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SENATE ARMED SERVICES COMMITTEE
STRATEGIC FORCES SUBCOMMITTEE

STATEMENT OF
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BEFORE THE
STRATEGIC FORCES SUBCOMMITTEE
OF THE
SENATE ARMED SERVICES COMMITTEE
ON
FISCAL YEAR 2008 DEFENSE AUTHORIZATION BUDGET REQUEST
FOR SPACE ACTIVITIES
APRIL 19, 2007

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Mr. Chairman, distinguished members of the Committee, as the Commander of Naval Network Warfare Command, I am honored to appear before you today to address Navy space activities. Naval Network Warfare Command is responsible for providing operational network, information operations, and space effects, as a supporting Commander to Navy component and Joint Commanders.

The Chief of Naval Operations (CNO) pointed out our two unique Navy attributes – global reach and persistent presence – during his 23 March 2007 FY08 Posture Hearing. This means we as a Navy must be prepared to conduct major combat operations, address asymmetric threats, as well as provide maritime security in a variety of ways in an ever changing world. The value that the Navy brings in terms of regional security, global stability, and anti-access capabilities is undeniable. All of this requires space capabilities that are rapid, dynamic and assured. Space can be viewed as a classic inter-dependency; Naval Component Commanders depend on U.S. Strategic Command to provide DoD and National space effects, essential for successful Naval operations. I will share with you what we are doing as part of the joint space team.

Space Support to the Navy Warfighter

Warfare today and in the future will be about speed and having superiority in the information domain - acting quickly in the global commons of the seas, space, and cyberspace before an adversary saturates or penetrates our defenses. It will also be about persistence – having the duration and vantage point to find threats and counter them with precision. Space capabilities are a critical enabler for maritime operations. They provide the foundation through which data is

rapidly collected, fused, correlated and disseminated to build Maritime Domain Awareness and support the National Strategy for Maritime Security. In general, Naval warfighters need global coverage, wide-area active and passive surveillance capabilities, robust jam-resistant communications, and position, navigation and timing information for core Navy warfighting competencies, deterrence missions, and stability operations.

Naval Space Campaign Plan

The Naval Space Campaign Plan is my blueprint for operationalizing space support to the maritime warfighter. As we implement and execute the plan, we are breaking new ground in the Fleet's operational employment of space effects. NETWARCOM's NetOps, IO, and Space Center (NIOSC) functions as a true reachback staff element for deployed Strike Groups and forward Maritime Headquarters. The space planners in the NIOSC broker maritime operational and exercise space needs with the Joint Space Operations Center at Vandenberg AFB and assist the theater Space Coordinating Authorities as they develop the space support requests for their AORs. This insures that the desired DoD and National Technical space effects are delivered in support of Fleet activities. Concurrently, NETWARCOM is formalizing the Fleet's training and exercise play. By advancing the Fleet's space systems knowledge through regular staff training sessions and standardizing the way the Fleet trains during FRTP to fight in an environment with mature threats to our space systems, we are ensuring our Strike Groups and staffs are equipped to fully leverage and integrate Joint and National space capabilities and operate against a regional space peer.

The Navy's Investment

The Navy's space investment portfolio reflects our partnership with the Department of Defense's Executive Agent for Space and the rest of the National Security Space community -- as well as our maritime responsibilities. We recognize our reliance on the Air Force and NRO to acquire most of the major space platforms. The Navy's Space Cadre works closely with them to collaborate on meeting maritime requirements. We also take the lead in tackling maritime challenges through our participation in the Science and Technology/Research and Development (S&T/R&D) process. Our Tactical Exploitation of National Capabilities (TENCAP) office works closely with the NRO to develop new technologies and techniques to collect and exploit against emerging naval threats, including developing operationally responsive payloads.

In addition to our major space segment responsibility for narrowband SATCOM, which I will talk about more specifically in a moment, my organization is leading change in two key areas that will make our Navy more capable of fully leveraging space capabilities. First, we are using a combination of military and commercial satellite capabilities to increase available bandwidth. In conjunction with this effort, we are investing in the dynamic management of existing bandwidth (i.e., Automated Digital Network System, new modems, etc). Together, these strategies will be used to deliver our warfighting requirements, enabling the Naval Operating Concept vision of "distributed network operations." These increased capabilities will further enhance education and training opportunities available at sea and support other quality of service aspects expected by the Millennium Generation. Second, we are breaking the link between software and hardware by moving to an open architecture approach. Through strong governance

and fiscal discipline, we are developing a Service Oriented Architecture to enable lower cost upgrades, reduce equipment costs, and rapidly insert new technology. Our goal is to ensure the capacity and flexibility to rapidly integrate space, as well as capabilities from other platforms, into our architecture.

MUOS

The Navy's major space segment responsibility to the joint community is the narrowband satellite communications constellation. Today it consists of UHF Follow-on (UFO) and Fleet Satellites (FLTSATs) which will begin to be replaced by the Mobile User Objective System (MUOS) in 2010. MUOS will provide communications-on-the-move, through double canopy foliage and in urban environments to small antennas used by disadvantaged users (handhelds, aircraft, missiles, UAVs, remote sensors) in stressed environments (foliage, urban environment, high sea state). MUOS is the common denominator for command and control providing the capability to communicate from tactical to theater levels, to allies and coalition partners, and between defense and non-defense agencies. MUOS will allow a more comprehensive and coordinated approach to regional engagement, providing the capability to synchronize efforts with other services, agencies, and allied nations.

MUOS is critical to satisfying the demand for tactical satellite communications. During OPERATIONS ENDURING FREEDOM and IRAQI FREEDOM, UFO, FLTSAT, and LEASAT 5 were only able to support 80% of the narrowband tactical UHF satellite communication requirements. Additionally, in the 2010 timeframe, LEASAT 5 will reach its

end of service life, and the UFO constellation, based on new analysis after the premature UFO 9 failure, is expected to reach an unacceptable level of availability in May 2008. We have a mitigation plan to minimize the operational impact of a potential gap in capability (7 operational satellites vice the required 8) before MUOS is operational. It includes the use of commercial bandwidth and the dynamic management of existing bandwidth as mentioned previously. Today, UFO supports approximately 500 simultaneous accesses worldwide. Based on evolving future war fighting concepts in support of the Defense Planning Guidance (DPG), UHF SATCOM access requirements are expected to grow by at least a factor of four and MUOS, as designed, will be able to support that requirement.

Since last year the MUOS program successfully completed the Key Decision Point (C) milestone and the Critical Design Review phase. The program is currently on schedule and within budget to meet an On-orbit Capability in 2010 and is fully funded in the President's 2008 Budget to meet all threshold requirements. The MUOS program is currently preparing for the October 2007 Build Decision (for satellites 1 and 2). MUOS will bring a four fold increase in the number of accesses (1997 vice 500) and a twenty fold increase in throughput (39.2 Mbps, total system capacity vice 2 Mbps) worldwide while providing improved communications on the move to disadvantaged platforms (hand held terminals, aircraft, missiles, UAVs, remote sensors) at higher data rates (up to 64 kbps per access). This capability can only be realized with the fielding of MUOS capable Joint Tactical Radio System (JTRS) terminals or by upgrading existing UHF legacy software programmable terminals.

Space Environment

Navy depends on space capabilities now and expects the demand for space capabilities in the future, especially for satellite communications (SATCOM), to increase. We, like the rest of the Nation's leadership, were concerned by China's recent anti-satellite (ASAT) test, not only for its primary purpose of demonstrating a capability against spacecraft, but for the collateral effects of the debris created. That said, we recognize that all space capabilities are vulnerable to both low and high technology threats, including communication and data link jamming, attempts to exploit or disrupt computer systems, attacks against the sensors, and physical attack against the ground infrastructure. Although space threats can not be completely eliminated, Navy is embarking on a multi-pronged approach to minimize their potential impact on naval operations. We started with an internal study on space vulnerabilities in 2005 and have identified opportunities for action. First, Navy will have multiple communications paths available, including EHF, UHF and SHF, as well as commercial systems. While we eagerly await the leap in communications capability that the Transformational Satellite (TSAT) will bring, the requested funding for an additional Advanced Extremely High Frequency (AEHF) satellite will improve protected communication capability in the near term. Also, for our battlespace and maritime domain awareness needs, we will leverage a variety of sensors, including airborne and space based, and ensure a balance between sea and shore based intelligence analysis and processing capabilities. Finally, we are examining non-material solutions, such as planning and training for degradation of space capabilities. As I've already mentioned, the NIOSC is currently providing focused space support to the Eisenhower, Stennis, and Bataan Strike Groups as part of the Naval Space Campaign Plan, with the goal of providing tailored space capabilities to improve the mission effectiveness of the fleet.

The Navy is working with U.S. Strategic Command to ensure comprehensive space intelligence is provided and appropriate means of protection are addressed systematically as space systems and their concept of operations are being developed. We communicated to Strategic Command the need for a balanced Space Control portfolio to ensure appropriate emphasis on protection and space situational awareness. And, as both the Secretary of the Navy and CNO have noted, we cannot allow ourselves to be fixated on one threat alone. Therefore, our collective efforts must take a broad-based perspective on the threat to space capabilities.

Operationally Responsive Space

Navy supports Operationally Responsive Space (ORS) because maritime forces need the flexibility that ORS offers to augment and reconstitute critical warfighting capabilities in order to counter increasingly agile adversaries. Navy actively participated in the Congressionally directed 120 Day ORS Study and will be an integral part of the ORS organization once a joint office is established. Building on over 50 years of small satellite experience, Navy is working closely with the Services, COCOMs and the Intelligence Community to develop key elements of ORS through the TacSat series of experiments. We realize that ORS is more than just smaller, rapidly developed satellites and requires an end-to-end examination to develop the agility and capabilities needed to rapidly adapt to the ever evolving threat environment facing our Joint Force Commanders (JFC).

As part of the joint TacSat and ORS effort, the Office of Naval Research (ONR) is investing \$15M of S&T funds each year in moderate-to-high-risk projects that result in significant prototypes through the Space Innovative Naval Prototype program. Investments are focused on naval capability gaps that space can fill such as ship tracking, data exfiltration from buoys, communications-on-the-move, submarine detection, cueing, and littoral characterization. As you know, TacSat-2 was launched on 16 December 2006 and is undergoing testing. Commander Strike Group-8 is interested in leveraging one of its secondary payloads, built by the Naval Research Laboratory (NRL), for ship tracking and input into maritime domain awareness. We are looking forward to launching TacSat-1 later this year after SpaceX gives the go-ahead for launch on its Falcon-1 rocket. NRL also built a secondary payload for TacSat-3 that provides a basic IP-based data exfiltration capability. NRL is leading TacSat-4 for the joint community with ONR funding the UHF Communications payload to support comms-on-the-move and data exfiltration. TacSat-4 uses a prototype spacecraft bus resulting from a broad government-industry team effort to develop and mature bus standards for increased modularity. The spacecraft should be completed by the first half of next year and will be launched into a highly elliptical orbit to provide long dwells over theater. The TacSat series of experiments reflect the partnerships that need to be developed between the services, COCOMS and intelligence community to innovate solutions and leverage the best talent available across the national security space community to solve warfighting challenges. NRL is managing the ORS Payload Technology initiative for OSD. This initiative jointly evaluated 75 industry proposals and awarded 14 which are being developed by industry now and over the course of the next year.

The ORS attributes of flexibility and agility not only impact the current operational environment but also have the potential of positively affecting the space industrial base. The

shorter project cycles should provide a broader base of rapid response experience for the space industry and space cadre, and will establish a faster acquisition rhythm in the long run.

Summary

Our mission of keeping the air and sea lanes open and ensuring the security of our citizens at home and abroad requires a global reach and persistent presence. We must be constantly ready, whether it is to deliver on a mission of mercy or more lethal measures to respond to a specific threat. Our ability to respond, as well as work with our coalition and other maritime partners, will depend on space capabilities for the necessary flexibility and speed to support our worldwide responsibilities. To deliver the required space capabilities to the warfighter and represent the Navy's interest in space, we will continue to invest in our most valuable resource, our people, the Navy Space Cadre.

The Navy remains committed to shaping space system capabilities and fully integrating those capabilities into maritime operations. We look forward to participating in ORS, as well as delivering MUOS for the joint warfighter.

Thank you for the opportunity to share our efforts with you today.