Written Testimony of James E. Dunstan & Berin Szoka

Senate Committee on Commerce, Science, & Transportation
Subcommittee on Space, Science, and Competitiveness

Reopening the American Frontier: Exploring How the Outer Space Treaty Will Impact American Commerce and Settlement in Space

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Congress took the first (and long-overdue) step toward recognizing the rights of private citizens to explore and use the resources of outer space in the Commercial Space Launch Competitiveness Act of 2015 (CSLCA). The next challenge is for Congress to address the so-called "regulatory gap" for innovative space activities beyond today's established satellite and launch industries — such as asteroid and lunar mining, on-orbit repair and construction, and private space habitats. This implicates Article VI of the Outer Space Treaty ("OST"), which requires that nations "authorize" and "continually supervise" the activities of their citizens in outer space to ensure compliance with overall treaty obligations. This does ***not*** mean, however, that the United States must either (a) re-open the Treaty for negotiation or (b) pass legislation to regulate private activities in space. This is because:

- The "authorization" and "supervision" components of Article VI are subsidiary to the overall structure of Article VI, which places both the responsibility and liability for treaty violations and damages for space activities on the nation itself. A failure to either authorize or continually supervise the activities of private nationals merely increases the risk that a country might be liable for damages;
- Article VI is not "self-executing," meaning that the authorization and supervision language is not the "law of the land" in the United States, absent domestic legislation implementing Article VI. The case of *Medellin v. Texas* makes a clear distinction between treaty provisions that, by their language and nature, become the "law of the land" in the U.S., and those treaty provisions that require domestic implementation to have the force of law;
- The Tenth Amendment (echoing the Declaration of Independence) provide the required "authorization" component of Article VI for Americans;
- Congress has the discretion, as a matter of both international and American constitutional law, to decide how to implement its Article VI responsibility to provide "ongoing supervision" for private American actors in space;
- There are plenty of supervisory regulations in place already, many of which are overlapping, cumbersome, and inconsistent;
- The best way to protect American interests is for Congress to enact a regulatory framework that takes the lightest touch possible in order to satisfy our Treaty obligations while also protecting both public and private American assets — by setting precedent for other nations to follow in adopting their own domestic legislation that will ensure that foreign private companies also act responsibly in space; and

- Reopening the international space law treaty regime would, at least prior to the U.S. establishing its own domestic regulatory regime (and perhaps also demonstrating that such a regime can work), no doubt look much like the burdensome provisions of the Moon Treaty, which the U.S. has previously rejected.

Congress must also streamline and harmonize the patchwork regulatory regime put into place in the 1980s and 1990s on the assumption that there would be only a dozen or so commercial flights a year that would carry no more than 20 payloads to space.

Congress' next steps after adoption of the CSLCA will chart the course for space development for the next century. We call the attention of the Committee to nine themes:

1. The So-called "Regulatory Gap" and Article VI of the OST

This hearing is focused on the impact of the Outer Space Treaty on private activities in space. In Section 108 of the CSLCA, Congress directed the White House to identify any regulatory gaps and suggest ways of closing those gaps to ensure compliance with U.S. obligations under the OST. The White House responded in April, 2016, with its analysis that correctly noted that currently no federal agency regulates such "innovative space activities" such as asteroid mining and commercial lunar landings.[1] The White House suggested a "Mission Authorization" approach, with the FAA/AST taking the lead role in an inter-agency review of applications for missions that don't squarely fall into the regulatory jurisdiction of any current agency (FAA/AST for launches, FCC for frequency, NOAA for remote sensing, NASA for NASA-backed payloads and DOD for DOD payloads).

The White House report notes, correctly, that some planned missions involve activity that is not currently regulated and then concludes, incorrectly, that the U.S. is not meeting its obligations under Article VI. But Article VI does not, in and of itself, require any specific form of authorization and supervision — or that, in the absence of such, non-governmental activities are prohibited. Consider Article VI in its entirety:

> States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. *The activities of non-governmental entities in outer spac*e, including the Moon and other celestial bodies, *shall require authorization and continuing supervision by the appropriate State Party to the Treaty*. When activities are carried on in outer space, including the Moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization.

[1] The OSTP report is available at: https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/csla_report_4-4-16_final.pdf (last checked, May 18, 2017).

Thus, Article VI places the responsibility and liability for breach of the clear prohibitions contained in the OST on the launching state. These prohibitive provisions are:

1. No placing of nuclear weapons or weapons of mass destruction in outer space (Article IV);
2. No establishing military bases on the Moon or other celestial bodies (Article IV);
3. Space and celestial bodies are not subject to claims of appropriation by means of use or occupation (Article II);
4. Avoiding harmful contamination (Article IX); and
5. Avoiding harmful interference (Article IX).

There is a strong argument that the last two prohibitions are not self-executing (see discussion below), but for the sake of this argument, we assume that they are.

2. Article VI Allows Congress to Choose How to Authorize and Supervise the Activities of American Companies

While Article VI requires each nation to "authorize" and "continually supervise" the activities of its citizens, the extent of such oversight only extends to compliance with the *self-executing* Treaty provisions (*i.e.*, that its citizens don't place a WMD in space, make a real property claim on a Celestial Body, or attempt to construct a military base). Article VI says that countries must assure that "activities are carried out in conformity with the provisions set forth in the present Treaty."

How a country chooses to assure that its citizens do not violate these provisions is completely up to that country. Since Articles VI and VII (making countries liable for damages that are caused by their own activities or those of their nationals) place liability for any activities of citizens clearly upon the launching state, the amount of supervision a country wishes to place is, in terms of treaty interpretation, completely up to the country, depending upon the risk the country wishes to assume. Countries fearing that the activities of their citizens could result in international liability may choose to heavily "supervise" (through highly proscriptive ex ante regulation) the space activities of their citizens — up to, and including, prohibiting private space activities entirely. But countries that conclude that the benefits of innovative space activities outweigh the liability risks may consider a lighter "regulatory touch," all the way to becoming a "flag of convenience" with no supervision whatsoever. A lack of supervision is not, in and of itself, a violation of international law; it merely raises the chances that a non-governmental activity might run afoul of the OST prohibitions and that the country responsible be held liable for consequential damages because that country's citizens seek to engage in a behavior that is a per se violation of the OST, or creates a probability that those activities will interfere with the activities of another space activity resulting in harm (e.g., orbital collision or frequency interference). Congress now has the opportunity to decide where on that continuum of regulation it wishes to place the United States.

3. Article VI is Not Self-Executing

In legal terms, this means that Article VI is not self-executing: it requires domestic legislation in order to be enforceable in U.S. courts. *Medellin v. Texas*¸ 552 U.S. 491 (2008). The distinction between a treaty provision that represents an international commitment versus a treaty provision that sets forth specific

international law that becomes the "law of the land" is a cornerstone of U.S. constitutional law and was discussed in the Federalist Papers, No. 33, "comparing laws that individuals are 'bound to observe' as 'the supreme law of the land' with 'a mere treaty, dependent on the good faith of the parties.'" *Medellin*, 552 U.S. at 499. While there are clear prohibitions contained in the Outer Space Treaty which are self-executing, the remaining provisions of the OST are aspirational and advisory, leaving the specific implementation of those concepts up to individual nations. Like the legal issue (consular notification rights of criminal defendants) in the convention at issue in *Medellin* (the Vienna Convention on Consular Relations), the Article VI falls into this latter category of non-self-executing provisions of the OST.

4. The United States has already Authorized Innovative Space Activities

The White House Section 108 Report also ignores the fact that in the United States, innovative outer space activities are already authorized. That authorization predates the space era by nearly 200 years. As Americans, we declared in 1776 that "[w]e hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness." The Tenth Amendment to the U.S. Constitution carries through this concept when it states that "[t]he powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." In short, absent a constitutionally consistent law prohibiting "innovative space activities," Americans are authorized to pursue those activities. In other words, that which is not forbidden is permitted.

5. Adopting a Complete Laissez-Faire "Flag of Convenience" Regime Would Clearly Not Be in the Interests of the United States.

As noted above, because Articles VI and VII of the OST ultimately place liability on the launching state, how the U.S. chooses to "continually supervise" the activities of its citizens in space is a matter of risk assessment. Nonetheless, strong policy reasons (besides the potential liability of the U.S. government, and therefore, the U.S. taxpayer) exist as to why the United States should not abdicate all regulatory authority over the activities of its citizens in space. On two of the Treaty's five principal requirements — the three bright-line rules — the foreign policy interests of the United States should be rather obvious: We absolutely do not want China or Russia or any other power (1) placing nuclear weapons or weapons of mass destruction in outer space (Article IV), (2) establishing military bases on the Moon or other celestial bodies (Article IV), or (3) placing an object on a strategic place and then claiming an absolute, permanent property right on that place (rather than a non-interference zone around ongoing activity). We cannot insist through diplomatic consultation that China or Russia screen their companies' (including state-controlled enterprises) planned missions to ensure compliance with these prohibitions without having a clear mechanism for doing the same ourselves.

Nor can we, without our own system of appropriation "supervision," protect the rights of American public and private actors under the other two principal requirements of Article VI:

1. Avoiding harmful contamination (Article IX); and
2. Avoiding harmful interference (Article IX).

It is not difficult to see how American companies and government actors (both NASA and military/intelligence) could suffer at the hands of foreign companies that push the envelope on these two principles to elevate them into a quasi-claim of appropriation — nor why American companies and government actors would benefit from establishing both more specific standards and dispute resolution mechanisms on all three counts. While relying on international treaty making to tackle these highly fact and science-specific problems, the U.S. can continue to lead the way. The U.S. has done so on technical committees such as the Inter-Agency Space Debris Coordination Committee (IADC), which helped develop the orbital debris mitigation standards that were first adopted by the United States, and are now quickly becoming customary international law. Congress should task NASA and other expert agencies to develop technical standards on use, collocation of multiple bases or other uses (*e.g.*, robotic mining or telescopes) on a celestial body, and ways to mitigate interference among multiple users, such as between two groups extracting minerals in adjacent areas or between a mining operation (which produces dust) and a telescope (which might be subject to interference from dust). Such standards could help to avoid disputes in the first place, just as coordination minimizes disputes among spectrum users, while also providing standards for resolving disputes when they do happen.

Ultimately, such standards — and the adjudicatory mechanisms through which technical standards evolve into legal standards, and change over time — will be of greatest benefit to American companies (and government actors) when they address not only disputes with other American entities, but also with foreign entities. While it is theoretically possible to have two systems operating side by side — one for interactions among U.S. parties and one for interactions among U.S. and foreign parties — the difficulty inherent in such separate systems, and the advantages of having, to the greatest extent possible, a harmonized system for both, would be considerable.

One thing is certain: whatever the United States does will set precedent for the rest of the world, as we did with the issue of orbital debris mitigation. For these reasons, the U.S. should continue to lead the international community in exploring and adopting standards for non-interference as well as the other prohibitions contained in the OST — if for no other reason than to set the precedent in the international community that the clear prohibitions contained in the OST must be enforced by all nations on all citizens of the world. In other words, ensuring *some* effective scrutiny over U.S. companies' activities will, to the extent that other nations follow suit, protect U.S. actors, both public and private alike, from irresponsible foreign actors.

Rather than merely hoping that other countries will follow our lead, the United States should give other countries an incentive to enact domestic legislation that offers equivalent protections to that of the U.S. — especially in the standards and mechanisms for resolving interference disputes between U.S. parties and parties of that country. There is already a directly applicable model for this in the U.S. Code. The Deep Seabed Mineral Resources Act of 1979 was passed as an alternative to the socialist and impractical resource appropriation provisions of the Law of the Sea Treaty, as it was then drafted (and under discussion). Rather than negotiate a new treaty, the U.S. law simply and elegantly allows the recognition of exclusive mining claims issued by other countries that will also recognize U.S. claims through "compatible" legislation.[2] This model could easily be incorporated into U.S. law, avoiding the need for

[2] 30 U.S.C. § 1428.

negotiating revisions to the Outer Space Treaty or even a new multilateral framework such as a convention.

6. Amending the OST or Entering New Treaty Negotiations at this Time is Not in the Interest of the United States

Precisely because the "authorization" and "supervision" provisions of Article VI are aspirational and not self-executing, and because the U.S. Constitution gives Congress the ability to craft domestic legislation that implements Article VI in a way that is both consistent with the core provisions of the OST and Congress' desire to promote rather than stifle free enterprise in space, Congress should *not* suggest to the Administration or the State Department that the U.S. should begin discussions in the international community about amending the OST or augmenting Article VI with a new treaty (such as was done to flesh out the liability provisions of OST Article VII into the 1972 Liability Convention). The result of such efforts would inevitably be a treaty that the United States would not be able to ratify, because it would either (a) contain specific regulatory provisions akin to those adopted in the Moon Treaty that would be antithetical to U.S. economic interests, or (b) provide international lawyers a way to close the "Medellin loophole" by specifically stating that the requirement that countries supervise and authorize the activities of their citizens is self-executing — by adopting language specifying what that regulatory regime must look like.

Either way, the United States would lose the flexibility it now enjoys, which provides it with a unique opportunity to establish domestic law in the United States that is both consistent with Article VI, yet still provides U.S. citizens with a light regulatory approach that encourages innovation and investment in new outer space activities. Most of all, that flexibility means that U.S. policymakers can design a regime that will heavily influence what other countries do, and the concomitant evolution of international law through new conventions (such as those on registration, liability, rescue and return) or through customary international law.

In short, nothing good can come from diving down the "rabbit hole" of treaty (re)making at this stage. In the future, after the U.S. has shown its world leadership by establishing a domestic regulatory approach that encourages private sector advancement into space while protecting the core values of the OST, then the U.S. will be able to negotiate a future treaty from a position of strength, as by that time U.S. entrepreneurs will already have established themselves as the "first movers" in a huge new economic arena and U.S. domestic law will have shown itself to work, not just for American companies, but also for foreign companies that interact with American companies in space, or that choose to launch out of the U.S. to take advantage of American domestic space law.

7. Understanding the Depth and Breadth of Current Space Regulation.

At a recent House hearing,[3] most of the questions asked of the panelists involved issues of space traffic management and orbital debris. It was frustrating that the expert panel did not forcefully respond that

[3] "Regulating Space: Innovation, Liberty, and International Obligations," March 8, 2017.

every scenario raised in questions is already covered by multiple agencies and multiple sets of regulations.

1. If one launches a payload into LEO, FAA/AST regulations require full information about orbital parameters, and the launching party must demonstrate that its orbital choice will not conflict with other users (14 C.F.R. § 415.35), as well as demonstrate that it has complied with orbital debris mitigation standards for "safeing" upper stages and disposal at payload end of life (14 C.F.R. § 417.129).
2. The FCC has similar, yet separately enforced, regulations for anyone seeking a license to communicate with a vehicle or payload (47 C.F.R. § 25.114(d)(14)).[4]
3. NOAA, likewise, has rules for those seeking a license for remote sensing of the Earth (15 C.F.R. Part 960, Appendix 1: C).
4. NASA also has orbital debris and other orbital restrictions (vis-à-vis the ISS) that must be satisfied for any NASA-sponsored mission (NASA-STD-8719.14A (74 pages), which puts into effect NASA Procedural Requirement 8715.6, and includes reference to NASA-Handbook (NASA-HDBK) 8719.14).

So if a company is using a U.S. commercial vehicle to launch a remote sensing satellite that will download data to Earth and is somehow supported by a NASA contract, it must demonstrate compliance with the orbital interference and debris rules of ***four separate federal agencies***.[5] Worse yet, if any of

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[4] Examples abound of how the current space regulations are rooted in the 1980s. The FCC assumes that all satellite are multi-million dollar payloads that take many years to build and launch. *See Comprehensive Review of Licensing and Operating Rules for Satellite Services*, FCC 15-167, 30 FCC Rcd 14713, 14736 (December 17, 2015) ("*Satellite Services Rules Update Order"*). The FCC rules further require the procurement of multi-million dollar bonds (to minimize the warehousing of orbital slots), 47 C.F.R. § 25.165. The application fees for satellites are extremely high (*See Amendment of the Schedule of Application Fees Set Forth in Sections 1.1102 through 1.1109 of the Commission's Rules, Order*, GEN Docket No. 86-285, 29 FCC Rcd 3276, 3276, ¶ 2 (2014) ($129,645.00 application fee per GEO satellite, $446,500.00 application fee per non-GEO ("NGSO") satellite or constellation). Each year satellite operators also have to pay a regulatory fee to the FCC of $138,475.00 for GEO satellites, and $141,950.00 for NGSO satellite or constellations. Current processing times for remote sensing licenses from NOAA are more than a year. Further, the regulations adopted even as late as 2006 anticipated the placement of a few very large satellites (*e.g.*, LandSat and its progeny), and require NOAA to physically visit the downlink sites on an annual basis to ensure that they are operated properly. *See* http://www.nesdis.noaa.gov/CRSRA/files/noaa_commercial_remote_sensing_regulatory_affairs_06302015.pdf . This NOAA presentation noted that between 1996 and 2010, a total of 26 licenses were issued (less than two per year). As of October 1, 2010, there were a total of six (6) remote sensing satellites in orbit. Between 2010 and 2015, 46 licenses were issued (8 per year). As of June, 2015, 11 applications were in process and 22 other entities informed that they were required to apply for licenses. There are now over 100 remote sensing satellites on orbit.

[5] The DOD has its own set of regulations for military launches.

those agencies determines that the debris mitigation statement is insufficient, the company would have to amend its statement to all four agencies, triggering another round of bureaucratic review and (potentially), a near-endless series of reviews and revisions to each of its requests for authorization. This back-and-forth will become significantly more problematic with higher launch volumes.

The problem, then, is not a "regulatory gap" for current space activities, but rather a patchwork regulatory system that is complex, non-transparent, and extremely expensive to navigate. Before we start overlaying a whole new "Mission Authorization" regulatory regime on innovative space activities, we must first streamline the existing regime to reduce cost, redundancy, and most of all, opaqueness, where bureaucrats can still pick winners and losers with impunity. Cleaning up a bloated regulatory regime will provide far more clarity to the space industry than the establishment of an entirely new "black box" into which one drops applications, and crosses fingers that it won't be vetoed, without explanation, by one of several unaccountable agencies. Ideally, Congress should clean up the mess of current federal licensing at the same time that it implements any new regime to address its Article VI responsibilities.

8. The "Mission Authorization" Approach Proposed by the Obama Administration is a Continuation of a "Black Box" Policy of the Federal Government Picking Winners and Losers

Is there an optimal domestic regulatory regime for regulating "innovative space activities?" If there is, it certainly is ***not*** the "Mission Authorization" regime set forth in the White House Report under Section 108. Under OSTP's "Mission Authorization" approach, an inter-agency review process would be established for initial authorization. As proposed, the process lacks any transparency. There is no requirement governing application processing times, no standards against which approval or disapproval are measured, no requirement for a full (or written) explanation of reasons for denial, and no appeals process. In short, the proposed review process looks uncannily like the State Department's International Traffic in Arms Regulations (ITAR) regime. That process has been abused by different governmental agencies countless times since it was imposed, resulting in the near death of the United States satellite building industry. It appears that, under the Administration's Mission Authorization proposal, as in the ITAR, powerful governmental players on the inter-agency review team would each have an independent veto on an authorization request. Most likely, the applicant would never find out who "blackballed" the mission, or why.

If a regulatory regime is adopted for mission authorizations that mirrors, or even remotely resembles, the ITAR regime, Congress will have failed to execute our Treaty obligations in a way that promotes the "exploration and use" of space — the overarching goal of the Treaty (Article II) — and commercial entities will flee the United States to jurisdictions that treat their citizens in a fairer manner, just as satellite manufacturers fled the U.S. To avoid repeating the mistakes of the ITAR regime, Congress must ensure that:

1) The lead agency in the inter-agency process must have the **clout to push back against other agencies** seeking to thwart private enterprise for their own reasons, which may have little to do with U.S. national interests – and, indeed, may actively frustrate them (such as by strangling American industry). FAA/AST, as currently constituted, clearly lacks such clout.

2) **Clear processing guidelines** must keep agencies from blackballing projects on a whim. This will take a significant amount of expertise that is lacking even within FAA/AST. While that office has engineers capable of analyzing launch and reentry risks, it is ill-equipped to analyze, for example, whether Company B can mine an asteroid after Company A has already received authorization for such activities, or to determine how close Company B can land to Company A's lander on the Moon. In short, "non-interference" analyses will need to be conducted, which FAA/ATS does not have the expertise to do. Agencies that do have that expertise might have also an interest in conducting similar missions, giving them perverse incentives that could call into question the integrity of their analyses.

3) The **process must be transparent**. Applicants must be able to find out where in the process they are, what agencies might have questions about the mission, and when a decision will be rendered.

4) Any denial must come with a **fully reasoned decision**, so that rejected registrants know what they must do to amend their registration before resubmitting it. The ability to reject registrations without such explanations will effectively convert a mission registration regime into a mission authorization regime by giving unchecked discretion — veto rights, in fact — to, potentially, each of the reviewing agencies.

5) There must be an **appeal process**, whereby an applicant can challenge that decision in court. In short, the Administrative Procedures Act must apply to this process, rather than the "black box" that characterizes the ITAR process.

While it is theoretically possible to write legislation that would cover all of these "sins," we have no doubt but that bureaucrats, attempting to protect their own "turf," could find other ways of denying or slowing down a private sector company's attempt to conduct innovative space activities that might compete with a government program that is seeking billions of dollars of the federal budget. The statement at the Hearing that "national security interests will always trump commercial interests" gives us pause as to whether any regime with a "veto power" will actually promote commercial innovative uses of space.

9. A "Mission Registration" Approach Will Spur Investment in the Space Economy While Still Allowing the U.S. to Prohibit Activities That Violate the OST or Articulated U.S. National Security Interests

Instead of "Mission Authorization," we propose a minimal "Mission Registration" approach. The essential difference is where the presumption lies.

We suggest allowing any U.S. entity planning to conduct a mission to register with a government entity, and provide full disclosure of the mission scenario. They would also have to demonstrate that the mission would not violate any of the OST prohibitions outlined above and defined more specifically in the enabling legislation. They would also demonstrate that the mission complies with orbital debris and space traffic management requirements through either reference to an FAA/AST, FCC, NOAA, or NASA authorization/approval, or through a separate demonstration if none of those regime apply (which is highly unlikely).

An interagency review would be conducted under a strict shot-clock of 120 days; after that time, the mission would be deemed authorized, unless the lead agency issued an appealable order, consistent with the Administrative Procedure Act's "arbitrary and capricious" standard, clearly identifying the grounds on which the registration was denied. In other words, self-certification of compliance with the statute would provide a **presumption of compliance** — a kind of safe harbor – but that presumption could, of course, be rebutted by the agency or any private party (domestic or, ideally, foreign as well) seeking to oppose the proposed mission as inconsistent with the Treaty.

A registrant would be under an obligation to keep the registering agency upraised of any changes to the mission, and the lead agency could in the future, if it later deemed that the mission might violate the OST prohibitions or other U.S. policy concerns, seek a court injunction to revoke the registration, with the burden of proof or revocation resting with the government agency.[6]

In order to meet U.S. obligations under OST Article IX not to authorize missions that might cause harmful interference to the activities of other "State Parties" or that might cause harmful contamination of space or celestial bodies (which, again, could be involve harm to future users, who may not yet be present to defend their interests in the kind of adversarial process that could work for harmful interference claims), we propose that the lead agency issue a Public Notice indicating that the application for registration has been filed and general information about mission type (*e.g.*, on-orbit satellite servicing, asteroid mining, etc.).[7] Another country (but not a foreign national) at that point could seek consultation with the United States if it believed that a mission might violate Article IX. The statute should be written such that other countries could not abuse the consultation process by objecting to each registration as a way of either slowing down U.S. interests, or gaining valuable proprietary information concerning the nature of the mission, or the technology involved.

The practical problem with the U.S. taking the "high road" of notifying the world community in advance of planned missions, however, is that it might prompt other nations to create "paper missions"[8] to stake out coveted locations in the solar system. A country, for example, could authorize a mission to land near Shackleton crater on the Moon and then claim a large non-interference zone around the landing site that would effectively preclude other operations nearby. Such a claim would likely violate Article II's

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[6] We believe that any revocation would need to be done at the court level to assure an independent review of the revocation process. Allowing an agency to revoke the authorization subject to court appeal by the applicant would unfairly place the burden of proceeding and burden of proof with the private entity, and not on the government agency, where it belongs.

[7] A fuller registration of the payload would be made prior to launch consistent with the obligations of the Registration Convention.

[8] The International Telecommunication Union (ITU) and state regulatory bodies such as the FCC have long dealt with attempts to warehouse valuable orbital locations (especially within the geostationary orbit), through the filing of "paper satellite" applications – applications to provide service by entities clearly technically or financially unable to launch a satellite within the timeframes specified in those applications. This has led, on the U.S. side, to the implementation of very strict construction and launch milestones.

prohibition on territorial appropriation, both because it is not based on actual, ongoing use, but future, hypothetical use. Nonetheless, to avoid tying up American companies in dilatory international consultations under Article VI, any “prior notice" regime should come with strict milestones to demonstrate to the international community that such authorizations are legitimate. In that way, the United States can demand similar regimes from foreign governments in order to acknowledge any Article IX non-interference rights of their citizens. Again, this kind of coordination should be central to the concept of reciprocal, interlocking legislation proposed above in the model of the Deep Seabed Hard Mineral Resources Act.

A private party would be left with the ability to seek an injunction against another party it believed might cause harmful interference to its activities using traditional common law tort theories. As much as any particular private U.S. company might like to have the weight of the U.S. government behind it to enforce its rights to a particular mission, such a heavy-handed approach (empowering the government to pick winners and losers) would be costly for the government to engage in, and simply not necessary given the well-established field of tort law. At most, Congress could consider requiring arbitration or other alternative dispute resolution platform in the statute for all cases arising under a Mission Registration regime. Ideally, the same common law developed between U.S. parties should be applicable in disputes between U.S. and foreign parties. For the concept of interlocking, reciprocal domestic legislation to work, the U.S. common law must be firmly grounded in Article IX’s prohibition against harmful interference, while also taking care not to violate Article II’s prohibition on territorial appropriation.

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This is, of course, only the beginning of the issues that will ultimately need to addressed to ensure that American law provides a sound foundation for American activities in space of all kind: governmental, business and scientific / not-for-profit. Congress will also have to address difficult questions, especially around harmful contamination and spectrum usage. But not all these issues need to be addressed now, at this hearing, or in legislation that Congress might pass this year.

We look forward to assisting explore these additional questions in the future, and look forward to being of assistance to your committee in any way we can.

Respectfully,

James E. Dunstan, Senior Adjunct Fellow, TechFreedom[9]

Berin Szóka, President, TechFreedom[10]

[9] Jim Dunstan is a Senior Adjunct Fellow of TechFreedom and the founder of Mobius Legal Group, PLLC where he has spent more than 33 years representing companies in the outer space, telecommunications, and high technology sector. He can be reached at jdunstan@mobiuslegal.com.

[10] Berin Szóka is President of TechFreedom, a nonprofit, nonpartisan technology policy think tank. He can be reached at bszoka@techfreedom.org.