2010

Space Tourism and Export Controls: A Prayer for Relief

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SPACE TOURISM AND EXPORT CONTROLS: A PRAYER FOR RELIEF

MARK J. SUNDAHL*

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I. INTRODUCTION

THE RECENT EMERGENCE of the commercial human spaceflight industry is a transformative moment in the history of mankind. Although the story of human spaceflight be-

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gan when Yuri Gagarin first orbited the Earth in 1961, recent technological developments coupled with the dedication of well-funded entrepreneurs have taken spaceflight from the province of governmental action and delivered it into the private sector.\(^1\) Multiple space tourism companies are planning to send private passengers on suborbital and orbital flights within the coming years, private spaceports are being built around the world, and at least one company is well on its way to placing private space stations into orbit to serve as manufacturing facilities, laboratories, or even space hotels.\(^2\) Moreover, changes to the U.S. Space Policy recently proposed by the Obama Administration would accelerate the development of the human spaceflight industry.\(^3\) These proposals call for the abolition of NASA's Constellation program that entailed the development of the next generation of government space vehicles—and instead recommend that the government set aside six billion dollars to purchase crew and cargo delivery services from private companies to meet government requirements for ferrying cargo and crew to the International Space Station and placing satellites into orbit.\(^4\) This increased demand for services will enable private space companies to develop the next generation of space vehicles that will likely include a line of reusable launch vehicles that should improve greatly upon the current space shuttle technology.\(^5\)

Despite this bright outlook for commercial human spaceflight, the industry faces several significant challenges before it achieves sustainability. Although these challenges are largely technological and financial, one of the more serious obstacles to the industry’s success is regulatory in nature, namely, the burdensome export control regulations under U.S. law. Export

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\(^1\) See infra Part II.

\(^2\) See infra Part II.


controls on space technology are notoriously strict in the United States, where all technology related to spacecraft is subject to the same complicated and restrictive export controls that govern the export of munitions under the International Traffic in Arms Regulations (ITAR). In fact, the United States is the only country in the world that treats commercial space technology like munitions, rather than as dual-use technology that has a primarily commercial application. The application of ITAR to space technology has harmed the ability of U.S. space companies to compete on the world market, as is perhaps best illustrated by the practice of certain European satellite manufacturers to market “ITAR-free” satellites—that is, satellites that do not incorporate any components manufactured in the United States and are therefore free of the regulatory complexities and compliance costs that flow from ITAR. As a result, European satellite sales have increased sharply, cutting deeply into

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8 See Center for Strategic and International Studies, Briefing of the Working Group on the Health of the U.S. Space Industrial Base and the Impact of Export Controls, at 10, Executive Summary, Findings 10 & 11 (Feb. 2008); Bini, supra note 7, at 70.
the market share of U.S. manufacturers. U.S.-based space tourism companies and other private spaceflight companies are sure to suffer the same ill effects of ITAR unless relief is provided either by legal reform or through the granting of special discretionary relief by the Directorate of Defense Trade Controls (DDTC), which is the administrative agency that oversees the application and enforcement of ITAR.

On August 13, 2009, the Obama Administration announced that the President had established a task force to undertake a broad-based review of U.S. export controls, which will include a review of those controls applicable to satellites and other space technology. In order to expedite the process of reform, President Obama issued Presidential Study Directive 8 on December 21, 2009, which required that recommendations for reform based on the findings of the review process be submitted to him by January 21, 2010. However, this deadline passed without the public release of any such recommendations, and, given the complexity of the regulations and the political sensitivity of the topic of export controls, significant changes are not expected to be implemented anytime soon. In the meantime, the only

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(discussing Alcatel's development of ITAR-free satellites); Eligar Sadeh, Export Controls of Space Technologies, 6 ASTROPOLITICS 105, 109 (2008).

9 See Bini, supra note 7, at 70 (stating that the market share of U.S. manufacturers shrank from 64% in 1998 to 36% in 2002, while Alcatel's market share of the global satellite business doubled between 1998 and 2004); Philip L. Spector, Satellite Export Controls: Five Years and Counting, 18 AIR & SPACE LAW. 12, 13 (2003) (stating that from 2002 to 2003, foreign customers purchased twice as many satellites from foreign manufacturers than from U.S. manufacturers); Ryan Zelnio, The Effects of Export Control on the Space Industry, SPACE REV. (Jan. 16, 2006), http://www.thespacereview.com/article/533/1 (explaining that prior to the shift of jurisdiction over satellite exports to the Department of State in 1999, U.S. satellite manufacturers enjoyed, on average, an 83% market share of the global satellite sales, but that this market share declined to 50% by 2006).


12 Klamper, supra note 11.

13 Id. (explaining that “export control reform is a polarizing topic that pits national security hawks against the American aerospace industry”).
hope for relief from the burdens of ITAR lies in the hands of the DDTC. As described in this article, the DDTC has indicated that it is willing to exercise its administrative discretion in a manner that will enable the nascent human spaceflight industry to survive and even flourish in the global marketplace.\textsuperscript{14} This indication was given last year when the DDTC excepted Bigelow Aerospace from the need to acquire a license and comply with other requirements under ITAR before allowing foreign nationals aboard their expandable space stations.\textsuperscript{15} This ruling was heralded as a breakthrough for the human spaceflight industry, which now hopes to be granted the opportunity to operate under a reduced regulatory burden, provided that the Bigelow ruling is extended to other spaceflight companies, such as those offering space tourism services.

This article tells the story of the DDTC's landmark Bigelow ruling and makes the case for why a similar exception should be granted to the space tourism companies that will soon be carrying their first customers into space. The following section sets the stage for this discussion by providing a preliminary description of the regulations that govern the export of space technology and discussing how these regulations should be applied to the space tourism industry. This article also examines the DDTC's Bigelow ruling in the greater context of administrative law and argues that the DDTC's actions provide a striking example of how an administrative agency can reshape the law through administrative discretion when Congress is paralyzed by party factionalism and political pressures.

II. ITAR AND HUMAN SPACEFLIGHT

Whenever a company exports a spacecraft, a launch vehicle, or a satellite, the export is subjected to the same controls that are applied to the export of arms under the Arms Export Control Act (AECA) and the AECA's implementing regulations, ITAR.\textsuperscript{16} It was not always the case that space technology was

\textsuperscript{14} See infra Part III.

\textsuperscript{15} See infra Part III.

\textsuperscript{16} In addition to implementing the policies of the U.S. government, the export controls imposed by ITAR and the Export Administration Regulations (which, as explained below, govern the export of dual-use technology) also implement the principles of two international export control arrangements: (1) the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies, an international system designed to prevent certain rogue countries, including Iran, North Korea, and Syria, from obtaining advanced mili-
treated as munitions under ITAR. In the 1990s, under President H.W. Bush, a movement began to transfer jurisdiction over the export of commercial communications satellites from the Department of State to the Department of Commerce (DOC). 17 This movement continued during the Clinton presidency and by 1996 most of the licensing responsibilities for the export of communications satellites had been transferred to the DOC. 18 However, the DOC's jurisdiction over commercial satellites was short-lived due to an incident in which Hughes Space and Communications Company and Loral Corporation divulged information related to two failed launches of Chinese rockets that were carrying their payloads to an insurer without the necessary license from the DOC. 19 In response to this incident, Congress passed the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999, which transferred export licensing of "all satellites and related items" back to the jurisdiction of the Department of State, with the result that virtually all space technology was once again subject to ITAR. 20

While certain space technology should unquestionably be subject to strict export controls in order to prevent the proliferation of dangerous weapons, such as technology related to ballistic missiles, it is often argued that technologies that have a commercial as well as a potential military application, so-called "dual use" items like communications satellites, should be controlled under the less restrictive Export Administration Regulations, which are administered by the DOC. 21 The benefit of a jurisdictional technology; and (2) the Missile Technology Control Regime (MTCR), a multilateral arrangement to prevent the proliferation of missiles capable of carrying weapons of mass destruction. See Francis Lyall & Paul B. Larsen, Space Law: A Treatise 459–61 (2009); Kenneth A. Dursht, From Containment to Cooperation: Collective Action and the Wassenaar Arrangement, 19 Cardozo L. Rev. 1079, 1106–10 (1998); Elizabeth Seebode Waldrop, Integration of Military and Civilian Space Assets: Legal and National Security Implications, 55 A.F. L. Rev. 157, 189–91 (2004).


18 Jakhu & Wilson, supra note 17, at 171–72; Zelnio, supra note 9.

19 Jakhu & Wilson, supra note 17, at 171–72; Zelnio, supra note 9.


21 See, e.g., Spector, supra note 9, at 13.
tional transfer to the DOC is significant because the Export Administration Regulations are notably less burdensome than are the controls under ITAR. Generally speaking, a company is less likely to be required to seek a license from the DOC prior to the export of a controlled item because licenses for the export of controlled items are frequently not required for export to allied countries, and moreover, various exceptions to the license requirement (such as for a low value shipment or for export to a civilian end-user) are also available.\footnote{22}

Although the debate regarding the appropriate level of export controls over the last decade has centered on commercial satellites, the DDTC now faces a new question, namely, how ITAR should apply to new space technologies that have emerged in recent years, in particular, the suborbital spaceplanes that have been developed by space tourism companies and the private space stations that are under development by Bigelow Aerospace. Virgin Galactic, the space tourism company launched by Sir Richard Branson, will be the first to begin operations by flying tourists into suborbital space from Spaceport America, which is currently under construction in New Mexico.\footnote{23} (As a brief aside, despite being the brainchild of a British citizen, Sir Richard Branson, Virgin Galactic is operating in the United States through a Delaware corporation and is therefore treated as a U.S. space tourism company.) The spaceplanes being built by Virgin Galactic are reusable launch vehicles that differ significantly from anything seen before. The spaceplane, carrying a crew of two and six passengers, begins its journey into space on the underbelly of an airplane that will lift the spaceplane to an altitude of 52,000 feet at which point the spaceplane will disengage, fire its rocket engine, and fly to an altitude of approximately 65 miles above the Earth—just above the generally accepted border of outer space, known as the Kármán Line, which is located approximately 100 kilometers (or 62 miles) above the Earth.\footnote{24} After reaching its apogee, the

\footnote{22} The Export Administration Regulations are similar to ITAR in one important respect, namely, that both the Export Administration Regulations and ITAR treat the sharing of controlled technology with a foreign national as an export (such sharing of information termed a “deemed export” in the Regulations). 15 C.F.R. § 734.2(b)(2)(ii).


spaceplane will begin a slow descent back into the atmosphere, its speed broken by an innovative pivoting wing design that enables the plane to flutter through the upper layers of the atmosphere like a shuttlecock.\textsuperscript{25} Once it reaches the heavier atmosphere, the spaceplane glides back to Earth like an airplane.\textsuperscript{26} Other space tourism companies are also offering suborbital flights on spaceplanes, such as Rocketplane, an Oklahoma-based company offering suborbital flights for $250,000, and Xcor Aerospace, a California company offering suborbital flights for the competitive price of $95,000.\textsuperscript{27} Starchaser, based in the United Kingdom, plans to use both rocket-launched space capsules as well as spaceplanes to send private passengers into suborbital space.\textsuperscript{28} Other approaches to human spaceflight are also being pursued by private enterprises. For example, Blue Origin, a space tourism company founded by Amazon founder Jeff Bezos, is developing a unique spacecraft that takes off and lands vertically.\textsuperscript{29} Excalibur Almaz, a company based on the Isle of Man, plans to put tourists into orbit in Soviet-made Almaz space capsules.\textsuperscript{30} The company is also preparing to place an Almaz space station into orbit to be used as a space hotel or for other civilian purposes.\textsuperscript{31} Similarly, Bigelow Aerospace’s planned private space stations (of which two prototypes have already been placed into orbit) utilize a new technology that allows for expandable modules to be placed in orbit, which are then configured to the needs of the client (whether the purpose is for manufacturing, research, or pleasure).\textsuperscript{32}

\textsuperscript{25} See Spaceships, supra note 24.
\textsuperscript{26} Id.
\textsuperscript{31} Id.
\textsuperscript{32} Mike N. Gold, \textit{Lost In Space: A Practitioner’s First-Hand Perspective on Reforming the U.S.’s Obsolete, Arrogant, and Counterproductive Export Control Regime for Space-
modules can be packed into launch farings in a highly space- and weight-efficient manner, thus dramatically reducing the cost of placing space stations into orbit.\textsuperscript{35}

The following sections provide a detailed look at how the current export control regulations under U.S. law apply to space technology and, in particular, how the regulations are likely to apply to the new spaceplane technologies being developed by the space tourism companies.

A. THE ARMS EXPORT CONTROL ACT

Our analysis of export controls applicable to space technology begins with section 38 of the Arms Export Control Act (AECA), which addresses export controls over munitions.\textsuperscript{34} Section 38 opens with the following provision setting forth the President’s authority to control the export of munitions, primarily by designating what technology should be included on the United States Munitions List (USML):

\begin{quote}
In furtherance of world peace and the security and foreign policy of the United States, the President is authorized to control the import and the export of defense articles and defense services and to provide foreign policy guidance to persons of the United States involved in the export and import of such articles and services. The President is authorized to designate those items which shall be considered as defense articles and defense services for the purposes of this section and to promulgate regulations for the import and export of such articles and services. The items so designated shall constitute the United States Munitions List.\textsuperscript{35}
\end{quote}

In addition to granting the President the authority to designate controlled items, this provision states the overarching purpose of these export controls—to promote world peace as well as the security and foreign policy goals of the United States. The new commercial space technologies of Virgin Galactic and Bigelow Aerospace do not threaten peace and security and should there-
fore enjoy relief from these controls under the AECA. This argument is strengthened in light of the factors set forth in the AECA that are to be taken into account when determining whether an export license should be granted. These factors include whether the export of the article would contribute to (i) the proliferation of weapons of mass destruction, (ii) the spread of terrorism, or (iii) the escalation of armed conflict. These are important concerns to be sure, but if these are truly Congress's concerns, then there is no reason for the government to subject purely commercial space technology to the AECA. As discussed further below, the absence of such policy concerns in the context of the technology being used by space tourism companies should facilitate the granting of exceptions by the DDTC to reduce the regulatory burden on these companies.

B. ITAR CONTROLS APPLICABLE TO HUMAN SPACEFLIGHT

At the core of the ITAR regime is the requirement that a license from the DDTC be acquired prior to the export of any "defense article." A "defense article" is any item listed in section 121.1 of ITAR, better known as the United States Munitions List—as well as any "technical data recorded or stored in any physical form, models, mockups or other items that reveal technical data directly relating to items" on the USML. Section 120.3 of ITAR sets forth specific criteria for determining whether a particular item that is not already listed on the USML could be classified as a "defense article" and thus subjected to ITAR control. Such a determination can be made if the item in question (1) is designed for military use, does not have a primary civilian application, and exceeds the performance standards of equivalent civilian equipment, or (2) is designed for military use and has "significant" military value (regardless of its performance standards or whether it has a predominant civil application).

The threshold question for Bigelow Aerospace and the space tourism companies is whether their equipment would be deemed a "defense article." Under the section 120.3 criteria, it appears that neither the Bigelow space stations nor Virgin Ga-

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37 Id.
38 22 C.F.R. § 127.1(a)(1).
39 Id. § 120.6.
40 Id. § 120.3.
41 Id.
lactic’s spaceplanes should qualify as “defense articles.”\textsuperscript{42} They are not designed for military use, they only have a civil application, and they cannot be said to exceed the performance standards of comparable civilian equipment since no comparable civilian equipment exists—Bigelow’s space stations and Virgin Galactic’s spaceplanes are alone in their class.\textsuperscript{43} Nevertheless, despite the apparent failure of this technology to meet the criteria for being designated a “defense article” under section 120.3, the space stations and spaceplanes still come under a specific listing of controlled technology on the USML, and are therefore subject to ITAR control. The relevant entry in the USML for the human spaceflight industry is Category XV, which includes language that brings spacecraft and other space-related technology within the scope of ITAR.\textsuperscript{44}

An analysis of Category XV reveals that the entry has four main parts. First, all “spacecraft” and all “ground control stations” engaged in the telemetry, tracking, and control of spacecraft are “defense articles” and therefore come within the ambit of ITAR.\textsuperscript{45} The term “spacecraft” is not defined in the regulation, which allows for a wide net to be cast by the DDTC when applying the regulations. The only guidance given in the regulations is that the term “spacecraft” includes commercial satellites (which, in turn, includes Bigelow’s orbiting space stations).\textsuperscript{46} The space tourism companies should argue in their commodity jurisdiction requests (seeking the removal of their spaceplane technology from the USML)\textsuperscript{47} that although their spaceplanes are “spacecraft” in the colloquial sense, they are purely commercial and therefore should not be subject to ITAR. This interpretation is consistent with the treatment of aircraft, which are subject to ITAR only if “designed, modified, or

\textsuperscript{42} See id.
\textsuperscript{43} See id.
\textsuperscript{44} Id. § 121.1 Category XV.
\textsuperscript{45} Id. § 121.1 Category XV(a), (b). The exact language from subsection (a) is: “[s]pacecraft, including communications satellites, remote sensing satellites, scientific satellites, research satellites, navigation satellites, experimental and multi-mission satellites.”
\textsuperscript{46} Id. § 121.1 Category XV(a). That Bigelow’s space stations are defense articles has been established by the DDTC’s denial of Bigelow’s request for a ruling that its technology was not covered by, or should be removed from, the USML. See infra Part III.
\textsuperscript{47} Regarding commodity jurisdiction requests, see infra Part III.
equipped for military purposes”—thus, commercial aircraft are not regulated by ITAR.\textsuperscript{48}

In addition to being on the USML, spacecraft are also treated as "significant military equipment" (SME), for which "special export controls" can be applied due to the military utility of the technology (which designation is indicated by an asterisk prior to the USML entry).\textsuperscript{49} Happily, this SME designation does not apply to commercial satellites unless they are used for military purposes, thus sparing Bigelow Aerospace from the threat of these special controls.\textsuperscript{50}

The second part of Category XV is made up of paragraphs (c) and (d), which bring two special categories of space technology within the scope of ITAR: global positioning systems (GPS) receivers and radiation-hardened circuitry.\textsuperscript{51} These categories of controlled items would only apply to space tourism companies to the extent that such equipment is used.\textsuperscript{52}

The third part of Category XV, set forth in paragraph (e), significantly expands the scope of ITAR by applying it to "[a]ll specifically designated or modified systems or subsystems, components, parts, accessories, attachments," and other equipment associated with spacecraft, ground controls stations, and the special GPS and radiation-hardened technology.\textsuperscript{53}

The fourth and final component of Category XV is found in paragraph (f), which applies ITAR to all "technical data" and "defense services" directly related to any of the items mentioned in Category XV or any "launch support activities," such as providing launch parameters to a launch provider.\textsuperscript{54}

The definition of "defense service" includes, among other things, providing a foreign person with "technical data" relating to a defense article.\textsuperscript{55} The sharing of such data will constitute a "defense service" whether the data is divulged in the United

\textsuperscript{48} 22 C.F.R. § 121.1 Category VIII(a).
\textsuperscript{49} Id. §§ 120.7, 121.1 Category XV(a), Note.
\textsuperscript{50} Id. § 121.1 Category XV(a), Note.
\textsuperscript{51} Id. § 121.1 Category XV(c), (d).
\textsuperscript{52} See id.
\textsuperscript{53} Id. § 121.1 Category XV(e). This section excludes from ITAR's control nine specific types of components, such as space-qualified data recorders and certain types of photovoltaic arrays, unless they are designed for military use. Id.
\textsuperscript{54} Id. § 121.1 Category XV(f).
\textsuperscript{55} Id. § 120.9(2). "Defense services" also include: (1) "[t]he furnishing of assistance (including training) to foreign persons" in the design, manufacture, modification, use, testing, repair, or even the destruction of a defense article; and (2) the provision of military training. Id. § 120.9(a)(1), (3).
States or abroad. 56 “Technical data,” in turn, is broadly defined in section 120.10 to include the following four concepts:

(1) Information [in whatever format] . . . which is required for the design, development, production, manufacture, assembly, operation, repair, testing, maintenance or modification of defense articles. . . .
(2) Classified information relating to defense articles and defense services;
(3) Information covered by an invention secrecy order; and
(4) Software . . . directly related to defense articles. 57

The scope of controlled “technical data” related to launch support activities is particularly broad by explicitly including “technical data provided to the launch provider on form, fit, function, mass, electrical, mechanical, dynamic, environmental, telemetry, safety, facility, launch pad access, and launch parameters, as well as interfaces for mating and parameters for launch.” 58 Of particular concern to the space tourism industry is the inclusion of safety information in this expanded definition of technical data. 59 For example, a space tourism company could potentially be found to be providing a “defense service” merely by training a foreign customer in safety procedures, such as the operation of safety hatches on the vessel. This concern will be addressed, and hopefully allayed, in the following section where the safety training requirements of the U.S. human spaceflight regulations are discussed. 60 As a final comment, it comes as some measure of relief that “basic marketing information” is explicitly excluded from the definitions of both “technical data” and “defense article.” 61 And so space tourism companies can at least rest assured that they need not seek a license before launching websites that market their suborbital adventures.

C. Special Considerations When Passengers Are Foreign Nationals

Even assuming that suborbital spaceplanes come within the definition of “spacecraft” under Category XV of the USML and are therefore defense articles, a license from the DDTC is still

56 Id. § 120.9(a)(2).
57 Id. § 120.10.
58 Id. § 121.1 Category XV(f).
59 See id.
60 See infra Part II.C.
61 22 C.F.R. §§ 120.10(a)(5), 120.6.
not required unless the spaceplanes are exported. Thus if, for example, Virgin Galactic's spaceplanes are flown by its U.S. subsidiary from a U.S. spaceport, such as Spaceport America in New Mexico, and land there as well, no exportation would seem to take place, thus apparently avoiding the burdens of ITAR.\textsuperscript{62} This is, however, not the case. The concept of an "export" is broadly defined under ITAR to include not only the physical movement of defense articles across the borders of the United States, but also the following actions:

- "Transferring registration, control or ownership to a foreign person of any aircraft, vessel, or satellite covered by the U.S. Munitions List . . .";
- "Disclosing (including oral or visual disclosure) or transferring in the United States any defense article to an embassy, any agency or subdivision of a foreign government . . .";
- "Disclosing (including oral or visual disclosure) or transferring technical data to a foreign person . . ."; and
- "Performing a defense service on behalf of, or for the benefit of, a foreign person . . ."\textsuperscript{63}

This broad concept of what constitutes an export under ITAR thus includes not only selling controlled items into foreign countries, but embraces the disclosure of information related to controlled technology to a "foreign person,"\textsuperscript{64} regardless of how such disclosure is made.\textsuperscript{65}

Once again, of particular concern to Bigelow Aerospace, Virgin Galactic, and the other human spaceflight companies is whether in the course of their discussions with, and training of,

\textsuperscript{62} See id. § 120.17(a), (b).
\textsuperscript{63} Id. § 120.17.
\textsuperscript{64} The definition of "foreign person" includes: (1) "any natural person who is not a lawful permanent resident" of the United States (or a lawful refugee or asylee); (2) any corporation (or other organization) "that is not incorporated or organized to do business in the United States"; and (3) "international organizations, foreign governments and any agency or subdivision of foreign governments . . ." Id. § 120.16.
\textsuperscript{65} Space technology is accorded special treatment in two respects in the definition of "export." First, the mere transfer of registration, control, or ownership of satellites (even if no physical transfer takes place—presumably due to the fact that the satellite is in orbit) constitutes an export. Id. § 120.17(a)(2). That a license is needed before such transfers take place is reiterated in section 123.8. Id. § 123.8(a). Exportation also takes place if a satellite located in the United States is registered in a foreign country. Id. § 123.8(b). Second, the definition makes clear that exportation is not deemed to have taken place merely because a launch vehicle or payload is launched into space. Id. § 120.17(a)(6).
their foreign customers they will be deemed to have disclosed "technical data" relating to their spacecraft—which might, in turn, be treated as the export of a defense article or the performance of a "defense service." As explained above, "technical data" includes information "required for the . . . operation" of the spacecraft, which could be broadly interpreted to include safety information provided to passengers regarding the operation of hatches and other onboard safety equipment. If this interpretation is adopted by the DDTC and such safety information is deemed to be controlled data, the disclosure of the information without DDTC approval would be prohibited regardless of the form in which such data is displayed or stored (whether in documents, models, or other items) and regardless of how the data is communicated (whether by the sharing of documents, email, conversation, or by visual inspection). Therefore, the mere presence of a foreign national on a Bigelow space station or a spaceplane could be deemed to be an "export" of technical data on the grounds that the passenger was provided with the opportunity for a visual inspection of the design of the equipment. As a result, a license from the DDTC would be required before any foreign passengers could set foot on the space station or spaceplane.

On the other hand, it is not clear that information regarding safety operations would necessary come within the definition of "technical data." Under a more reasonable interpretation of the definition, information regarding safety operations would not be treated as "technical data" since such safety operations are not strictly "required" for the operation, i.e., the flight of the spaceplane—just as the instructions given to airplane passengers seated in the exit row of an airplane prior to take-off regarding the opening of the emergency hatches does not provide them with the information needed to fly the airplane. In fact, the Air Force routinely puts on air shows that often provide the civilian attendees, whether U.S. citizens or foreign nationals, the chance to view military aircraft up close and sometimes even sit

66 See id. §§ 120.9, 120.10.
67 Id. § 120.10(a)(1).
68 See id. §§ 120.10(a)(1), 125.2(c).
69 See id. § 120.17(a)(4).
70 See id. § 125.2(c).
71 See id. § 120.10.
72 See id.
in the cockpits.\textsuperscript{73} There is apparently no concern about the transfer of technical data in these situations—just as there should be no concern about the transfer of technical data to space tourists. If the DDTC adopts this more reasonable interpretation, no license would be required prior to training the passengers.

In a recent article, P.J. Blount examined the possibility that the disclosure requirements under the FAA's Human Space Flight Requirements for Crew and Space Flight Participants (Space Flight Regulations) may compel the disclosure of "technical data."\textsuperscript{74} One of the provisions of the Space Flight Regulations that poses this risk is the requirement that the spaceflight company train passengers how to respond to emergency situations on board, which could include information about how to operate emergency hatches and other safety mechanisms on the spacecraft.\textsuperscript{75} In addition, prior to the company receiving any compensation or entering into a flight agreement, the regulations require that the company disclose in writing to prospective passengers information regarding "each known hazard and risk that could result in a serious injury, death, disability, or total or partial loss of physical and mental function . . . ."\textsuperscript{76} Moreover, prior to flight, the company must provide "an opportunity to ask questions orally to acquire a better understanding of the hazards and risks of the mission" prior to the passenger providing written consent that indicates that the passenger understands the risks of the mission.\textsuperscript{77}

Although there is certainly a risk that the safety training and other disclosures required under these provisions may amount to the disclosure of "technical data," there is also a strong likelihood that ITAR would not be triggered, depending in part on


\textsuperscript{75} 14 C.F.R. § 460.51 (2010).

\textsuperscript{76} Id. § 460.45(a).

\textsuperscript{77} Id. § 460.45(f).
the nature of the information disclosed. Blount argues that any instruction provided regarding the operation of safety hatches or other safety procedures would likely be treated as a disclosure of technical data under ITAR, particularly in light of the language in Category XV of the USML, which states that “safety” data related to “launch support activities” is deemed to be technical data “without exception.” However, this language should not be interpreted as requiring information provided to a passenger in the course of safety training to be treated as technical data “without exception” since the paragraph is limited to information disclosed in connection with “launch support activities.” This language contemplates information disclosed to launch providers, not passengers, as is indicated by the example provided in the text which states that an example of such technical data provided in connection with launch support activities includes “technical data provided to the launch provider on the form, fit, function, . . . safety, . . . [and] launch parameters, as well as interfaces for mating and parameters for launch.”

Despite these arguments against the treatment of safety training as involving the disclosure of technical data, the risk remains that the DDTC will come to a different conclusion.

As Blount points out in his article, a more difficult situation could arise during the question and answer session required by the Space Flight Regulations in order to allow the passengers to become fully informed of all risks. It is conceivable that passengers will inquire into more sensitive aspects of spacecraft technology, such as the type of propellant used by the spacecraft or engine mechanics—inquiries that would not be unreasonable since this information is relevant to a thorough understanding of the risks of spaceflight. However, if the company discloses technical information of this type to a foreign customer, the DDTC could find that the company has exported “technical data” under ITAR.

There is some irony in the fact that, on the one hand, ITAR prohibits space tourism companies from disclosing safety information to foreign customers without first acquiring an export license, while, on the other hand, the Space Flight Regulations

78 See Blount, supra note 74, at 1610; 22 C.F.R. § 121.1 Category XV(f) (2010).
79 See id. at 1610-11.
80 See id.
81 See id.
82 See id.
may very well require the disclosure of such information. However, even if ironic, the regulations are not contradictory, and compliance with both is necessary. The result is that a space tourism company will have to acquire a license from the DDTC before making any disclosures to a foreign passenger or prospective passenger that may rise to the level of “technical data” under ITAR. An alternative approach would be for a company to limit the type of information provided to its passengers and rely on the advice of lawyers that the information provided does not qualify as “technical data”—but this may be an unwise risk. Moreover, the refusal to provide certain types of information when requested by the passenger during the question and answer session may constitute a violation of the Space Flight Regulations and could lead to increased exposure to tort liability due to a failure to obtain the fully informed consent of a passenger.

If a space tourism company is deemed to disclose technical data to foreign customers, whether in discussions with the customer, during flight training, or by virtue of the mere presence of the customer on the spaceplane, the company will need to first register with the DDTC (which registration must be renewed annually) and must then acquire a separate license from the DDTC with respect to each customer prior to making any disclosures. The average processing time reported by the DDTC for acting on license requests is approximately two to three weeks.

If the only requirement imposed by ITAR were the license requirement, the burden on space tourism companies would not be so severe. However, substantial additional obligations are in fact imposed by the regulations. For example, space tourism companies will be required to enter into a Technical Assistance Agreement (which describes the parties to the transaction, the information to be disclosed, and the nature of the project) with each of its foreign customers prior to the disclosure of the controlled information. A Technical Assistance Agreement is required whenever a company discloses technical data to a foreign person or engages in a “defense service.” Although the DDTC

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84 22 C.F.R. § 122.1. In fact, a space tourism company would be required to register with the DDTC as soon as it manufactured or acquired a spacecraft. Id.
85 Id. § 123.1.
87 22 C.F.R. §§ 120.9, 124.1 et seq.; Gold, supra note 32, at 168 n.18.
88 22 C.F.R. § 124.1(a).
strives to approve Technical Assistance Agreements within sixty days of submission, it is not unusual for approval to take up to three months after the agreements are submitted for approval. The renegotiation of the conditions (or "provisos") placed on the disclosure of the controlled information with the DDTC can take an additional one to three months. When U.S. space tourism companies are competing for foreign customers, this time-consuming approval process would be a dangerous hindrance that could destroy the ability of U.S. companies to compete with foreign operators. Imagine a customer that would like to fly into space who has a choice between a U.S. company that must seek approval of a Technical Assistance Agreement and a foreign company that need not. The customer could potentially face a delay of up to six months before the U.S. company could even begin training. It would not be surprising if prospective foreign customers instead decided to fly with a foreign space tourism company to avoid such regulatory delays.

In order to avoid the complications of obtaining the approval of a Technical Assistance Agreement, space tourism companies could argue for an exemption under section 124.2(a), which states that "[t]echnical assistance agreements are not required for the provision of training in the basic operation . . . of defense articles lawfully exported." This exemption would appear to apply to the training of passengers in safety operation, provided that a license permitting the disclosure was granted. Of course, it would be preferable if the DDTC would make a determination excepting the space tourism companies entirely from ITAR with respect to their interactions with passengers.

D. SPECIAL CONSIDERATIONS WHEN LAUNCHING FROM NON-ALLIED COUNTRIES

The burdens of ITAR could grow far greater when a U.S. company launches its satellites from the territory of a country that is neither a member of NATO nor another "major non-NATO ally" as defined in section 120.32 of ITAR. First, under section

89 See, e.g., Gold, supra note 32, at 168.
90 Id. at 168–69.
91 22 C.F.R. § 124.2(a).
92 See id. §§ 120.32, 124.15(a) (1). NATO consists of twenty-eight current members including Albania, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Turkey, the United Kingdom, and the United States.
124.15, a Technology Transfer Control Plan (TTCP) has to be approved by the Department of Defense (DOD). A TTCP is a written plan that describes the process for transferring the controlled information to foreign nationals and explains how the information will be safeguarded from improper disclosure as well how proper disclosures will be documented. The process of developing and obtaining approval of a TTCP can take anywhere from one to three months. The entire process of obtaining a license, receiving approval of a Technical Assistance Agreement, and obtaining approval of a TTCP has reportedly taken as long as one year. If these regulatory burdens were placed on U.S. space tourism companies, the delay would almost certainly send prospective customers to foreign competitors that were not subject to such delays.

In addition to the approval of a TTCP, when U.S. companies conduct launches from non-allied territories the DOD has to be notified in advance of any discussions with foreign nationals related to the launch—and the DOD then has the right to monitor these discussions. These monitoring activities are carried out by the DOD's Defense Technology Security Administration (DTSA). The DTSA also has the right to send agents to the launch site to monitor the launch as well as all related activity and discussions with all monitoring expenses, as well as all travel expenses, being borne by the owner of the space object. These monitoring expenses can be significant. For example, after Bigelow Aerospace launched its first prototype space station from Russia, it received a bill of $161,896 from the DTSA merely for monitoring expenses, which came out to a rate of approximately $130 per hour (and which did not include the travel ex-

Member Countries, NATO, http://www.nato.int/cps/en/natolive/nato_countries.htm (last visited July 14, 2010). “Major non-NATO allies” include Argentina, Australia, Bahrain, Egypt, Israel, Japan, Jordan, Kuwait, Morocco, New Zealand, Pakistan, the Philippines, Thailand, Taiwan, and the Republic of Korea. Id.

93 22 C.F.R. § 124.15(a)(1).
94 Gold, supra note 32, at 169 n.19.
95 Id. at 169.
96 Id.
99 22 C.F.R. § 124.15(a)(2). Section 124.15 also requires a license prior to the participation of any U.S. party in a launch failure investigation or analysis—and allows for DOD monitoring of any activities related to such investigation. Id. § 124.15(b).
penses of the DTSA monitors). Although these special controls are intended to apply to launches from non-allied countries, the regulations state that these controls can be extended to launches from allied countries.

While these special controls are undeniably applicable to the launch of Bigelow Aerospace’s expandable space stations from a Russian launch site, these controls should not necessarily apply to the launch of suborbital space tourism flights. The language of section 124.15 is reproduced here to show how it is limited to the launch of “satellites” and therefore would not apply to the launch of suborbital spacecraft:

The export of any satellite or related item (see § 121.1, Category XV(a) and (e)) or any defense service controlled by this subchapter associated with the launch in, or by nationals of, a country that is not a member of the North Atlantic Treaty Organization or a major non-NATO ally of the United States always requires special export controls . . . .

The reference to “any defense service controlled by this subchapter associated with [a] launch” presents the possibility that the operations of a suborbital spaceflight company could come within the scope of this provision when flying out of a non-allied country. If the government adopts this interpretation, oral disclosures made to foreign space tourists could be deemed to be a technical discussion that would be subject to monitoring. On the other hand, it would be more reasonable to argue that this provision was intended to apply only to the launch of satellites (and defense services related to the launch of satellites) and not to the taking off of a spaceplane.

E. The DDTC’s Discretion to Grant Exceptions from ITAR

Despite the strict controls on the export of space technology described in the preceding sections, section 126.3 of ITAR grants the DDTC broad discretion to grant exceptions from the application of the regulations as follows: “In a case of exceptional or undue hardship, or when it is otherwise in the interest of the United States Government, the Director, Office of Defense Trade Controls may make an exception to the provisions

100 Gold, supra note 32, at 181.
101 Id.; 22 C.F.R. § 124.15(c).
102 22 C.F.R. § 124.15(a) (emphasis added).
of this subchapter."\(^{103}\) This provision allows the DDTC to grant an exception from ITAR (which composes the entire "subchapter" referred to in this section) under the circumstances described. As written, the discretion should be utilized primarily in cases of "exceptional or undue hardship," but can also be applied under any circumstances in order to serve "the interest of the United States Government."\(^{104}\) No further guidance is given regarding the type of governmental interest that would allow for the suspension of ITAR, which means that it could potentially be of any nature, whether based on national security, diplomatic concerns, or commercial interests. The discretion provided by section 126.3 was apparently instrumental in the Bigelow ruling and also allows for the granting of similar exceptions to space tourism companies, as explained in the following sections.

III. THE BIGELOW AEROSPACE COMMODITY JURISDICTION REQUEST

Some of the most eloquent and incisive comments regarding the regulatory burdens imposed by ITAR are found in the writings of Michael Gold, the Corporate Counsel and Director of the Washington office of Bigelow Aerospace.\(^{105}\) In various publications, Mr. Gold has described the surprisingly onerous (and often nonsensical) demands that have been placed on Bigelow Aerospace as the company launched its prototype space stations into orbit from Russia.\(^{106}\) In what has become one of the more famous examples of the unreasonable requirements imposed under ITAR, Mr. Gold has described how Bigelow Aerospace was required (by a proviso in its Technical Assistance Agreement) to guard on a 24/7 basis a simple stand that was used to hold the prototype space station prior to its being loaded into the launch fairing.\(^{107}\) Although the stand was from a functional perspective not much different from a card table, it was deemed

\(^{103}\) Id. § 126.3.

\(^{104}\) Id.


\(^{106}\) See sources cited supra note 105.

\(^{107}\) Gold, supra note 32, at 172–73.
to be modified for use with controlled space technology and was, therefore, itself subject to ITAR controls.\(^{108}\)

Prior to the DDTC's ruling that excepted Bigelow from certain aspects of ITAR, Bigelow Aerospace feared that it would have been required to acquire a license from the DDTC before allowing any foreign national to set foot on one of its space stations.\(^ {109}\) For example, if Bigelow placed into orbit a space station that was to be visited by foreign nationals, ITAR would have required that Bigelow obtain a license (by submitting a DSP-5 form) for each foreign national that was anticipated to inhabit the space station.\(^ {110}\) This requirement would also apply to any third party that might purchase a Bigelow space station. That is, if Bigelow placed a space station into orbit and then transferred the station to a U.S. purchaser, the purchaser would have to obtain a license prior to permitting a foreign national to enter the space station. In addition to the costs of seeking such a license, there would also have been a risk that the DDTC would deny a license, thus preventing the foreign national from entering the space station at all.

In addition, Bigelow would have been required to enter into a Technical Assistance Agreement with each foreign passenger, which would then have to be submitted to the DDTC for its approval.\(^ {111}\) Bigelow was also concerned that the more burdensome requirements regarding the creation of a Technology Transfer Controls Plan and DTSA monitoring of all conversations with foreign passengers would be triggered if the space stations were launched from non-NATO countries.\(^ {112}\) If these provisions of ITAR would have been applied strictly to Bigelow's operations, it may have jeopardized the success of the company since it would have made it far more difficult to attract and maintain foreign customers. The pool of potential customers for Bigelow's space stations is small to begin with and a significant portion of that pool is composed of foreign companies and space agencies. Therefore, the possibility that ITAR would interfere with Bigelow's ability to fully tap into the foreign market was a threat to the company's viability.

One way that a company can escape the burdens of ITAR compliance is to ask the DDTC to remove the company's tech-

\(^ {108}\) Id.
\(^ {109}\) See Klamper, infra note 117.
\(^ {110}\) See Gold, supra note 32, at 176.
\(^ {111}\) See id. at 177–79.
\(^ {112}\) See supra Part II.D.
nology from the USML by way of a “commodity jurisdiction request” (CJ request). When submitting a CJ request, the applicant is requesting that the DDTC remove the applicant’s technology from the USML, thus transferring the technology to the jurisdiction of the DOC, which oversees exports of dual-use items under the EAR.

On December 27, 2007, Bigelow Aerospace submitted a CJ request to the DDTC seeking to remove its expandable space platform technology from the USML. Although the DDTC typically makes a determination within three or four months after receiving a request, a decision was not to be issued in this case for sixteen months. The suspense was broken on April 22, 2009, when Bigelow Aerospace announced that the DDTC had responded favorably to its CJ request. The DDTC had ruled that the presence of foreign nationals on a Bigelow space station, as well as the training of these private astronauts, referred to collectively by Mr. Gold as the “passenger experience,” was “non-licensable” under ITAR, meaning that the obligations imposed by ITAR would not apply to this aspect of Bigelow’s operations. Michael Gold had succeeded in his argument that just because a person has seen a space station does not mean that he or she can build one.

This ruling was rather unusual in that the DDTC will typically decide either to remove the technology at issue from the USML (thus transferring jurisdiction to the DOC) or to keep the technology on the USML (and continue to require licenses for ex-

113 22 C.F.R. § 120.4 (2010).
114 See Introduction to Commerce Department Export Controls, Bureau of Industry and Security, http://www.bis.doc.gov/licensing/exportingbasics.htm (last visited July 17, 2010). Section 120.4 explains that a commodity jurisdiction request can be used either “if doubt exists as to whether an article or service is covered by the U.S. Munitions List” or “for consideration of a redesignation of an article or service currently covered by the U.S. Munitions List.” 22 C.F.R. § 120.4.
116 In the course of this decision process, Michael Gold remained philosophical during what was unquestionably a suspenseful time for him and Bigelow Aerospace. When asked about the long wait, he showed no impatience, but instead insisted that he was more interested in a good decision rather than a speedy one.
117 Bigelow Aerospace has not released to the public either its commodity jurisdiction request or the DDTC’s response. See Amy Klamper, Mike Gold, Corporate Counsel and Director of Washington Operations, Bigelow Aerospace, SPACE NEWS (Aug. 31, 2009), http://www.spacenews.com/profiles/091009profile-mike-gold.html.
118 Id.
In Bigelow’s case, the technology remained on the USML, but the requirements for a license, Technical Assistance Agreement, Technology Transfer Control Plan, and monitoring will no longer apply with respect to the “passenger experience.” Despite the fact that it was not expressly stated in the ruling, the DDTC was apparently exercising the discretion granted to it under section 126.3 to grant an exception from the application of ITAR when it made this ruling.

Although it may appear that Bigelow Aerospace fell short by not succeeding in having its technology removed from the USML, this ruling appears to have been the best result for Bigelow since a transfer of its technology to the DOC would have likely meant that a license would have to have been sought under the Export Administration Regulations. However, under the “non-licensable” ruling, Bigelow does not have to apply for licenses from either the DDTC or the DOC. Prior to this DDTC decision, the presence of foreign nationals on a Bigelow space station would have triggered the various burdens under ITAR. The continuation of this policy would have placed an extraordinary burden on Bigelow due to the expensive and time-consuming process of complying with these requirements for each foreign national present on a Bigelow space station. Bigelow Aerospace’s successful CJ request has removed these obstacles and, as a result, has promised to breathe new life into the private spaceflight industry.

It is worth noting that the DDTC ruling is not without its limits. First, the ruling only applies to Bigelow Aerospace. Therefore, unless the ruling is replicated for other spaceflight companies, it will, in reality, have no effect on the space industry because, as explained below, there is no value in an exception for people on a space station if the spaceflight companies that have to deliver the people to the space station are subject to the debilitating burdens of ITAR. Second, prospective passengers who are nationals of the so-called “[s]ection 126.1 countries” would still need a license from the appropriate agency before being able to enter a Bigelow space station. Section 126.1 of ITAR states that “[i]t is the policy of the United States to deny licenses and other approvals for exports and imports of defense articles and defense services, destined for or originating in cer-

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119 See supra Part II.B.
120 See Klamper, supra note 117.
tain countries . . . [including] Belarus, Cuba, Eritrea, Iran, North Korea, Syria, and Venezuela" as well as to "countries with respect to which the United States maintains an arms embargo (e.g., Burma, China, Liberia, and Sudan)." 122

Despite these limitations, the DDTC's ruling on Bigelow's CJ request was heralded by other spaceflight companies as a major breakthrough that promises to significantly ease the regulatory burden on their operations. 123 For example, Marc Holzapfel, counsel to Virgin Galactic, called the ruling a "major development" that will enable space companies to avoid the "complicated, expensive, and dilatory export approval process." 124 Likewise, the chief counsel of SpaceX, Tim Hughes, praised the DDTC for adopting "a common-sense approach to ITAR." 125 However, since the Bigelow ruling only provides relief to Bigelow Aerospace and does not apply to either Virgin Galactic or other space tourism companies, these companies will have to seek similar relief on their own.

IV. EXTENDING THE BIGELOW RULING TO SPACE TOURISM COMPANIES

Since Bigelow Aerospace announced the receipt of its favorable ruling, there have been reports that Virgin Galactic has already filed a CJ request that will rely on the Bigelow ruling as precedent. 126 Other space tourism companies will likely follow suit. The typical method of requesting a section 126.3 exception is through the submission of a General Correspondence letter to the DDTC. That Virgin Galactic has submitted a CJ request indicates that the company is attempting to have its spaceplane technology removed from the USML or else receive a ruling that the term "spacecraft" in Category XV of the USML does not include commercial spaceplanes (just as commercial aircraft are not covered by ITAR). 127 The criteria considered by the DDTC when determining whether to remove a particular

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122 Id.
124 Id.
125 Id.
126 Commercial Space Transportation Advisory Committee, Meeting Minutes (May 21, 2009), http://www.faa.gov/about/office_org/headquarters_offices/ast/advisory_committee/meeting_news/archive/media/May%2021%202009.pdf.
127 See supra Part II.B.
technology from the USML are the same criteria that are taken into account when determining under section 120.3 whether a particular technology should be designated as a “defense article,” namely, whether the technology: (1) is designed for military use, does not have a primary civilian application, and exceeds the performance standards of equivalent civilian equipment; or (2) is designed for military use and has “significant” military value. These criteria receive further elaboration in section 120.4, but the primary criteria remain the same.

Looking at the plain language of ITAR, suborbital spaceplane technology of the type being developed by space tourism companies should be removed from the USML since it has not been designed for military use and does not exceed the performance of equivalent civilian space tourism equipment. That said, the DDTC is likely to consider the potential military application of the spaceplane technology when making its determination. With respect to this issue, the DDTC should take into account the fact that the spaceplanes that are currently under development are not in the same class of launch equipment that lofts satellites into orbit and can easily double as ballistic missiles. Although there may be some concern that these spaceplanes could deliver weapons of mass destruction to a target, the current state of spaceplane technology should eliminate any such concerns since the suborbital vehicles are not capable of point-to-point flight to any significant degree, but only return to their point of departure. In light of this, it appears that the test for removing spaceplanes from the USML has been met, and the

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128 See supra Part II.B.
129 22 C.F.R. § 120.4.
130 See id.
131 It should be obvious that the space tourism equipment should not be characterized as any of the controlled items under the MTCR, whether as a rocket, a “space launch vehicle,” or a “reentry vehicle,” simply because spaceplanes are not missiles and such technology was not contemplated by this control regime. See Peter van Fenema, Export Controls and Satellite Launches: What's New?, in Proceedings of the Forty-Sixth Colloquium on the Law of Outer Space 239, 241 (2004) (citing the MTCR guidelines which make clear that the purpose of the MTCR is to prevent the transfer of technology that can deliver weapons of mass destruction and that the MTCR is “not designed to impede national space programs”); see also Waldrop, supra note 16, at 176, 190 (explaining that the “greatest concern . . . is that space launch vehicles essentially are ballistic missiles”). Likewise, the International Code of Conduct against Ballistic Missile Proliferation (ICOC) is concerned with the proliferation of ballistic missile technology and should be not applied to the launch of commercial spaceplanes. For a discussion of the nature and scope of the ICOC, see van Fenema, supra at 241–45.
DDTC would be able to make such a ruling in response to a CJ request from Virgin Galactic and the other space tourism companies.

On the other hand, perhaps Virgin Galactic is simply following Bigelow Aerospace's example by submitting a CJ request while still expecting nothing more than a section 126.3 exception of the "passenger experience." And whether this narrower request to render the "passenger experience" excepted from ITAR—as was done for Bigelow Aerospace—is made either in the form of a CJ request or a General Correspondence letter, the DDTC should grant the request for two reasons. First, the refusal to grant such an exception to the space tourism companies would render the Bigelow ruling a nullity. Second, the circumstances for granting an exception under section 126.3 of ITAR are clearly met in the case of space tourism companies in light of (i) the exceptional hardship that would be caused by the strict application of ITAR and (ii) the strong interest that the United States has in supporting the success of the private human spaceflight industry.

The first point is a rather obvious one, namely, that the DDTC's previous ruling regarding Bigelow's operations would be meaningless unless similar relief is granted to the companies that will deliver people to the Bigelow space stations. The companies that Bigelow will rely on to deliver scientists, manufacturers, and recreational visitors to its space stations are likely to be the same companies that are now offering suborbital tourism services. These companies will continue to refine their technology until they are able to provide orbital delivery. However, without relief from ITAR, the tourism companies may not be able to survive even for the short term, let alone long enough to develop orbital delivery capabilities. And without such services being available, Bigelow Aerospace's space station venture will collapse as there is no sense in placing a space station in orbit if its stands empty.

In addition to this first point, the DDTC should except the "passenger experience" of the space tourism companies from ITAR under section 126.3 because the grounds for granting such an exception are clearly met. As explained above, the DDTC has the power to grant an exception from the application of ITAR in the event of "exceptional or undue hardship, or

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132 See 22 C.F.R. § 126.3.
when it is otherwise in the interest of the United States."\textsuperscript{133} Although it is only necessary to show either exceptional hardship or that the exception is in the interest of the United States, both prerequisites are easily met in this case. First, it is undeniable that the space tourism companies face exceptional hardship under the ITAR regulations. In fact, the space tourism companies face even greater hardship than the hardship faced by Bigelow Aerospace. This is true because space tourism companies will have a much higher number of passengers per year than Bigelow would have on its space stations and will therefore have to apply for many more export licenses to allow for the disclosures to the passengers that are mandated under the Human Space Flight Regulations, as well as for allowing the passengers on board (and thereby potentially disclosing "technical data" related to the spacecraft by means of visual inspection). For example, Virgin Galactic plans on eventually launching multiple flights per day with six passengers per flight, which could eventually amount to thousands of passengers every year.\textsuperscript{134} In addition, the disclosure of technical data will also require space tourism companies to enter into a Technical Assistance Agreement with each individual passenger—an agreement which must then be submitted to the DDTC for approval prior to the disclosure of any such data.\textsuperscript{135} The cost and complexity of acquiring licenses and entering into Technical Assistance Agreements for each passenger would be colossal and would unquestionably harm a company's ability to attract foreign customers who would likely prefer to fly with a foreign space tourism company that is not subject to the cost, uncertainty, and delay of the U.S. regulatory regime.

The success of the space tourism industry would also be threatened by the special controls under section 124.15, which are triggered by the provision of defense services related to a launch from a non-allied territory. As described above, these special controls require Technology Transfer Control Plans as well as permit the DTSA to monitor all discussions and activities related to the launch (with the expense of such monitoring being borne by the company).\textsuperscript{136} While Bigelow was concerned that section 124.15 would be triggered by the presence of their

\textsuperscript{133} See supra Part I.E.

\textsuperscript{134} See, e.g., Leonard David, Virgin Galactic Details Its Space Travel Plans, MSNBC.com (Nov. 11, 2006), http://www.msnbc.msn.com/id/15654772/.

\textsuperscript{135} See supra Part II.C.

\textsuperscript{136} 22 C.F.R. § 124.15.
customers on their space stations, there is a good argument that this provision would not have been triggered since Bigelow will not be involved with the launch of these customers.137 Passengers will be delivered to the space stations by other companies.138 And if Bigelow is not involved in the launching of its customers, then the customers' presence on the space station would not be subject to section 124.15.139 Of course, Bigelow would still be subject to section 124.15 when launching its space stations from non-allied territory,140 but that is a less contentious issue since, although burdensome, such launches would take place relatively infrequently (compared with the frequency of space tourism flights).

In contrast, it seems far more likely that the activities of space tourism companies will trigger the application of the special controls under section 124.15 when the flights are launched from non-allied territories since customers of space tourism companies will actually be involved on a first-hand basis in the launching of the spacecraft.141 Therefore, not only do these companies run the risk that they may be found to be providing defense services by disclosing to their passengers (through visual inspection and safety training) technical data relating to their spacecraft, but this defense service may be deemed to be provided in connection with the launch of the spacecraft, thus triggering the controls of section 124.15.

Admittedly, the special controls of section 124.15 only apply if the tourism companies launch from non-allied territories. It may seem that space tourism companies may easily avoid launching from non-allied territories and thus avoid the burdens of section 124.15.142 After all, the list of NATO countries and major non-NATO allies is a long one, including at this point forty-three countries.143 However, there are significant omissions from this list. For example, Sweden is neither a member

137 See supra Part III.
138 See supra Part III.
139 At the most, the presence of the customers on a Bigelow space station would be treated as an export of the space station (through visual disclosure) or the provision of a defense service, which would only require an export license and Technical Assistance Agreement. See supra notes 93–96 and accompanying text.
140 See supra Part II.D.
141 See supra Part II.D.
142 See supra Part II.D.
143 Member Countries, supra note 92.
of NATO nor a major non-NATO ally. This is significant because Spaceport Sweden is one of the spaceports that plans to provide services to the space tourism companies. Some foreign space tourism companies are also pursuing the possibility of launching flights from a spaceport in Abu Dhabi or Dubai. Once again, U.S.-based space tourism companies will have a hard time following foreign competitors to these launch sites due to the fact that neither Sweden nor the United Arab Emirates are on the list of allied countries. These launch sites are attractive due to their ability to serve the customer pools of Europe and the Middle East—where a large number of potential customers with sufficient funds for this type of adventure tourism are to be found. Unfortunately, U.S.-based companies may be locked out of this market unless they are relieved of the burdens of section 124.15.

To make one final point regarding section 124.15, the DDTC could also choose to interpret the section as applying only to "defense services" related to the launch of satellites (and not the launch of a spaceplane), since the opening of the section mentions the export of satellites in particular—in which case the entire specter of section 124.15 would evaporate. In the event that this narrow reading of the section is not adopted, the DDTC should at least grant an exception under section 126.3 with respect to disclosures made to space tourists.

In addition to the grounds of exceptional hardship that space tourism companies would suffer under ITAR, a "passenger experience" exception from ITAR should be granted solely on the grounds that such an exception would be in the interest of the United States. The interest that would be served is two-fold. First, the space tourism industry is a significant development in the commercialization of space, and the technological developments that result from these early tourism ventures are likely to lead to more substantial commercial ventures, such as orbital manufacturing, orbital research laboratories, point-to-point space travel, and even the mining of the moon or other celestial bodies. The United States has a great interest from an eco-

144 Id.
nomic perspective in being at the forefront of this industry and should therefore modulate the application of ITAR in a manner that will foster the competitiveness of U.S. companies.

In addition to the economic interests at stake, the United States has a strong interest in ensuring the success of U.S. human spaceflight companies from the standpoint of national security. A strong space presence has for a long time been an important component of American strength and national security.\(^{148}\) And now that the Obama Administration plans to eliminate NASA’s spaceflight program and rely instead on the private space industry to meet the government’s spacefaring needs, it has become essential for the government to make every effort to facilitate the success of the private spaceflight industry—which at this point means supporting the space tourism industry. This does not mean that certain export controls cannot be kept in place when required to prevent the proliferation of dangerous technologies, but it does mean that the DDTC should grant exceptions wherever possible in order to ease the regulatory burden on these young companies.

The DDTC should also be confident that granting a “passenger experience” exception to the space tourism companies would not result in the proliferation of the dangerous technologies that ITAR is designed to prevent. As discussed above, the spaceplanes that are currently under development are designed for purely commercial purposes and do not have the potential of delivering weapons to a target.\(^{149}\) Moreover, the tourism equipment is not designed for military use and therefore does not come within the criteria for ITAR control set forth in section 120.3.\(^{150}\) And not only is technology not of a type that should raise national security concerns, but the transmission of the “technical data” to space tourists is also of a nature that fails to warrant the application of export controls. Even if the Human Space Flight Regulations are interpreted broadly to require disclosure about every aspect of spacecraft safety and potential risks, it is highly unlikely that the information divulged to passengers (or the equipment that is visible to passengers) will entail the level of technological detail that is relevant to the construction and flight operation of the spaceplanes (unless a pas-

\(^{148}\) For a discussion of the history of the United States’ reliance on the commercial space industry for national security needs, see Waldrop, \textit{supra} note 16, at 158, 199.

\(^{149}\) See \textit{supra} Part IV.

\(^{150}\) See \textit{supra} Part II.B.
senger happens to inquire about engine mechanics or other highly technical matters).

For the reasons set forth above, the U.S. government has little to fear and much to gain from easing the regulatory burdens on the space tourism industry by excepting the “passenger experience” from ITAR. The discretion that the DDTC has been granted in section 126.3 allows the agency to adjust the application of ITAR in an appropriate manner to achieve the policy goals of maintaining security while also protecting the interest of the United States in supporting this new industry of private human spaceflight. The relaxation of ITAR in order to support the innovative and important ventures undertaken by the new space tourism industry is precisely the situation that section 126.3 was intended to address. And as discussed in the following section, if the DDTC does not provide relief to the space tourism industry, then it is likely that no relief will be provided, since Congress does not seem capable of reforming the law given the political paralysis that has gripped our nation’s capital.

V. ADMINISTRATIVE DISCRETION AND THE FUTURE OF EXPORT CONTROL REFORM

The stated commitment of the Obama Administration to export control reform provides hope that the unnecessary regulatory burdens described in this article will be lifted from the shoulders of commercial human spaceflight companies, thus allowing them to thrive in the global marketplace. The recent bills that passed the House in 2008 and 2009 also show that support for reform exists in Congress. However, when these reforms will take place and what the nature of these reforms will be is uncertain. The mere removal of commercial satellites from the USML will not benefit tourism. These reforms, if they occur at all, may not be implemented for years. In the meantime, space tourism companies are on the verge of beginning their operations, and therefore regulatory relief must be granted to these companies through the exercise of the DDTC’s administrative discretion to grant exceptions from ITAR or to remove spaceplane technology from the USML entirely.

The DDTC’s actions connected with the Bigelow ruling and the potential for the DDTC to grant relief to the space tourism companies provide a striking example of an interesting phenomenon in the field of administrative law. One of the more

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debated issues in the field of administrative law is the matter of administrative discretion and, in particular, the benefits and dangers of providing administrative agencies with discretion to tailor the application of law to individual cases. By easing the regulatory burdens on Bigelow Aerospace, the DDTC has illustrated the benefit of administrative discretion in two distinct ways. First, the DDTC has shown how administrative discretion can be used to adjust the application of a statute to new technologies and fact scenarios that were not contemplated during the drafting of the statute. Second, the DDTC has shown how an administrative agency, through its discretionary powers, can act in place of the constitutionally established organs of government when these organs are unable to take action themselves due to political paralysis.

The idea that administrative discretion is useful, and even necessary, in order to adjust the application of law to unforeseeable circumstances has been widely recognized. Kenneth Culp Davis identifies this primary purpose of administrative agencies in his seminal 1969 book, *Discretionary Justice*, when he explains that one of the main reasons for the tremendous increase in administrative discretion in the United States during the nineteenth century was that the legislature was unable to craft a set of rules in advance to cover unforeseeable future circumstances or new developments that were sure to arise during a time when society, technology, and business were evolving at a rapid pace. As Davis points out, the mechanical application of an inflexible rule (such as the blanket rule subjecting all space technology to ITAR) will certainly lead to unjust or undesirable results. Discretion is needed in order to tailor the general rule to the unique circumstances of a particular case in order to produce a result that properly balances the relevant interests and policies. This careful balancing of various policies in light of the specific facts of a case is best carried out on a case-by-case basis at the administrative level—which was the ra-

153 Id.
154 Kenneth Culp Davis, *Discretionary Justice: A Preliminary Inquiry* 15–17, 20, 24 (1969). See, in particular, Davis’s statement that “[i]nventing rules to answer all regulatory questions is far beyond the intellectual capacity of the ablest men.” Id. at 42.
155 Id. at 19.
156 Id.
tionale behind the inclusion of section 126.3 in ITAR, giving the DDTC discretion to grant an exception from the application of the regulations in the event of "exceptional or undue hardship, or when it is otherwise in the interest of the United States." 157

The Bigelow CJ request was the perfect scenario for the application of the DDTC's discretion to grant an exception from the regulations. The DDTC was faced with a request to determine whether Bigelow space stations were subject to ITAR. Unable to rule that the space stations were not satellites (since they orbit the Earth), the DDTC could only respond by ruling that ITAR would apply to the export of the space stations. 158 However, it is to the credit of the DDTC that it recognized that the imposition of the regulations would threaten the viability of this new industry. Bigelow Aerospace was not a communications satellite manufacturer or a provider of launch services—it was instead a new type of business that provided for the private habitation of space. And if ITAR were strictly applied to Bigelow’s operations, the burden could crush the new company. This was the perfect opportunity for the DDTC to use the discretion that had been granted to it in section 126.3 to issue an exception since there was every indication that the strict application of the regulations would result in "exceptional or undue hardship." 159 Moreover, it was also in the interest of the United States to ease the regulations and allow this groundbreaking company to grow in a reasonable regulatory environment since the company’s success will contribute greatly to the evolution of a vibrant new private space industry.

The other benefit of the administrative discretion wielded by the DDTC under section 126.3 is of a type that has not been widely recognized in scholarly literature—at least not in the particular form illustrated by the Bigelow ruling. This benefit is found in the ability of the DDTC to grant an exception to commercial space companies from the burdens of ITAR when the legislative branch is so paralyzed by the politics of the day that it is unable to modify the law to remove commercial satellites from the scope of ITAR, as has been demanded by industry and academia for years. 160 In other words, the DDTC has shown how administrative discretion allows for the law to be modified in its

158 See supra Part III.
159 22 C.F.R. § 126.3.
160 See supra note 5.
application by the administrative agency when the legislature is unable to make necessary amendments to the law due to the paralyzing effects of political pressures.

The current highly factionalized political environment has made it virtually impossible for any meaningful legislative reforms to pass both houses—and the reform of arms trafficking regulations poses special challenges. Any politician who recommends relaxing ITAR (even if they are really only talking about the exemption of purely commercial technology) opens himself to political attacks for being soft on national defense. In this political climate, the legislature is paralyzed. And without the legislature being able to enact the necessary ITAR reforms, the only hope lies with the DDTC, which has the discretion to grant an exception from the regulations when necessary. The use of administrative discretion to solve the problem of political paralysis in the age of terror, party factionalism, and divided government strikes a chord that is similar to the "public choice" theory in administrative law, which, as enunciated in Pierce's treatise on administrative law, states that politicians prefer to allow administrative agencies to make controversial policy decisions rather than make a decision that may alienate a segment of voters and thus place the politicians' political career in jeopardy. Although the reality of political paralysis is an unfortunate development that signals a profound flaw in our democracy, it has illustrated how, when the traditional constitutional organs of government are paralyzed by politics or are otherwise dysfunctional, administrative agencies can step in and shape the law in a reasonable manner pursuant to their discretionary powers.

161 For a first-hand account of the current paralysis of Congress, see Evan Bayh, Why I'm Leaving the Senate, N.Y. TIMES, Feb. 21, 2010, at WK9; see also Richard J. Pierce, Jr., Administrative Law Treatise 134–35 (4th ed. 2002) (explaining how party factionalism has led to gridlock because different parties control the Presidency and Congress—and each has the power to thwart the other branch); Peter Beinart, Why Washington Is Tied Up in Knots, Time, Mar. 1, 2010, at 20.

162 See Spector, supra note 9, at 14 (explaining that at the time of his writing the article there was a "strong group within Congress that . . . is largely suspicious of any efforts that might appear to make satellite exports easier" and that "[i]t seems unlikely that meaningful reforms will be enacted . . . when U.S. representatives are not likely to embrace any bill that exposes them to a charge of being 'soft' on national security").

163 Pierce, supra note 161, at 99; see also Jerry Mashaw, Prodelegation: Why Administrators Should Make Political Decisions, 1 J.L. Econ. & Org. 81 (1985).
This reliance on the authority and discretion of the DDTC to grant an exception from the ITAR regulations in order to allow for the successful operation of the new human spaceflight industry may, given the current political climate, be a more realistic alternative to the revision of the regulations. By giving the DDTC officers an opportunity to tailor the application of the existing regulations in a reasonable manner, the burden of ITAR on commercial space enterprises could be reduced significantly. However, since an exception under section 126.3 only affects the operations of the requesting company, broad relief across the industry would require each of the space companies to file their own request. This task could be made easier if companies would share their CJ requests in order to enable others to submit similar requests. This would obviously require the sharing of valuable information with competitors—but would be done in order to achieve the greater goal of improving the competitiveness and viability of the spaceflight industry as a whole. If the DDTC granted a series of exceptions from the application of ITAR with respect to the "passenger experience," it would pave the way for a formal revision of the USML to remove the burdens of ITAR from this aspect of the spaceflight company operations. For once the section 126.3 exceptions are granted and the spaceflight industry proves itself to be an important and viable industry, the suggestion to formalize the exception in a revision of the regulations should entail less political controversy.

VI. CONCLUSION

The United States is entering a new age of space commercialization that will be fueled by the Obama administration’s new reliance on services provided by private companies. Now more than ever the strength of the U.S. space program will depend on a robust domestic industry that is able not merely to service the needs of the government, but actually replace the government spaceflight program. The policy is daring and forward-thinking, but it also comes with risks. An entrepreneur in the space industry will have to surmount the impossible by succeeding in an exotic venture that is capital intensive, technologically challenging, and—if that were not enough—burdened by a byzantine regulatory system that promises substantial attorneys’ fees and, if violations occur, crushing penalties. Fortunately, these regulatory hurdles can be largely removed by easing the impact of the
ITAR regulations in a manner that properly balances commercial needs with security concerns.

Although the current political environment—characterized by factionalism, a split government, and, in the end, governmental paralysis—has made it impossible for Congress to respond to the clear need to reform ITAR, the DDTC has used its discretion wisely to except Bigelow Aerospace from the those aspects of ITAR that threatened the survival of the company. This use of administrative discretion to modify the application of law when the constitutional organs of government are unable to act is a powerful example of the importance of administrative agencies to our democracy—when government breaks down, the agencies can take over the work of government. This article has made the case for why the DDTC should continue to exercise its discretion by granting similar exceptions for the “passenger experience” to the space tourism companies that will soon begin to fly customers into space. The need for such an exception is even stronger for such companies than was the case for Bigelow Aerospace since their number of customers will be significantly larger than those of Bigelow and the nature of their operations will be more likely to trigger ITAR controls. The interests of the United States demand that these exceptions be granted. A successful domestic commercial spaceflight industry will not only bring jobs, prosperity, and technological advantages to the United States, but will also ensure the strength of our government space program, which, under the Obama Administration’s new space policy, will rely more than ever on private industry.
Book Review