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**“Protection of Critical Infrastructure”
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For more than 50 years, humanity has benefited from practical space applications. During this period there has been continued progress in the use of space for the full range of human endeavors. In the early decades of the Space Age, information collected from space played a key role in easing Cold War tensions and enhancing the accuracy of weather forecasting. During this same period, information transmitted through space allowed the creation of globe-spanning networks for trunked communications and television distribution.

As the 20th Century drew to a close, humanity's use of space expanded to global positioning, navigation and timing and a host of direct-to-user communications services. With the turn of the century, these same capabilities became increasingly integrated into a full range of commercial and government activities. Over the past decade, commercial remote

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sensing satellite imagery – coupled with continuing advances in Global Positioning System applications – has created a growing set of geospatial information applications.

As our other speakers have already noted, the coming decades will see space-derived information playing a key role in an expanding range of economic activities. The same will be true for public sector activities. As a result, interdependencies between government and commercial space sectors will grow in magnitude and complexity.

Under the current U.S. policy framework, the nature of these interdependencies and their vital importance for national security is already apparent to policy makers:

- Since the terrorist attacks of September 11, 2001, a majority of the satellite communications (SATCOM) bandwidth supporting U.S. and coalition forces around the globe has been carried on commercial satellites, including a number of satellites operated by companies based in Europe and other allied nations.
- Commercial SATCOM plays an equally vital role for the Department of State. While military satellite networks can provide minimum essential connectivity to more than 260 American embassies and missions around the globe, the bandwidth carried on commercial systems is a critical enabler for what Secretary Clinton terms “smart power.” As more U.S. diplomats realign to support the priorities of the 21st Century, commercial satellite networks will be needed to support expanded information sharing across regions and between

agencies, supporting national security needs for secure, reliable, and robust communications capabilities.

- Under a plan recently announced by Director of National Intelligence Blair, the Department of Defense and the Intelligence Community will increase their use of commercial imagery provided by U.S. remote sensing satellites. This additional capability from these and Allied commercial imaging systems can provide the U.S. government with more flexibility to respond to unforeseen challenges. – making them especially useful as a supplement and backup to the government’s imagery satellite architecture.

With the growth of these interdependencies, the U.S. Government is paying increasing attention to the need to sustain and protect critical public and private space infrastructures. To maintain the space infrastructures that support America’s vital economic and security interests, the Obama Administration is committed to continued investments in key space capabilities, such as the next generation of Global Positioning System satellites. As the Administration conducts its review of national space policies and strategies, Federal departments and agencies are considering opportunities for expanded cooperation with America’s allies and the private sector to identify and protect against intentional and unintentional threats to U.S. and allied space capabilities.

Federal cooperation with allies and the private sector will be based on a combined effort that involves the Departments of Homeland Security (DHS), Defense, **and** State. Domestically, the protection of satellite communications falls under DHS’s National Infrastructure Protection Plan

(NIPP). The plan provides a comprehensive risk management framework that defines critical infrastructure protection roles and responsibilities for all levels of government and private industry. The Administration recognizes that a successful risk assessment framework requires cooperation and coordination among all levels of government; private sector owners and operators; and international partners.

To implement the NIPP, Sector-Specific Agencies (SSAs) for each of the 18 critical infrastructure and key resources sectors are partnering with State, local, and tribal governments, and industry to create and implement Sector-Specific Plans (SSPs).

DHS's National Communications System (NCS) serves as the lead for the protection of SATCOM systems as part of the protection plan's Communications Sector component. The development and implementation of the Communications protection plan by is intended to ensure that SATCOM and other communications network operators effectively coordinate with government partners and other infrastructure sectors to ensure protection and resiliency in an all-hazards environment. This plan -- which was first released in 2006 -- is designed to evolve over time as threats change and specific protection actions are implemented.

The work by the NCS on the first version of the Communications protection plan benefited from previous work by the President's National Security Telecommunications Advisory Committee in 2004 and subsequent work by the Department of Defense's National Security Space Office and Defense

Information Systems Agency. The approaches taken in these previous efforts provided the Communications protection plan with an analytical framework that was already familiar to industry and government sector security partners. Today, the Departments of Defense and Homeland Security are moving forward with an expanded collaboration which also includes United States Strategic Command, the Defense Sector Lead Agent for space critical infrastructure supporting national security users.

These Interagency activities also benefit from more than five years of close cooperation between government agencies and private sector satellite operators and non-governmental organizations such as the Satellite Industry Association. Today, plans for ongoing efforts include:

- Adopting an architectural approach to infrastructure identification and risk assessment processes;
- Coordinating with other parts of the communications and defense sectors as well as other infrastructure sectors and customers on space infrastructure dependencies and solutions for mitigating risk; and
- Integrating commercial SATCOM, remote sensing and other space infrastructure protection plans into national-level plans.

In the future, there may also be opportunities to conduct exercises and simulations that link commercial and government satellite operations centers with policy-makers in Washington. These more dynamic exercises allow participants to test assumptions and identify seams in command and control to repair before a real crisis occurs.

Looking beyond domestic terrestrial satellite infrastructure protection activities, space protection efforts will also include increased cooperation with America's friends and allies. In this regard, the Department of State, in conjunction with the departments of Homeland Security and Defense, is responsible for coordinating with foreign countries and international organizations to strengthen the protection of satellite networks with critical international interdependencies. In addition to direct engagement on space issues, State uses the United States' broader bilateral and multilateral relationships to promote space critical infrastructure protection best practices.

International critical infrastructure protection activities require coordination with a wide range of security partners and must benefit the national security and economic interests of all partners. As part of overarching international efforts on infrastructure protection, State and DHS will continue working to implement existing agreements that are founded on the principle of mutual benefit.

The United States is now making satellite infrastructure protection a specific item on the agenda of our regular bilateral space security dialogues with other nations. As an example, the United States believes that protection of shared interests in space should receive full consideration within the Euro-Atlantic community, including potentially the North Atlantic Treaty Organization as it begins to revise its long-term mission statement.

U.S. experts also look forward to beginning technical exchanges later this year on satellite CIP with the Europeans as the European Commission

focuses on satellite communications protection as part of its broader research program on “Prevention, Preparedness and Consequence Management of Terrorism and other Security related risks.” This research will be keyed to EU efforts to identify and designate European critical infrastructures and assess the state of current protection plans. This is a prime opportunity for the United States and Europe to discuss issues such as methodologies for assessment, technical standards, safeguards for the protection of sensitive information on threats, specific susceptibilities, and resulting vulnerabilities.

Trans-Atlantic discussions on the protection of terrestrial infrastructure also can build from ongoing dialogues with the European Union and the European Space Agency on space situational awareness to address the increasingly congested and complex space environment. This trans-Atlantic collaboration can also serve as a foundation for expanded cooperation with other spacefaring nations around the globe who share our commitment to the safe and responsible use of space.

While the expanses of the cosmos may be infinite, many of the most important space applications are conducted in specific orbital belts. The best-known of these is the geostationary orbit, also known as Clarke Orbit – named in honor of Sir Arthur C. Clarke – who described how such a series of satellites orbiting at altitudes of roughly 22,000 miles above the equator could be used for global communications.

At the time, a British patent lawyer told him that his concept was “too far-fetched to be taken seriously.” Two decades later, Sir Arthur noted the

economic value of this orbit in an article entitled "A Short Pre-History of Comsats, Or: How I Lost a Billion Dollars in My Spare Time."

It is worth noting that Sir Arthur's whimsical article was written in the mid-1960s, when a billion dollars was still in the realm of "real money" -- both here in Geneva and even in Washington, D.C.! Four decades later, in 2007, world satellite industry revenues would be estimated at \$123 billion, with solid prospects for even greater growth.

With this growth has come increasing complexity. Four decades ago, there was only one operational spacecraft in the Clarke orbit and it was owned by Intelsat, an intergovernmental organization. Today, there are more than 700 geosynchronous satellites controlled by a dozens of public and private operators in more than 34 nations, including a now privatized Intelsat, as well as intergovernmental operators, such as Eumetsat.

Congestion is also increasing in lower orbits. This growth of inadvertent hazards was illustrated in February, when an Iridium communications satellite collided with an inoperable Russian government satellite. More disturbingly, there has also been an increase in unnecessary hazards. This problem was most dramatically highlighted when China intentionally destroyed a satellite in a flight test of a ground-based anti-satellite missile in January 2007. This test created more than 2,400 pieces of trackable debris, many of which will need to be monitored for decades.

To help reduce the risk of future man-made hazards and threats, the United States is working closely with other spacefaring nations on diplomatic

measures to enhance spaceflight safety and preserve the space environment for future generations. These activities include discussions in New York at the United Nations, in Vienna at the Committee on the Peaceful Uses of Outer Space, and here in Geneva at the International Organization for Standardization. They also include continued engagement in International Telecommunication Union fora to ensure reliable access to radio spectrum and orbital assignments and to prevent harmful radio frequency interference to space services.

The United States is also consulting with our allies and friends around the globe on new forms of diplomatic and security cooperation. These dialogues address intentional threats to our freedom of action in space and are providing valuable inputs to several ongoing reviews of space policies and programs. Given our shared reliance on commercial satellites, one of the key topics of these bilateral exchanges is opportunities for enhanced “space situational awareness” – including expanded monitoring of environmental and collision risks as well as improved information sharing to support collective efforts to protect commercial and allied government satellites in what is becoming a contested environment. As with any complex project involving a multiple stakeholders, complete solutions won’t emerge overnight, but there is now a clear understanding in the United States on the need to move forward as quickly as possible.

To summarize, the economic prosperity and security of the “global village” is increasingly dependent on space infrastructures, and governments cannot succeed in protecting their interests by working in isolation. The public and

private sectors' interests are intertwined with a shared responsibility for ensuring a secure, reliable infrastructure. There are many ways in which governments can work with the private sector, and these options are now receiving careful consideration in the United States -- particularly as they may evolve over the coming years as partners' roles and responsibilities change and their capabilities advance.

The United States will also work to bring like-minded nations together on a host of issues relating to satellite infrastructure protection, such as technical standards and mitigation strategies based on operator best practices. Such international cooperation is critical to ensuring the long-term sustainability of the space environment. Only by working with international partners can the United States best address emerging challenges, assure its security interests, and reap the full benefits of the Space Age.