi.org/10.3390/socsci7020020>;

Kovacs, Mandy. “Let’s talk about women in STEM.” » March 8, 2017. IT World Canada.

<https://www.itworldcanada.com/article/lets-talk-about-women-in-stem/391215> <accessed June 13, 2018>

<sup>14</sup> Carey

<sup>15</sup> Solberg, Margot. “Can the implementation of aerospace science in elementary school help girls maintain their confidence and engagement in science as they transition to middle school?” *Acta Astronautica*. Volume 147, June 2018, Pages 462-472.

academics.<sup>16</sup> Language that is gender-specific reinforces implicit bias and can be a barrier to the feeling of belonging;<sup>17</sup> that sensation of being an outsider could result in the pursuit of other more inclusive domains of study.

2.9 Lastly, as Canada is a bilingual country with English and French as its official languages, it is notable to mention that the gender issue only exists in English. The French equivalent to UAS, système d'aéronef sans pilote, is gender neutral, and translates to unpiloted aerial system. The new term, the equivalent to RPAS système d'aéronef télépilote (SATP), remains gender neutral but indicates that the pilot is operating at a distance.

### 3. CONCLUSION

3.1 The use of RPAS to describe drones make sense from multiple perspectives. It is reflective of current technology (by which people operate drones from a distance), it aligns with international trends, and, it is gender-inclusive, supporting current United Nations, G7 and Government of Canada priorities.

3.2 According to the limited statistics available, women are extremely underrepresented in the drone sector, accounting for approximately 5 per cent of operators. Similarly, women are a significant minority in other areas of aviation and in STEM industries as a whole. Moving away from terminology that uses the term 'unmanned' could serve to make the field of drones (and STEM fields in general) more inclusive and welcoming to women as well as those who identify as non-binary.<sup>18</sup>

3.3 In reference to the ICAO Global Aviation Gender Summit (August 2018), ICAO has stated that "Gender equality is both the right thing and the smart thing to do. It is now time to act!"<sup>19</sup> To support gender equality, this paper recommends that ICAO and its Member States reconsider its use of the term 'unmanned.' Canada has elected to refer to all drones as RPAS; however, should this term not appeal to ICAO and its members due to the desire to eventually include autonomous drones in the future, other gender-neutral options exist. NASA uses the term 'uncrewed,' but there may be another equally gender-inclusive term that can be created. Adoption of gender-neutral terminology at international fora will promote its use elsewhere. The incorporation of such gender-neutral language will hopefully spark discussion and signal to current and future pilots that people of all genders are invited to participate in the drone sector.

3.4 In light of the above, the Conference is invited to agree to the following recommendation:

#### **Recommendation 5.3/X RPAS – What's in a name?**

That the Conference reconsider ICAO's use of the term 'unmanned' to describe aviation without a crew, given the current social and technological environment.

— END —

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<sup>16</sup> Garr-Schultz, Alexandra Gardner, Wendi L. Gardner. "Strategic Self-Presentation of Women in STEM." *Soc. Sci.* 2018, 7(2), 20; <https://doi.org/10.3390/socsci7020020>

<sup>17</sup> Plait; Lakdawalla; Walton et al. "Two Brief Interventions to Mitigate a "Chilly Climate" Transform Women's Experience, Relationships, and Achievement in Engineering." *Journal of Educational Psychology*, v107 n2 p468-485 May 2015.

<sup>18</sup> Plait, Phil. "A Lesson in Crewed Language." *Slate*. October 7, 2015. [http://www.slate.com/blogs/bad\\_astronomy/2015/10/07/manned\\_spaceflight\\_time\\_to\\_change\\_the\\_language.html](http://www.slate.com/blogs/bad_astronomy/2015/10/07/manned_spaceflight_time_to_change_the_language.html) <accessed December 4, 2017>

<sup>19</sup> "Global Aviation Gender Summit." <https://www.icao.int/Meetings/AviationGenderSummit/Pages/default.aspx> <accessed July 24, 2018>