

# Radio silence

## Autonomous military aircraft and the importance of communication

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Communication is central to military operations but very susceptible to disruption and interception. Autonomous military aircraft may reduce this vulnerability and allow the military to operate more effectively in communications denied environments. However, to have clearance to fly, a military aircraft must ensure it can safely interact in the civilian environment. The inability of an autonomous military aircraft to communicate in such a way as to ensure the safety of civilian aircraft may mean that the full benefits offered by autonomy may not be able to be exploited. To examine these issues, this brief looks at how autonomous military aircraft are impacted by international laws that aim to protect civilians and civil aviation.

### International legal frameworks for military aircraft

There is no overarching international law defining and regulating military aircraft. The laws pertaining to military aircraft therefore require a consideration of international humanitarian law (IHL), the 1923 Hague Rules of Aerial Warfare (Hague Rules), the 2013 HPCR Manual on International Law Applicable to Air and Missile Warfare (HPCR Manual) and the 1944 Convention on International Civil Aviation (Chicago Convention). A collective reading of these documents demonstrates that autonomous military aircraft have to comply with the international legal rules which refer to State aircraft, military aircraft and the safety of civil aviation.



## Autonomous State aircraft and the safety of civil aviation

While the Chicago Convention does not purport to regulate State aircraft (military aircraft being a type of State aircraft) directly, it specifically requires that States ensure that State aircraft have 'due regard' for the safety of civilian aircraft (Article 3(d)). Bourbonniere and Haeck describe this provision as 'creat[ing] an obligation on States to regulate State aircraft in order to ensure that [they] heed and care for the safety of the course and position of civil aircraft avoiding obstruction ... and collisions with civil aircraft'.<sup>1</sup> This necessarily requires an aircraft to be able to signal and communicate in a manner consistent with international protocols in order to avoid hazards and to avoid being a hazard. The question therefore is, whether in automating some of the functions of aircraft, State aircraft systems can still have 'due regard for the safety of navigation of civil aircraft' and thus meet the regulatory requirements? States need to ensure that autonomous military aircraft are able to comply with civilian communication protocols designed for the safety of civil aviation while completing their flight or they will not be able to be deployed.

## Autonomous State aircraft and navigation rights

State aircraft have to comply with the restrictions on their navigational rights. According to treaties and customary international law, State aircraft are able to fly over the land areas and territorial waters adjacent thereto under their States sovereignty as well as those where they have express prior permission. Additionally, they have overflight rights of the high seas and other designated navigational pathways under the law of the sea as well as areas not subject to any State's jurisdiction or of 'undetermined sovereignty'.<sup>2</sup>

The freedom of overflight of aircraft applies the same principles of the freedom of the high seas — namely that there is a right of 'unimpeded passage' but that this passage is subject to limitations including the duties to protect life and the environment and to prevent illicit activities such as piracy, slavery, trafficking and unauthorised broadcasting.<sup>3</sup>

In order to comply with these restrictions on navigational rights, aircraft have to be able to communicate with other aircraft and with air traffic control. For example, it is a requirement that aircraft exercising overflight rights 'at all times monitor the radio frequency assigned by the competent internationally designated air traffic control authority' (United Nations Convention on the Law of the Sea art 39 (3)(b)). Further, there are measures in place in order to protect sovereignty which may require aircraft to communicate. For example, a State aircraft that enters prohibited airspace without permission risks being shot

down and/or creating an international incident. It is therefore important that any autonomous functionality on an aircraft allows compliance with these navigational principles.

## Communication and the protection of civilians

In times of war, States may regulate aircraft movement within their jurisdiction. This allows States to require aircraft to, among other things, land or divert their route. Non-compliant aircraft 'may be fired upon'. In addition, autonomous military aircraft must be able to comply with the obligations of military aircraft. As such, should an autonomous military aircraft seek to exercise its rights, or have any applicable protections of IHL afforded to them by virtue of their nature as a military aircraft, it would need to ensure the legal requirements were appropriately complied with. Communicating appropriately is therefore absolutely essential to a military aircraft's activities. This raises a number of questions. Can an autonomous military aircraft effectively give warnings, effectively receive warnings and effectively receive and act on communications in response to warnings issued? Autonomous aircraft developers have to ensure that their aircraft are capable of doing so. If they cannot respond appropriately then, while they may (arguably) meet the technical definition of a military aircraft, they will not be able to exercise their belligerent rights and/or will lose the protections afforded by IHL — putting civilians and the sick and wounded at risk.

## Conclusion

Compliance with civilian aviation regulations requires the capacity to communicate consistently in line with international protocols and to deal with the situation when communications systems fail. Communication challenges can also be had by crewed and remotely piloted aircraft without autonomous functionality. As such, some of these challenges may not be unique to autonomous aircraft. However, given autonomous military aircraft are often specifically designed with the objective of operating in communications denied environments, States need to give consideration to ensuring that autonomous military aircraft can comply with civilian communication protocols designed for the safety of civil aviation while completing their military missions. ●

- 1 Michel Bourbonniere and Louis Haeck, 'Military Aircraft and International Law: Chicago Opus 3' (2001) 66 *Journal of Air Law & Commerce* 885, 916.
- 2 *ibid* 895.
- 3 Douglas Guilfoyle, 'Article 87' in Alexander Proelss (ed), *United Nations Convention on the Law of the Sea: A Commentary* (Beck, Hart and Nomos 2017) 681, 681-682.



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