

## Evaluating the Obama National Space Policy: Continuity and New Priorities

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Nearly every president since Eisenhower has released a “*national space policy*,” outlining his views on the significance of space to American interests and identifying high level priorities intended to guide government action. Of course, the policies also are meant for international and public consumption, and so, they signal intentions and priorities meant to influence subsequent events. The new national space policy (released June 28, 2010) includes unique elements, but many of its principles, goals, and objectives are found in earlier space policies and reflect long-standing U.S. views on the use of and objectives in outer space.

The natural comparison for the policy is the one it replaces, which is the Bush Administration’s policy released in October 2006. In general terms, the new policy builds on the old policy, much as one expects. Although phrased differently, the core principles embodied in the 2006 document remain, just as the 2006 policy included the core principles of the 1996 Clinton space policy. New areas recognize new challenges and different approaches to old problems.

The Obama policy adds several new terms to the space policy lexicon – sustainability, responsible behavior, and stability, most notably. How those terms come to be interpreted and subsequently reflected in decisions about other policies and programs will be of considerable interest to U.S. departments and agencies, policy analysts, and foreign governments. On face, the Obama policy appears to emphasize international cooperation and highlights the goal of U.S. space leadership more than past policies. The U.S. actively participates in and leads international discussions on a host of space issues, leaving one to ask what additional efforts are anticipated in the new policy. The Obama policy adds a welcome emphasis on expanding cooperation with allies on space security concerns and added prioritization on assuring access to space. Finally, the Obama policy offers more detailed discussion of commercial and civil space issues.

The policy signals principles and goals, but ultimately, actions, reflected by budgets, decisions about programs and technical investments, and positions taken in bilateral and multilateral settings, will determine the character of U.S. space policy. How the policy’s principles, goals, and guidelines are implemented is the challenge ahead.

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## Context for Space Policy Making

In May 2006, we asked “Does National Space Policy Matter”?<sup>1</sup> At the time, the long awaited Bush policy<sup>2</sup> was still months from being released and technically the policy governing U.S. space activities remained the 1996 NSC 49 prepared by the Clinton Administration.<sup>3</sup> Critics and supporters alike questioned the rationale for the delay well into the second term of the Bush presidency, but most recognized that the Bush Administration’s actions (other policy statements, programs, and budgets) signaled ongoing deviations from the previous policy. Reflecting the notion that implementation, rather than statements, determines the character and content of policy, any number of other means for influencing the direction of U.S. activities in space exist. Guidance memos, presidential correspondence, budgetary tools, congressional testimony, official statements and speeches, and inaction are all tools for influencing programs and activities in lieu of national policy guidance or presidential decision directives.<sup>4</sup>

For instance, the Obama Administration’s plan to alter the space exploration program, now embodied in the space policy document, was announced months before (in the budget request to the Congress and in presidential and ranking administration official statements). While the final disposition of those changes is still unknown, there is little question that a major shift in space exploration policy is underway. Similarly, the George W. Bush Administration issued many policies pertaining to space issues before the national space policy was completed, such as the 2003 commercial remote sensing policy, the 2004 “Vision for Space Exploration”, the 2004 position, navigation and timing policy, and the 2005 space transportation policy. Undoubtedly, each of these shaped the form and context of the subsequent *national space policy*.

National space policy statements nevertheless attract considerable attention and are properly viewed as signaling important issues and priorities. Equally important are the areas that do not change. Indeed, a long view of U.S. national space policy reveals more continuity than change. Our *Presidential Decisions* reference volume, which compiles the core statements on space issues from each presidential administration from Eisenhower to the present (see <http://www.marshall.org/article.php?id=803>), reveals these long-standing patterns. Historian Cargill Hall summarizes the core principles of U.S. space policy:

... for fifty years, between 1955 and 2005, a few basic principles have undergirded U.S. space policy, principles enumerated in presidential NSC [National Security Council] space directives from Eisenhower to Clinton. During this period they have remained remarkably consistent, with the United States pledged to freedom of space, that is, free access to and unimpeded passage through space for satellites of

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<sup>1</sup> Richard Buenneke *et al.* *National Space Policy: Does It Matter?* (Washington, DC: George C. Marshall Institute, May 12, 2006), <http://www.marshall.org/pdf/materials/439.pdf>.

<sup>2</sup> See <http://www.marshall.org/pdf/materials/896.pdf> for a copy of the Bush Administration’s national space policy.

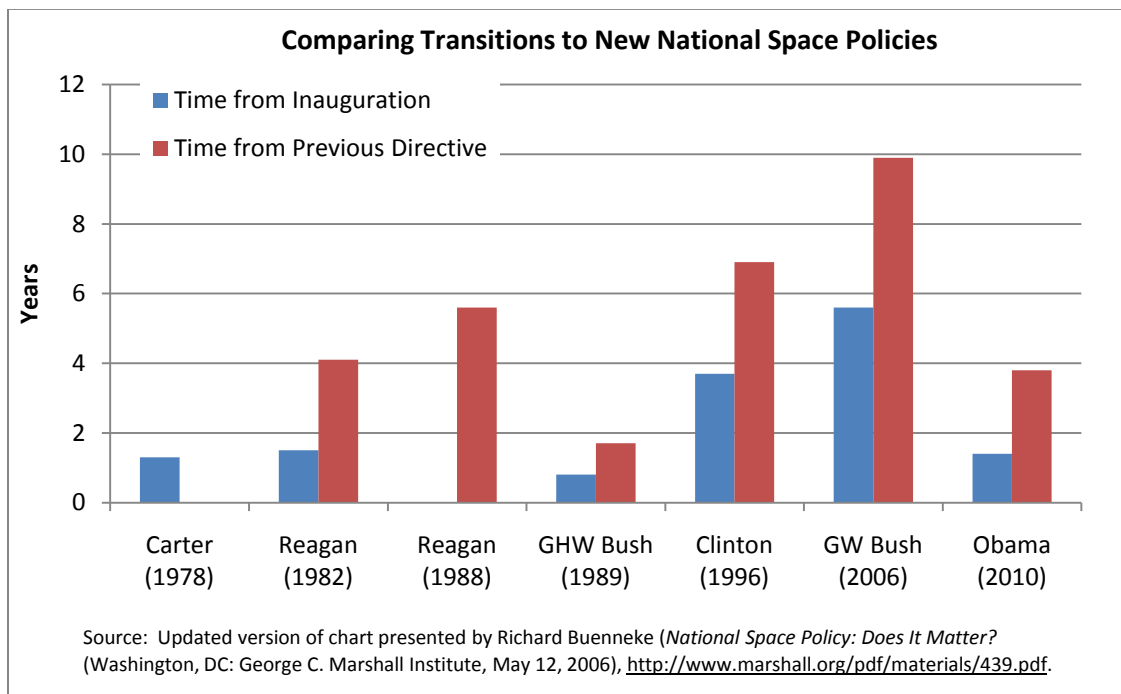
<sup>3</sup> A copy of the Clinton Administration’s national space policy is available at <http://www.marshall.org/pdf/materials/874.pdf>.

<sup>4</sup> See generally Richard DalBello in Buenneke *et al.* (2006): 17-18.

all nations and to the exploration and use of space for peaceful purposes for the benefit of all mankind. (The terms “peaceful purposes,” then and today, embraced defense-support activities including intelligence.) Second, the U.S. rejected any claims of sovereignty over outer space or other celestial bodies; third, it pursued three interrelated government space programs, civil, military and intelligence; fourth, it recognized the space systems of all nations as national property with the right of passage through and operation in space without interference (purposeful interference with operational space systems was and remains viewed as an infringement on sovereign rights); and fifth, the U.S. reserved the right to conduct, if attacked, activities in outer space in support of self-defense.<sup>5</sup>

Presidential policies add issues as they emerge. For example, research on space nuclear power, export control reform and industrial base/workforce issues begin weaving into the space policy statements in recent iterations. But these core principles have stood the test of time. One expects to see them in the Obama policy and it is the modifications and interpretation to them which signals notable shifts.

President Obama’s space policy was prepared, finalized, and released on a significantly different schedule than its predecessor. The new space policy comes just 17 months into the Administration with no other space directives having been issued publicly, except for those associated with NASA’s space exploration programs.



<sup>5</sup> Cargill Hall in Buenneke *et al* (2006): 8. For a more thorough treatment of the evolution of U.S. national security space policy see Cargill Hall and Robert Butterworth, *Military Space and National Policy: Record and Interpretation*, (Washington, DC: George C. Marshall Institute, 2006), <http://www.marshall.org/pdf/materials/419.pdf>.

Like Presidents Carter, Reagan, and George H.W. Bush, President Obama elected to release his space policy early in his first term. Presidents Carter and Reagan took roughly the same amount of time as President Obama to complete their space policies. President George H.W. Bush completed his in less than year from taking office. In contrast, President Clinton issued his space policy as his first term was nearing its end and President George W. Bush took even longer, releasing his space policy half-way through his second term. Both administrations had produced a number of space directives focused on specific issues and clearly had stated and influenced policy priorities reflected in budgets, programs, and official statements.

Finally, the Obama policy document released on June 28, 2010 is approximately 1,000 words longer than the one it replaces. As such, it offers more detail in areas of overlap and includes topics not mentioned in the Bush 2006 policy. In some cases, the Bush Administration had elaborated on a number of those issues in separate directives. For example, the Obama policy sets the policy guideline to “Maintain and Enhance Space-Based Positioning, Navigation and Timing Systems.” No analogous section can be found in the Bush 2006 document, but the December 15, 2004 U.S. Space-Based Position, Navigation and Timing Policy treats the issue independently.<sup>6</sup> Commercial remote sensing and space transportation policies,<sup>7</sup> released in 2003 and 2005, offer details on topics that receive only cursory treatment in the 2006 policy document.

### **Considering the Obama Space Policy**

Like its predecessor, the Obama space policy is broken into three sections – principles, goals, and guidelines. The principles and goals are short statements and attract considerable attention, but because they are short statements are open to the widest interpretation. The guidelines elaborate on these statements and offer general direction to the departments and agencies responsible for space activities. Tables below offer a comparison of the statements of principles, goals, and guidelines in the Obama and Bush space policies.

#### ***Vital National Interests***

As noted, the core principles of U.S. space policy are remarkably consistent over the years. The table below compares the statement of principles contained in the Obama and Bush space policies. As expected, the core principles remain essentially unchanged.

Like the Bush policy, President Obama considers space capabilities “vital to [U.S.] national interests.” And, like many space policies before, the Obama policy identifies “free access to” space, the U.S.

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<sup>6</sup> See the fact sheet on the U.S. Space-Based Positioning, Navigation, And Timing Policy (December 15, 2004) at <http://www.marshall.org/pdf/materials/899.pdf>.

<sup>7</sup> See the fact sheet on the Commercial Remote Sensing Space Policy (May 13, 2003) at <http://www.marshall.org/pdf/materials/895.pdf>; the U.S. Space Transportation Policy (January 6, 2005) at <http://www.marshall.org/pdf/materials/898.pdf>.

commitment to the use of space for “peaceful purposes,” the rejection of claims of national sovereignty, and holds that “purposeful interference” with national space systems is an “infringement” on U.S. rights” as key principles guiding U.S. policy.

<b>Comparing the Principles in the Bush &amp; Obama Space Policies</b>	
<b>Bush (2006)</b>	<b>Obama (2010)</b>
The United States considers space capabilities -- including the ground and space segments and supporting links -- vital to its national interests. Consistent with this policy, the United States will: preserve its rights, capabilities, and freedom of action in space; dissuade or deter others from either impeding those rights or developing capabilities intended to do so; take those actions necessary to protect its space capabilities; respond to interference; and deny, if necessary, adversaries the use of space capabilities hostile to U.S. national interests	It is the shared interest of all nations to act responsibly in space to help prevent mishaps, misperceptions, and mistrust. The United States considers the sustainability, stability, and free access to, and use of, space vital to its national interests. Space operations should be conducted in ways that emphasize openness and transparency to improve public awareness of the activities of government, and enable others to share in the benefits provided by the use of space.
The United States will oppose the development of new legal regimes or other restrictions that seek to prohibit or limit U.S. access to or use of space. Proposed arms control agreements or restrictions must not impair the rights of the United States to conduct research, development, testing, and operations or other activities in space for U.S. national interests	The United States will employ a variety of measures to help assure the use of space for all responsible parties, and, consistent with the inherent right of self-defense, deter others from interference and attack, defend our space systems and contribute to the defense of allied space systems, and, if deterrence fails, defeat efforts to attack them.
The United States is committed to encouraging and facilitating a growing and entrepreneurial U.S. commercial space sector. Toward that end, the United States Government will use U.S. commercial space capabilities to the maximum practical extent, consistent with national security	A robust and competitive commercial space sector is vital to continued progress in space. The United States is committed to encouraging and facilitating the growth of a U.S. commercial space sector that supports U.S. needs, is globally competitive, and advances U.S. leadership in the generation of new markets and innovation-driven entrepreneurship.
The United States is committed to the exploration and use of outer space by all nations for peaceful purposes, and for the benefit of all humanity. Consistent with this principle, “peaceful purposes” allow U.S. defense and intelligence-related activities in pursuit of national interests; The United States will seek to cooperate with other nations in the peaceful use of outer space to extend the benefits of space, enhance space exploration, and to protect and promote freedom around the world	All nations have the right to explore and use space for peaceful purposes, and for the benefit of all humanity, in accordance with international law. Consistent with this principle, “peaceful purposes” allows for space to be used for national and homeland security activities.
The United States rejects any claims to sovereignty by any nation over outer space or celestial bodies, or any portion thereof, and rejects any limitations on the fundamental right of the United States to operate in and acquire data from space; The United States considers space systems to have the rights of passage through and operations in space without interference. Consistent with this principle, the United States will view purposeful interference with its space systems as an infringement on its rights	As established in international law, there shall be no national claims of sovereignty over outer space or any celestial bodies. The United States considers the space systems of all nations to have the rights of passage through, and conduct of operations in, space without interference. Purposeful interference with space systems, including supporting infrastructure, will be considered an infringement of a nation’s rights.

Both policies include strong language upholding the right of the U.S. to defend its interests. The Obama policy states that the U.S. may: “... consistent with the inherent right of self-defense, deter others from

interference and attack, defend our space systems and contribute to the defense of allied space systems, and, if deterrence fails, defeat efforts to attack them.” U.S. efforts to deter, defend against, and defeat attacks in space remain a priority and are discussed again when the policy offers guidance to the Secretary of Defense.

But, this language is not as direct as that included in the Bush policy. The 2006 policy said the U.S. may act to: “dissuade or deter others from either impeding those rights or developing capabilities intended to do so; take those actions necessary to protect its space capabilities; respond to interference; and deny, if necessary, adversaries the use of space capabilities hostile to U.S. national interests.” Gone from the principle statement in the new policy are references to deterring or dissuading the development of capabilities and the right of the U.S. to deny the use of space to those hostile to its interests. These concepts may be subsumed in the intent of the Obama policy’s calls to deter, defend against, and defeat. If they are not, then an explanation for the shift in policy and its rationale is required.

The Obama policy introduces new terms. All nations are said to have a shared interest in “responsible” behavior. The policy does not define what “responsible behavior” means. In outlining goals, the policy calls for measures to ensure “responsible operations in space” and also references collision avoidance and debris mitigation efforts in the same statement. If those actions are what define “responsible behavior,” then the new statement reinforces and elevates existing practice. If more is implied, then additional detail and elaboration is required.

“Sustainability” of space is another new addition to the principles. The term is used only one other time in the policy in a section calling for the preservation of the space “environment.” Specifically, the policy says “Develop, maintain, and use space situational awareness (SSA) information from commercial, civil, and national security sources to detect, identify, and attribute actions in space that are contrary to responsible use and the long-term sustainability of the space environment.” The expansion of SSA capabilities precedes this Administration, is well underway and serves many purposes. In 2007, for example, the Bush Administration issued a classified memo directing government agencies to focus effort on improving SSA capabilities.<sup>8</sup>

Improving SSA capabilities offers a number of benefits and some risks. In the context of improving the sustainability of space, these capabilities are expected to reduce the probability of unintentional or intentional collisions of objects in space thereby reducing the generation of space debris. A focus on space debris is hardly new. The Bush policy said: “the United States shall seek to minimize the creation of orbital debris by government and non-government operations in space in order to preserve the space environment for future generations.” Both the Obama and Bush policies ordered the U.S. to lead international efforts to develop and adopt policies to minimize debris and re-committed U.S. adherence

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<sup>8</sup> Amy Butler, “Bush Memo Orders Space Situational Awareness,” *Aerospace Daily And Defense Report* (October 12, 2007), [http://www.aviationweek.com/aw/generic/story\\_generic.jsp?channel=defense&id=news/MEMO10127.xml&headline=Bush%20Memo%20Orders%20Space%20Situational%20Awareness](http://www.aviationweek.com/aw/generic/story_generic.jsp?channel=defense&id=news/MEMO10127.xml&headline=Bush%20Memo%20Orders%20Space%20Situational%20Awareness).

to its own guidelines concerning debris mitigation.<sup>9</sup> U.S. leadership in this area is well established. The Obama policy adds a welcome additional focus on positive steps to address the orbital debris challenge, directing NASA and the DOD to develop technologies “to mitigate and remove on-orbit debris, reduce hazards, and increase understanding of the current and future debris environment.” How these investments mature will be of great interest.

<b>Comparing Space Policy Goals</b>	
<b>Bush (2006)</b>	<b>Obama (2010)</b>
Enable a dynamic, globally competitive domestic commercial space sector in order to promote innovation, strengthen U.S. leadership, and protect national, homeland, and economic security	Energize competitive domestic industries to participate in global markets and advance the development of: satellite manufacturing; satellite-based services; space launch; terrestrial applications; and increased entrepreneurship.
Encourage international cooperation with foreign nations and/or consortia on space activities that are of mutual benefit and that further the peaceful exploration and use of space, as well as to advance national security, homeland security, and foreign policy objectives	Expand international cooperation on mutually beneficial space activities to: broaden and extend the benefits of space; further the peaceful use of space; and enhance collection and partnership in sharing of space-derived information.
Strengthen the nation’s space leadership and ensure that space capabilities are available in time to further U.S. national security, homeland security, and foreign policy objectives	Strengthen stability in space through: domestic and international measures to promote safe and responsible operations in space; improved information collection and sharing for space object collision avoidance; protection of critical space systems and supporting infrastructures, with special attention to the critical interdependence of space and information systems; and strengthening measures to mitigate orbital debris.
Enable unhindered U.S. operations in and through space to defend our interests there	Increase assurance and resilience of mission-essential functions enabled by commercial, civil, scientific, and national security spacecraft and supporting infrastructure against disruption, degradation, and destruction, whether from environmental, mechanical, electronic, or hostile causes.
Implement and sustain an innovative human and robotic exploration program with the objective of extending human presence across the solar system	Pursue human and robotic initiatives to develop innovative technologies, foster new industries, strengthen international partnerships, inspire our Nation and the world, increase humanity’s understanding of the Earth, enhance scientific discovery, and explore our solar system and the universe beyond.

<sup>9</sup> For discussion of recent debris mitigation and collision avoidance efforts, see John Campbell *et al.*, *Examining Codes and Rules for Space*, (Washington, DC: George C. Marshall Institute, June 27, 2007), <http://www.marshall.org/pdf/materials/554.pdf>.



	Improve space-based Earth and solar observation capabilities needed to conduct science, forecast terrestrial and near-Earth space weather, monitor climate and global change, manage natural resources, and support disaster response and recovery.
Increase the benefits of civil exploration, scientific discovery, and environmental activities	
Enable a robust science and technology base supporting national security, homeland security, and civil space activities	

Preserving the “long-term sustainability of the space environment” is a new statement with broad implications. Its embodiment in the principles and goals sections as a vital national interest is a strong signal of intent, but the policy does not define what constitutes a sustainable space environment and, perhaps more importantly, what actions are prohibited as a result. Some space analysts have called for a ban on debris-producing activities, such as the ASAT test by China or the U.S. destruction of a dead satellite, using similar language. Is that the policy’s intent? If so, a serious public discussion of the benefits and consequences is required. If the term is meant to convey concern with the increasing amount of orbital debris, then the policy introduces a new label to discuss an old issue, leaving one to wonder why.

***International Leadership and Space Arms Control***

In both the statement of principles and elsewhere, the Obama policy places great emphasis on “space leadership.” Early commentators see the policy as a dramatic revision of past policies with its emphasis on international cooperation and commitment to “bilateral and multilateral transparency and confidence building measures.” The “guidelines” section offers details on how the policy would strengthen U.S. space leadership and there is a separate section discussing transparency and confidence-building measures.

The Bush policy lacks these details, but it is wrong to interpret it as eschewing U.S. leadership in space. The Bush policy set a specific goal of strengthening the nation’s space leadership, directed the State Department and related agencies to work internationally to build support for the principles and activities outlined in the policy, and routinely referenced working through international fora in the context of specific topics. For example, the Bush policy called for the U.S. to assume a leadership role in international discussions and organizations to encourage the adoption of “policies and practices aimed at debris minimization” and to encourage cooperation “in the exchange of information on debris research and the identification of improved debris mitigation practices.” A careful examination of the actions of the Bush Administration also reveals great use of pertinent international bodies for purposes



related to the transparency and confidence-building activities suggested in the Obama policy.<sup>10</sup> In pursuit of transparency, the Bush policy directed the Secretary of State and others, as they are in the Obama policy, to “carry out public diplomacy efforts, as appropriate, to build an understanding of and support for U.S. national space policies and programs ...” The Obama policy discusses these issues in greater detail, but whether the added detail reflects a dramatic shift in U.S. actions remains to be seen.

The two policies address the prospect of space arms control differently. The Bush Administration’s statements on the utility of space arms control were widely pilloried in the national and international media, and by numerous arms control and space policy experts. Overlooked initially in the rush to condemn the language was the similarities shared with the 1996 policy and ones before it. Famously, the Bush policy opposed “the development of new legal regimes or other restrictions that seek to prohibit or limit U.S. access to or use of space,” which meant that arms control agreements that would have impaired or restricted U.S. rights to act in its national interests in space were to be rejected on face. Critics savaged the Bush policy for this language. But the statement reaffirmed the bedrock principles guaranteeing freedom of access to space and the right to protect, defend, and deter attacks on U.S. assets and interests in space by rejecting limits on those basic principles. The explicit nature of the statement left little doubt about where the U.S. stood on the question. Can the same be said for the Obama policy?

The Obama policy says that the U.S. “will consider proposals and concepts for arms control measures if they are equitable, effectively verifiable, and enhance the security of the United States and its allies.” The statement is open to interpretation. On the one hand, it says that the U.S. will agree to talk space arms control, but we don’t commit to doing anything unless it meets these standards, which are not defined. If the standards are held strictly, then the arms control discussions will inevitably falter because the proposals have not proven to be equitable, verifiable or in the interests in U.S. security.<sup>11</sup> On the other hand, if those standards are defined loosely, the statement opens the door for a space arms control agreement that may prove harmful to U.S. security. The Administration’s language may be intentionally vague in hopes of signaling a reversal of attitude regarding the discussion of arms control without actually reversing the positions of the U.S. vis-à-vis arms control. Only time will tell.

A third new term offered in the new policy is “stability.” The Obama policy sets a goal to “strengthen stability in space” and ranks stability in space among the vital interests of U.S. The term is nowhere to be found in the Bush policy. Like sustainability and responsible behavior, the term is not defined. When first introduced in the principles section, the policy proclaims the “shared interest of all nations to act responsibly in space to help prevent mishaps, misperceptions, and mistrust” following which the policy says that sustainability, stability, and free access are vital national interests. Is the term meant to refer to the relationships between states as it regards space? If so, who determines whether space is

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<sup>10</sup> See Campbell *et al* (2007).

<sup>11</sup> For discussion of the limitations on space arms control, see Paula DeSutter, *Is An Outer Space Arms Control Treaty Verifiable?*, (Washington, D.C.: George C. Marshall Institute, March 4, 2008), <http://www.marshall.org/pdf/materials/592.pdf>; and clarifications of the Bush policy on the topic, see Robert Joseph, *The U.S. National Space Policy* (Washington, D.C.: George C. Marshall Institute, December 13, 2006), <http://www.marshall.org/pdf/materials/481.pdf>.

“stable”? Is there a common view of what a “stable” space security environment looks like? And, is that view in U.S. interests? Is the use of space for terrestrial warfighting purposes an “unstable” use of space? If so, the consequences for the U.S. are profound.<sup>12</sup>

### ***Enhancing Cooperation With Allies***

The Obama policy calls for the U.S. to work more closely with its allies on space issues. The policy says the U.S. will employ measures to “... defend our space systems and contribute to the defense of allied space systems...” Elsewhere, it discusses leveraging allied space assets to assist U.S. efforts to perform missions or aid reconstitution of capabilities. These are important additions to U.S. space policy and fill a void left by the Bush policy. In our evaluation of the Bush policy, we called for the creation of an alliance strategy for space.<sup>13</sup> In considering steps the U.S. might take to improve the security of its space assets, allies and their growing space capabilities are a natural source of complementary capabilities in pursuit of shared interests.<sup>14</sup> How the Administration pursues this objective warrants close observation, for it implies fundamental shifts in how the U.S. develops space systems and performs space operations. Many of those existing practices are products of a bygone era when our allies lacked useful space capabilities. That is no longer the case. Moving forward the U.S. will require greater attention to improving and enabling the interoperability of its space systems with allies technically as well as operationally. Planning, preparation, and conduct of joint space operations will be required. U.S. space organizations will have to become more accepting of working with allies (and other partners) which will require organizational culture and process changes.

### ***Assured Access to Space***

The Obama policy highlights the importance of assured access to space. The Bush policy does not discuss the topic explicitly, but raises similar concerns in its earlier space transportation policy. The cost of accessing space continues to pressure government resources and the demands for more responsive (i.e., quicker and more available) launch options challenges operational concerns for the nation’s armed forces and intelligence community. The new space policy rightly places focus on the issue and identifies worthy goals and activities. Translating these statements into action is the obvious challenge. The economic environment created by low launch rates reflects the result of many choices over a long period of time. It will not be reversed quickly or easily.

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<sup>12</sup> For discussion of the military use of space, see Brig. Gen. John Raymond in *A Day Without Space: Synthesis Event* (Washington, D.C.: Space Enterprise Council and George C. Marshall Institute, September 24, 2009), <http://www.marshall.org/pdf/materials/763.pdf>.

<sup>13</sup> Marshall Institute, *What Do You Leave Behind? Evaluating the Bush Administration’s National Security Space Strategy* (Washington, D.C.: George C. Marshall Institute, December 2006): 6, <http://www.marshall.org/pdf/materials/490.pdf>.

<sup>14</sup> We examine some specific areas in *Near Terms Responses to New Strategic Challenges in Space* (Washington, D.C.: George C. Marshall Institute, March 2, 2007), <http://www.marshall.org/pdf/materials/510.pdf>.

### **Other Notable Areas**

Both policies encourage development of nuclear power for use in space, both address management of the radiofrequency spectrum, both outline plans to encourage the growth of the commercial sector, both recognize the importance of the space workforce, both proclaim an interest in export reform, and both delineate specific roles and responsibilities for the various departments and agencies involved in space activities. Those details and others are reflected in the table that follows which compares the Guidelines stated in the Obama and Bush space policies.

The Obama policy includes references to several areas which the Bush policy hardly discusses, if at all. For those, it is important to recall the policies released by the Bush Administration in the years prior to the national space policy's release in 2006. Earlier Bush policies dealt with space exploration, remote sensing, and space transportation in greater detail and those topics are addressed in general terms in the 2006 policy. Not surprisingly, the Obama policy gives these topics more detailed treatment as this is one of this Administration's first major statements on space policy.

### **Conclusion**

Not unexpectedly, the Obama Administration built on the well-established foundation of American space policy. The core principles of maintaining freedom of access, the right to defend American assets and interests in space, the pursuit of peaceful uses of space and the rejection of national sovereignty over celestial bodies are enshrined in the new policy as they have been in past ones. By virtue of its length, the new policy addresses more issues with greater detail than its predecessor. As such, there is greater discussion of international cooperation, space launch capabilities, and GPS, for example, than appears in the Bush policy. It also adds new concepts – sustainability, stability, and responsible behavior – which raise significant, and potentially disturbing, unaddressed questions about their purpose and meaning.

By itself, the policy is just a statement. How this policy is translated into actions – budgets, programs, and positions – will determine its long-term influence and there the willingness of the agencies to adapt to the demands and the desire of the Administration leaders to fight for their priorities are the determinants of success.

## Comparing Space Policy Guidelines

### Bush (2006)

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**Strengthen and Maintain the U.S. Space-Related Science, Technology, and Industrial Base.** A robust science, technology, and industrial base is critical for U.S. space capabilities. Departments and agencies shall: encourage new discoveries in space science and new applications of technology; and enable future space systems to achieve new and improved capabilities, including incentives for high-risk/high-payoff and transformational space capabilities. Additionally, departments and agencies shall: conduct the basic and applied research that increases capability and decreases cost; encourage an innovative commercial space sector, including the use of prize competitions; and ensure the availability of space related industrial capabilities in support of critical government functions.

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### Obama (2010)

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**Strengthen U.S. Leadership In Space-Related Science, Technology, and Industrial Bases.** Departments and agencies shall: conduct basic and applied research that increases capabilities and decreases costs, where this research is best supported by the government; encourage an innovative and entrepreneurial commercial space sector; and help ensure the availability of space-related industrial capabilities in support of critical government functions.

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**Enhance Capabilities for Assured Access To Space.** United States access to space depends in the first instance on launch capabilities. United States Government payloads shall be launched on vehicles manufactured in the United States unless exempted by the National Security Advisor and the Assistant to the President for Science and Technology and Director of the Office of Science and Technology Policy, consistent with established interagency standards and coordination guidelines. Where applicable to their responsibilities departments and agencies shall:

--Work jointly to acquire space launch services and hosted payload arrangements that are reliable, responsive to United States Government needs, and cost-effective;

--Enhance operational efficiency, increase capacity, and reduce launch costs by investing in the modernization of space launch infrastructure; and

--Develop launch systems and technologies necessary to assure and sustain future reliable and efficient access to space, in cooperation with U.S. industry, when sufficient U.S. commercial capabilities and services do not exist.

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**Maintain and Enhance Space-based Positioning, Navigation, and Timing Systems.** The United States must maintain its leadership in the service, provision, and use of global navigation satellite systems (GNSS). To this end, the United States shall:

--Provide continuous worldwide access, for peaceful civil uses, to the Global Positioning System (GPS) and its government-provided augmentations, free of direct user charges;

--Engage with foreign GNSS providers to encourage compatibility and interoperability, promote transparency in civil service provision, and enable market access for U.S. industry;

--Operate and maintain the GPS constellation to satisfy civil and national security needs, consistent with published performance standards and interface specifications. Foreign positioning, navigation, and timing (PNT) services may be used to augment and strengthen the resiliency of GPS; and

--Invest in domestic capabilities and support international activities to detect, mitigate, and increase resiliency to harmful interference to GPS, and identify and implement, as necessary and appropriate, redundant and back-up systems or approaches for critical infrastructure, key resources, and mission-essential functions.

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**Develop Space Professionals.** Sustained excellence in space-related science, engineering, acquisition, and operational disciplines is vital to the future of U.S. space capabilities. Departments and agencies that conduct space related activities shall establish standards and implement activities to develop and maintain highly skilled, experienced, and motivated space professionals within their workforce.

**Develop and Retain Space Professionals.** The primary goals of space professional development and retention are: achieving mission success in space operations and acquisition; stimulating innovation to improve commercial, civil, and national security space capabilities; and advancing science, exploration, and discovery. Toward these ends, departments and agencies, in cooperation with industry and academia, shall establish standards, seek to create opportunities for the current space workforce, and implement measures to develop, maintain, and retain skilled space professionals, including engineering and scientific personnel and experienced space system developers and operators, in government and commercial workforces. Departments and agencies also shall promote and expand public-private partnerships to foster educational achievement in Science, Technology, Engineering, and Mathematics (STEM) programs, supported by targeted investments in such initiatives.

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**Improve Space System Development and Procurement.** United States space systems provide critical capabilities to a wide range of civil, commercial, and national security users. The primary goal of space system development and procurement must be mission success. Achieving this goal depends on effective research, development, acquisition, management, execution, oversight, and operations. Toward that end, departments and agencies shall create an environment that enables mission success, including, but not limited to, creating a common understanding of realistic and stable requirements and operational concepts; clearly identifying and managing risks, including system safety; setting and maintaining realistic and stable funding; delivering space capabilities on time and on budget; and providing acquisition managers with the tools, responsibility, budget flexibility, and authority to achieve this goal.

**Improve Space System Development and Procurement. Departments and agencies shall:**

- Improve timely acquisition and deployment of space systems through enhancements in estimating costs, technological risk and maturity, and industrial base capabilities;
  - Reduce programmatic risk through improved management of requirements and by taking advantage of cost-effective opportunities to test high-risk components, payloads, and technologies in space or relevant environments;
  - Embrace innovation to cultivate and sustain an entrepreneurial U.S. research and development environment; and
  - Engage with industrial partners to improve processes and effectively manage the supply chains.
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**Increase and Strengthen Interagency Partnerships.** The challenges of the 21st century require a focused and dedicated unity of effort. Interagency partnerships provide opportunities to jointly identify desired effects, capabilities, and strategies. Departments and agencies shall capitalize on opportunities for dynamic partnerships — whether through collaboration, information sharing, alignment, or integration.

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**Strengthen Interagency Partnerships.** Departments and agencies shall improve their partnerships through cooperation, collaboration, information sharing, and/or alignment of common pursuits. Departments and agencies shall make their capabilities and expertise available to each other to strengthen our ability to achieve national goals, identify desired outcomes, leverage U.S. capabilities, and develop implementation and response strategies.

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**Strengthen U.S. Space Leadership.** Departments and agencies, in coordination with the Secretary of State, shall:

- Demonstrate U.S. leadership in space-related fora and activities to: reassure allies of U.S. commitments to collective self-defense; identify areas of mutual interest and benefit; and promote U.S. commercial space regulations and encourage interoperability with these regulations;
- Lead in the enhancement of security, stability, and responsible behavior in space;
- Facilitate new market opportunities for U.S. commercial space capabilities and services, including commercially viable terrestrial applications that rely on government-provided space systems;
- Promote the adoption of policies internationally that facilitate full, open, and timely access to government environmental data;

Promote appropriate cost- and risk-sharing among participating nations in international partnerships; and

- Augment U.S. capabilities by leveraging existing and planned space capabilities of allies and space partners.
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**International Space Cooperation.** The United States Government will pursue, as appropriate, and consistent with U.S. national security interests, international cooperation with foreign nations and/or consortia on space activities that are of mutual benefit and that further the peaceful exploration and use of space, as well as to advance national security, homeland security, and foreign policy objectives. Areas for potential international cooperation include, but are not limited to: Space exploration; providing space surveillance information consistent with security requirements and U.S. national security and foreign policy interests; developing and operating Earth-observation-systems.

The Secretary of State, after consultation with the heads of appropriate Departments and Agencies, shall carry out diplomatic and public diplomacy efforts, as appropriate, to build an understanding of and support for U.S. national space policies and programs and to encourage the use of U.S. space capabilities and systems by friends and allies.

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**Identify Areas for Potential International Cooperation.** Departments and agencies shall identify potential areas for international cooperation that may include, but are not limited to: space science; space exploration, including human space flight activities; space nuclear power to support space science and exploration; space transportation; space surveillance for debris monitoring and awareness; missile warning; Earth science and observation; environmental monitoring; satellite communications; GNSS; geospatial information products and services; disaster mitigation and relief; search and rescue; use of space for maritime domain awareness; and long-term preservation of the space environment for human activity and use.

The Secretary of State, after consultation with the heads of appropriate departments and agencies, shall carry out diplomatic and public diplomacy efforts to strengthen understanding of, and support for, U.S. national space policies and programs and to encourage the foreign use of U.S. space capabilities, systems, and services.

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**Develop Transparency and Confidence-Building Measures.** The United States will pursue bilateral and multilateral transparency and confidence-building measures to encourage responsible actions in, and the peaceful use of, space. The United States will consider proposals and concepts for arms control measures if they are equitable, effectively verifiable, and enhance the national security of the United States and its allies.

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**Orbital Debris.** Orbital debris poses a risk to continued reliable use of space-based services and operations and to the safety of persons and property in space and on Earth. The United States shall seek to minimize the creation of orbital debris by government and non-government operations in space in order to preserve the space environment for future generations. Toward that end:

- Departments and agencies shall continue to follow the United States Government Orbital Debris Mitigation Standard Practices, consistent with mission requirements and cost effectiveness, in the procurement and operation of spacecraft, launch services, and the operation of tests and experiments in space;
- The Secretaries of Commerce and Transportation, in coordination with the Chairman of the Federal Communications Commission, shall continue to address orbital debris issues through their respective licensing procedures; and
- The United States shall take a leadership role in international fora to encourage foreign nations and international organizations to adopt policies and practices aimed at debris minimization and shall cooperate in the exchange of information on debris research and the identification of improved debris mitigation practices.

**Preserve the Space Environment. For the purposes of minimizing debris and preserving the space environment for the responsible, peaceful, and safe use of all users, the United States shall:**

- Lead the continued development and adoption of international and industry standards and policies to minimize debris, such as the United Nations Space Debris Mitigation Guidelines;
- Develop, maintain, and use space situational awareness (SSA) information from commercial, civil, and national security sources to detect, identify, and attribute actions in space that are contrary to responsible use and the long-term sustainability of the space environment;
- Continue to follow the United States Government Orbital Debris Mitigation Standard Practices, consistent with mission requirements and cost effectiveness, in the procurement and operation of spacecraft, launch services, and the conduct of tests and experiments in space;
- Pursue research and development of technologies and techniques, through the Administrator of the National Aeronautics and Space Administration (NASA) and the Secretary of Defense, to mitigate and remove on-orbit debris, reduce hazards, and increase understanding of the current and future debris environment; and
- Require the head of the sponsoring department or agency to approve exceptions to the United States Government Orbital Debris Mitigation Standard Practices and notify the Secretary of State.

Foster the Development of Space Collision Warning Measures. The Secretary of Defense, in consultation with the Director of National Intelligence, the Administrator of NASA, and other departments and agencies, may collaborate with industry and foreign nations to: maintain and improve space object databases; pursue common international data standards and data integrity measures; and provide services and disseminate orbital tracking information to commercial and international entities, including predictions of space object conjunction.

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### **Effective Export Policies**

As a guideline, space-related exports that are currently available or are planned to be available in the global marketplace shall be considered favorably.

Exports of sensitive or advanced technical data, systems, technologies, and components, shall be approved only rarely, on a case-by-case basis. These items include systems engineering and systems integration capabilities and techniques or enabling components or technologies with capabilities significantly better than those achievable by current or near-term foreign systems.

### **Effective Export Policies**

Consistent with the U.S. export control review, departments and agencies should seek to enhance the competitiveness of the U.S. space industrial base while also addressing national security needs.

The United States will work to stem the flow of advanced space technology to unauthorized parties. Departments and agencies are responsible for protecting against adverse technology transfer in the conduct of their programs.

The United States Government will consider the issuance of licenses for space-related exports on a case-by-case basis, pursuant to, and in accordance with, the International Traffic in Arms Regulations, the Export Administration Regulations, and other applicable laws, treaties, and regulations. Consistent with the foregoing space-related items that are determined to be generally available in the global marketplace shall be considered favorably with a view that such exports are usually in the national interests of the United States.

Sensitive or advanced spacecraft-related exports may require a government-to-government agreement or other acceptable arrangement.

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## **Space Nuclear Power**

Where space nuclear power systems safely enable or significantly enhance space exploration or operational capabilities, the United States shall develop and use these systems. The use of space nuclear power systems shall be consistent with U.S. national and homeland security, and foreign policy interests, and take into account the potential risks. In that regard:

- Approval by the President or his designee shall be required to launch and use United States Government and non-government spacecraft utilizing nuclear power sources with a potential for criticality or above a minimum threshold of radioactivity, in accordance with the existing interagency review process;
- To that end, the Secretary of Energy shall: conduct a nuclear safety analysis for evaluation by an ad hoc Interagency Nuclear Safety Review Panel which will evaluate the risks associated with launch and in-space operations; assist the Secretary of Transportation in the licensing of space transportation; provide nuclear safety monitoring to ensure that operations in space are consistent with the safety evaluation performed; and maintain the capability and infrastructure to develop and furnish nuclear power systems for use in United States Government space systems; and
- For government spacecraft, the head of the sponsoring Department or Agency shall request launch approval and be responsible for the safe operation of the spacecraft in space.

## **Space Nuclear Power**

The United States shall develop and use space nuclear power systems where such systems safely enable or significantly enhance space exploration or operational capabilities.

Approval by the President or his designee shall be required to launch and use United States Government spacecraft utilizing nuclear power systems either with a potential for criticality or above a minimum threshold of radioactivity, in accordance with the existing interagency review process. To inform this decision, the Secretary of Energy shall conduct a nuclear safety analysis for evaluation by an ad hoc Interagency Nuclear Safety Review Panel that will evaluate the risks associated with launch and in-space operations.

The Secretary of Energy shall:

- Assist the Secretary of Transportation in the licensing of space transportation activities involving spacecraft with nuclear power systems;

- For the launch and use of non-government spacecraft utilizing nuclear power sources, the operator will be responsible for the safe operation of the spacecraft in space, including nuclear power sources. To that end:
- The United States Government shall designate a point of entry and develop procedures for reviewing non-governmental missions that use space nuclear power systems;
- The Secretary of Transportation shall be the licensing authority for U.S. commercial launch activities involving nuclear materials, including a payload determination, subject to the requirements described above;
- The Nuclear Regulatory Commission will license activities prior to launch that involve utilization facilities and nuclear materials not owned by the Department of Energy;
- The United States Government will conduct safety analysis, evaluation, and nuclear safety monitoring on a fee-for-service basis, to the extent allowed by law, where the operator will fully reimburse the United States Government entity for services provided; and
- The Secretary of Energy shall establish and implement policies and procedures to protect sensitive information regarding the control, dissemination, and declassification of space-related nuclear activities.

- Provide nuclear safety monitoring to ensure that operations in space are consistent with any safety evaluations performed; and

Maintain the capability and infrastructure to develop and furnish nuclear power systems for use in United States Government space systems.

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### **Radio Frequency Spectrum And Orbit Management And Interference Protection**

The use of space for national and homeland security, civil, scientific, and commercial purposes depends on the reliable access to and use of radio frequency spectrum and orbital assignments. To ensure the continued use of space for these purposes, the United States Government shall:

### **Radiofrequency Spectrum and Interference Protection**

The United States Government shall:

- Seek to obtain and protect U.S. global access to the radio frequency spectrum and orbital assignments required to support the use of space by the United States Government and commercial users;
- Explicitly address requirements for radio frequency spectrum and orbit assignments prior to approving acquisition of new space capabilities;
- Consistent with current approaches, assure, to the maximum practical extent, that U.S. national security, homeland security, civil, and commercial space capabilities and services and foreign space capabilities and services of interest to the United States Government are not affected by harmful interference; and
- Seek spectrum regulatory status under U.S. domestic regulations for United States Government owned and operated earth stations operating through commercial satellites, consistent with the regulatory status afforded commercial operations and with the allocation status of the satellite service.

- Seek to protect U.S. global access to, and operation in, the radiofrequency spectrum and related orbital assignments required to support the use of space by the United States Government, its allies, and U.S. commercial users;

- Explicitly address requirements for radiofrequency spectrum and orbital assignments prior to approving acquisition of space capabilities;

- Seek to ensure the necessary national and international regulatory frameworks will remain in place over the lifetime of the system;

- Identify impacts to government space systems prior to reallocating spectrum for commercial, federal, or shared use;

- Enhance capabilities and techniques, in cooperation with civil, commercial, and foreign partners, to identify, locate, and attribute sources of radio frequency interference, and take necessary measures to sustain the radiofrequency environment in which critical U.S. space systems operate; and

- Seek appropriate regulatory approval under U.S. domestic regulations for United States Government earth stations operating with commercially owned satellites, consistent with the regulatory approval granted to analogous commercial earth stations.

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#### **Assurance and Resilience of Mission-Essential Functions**

The United States shall:

- Assure space-enabled mission-essential functions by developing the techniques, measures, relationships, and capabilities necessary to maintain continuity of services;

--Such efforts may include enhancing the protection and resilience of selected spacecraft and supporting infrastructure;

- Develop and exercise capabilities and plans for operating in and through a degraded, disrupted, or denied space environment for the purposes of maintaining mission-essential functions; and
  - Address mission assurance requirements and space system resilience in the acquisition of future space capabilities and supporting infrastructure.
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### **Commercial Space Guidelines**

It is in the interest of the United States to foster the use of U.S. commercial space capabilities around the globe and to enable a dynamic, domestic commercial space sector. To this end, departments and agencies shall:

- Use U.S. commercial space capabilities and services to the maximum practical extent; purchase commercial capabilities and services when they are available in the commercial marketplace and meet United States Government requirements; and modify commercially available capabilities and services to meet those United States Government requirements when the modification is cost effective;
- Develop systems when it is in the national interest and there is no suitable, cost effective U.S. commercial or, as appropriate, foreign commercial service or system that is or will be available when required;
- Continue to include and increase U.S. private sector participation in the design and development of United States Government space systems and infrastructures;
- Refrain from conducting activities that preclude, deter, or compete with U.S. commercial space activities, unless required by national security or public safety;
- Ensure that United States Government space activities, technology, and infrastructure are made available for private use on a reimbursable, non-interference basis to the maximum practical extent, consistent with national security; and
- Maintain a timely and responsive regulatory environment for licensing commercial space activities and pursue commercial space objectives without the use of direct Federal subsidies, consistent

### **Commercial Space Guidelines**

The term “commercial,” for the purposes of this policy, refers to space goods, services, or activities provided by private sector enterprises that bear a reasonable portion of the investment risk and responsibility for the activity, operate in accordance with typical market-based incentives for controlling cost and optimizing return on investment, and have the legal capacity to offer these goods or services to existing or potential nongovernmental customers. To promote a robust domestic commercial space industry, departments and agencies shall:

- Purchase and use commercial space capabilities and services to the maximum practical extent when such capabilities and services are available in the marketplace and meet United States Government requirements;
  - Modify commercial space capabilities and services to meet government requirements when existing commercial capabilities and services do not fully meet these requirements and the potential modification represents a more cost-effective and timely acquisition approach for the government;
  - Actively explore the use of inventive, nontraditional arrangements for acquiring commercial space goods and services to meet United States Government requirements, including measures such as public-private partnerships, hosting government capabilities on commercial spacecraft, and purchasing scientific or operational data products from commercial satellite operators in support of government missions;
  - Develop governmental space systems only when it is in the national interest and there is no suitable, cost-effective U.S. commercial or, as appropriate, foreign commercial service or system that is or will be available;
  - Refrain from conducting United States Government space activities that preclude, discourage, or compete with U.S. commercial space activities, unless required by national security or public safety;
  - Pursue potential opportunities for transferring routine, operational space
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with the regulatory and other authorities of the Secretaries of Commerce and Transportation and the Chairman of the Federal Communications Commission.

functions to the commercial space sector where beneficial and cost-effective, except where the government has legal, security, or safety needs that would preclude commercialization;

- Cultivate increased technological innovation and entrepreneurship in the commercial space sector through the use of incentives such as prizes and competitions;
- Ensure that United States Government space technology and infrastructure are made available for commercial use on a reimbursable, noninterference, and equitable basis to the maximum practical extent;
- Minimize, as much as possible, the regulatory burden for commercial space activities and ensure that the regulatory environment for licensing space activities is timely and responsive;
- Foster fair and open global trade and commerce through the promotion of suitable standards and regulations that have been developed with input from U.S. industry;
- Encourage the purchase and use of U.S. commercial space services and capabilities in international cooperative arrangements; and
- Actively promote the export of U.S. commercially developed and available space goods and services, including those developed by small- and medium-sized enterprises, for use in foreign markets, consistent with U.S. technology transfer and nonproliferation objectives.

The United States Trade Representative (USTR) has the primary responsibility in the Federal Government for international trade agreements to which the United States is a party. USTR, in consultation with other relevant departments and agencies, will lead any efforts relating to the negotiation and implementation of trade disciplines governing trade in goods and services related to space.

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#### **Civil Space Guidelines**

The United States shall increase the benefits of civil exploration, scientific discovery, and operational environmental monitoring activities. To that end, the Administrator, National Aeronautics and Space Administration shall: execute a sustained and affordable human and robotic program of space exploration and develop, acquire, and use civil space systems to advance fundamental scientific knowledge of our Earth system, solar system, and universe. The Secretary of Commerce, through the Administrator of the National Oceanic and Atmospheric Administration, shall in coordination with the Administrator, National Aeronautics and Space

#### **Civil Space Guidelines**

Space Science, Exploration, and Discovery

The Administrator of NASA shall:

- Set far-reaching exploration milestones. By 2025, begin crewed missions beyond the moon, including sending humans to an asteroid. By the mid-2030s, send humans to orbit Mars and return them safely to Earth;
- Continue the operation of the International Space Station (ISS), in cooperation with its international partners, likely to 2020 or beyond, and expand efforts to: utilize the ISS for scientific, technological, commercial, diplomatic, and educational purposes; support activities requiring the unique attributes of humans in space; serve as a continuous human presence in Earth orbit; and

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Administration, be responsible for operational civil environmental space-based remote sensing systems and management of the associated requirements and acquisition process as follows:

- The Secretary of Commerce, through the National Oceanic and Atmospheric Administration, in collaboration with the Secretary of Defense through the Secretary of the Air Force, and the Administrator, National Aeronautics and Space Administration will continue to consolidate civil and military polar-orbiting operational environmental sensing systems in accordance with current policy direction;
- The Secretary of Commerce, through the National Oceanic and Atmospheric Administration, shall continue a program of civil geostationary operational environmental satellites with support from the National Aeronautics and Space Administration; and
- The Secretary of Commerce, through the National Oceanic and Atmospheric Administration, and the Administrator, National Aeronautics and Space Administration shall ensure to the maximum extent possible that civil space acquisition processes and capabilities are not duplicated.

The Secretary of the Interior, through the Director of the U.S. Geological Survey, shall collect, archive, process, and distribute land surface data to the United States Government and other users and determine operational requirements for land surface data.

The United States will study the Earth system from space and develop new space-based and related capabilities to advance scientific understanding and enhance civil space-based Earth observation. In particular:

- The Administrator, National Aeronautics and Space Administration shall conduct a program of research to advance scientific knowledge of the Earth through space-based observation and development and deployment of enabling technologies; and
- The Secretary of Commerce and the Administrator, National Aeronautics and Space Administration, and other departments and agencies as appropriate, in support of long-term operational requirements, shall transition mature research and development capabilities to long-term operations, as appropriate.

The United States will utilize government and commercial space-based and related capabilities wherever feasible to enhance disaster

support future objectives in human space exploration;

- Seek partnerships with the private sector to enable safe, reliable, and cost-effective commercial spaceflight capabilities and services for the transport of crew and cargo to and from the ISS;
- Implement a new space technology development and test program, working with industry, academia, and international partners to build, fly, and test several key technologies that can increase the capabilities, decrease the costs, and expand the opportunities for future space activities;
- Conduct research and development in support of next-generation launch systems, including new U.S. rocket engine technologies;
- Maintain a sustained robotic presence in the solar system to: conduct scientific investigations of other planetary bodies; demonstrate new technologies; and scout locations for future human missions;
- Continue a strong program of space science for observations, research, and analysis of our Sun, solar system, and universe to enhance knowledge of the cosmos, further our understanding of fundamental natural and physical sciences, understand the conditions that may support the development of life, and search for planetary bodies and Earth-like planets in orbit around other stars; and
- Pursue capabilities, in cooperation with other departments, agencies, and commercial partners, to detect, track, catalog, and characterize near-Earth objects to reduce the risk of harm to humans from an unexpected impact on our planet and to identify potentially resource-rich planetary objects.

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warning, monitoring, and response activities; and take a leadership role in international fora to establish a long-term plan for coordination of an integrated global Earth observation system and promote the adoption of policies internationally that facilitate full and open access to government environmental data on equitable terms.

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#### **Environmental Earth Observation and Weather**

To continue and improve a broad array of programs of space-based observation, research, and analysis of the Earth's land, oceans, and atmosphere:

- The NASA Administrator, in coordination with other appropriate departments and agencies, shall conduct a program to enhance U.S. global climate change research and sustained monitoring capabilities, advance research into and scientific knowledge of the Earth by accelerating the development of new Earth observing satellites, and develop and test capabilities for use by other civil departments and agencies for operational purposes.

- The Secretary of Commerce, through the National Oceanic and Atmospheric Administration (NOAA) Administrator, and in coordination with the NASA Administrator and other appropriate departments and agencies, shall, in support of operational requirements:

- Transition mature research and development Earth observation satellites to long-term operations;

- Use international partnerships to help sustain and enhance weather, climate, ocean, and coastal observation from space; and

- Be responsible for the requirements, funding, acquisition, and operation of civil operational environmental satellites in support of weather forecasting, climate monitoring, ocean and coastal observations, and space weather forecasting. NOAA will primarily utilize NASA as the acquisition agent for operational environmental satellites for these activities and programs.

- The Secretary of Commerce, through the NOAA Administrator, the Secretary of Defense, through the Secretary of the Air Force, and the NASA Administrator shall work together and with their international partners to ensure uninterrupted, operational polar-orbiting environmental satellite observations.

The Secretary of Defense shall be responsible for the morning orbit, and the Secretary of Commerce shall be responsible for the afternoon orbit. The departments shall continue to partner in developing and fielding a shared ground system, with the coordinated programs operated by NOAA. Further, the departments shall ensure the continued full sharing of data from all systems.

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### **Land Remote Sensing**

The Secretary of the Interior, through the Director of the United States Geological Survey (USGS), shall:

- Conduct research on natural and human-induced changes to Earth’s land, land cover, and inland surface waters, and manage a global land surface data national archive and its distribution;
- Determine the operational requirements for collection, processing, archiving, and distribution of land surface data to the United States Government and other users; and
- Be responsible, in coordination with the Secretary of Defense, the Secretary of Homeland Security, and the Director of National Intelligence, for providing remote sensing information related to the environment and disasters that is acquired from national security space systems to other civil government agencies.

In support of these critical needs, the Secretary of the Interior, through the Director of the USGS, and the NASA Administrator shall work together in maintaining a program for operational land remote sensing observations.

The NASA and NOAA Administrators and the Director of the USGS shall:

- Ensure that civil space acquisition processes and capabilities are not unnecessarily duplicated; and
- Continue to develop civil applications and information tools based on data collected by Earth observation satellites. These civil capabilities will be developed, to the greatest extent possible, using known standards and open protocols, and the applications will be made available to the public.

The Secretary of Commerce, through the Administrator of NOAA, shall provide for the regulation and licensing of the operation of commercial sector remote sensing systems.

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### **National Security Space Guidelines**

United States national security is critically dependent upon space capabilities, and this dependence will grow. The Secretary of Defense and the Director of National Intelligence, after consulting, as appropriate, the Secretary of State and other heads of departments and agencies, and consistent with their respective responsibilities as set forth in the National Security Act of 1947, as amended, Title 10, U.S.C. and Title 50 U.S.C., the National Security Intelligence Reform Act of 2004, and other applicable law, shall:

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### **National Security Space Guidelines**

The Secretary of Defense and the Director of National Intelligence, in consultation with other appropriate heads of departments and agencies, shall:

- Develop, acquire, and operate space systems and supporting information systems and networks to support U.S. national security and enable defense and intelligence operations during times of peace, crisis, and conflict;
  - Ensure cost-effective survivability of space capabilities, including supporting information systems and networks, commensurate with their planned use, the consequences of lost or degraded capability, the threat, and the availability of
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- Support the President and the Vice President in the performance of Executive functions, and senior Executive Branch national security, homeland security, and foreign policy decision makers; other Federal officials, as appropriate; and the enduring constitutional government operations and infrastructure;

- Support and enable defense and intelligence requirements and operations during times of peace, crisis, and through all levels of conflict;

- Develop and deploy space capabilities that sustain U.S. advantage and support defense and intelligence transformation; and

- Employ appropriate planning, programming, and budgeting activities, organizational arrangements, and strategies that result in an operational force structure and optimized space capabilities that support the national and homeland security.

To achieve the goals of this policy, the Secretary of Defense shall:

- Maintain the capabilities to execute the space support, force enhancement, space control, and force application missions;

- Establish specific intelligence requirements that can be met by tactical, operational, or national-level intelligence gathering capabilities;

- Provide, as launch agent for both the defense and intelligence sectors, reliable, affordable, and timely space access for national security purposes;

- Provide space capabilities to support continuous, global strategic and tactical warning as well as multi-layered and integrated missile defenses;

- Develop capabilities, plans, and options to ensure freedom of action in space, and, if directed, deny such freedom of action to adversaries;

- Have responsibility for space situational awareness; in this capacity, the Secretary of Defense shall support the space situational awareness requirements of the Director of National Intelligence and conduct space situational awareness for: the United States Government; U.S. commercial space capabilities and services used for national and homeland security purposes; civil space capabilities and operations, particularly human space flight activities; and, as appropriate, commercial and foreign space entities; and

- Establish and implement policies and procedures to protect

other means to perform the mission;

- Reinvigorate U.S. leadership by promoting technology development, improving industrial capacity, and maintaining a robust supplier base necessary to support our most critical national security interests;

- Develop and implement plans, procedures, techniques, and capabilities necessary to assure critical national security space-enabled missions. Options for mission assurance may include rapid restoration of space assets and leveraging allied, foreign, and/or commercial space and non-space capabilities to help perform the mission;

- Maintain and integrate space surveillance, intelligence, and other information to develop accurate and timely SSA.SSA information shall be used to support national and homeland security, civil space agencies, particularly human space flight activities, and commercial and foreign space operations;

- Improve, develop, and demonstrate, in cooperation with relevant departments and agencies and commercial and foreign entities, the ability to rapidly detect, warn, characterize, and attribute natural and man-made disturbances to space systems of U.S. interest; and

- Develop and apply advanced technologies and capabilities that respond to changes to the threat environment.

The Secretary of Defense shall:

- Be responsible, with support from the Director of National Intelligence, for the development, acquisition, operation, maintenance, and modernization of SSA capabilities;

- Develop capabilities, plans, and options to deter, defend against, and, if necessary, defeat efforts to interfere with or attack U.S. or allied space systems;

- Maintain the capabilities to execute the space support, force enhancement, space control, and force application missions; and

- Provide, as launch agent for both the defense and intelligence sectors, reliable, affordable, and timely space access for national security purposes.

The Director of National Intelligence shall:

- Enhance foundational intelligence collection and single- and all-source intelligence analysis;

- Develop, obtain, and operate space capabilities to support strategic goals, intelligence priorities, and assigned tasks;

- Provide robust, timely, and effective collection, processing, analysis, and dissemination of information on foreign space and supporting information system activities;

- Develop and enhance innovative analytic tools and techniques to use and

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sensitive information regarding the control, dissemination, and declassification of defense activities related to space.

To achieve the goals of this policy, the Director of National Intelligence shall:

- Establish objectives, intelligence requirements, priorities and guidance for the intelligence community to ensure timely and effective collection, processing, analysis and dissemination of national intelligence;
- Ensure that timely information and data support foreign, defense, and economic policies; diplomatic activities; indications and warning; crisis management; treaty compliance verification; appropriate civil, homeland security, and law enforcement users; and perform research and development related to these functions;
- Support military planning and satisfy operational requirements as a major intelligence mission;
- Provide intelligence collection and analysis of space related capabilities to support space situational awareness for: the United States Government; U.S. commercial space capabilities and services used for national and homeland security purposes; civil space capabilities and operations, particularly human space flight activities; and, as appropriate, commercial and foreign space entities;
- Provide a robust foreign space intelligence collection and analysis capability that provides timely information and data to support national and homeland security;
- Coordinate on any radio frequency surveys from space conducted by United States Government departments or agencies and review, as appropriate, and approve any radio frequency surveys from space conducted by the private sector, State, or local governments; and
- Establish and implement policies and procedures to: classify attributable collected information and operational details of intelligence activities related to space; protect sensitive activities; and declassify and release such information when the Director determines that protection is no longer needed.

share information from traditional and nontraditional sources for understanding foreign space-related activities;

- Identify and characterize current and future threats to U.S. space missions for the purposes of enabling effective protection, deterrence, and defense;
- Integrate all-source intelligence of foreign space capabilities and intentions with space surveillance information to produce enhanced intelligence products that support SSA;
- Support national defense and homeland security planning and satisfy operational requirements as a major intelligence mission;
- Support monitoring, compliance, and verification for transparency and confidence-building measures and, if applicable, arms control agreements; and
- Coordinate on any radio frequency surveys from space conducted by United States Government departments or agencies and review, as appropriate, any radiofrequency surveys from space conducted by licensed private sector operators or by state and local governments.

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#### **Space-Related Security Classification**

The design, development, acquisition, operations, and products of intelligence and defense-related space activities shall be classified as necessary to protect sensitive technologies, sources and methods,

and operations, consistent with E.O. 12958, E.O. 12951, and applicable law and regulation as amended.

- The Secretary of Defense and the Director of National Intelligence shall establish and implement policies and procedures to protect, disseminate, and appropriately classify and declassify activities and information related to their respective responsibilities outlined in this policy. Where appropriate, they shall coordinate their respective classification guidance.

The following facts are unclassified:

- The United States Government conducts: satellite photoreconnaissance that includes a near real-time capability; overhead signals intelligence collection; and overhead measurement and signature intelligence collection; and
- United States Government photoreconnaissance is used to:
  - Collect intelligence; monitor compliance with arms control agreements; collect mapping, charting, and geodetic data that is used to support defense and other mapping-related activities; collect scientific and environmental data and data on natural or man-made disasters; and the foregoing categories of information can be provided to authorized federal agencies;
  - Provide information for indications and warning and the planning and conduct of military operations; and
  - Image the United States and its territories and possessions, consistent with applicable laws, for purposes including, but not limited to, homeland security.