

January 2008

Space and Defense – Volume Two – Number Two – Winter 2008

Space and Defense Journal

Follow this and additional works at: <https://digitalcommons.unomaha.edu/spaceanddefense>



Part of the Asian Studies Commons, Aviation and Space Education Commons, Defense and Security Studies Commons, Eastern European Studies Commons, International Relations Commons, Leadership Studies Commons, Near and Middle Eastern Studies Commons, Nuclear Engineering Commons, Science and Technology Studies Commons, and the Space Vehicles Commons

Recommended Citation

Space and Defense Journal (2008) "Space and Defense – Volume Two – Number Two – Winter 2008," *Space and Defense*: Vol. 2: No. 2, Article 1.

Available at: <https://digitalcommons.unomaha.edu/spaceanddefense/vol2/iss2/1>

This Whole Issue is brought to you for free and open access by DigitalCommons@UNO. It has been accepted for inclusion in Space and Defense by an authorized editor of DigitalCommons@UNO. For more information, please contact unodigitalcommons@unomaha.edu.

SPACE and DEFENSE

Volume Two

Number Two

Winter 2008

2008 National Space Forum

speeches by

Susan Eisenhower

Senator Wayne Allard

Representative Terry Everett

Representative Jane Harman

EISENHOWER CENTER
FOR SPACE AND DEFENSE STUDIES



*The Honorable
Peter B. Teets
Distinguished Chairman*

*Ambassador
Roger G. Harrison, Ph.D.
Director*

Lt. Gen (ret) Edward Anderson

*Ms. Natalie W. Crawford
Senior Advisor*

*Gen (ret) Ronald R. Fogleman
Senior Advisor*

*VADM (ret) David R. Frost
Senior Advisor*

Dr. John Logsdon

*Ms Joanne M. Maguire
Senior Advisor*

*Gen (ret) James P. McCarthy
Senior Advisor*

*Gen (ret) Thomas S. Moorman, Jr.
Senior Advisor*

*BGen (ret) Douglas J. Murray
Professor Emeritus*

SPACE AND DEFENSE
*The Journal of the
Eisenhower Center for Space
and Defense Studies*

*Ambassador
Roger G. Harrison, Ph.D.
Editor-in-Chief*

*Dr. Eligar Sadeh.
Editor*

*Major Deron Jackson
Assistant Editor*

*Ms. Tracy Hicks
Production Editor*

About the Center

The Eisenhower Center for Space and Defense Studies is located in the Political Science Department at the United States Air Force Academy in Colorado Springs, Colorado. The Center's mission is to provide the intellectual foundation for the integration of space policy in the overall national security policy of the United States, define the curriculum for space policy studies in higher education, and produce successive generations of Air Force officers with a vocation for space.

Space and Defense is the journal of the Center for Space and Defense Studies. It is published semiannually and is a work of the United States Government in the public domain. *Space and Defense* should be acknowledged whenever material is quoted from or based on its content. The journal welcomes submission of scholarly, independent research (normally 5,000-10,000 words in length) to the address below. Electronic submissions should be emailed to Eligar.Sadeh@usafa.edu.

The opinions, conclusions, and recommendations expressed or implied within *Space and Defense* are those of the contributors and do not necessarily reflect those of the Eisenhower Center for Space and Defense Studies, the Air Force Academy, the Air Force, the Department of Defense, or any other agency of the United States Government.

Eisenhower Center for Space and Defense Studies
Department of Political Science
HQ USAFA/DFPS
2354 Fairchild Drive, Suite 6L16
USAF Academy, Colorado 80840
Phone (719) 333-2270
Fax (719) 333-2945

EISENHOWER CENTER FOR SPACE AND DEFENSE STUDIES



Space and Defense

Scholarly Journal of the United States Air Force Academy
Center for Space and Defense Studies

Volume Two

Number Two

Winter 2008

Introduction: The Eisenhower Legacy.....	1
<i>Susan Eisenhower</i>	
Speech to the 2008 National Space Forum.....	2
<i>Senator Wayne Allard</i>	
Speech to the 2008 National Space Forum.....	12
<i>Representative Terry Everett</i>	
Speech to the 2008 National Space Forum.....	15
<i>Representative Jane Harman</i>	

INTRODUCTION BY SUSAN EISENHOWER

SPEECH FOR THE 2008 NATIONAL SPACE FORUM

Senator Wayne Allard

Senator Wayne Allard is from the State of Colorado

Good afternoon. It is a pleasure to be here with all of you today at the National Space Forum, and it is an honor to be here with so many industry experts and leaders. I thank our sponsors, the Eisenhower Center for Space and Defense Studies at the U.S. Air Force Academy and also the Center for Strategic and International Studies, for hosting this important event and for giving me an opportunity to speak to you today. In the Senate I have long supported the Center for Space and Defense Studies, and I am pleased to see the Center executing its goals of supporting and fostering a national dialogue on space.

As a member of the Senate Appropriations and Budget Committees, a former member of the Senate Armed Services Committee, co-chairman of the Congressional Space Power Caucus, and member of the Air Force Academy Board of Visitors, I am extremely interested in the topic of this forum: the space policy challenges facing the new presidential administration.

Unquestionably, 2008 is shaping to be a landmark year in American history as we will be electing a president in the first true open-seat election in 80 years, as no incumbent candidate is running in the primaries. Certainly much has changed since then. In 1928 space travel and space exploration existed in imaginations, and was only conceptualized in the minds and drawing boards of the world's greatest scientists who could only hope man would possess the ability to reach outer space within their lifetimes. It would have been very difficult to conceive that just three decades later man would reach space, and 11 years after that monumental achievement, we would be walking on the moon and repairing orbital structures in space.

As Americans, we are now able to both celebrate our rich and storied history with space, while looking forward to what achievements lay ahead. Just last week the United States celebrated the 50th anniversary of Explorer 1, the first U.S. satellite to orbit Earth and today marks the 50th anniversary of the creation of the Advanced Research Projects Agency in response to Sputnik. NASA is also commemorating its golden anniversary this year. The first 50 years in space have yielded incredible results and discoveries that have shaped the world we live in today. Strategically, though, we have reached a crossroads; we have proven we can get there, and must now decide what we want to do, now that we're there.

While politically 2008 may be remembered as a year for the ages, 2009 will quickly usher in many difficult and daunting challenges for a new administration and our 44th president. Washington always has and always will play a game of competing priorities, and for space it will be no different. The administration will be forced to choose and determine where, and in what capacity, it wants to prioritize space, including NASA, the Department of Defense's numerous agencies and the regulation of commercial space. In a broad sense, space will be forced to compete for limited dollars with the numerous programs, departments and agencies supported by our government. Money will be used to equip and support our troops, as well as to meet the needs of veterans. Domestic priorities such as healthcare and social security are sure to require much attention, as will our evolving energy needs and of course the state of the economy is sure to factor in heavily as well.

After sifting through these many and sometimes conflicting priorities, the next President will face a

host of policy decisions within the numerous areas of space, including: retirement of the Space Shuttle and making operational the next general human spaceflight vehicles; joint civil and military Earth observation capabilities; replacement of national security space assets and next generation blocks; and government utilization of commercial remote sensing capabilities for geo-spatial intelligence needs.

To further complicate this task, these decisions and activities will not be made in isolation, as space activities have increased globally, with more nations seeking to gain strategic and economic advantages through the use of space. It is no longer just the U.S. and Russia in space. Globalization now reaches beyond the globe itself. New partners, like India, are seeking to send spacecraft to the Moon. And uncertainty around utilization of the assembled International Space Station means opportunities and the necessity for international cooperation in civil space will continue to expand dramatically.

America's accomplishments in space have been numerous and influential. I'm positive you all could recite dozens of examples of products and services we all use everyday that were created through our space programs that enhance our quality of life: ATM machines, GPS technology, enriched baby food, and athletic shoes are just a few of the thousands of products that exist. Despite all this success, the space industry and space agencies will have to continue to prove their worth and validate their usefulness to a new Administration in order to receive federal dollars. Our space programs and the commercial space industry have both developed through innovation and competition - these challenges are nothing new. Whether policy makers like it or not, space can't be ignored and will continue to evolve to become even more intertwined within our daily lives.

Through the years, space has continued to provide a distinct and unquestioned strategic advantage in ensuring our national security. Today's world is no exception, and our military depends on space more than ever. Space assets are used for targeting, communications, weather, intelligence, surveillance

and reconnaissance, navigation and numerous other functions. There is no doubt the military space domain is here to stay, the only question remains is how a new Administration will best utilize this platform.

From a policy perspective, a number of choices exist. How, and in what ways should we expand our space assets and to what degree are we willing to become even more dependent upon them for national security? In turn, to what degree do we need to protect our assets, and how significantly are they at risk? How will we apply existing, and perhaps outdated, space policies to this new world with real threats to our space domination? I agree with STRATCOM Commander General Kevin Chilton that the space domain needs a bit of an image change. We can't simply think of space as just an enabler for other domains, and we need to transition our thinking and protocol to allow our land, sea, and air components to adequately and effectively support our space assets as well. The new administration will have to choose how it will incorporate and integrate space more completely into the big picture of national security.

Further, I believe we are already overdue in determining and defining our comprehensive policy related to our strategic space assets. Existing policy states that other nations have the right to use space for peaceful purposes and also have the right to defend their interests. However, we lack clarity as to what enforcement mechanisms exist for the U.S., and to what extent we will go to defend our space interests. There is no definitive line-in-the-sand, no borders in this ever-changing world of competing space interests. Our overall national policies must be adjusted in order to be prepared for any threat that may exist.

As we all remember, the Chinese ASAT test collectively woke up the world and reminded us that we are not alone in space; it is not our playground and not solely our domain. Further, it proved that China has an intense interest in developing space capabilities. Major policy choices and decisions need to be made in order to counter and prepare for any

challenge to our space dominance. This is increasingly imperative as we become more dependent on our space assets as this increased reliance makes our satellites and other assets more appealing targets for potential enemies. These decisions must be made in conjunction with an increased integration of space assets into all defense-wide operations in order for the U.S. to meet our full potential and integrate into a unified network. Technology is advancing so quickly that our policies are failing to keep up, and new space integration doctrine must be created that standardize tactics and procedures. We cannot afford to stovepipe our capabilities.

This year already, the issue of space weaponry has made headlines. It has been reported that China and Russia are planning to introduce next week a draft treaty for the "Prevention of Placement of Weapons in Outer Space" at the International Conference on Disarmament in Geneva. In response, it is my understanding that U.S officials have announced their opposition to this treaty. This topic is certainly not going away, and has long-reaching political consequences. Likely, this will become an increasingly more influential political issue in coming years, and the next administration will need to develop policy specifically related to weapon proliferation in space as part of their comprehensive foreign policy strategy. As such, I predict that an unprecedented, concrete international agreement will be forged regarding the issue of weapons in space because the eventual prevalence of the issue and the attention it acquires world-wide. Further, I believe this will be sought with controversy and conflicting self-interests due to the parties involved, and it is my hope the U.S. does not compromise any of our self interests in such negotiations.

The next administration will also be confronted with the need to further incorporate and integrate cyber defense systems into our military. The Air Force has already stood up a provisional Cyber Command, and I've strongly advocated for its basing to be located in Colorado Springs, Colorado. Air Force Cyber Command will ensure the freedom from attack in the

cyberspace domain. This decade has already seen several attacks on our cyber infrastructure by China. In May 2001 Chinese hackers successfully took down the White House Web site for almost three hours. The effects of a cyber attack can be crippling. Last year, Estonia witnessed first-hand the effects of a successful large-scale attack when a coordinated Russian attack disabled many commercial and governmental websites in the nation for several days.

The cyber threat is real, and can amount to much more than a mere inconvenience. Its scope stretches far beyond the "white-collar warriors" who attack from behind their monitors. A successful attack is the equivalent of modern-day industrial sabotage. On the battlefield, our military uses cyber tools to disable and destroy remotely triggered IEDs in Iraq, conduct electronic warfare operations, halt terrorist use of GPS and satellite communications, and prevent jamming of frequencies. Disruption of these abilities can be deadly; these are not threats we can afford to take lightly. The next administration will have to determine to what degree we will incorporate cyberspace and how will that relate to our overall space goals. Further integration of many systems including the broader domains of space and cyberspace will be a daunting task, and could make the monumental Goldwater-Nichols Act of 1986 look like a simple piece of legislation.

In addition to the formal integration of these new platforms, the next administration will be confronted with the proverbial fork-in-the-road regarding missile defense. The Bush administration has been a strong advocate for the program and has significantly restructured our missile defense assets. The Missile Defense Agency (MDA) has received strong bipartisan support in Congress. The FY 2008 budget cycle, however, was not so kind. Last year, one of MDA's top priorities, the placement of proposed missile defense installations in Europe, was funded \$85 million below the budget request, and the project garnered headlines world-wide and triggered strong opposition from Russia.

Other important MDA programs also received decreased funding last year, including the Space Tracking and Surveillance System (STSS) sensor development project, which is critical to increasing our ability to actively monitor threats around the globe. STSS provides worldwide tracking, discrimination and fire control. This program was funded at about one-third less than the President's request. STSS has grown in cost, but remains essential to our ability to effectively monitor future threats. Additionally, other programs such as the Multiple Kill vehicle and the Airborne Laser are also crucial to developing a stronger and more sophisticated missile defense system.

Aside from cuts to these big-name projects, I was also disappointed in proposed Congressional funding cuts for education and development centers. The Missile Defense Space Experimentation Center located at Shriever Air Force Base is critical to develop our future space-based capabilities, and the advancements made there contribute directly to the success of such programs like STSS. I was able to work with my colleagues on the Appropriations Committee, Senators Inouye and Stevens, to keep the full requests, but the support was not automatic and does not bode well for the future of the program under a less enthusiastically supportive Administration.

In FY '08 Congress prioritized systems that are ready or nearing completion for deployment as opposed to more futuristic systems, and it will be intriguing to see what pattern develops entering the new administration. It is of great concern to me if the priorities reflected in FY 2008 continue to veer even farther away from long-term development. It is important for us to keep U.S. industries active in the program and include our allies like Japan, with whom we are cooperating to build an ICBM interceptor that could be deployed from an Aegis cruiser. In the long-term, the MDA's goal is to build a global system, which is equipped to meet an unpredictable global threat. As such, space is paramount to accomplishing this goal.

As you know, our system today consists of space-based detection sensors, ground-based and seaborne early warning and tracking sensors, ground-based interceptors in Alaska and California for long-range defense, transportable ground-based Patriot capability, and sea-based interceptors to engage short and medium-range ballistic missiles. Our system features multiple defensive layers with system elements working together synergistically to enhance the capability as a whole. As advanced as our system is, it is far from invincible as we are still very much tethered to the ground and sea.

The new administration and Congress needs to determine what degree of investment it wants to place in future development. What we lack right now is a specific program that would develop a space layer of interceptors. I would like to see this administration, as well as the next begin to develop such a layer. Unquestionably, this would translate into an incredible strategic advantage.

A layer of space-based interceptors would enable a global on-call missile defense capability that could produce a timely response to rapidly evolving situations, and would enable the U.S. to be prepared for all types of threats that could develop out of unpredictable locations.

Of course such capabilities are accompanied with a high price-tag, and must compete with other priorities within the defense budget as well as the national budget in a hotly contested political environment. Even so, it is important to remember that such developments would not exist in a vacuum, but would be part of a complex and integrated system. The next administration will have to choose which direction to take, and which way it wants to go: continue the trend demonstrated in the 110th Congress of prioritizing near term projects at the expense of future projects or invest in comprehensive long-term goals such as space-based interceptors that would be able to reach targets more rapidly and are capable of destroying enemy missiles in the boost phase.

Most certainly the cost of a ballistic missile nuclear strike against a U.S. city would be enormous; the economic toll alone is estimated to be \$4 trillion. There would be no conceivable way to calculate or compensate for the loss of life and moral. The next president must determine these priorities, assess our enemies' capability and make the best decision. After 60 years of developing missile defense technology, we have reached the point where we must choose a direction.

It is my prediction that within the next Administration, missile defense will become a much less polarizing political issue than it has been in the past. As countries like China and now Iran, which this week test-launched the country's first low-orbit research satellite, begin looking toward space, the threat to American space dominance will become more apparent. Despite recent events in China, North Korea and Iran, skeptics of missile defense continue to characterize the threat from other nations as hypothetical and merely an academic exercise because the U.S. has remained so much farther advanced than our adversaries. We will be forced to acknowledge and confront these challenges because they will be unavoidable. I predict the debate to shift from "should we" to "how should we best" invest in missile defense.

Utilizing space for national security comes in many forms, including data imagery. The next administration will have to determine the appropriate role for commercial geo-spatial data providers and the government. Particularly, the National Reconnaissance Office (NRO) and the National Geospatial Agency (NGA) has expressed concerns recently about the relationship and reliance upon commercial-data providers and expressed a need for more "in house" imagery services. With more commercial companies emerging with business cases for entering parts of space that were previously only in the government domain, the question will inevitably be raised as to what capabilities are vital, and what capabilities can be effectively provided by the private sector. This addresses an inherent and time-old debate over the usefulness of contractors,

and whether a particular service should be considered inherently governmental.

President Bush's Commercial Remote Sensing Policy from April 2003 states that the fundamental goals include "relying to the maximum practical extent on U.S. commercial remote sensing capabilities for filling imagery and geospatial needs." However a recent and influential report released last fall recommended against the current NGA model of using multiyear contracts with commercial data providers to procure imagery and favored a more traditional business model of government owned and operated satellites. The administration will be confronted with the decisions of how to regulate and manage the relationship between these apparent conflicting concerns. Industry is naturally concerned about this potential policy switch, and contends that if their business with the U.S. Government is greatly reduced, the market could give rise to foreign companies filling that void, companies that the U.S. has no control over, which could produce yet another security concern.

The incoming administration must pursue policies that will enable healthy commercial space activities in all sectors of the industry, while leveraging existing commercial space capabilities. The United States is facing unprecedented international competition in this arena. New competitors have emerged in the space exploration field. China, India, Japan, Russia and Europe are all taking a more active and innovative role in space travel and commercial development. The X-Prize Foundation recently announced the Google Lunar X Prize, which invites private teams from around the world to build a robotic rover capable of landing on the Moon. Virgin Galactic, based in California, has plans for SpaceShipTwo, a six-passenger space liner with suborbital passenger services in 2008. Overseas, EADS-Astrium is developing a four-person spacecraft to make suborbital trips with the possibility of the first commercial flight in 2012.

The next administration will also have to confront the reality of an emerging commercial space industry,

which is growing at the same time the government's space systems are in transition. By 2010 the Space Shuttle program will be retired, and it likely will be three to five years where NASA can not send man into space; the question remains what will fill that void? For this reason, it is imperative that the United States government continue to promote private and commercial space exploration, developing a vibrant and ground-breaking commercial sector. The question will also be raised about the appropriate usage of government funds, and if the government is financing projects that duplicate commercial capabilities. Recent developments in commercial and civil space exploration, namely Spaceship One, incorporate innovative technologies, knowledge and existing infrastructures to explore and support the future human space exploration. Further collaboration and communication will be needed to meet the requirements of future space exploration while pursuing a cost-effective and sustainable approach. Taking this new and unique opportunity to further develop partnerships with the private and commercial space industry will mean the United States maintains its competitive and technological advantage.

The administration will also have to formulate its long-term strategic vision; will it move away from President Bush's "vision for space exploration" that focuses on permanent lunar bases similar to the International Space Station and a return to the Moon by 2020 in preparation for eventual human exploration of Mars and other destinations? Will new alternatives be proposed and will a strategic shift take place? The Vision for Space has broad implications for NASA as almost all the funds are expected to come from other existing NASA programs. Congress is still seeking to balance NASA's exploration activities and other existing programs like science and aeronautics research. Congress last authorized NASA in 2005 for FY 2007 and 2008, so reauthorization of NASA in FY 2009 and beyond could provide a new administration the opportunity to shape future policies considerably. Given the current political situation, it is entirely possible that Congress will not be able to provide comprehensive and long-term authorization this year. That would provide the new administration

with an opportunity to implant a firm footprint on NASA's future.

NASA will need to reshape its workforce in order to better align the mix of skills with the needs for future missions, and to ensure that NASA will have the necessary skills to achieve the new vision. Consequently, NASA sees a need to identify those skills that will no longer be needed, take steps to retrain and reshape the workforce, and be able to provide specific skills that will be needed in the future.

In conclusion, after 50 years in space we truly have reached a crossroads and the next president will face complicated and vital decisions regarding our future in space. Chiefly, we need to encourage more math and science students. It is an alarming fact that universities awarded more than twice the number of bachelors' degrees in physics 50 years ago than they do today. We need to replace retiring space professionals in reinvigorate the workforce. This, to some degree is accomplished by forums like we have today. At its core, space exploration is inspirational. We strive to inspire the next generation of ambitious engineers, astronauts and explorers. I truly hope that more young people will be able to experience and benefit from space exploration. The Center for Space and Defense Studies and the Center for Strategic and International Studies perform a vital role in our efforts to bring attention back to space, and excite individuals about what possibilities that exist in the future. Thank you again for this opportunity.

SPEECH FOR THE 2008 NATIONAL SPACE FORUM

Representative Terry Everett

Representative Terry Everett is from the Second District of Alabama

I would like to thank the Eisenhower Center for Space and Defense Studies and the Center for Strategic and International Studies for the invitation to speak today. I would also like to thank Dr. Hamre, Ambassador Harrison, and Peter Teets for their leadership. Peter Teets is a good friend and great space leader and I am honored to be among such individuals who I hold in high regard.

My objective here today is to provide my thoughts and observations on national security space issues being discussed in Congress and prospects for the upcoming budget year. The specific topics I plan to discuss are:

- Understanding our dependence on space;
- Space protection and space situational awareness;
- Space acquisition and a few key space programs.

The public in general and many members have no idea how dependant we are on space and how essential it has become to so many aspects of our daily lives.

As this forum knows all too well, we have seen great growth in the commercial and civil uses of space.

- The global space industry grew to nearly \$220 billion last year; an 18-percent annual increase.
- Last year, the satellite television industry grew by 20-percent, GPS equipment by 43-percent, and satellite radio by 96-percent.

- GPS is essential to commercial aviation, commercial shipping, enhanced 9-1-1 emergency services, in-vehicle navigation, fleet/vehicle tracking and financial transactions.
- Agriculture Uses: GPS and remote sensing is used to track farm equipment, assess crop health, and forecast crop production.

Space is also integral to modern day warfighting. I like to explain to my colleagues that the F-22, U-A-S, cruiser, or F-C-S system they support isn't very effective without space.

- General Dogden tells the story that when he asked a soldier if he needs space, the soldier replied no, All I just need is my weapon and this black box to tell me where I am and to talk to my commander.
- Tactical SATCOM enables divisions to have communications over extreme distances.
- In Iraq today, U.S. soldiers manning Joint Security Stations carry satellite maps of local neighborhoods. MRAPs carry GPS and SATCOM-enabled blue force tracking systems.
- In June 2006, Al Qaida leader al-Zarqawi was targeted with one F-15 sortie and two 500 pound bombs. This successful strike mission was heavily reliant on space, and included: High-resolution satellite imagery and other intelligence to geo-locate the target within meters; Satellite communications to the cockpit for real-time updates; and GPS-guided precision munitions to minimize collateral damage.

I believe a greater emphasis must be placed on space protection and space situational awareness. I was successful in securing legislation on this topic. This year's conference report directs the Secretary of Defense and DNI to develop a space protection strategy.

The threat to space is clear and growing. In particular, I find China's military modernization in counterspace quite worrisome. I have not seen a coherent, comprehensive strategy from the Department on how it would address these threats. The legislation asks that the following questions be considered:

- First, what implications do these threats have on our nation's future space architecture and investment strategy?
- Second, what material and non-material solutions are needed?
- And third, can improvements be made in how the defense and intelligence communities acquire and manage S-S-A and protection capabilities?

Simply put, it's impossible to know HOW to protect our space assets if we don't know WHAT to protect, from a global, commercial, and military standpoint. In this case, I'm speaking about both black and white space. I've tried as Chairman and now Ranking Member of the Strategic Forces Subcommittee to attract national attention to the issue of space control. We need more education and awareness on these issues.

I am concerned about D-O-D budgeting for S-S-A and protection capabilities. Less than 4-percent of the over-all space budget is spent in these areas -- and that doesn't include NRO, or, Black space. Is this enough? I don't believe it is. Our ability to take advantage of space is limited by our modest investments in the protection of our space assets. In fiscal year 2008, several key initiatives, such as the Self-Awareness S-S-A system, RAIDRS, and the Space Fence, ended up on the Air Force unfunded priority list. In a welcome move, it

appears the FY 2009 budget request increases S-S-A and protection resources by about 12-percent.

We have a fragile space architecture at this moment in time. We have a real opportunity to look hard at our national architectures, change our investment strategies, and leverage commercial and perhaps foreign partner capabilities. I am concerned that we say we have redundancies and alternatives, but where are the details?

China's ASAT test raises some important policy and operational issues we have yet to work through. Do we need more emphasis on war games and exercises? Surely, we need to work through policy issues and concepts of operations ahead of time through war games and exercises in realistic environments.

I'd like to pose some questions to this body and ask that you give them thought as you continue your panel discussions:

- As we think about deterrence against 21st century threats, how do we apply deterrence to space? Can we deter others from holding our space systems at risk?
- Do we have clear "trip lines" or thresholds for action? Our current policy is silent on this. Would a policy that signals our intent and lays out consequences be more effective?
- How would U.S. policymakers respond if attacked? What about our response to laser dazzling or jamming during peacetime? Neither case is acceptable, and what should the consequences be?
- What impacts would an attack have on combatant commanders' war plans and what implications does it have for their future capability needs?
- What is our military's response posture? Would we seamlessly transition to redundant or alternative capabilities? What decision-making and C-2 mechanisms would we need in place ahead of time?

- What diplomatic options should we consider and what role should our friends and allies play? Do treaties work to hold actors accountable, or, are there other international instruments we can leverage?

I look forward to the protection strategy the Department must deliver to Congress later in the year. I expect our subcommittee to hold hearings and additional briefings on this subject. Some of these important policy questions and options can be debated in the open; other discussions will be classified.

I am concerned about the affordability of the national security space portfolio. I support space modernization programs. I think one of the most exciting things our nation does is in space and I'm proud to be associated with it. However, how do we manage modernization with limited resources?

I have observed continued cost growth and schedule delays with ongoing acquisition programs and expect big bills for TSAT, GPS-III, Space Radar, and other NRO systems. Can the D-O-D and I-C execute all their space acquisition plans?

I am an advocate for increasing the space topline, and was pleased to see the Air Force space budget increase by roughly \$500 million. Getting this through Congress will be tough, however, as budget pressures with Iraq and Afghanistan, force reset, and military healthcare continue to rise. Additionally, Congressional PAYGO restrictions and a lack of appetite for increased taxes will also limit the flexibility of Congress to authorize increased budgets. I am afraid Congress will be looking for bill payers, and I will continue to make the case that space spending is already at the bare minimum and cannot be reduced in the future without consequences.

With concerns about vulnerabilities and single-point failures, we must change the legacy model of building a few large, expensive, complex satellites. Demand for robust systems engineering

will continue as we continue to insist on more tradespace reviews—what architecture, requirements, and design tradeoffs can be made to lower complexity and/or cost?

I am concerned about budget estimates, the predictability of costs, limiting government requirements growth, and contractor “add-ons.” I like “Back-to-Basics” acquisition approach; it is similar to my “First-Things-First” philosophy. I believe the community has turned the corner, but still has to prove it works.

Let me touch briefly on key space programs and some other topics of importance to me.

I have supported Space Radar for many years now. Last year, Congress received letters of support for this program from warfighters and intelligence chiefs. (Dr. Sega) However, committees and members disagreed on the value and technical solution for Space Radar.

I expect the debate to continue. Congress is expecting a detailed, revised acquisition strategy and an independent review of alternatives

TSAT. Both the House and Senate Armed Services Committees fully supported TSAT. I was, therefore, disappointed with the \$150 million cut by the appropriators. I am equally disappointed by the Department's decision to cut \$4 billion from the program because so many other defense programs are relying on TSAT, such as F-C-S. I dislike that TSAT is penalized even though it has followed a sound approach to maturing technology and applying “Back-to-Basics.”

GPS. I was equally disappointed with the \$100 million GPS-3 cut. We need to move to GPS-3 as quickly as possible. I support the incremental block approach being taken by the program office and am happy to see the Department moving forward with this in their 2009 budget request.

Operationally Responsive Space. I was at Kirtland when the Space Development and Test Wing stood up. I see promise in O-R-S. It offers potential surge, reconstitution, and niche capabilities. I am aware there has been debate within the community on the focus of O-R-S. Our intent, codified in 2007 legislation, is a focus on getting simple, low cost solutions rapidly on-orbit to meet the needs of our combatant commanders. A secondary benefit is that it provides more frequent opportunities to prove-out innovative concepts and technologies at a lower cost.

On the subject of black-white space integration, last October I sent a letter to Secretary Gates asking him to re-establish the dual-hatted undersecretary position. I thought Pete Teets did a good job in this role. I don't understand why one person cannot provide oversight and leadership across national security space. The Secretary of Defense has the entire defense portfolio under him.

I know opinions in Congress vary. I believe one person setting policy and making decisions in the context of an integrated architecture is beneficial and reduces unnecessary overlaps, especially in planning and acquisition.

I also want to touch briefly on missile defense and space. Since the Bush Administration withdrew from the A-B-M treaty, we have seen great progress in fielding a ballistic missile defense system in a short period of time. As we look forward, I believe space will play a greater role beyond missile warning capabilities like SBIRS.

I would like to revisit space-based interceptors. While I support and prefer passive and reversible methods for protection, I cannot discount the potential utility of defensive space-based interceptors. Why space-based interceptors? The orbital debris is entirely undesirable. However, against an incoming ballistic missile, orbital debris versus destruction of New York City is an easy trade for me to make. I believe we need to at least look at it by looking at the technology, costs,

benefits, and policy implications to better inform future decisions.

Lastly, I want to touch on an area that is important to me—professional development and science and math education. I spoke with Buzz Aldrin last year and we had a long conversation on this topic.

I am interested in ideas on how to strengthen youth science and math education, and recruit more young folks into aerospace careers. I think professional development is equally important and I was pleased that my legislation on space cadre management was included in the final 2007 defense bill.

It has been an honor to speak here today. As I mentioned earlier, I think space and in particular, national security space, is one of the most exciting things our nation does. We have challenging space policy and program issues ahead of us and collectively, we have an opportunity to tee up these issues for the next Administration. I look forward to your thoughts and suggestions and I hope you will share these with Congress as well as the next Administration.

We just celebrated the 50th anniversary of the first satellite launch. It took a unique cadre of talented and driven individuals to accomplish what our nation did in its first 50 years in space. It will take no less talented and driven of a cadre to shape the next 50 years. I am proud to be associated with these endeavors and with the people who make them happen.

Thank you.

SPEECH FOR THE 2008 NATIONAL SPACE FORUM

Representative Jane Harman

Representative Jane Harman is from the 36th District of California

As many of you probably know, my Congressional district in Southern California is home to the Space and Missile Command – the arm of the Air Force tasked with developing and procuring the space assets that give America its eyes and ears in space.

It's also the best Congressional district in the country. We are the place for sun, surf, and satellites – the only place in America where aerospace engineers have tans!

Thousands of these engineers are my constituents. And over the years, I have gained a deep and abiding respect for both the importance and difficulty of what they do.

We ask them to construct an amalgam of circuits, wiring, sensors, and fragile structures that must survive unimaginable rigors of launch and harsh conditions of outer space, with scant possibility of repair, and perform flawlessly for years. And we place the technical responsibility for carrying out core functions of the government – from communications to intelligence to operations – in their hands.

There is very little margin for error.

Given those stakes, SMC and the industry it helps lead have amassed an impressive record in recent years. We haven't had a launch failure nearly a decade, 56 in a row and counting. General Mike Hamel at SMC deserves a lot of credit for this success.

But we shouldn't spend too much time patting ourselves on the back. We have some big challenges ahead of us.

You've just heard from my colleague Terry Everett about the budget the President released this week. Terry and I have worked closely together on the Intelligence Committee and the Space Power Caucus.

I want to keep my remarks today focused on the big picture. My thesis is that the Administration and Congress have been snoozing. Seven years after the Rumsfeld Commission Report, which highlighted our critical dependence on space, and more than one year after the Chinese ASAT test, we have no strategy.

Although China knew the orbit of its satellite, the ASAT test nonetheless amply demonstrated its capability in space.

The ASAT test put the spotlight on our Achilles heel. Our space assets, particularly those in low earth orbit (or LEO), are vulnerable.

The test also increased the amount of space debris orbiting the Earth by about 20 percent, potentially threatening satellites in LEO for decades, if not longer.

The tacticians will focus on China – spinning out scenarios for ASAT attacks during a conflict in the Straits of Taiwan. Those scenarios are certainly worthy of our careful study.

But this isn't a China-specific problem. The media has reported that Russia has had ASAT abilities for years. Other nations also have demonstrated the ability to disrupt or degrade our use of space assets. And it will not be too difficult for these nations to develop more effective ASAT capabilities in the coming decades.

The problem is not a short-term hiccup in an otherwise solid plan. It is a long-term strategic vulnerability that needs to be addressed now. China's test was a very urgent wake-up call.

But we pushed the snooze button. In the year-plus since the test – and about a year since Sen. Kyl and I discussed this topic at CSIS – the United States government has done almost nothing in response.

I would have expected an Administration that warned of a “space Pearl Harbor” in the 2000 elections to have made a greater effort to protect us against the threat.

To be fair, none of the major candidates for President has addressed such the threat either.

Our space acquisition budget reflects this lack of a strategy. We behave like kids in a candy store.

The Administration pursues “desirements” – technologies that would be great to have but are not of the utmost importance. Not coincidentally, some of these projects are staggeringly expensive and entail enormous risk.

Recent procurement and operational failures should come as no surprise.

Our new President – whoever she or he may be – should come into office with a strategy in hand. But we need not wait for a new Administration. The sooner we start this process the better.

The Administration's 2006 policy statement sets general goals, not a strategic vision. It needs fleshing

out. And the new President may have a different vision.

But we can surely agree that one key policy goal be to maintain our leadership in space for decades to come. And to do that, we must be able to counter the threat posed by ASAT technologies.

As policy makers, we in Congress don't have the luxury of just throwing stones – though we often forget this. We have to offer constructive suggestions.

Here are mine.

In my opinion, any comprehensive strategy to preserve our leadership position in space must include five elements: intelligence, defensive measures, redundancy, risk mitigation, and export control reform.

First, we need to understand the motivations of adversaries. Why did China conduct the ASAT test? Was China attempting to send the United States a message? Is it announcing its intent to become a global strategic rival? Or, as many believe, is its focus primarily regional?

The same questions can be asked of Russia and other nations. What are their capabilities and intentions in space and how do they impact our interests?

Those answers are relevant to our strategy. If China is primarily interested in intimidating Taiwan, we have some time to adjust to their newly unveiled capabilities. If, however, they intend to develop space capabilities to rival ours, time may be short.

Intelligence is a priority. Congress may want to consider asking for a National Intelligence Estimate on the test and potential threats to our position in space.

We should also talk to the Chinese, in much the same way that we spoke to the Soviets during the Cold War.

I was heartened to hear Defense Secretary Gates speak about enhancing military-to-military contacts with China. These sorts of exchanges can not only help us better understand China's motivations, they can help avoid the misunderstandings that can lead to a more confrontational relationship.

Gates' model is the strategic dialogue between the US and the Soviets during the Cold War, which was key to preventing miscalculations.

Second, we should employ defensive measures in space, and harden our ground assets.

I can't discuss the specifics, but it is widely known that we have the technology to protect key assets against certain kinds of non-physical attacks – particularly attacks that use electro-magnetic pulses (or EMPs).

We need to think “out of the box” to find other means to protect our satellites from attacks.

We should incorporate this technology not only into all new military and intelligence satellites, but in some commercial satellites as well.

But we shouldn't expect miracles. These technologies can't harden a satellite against kinetic kill vehicles, like the missile China used in its test. We also can't retrofit assets that are already in space.

We sometimes forget that our space assets are only part of the equation. We depend on ground infrastructure to make those assets work.

That infrastructure is vulnerable to all kinds of physical attacks like car bombs, electro-magnetic attacks, or (like much of our government's information technology backbone) cyber attacks.

If the United States is ever in a war with our space assets under attack, you can count on attacks on our ground-based space infrastructure as well.

Securing those facilities must therefore be a top priority.

But we are unlikely to stop every attack or sufficiently protect every space asset. To protect core capabilities, we must build redundancy into our overhead architecture – my third suggestion.

We should have multiple assets available to do the same job. That is already the case with certain programs, like GPS. We can afford to lose a few GPS satellites without losing much capability.

LEO satellites (like China's weather satellite) are particularly vulnerable.

Using higher orbits – particularly geosynchronous (or GEO) orbits – for more assets that we currently keep in LEO can help protect our capabilities.

Not all of these redundant assets needs to be in space. We can keep some of the satellites on the ground if we have the capability to get them into space quickly and at a reasonable cost.

This, of course, is the idea behind operationally responsive space (or, ORS). We have begun to invest serious time and money in ORS, and there are some brilliant rocket scientists working in this area. And yes, some of them are constituents!

The potential of ORS is not yet fully realized, as even its biggest proponents will admit. But that potential can be reached if we sustain our commitment and our funding.

Redundancy will not be enough, however. There are only so many satellites that the US can afford. We must therefore mitigate our risk by enhancing our cooperation with civilian imaging and communications assets, and those of our allies – the fourth element of my strategy.

The capabilities of commercial imaging and communications satellites have grown by leaps and

bounds in recent years. They can serve many of our military needs.

Of course, we already make extensive use of civilian and ally assets. During the Iraq war, for example, the US military used 2.4 gigabits of bandwidth per second – and over half of that communications capacity came from commercial sources.

But there is room to grow, particularly in the use of commercial imaging products.

We should consider relaxing current restrictions on resolution. Many civilian imaging satellites can achieve amazing clarity, and with a few changes can provide imagery close to what our military planners are used to seeing.

Enhanced cooperation would have the added benefit of supporting our space industrial base. The more we use these private companies, the more we enable them to grow, developing the industrial base and developing capabilities that the US government can use.

We will also help provide employment for more aerospace engineers. As I have said many times, rocket scientists do not grow on trees.

Fifth and finally, we should fundamentally reexamine our approach to export controls.

Restrictions on the space technologies companies can export have had the perverse effect of encouraging other nations – like China and India – to develop their own indigenous technologies.

Rather than buying or renting technology built by American companies that are subject to American law, we have given these countries the incentive to figure it out on their own.

These nations have gained their own strategically important industries, denying us a lock on cutting-edge technologies.

A more balanced – and I believe, more targeted – export regime is essential.

I'm not ruling out the possibility of some form of multilateral or bilateral agreements, perhaps to preclude the debris-causing sort of test that China conducted last year.

An informal code of conduct that sets norms of behavior for space-faring nations could be particularly helpful in restraining reckless behavior like last year's test.

History has shown that multilateral diplomatic pressure – peer pressure, if you will – can be very effective in setting norms for space.

But we should be realistic about what formal agreements can achieve. Identifying which programs are covered is a challenge, and it could be almost impossible to verify compliance.

We should also mind our words. Using needlessly provocative language is foolish. Our current space capabilities are no match for any other nation, even given China's test.

Given that advantage, we would have much to lose in a space arms race, in which other nations have the excuse to invest in offensive capabilities that go far beyond kinetic kills in LEO.

These five suggestions could form the core of a space strategy.

It's time to wake up, get focused, and implement a comprehensive strategy to protect our position in space.

We snooze at our peril.

