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**Committee on the Peaceful Uses  
of Outer Space**  
**Legal Subcommittee**  
**Forty-seventh session**  
31 March - 11 April 2008  
Item 12 of the agenda<sup>\*</sup>  
**General exchange of information  
on national legislation relevant to the peaceful  
exploration and use of outer space**

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**Note by the Secretariat**

1. At its forty-sixth session, in 2007, the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space, agreed to include “General exchange of information on national legislation relevant to the peaceful exploration and use of outer space”, as an item under a four-year workplan (A/AC.105/891, paragraph 136). In accordance with that work plan, at its forty-seventh session, under agenda item 12, the Subcommittee would consider presentations by Member States of reports on their national legislation.
2. The present document contains an overview of national legislation of the United States of America governing space activities.

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<sup>\*</sup> A/AC.105/C.2/L.264.

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## OVERVIEW OF U.S. LAW GOVERNING SPACE ACTIVITIES

### I. Introduction

This paper provides an overview of national legislation of the United States of America relating to space. U.S. national legislation relating to governmental and non-governmental space activities is interspersed in numerous legislative enactments. This report primarily provides information concerning four laws relating to governmental or non-governmental space activities of the United States: (a) the Commercial Space Launch Act; (b) the Land Remote Sensing Policy Act; (c) the Communications Act of 1934, as amended; and (d) the National Aeronautics and Space Act. In addition, this report provides brief summaries of other legislation relating to space activities.<sup>1</sup>

### II. Overview of Some Relevant U.S. Laws

#### A. Commercial Space Launch Act<sup>2</sup>

##### 1. Summary

The Commercial Space Launch Act (“CSLA”) and the regulations promulgated under it together comprise a significant component of the body of law in the United States governing commercial space activity. Briefly, the CSLA grants authority to the Secretary of Transportation, delegated to the Office of Commercial Space Transportation of the Federal Aviation Administration (“FAA”), to undertake three tasks. First, the FAA must oversee launch and reentry activities of licensees and permittees and evaluate the impact of such activities on health and public safety, the environment, national security and U.S. foreign policy. Second, the FAA must impose and enforce insurance and financial responsibility requirements on licensees and permittees. Third, the FAA is authorized to investigate and penalize violations of the CSLA.

##### 2. Purposes

The goals of the CSLA are to safely open space to the American people and to encourage private sector development of space transportation.<sup>3</sup> Among other goals, the stated purposes of the CSLA are to simplify and expedite the issuance and transfer of commercial launch and reentry licenses, to promote the safety of launch and reentry vehicles that are intended to carry humans, and to facilitate the strengthening and expansion of the space transportation infrastructure in the United States.<sup>4</sup> The realization of these goals also promotes trade among nations. As

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<sup>1</sup> This paper also includes selected regulations promulgated under U.S. statutes. There are several other U.S. regulations related to space that are not discussed in this paper.

<sup>2</sup> Commercial Space Launch Act, as amended, 49 U.S.C. §§70101-70121 (Pub. L. 98-575, Oct. 30, 1984), as amended in 1988 (Pub. L. 100-657), as amended in 1998 (Pub. L. 105-303).

<sup>3</sup> 49 U.S.C. § 70701(a).

<sup>4</sup> *Id.* at § 70101(b).

explained in each of the following sections, much of the CSLA also serves to satisfy the requirements imposed on the United States by various international treaties.

### 3. Licensing Procedures and Requirements

Article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (“Outer Space Treaty”)<sup>5</sup> provides that States Parties bear international responsibility for their activities in outer space, “whether such activities are carried on by governmental agencies or by non-governmental entities.” In addition, under Article VI of the Outer Space Treaty, space activities conducted by non-governmental entities must be authorized and supervised by the appropriate State Party to that treaty.

Section 70104 of the CSLA requires a license:

(1) for a person to launch a launch vehicle or to operate a launch site or reentry site, or to reenter a reentry vehicle, in the United States;

(2) for a citizen of the United States (as defined in section 70102(1)(A) or (B) of the CSLA) to launch a launch vehicle or operate a launch site or reentry site, or to reenter a reentry vehicle, outside the United States;

(3) for a citizen of the United States (as defined in section 70102(1)(C) of the CSLA) to launch a launch vehicle or operate a launch site or reentry site, or to reenter a reentry vehicle, outside the United States and outside the territory of a foreign country, unless the foreign government has jurisdiction over the launch or operation pursuant to an agreement between the government of the United States and the government of the foreign country;

(4) for a citizen of the United States (as defined in section 70102(1)(C) of the CSLA) to launch a launch vehicle or operate a launch site or reentry site, or to reenter a reentry vehicle, in the territory of a foreign country if there is an agreement between the government of the United States and the government of the foreign country that the U.S. Government has jurisdiction over the launch or operation.<sup>6</sup>

A citizen of the United States is defined by section 70102(1) of the CSLA as: (A) an individual who is a citizen of the United States; (B) an entity organized or existing under the laws of the United States or a State; or (C) an entity organized or existing under the laws of a foreign country if the controlling interest is held by an individual or entity described in subclause (A) or (B).<sup>7</sup> “Controlling interest” is defined in the CSLA’s implementing regulations as ownership of an amount of equity in such entity sufficient to direct management of the entity or to void transactions entered into by management. Ownership of at least 51% of the equity in an entity by persons described in subclauses 70102(A) or (B) creates a rebuttable presumption that such interest is controlling.<sup>8</sup>

<sup>5</sup> The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, 18 U.S.T. 2410 (1967).

<sup>6</sup> 49 U.S.C. § 70104(a).

<sup>7</sup> *Id.* at § 70102(1).

<sup>8</sup> 14 C.F.R. § 401.5 (*see* definition of “United States citizen”).

The regulations implemented under the CSLA establish procedures by which persons must obtain: a launch license (Part 415); a license to operate a launch site (Part 420); a license for launch and reentry of a reusable launch vehicle (“RLV”) (Part 431); a license to operate a reentry site (Part 433); and a license for reentry of a vehicle other than a RLV (Part 435).

Part 413 of the CSLA regulations sets out the procedures for filing applications generally, while the regulations for the individual licenses listed above outline the specific requirements for each category of license. A significant requirement that applies to all categories of licenses is the pre-application consultation, by which an applicant consults with the FAA to discuss the application process and potential issues that may be relevant to the consideration of the application.<sup>9</sup>

Articles II and IV of the Convention on Registration of Objects Launched into Outer Space (“Registration Convention”)<sup>10</sup> require States Parties to maintain registries of space objects launched into Earth’s orbit or beyond, and to provide the Secretary-General of the United Nations with certain information concerning such registered objects. In support of these obligations, the regulations of the CSLA require launch and reentry operators to provide the information required by the Registration Convention to the FAA for any object placed into space by a licensed launch. The only objects exempt from this requirement are those owned and registered by the U.S. Government and objects owned by a foreign entity.<sup>11</sup>

The State Department is the U.S. Government agency that maintains the United States registry of space objects, including both commercial and U.S. Government objects, and is the U.S. Government agency that provides the Secretary-General of the United Nations with information concerning registered space objects.

Under 14 C.F.R. § 417.129, the FAA addresses orbital debris issues. This regulation requires that a launch operator ensure that there is no unplanned physical contact between a launch vehicle and its payload after separation. The requirements also prohibits the generation of debris from the conversion of energy sources into energy that would fragment the vehicle. Finally, the FAA requires that a launch operator remove stored energy from its launch vehicle, including by depleting residual fuel and venting any pressurized system.

#### **4. Insurance and Financial Responsibility Requirements**

Article VII of the Outer Space Treaty provides for international liability for damage to another State Party or to its natural or juridical persons by a space object or its component parts on Earth, in air space or in outer space. The Convention on International Liability for Damage Caused by Space Objects (“Liability Convention”) provides for absolute liability for damage caused by a launching State’s space object on the surface of the Earth or to aircraft in flight, and fault-based liability for damage caused elsewhere.<sup>12</sup> A “launching State” is defined in Article I of the Liability Convention as either (a) a State which launches or procures

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<sup>9</sup> *Id.* at § 413.5.

<sup>10</sup> The Convention on Registration of Objects Launched into Outer Space, T.I.A.S. 8467 (1976).

<sup>11</sup> 14 C.F.R. §§ 417.19 and 431.85.

<sup>12</sup> The Convention on International Liability for Damage Caused by Space Objects, 24 U.S.T. 2389 (1972).

the launching of a space object, or (b) a State from whose territory or facility a space object is launched. Therefore, a State Party may, inter alia, be liable for damages caused by or in connection with a launch conducted by a non-governmental entity, or even a foreign national, as long as the launch occurred within the State's territory or at a State facility.

The CSLA requires a licensee or permittee to obtain third party liability insurance or demonstrate financial responsibility in amounts sufficient to compensate for the maximum probable loss ("MPL") from claims by a third party for death, bodily injury, or property damage or loss and by the U.S. Government against a person for damages or loss to government property resulting from an activity carried out under the launch license.<sup>13</sup> The amounts required to compensate for the MPL are established for each license by the FAA's Office of Commercial Space Transportation, up to a maximum of \$500 million, or up to \$100 million for claims brought by the U.S. Government for loss of or damage to property owned, leased, occupied or within the control of the United States.<sup>14</sup>

The CSLA also requires a licensee to include, and cause to be included in all contracts with its contractors, subcontractors, customers, and the contractors and subcontractors of the customers, a reciprocal waiver of claims. Through this waiver, each party agrees to be responsible for property damage or loss it sustains, and for personal injury to, death of, or property damage or loss sustained by its own employees resulting from an activity carried out under the license.<sup>15</sup> The licensee and its contractors, subcontractors, customers, and the contractors and subcontractors of the customers are also required to enter into a reciprocal waiver of claims with the U.S. Government pursuant to the terms of a three-party agreement.<sup>16</sup>

To the extent provided in advance in an appropriations law, the U.S. Government will pay successful third party claims against the licensee, a contractor, subcontractor, or customer of the licensee or a contractor or subcontractor of the licensee's customer that exceed the amount of the licensee's third party liability insurance up to \$1.5 billion.<sup>17</sup> In such an event, the President of the United States, on the recommendation of the Secretary of Transportation, must submit a compensation plan to Congress setting forth the amount of claims to be paid.<sup>18</sup>

## 5. Oversight and Evaluation

Among the specific requirements for each type of license is the need for the FAA, in conjunction with other agencies of the U.S. Government, to conduct one or more of the following categories of "review" for a proposed activity: policy, safety, and environmental impact. In a "policy review," the FAA must determine whether the proposed activity would jeopardize U.S. national security or foreign policy

<sup>13</sup> 49 U.S.C. § 70112(a)(1); 14 C.F.R. Part 440.

<sup>14</sup> 49 U.S.C. § 70112(a)(2)-(3). The procedures for determining the MPL are set out at 14 C.F.R. § 440.7. *See also id.* at § 440.9(d).

<sup>15</sup> 49 U.S.C. § 70112(b)(1); 14 C.F.R. § 440.17.

<sup>16</sup> 49 U.S.C. § 70112(b)(2); 14 C.F.R. § 440.17. The forms of three-party agreement are found at Appendices B and C to Part 440 for launch licensees and permittees.

<sup>17</sup> 49 U.S.C. § 70113(a); 14 C.F.R. § 440.19. The CSLA provides that the \$1.5 billion maximum amount that the United States will pay in excess of the licensee's third party liability insurance be adjusted to reflect inflation.

<sup>18</sup> 49 U.S.C. § 70113(d).

interests or international obligations of the United States.<sup>19</sup> “Safety reviews” will vary depending on the specific type of activity, but the following issues will generally be considered in all cases: analysis and compliance with acceptable risk criteria; adequacy of flight safety systems; existence of safety organizations and officials; and emergency response and investigation plans and procedures.<sup>20</sup> Payloads will also be evaluated under criteria of policy and safety reviews.<sup>21</sup>

Part 414 of the CSLA regulations establish procedures by which an applicant can obtain a “safety approval” for any of certain defined “safety elements.” Such safety approval can be obtained independent of a license, but does not confer authority to conduct activities for which a license is required.<sup>22</sup>

Part 460 of the CSLA rules sets out the requirements for approval of human space flight. Aside from requirements regarding crew qualifications, training, and security precautions, the CSLA and its regulations require that crew members and space flight participants be advised of the risks associated with space travel and sign waivers releasing the U.S. Government from any claims arising from injury or property damage associated with their participation in space activities.<sup>23</sup>

## 6. Enforcement and Penalties

Section 70106 of the CSLA requires a licensee or permittee to allow the placement of a representative of the U.S. Government at a launch site or re-entry site, at a production or assembly site, or at a site at which a payload is integrated with a launch or re-entry vehicle, or at a training site for crew and space flight participants. The observer monitors the activity at the site to ensure compliance with applicable laws and regulations.<sup>24</sup>

Sections 70107 authorizes the Secretary of Transportation to modify, suspend, or revoke a license or permit as a result of non-compliance or where suspension and revocation is necessary to protect the public health and safety, the safety of property, or the national security and foreign policy interests of the United States.<sup>25</sup> Under Section 70108, the Secretary may prohibit, suspend, or end immediately any FAA-authorized launch or reentry or operation of a launch or reentry site if such launch, reentry, or operation is detrimental to the public health and safety, the safety of property, or the national security and foreign policy interests of the United States.<sup>26</sup>

Finally, Section 70115 grants the Secretary powers of investigation, search and seizure, and the imposition of civil penalties for violation of applicable laws, rules, or terms of a license or permit.<sup>27</sup>

<sup>19</sup> See, e.g., 14 C.F.R. Parts 415, Subpart B, and 431, Subpart B.

<sup>20</sup> See, e.g., 14 C.F.R. Parts 415, Subpart C, and 431, Subpart C.

<sup>21</sup> *Id.* at §§ 415.51 and 431.51.

<sup>22</sup> *Id.* at § 414.3.

<sup>23</sup> *Id.* at §§ 460.9, 460.19 and 460.49. The form contracts that must be used to execute such waivers with the U.S. Government are found at Appendices D and E to Part 440.

<sup>24</sup> 49 U.S.C. § 70106(a).

<sup>25</sup> *Id.* at § 70107(b) and (c).

<sup>26</sup> *Id.* at § 70108(a).

<sup>27</sup> *Id.* at § 70115.

## B. Land Remote Sensing Policy Act of 1992<sup>28</sup>

### 1. Summary

The Land Remote Sensing Policy Act (“LRSPA”) authorizes the Secretary of Commerce to carry out two general responsibilities: the licensing of private commercial remote sensing satellite systems and the provision of unenhanced data generated by private remote sensing systems, and systems of the U.S. Government, to foreign governments and other users. The Secretary of Commerce, whose authority is delegated to the National Oceanic and Atmospheric Administration (“NOAA”), also is vested with powers to investigate and punish violations of the LRSPA.

### 2. Purposes

The stated purposes of the LRSPA include stimulating the development of the commercial market for unenhanced data; furthering the long-term goal of commercialization of land remote sensing, which will enhance international trade; and promoting widespread access to unenhanced data on a non-discriminatory basis. Execution of the duties under the LRSPA, therefore, encourages accessibility to remote sensing data and encourages commercial and scientific cooperation between nations.<sup>29</sup>

### 3. Licensing Requirements

As noted in the discussion of the CSLA, Article VI of the Outer Space Treaty provides that States Parties bear international responsibility for their activities in outer space, “whether such activities are carried on by governmental agencies or by non-governmental entities,” and space activities conducted by non-governmental entities must be authorized and supervised by the appropriate State Party. Consistent with the requirements of the Outer Space Treaty, the LRSPA authorizes the Secretary of Commerce to license private sector parties to operate private remote sensing space systems.<sup>30</sup> In fact, the LRSPA makes it unlawful for any person who is subject to the jurisdiction or control of the United States to operate a private remote sensing space system without a license issued by the Secretary.<sup>31</sup> Further, operations under such licenses must be carried out in a manner to preserve the national security of the United States and to observe international obligations of the United States.<sup>32</sup>

Technical operating requirements of licensees include: (1) furnishing the Secretary of Commerce with complete orbit and data collection characteristics of the remote sensing system, and immediately providing notification of any deviation; and (2) upon termination of operations under the license, making disposition of any

<sup>28</sup> Land Remote Sensing Policy Act, as amended, 15 U.S.C. §§5601-5672 (Pub. L. 102-55, Oct. 28, 1992), as amended in 1998 (Pub. L 105-303).

<sup>29</sup> See 15 U.S.C. § 5601.

<sup>30</sup> *Id.* at § 5621(a). The regulations implementing the LRSPA at 15 C.F.R. § 960.3 define *remote sensing space system* as any device, instrument, or combination thereof, the space borne platform upon which it is carried, and any related facilities capable of actively or passively sensing the Earth’s surface, including bodies of water, from space by making use of the electromagnetic waves emitted, reflected, or diffracted by the sensed objects.

<sup>31</sup> 15 U.S.C. § 5622(a).

<sup>32</sup> *Id.* at § 5622(b)(1).

satellites in space in a manner satisfactory to the President of the United States.<sup>33</sup> A licensee must also maintain operational control of the remote sensing space system from a location within the United States at all times and allow access to its facilities comprising the remote sensing space system to U.S. Government representatives for license monitoring and compliance inspections.<sup>34</sup>

In addition, the licensee must notify and seek approval from the Secretary of Commerce regarding any significant or substantial agreement the licensee intends to enter with a foreign nation, entity, or consortium involving foreign nations or entities, not later than sixty (60) days prior to concluding the agreement.<sup>35</sup> The term “significant or substantial foreign agreement” is defined in the regulations as an agreement that provides for one or more of the following:

- (1) administrative control that may include distributorship arrangements involving the routine receipt of high volumes of unenhanced data from a licensee’s system;
- (2) participation in the operations of the system, including direct access to the system’s unenhanced data; or
- (3) an equity interest in the licensee held by a foreign nation and/or person, if such interest equals or exceeds or will equal or exceed 20% of total outstanding shares, or entitles the foreign person to a position on the licensee’s Board of Directors.<sup>36</sup>

In conjunction with the Department of Defense, the Department of State, and other relevant agencies, the Department of Commerce will review the proposed agreement in light of the national security interests, foreign policy, and international obligations of the U.S. Government. The LRSPA regulations outline certain requirements that such an agreement must meet for approval.<sup>37</sup>

#### 4. Provision of Unenhanced Data

Consistent with the United Nations’ Principles Relating to Remote Sensing of the Earth from Outer Space,<sup>38</sup> the LRSPA requires that a licensee make available to the government of any country (including the United States) “unenhanced data” concerning the territory under the jurisdiction of such government as soon as such data are available and on reasonable cost terms and conditions and subject to all other conditions of the license.<sup>39</sup> However, unenhanced data will not be provided if the release is contrary to U.S. national security concerns, foreign policy or

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<sup>33</sup> *Id.* at § 5622(b)(4) and (5). The requirement to dispose of a satellite in a manner satisfactory to the President is intended to give effect to the orbital debris mitigation policies of the U.S. Government. In the Final Rule implementing the LRSPA regulations, NOAA indicated that it would provide license applicants with background information on three possible methods for post-mission disposal that are consistent with the practices reflected in those mitigation policies, and will review post-mission plans on a case-by-case basis. *See* Licensing of Private Land Remote-Sensing Space Systems, Final Rule, 71 Fed. Reg. 24474, 24479 (April 25, 2006).

<sup>34</sup> 15 C.F.R. § 960.11(b)(2) and (3).

<sup>35</sup> *Id.* at § 960.8; 15 U.S.C. § 5622(b)(6).

<sup>36</sup> 15 C.F.R. § 960.3.

<sup>37</sup> *Id.* at § 960.8(b).

<sup>38</sup> Principles Relating to Remote Sensing of the Earth from Outer Space, December 3, 1986.

<sup>39</sup> 15 U.S.C. § 5622(b)(2).

international obligations or is otherwise prohibited by law.<sup>40</sup> “Unenhanced data” is defined in the regulations, in part, as “remote sensing signals or imagery products that are unprocessed or subject only to data preprocessing.”<sup>41</sup> In addition to the provision of such data to foreign governments, a licensee (and the U.S. Government) must provide unenhanced data designated by the Secretary of Commerce to all users without preference or special arrangement regarding delivery, pricing, or technical considerations. However, unenhanced data may be provided at reduced prices on the condition that such data are used solely for noncommercial purposes, such as education or research.<sup>42</sup>

## 5. Enforcement

Subpart 960.14 of the LRSPA regulations authorizes the Secretary of Commerce to search and inspect any facility suspected of being used to violate the terms of the license or regulations, and seize any data obtained in violation of law. The Secretary of Commerce may assess a civil penalty of up to \$10,000 for each violation, with each day of operation in violation constituting a separate violation.<sup>43</sup> Finally, the Secretary may seek a court order terminating, modifying, or suspending a license if the licensee fails to comply with the terms of the license or the national security concerns or international obligations of the United States.<sup>44</sup>

## C. Communications Act of 1934, as amended<sup>45</sup>

The Communications Act of 1934, as amended (“Communications Act”), grants the Federal Communications Commission (“FCC”) authority to regulate radiocommunication activities by non-Federal government entities, within the limits of U.S. jurisdiction as provided in that statute, and the FCC applies this authority to space activities.<sup>46 47</sup> The FCC was established for the purpose of regulating commerce in communication, and to make available “to all the people of the United States ... a rapid, efficient, Nation-wide and world-wide wire and radio communication service with adequate facilities at reasonable charges, for the

<sup>40</sup> 15 C.F.R. § 960.11(b)(10).

<sup>41</sup> *Id.* at § 960.3.

<sup>42</sup> 15 U.S.C. §§ 5622(b)(3) and 5651.

<sup>43</sup> 15 U.S.C. § 5623(a)(3) and 15 C.F.R. §§ 960.14 and 960.15(a).

<sup>44</sup> 15 U.S.C. § 5623(a)(2) and 15 C.F.R. § 960.15.

<sup>45</sup> Communications Act of 1934, as amended, 47 U.S.C. §§151 et seq. (Pub. L. 416, June 19, 1934).

<sup>46</sup> For an early discussion of one aspect of the FCC’s authority to regulate satellite radiocommunication, *see* Establishment of Domestic Communication-Satellite Facilities by Nongovernmental Entities, 22 FCC 2d 86, Appendix C-Memorandum on Legal Issues (1970).

<sup>47</sup> Note that the FCC’s authority does not extend to satellite systems owned and operated by U.S. Government agencies. *See* 47 U.S.C. § 305. The National Telecommunications and Information Administration (“NTIA”), U.S. Department of Commerce, has the exclusive authority to manage radio spectrum used by U.S. Government agencies and to make frequency assignments to radio stations and classes of radio stations belonging to and operated by the United States. *See* National Telecommunications and Information Organization Act, as amended (codified at 47 U.S.C. §§ 901, et seq.). Among other things, NTIA coordinates and registers U.S. Federal Government satellite networks internationally.

purpose of the national defense, [and] for the purpose of promoting safety of life and property...” The FCC’s primary function concerning radiocommunication is to issue licenses and prescribe rules to further the use of radio in the public interest.<sup>48</sup> The FCC issues licenses based upon a demonstration that the proposed operations will serve the public interest, convenience, and necessity. The FCC may also adopt rules to carry out the Communications Act, or the provisions of “any international radio or wire communications treaty or convention, or regulations annexed thereto, including any treaty or convention insofar as it relates to the use of radio, to which the United States is ... a party.”<sup>49</sup>

Part 25 of the FCC’s rules provides procedures and requirements for the licensing and operation of facilities used for satellite communications, including both ground stations and satellites. These rules provide technical requirements designed to avoid radio-frequency interference, and to facilitate coordination of satellite system operations, both domestically in the United States and internationally through the processes administered by the International Telecommunication Union (“ITU”).<sup>50</sup>

The FCC has adopted rules concerning orbital debris mitigation by satellite systems.<sup>51</sup> In adopting these rules, the FCC stated that they would help preserve the United States’ continued affordable access to space, the continued provision of reliable U.S. space-based services, and the continued safety of persons and property in space and on the Earth’s surface. The FCC also noted that the regulations are consistent with international policies and initiatives to achieve the goal of minimizing the creation of orbital debris.<sup>52</sup>

The FCC’s rules require the submission of an orbital debris mitigation plan to the FCC.<sup>53</sup> Such a mitigation plan must include the following elements:

- (1) a statement that the space station operator has assessed and limited the amount of debris released in a planned matter during normal operations, and has assessed and limited the probability of the space station becoming a source of debris by collisions with small debris or meteoroids that could cause loss of control and prevent post-mission disposal;
- (2) a statement that the space station operator has assessed and limited the probability of accidental explosions during and after completion of mission operations, including a demonstration that debris generation will not result from the

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<sup>48</sup> 47 U.S.C. §§ 301, 303. The Communications Act also limits the FCC’s authority with respect to issuance of licenses to governmental entities. The Communications Act prohibits FCC issuance of a license for a station owned and operated by the U.S. Federal Government. 47 U.S.C. § 305. U.S. Government stations are authorized through the NTIA. The Communications Act also prohibits the issuance of a license to a foreign government or its representative. 47 U.S.C. § 310(a).

<sup>49</sup> 47 U.S.C. § 303(r).

<sup>50</sup> The Secretary of State is responsible for the formulation, coordination, and oversight of foreign policy related to international communications and information policy, including the determination of U.S. positions and the conduct of U.S. participation in negotiations with foreign governments and international bodies, such as in the ITU. 22 U.S.C. § 2707.

<sup>51</sup> See Mitigation of Orbital Debris, Final Rule, IB Docket 02-54, FCC 04-130, 69 Fed. Reg. 54581 (Sept. 9, 2004) (“Mitigation Final Rule”).

<sup>52</sup> *Id.* at 54581.

<sup>53</sup> 47 C.F.R. §§ 5.63(e), 25.114(d)(14) and 97.207(g)(1). An orbital debris mitigation plan is also required in connection with amateur and experimental satellite operations.

conversion of energy sources on board the spacecraft into energy that fragments the spacecraft. The statement should also address whether stored energy will be removed at the spacecraft's end of life;

(3) a statement that the space station operator has assessed and limited the probability of the space station becoming a source of debris by collisions with large debris or other operational space stations; and

(4) a statement detailing the post-mission disposal plans for the space station at end of life, including the quantity of fuel that will be reserved for post-mission disposal maneuvers. The statement must also include a casualty risk assessment if planned post-mission disposal involves atmospheric re-entry of the space station.<sup>54</sup>

The debris mitigation plan is submitted with an applicant's request for issuance of a license, or, in the case of a satellite licensed by another Administration, in an application seeking to communicate with that satellite using U.S. earth stations. The debris mitigation plan is evaluated, along with other information, to determine whether granting the application is in the public interest.

Section 25.283 of the FCC's rules provides requirements for end-of-life operation of space stations. This rule requires disposal of geostationary space stations consistent with the recommendations of the ITU and the Inter-Agency Debris Coordinating Committee. The rule also requires that all space station licensees must, at a satellite's end of life, ensure that all stored energy sources on board the satellite are discharged.<sup>55</sup>

The FCC has declined to adopt a rule requiring in all cases that space station operators obtain insurance to protect the United States from exposure to claims arising from their normal operations. However, the FCC has stated that insurance and liability issues are factors in considering whether a mitigation plan serves the public interest.<sup>56</sup>

## **D. The National Aeronautics and Space Act of 1958<sup>57</sup>**

### **Overview**

The National Aeronautics and Space Act of 1958 ("Space Act"), 42 U.S.C. §§ 2451 *et seq.*, authorized the creation of the National Aeronautics and Space Administration ("NASA"). At its creation, Congress declared NASA to be a civilian agency, "headed by an Administrator who shall be appointed from civilian life by the President."<sup>58</sup> Furthermore, Section 102 of the Space Act declared

<sup>54</sup> *Id.* The regulations also require additional statements depending on whether the space station will be launched into a low-Earth orbit that is identical, or very similar, to an orbit used by other space station, or if the space station operator is relying on coordination with another system, or if a space station requests the assignment of a geostationary-Earth orbit location.

<sup>55</sup> 47 C.F.R. § 25.283; *see also* Mitigation Final Rule at 54585.

<sup>56</sup> Mitigation Final Rule, at 54586.

<sup>57</sup> National Aeronautics and Space Act of 1958, as amended, 42 U.S.C. §§2451-2484 (Pub. L. 85-568, Jul. 29, 1958).

<sup>58</sup> 42 U.S.C. § 2472(a).

unequivocally: "... [I]t is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind."<sup>59</sup>

The Space Act also provided that one of NASA's objectives is cooperation with other nations in work done pursuant to the Space Act.<sup>60</sup> International cooperation, in particular, is authorized in the Space Act. Section 205 of the Act provides that NASA may engage in a program of international cooperation in its work pursuant to international agreements.<sup>61</sup> Thus, this section provides legal authority for the conclusion of treaties and other international agreements on behalf of the United States, subject to the foreign policy guidance of the President, as exercised on a day-to-day basis by the Secretary of State. Although NASA is not charged with the supervision or licensing of private or governmental entities, the agency is obligated, among other things, to provide for the widest practicable and appropriate dissemination of information concerning its activities.<sup>62</sup> Furthermore, NASA is obliged to "seek and encourage, to the maximum extent possible, the fullest commercial use of space," and "provide for Federal Government use of commercially provided space services and hardware, consistent with the requirements of the Federal Government."<sup>63</sup>

### **The Space Act and NASA's Governmental Activities**

Section 102(d) of the Space Act provides a declaration of the policy and purpose of the U.S. activities in outer space. Specifically: "The aeronautical and space activities of the United States shall be conducted so as to contribute materially to one or more of the following objectives:"

- (a) Expansion of human knowledge of the Earth and the phenomena in the atmosphere and space;
- (b) Improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles; and
- (c) Establishment of studies of the benefits from and problems involved in the utilization of space for peaceful and scientific purposes.<sup>64</sup>

NASA's functions are laid out in Section 203 (a) of the Space Act. Among other responsibilities, NASA shall:

- (a) Conduct aeronautical and space activities;
- (b) Arrange for participation by the scientific community in scientific measurements and observations;
- (c) Provide for the widest practicable and appropriate dissemination of information about its activities and results;

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<sup>59</sup> *Id.* at § 2451(a).

<sup>60</sup> *Id.* at § 2451(d)(7).

<sup>61</sup> *Id.* at § 2475.

<sup>62</sup> *Id.* at § 2473(a)(3).

<sup>63</sup> *Id.* at § 2473(a)(4) and (5).

<sup>64</sup> *Id.* at § 2451(d).

- (d) Seek and encourage the fullest commercial use of space; and
- (e) Encourage Federal Government use of commercially provided services and hardware.<sup>65</sup>

Furthermore, the Space Act provides NASA with authority to accomplish its mission. For example, Section 203(c)(3) enables NASA to: acquire (by purchase, lease, or otherwise), construct, improve, operate, and maintain laboratories, research facilities, aeronautical and space vehicles, and other real and personal property, or any interest therein.<sup>66</sup> Additionally, Section 203(c)(5) provides NASA with flexible authority to enter into “other transactions,” commonly referred to as “Space Act Agreements,” which constitute the primary instrument for NASA’s collaborative research.<sup>67</sup> Section 203(c)(5) further confers upon the NASA Administrator the authority to execute various commitments necessary to accomplish NASA’s mission, including contracts, leases, and cooperative agreements.<sup>68</sup> Section 203(c)(6) allows NASA to use services, equipment, and personnel of “Federal and other agencies with or without reimbursement” and requires each department and agency of the Federal Government to “cooperate fully” in making its personnel available to NASA.<sup>69</sup>

## The Space Act and the Commercial Sector

The Space Act also contains provisions to meet U.S. responsibilities under Article VII of the Outer Space Treaty and the Liability Convention regarding the absolute liability to pay compensation for damage on the surface of the Earth caused by a U.S. space object. Section 308 of the Space Act authorizes NASA to provide liability insurance for any user of a space vehicle to compensate all or a portion of claims by third parties for death, bodily injury, or loss of or damage to property resulting from activities conducted in connection with the launch, operation, or recovery of the space vehicle.<sup>70</sup> In addition, an agreement between NASA and a user of a space vehicle may provide that the United States will indemnify the user against claims (including reasonable expenses of litigation or settlement) by third parties for death, bodily injury, or loss of or damage to property resulting from activities carried on in connection with the launch, operations or recovery of the space vehicle. However, such indemnification may only extend to amounts of such claims that are not compensated by liability insurance of the user. Moreover, the indemnification may be limited to claims resulting from other than the actual negligence or wilful misconduct of the user.<sup>71</sup>

In this context, a “space vehicle” is defined as “an object intended for launch, launched or assembled in outer space, including the Space Shuttle and other components of a space transportation system, together with related equipment, devices, components and parts.” A “user” of a space vehicle is defined as anyone

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<sup>65</sup> *Id.* at § 2473(a).

<sup>66</sup> *Id.* at § 2473(c)(3).

<sup>67</sup> *Id.* at § 2473(c)(5).

<sup>68</sup> *Id.*

<sup>69</sup> *Id.* at § 2473(c)(6).

<sup>70</sup> *Id.* at § 2458b(a).

<sup>71</sup> *Id.* at § 2458b(b).

who enters into an agreement with NASA for use of all or a portion of a space vehicle, who owns or provides property to be flown on a space vehicle, or who employs a person to be flown on a space vehicle.<sup>72</sup>

Section 309 of the Space Act establishes a comprehensive liability regime for experimental aerospace vehicles.<sup>73</sup> Section 309 defines an experimental aerospace vehicle as “an object intended to be flown in, or launched into, orbital or suborbital flight for the purpose of demonstrating technologies necessary for a reusable launch vehicle, developed under an agreement between the Administration and a developer.”<sup>74</sup> This regime comprises: insurance requirements; indemnification beyond the limits of insurance; and mutual cross-waivers of liability. Among other features, Section 309 confirms and clarifies NASA’s authority to waive claims of the U.S. Government in cooperative agreements in exchange for a reciprocal waiver of claims from a cooperating party.<sup>75</sup> This waiver reduces costs for all participants in the cooperative activity. Section 309 also reduces insurance costs, which in turn provides greater funding for developmental programs, while reducing costs to the taxpayer.

## Other Relevant Statutory Provisions

There are other U.S. laws that serve as examples of national legislation relating to governmental and non-governmental space activities. Over the past five decades, a substantial amount of legislation has been enacted related to national and commercial space programs. Other laws that are relevant to governmental interactions with the private sector include the following:

### 15 U.S.C. § 5807: Use of Government Facilities

This law authorizes NASA to allow non-Federal entities to use its space-related facilities on a reimbursable basis, subject to certain conditions. For example:

- (a) The facilities must be used to support commercial space activities;
- (b) Such use is compatible with Federal activities;
- (c) Equivalent commercial services are not available on reasonable terms; and
- (d) Such use is consistent with public safety, national security, and international treaty obligations.

Pursuant to this statute, other space agencies have also used NASA facilities to test components of their launch vehicles.

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<sup>72</sup> *Id.* at § 2458b(f)(1) and (2).

<sup>73</sup> *Id.* at § 2458c.

<sup>74</sup> *Id.* at § 2458c(d)(3).

<sup>75</sup> *Id.* at § 2458c(c).

### **35 U.S.C. § 105: Inventions in Outer Space**

This statute provides, *inter alia*, that any invention made, used or sold in outer space on a space object or component thereof under the jurisdiction or control of the United States shall be considered made, used, or sold within the United States for purposes of U.S. patent laws.

### **42 U.S.C. § 14713: Acquisition of Space Science Data**

This law requires that, where appropriate, NASA, to the extent possible while satisfying its scientific or educational requirements, shall purchase space science data from a commercial provider. Space science data is defined under this law to include:

- (a) The elemental and mineralogical resources of the Moon, asteroids, planets, and their moons, and comets;
- (b) Microgravity acceleration; and
- (c) Solar storm monitoring.

### **42 U.S.C. § 14715: Acquisition of Earth Science Data**

Similar in nature to the previous provision, this statute provides that NASA shall acquire, where cost-effective and while satisfying its scientific or educational requirements, space-based and airborne Earth remote sensing data, services, distribution, and applications from a commercial provider. Like space science data, Earth science data is also treated as a “commercial item.”

### **U.S. Law Regarding Commercial Activity in Outer Space**

Apart from the specific direction provided to NASA in the Space Act “to seek and encourage, to the maximum extent possible, the fullest commercial use of space,” other provisions of law and statements of policy also address nongovernmental, commercial activity in outer space. Some examples follow:

In 1998, the Commercial Space Act stated that “a priority goal of constructing the International Space Station is the economic development of Earth orbital space.” The law further states that “competitive markets ... should therefore govern the economic development of Earth orbital space.”<sup>76</sup>

NASA has also received explicit direction to work with space entrepreneurs. Specifically, the NASA Authorization Act of 2005 provides that: “In carrying out the programs of the Administration, the Administrator shall ... work closely with the private sector, including by ... encouraging the work of entrepreneurs who are seeking to develop new means to launch satellites, crew, or cargo.”<sup>77</sup>

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<sup>76</sup> *Id.* at § 14711(a).

<sup>77</sup> Pub. L. No. 109-155, 119 Stat. 2898 (Dec. 30, 2005), 42 U.S.C. § 16611(a)(2)(B).

## **E. Other Legislation**

The Communications Satellite Act of 1962 provided for U.S. participation in the International Telecommunications Satellite Organization (“INTELSAT”).<sup>78</sup> The International Maritime Satellite Telecommunications Act of 1978 provided for U.S. participation in the International Maritime Satellite Organization (“INMARSAT”).<sup>79</sup> In 2000, the Open-Market Reorganization for the Betterment of International Telecommunications Act, or ORBIT Act, specified criteria and procedures for U.S. participation in the privatization of INTELSAT and INMARSAT.<sup>80</sup>

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<sup>78</sup> Pub. L. No. 87-624, 76 Stat. 419 (Aug. 31, 1962), formerly codified at 47 U.S.C. § 701, et seq.

<sup>79</sup> Pub. L. No. 95-564, 92 Stat. 2392 (Nov. 1, 1978), formerly codified at 47 U.S.C. § 751, et seq.

<sup>80</sup> Pub. L. 106-180, 115 Stat 48 (2000), codified in part at 47 U.S.C § 761, et seq.