STATEMENT OF

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Chairwoman Snowe, Members of the Seapower Subcommittee, thank you for the opportunity to discuss the role submarines will play in 21st Century warfare. In my opening remarks, I would like to describe in broad terms the key themes that impact the submarine in today's naval operations, particularly in the littorals. I will then briefly discuss specific programmatic issues that demonstrate the commitment we have to maintaining superiority in the littorals in the 21st century.

Madam Chairwoman, first, some opening observations. As the Chief of Naval Operations has stated, we are transforming our Navy from a force that, while still excelling in traditional "blue water" missions, is becoming increasingly focused on the land campaign. As we develop and maintain naval forces that project decisive force inland from the sea, we must be mindful of the capabilities potential adversaries can field in the 21st century. In fact, a variety of independent studies reviewing key trends in future naval warfare have concluded that 21st century littoral warfare could be marked by the use of asymmetrical means to counter a U.S. Navy whose doctrine and force structure projects robust power ashore from the littorals.

Asymmetric threats. Asymmetric warfare implies that potential adversaries will use easily acquired weapons systems that exploit perceived weaknesses in our doctrine or capabilities. These asymmetric weapons include quiet submarines, mines, tactical ballistic missiles, cruise missiles, weapons of mass destruction and information warfare. As the Defense Science Board 1995 Summer Study "Investments for 21st Century Military Superiority" indicated, thanks to a robust international arms market, regional powers can acquire weapons formerly developed and deployed by major powers only.

Additionally, readily available commercial technologies are increasingly important in the development of key military capabilities. For example, regional powers have increasing access to commercial satellites capable of providing the necessary communication, command and control network as well as a detection capability that could enable the targeting and control of long range precision missiles.

In the future, tactical ballistic missiles will increasingly threaten fixed sites on land. The mobility inherent in naval forces provides a natural defense against these precision weapons. Of concern in the 21st century, however, is the potential that the combination of space based reconnaissance, long range precision strike weapons and robust command and control networks could make non-stealthy platforms increasingly vulnerable to attack near the world's littorals.

Whatever an opponent's ability to deny access to, or preempt, U.S. military presence, it can use these weapons in only limited ways against submarines. First, adversaries cannot reliably detect their presence. Second, submarines are not threatened by many of the existing or projected access denial weapons. Coastal cruise missiles, tactical ballistic missiles, weapons of mass destruction and information warfare pose little or no threat to a well-operated nuclear submarine. The submarine's stealth provides the necessary protection for our submarine force to conduct key missions in support of our battle groups- *preparing the battlespace*.

Preparing the Battlespace. The submarine's ability to penetrate a denied area, independently, covertly, and for long duration, provides a unique tactical advantage. Submarines provide U.S. operational commanders the critical tools they need to prepare

and shape the battlespace and defeat an advanced area denial threat with little risk to U.S. personnel. U.S. submarines operating undetected near the enemy coastline can provide a complete picture of the undersea, surface and near shore environment and enemy force dispositions and preparations. In this role, submarines pave the way for the effective employment of other naval forces and allow those same forces to be kept out of harm's way during the initial phases of any conflict.

Employing currently available onboard imagery, SIGINT equipment and unmanned remotely controlled air and undersea vehicles (UAVs and UUVs) in the future, the submarine can gather intelligence data that no other national asset can duplicate. The submarine's ability to map the undersea environment with onboard sensors and UUVs furnishes our operational commanders a complete picture of the undersea battlespace, providing them with the location of mines and enemy submarines, and, as importantly, negative information—where they are NOT. Using the strike capability resident in Tomahawk as well as the unique ability of the submarine to covertly insert Special Forces, submarines can destroy targets from denied areas while providing little or no warning time to the enemy. These strikes will reduce or defeat an enemy's area denial capability and allow entry of less stealthy forces. I believe the submarine's ability to prepare and control the undersea battlespace will be of paramount importance in 21st century combat in the littorals.

Protection of sealift and amphibious assets. In addition to preparing the battlespace for entry by our battle groups, our submarines play a key role in protecting our precious sealift and amphibious assets. It is essential that we safeguard the follow on forces and

logistics support necessary to rapidly prevail against a strong regional adversary. Network centric warfare and cooperative engagement will provide key capabilities necessary to defeat enemy capabilities on the surface and in the air. However, the undersea environment provides a difficult challenge because the ranges of detection for mines and submarines are relatively short. An adversary's submarines will be able to threaten our vulnerable logistics assets in the absence of an aggressive Anti-Submarine Warfare effort on our part. I'll discuss the improvements in submarine ASW capabilities later in my testimony.

Force Structure. We are reducing our attack submarine fleet to 50 attack submarines, based on the Quadrennial Defense Review. In 1997, our attack submarine force fell below the force structure (72 submarines) necessary to meet all operational commitments. We have transitioned from a *requirements driven* force to an *asset limited* force structure. Today, although we have 58 submarines in the force, we have too few submarines to accomplish all assigned missions, and have begun to gap fleet requirements.

What does this transition to 50 SSNs mean in practice, for our operational commanders? Until 1997, we were able to provide about 16 SSNs forward deployed at all times in order to meet commitments tasked by the unified or fleet CINCs or National Command Authorities. In 2003, when we arrive at the QDR mandated force structure of 50 SSNs, our forward deployed submarine force will have been significantly reduced, impacting our ability to perform missions. This reduction in forward presence is occurring at the same time the demand for submarine services (as well as other naval forces) is increasing. For example, the number of Intelligence, Surveillance and

Reconnaissance missions has doubled from Cold War levels, due to the national desire for unique intelligence in many new trouble spots around the globe, while our force structure has been reduced by more than 40%. In view of the higher demand signals, but reduced force structure, let me emphasize that I believe the QDR level of 50 SSNs is the absolute floor for our Submarine Force structure and implies very real future risk.

SSN 688s and 688Is, built at rates of 3 or 4 per year in the 1970s and 1980s are the backbone of today's attack submarine force. They will begin to reach the end of their service lives in large numbers early in the next century. To maintain adequate force structure, the Navy must build at a rate adequate to replace the retiring SSN 688/688Is.

In order to ensure adequate future force structure, the Submarine Force recently completed an analysis of extending the life of some 688 Class ships. This analysis, incorporating recent operating experience with SSN force levels falling into the 50s, has determined that with careful management of reactor core usage, there is technical justification for extending selected SSN 688I Class ship lives to about 33 years. These selected life extensions will allow the Navy to maintain a force level of about 50 attack submarines to 2027 with a build rate of only two VIRGINIA Class SSNs per year beginning no later than FY06. If we do not achieve this build rate, the SSN force structure could drop significantly below even 50 SSNs and would clearly be insufficient to meet wartime or peacetime requirements, as we envision them.

Cost Effectiveness. The VIRGINIA Class SSN has been designed with a careful balance of affordability and warfighting effectiveness in order to mitigate the burden of future

submarine recapitalization. Because submarines are built with nuclear fuel to last their lifetime and are manned by small, efficient crews, much more of a submarine's total operating costs are contained in its initial acquisition cost compared to other ships. In an era of constrained shipbuilding budgets, these initial acquisition costs can discourage achieving required submarine build rates despite proven submarine life cycle cost effectiveness. Therefore, our attention to affordability in VIRGINIA Class SSNs plays a key role in maintaining future submarine force structure.

I am very pleased to report that VIRGINIA Class affordability and warfighting effectiveness remains an outstanding success story. VIRGINIA Class development, procurement and operating costs represent more than a 30% cost reduction from SEAWOLF. The VIRGINIA Class will deliver overall greater warfighting capabilities than SEAWOLF at an acquisition cost close to that of a new SSN 688I, if a 688I were to be built today -- and with lower operating costs than either the SEAWOLF or SSN 688I Classes. The VIRGINIA Class has at least SEAWOLF level acoustic stealth and betters SEAWOLF on non-acoustic stealth. The VIRGINIA Class is quieter than any advanced SSN at sea or under construction and will maintain the margin of acoustic superiority because it has the flexibility to incorporate future advanced technology rapidly and affordably. Reconfigurable spaces, modular design and construction, and open system architecture being employed on the VIRGINIA Class will allow affordable technology insertion and configuration for specific mission tasking. This class of ships will readily keep pace with the technology and threat changes.

Technological Innovation. Planning for technological insertion in the VIRGINIA Class submarine program is just one part of our plans for submarine innovation. In 2015, two thirds of our Submarine Force will be composed of 688s, so it is imperative that we continue to modernize all our submarines to ensure our ability to control the littorals in the 21st century. Therefore, we are pursuing a "forward fit/backfit" strategy to upgrade our current submarines even as we build the VIRGINIA Class submarine that is optimized for the littorals. A key benefit of this strategy includes significant cost savings as we develop common systems for all our submarines.

As you know, the Navy is committed to a progressive technology insertion program in the VIRGINIA Class SSN and the President's budget provides steady, robust funding of this effort across the FYDP. A major part of VIRGINIA's technology insertion program involves the use of a Large Scale Vehicle. This one quarter scale model allows new technologies to be rapidly and affordably proven in an "at sea environment" before insertion into the VIRGINIA Class SSN program. Additionally, the low-rate production of VIRGINIA Class SSNs provides an opportunity to progressively insert and operationally test advanced technologies in these submarines as they are built. When VIRGINIA Class production must ramp up later in the decade, the Navy will have an optimum design that includes state-of-the-art technology and capabilities.

Long-term technological innovation will be addressed via a combined NAVY/DARPA development program. In 1998, the Navy and the Defense Advanced Research Projects Agency (DARPA) signed a Memorandum of Agreement (MOA) to study advanced payloads and sensors systems in preparation for a long-term development effort. The MOA closely follows the recommendation of the Defense Science Board's

"Submarine of the Future" study that DARPA and the Navy pursue a "wide open look" at future submarine design. I look forward to new concepts and ideas that will be brought forward by this initiative.

Already, near term submarine modernization and development efforts are demonstrating progress in many key areas including sensors, weapons, and unmanned vehicles. I'd like now to turn to the specific areas where innovation and SSN modernization is improving our littoral warfare and power projection capabilities.

SSN Development. We are at a transition period in the development of submarines. The 688 Class has been completed and two of three SEAWOLF class ships are now in commission. The early performance of both SEAWOLF and CONNECTICUT has been superb. They are far and away the quietest submarines in the world today. The SEAWOLF Class submarines will set the standard for all future submarines.

1998 marked the start of construction for the VIRGINIA (SSN 774) Class (formerly New Attack Submarine (NSSN)) and was highlighted with the announcement that the first two ships of the class would be named USS VIRGINIA (SSN 774) and USS TEXAS (SSN 775). Utilizing an innovative teaming arrangement, the first four VIRGINIA Class SSNs are under contract to be built by two participating shipyards.

VIRGINIA Class SSN. The VIRGINIA (SSN 774) Class SSN is specifically designed to dominate the littoral environment while remaining second to none in "blue water" operations. Building on the success of the SEAWOLF program, its enhancements will include unprecedented stealth, both acoustic and non-acoustic, a reconfigurable torpedo

room which can be optimized for a variety of missions including: Anti-submarine Warfare, Strike with Tomahawk missiles, or Special Forces Delivery. VIRGINIA will carry an advanced mine detection system and a reduced electromagnetic signature for mine avoidance, a nine man SOF lockout trunk and the ability to carry both the Dry Deck Shelter and the Advanced SEAL Delivery System. Sophisticated surveillance enhancements will include improved periscope imagery capability using a digital electro-optical photonic mast and the improved acoustic sensors including towed arrays and the Lightweight Wide Aperture hull mounted array. The inclusion of advanced technologies and increased automation resulted in a 26 percent reduction in the number of watchstanders required to operate the ship at sea. Additionally, VIRGINIA was specifically designed to readily accommodate the insertion of advanced technologies in each new ship. The President's FY '00 budget adds an additional VIRGINIA Class SSN in FY '03, resulting in substantial savings ($225M in FY 98 dollars) to the taxpayer.

Acoustic Superiority. The Submarine Force is making significant, rapid improvements in acoustic sensors and processing. In real-world exercises and operations, both the TB-29 towed array and the new Advanced Rapid COTs Insertion Sonar system (ARCI) are ensuring our submarines retain the acoustic advantage. Use of Commercial Off the Shelf equipment (COTS) in ARCI (and in a modified TB-29 array) has resulted in substantially reduced costs with significantly improved processing capability. Each ARCI shipset costs only a small fraction of the price of its predecessor, yet improves processing power by an order of magnitude. Improvements in processing power allow the use of powerful

new algorithms that resulted in much improved towed array detection ranges in testing to date.

ARCI is my top submarine modernization acquisition priority for backfit on the LOS ANGELES Class SSNs. It is currently installed on two submarines. We have an aggressive plan to install phased, improved versions of ARCI across the entire submarine force by FY ' 06. In fact, the President's budget enables us to accelerate installation of ship sets compared with last year's plan. With your continued support, I'm confident this system will provide the necessary improvements in detection capabilities to enable us to defeat the improving undersea threats in the littorals.

One key attribute of our new sonar systems is the ability to quickly determine the range to contacts passively. Both the TB-29 and the Lightweight Wide Aperture Array, which is scheduled for installation in the VIRGINIA Class SSN, incorporate this capability- thereby significantly reducing the amount of time that our submarines need to transition from threat detection to attack. The resulting time compression in Anti-submarine search and attack provides a substantial advantage to our submarines operating in the littorals.

In the integrated undersea surveillance (IUSS) area, we are developing several systems with strong potential to improve our Anti-Submarine capabilities in the littorals. Surveillance Towed Array Sensor System (SURTASS) Twin Line operations in 1998 demonstrated the ability to detect advanced diesel submarines at substantial ranges in the littoral environment. Development of the new Advanced Deployable System (ADS) will provide a rapidly deployable acoustic array installed on the ocean floor that provides

littoral undersea surveillance and real time cueing not only for submarine operations but also mining and other operations by a regional power in an area of U.S. interest.

Littoral Force Protection. Advanced submarine torpedoes will enable us to provide improved protection to U.S. forces operating in the littorals. The Mk-48 ADCAP torpedo is being modified to be acoustically quieter with much improved performance in the littoral environment. Further substantial advances will occur with incorporation of the common broadband advanced sonar system (CBASS) into the Mk-48 ADCAP. CBASS will utilize a wideband capability to dramatically improve torpedo performance in the littorals in the face of the proliferation of advanced countermeasures.

To protect our submarines against improved torpedoes and sonars available on the open market, we are developing a new Acoustic Countermeasures protection and control set (AN/WLY-1). The AN/WLY-1 provides improved capability for the detection of intentional active emissions from a wide variety of advanced threats including sonars and torpedoes.

Intelligence collection, surveillance and reconnaissance will be aided by the new Electronic Support (ES) System which is designed as a minimally manned, passive receiving system capable of detection, acquisition, identification, and localization of a variety of signals of interest. The ES system consists of the AN/BLQ-10 ES System and will be installed on VIRGINIA Class submarines and backfit on 688I's. Improvements in our antennas incorporated in the Type 18I periscope and Integrated Electronics Mast (IEM) will aid our new ES systems to provide superior performance in the littorals.

Mine Warfare. Mine reconnaissance capability from submarine launched Unmanned Undersea Vehicles will allow the submarine to covertly detect and report mine danger areas without risk to naval forces. As a result, potential adversaries have fewer clues indicating potential locations of American expeditionary operations and U.S. military planners are better able to exploit the element of surprise. The submarine-launched Near Term Mine Reconnaissance System (NMRS) is a tethered system undergoing successful testing since the spring of 1998. The Long Term Mine Reconnaissance system (LMRS), under development with initial operational capability projected for 2003, will provide autonomous, long-range reconnaissance of the mine threat and other ocean bottom features in littoral areas of interest.

Based on recent research in high frequency sonar applications, the Submarine Force is investigating precision undersea mapping capability for both ARCI and the LMRS UUVs. This innovation would provide for unparalleled knowledge of the undersea battlespace, ensuring superior minehunting and mine avoidance capabilities as well as preparation of special forces/amphibious assault ingress routes.

Improvements in offensive littoral mining capability are planned with development of the Improved Submarine Launched Mobile Mine (ISLMM). By modifying a Mk-48 torpedo, we will provide a long-range offensive mining capability delivering two warheads and employing a unique ability to maneuver to ensure optimum placement of the warheads.

Littoral Power Projection. Submarines provide a substantial portion (about 20%) of each battlegroup's Tomahawk land attack capability in a uniquely covert delivery platform. Development of Tactical Tomahawk will allow for Battle Damage Assessment, in-flight loitering, and retargeting while cutting missile costs by about 50%. This will enhance battlefield responsiveness and flexibility while providing an enabler for future capability growth.

Submarines provide the only truly covert Special Operations Force insertion capability. The submarine's inherent stealth and endurance, as well as sophisticated communications equipment and sensors enable covert, precise insertion of Navy SEALS and other special operations forces close to their littoral objective, and provide a reliable means for their extraction once their tasks are accomplished. The Advanced Seal Delivery System (ASDS), a long-range (125nm) mini-submarine will establish a new level of capability by incorporating a dry environment allowing for long-range, covert insertion of Special Forces from Submarines. The first ASDS will deliver in FY '00.

USS JAMES K. POLK and USS KAMEHAMEHA, two specially configured SOF delivery platforms, are at the end of their service lives. We recently decommissioned JAMES K. POLK; we will operate KAMEHAMEHA through FY 2001. The loss of these two ships will significantly reduce the numbers of SOF platoons we can covertly insert. Until 2012, when sufficient numbers of VIRGINIA Class submarines are available, we will retain only limited SOF insertion capability. I would point out that while carrying capability will remain a problem for a number of years, submarine insertion of SOF remains a favored method of covert insertion and adds much value to our force commanders in the littorals.

Communications Connectivity. Submarine communications capabilities are being substantially upgraded. The submarine High Data Rate (HDR) antenna program is the top priority submarine C4I initiative and is the Navy's first multi-band dish antenna. The HDR antenna will provide the submarine force with worldwide high data rate satellite communications capability. It will enable the submarine to access a variety of systems including the secure, survivable Joint Milstar Satellite Program in the Extremely High Frequency (EHF) band and the Global Broadcast Service (GBS). We will install HDR antennas on all SSNs by FY ' 04, thereby substantially improving SSN connectivity with the Battlegroup.

SSGN Study. The Navy currently has 18 Trident submarines that carry nuclear ballistic missiles. Pending ratification of START II by the Russian Duma or relief from congressional language, the first four SSBNs are scheduled to be removed from strategic service, two in FY '03 and two in FY '04. To keep all 18 boats in strategic deterrent service would require an additional $5-6 billion above what is currently planned. Such an additional burden would impact modernization efforts and would not materially improve our strategic capabilities.

The Navy is studying the concept of converting the first four Trident SSBNs to Tomahawk missile and special forces operating ships called SSGNs. The SSGN report is under review with the Office of Secretary of Defense. The Defense Science Board has concluded that conversion of up to four Trident SSBNs to an SSGN configuration represents a one-time, near term opportunity which would provide a platform with a high

capacity precision strike capability and which could function as a stealthy, long endurance, operating base for sustained Special Operating Forces campaigns. SSGN would also significantly reduce the 11-year gap during which we would be below desired SOCOM payload carrying capacity for SOF submarine insertion. SSGN is not currently a Navy program. Navy is continuing an internal assessment of this potential program, addressing resource implications. SSBN-SSGN conversion will be addressed in the program review for FY 2001.

Today's Need for Submarines. Madam Chairwoman, I would like to close my testimony by reiterating the critical need for submarines today. Our Navy's downsizing is very nearly complete and today's Navy is stretched thinner than during the Cold War. This nation builds the world's finest ships, but none of our ships, no matter how advanced, can be at two different locations at the same time. We see substantial *multi-mission pull,* as our deployed battle groups must do more with fewer ships.

Having served as a battle group Chief of Staff, I can tell you with full confidence that our submarine force delivers critical capabilities to our deployed battle groups and substantially mitigates this multi-mission pull. Submarines do this by providing unique intelligence that enables efficient placement of both other intelligence assets as well as battle group assets. Submarines also provide a surprising portion of each battle group's land attack capabilities- both Tomahawk and SOF. Faced with declining numbers of surface ships escorting each carrier, our battle group commanders can confidently employ a single submarine to conduct a sensitive mission while maintaining the cohesiveness and striking power of the remainder of the battle group.

The demand for submarines assigned independent missions is high as well. The best way to measure this demand is to look at the percentage of time our submarines are underway while deployed. In the past, nuclear powered submarines routinely spent 72% of their deployed time at sea. However, recently deployed submarines are typically spending over 80% of their deployed time at sea in order to meet high demand tasking. As I previously indicated, this tasking includes a doubling of the number of Intelligence, Surveillance and Reconnaissance missions conducted as compared to Cold War levels.

Because of the demonstrated capabilities of SSNs, the demand for submarines by CVBG commanders, theater CINCs and the National Command Authorities exceeds the number of submarines existing today or projected for tomorrow.

CONCLUSION. Innovative modernization of our current submarines and development of the superb VIRGINIA Class will ensure the U.S. remains the preeminent Submarine Force. With your continued help, we will continue to build the most advanced, technologically sophisticated submarines in the world.