



ICRC

Preliminary recommendations on possible norms, rules and principles of responsible behaviours relating to threats by States to space systems

Working paper submitted by the International Committee of the Red Cross to the open-ended working group on reducing space threats through norms, rules and principles of responsible behaviours

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The International Committee of the Red Cross (ICRC) appreciates the opportunity to participate in the open-ended working group on reducing space threats through norms, rules and principles of responsible behaviours (OEWG), convened under United Nations (UN) General Assembly Resolution 76/231.¹

In line with its humanitarian mission and mandate, the ICRC submits through this working paper preliminary recommendations on “possible norms, rules and principles of responsible behaviours relating to threats by States to space systems, including, as appropriate, how they would contribute to the negotiation of legally binding instruments, including on the prevention of an arms race in outer space”. The ICRC hopes, in this way, to contribute to the discussions at the third and fourth sessions of the OEWG.² The ICRC’s recommendations are made in line with the aim of the international community, including this OEWG, to prevent an arms race in outer space and to keep it free from conflict. The ICRC may submit refined and/or additional recommendations over the course of the OEWG’s work; in the meantime, it invites the OEWG to consider these recommendations for inclusion in the report to be submitted to the General Assembly at its seventy-eighth session.³

I. Existing international law constraining military operations in, or in relation to, outer space and relating to threats to space systems

Despite the long-term desire of the international community to explore and use space for peaceful purposes,⁴ space systems have been employed for military purposes since the dawn of the space era. As the role of these systems in military operations during armed conflicts increases, the likelihood of their being targeted also increases. Current and future threats to space systems include electronic warfare, cyber operations, directed

¹ UN General Assembly, Resolution 76/231 “Reducing space threats through norms, rules and principles of responsible behaviours”, UN Doc. A/RES/76/231, 24 December 2021, paras 5 and 6.

² Ibid, paras 5(c) and (d).

³ Ibid, para 5(d).

⁴ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty), preambular para 2.

energy operations, and the use of orbit-based and ground-based anti-satellite weapons or other counter-space military capabilities, such as harmful in-orbit rendezvous and proximity operations.⁵

It must be borne in mind that military operations in, or in relation to, outer space⁶ – be it through kinetic or non-kinetic means – do not occur in a legal vacuum, but are constrained by existing international law.⁷ States should reaffirm that instruments and rules of international law that protect space systems against threats arising from State behaviour include, in particular, the UN Charter, space law treaties – including the Outer Space Treaty – and within the context of armed conflict, the law of neutrality and international humanitarian law (IHL).⁸ Notably, IHL offers protection, during armed conflicts, for the civilian population on earth against the effects of military operations in, or in relation to, outer space.

Reaffirming the protection afforded, and restrictions imposed, by existing international law – including IHL – is critical to fulfilling the mandate of the OEWG, because any recommendation on the normative development of responsible space behaviours must be consistent with, and should build on and strengthen, the existing legal framework.

II. Preliminary recommendations on possible norms, principles and rules of responsible behaviours relating to threats by States to space systems

Military operations in, or in relation to, outer space could have a significant impact on civilians on earth, because technology enabled by space systems permeates most aspects of civilian life, making the potential consequences of attacks on space systems a matter of humanitarian concern.⁹

In line with its humanitarian mandate and mission, the ICRC is concerned primarily with the potential human cost for civilians on earth of the use of weapons and other military operations in, or in relation to, outer space. The ICRC urges States to consider this potential human cost when taking any decision with regard to military operations in, or in relation to, outer space. In particular, in light of the risk of significant civilian harm, States could decide to set general prohibitions or specific limits with regard to weapons, hostilities or other military operations in relation to outer space for a range of reasons, including humanitarian ones, as they did in the Outer Space Treaty.

Humanitarian considerations should also be the cornerstone of any discussion on normative development with regard to responsible space behaviours. To this end, the ICRC's recommendations in this paper focus on measures to minimize the risk of civilian harm posed by threats to space systems. These recommendations should be implemented already in peacetime.

⁵ ICRC, Working Paper on [Constraints under International Law on Military Operations in, or in Relation to, Outer Space during Armed Conflicts](#), 3 May 2022, p.2.

⁶ For the purpose of this paper, military operations in, or in relation to, outer space include military operations in, to, from and through outer space and those against space systems, whether it be a space component, a ground component or any link between them.

⁷ Article III of the Outer Space Treaty reaffirms the applicability of international law to activities in the exploration and use of outer space, *supra* note 4.

⁸ For a detailed discussion on existing limits under international law, including IHL, on military operations in or in relation to outer space, see ICRC, [The Potential Human Cost of the Use of Weapons in Outer Space and the Protection Afforded by International Humanitarian Law](#), Position paper submitted to the Secretary-General of the United Nations on the issues outlined in UN General Assembly Resolution 75/36, 7 April 2021, pp. 2-6.

⁹ For a more detailed discussion on the human cost of military operations in, or in relation to, outer space on civilians and humanitarian action, see *ibid*, p. 2; and ICRC, [Statement under agenda item 6\(b\)](#), at the Open-ended working group on reducing space threats through norms, rules and principles of responsible behaviours, second session, 13 September 2022.

Recommendation 1: States should not conduct or support any military operation or other activity designed or expected to disrupt, damage, destroy or disable space systems necessary for the provision of essential civilian services and for the protection and functioning of persons and objects specifically protected under international law.

Space systems, particularly navigation, communications and remote-sensing satellites, play an indispensable role in the functioning of critical civilian infrastructure, especially in the energy and communications sectors. These sectors enable the provision of the essential services on which civilians depend, such as food supply, water, electricity, sanitation, waste management, and health care. Space systems also contribute to humanitarian relief operations and emergency response. Additionally, space systems are critical to the functioning, protection, safety or maintenance of certain persons and objects specifically protected under international law. Disruption or destruction of space systems carrying out such functions could have far-reaching consequences for the civilian population, including humanitarian organizations.

These space systems will often be afforded protection under international law, such as the prohibition against attacks on civilian objects and the special protection afforded by IHL to specific persons and objects during armed conflicts (see section I above). Building upon these protections, in light of the significant risk of civilian harm and the possibly escalatory effects, States should refrain at all times from conducting and/or supporting activities that would impair space systems necessary for the provision of essential civilian services and for the protection and functioning of persons and objects specifically protected under international law, particularly those systems that are:

- critical to the production and maintenance of objects indispensable to the survival of the civilian population or otherwise enabling the delivery of essential civilian services, including but not limited to foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water installations and supplies, irrigation works, electricity and communications.
- necessary for the protection and functioning of persons and objects specifically protected under international law, such as astronauts, medical personnel, activities and facilities, humanitarian relief personnel and objects, civil-defence organizations, cultural property and the natural environment. One example would be space systems that are critical to the safety and maintenance of infrastructure containing hazardous or toxic materials, such as oil and gas pipelines and chemical plants, because any incident resulting in the leakage of such hazardous or toxic materials would cause serious damage to the natural environment.
- critical to the safety and maintenance of works and installations containing dangerous forces, namely dams, dykes and nuclear power plants.

Recommendation 2: Whenever feasible, States should segregate the military use of space systems (including satellites, communication links and ground stations) from their civilian use, particularly with regard to systems necessary for the provision of essential civilian services and for the protection and functioning of persons and objects specifically protected under international law.

Existing international law requires States to take all feasible precautions to protect civilians and civilian objects from the effects of military operations. This includes military operations in, or in relation to, outer space that affect civilians on earth. In this regard, with a view to protecting civilians and civilian objects from the harmful effects of threats against space systems, one important measure is to segregate, to the extent feasible, space systems used for military purposes from space systems used for civilian purposes, including satellites, ground stations and communication links. From a humanitarian perspective, this measure is of particular importance in connection with space systems necessary for the provision of essential civilian services and for the protection and functioning of persons and objects specifically protected under international law.

To this end, whenever feasible, States and commercial enterprises developing or operating space systems should work to develop and use dedicated space products and infrastructure such as satellite payloads, ground

terminals, cyber infrastructure and networks, and communication links, either for exclusively military purposes or for exclusively civilian purposes, particularly for space systems necessary for the functioning and protection of the above-mentioned categories of persons, objects and civilian infrastructure. States should also consider segregating from the internet the communication links on which these space systems depend. Finally, States should exercise their supervisory and regulatory role to require commercial satellite companies that provide such services to do so.

Recommendation 3: States should identify, register, mark, announce and/or otherwise indicate those space systems within their jurisdiction or control that are to be spared from the effects of military space operations.

Building on existing international law, each State should work towards identifying, registering, marking, announcing and/or otherwise indicating those space systems within its jurisdiction or control that are to be spared from the effects of military operations. This would be an effective means to help prevent these space systems from being targeted or otherwise impaired.

In light of recommendations 1 and 2 above, space systems that most need to be identified – be they satellites, ground stations and terminals or the communication links between them – would include those necessary for the provision of essential civilian services and for the protection and functioning of persons and objects specifically protected under international law.

Furthermore, if a space object is dedicated exclusively to civilian use, including solely for humanitarian purposes, the State should identify, mark and register it as such under the Registration Convention,¹⁰ clearly indicating its protected status under international law during armed conflicts. This would be particularly useful for space objects enjoying specific protection under international law. One such example would be a communication satellite serving exclusively medical purposes, for example by facilitating remote medical care and surgery or by transmitting communications for medical transports. Identifying, marking and registering the status of such satellites would help ensure that they are respected and protected at all times.¹¹

Recommendation 4: States should not develop, test or use kinetic counter-space capabilities or conduct other harmful operations against space systems that are designed or expected to create space debris.

Space debris may continue to travel, for decades or even longer, in the orbit in which it was produced. Given the speed at which it travels, debris can damage or destroy, in an unpredictable manner, other space objects – especially if in increasingly congested orbits – including those space objects necessary for the delivery of essential civilian services.

Debris can be created by a number of different space activities. These activities include, in particular, kinetic military operations against space objects, which risk causing far more debris than many other space activities. In this connection, a State should not develop, test or use kinetic counter-space capabilities, including but not limited to destructive direct-ascent anti-satellite missiles and co-orbital anti-satellite capabilities, or conduct other harmful operations against space systems that are designed or expected to create space debris.

¹⁰ Article IV(1)(e) of the Convention on Registration of Objects Launched into Outer Space (1974).

¹¹ For reference, Annex I on Regulations concerning Identification of the First Additional Protocol to the Geneva Conventions (as amended on 30 November 1993) regulates the use of distinctive signals (light and radio signals, electronic identification) by medical units or transports (Article 6.1), and it was specifically mentioned that medical transports may transmit their communications by satellite systems (Article 10.2). Furthermore, States may explore the possibility of digitally marking the status of a space system and its components in cyberspace for the purpose of mitigating civilian harm, see for example ICRC, [Digitalizing the Red Cross, Red Crescent and Red Crystal Emblems: Benefits, Risks, and Possible Solutions](#), ICRC, Geneva, 2022.

Recommendation 5: States should cooperate to increase the resilience of satellite services for humanitarian relief and emergency response in times of armed conflict and other emergencies.

Humanitarian relief and emergency response in times of armed conflict and other emergencies support the provision of food, water, sanitation, health care and other essential civilian services. Space systems, particularly weather, communications, navigation and earth observation/imaging satellites, contribute to every phase of humanitarian operations, from needs assessment to emergency relief delivery, and from disaster-risk reduction to resilience building in protracted conflicts.

An international mechanism for collaboration and cooperation should be put in place to increase the resilience of satellite services that humanitarian relief and emergency response rely on. National space agencies and other space operators in a position to do so, including commercial enterprises, should respond positively to requests for assistance from other States and actors such as emergency responders and humanitarian organizations. The experiences of existing mechanisms for international cooperation and assistance can be drawn upon.¹²

In this respect, capacity building is critical for increasing resilience. States with advanced space capabilities should share their experience with other States in need and contribute to building or enhancing the technical, legal and policy capacities of these States. States should consider involving other stakeholders – such as international and civil-society organizations, commercial actors and academia – in international cooperation, assistance and capacity building.

¹² One such example is [International Charter: Space and Major Disasters](#), a worldwide collaboration of space agencies and space system operators working together to voluntarily provide satellite imagery for disaster relief purposes. Furthermore, reference can be made to the norms of responsible behaviors in the field of Information and communications technologies (ICT). For example, it was agreed that “States should respond to appropriate requests for assistance by another State whose critical infrastructure is subject to malicious ICT acts”, see Norm 13(h), in [Report of the Group of Governmental Experts on Advancing Responsible State Behaviour in Cyberspace in the Context of International Security](#), A/76/135, July 2021.