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**General exchange of views on potential legal models
for activities in the exploration, exploitation, and
utilization of space resources**

United States – Input to the Working Group on Legal Aspects of Space Resource Activities

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* [A/AC.105/C.2/L.323](#).



Initial Submission
by the Delegation of the United States of America

to the United Nations Committee on the Peaceful Uses of Outer Space
Legal Subcommittee
Working Group on the Legal Aspects of Space Resource Activities

March 20, 2023

This submission is an initial U.S. response to the Chair and Vice Chair’s invitation to contribute to the initial information collection and stocktaking efforts of the Working Group on the Legal Aspects of Space Resource Activities pursuant to its five-year workplan. The United States may submit further contributions as the Working Group advances its work.

The extraction and utilization of space-based resources is critical to the long-term viability of deep space exploration and inhabiting the Moon and other planets in our solar system. Long-term human and robotic presence on the Moon or elsewhere in the solar system will require utilizing resources already located outside of Earth’s gravity well. At the same time, it is important to remember that humanity is in the earliest days of space resource exploration, exploitation, and utilization. This reality must remain foremost in mind as we discuss legal questions surrounding space resources.

I. Existing governance framework for space resource activities

International Law

The U.S. position regarding the current legal framework for space resource utilization has been consistent and dates back several decades. Under Article II of the Outer Space Treaty, outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means. In the U.S. view, this prohibition on national appropriation does not, however, limit ownership to be exercised by States or private entities over those natural resources that have been removed from their “place” on or below the surface of the Moon or other celestial bodies. Such removal is permitted by Article I of the Outer Space Treaty, which provides that “outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States...”. In other words, it is the U.S. position that the non-appropriation principle in Article II applies to the natural resources of celestial bodies only when such resources are “in place” (*in situ*), and that Article I recognizes the right of exploitation. We acknowledge that this view is not shared by all States or commentators, but as U.S. Department of State Legal Adviser Brian Egan stated in 2016, “notwithstanding the variety of States’ political positions on space resource utilization, the United States remains confident that its interpretation of Articles I and II over many decades and many administrations represents the better reading of the Treaty.”

The Treaty does shape the manner in which such activities may be conducted. For example, space resource utilization activities may not, per Article II, be structured around the assertion of rights in celestial bodies or their resources in place. On the other hand, Article VIII clarifies that launching an object into outer space, including to the Moon and other celestial bodies, does not affect that object's ownership. Thus, entities engaged in space resource utilization activities will retain ownership interests in their equipment, including whatever non-interference rights flow from those ownership interests, even though they will not acquire ownership interests in the ground beneath their equipment. Other articles of the Outer Space Treaty – including, among others, Article IX's provisions regarding due regard, harmful contamination, and harmful interference, and Article XI's obligation regarding informing the UN Secretary-General of the nature, conduct, locations and results of such activities – as well as important obligations under the Registration Convention, Liability Convention, and Rescue & Return Agreement all form indispensable parts of the legal framework for space resource activities.

Domestic Law

The Space Resource Exploration and Utilization Act of 2015 (the Act) directs the U.S. government to: (1) facilitate commercial exploration for and commercial recovery of space resources by U.S. citizens; (2) discourage government barriers to the development in the United States of economically viable, safe and stable industries for commercial exploration for and commercial recovery of space resources in manners consistent with the international obligations of the United States; and (3) promote the right of U.S. citizens to engage in commercial exploration for and commercial recovery of space resources free from harmful interference, *in accordance with the international obligations of the United States and subject to authorization and continuing supervision by the U.S. government*. In addition, the Act states that a U.S. citizen engaged in commercial recovery of a space resource shall be entitled to certain rights, including possession, ownership, use, and sale, *in accordance with applicable law, including the international obligations of the United States*.

It is clear based on the plain language that the Act affirms that space resource utilization activities are subject to the United States' international obligations. By its terms, the Act sanctions space resource utilization only "in manners consistent with the international obligations of the United States." Similarly, the Act only recognizes rights in resources "obtained in accordance with applicable law, including the international obligations of the United States." The Act also recognizes that non-governmental space resource utilization activities are "subject to authorization and continuing supervision by the Federal Government."

Legally Nonbinding Principles, Guidelines and Best Practices

At this stage, the United States believes there is neither a need nor a practical basis to create a further elaborated international regime for space resource utilization activities. Initial technology demonstration missions will be required long before widespread space resource utilization activities occur. As described previously, the four core space treaties provide a basic

legal framework within which interested States can ensure their interests are protected for such initial missions.

We do, however, see an urgent need to ensure that all nations engaged in space resource activities share a common set of fundamental beliefs, among them: in the rule of law, in transparency, and in peaceful purposes. The Artemis Accords underscore these and other critical principles. For Accords Signatories, including the United States and 22 other States, the Accords form an important starting point for future work on space resources.

In Section 10 of the Artemis Accords on Space Resources, Signatories note that utilization of space resources can benefit humankind by providing critical support for safe and sustainable operations. Section 10 emphasizes that extraction and utilization of space resources, including any recovery from the surface or subsurface of the Moon, Mars, comets, or asteroids, should be executed in a manner that complies with the Outer Space Treaty and in support of safe and sustainable space activities. Signatories also affirm that extraction of space resources does not inherently constitute national appropriation under Article II of the Outer Space Treaty, and that contracts and other legal instruments relating to space resources should be consistent with the Treaty. In addition, signatories commit to informing the UN Secretary-General, as well as the public and the international community, of their space resource extraction activities in accordance with the Outer Space Treaty. The Signatories intend to use their experience through the Artemis program to contribute to multilateral efforts such as those to be conducted under the Working Group.

In addition to the specific commitments on space resources enumerated in Section 10, there are other Accords principles that are crosscutting, relevant not just to space resource activities, but to lunar operations and space exploration more generally, including several principles that help to operationalize our obligations under the Outer Space Treaty and other key instruments:

- **Peaceful Purposes:** Section 3 affirms that cooperative activities under the Accords should be exclusively for peaceful purposes and in accordance with relevant international law.
- **Transparency:** Section 4 expresses a commitment to transparency in the broad dissemination of information regarding Signatories' national space policies and space exploration plans in accordance with their national rules and regulations.
- **Scientific Data:** one of the principal benefits to humanity of space resource exploration, extraction and utilization will be the scientific results. Section 8 of the Accords expresses the Signatories' commitment to the open sharing of scientific data and their intent to make the scientific results obtained from cooperative activities available to the public and the international community, as appropriate, in a timely manner.
- **Deconfliction:** in Section 11 of the Accords on the deconfliction of space activities, Signatories acknowledge and reaffirm their commitment to the Outer Space Treaty, including those provisions relating to due regard and harmful

interference. Section 11 sets out how the Signatories intend to work together in operationalizing these important obligations.

Past and Planned Activities

Past practice in the collection, return to Earth, and even contractual sale of Moon regolith and Mars soil samples deserves discussion in the Working Group, although such practice is limited given the nascent nature of space resource extraction and use activities. The following list is not exhaustive, but may serve as a useful starting point for the Working Group.

- **Commercial sale:** In 2020, NASA entered into several commercial contracts to purchase small amounts of Lunar regolith collected by private companies as a part of their operations on the Moon.
- **OSIRIS-REx:** the Origins, Spectral Interpretation, Resource Identification, Security-Regolith Explorer (OSIRIS-REx) mission collected a sample of regolith from near-Earth asteroid 101955 Bennu and is currently returning the sample to Earth with an expected return date of September 24, 2023 to the Utah Test and Training Range in the West Desert in the State of Utah.
- **Mars Sample Return:** NASA and the European Space Agency are working on a program to bring the first samples of Mars material collected by the Mars Perseverance rover back to Earth in the early-to-mid 2030s.
- **Other transfers:** NASA has given away many lunar samples before, including to many COPUOS members. In addition, lunar samples collected by the Soviet Union have been sold on the private market.

II. Resources Covered by the Working Group

There is no definition under international law of “space resource.” Under U.S. domestic law, a space resource has been defined as “an abiotic resource in situ in outer space” and includes water and minerals, for purposes of the Space Resource Exploration and Utilization Act of 2015. In addition, the 2019 Building Blocks for the Development of an International Framework on Space Resource Activities uses a similar definition of space resource: an extractable or recoverable abiotic resource *in situ* in outer space. The Working Group’s mandate does not include discussion of orbital slots or radio spectrum allotment.

III. Activities Covered by the Working Group

This Working Group should consider those activities that are conducted in outer space, including the Moon and other celestial bodies, for the purpose of extracting and utilizing space resources.

IV. Relevant Factors for Working Group Outcomes

The Working Group’s efforts and outcomes should:

- Be rooted in and conform with States' obligations under the existing legal framework, with the Outer Space Treaty and the other three core space treaties as the cornerstones, and reflect important obligations including those related to nonappropriation, free use of outer space, free access to all areas of celestial bodies, due regard, harmful interference, harmful contamination, authorization and continuing supervision, information sharing, scientific data sharing, and registration;
- Acknowledge that the extraction of space resources does not inherently constitute national appropriation under Article II of the Outer Space Treaty;
- Promote the use of outer space for peaceful purposes and for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development;
- Promote the safety, sustainability, and transparency of such activities;
- Promote predictability and legal certainty for governmental and nongovernmental entities seeking to invest in space resource activities, including by promoting consistency within the governance framework;
- Be informed by scientific and technological experts, including through consultations with the Scientific and Technical Subcommittee;
- Be informed by the knowledge and expertise of other stakeholders, including through consultations with nongovernmental entities engaged in, or planning, space resource utilization activities; and
- Reflect the current reality that humanity is at its earliest days of space resource exploration, extraction, and utilization.

V. Conference

The dedicated conference should be designed primarily to understand the current practices and challenges in the operational implementation of the existing governance framework, as well as the benefits and challenges to the further development of a framework for such activities. In particular, one of the objectives of the conference should be to hear from nongovernmental stakeholders regarding planned space resource activities, including operational or other challenges. For the conference to have value added for the Working Group, conference participation should be multistakeholder and inclusive and must not be limited to States and Committee observers.