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Additional considerations and proposals for building up understanding of the priority aspects, comprehensive meaning and functions of the concept and practices of ensuring the long-term sustainability of outer space activities

Working paper submitted by the Russian Federation[1]

1. The focus of this working paper, like those previously submitted by the Russian Federation, is to further consolidate proposals on pertinent aspects of ensuring the safety of space operations and the long-term sustainability of outer space activities in general. Following the outcome of the work of the Scientific and Technical Subcommittee undertaken from February 2012 to the present, certain baseline conclusions related to ensuring the long-term sustainability of outer space activities, and primarily the safety of space operations, have been substantiated in a fairly detailed manner. However, there is still a need for a meaningful analysis of a number of important topics that have not yet been considered or have been covered only superficially. The set of guidelines currently being prepared clearly needs to include more reasonable and practical decisions conducive to a more maturely developed, fully integrated and consistent conceptual framework for ensuring the long-term sustainability of outer space activities and the safety of space operations. Of particular importance is the issue of how the level and the principal directions of the development of the safety culture as applied to outer space, and the modalities for assured and enhanced regulation in this field, will be determined in the long run. No State should neglect participation in a most serious discussion of issues raised in this context. The 2015 session of the Scientific and Technical Subcommittee is to decide whether it is possible to implement the preferred scheme agreed upon in

[1] The text of the present document was first made available, in English and Russian, as a conference room paper at the fifty-second session of the Scientific and Technical Subcommittee (A/AC.105/C.1/2015/CRP.24).

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June 2014 for completing all work on the guidelines by 2016. The prospects for shaping up practical ways of regulating the issues related to the security of space activities and the possibility for developing methods for implementing various types of space activities building on the multifaceted assessment of the situation and identifying means and technologies for tackling specific tasks within the space operations safety system will depend on the quality of the guidelines and whether they can be made relevant and workable. Efforts should not be limited to achieving fragmentary regulation. On the contrary, the scope of the regulations should be sufficiently broad and provide for the adoption of systemic measures. Otherwise, the guidelines for ensuring the long-term sustainability of outer space activities will ultimately prove of little practical use (taking into account both the highly dynamic development of space activities themselves and the processes of global development as a whole). In this regard, States and international intergovernmental organizations need to show their commitment to new values by ascribing greater importance to moral considerations as an incentive to carry out regular monitoring of their own activities and as an integral part of the regulation system, particularly for those important aspects of space activities for which no sustainable international legal regulation has yet evolved. The quality of the regime for long-term sustainability of outer space activities now being developed would have to be corroborated through appropriate types of political, legal, material, technological and informational support for joint efforts to ensure the security of space activities under universally recognized good-faith practices.

2. Russia holds a calibrated pragmatic position and reasonably believes that consideration of this topic offers a unique opportunity to highlight the incentives for introducing a new practice providing tools to positively influence the situation in near-Earth outer space, together with a sustainable cooperation process based on mutual interests and common approaches to resolving important issues of the safety of space operations and the security of outer space activities in general. Commonality of interests should be developed on the basis of joint commitments by States and international intergovernmental organizations to strengthening the safety culture in outer space with due regard to all those circumstances and factors that are essential or crucially important. The Russian Federation, driven by relevant, fair and trustworthy motives, stands by the priorities of genuine regulation in the area. Thus, the Russian side has a clear vision of the negotiation process: the project to develop the guidelines can be considered fulfilled when all the significant issues have been well and truly resolved. With this understanding, Russia is submitting detailed proposals on aspects of the future implementation of the concept of ensuring the long-term sustainability of outer space activities and the functions that this concept is designed to perform. The Russian proposals fully meet the requirements of responsible use of outer space and are designed to achieve important, realistic objectives. All the draft guidelines proposed by Russia, as well as the concept of establishing a unified centre for information on near-Earth space monitoring as an information platform under the auspices of the United Nations, are well grounded. The said draft guidelines and the concept of the centre are well adjusted and tailored to each other to allow the diligent development and consistent implementation of a common concept of the safety of space operations. This is a key point, since preserving outer space as a stable, safe and conflict-free environment is crucial for its future use in the interests of sustainable development on Earth. Russia therefore invites the States represented at the Scientific and Technical Subcommittee to show

foresight and to provide real opportunities to agree on express and positive interests and responsibilities for space security, as well as a number of key stabilizing functions in the context of the basic understanding of ways and means to ensure such security.

3. The serious approach taken by the Russian Federation to the subject matter of the safety of space operations has prompted its proposal to discuss the legal basis and modalities for invoking the right to self-defence with regard to outer space within the public negotiation process held under the auspices of the Committee on the Peaceful Uses of Outer Space. The lack of a common understanding on this issue on a multilateral and universal basis could, potentially, seriously complicate the maintenance of safe space operations. By proposing analytical research in this field, Russia rightly calls for a responsible attitude to the problem. In this regard, the essential understanding achieved at the 2014 session of the Committee to expand the potential of the priority item on its agenda, concerning ways and means of maintaining outer space for peaceful purposes, is a source of satisfaction. In both cases — that of ensuring safety of space operations and that of clarifying the mechanisms for invoking the right to self-defence — there is a need to reach an understanding on the modalities for safeguarding the sustainable use of outer space and avoiding confrontational schematics and unfavourable prospects in this important area of human activity.

4. If a task is set to objectively assess the opportunities for implementing the concept of the safety of space operations and security of outer space activities in general, the issue of how and in which direction the global scenario is developing, and specifically the likelihood of a trend towards an increasing use of geopolitical instruments, cannot be overlooked. Such a holistic perception of reality entails analysing the feasibility of finding a solution to the problem of space security in an increasingly challenging geopolitical environment, taking into account the factors and tendencies inherent in rigid forms of geopolitics. By exerting a multi-pronged effect, geopolitics is aimed at specific targets, inter alia, in the field of information. Experience has shown that stakes can be placed on misleading interpretations of events. Both the immediate and remote consequences of such geopolitical schematics call for proper attention when it comes to establishing a system of relationships to ensure the safety of space operations. It is important to be conscious of all the factors that could hinder the collective resolution of problems in this field. The interconnection of all related developments and trends may, under certain circumstances, lead quite predictably to a situation where the hopes for assured and conscientious information exchange on a bilateral basis or on some other individual basis turn out to be delusory because of the subjective factors involved.

5. The joint definition of approaches to elaborating the concept of the long-term sustainability of outer space activities is to serve the purpose of minimizing, as far as possible, conflict probability in connection with space operations. Hence there is a reasonable need to identify and define potential sources of insecurity when carrying out outer space activities and to take appropriate responsible measures to prevent uncontrolled developments, whether due to technogenic factors or to conflicts of interests. This is even more important in view of the lack of any generalized or universally recognized notion of “harmful interference” (besides that defined in the Radio Regulations), not to mention such a category as “hostilities”. As for the work of the Scientific and Technical Subcommittee on ensuring the safety

of space operations, it definitely can and should result in issuing an appropriately configured regulatory document distinguished by clear positive characteristics. The current version of the draft Code of Conduct in outer space, by contrast, lacks the essentials for strengthening security in outer space. Implications are actually the true essence of this document. Diligently reaffirming the commitment to the principle of the non-use of force, the draft Code advances the idea of the legitimacy of unauthorized coercive measures in respect of foreign space objects, if required, for example, for the purpose of space debris mitigation. Thus, any proper interpretation of the generally recognized norm of the non-use of force is being brought to naught. It is no coincidence that in the draft Code the basic principle of the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, which stipulates that "outer space shall be free for exploration and use by all States... on a basis of equality and in accordance with international law" and that "there shall be freedom of scientific investigation in outer space", has been replaced by a substantially modified "combi-thesis" (branded as a "principle"), which declares "the freedom for all States... to use outer space for peaceful purposes without harmful interference...". Such "details" in the draft Code are not incidental — all these elaborate elements are designed to be aligned with those of its provisions that envisage coercive measures. Abilities to establish associative links should suffice to understand that the zeal for space debris mitigation is being used in a rather utilitarian way to legitimize a fundamental change in the status of outer space, and the above norm of the draft Code is nothing but a tool to enable geopolitics to find its "laws" of application in outer space. Modifications of the provisions of the 1967 Outer Space Treaty are aimed at ousting basic notions of what is rightful and bringing about a political reconstruction and depreciation of the basic principles and standards of conduct in outer space. In this respect, the initiative under consideration obviously goes beyond what is tenable. Instead of strengthening the security regulation process in outer space, the international community will end up weakening it. It is pertinent here to cite as an example the national regulation of one of the States that is co-sponsoring the draft Code. Its basic doctrine document defines the concept of "control" in respect of outer space in terms of "freedom" (i.e. freedom of action for itself) and "denial" of access to outer space (obviously for those States to which it would be deemed reasonable to deny such access). The most important thing here is not the overestimation by a certain State of its actual capacities for acting in outer space in such an aggressive way, but the tendency evident in the development of approaches to outer space by the Code's drafters. This raises reasonable questions about the consequences of the persistent efforts by the authors and co-authors of the draft Code to push through such an untenable position. The practical concerns that arise in connection with the draft Code deserve to be addressed by the Committee on the Peaceful Uses of Outer Space, while the above-mentioned provisions of this document call for political and legal assessment within the United Nations.

6. It is known that some States uphold the paradigm of dominance in outer space. Such a doctrine is fundamentally different from previously set targets, such as leadership and even superiority, to which policies have been confined until recently. Dominance is not limited to factors and considerations of technological (including military) pre-eminence; in fact, it is equivalent to the promotion of truly aggressive schemes that involve the establishment of relations of dominance and dependence.

In the context of the safety of space operations, the ideology of dominance is of interest not so much as a basic symbol of political consciousness that forms national identity, but rather as a powerful factor and political tool in assessing opportunities and resources and identifying desired goals and means to achieve them. It would be practically useful to clarify the congruence of doctrines claiming dominance in outer space with the Outer Space Treaty of 1967, as well as the potential impact of such an entrenched political mentality on the regime of the secure use of outer space. The implementation of practical measures to establish dominance in outer space may quite predictably lead to the malfunctioning of the system of ensuring the safety of space operations. Here it is important to have a clear understanding that the logic and the strategic needs of the doctrine of dominance inevitably involve a highly active influence on the information sphere. It is obvious that the doctrine of dominance would not be complete if it did not imply a drive to monopolize certain spheres of activities and the use of coercive measures. States and other participants in space activities should be aware that such developments in the information sphere affecting the monitoring of outer space would certainly not be the best scenario.

7. The need for communication for the purpose of promoting the safety of space operations can be effectively assured through the information platform under the auspices of the United Nations. Such an option for interaction would be positively distinguished by its clearly practical and pragmatic nature derived exclusively from the functional mutuality of information providers which, for whatever reason, may not be engaged in direct interaction. International practice provides an example of the successful establishment of such a structure within the United Nations system, namely in the World Meteorological Organization, which provides all States with information about possible adverse and severe weather conditions. It would therefore be expedient to carefully analyse the benefits of creating (as proposed by Russia) a unified centre for information on near-Earth space monitoring. Such a centre would provide an influential and powerful incentive to develop commonality of interests in this area of considerable importance. It is appropriate to note the following pro-multilateralism motivations regarding interaction in this area:

- The centre’s association with the United Nations would provide significant political and institutional prerequisites for initiating and sustaining interaction procedures, thus enabling joint efforts to be sustained in a stable way;
- Applying the centre’s mechanism would allow States and international intergovernmental organizations to establish the exchange of information in such a way as to avoid dependence on the schematics of geopolitics and to allow the direction of development of international activities to be defined and maintained in the interests of ensuring the safety of space operations (while establishing, with added certainty, the prospects for confidence-building in outer space activities);
- The centre would become a reliable integrated source of information from different (mutually independent) information providers on the operational situation in near-Earth space and would allow effective monitoring of changes as they occur;
- The operational and logistical structuring of the centre would not imply significant costs;

- Access to information furnished by the centre would be available to a considerable number of interested users.

States should be positively motivated to provide the centre with the information they possess. Policy in this area should be based on the understanding that information is to be made available to the entire international community, represented by authorized users. The clear advantage of the centre and its essential difference from other mechanisms reside in the fact that in the context of its work, information would be perceived as a common good benefiting all, and the sphere of information-sharing would not be regarded as competitive or susceptible to competitive motivations, including entrepreneurial space competition. Shaping a completely right-minded information-sharing attitude based on the principle of collective action would be an important element of the model of confidence-building in outer space activities.

8. The following are drafts of additional guidelines officially submitted to the Scientific and Technical Subcommittee by the Russian Federation in original versions in the Russian and English languages.

Draft guidelines

Achievement of basic understanding and development of practical approaches with regard to identifying, in the course of the preparation and conduct of launches, probable conjunctions of newly launched objects with objects already present in near-Earth space

States and international intergovernmental organizations should be urged to consider the pre-launch assessment of possible conjunctions and collisions of newly launched space objects with space objects already present in near-Earth orbit, as well as international coordination of planned on-orbit operations, as prospectively rewarding from the standpoint of managing the safety of space operations. States and international intergovernmental organizations should undertake efforts on a continuous basis and in a sufficiently consistent and integrated fashion to endorse the development and implementation, as technically feasible, of their long-term policy requirements designed to adequately address and accomplish this task. Conditions for the proactive engagement of States and international intergovernmental organizations in cooperative relationships and for the establishment, in the long term, of an appropriate operative information-sharing framework could include the development and use of a common international standard for representing and sharing appropriate information on the nominal flight trajectory of a launch vehicle during the insertion of spacecraft (payloads). [Notwithstanding bilateral or multilateral forms of cooperation as may be deemed feasible by relevant participants, States and international intergovernmental organizations should, when performing a pre-launch assessment of potential conjunctions and collisions of newly launched space objects with space objects already present in near-Earth orbit, duly avail themselves of the opportunities and benefits for the gathering and distribution of trajectory information on space objects already in outer space that are afforded by the Centre for Information on Near-Earth Space Monitoring under the auspices of the United Nations.]

In order to ensure the development of cooperative activities involving the sharing of detailed data and the elaboration of appropriate procedures for the purposes of the safety of space operations, States and international intergovernmental organizations should be encouraged to provide, where possible, pre-launch notifications

containing information on planned dates and times of scheduled launches, types of launch vehicles and basic information on space objects planned for insertion into orbit with reference to the destination regions of near-Earth outer space where newly launched objects are intended to be placed and/or basic parameters of nominal orbit for each object and the possible dispersion of their values. It should be the general understanding that recourse to pre-launch notifications featuring provision of both sets of information identified above could, as an internationally recognized practice, acquire a stable pattern and be sustained as a routine shared standard of action parallel to the enhancement of the space security regime, including, inter alia, transparency and confidence-building measures in outer space activities. Such a favourable combination of factors would serve to eliminate the motivational issues that may inhibit the formation of a comprehensive practice in this area. Special attention must be given to address, as an immediate task, the issue of placing into the practical implementation perspective a procedure for providing information on planned dates and time of scheduled launches, types of launch vehicles and basic information on space objects planned for insertion into orbit with reference to the destination regions of near-Earth outer space where newly launched objects are intended to be placed, as this would require significantly less effort for the new technical and associated procedures to be introduced and simultaneously provide a focused matching of solution to need and practical opportunity.

States and international intergovernmental organizations, acting in compliance with statutory tasks and responsibilities under their legislative and conventional regulations, should, through achievable and pragmatic steps, support and reinforce the potential for partnership with industry and ensure prerequisites for concerted activity on its part with a view to initiating and/or continuously proceeding with studying and exploring concepts of upgrading launch vehicle control systems that would permit the introduction of a procedure for making changes in flight programmes in order to ensure rapid response to unforeseen collision risks during an actual launch. States and international intergovernmental organizations should undertake efforts to develop and use a standard format for the generation and pre-launch sharing of information on nominal orbital parameters and probable dispersion of their values for each space object planned for separation and independent insertion into a target orbit in order to allow assessment of possible encounters and coordinate planned in-orbit operations accordingly. The experience gained and methods developed should, accordingly, be summarized and should be sought to be institutionalized and, in due course, be covered by spaceflight safety planning and launch readiness reporting procedures as far as technically and otherwise practicable. States and international intergovernmental organizations should be encouraged to address the task of achieving, through appropriate mechanisms, commonality or convergence of the practices developed and to promote their use to meet the objectives of practical and effective safety measures.

Prevention of dangerous alterations of space environment parameters resulting from intentional modifications

States and international intergovernmental organizations should support a clear understanding that challenges associated with ensuring the safe and responsible conduct of space operations provide an imperative to focus on the avoidance and management of crisis situations that may be associated with a misuse of technologies and technical means of intentional modification of the natural space environment, thereby posing threats to, and/or causing vulnerabilities of, space systems. Acting to uphold, through participation and/or application, vigilant

compliance with the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, which was opened for signature on 18 May 1977 and entered into force on 5 October 1978, States and international intergovernmental organizations should, in furtherance of the aggregate concept characteristic of that Convention, prioritize those aspects and criteria that meet the safety needs of space operations. States and international intergovernmental organizations should agree that the use of environmental modification techniques for peaceful purposes formally not hindered by the Convention, may, unless supported by criteria and procedures critical to safety, damage or harm the operational space objects in orbit and thus cause widespread and/or long-lasting, and/or severe effects under the Convention, in the sense that such effects may pose immediate and/or projected threats of fragmentation of foreign or any other space objects and result in the mass proliferation of space debris hindering use of the orbit.

For the purposes of this guideline, deliberate manipulation of natural processes shall mean intentional alteration of the characteristics of the space environment (electronic concentration and temperature of the ionosphere, density and chemical composition of the upper atmosphere, intensity of electromagnetic emissions, and characteristics of radiation belts, including the creation of artificial radiation belts). Accordingly, when planning and conducting outer space activities, States and international intergovernmental organizations should not engage in and/or allow entities under their jurisdiction and control to engage in the use of modification techniques that could impact the condition of the space environment in a way that would negatively (in addition to objective factors of the space environment) influence operational spacecraft and associated means of ground infrastructure to a degree either equivalent to or comparable to effects described in article I of the Convention. States and international intergovernmental organizations should be fully aware that such negative influence may lead to the incapacitation of operational spacecraft and associated means of ground infrastructure and, consequently, the increase in the number and frequency of collisions and the proliferation of small objects (particles) of space debris, interference in space radio links, failures in space objects' control processes, on-board equipment and navigation systems, and the distortion of radio signals used in technical means for measuring the trajectory parameters of space objects.

States and international intergovernmental organizations should give issues that form the substance of this guideline proper preventive and reactive regulation applicable to activities they or their related entities conduct or participate in, which would include:

(a) Enhancing awareness of the risks associated with any deliberate manipulation of natural processes in the context provided for in this guideline, as well as advancing a systemic approach to assessing and controlling such risks;

(b) Designing and implementing administrative, operational and technological restraints, respectively, at the stage of establishing and throughout the implementation path of experiments or other types of activity involving any deliberate manipulation of natural processes in the context provided for in this guideline;

(c) Setting safety-critical parameters of the space environment with regard to the scale and effect of any minor manipulations of natural processes in the context

provided for in this guideline, so that the use of such manipulation techniques does not result in damaging phenomena.

Notwithstanding paragraph 2 of article III of the Convention and without prejudice to the procedures provided for in the guideline "Sharing operational space weather data and forecasts", should a fact be established, in the context of implementation of this guideline, that safety-critical values of space environment parameters have been reached, States and international intergovernmental organizations should be open for consultation and/or provision of information, if available, in the event of a request on the part of other States and international intergovernmental organizations interested in such consultations and/or information for good and valid reasons.

Implementation of a policy aimed at precluding interference with the operation of foreign space objects through unauthorized access to their on-board hardware and software

By regulating and administering the functions involved in ensuring the safe and responsible conduct of space operations, States and international intergovernmental organizations, acting, inter alia, subject to the requirements of article VI of the 1967 Outer Space Treaty, should not directly or indirectly engage in, and/or associate themselves with, activities that support or assist any practice whereby any instruments and/or software that are, in functional terms, originally intended or purposefully modified for unauthorized interference in the regular operation of hardware and/or for unauthorized access to information systems of foreign space objects embedded in space objects and/or their components destined for export or use, through sale, lease or otherwise, by foreign recipients (users). Likewise, States and international intergovernmental organizations should require entities under their jurisdiction and/or control to provide guarantees (assurances) against any such practice on their part or that of their personnel or contractors (subcontractors) at any tier. The absence of any such embedded instruments and/or software should be officially attested by States or international intergovernmental organizations exercising jurisdiction and/or control with respect to manufacturers and suppliers of spacecraft and/or their components, as part of standing safety and security validation and assurance processes and/or at the request of the recipient (user). It should be a common understanding that any practice to the contrary, irrespective of motives that presumably could serve to substantiate it, and/or of the nature, scope, duration or intensity of the potential effect of any particular embedded instrument and/or software, or the engagement criteria used or ultimate objectives pursued in that context, would entail serious implications for the safety of space operations since altered control programmes and any other component as may be embedded in space objects could, if conceivably activated, negatively affect the operational capabilities and mission sustainment of the space objects accommodating them and, specifically, escalate the risks of failures and increase the incidents/accidents probability.

Considering that any practice addressed by this guideline and purporting to exert an effect on foreign space objects such as to lead, in particular, to the compromising of command transmissions, would intrinsically be fraught with the denial of rights and interests of States and international intergovernmental organizations that exercise jurisdiction and/or control over said assets in outer space, such practices should be qualified as violative of, and/or prejudicial to, the principles and norms of international law, specifically those deriving from article IX of the 1967 Outer

Space Treaty, as well as the established criteria for good-faith practices and commercial integrity.

States and international intergovernmental organizations should give appropriate consideration to ways and means of providing for such a state of affairs where the understanding recorded in this guideline would be reinforced, directly by them and by non-governmental entities under their jurisdiction and/or control, through practical actions at the institutional and technical levels. Such efforts should be undertaken with a view to creating the prerequisites for consolidating international regulation in the area addressed by drafting and adopting a separate high-level policy document (for example, in the form of an international charter).

Modalities for ascertaining substantively relevant bases for addressing and meeting requirements for the safe conduct, in extreme cases, of operations resulting in the destruction of in-orbit space objects

States and international intergovernmental organizations, while fully adhering to the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, in particular as regards the need to avoid intentional destruction of on-orbit spacecraft, are entitled to preserve options and pursue solutions that could provide for such destruction of space objects under their jurisdiction and/or control when alternatives to such operations would persuasively have far more negative consequences (as may presumably be warranted, for instance, in the context of international efforts to counter an asteroid hazard). Notwithstanding the concept outlined above, it should be generally understood that, as part of ensuring the long-term sustainability of outer space activities and preserving outer space as a safe, stable and conflict-free environment, the intentional destruction of space objects in near-Earth orbits is to be avoided. In this connection, every hypothetical case where a State or international intergovernmental organization faces an absolute need to perform an operation leading to the destruction of a space object under its jurisdiction and/or control (i.e. when circumstances of its flight afford no other technical option but such destruction) should be duly substantiated, with the destruction operation compellingly described as an unavoidable measure to avert immediate or potential serious threat to human life, the environment or property in outer space or, in case of the predicted entry of a space object into the Earth's atmosphere, on the ground, in the air or at sea. Furthermore, any operation that could result, through mechanical impact or the use of other means, in direct or indirect damage to or destruction of space objects under foreign jurisdiction (foreign control) should not be contemplated unless explicitly agreed to by the States/international intergovernmental organizations that exercise jurisdiction and control over such space objects.

Well in advance of proceeding, on legitimate grounds, with the operation for the destruction of an in-orbit space object, States and international intergovernmental organizations should take care to ensure adherence to a procedure for reporting on the circumstances of such operations that should provide for the basic elements outlined below. States and international intergovernmental organizations should, through the Office for Outer Space Affairs as well as other relevant channels when necessary, keep the international community appropriately informed of the circumstances that warrant such an operation and additionally inform it, as necessary, on how the evolving situation is assessed. It should be a general principle that the greater the probability of forecasted side-effects from an operation, the more nuanced should be the information made available internationally at different

stages of the operation's preparation and implementation. Where practicable, the prerequisites for organizing information provision in an expeditious reactive mode or in near-real-time mode should be properly considered. When developing sets of decisions that presume and substantiate an operation for the destruction of a space object, States and international intergovernmental organizations should provide for safety assurance measures that would include warranted and substantive safeguards, to the extent that such measures are deemed practicable and satisfactory.

Integrating and sustaining a shared cross-functional perception of, and definition of incremental steps to ensure, the safe implementation of operations for the active removal and intentional destruction of space objects, specifically as applied to non-registered objects

In the course of applying the guidelines on active removal and/or intentional destruction of space objects at the stage of designing and implementing relevant operations, States and international intergovernmental organizations should align such activities with the provisions of this guideline which supplies and reinforces major criteria for supporting individual and common interests as they should be understood in the context under consideration, including when procedures under the Convention on Registration of Objects Launched into Outer Space of 14 January 1975 (Registration Convention) have not been effectuated with regard to objects launched into outer space. States and international intergovernmental organizations should ensure completeness of regulation of the said operations on the basis of a fully integrated approach in order to avoid any loose, random or abusive practices.

States and international intergovernmental organizations should proceed from the understanding that securing legitimate grounds for operations for active removal/intentional destruction is directly contingent on the reliability achieved in establishing that a specific space object (whether or not registered in the Register of Objects Launched into Outer Space) planned for removal/destruction and a specific physical object in orbit that is presumed to be/is associated with such a space object represent one and the same physical body. Positive identification of the object to be actively removed or intentionally destroyed should be perceived as the determining (decisive) factor in the process of deciding to proceed with the operation. Accordingly, until the origin and status of a specific physical object are determined in a sufficiently convincing and precise way, that object should not be regarded as an immediate (established) target for active removal/intentional destruction operation. States and international intergovernmental organizations should consistently seek to concert their efforts aimed at establishing and maintaining procedures and mechanisms that would make it possible to effectively address and satisfy individual and common needs in the identification of objects in orbit.

Operations for active removal/intentional destruction should be preceded by thorough analysis of all feasible methods of their implementation, including an assessment of the risks entailed by each method. The degree to which the international community is to be informed about the technical aspects of the method chosen for implementing the operation is to be determined at the discretion of States and/or international intergovernmental organizations that plan and conduct such operations, with the understanding that the overall information support required for the purposes of safety of space operations should be adequately provided by them through the Office for Outer Space Affairs and, in addition, through other relevant channels. Such operations should be secured informationally and technically by the States and international intergovernmental organizations planning and conducting

them. Other States and international intergovernmental organizations should, as far as possible and upon request, provide informational and analytical support for such operations. Apart from the provision of valid near-Earth space monitoring information and the results of space situational analysis (if such results are available), such support may also include assistance in identifying relevant space objects on the basis of analysis of the accessible monitoring-information archives and posting of the results of such analysis for general access and use.

Considering specific features that characterize the development of the practice of applying the Registration Convention and are conditioned by differing views on the function of registration of all component parts of space objects and/or launch vehicles which either do not, ab initio, possess (due to their technologically inherent features) the ability to operate independently or else turn out to be incapable (due to contingencies) of sustained operational capabilities for the mission-specified time period, States and international intergovernmental organizations should, by way of applying the guidelines on active removal and/or intentional destruction of space objects and with a view to enhancing practice in registering space objects, proceed from the following understanding:

(a) The body of rules governing the title to, and status of, a space object, as established under international law, should be understood to be based on the interaction of factors that relate to the precise and operationally conditioned interpretation of the legal status of component parts of space objects and launch vehicles as well as of space objects that have not been capable ab initio or else have lost the capability to perform their assigned functions, as applied to cases where States and international intergovernmental organizations do not perform the dedicated registration of such component parts and objects, and of other factors that in any case have continued relevance and, in the light of the rights and obligations provided for in articles VII and VIII of the 1967 Outer Space Treaty, should not be dispensed with;

(b) The fact of non-registration of component parts of objects and, when relevant, objects as described in subparagraph (a) above that result from a space launch or contingencies during the flight of a space object should not in itself be construed as grounds for considering such component parts and objects to be devoid of title, taking into account, inter alia, the requirements of the Convention on International Liability for Damage Caused by Space Objects of 29 March 1972; and the absence of specific information on the said component parts and objects either in the registration information or as a reference to registration entries should not serve to substantiate the divesting of jurisdiction and control over such component parts or objects;

(c) Full concurrence with the practical observations contained in subparagraphs (a) and (b) above should not decrease the motivation on the part of States and international intergovernmental organizations with regard to identifying and configuring, as appropriate, pragmatic and feasible policies that would be instrumental for the ascertainment by the launching State, and/or the international intergovernmental organization that has accepted relevant rights and obligations, of the status of non-registered component parts of space objects or non-functioning space objects under their jurisdiction and control, with the possible outcome being voluntary decisions on the part of the said States and/or international intergovernmental organizations to waive, in whole or in part, the authority they exercise with respect to such component parts of space objects or non-functioning

spacecraft so as to make it possible to develop a framework for taking decisions on clearing outer space of space debris;

(d) The approach outlined in subparagraph (c) should assist States/international intergovernmental organizations in entering into potential joint decisions and arrangements that could fully accommodate requests for well-defined and validated obligations and technical procedures for the implementation of space debris removal operations where such operations have been determined by the parties to such joint decisions and arrangements to be a prioritized requirement/prioritized task.

By way of defining the particular features of the status of fragments (irrespective of their linear dimensions) resulting from break-ups of space objects for whatever reason or from the conduct of technological operations in orbit, consideration should be given to the fact that, for objective reasons, they may not be subject to registration due to the very nature of their origin, their physical condition and the impossibility of determining and regularly updating the parameters of their orbital movement. In order to assess the feasibility of their registration, the degree of reliability with which each particular fragment can be correlated with another identified space object that may be assumed to be the object of its origin and/or with an event that led to its appearance or formation in orbit should be correctly evaluated. States and international intergovernmental organizations wishing to register fragments which they, based on the results of identification, regard as having relevance to space objects previously registered by them should direct to the Office for Outer Space Affairs confirmation of the intention to perform registration of such fragments, accompanied by information on planned applications and requests to have such information posted on a relevant information resource of the Office. It should be presumed in this context that a strictly limited period of time is to be allotted for the receipt from other States and/or international intergovernmental organizations of objections to such registration, given that the relevance of the orbital information decreases steadily unless it is updated. States and international intergovernmental organizations planning to direct requests may, at their own discretion, update, to the extent necessary, the orbital parameters of fragments that they have provided and/or show readiness to transfer such information at the request of interested States and international intergovernmental organizations. In case the requests encounter motivated objections they are to be recalled and the differences that have arisen should be the subject of international consultations.

The shared vision of the practical aspects of addressing and resolving the interrelated issues of the safety of space operations and space debris mitigation should include the allowance for States and international intergovernmental organizations to provide, consistently with their authority and responsibilities in accordance with, and by implication of, the relevant principles and norms of the 1967 Outer Space Treaty, for options that would envisage adjustments to the status of space objects under their jurisdiction and control (including objects that originated from such space objects) which have ceased to function or to be functional, so as to provide definitive eligibility with regard to potential international efforts to clear outer space of space debris. Such practice may, in particular, be validated as an operational necessity with regard to space debris fragments if it is convincingly established that such fragments have irretrievably lost the ability to function or sustain functionality and that lifting constraints on their removal could be the best solution. The entire set of relevant activities should

be motivated by a strict procedure whereby States and international intergovernmental organizations make official announcements that they anticipate the need for such an adjustment of status while maintaining, as technically feasible, exact and necessary correlation with their liabilities under international law. The decisions planned for adoption and actually adopted should be explicit as to the context in which specific rights to exercise functions involved in determining the treatment of such objects would either be conferred (assigned) or waived. The feasibility and expediency of authorizing such practices and rendering them valid should be determined on a case-by-case basis. Acting in implementation of article IX of the 1967 Outer Space Treaty, States and international intergovernmental organizations, while strictly adhering to the understanding outlined above, should, by increasing their level of involvement in focused cooperative activities, work on integrating, as necessary, the different aspects of such activities on the basis of relevant agreements to provide for specific solutions in this area. Within such agreements criteria should be designed and leveraged to further define liabilities and allocate respective duties among all participants in the activities planned. Such agreements should prescribe applicable procedures for regulating access to a space object and/or its component parts as well as measures to protect technology, where such procedures and measures are necessary and feasible in practical terms.

Establishment of normative and organizational frameworks for ensuring effective and sustained implementation of the guidelines and subsequent activity on their review and enhancement

States and international intergovernmental organizations should, acting in a dedicated fashion, establish a regulatory framework that would pragmatically and effectively lead to, and sustain, positive experience in upholding the virtues that reside in the guidelines and, specifically, put in place relevant regulations, processes and compliance review arrangements. It should be commonly understood that the guidelines, while being subject to voluntary implementation from a formally legal perspective, are to be perceived in direct relation to, and as a functional augmentation to, the principles and norms of international law, and that their operation should be supported by appropriate political reasoning and institutional backing in core doctrinal texts. The guidelines should, through a manifest process, be officially attributed the status of a standard-setting document establishing internationally recognized baseline and advanced conditions for ensuring the safety of space operations and, in general, the long-term sustainability of outer space activities. Proceeding from such an understanding, States and international intergovernmental organizations should establish a means to effectively administer existing and, if necessary, leverage new security procedures, to meet operational requirements uniquely associated with the guidelines. In the course of implementing new approaches in safety/security affairs as they relate to outer space activities, States are encouraged to secure such a state of affairs whereby they would take account of national security considerations, in the context of pertinent national policy priorities, objectives and measures, proportionally to the purposes and tasks of applying the guidelines and in appropriate correlation with the substance, nature, requirements and particularities of international cooperation provided for by the guidelines. Decision-making tasks and concepts should be designed so that the understanding outlined above is diligently upheld. Likewise, international intergovernmental organizations should associate their own policies with this understanding and, acting through conventional regulations and engagement with

member States, endeavour to ensure that the aggregate concept underlying their actions duly correlates with the above understanding.

The United Nations should be regarded by States and international intergovernmental organizations as the principal venue for continued institutionalized dialogue on issues related to facilitating practical success in the efficient and comprehensive implementation of the guidelines on ensuring the long-term sustainability of outer space activities, and the United Nations itself should, acting in this capacity through the Committee on the Peaceful Uses of Outer Space and the Office for Outer Space Affairs, sustain a dedicated policy process and provide for an adaptable decision-making platform in this domain. The Committee should, as necessary, develop sets of solutions, in particular, in the format of agreed understandings (either regulatory or interpretative) that could, following applicable procedures, be formally attached to the guidelines. States and international intergovernmental organizations are strongly encouraged to introduce and support the practice of providing the Office with annual reports, time-framed for the sessions of the Committee, containing assessments of the status of implementation of guidelines. In such reports, States and international intergovernmental organizations should corroborate, with the support of credible estimates and indicators, their perception that current (as of the date of the reports) outer space activities (in general and/or in specific aspects) are stable, safe and conflict-free in all major aspects, thus affirming positive motivations with regard to the implementation of the guidelines. If warranted, such reports should also identify phenomena in outer space and/or developments in outer space activities that appear to be manifestly at variance with the guidelines and, hence, would possibly necessitate special consideration by the Committee at its immediate session. In addition, exigency notifications may be filed with the Office referencing occurrences (their plausible attributes and origin) causing particular concerns in the context of implementation of the guidelines pertaining to the safety of space operations and containing an appeal to the Office to mediate in requesting clarification of those occurrences from those States and/or international intergovernmental organizations which may have a relation to such occurrences. As part of projecting an open posture towards information exchanges benefitting effective implementation of the guidelines, specifically, as they relate to safety of space operations, States and international intergovernmental organizations should not neglect reporting to the Office on events that result from their own actions (or omissions to act) or actions (or failure to act) on the part of non-governmental entities under their jurisdiction and control and may be deemed essentially important in practical terms.

Concluding Remarks

The combination of draft guidelines proposed by the Russian Federation is aimed at producing (in the form of baseline requirements) real prerequisites for adding significantly to the concept of space security. In the framework of the Committee on the Peaceful Uses of Outer Space (and on its margins), some colleagues involved in the dialogue have expressed dissatisfaction at the pace of work on the issue of the long-term sustainability of outer space activities and the fact that the process of developing guidelines has, allegedly, become overly protracted. The underlying reasons for such assessments accompanied by lame arguments are obvious: not everyone is ready to accept that the work on the safety of space operations has expanded and has reached the level of more universal generalization. Thus, there is a desire to prevent the draft guidelines from developing into something much

greater than their current preliminary version. Nevertheless, the situation is such that the material developed to date (within the two-year period of activity of the relevant Working Group of the Scientific and Technical Subcommittee) does not have, in relation to a range of cases, the potential to solve issues or even provide the context for addressing them in the future. Building a system of relations for the safety of space operations at a higher level requires persistence as well as ample time for a full-fledged development of the normative fabric allowing to speak of a more technically complex but fair system of views on legitimacy in outer space solely based on existing generally recognized principles and norms of international law. Hence the need to maintain the intellectual status of joint work within the Subcommittee and to agree upon an effective methodology in this area. All member States of the Committee should decide whether they can accept a paradoxical discrepancy between the way the concept of the long-term sustainability of outer space activities was conceived and the way it will be embodied. States and their delegations should synthesize the impressions produced by intermediate results, bring them into line with reality and propose, where necessary, something practical and reasonable with regard to the draft guidelines. Scrutiny in this case will demonstrate that from the point of view of extending the range of tasks solved, work needs to continue so as to develop the subject matter of the safety of space operations and relevant norms of behaviour.