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THE SENATE ARMED SERVICES COMMITTEE
STRATEGIC FORCES SUBCOMMITTEE

STATEMENT
OF
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BEFORE THE
SUBCOMMITTEE ON STRATEGIC FORCES
OF THE
SENATE ARMED SERVICES COMMITTEE
ON
FY 2022 BUDGET REQUEST FOR NUCLEAR FORCES AND
ATOMIC ENERGY DEFENSE ACTIVITIES
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Introduction

Chairman King, Ranking Member Fischer, and distinguished Members of the subcommittee, thank you for this opportunity to discuss the sustainment and recapitalization of the sea-based leg of the nuclear triad. It is an honor to testify before you today representing the Navy's Strategic Systems Programs (SSP) and the contributions the Navy provides to our national and global security.

The Nation's nuclear triad of intercontinental ballistic missiles, heavy bombers, and ballistic missile submarines (SSBNs) equipped with submarine-launched ballistic missiles (SLBM) is essential to the very foundation of our Nation's security and survival. The nuclear triad is the bedrock of our ability to deter aggression, to assure our allies and partners, to achieve U.S. objectives should deterrence fail, and to hedge against an uncertain future. While we are actively working to modernize our forces, U.S. modernization efforts lag behind those of our adversaries. As our Sea-Service leadership noted in December 2020's *Advantage at Sea*, "China's and Russia's aggressive naval growth and modernization are eroding U.S. military advantages. Unchecked, these trends will leave the Naval Service unprepared to ensure our advantage at sea and protect national interests within the next decade."

President Biden's Interim National Security Guidance reminds us that "[w]e must contend with the reality that the distribution of power across the world is changing, creating new threats. In today's threat environment, strategic deterrence is foundational to our national defense. Every Operational Plan across the Department begins with the assumption that strategic deterrence will hold. A safe, secure and effective nuclear force remains the most credible combination of capabilities to deter strategic attack and execute our national strategy. We must stay the course with nuclear and conventional force recapitalization commitments to ensure the Joint Force can operate when, where, and as required to defend our national interests. China, in particular, has rapidly become more assertive. It is the only competitor potentially capable of combining its economic diplomatic, military and technological power to mount a sustained challenge to a stable and open international system. Russia remains determined to enhance its global influence and play a disruptive role on the world stage. Both Beijing and Moscow have invested heavily in efforts meant to check U.S. strengths and prevent us from defending our interests and allies

around the world.” Per Secretary Austin’s Message to the Force, “[t]he Department will prioritize China as our number one pacing challenge and develop the right operational concepts, capabilities, and plans to bolster deterrence and maintain our competitive advantage.” Indeed, Great Power Competition has returned – and with it the need to recapitalize each essential and complementary component of the nuclear triad. This new framework demands we be ready for any threat, in any domain, at any time. Potential adversaries are exploiting seams below the level of armed conflict in an attempt to gain strategic advantage. We must account for the possibility of a conflict leading to conditions which could very rapidly drive an adversary to consider nuclear use as their least bad option. Given these conditions, I encourage you to draw one conclusion:

Our nation’s nuclear modernization initiatives must be fully funded.

The Navy provides the most survivable leg of the nuclear triad with the interdependent OHIO-class SSBNs and the TRIDENT II D5 Strategic Weapon System (SWS), which comprises both flight and shipboard systems. SSBNs are responsible for more than 70 percent of the Nation’s operationally deployed nuclear warheads that are subject to the New START Treaty. As the Chief of Naval Operations stated in his 2021 NAVPLAN, “[o]ur ballistic missile submarines provide an assured response to any strategic nuclear attack on the United States. OHIO-Class boats are nearing the end of four decades of service and must be replaced, making COLUMBIA-class program our top acquisition priority.” Furthermore, “[p]rojecting power and influence from the seas is vital to deterring aggression and resolving crises on acceptable terms. Our power projection capabilities alongside our strategic deterrent provide the surest guarantee of security for America and our allies” – this starts with deterring a nuclear attack against our nation with our ballistic missile submarines.

Concurrent with the delivery of the COLUMBIA-class is the need to develop the next generation of Trident II D5 SWS that will ensure the credibility of the sea-based strategic deterrent for the life of the COLUMBIA class. SSP’s core mission comprises two fundamental lines of effort: the safety and security of our Nation’s strategic assets entrusted to the Navy; and the design, development, production, and sustainment of the Navy’s SWS. We strive to maintain a culture of excellence, underpinned by rigorous self-assessment, to achieve the highest standards of

performance and integrity for personnel supporting the strategic deterrent mission. We focus unremittingly on our tremendous responsibility for the custody and accountability of our Nation's nuclear assets. The men and women of SSP, our Sailors, our Marines, our Navy Masters at Arms, our Coast Guardsmen, and our industry partners remain dedicated to supporting the strategic deterrence mission, to responding to the emerging needs of our warfighter, and to protecting and safeguarding our Nation's assets with which we are entrusted. We certainly could not do this without the support from this Committee.

The men and women of SSP and their predecessors have provided unwavering and mission-focused support to develop, sustain, and secure the sea-based leg of the triad for over 65 years. However, SSP's critical modernization bow wave is no longer part of the future—it is today. We are heading down a path from which we cannot turn away. Our workforce must evolve from years of sustainment efforts to the dual responsibilities of sustainment and development. Our industrial base has eroded under years of sustainment with minimal focus on future technologies. Investment in critical workforce skills, the industrial base, and complex technologies unique to strategic systems is essential to the Navy's ability to sustain not only today's sea-based strategic deterrent but to respond to emerging warfighter needs with cost-effective, creative, and timely solutions through the life of the COLUMBIA-Class SSBN.

As the fourteenth Director, it is my highest honor to serve as the program manager, technical authority, safety and security lead, regulatory lead, and Polaris Sales Agreement Project Officer for the Navy's nuclear weapons program. Most importantly, I am honored to represent the men and women of SSP, comprising approximately 1,500 Sailors, 1,000 Marines, 300 Coast Guardsmen, 1,400 civilians, and thousands of contractor personnel. It is my most critical goal to ensure they are poised to execute the mission with the same level of success, passion, and rigor both today *and* tomorrow as they have since our program's inception in 1955.

SWS Sustainment on OHIO-Class SSBN and Procurement for COLUMBIA-Class SSBN

Today's fragile relationship between sustainment of legacy systems and their replacements remains omnipresent in the calculus of effectively deterring adversaries. As previously stated, the Navy's highest priority acquisition program is the Columbia-Class submarine, which replaces

the existing Ohio-Class submarines. The Ohio-Class SSBNs begin decommissioning in the late 2020s, and the Columbia-Class must be ready to begin patrols no later than October 2030. Recapitalizing our SSBNs is a significant investment that only happens every other generation, making it critically important that we do it right and on time. Delays to the Navy's SSBN modernization plan are not an option. The continued assurance of our sea-based strategic deterrent requires not only a next class of ballistic missile submarines, but equally critical, a credible SWS – to include not just the weapon system itself, but the infrastructure and the people as well. The Navy is taking the necessary steps to ensure that the next generation deterrent is designed, built, delivered, and tested on time and provides flexibility and adaptability in the dynamic threat environment that ADM Richard mentioned before this committee at an affordable cost.

To lower development costs and leverage the proven reliability of the TRIDENT II D5 SWS, the COLUMBIA-Class SSBN will enter service with the same functionality and performance of the currently deployed TRIDENT II (D5) SWS including the life extended TRIDENT II D5 missile, which resides on today's OHIO-Class submarines. Maintaining a common SWS during the transition between existing and successor submarine platforms allows the Navy to leverage a mature material and knowledge enterprise, thus reducing programmatic costs and risks. Life-extended missiles will be shared with both the OHIO- and COLUMBIA-Class submarines in the U.S. and with the UK VANGUARD-Class and DREADNOUGHT-Class submarines into the 2040s.

Another major initiative to reduce risk associated with the overhaul of the sea-based strategic deterrent is the SSP Shipboard Modernization Program, which manages obsolescence and modernizes SWS shipboard systems through the use of open architecture design and commercial off-the-shelf hardware and software wherever feasible. The Shipboard Modernization Program refreshes shipboard electronics hardware and upgrades software, which will extend service life, enable more efficient and affordable future maintenance of the SWS, all while ensuring we continue to provide the highest level of nuclear weapons safety, security, and performance for the deployed SSBNs in order to meet U.S. Strategic Command (USSTRATCOM) requirements. The in-progress incremental upgrades to the SWS shipboard systems resident on the OHIO-Class are also linchpins to the timely delivery of the COLUMBIA-Class SSBNs. Modernization of the

SWS shipboard systems leverages engineering techniques and methodologies and embraces model-based engineering design practices in order to effectively respond to today's ever changing environment. The Navy's strategy of addressing obsolescence while simultaneously providing warfighter capability highlights the unique complexity of sustainment and modernization of our nation's nuclear deterrent.

TRIDENT II D5 Life Extension and Life Extension 2

The TRIDENT II D5 SWS capability has been deployed on the OHIO-Class ballistic missile submarines for nearly three decades and is planned to be deployed more than 50 years. This demand for service life from today's high-performing systems has resulted in a missile life extension effort to match the OHIO-Class submarine service life and, in concert with the Shipboard Modernization Program for shipboard systems, to serve as the initial SWS for the COLUMBIA-Class SSBN. The D5 Life Extension (D5LE) will ensure an effective and credible SWS on both the OHIO-class and COLUMBIA-Class SSBNs into the 2040s. Our initial life extension of missile and guidance flight hardware components was designed to meet the same form, fit, and function of the original system, maintain the deployed system as one homogeneous population, control costs, and sustain the demonstrated performance of the system. The Navy's D5LE program is executing on schedule to continue to meet deterrence requirements and will complete deployment by FY 2024.

As the Navy carefully manages the approach to end of life of our OHIO-Class SSBNs, we must address the viability of the SWS throughout the life of the COLUMBIA-Class SSBNs. Twelve COLUMBIA Class SSBNs will replace today's 14 OHIO SSBNs and beginning in FY30 D5LE missiles will support initial load-outs on COLUMBIA (Hulls 1-8). Production of additional D5LE missile is not practical due to unavailable technologies and lack of an industrial base. The TRIDENT II D5 Life Extension 2 (D5LE2) program is required to modernize and replace D5LE to support later COLUMBIA Class missile inventory starting in FY2039 (targeting COLUMBIA Hull 9 and will backfit Hulls 1-8 during their Extended Refit Period) to continue to meet USSTRATCOM requirements. D5LE2 will ensure the weapon system maintains demonstrated performance and remains survivable while facing a dynamic threat environment until COLUMBIA end of life. D5LE2 is a hybrid of pull-through cost-effective technology (e.g. solid

rocket motors, ignitors) and redesigned and updated components (e.g. avionics, guidance, system architecture). D5LE2 is structured to maintain today's unmatched reliability and demonstrated performance, while unlocking untapped system potential to efficiently respond to emerging needs and to maintain a credible deterrent throughout the life of the COLUMBIA-Class.

In FY20 and continuing in FY21, SSP began system architecture studies to evaluate solutions to problems associated with emerging threats, supportability, and adaptability required to address challenges in an uncertain future. Additionally, these studies focused on missile and guidance technology to determine the effective composition of redesign, remanufacture, and pull-through of highly reliable components. This ensures longer lead unique SLBM subsystems are mature in FY28 and FY29 to then be able to support large facility proofing and flight testing off a manned platform in the mid-2030s and Low Rate Initial Production (LRIP) in FY34.

Unlike SLBM programs of the past, D5LE2 does not have the benefit of a healthy industrial base that comes from maintaining continuous development. These early efforts will be critical to reconstituting the SLBM industrial base to restart production on critical components whose production lines were shut down over the last decade. In short, full support of D5LE2 today is vital to achieving 2039 Initial Fleet Introduction (IFI) and to embarking on a path that maintains an SLBM deterrent capability through the service life of the COLUMBIA-Class SSBN.

Warhead and Reentry Body Activities and NPR Supplemental Capabilities

The Navy also works in partnership with the Department of Energy's National Nuclear Security Administration (NNSA) to refurbish our existing reentry systems and development of new reentry systems in response to USSTRATCOM requirements. The TRIDENT II (D5) missile is capable of carrying two types of warhead families, the W76 and the W88, and the W93 warhead will be designed for use on both the D5LE and D5LE2 missiles. In 2019, NNSA completed the W76-1 Life Extension Program, marking the U.S. stockpile's first full-scale warhead refurbishment program. The Navy is now working on modernizing integrated aeroshells that house these warheads through the Mk4B program with the inclusion of a Shape Stable Nose Tip, which reduces reentry variability and improves performance margins.

The W88 warhead continues to undergo its refurbishment program on a revised timeline based on capacitor component issues that did not meet reliability requirements. The Navy and NNSA coordinated on tightly coupled schedules for the fleet, the nuclear enterprise weapons complex, and production of affected non-nuclear components to propose an 18-month delay to the original schedule that was approved by the Nuclear Weapons Council (NWC). The program remains on track for reaching a First Production Unit in July 2021. I am confident that our teams will work together to manage the delay, as we have historically addressed refurbishment challenges with a mission-focused attitude and rigor. The Navy will prioritize meeting our warfighters' requirements and minimizing disruption to the operational fleet to ensure that the sea-based leg of the triad continues to fulfill its deterrence mission. However, this program setback is indicative of the pervasive and overwhelming risk carried within the nuclear enterprise as refurbishment programs face capacity, historical funding, and schedule challenges.

In 2021, the Navy entered Phase 1 of the joint DoD-DOE Nuclear Weapons Lifecycle Process with NNSA for the W93/Mk7. This effort will address evolving ballistic missile warhead modernization requirements; improve operational effectiveness for USSTRATCOM; and mitigate technical, operational, and programmatic risk in the sea-based leg of the nuclear triad while simultaneously reinvigorating the atrophied industrial base and modernizing a Cold War era stockpile. W93/Mk7 will provide flexibility and adaptability to meet future warfighter needs. With the near simultaneous age out of the deployed stockpile in the 2040s, the W93/Mk7 will help address production concerns in the weapons complex and ensure a continuous at sea deterrent for the sea-based leg of the nuclear triad. FY 2021 initial investment supports the reinvigoration of critical, niche national skillsets and capabilities uniquely associated with harsh reentry environments, and therefore, is applicable to both the Navy and Air Force future needs. Even with the addition of the W93 to the stockpile, we will not increase the deployed stockpile. The Navy will work in close coordination with the Department of Defense, NNSA, the NWC, and the Congress as this effort matures, but we cannot continue to life extend our leftover Cold War era weapons and systems and successfully carry out our national strategy.

Finally, SSP will continue to support the Navy's FY 2021 Analysis of Alternatives (AoA) for the 2018 NPR-directed nuclear-armed Sea Launched Cruise Missile (SLCM-N). The initial study for this AoA has been submitted to the DoD's Office of Cost Assessment and Program

Evaluation (CAPE) to better inform decisions surrounding potential gaps in the full spectrum of deterrence.

Industrial Base and Infrastructure

The nation requires a fully modernized nuclear force and supporting infrastructure to execute our national strategy. Our modernization needs cannot succeed without investing in the research and development (R&D), critical skills, and facilities needed to produce, sustain, and certify our nuclear systems. Ensuring robust defense and aerospace industrial base capabilities—such as radiation-hardened electronics, strategic inertial instrumentation, and solid rocket motors—remains an important priority in conjunction with R&D investment. SSP has placed particular emphasis on the solid rocket motor industry and its sub-tier suppliers and appreciates the support of the Congress to allow for the continuous production of these vital components. Essential to the nuclear deterrent, is a national aeroshell production capability. The Navy has not delivered an integrated aeroshell since the 1980s and needs to reinvigorate a production capability that only resides in a small cadre of highly skilled experts in an exceptionally niche industry. Aeroshell investment supports the Navy but will also be cost-effectively leveraged by our colleagues in the Air Force – and also our strategic partners in the United Kingdom as they pursue their independent reentry program endeavors. Finally, R&D investment is critical to today’s nuclear modernization needs to ensure that we advance necessary technology ahead of design needs and to train our workforce during the early years of development. If the nation does not continue to address these concerns, no amount of money will be able to adequately mitigate the risks associated with key stockpile and infrastructure losses for as many as 5 to 10 years.

From an infrastructure perspective, our program is entering unprecedented times. Existing facilities are reaching their 30-year recapitalization windows while we simultaneously face weapons systems modernization periods in order to meet future requirements. Investing in facility sustainment and modernization is required for cradle-to-grave operations. Appropriate Military Construction (MILCON) and Facility Sustainment, Restoration, and Modernization (FSRM) resourcing is critical to the Navy maintaining a credible deterrence to include providing more than 70 percent of the Nation’s operationally deployed nuclear warheads. We will make smart investments to address through-put constraints and build in surge capacity to address

requirements presented by new and emerging threats. The Navy relies on a limited footprint to process missiles and outfit the SSBNs. Maintaining and sustaining facilities is critical to meeting USSTRATCOM and Fleet mission requirements. Our nation, and the Navy, will continue to prioritize and resource the sustainment and modernization of its nuclear infrastructure enterprise to provide an effective and flexible deterrent now and into the future.

As the Navy executes the modernization and replacement of the SSBN and associated SLBM leg of the nuclear triad, DoD and NNSA's infrastructure must be prepared to respond in tandem to the evolving needs of the Nation. Of most importance, we must have an effective, resilient, and responsive plutonium pit production capability. This capability can address age-related risks, support planned refurbishments, as well as prepare for future uncertainty. Additionally, tritium, lithium, and uranium, and high explosives and energetics, among other strategic materials, are vital to ensuring the Navy can continue to meet its strategic deterrent requirements. Efforts to sustain and modernize deterrent forces must continue. Our strategic forces underpin every military operation around the world, and we cannot afford to delay given the increasing threats facing our nation.

Workforce

History reminds us that the swift, successful creation and execution of the Fleet Ballistic Missile program in the 1950s was truly a result of national commitment, congressional support, and cadre of hand-selected scientists, engineers, and inspirational leaders. Though process will always underpin our efforts, our dedicated predecessors—civilians, military, and industry partners alike—responded to the national need with focused determination and drove this program with a vision. People are as fundamental to our nuclear deterrent as the SWS itself. Today, SSP and its industry partners are focused on inspiring, growing, and retaining a generation of workforce that did not live through the darkest days of the Cold War. Connecting a new workforce to this fundamental global security mission remains an important task shared among the entire nuclear enterprise. A capable, credible, and affordable strategic deterrent for our Nation for the next 60 years requires not only technical, policy, management, and financial acumen—it requires passion and a commitment to making this our life's work.

Truly, 2020 was an unprecedented year. I would like to take this opportunity to highlight some of the outstanding work the SSP team has done to continue to execute on our mission despite the uncertain environment:

SSP took an aggressive COVID-19 Testing and Vaccination posture for our Security Force commensurate with Tier 1 units to ensure their availability and to maintain the Nuclear Weapons Security Standard (NWSS). Additionally, we developed contingency plans to reinforce our security teams in order to mitigate COVID19 impacts. To date, we have not had to implement any of the contingency plans. We worked with nuclear policy leadership for the Secretary of Defense and Chief of Naval Operations staff to provide relief to some of the administrative training and PRP requirements in order to allow the force to remain focused on maintaining the NWSS and minimize interactions required across the force. We worked with our Marine Corps counterparts to adjust our Concept of Operations to maximize social distancing and minimize transmission by addressing guard rotations, reduction of security posts where possible based on operational requirements (ex. reduction of entry / exit lanes and associated guards commensurate with reduction of operations and personnel due to COVID (more people teleworking, less people have to enter area)), barracks berthing assignments, cleaning cycles, Personal Protective Equipment requirements, and aggressive contact tracing that minimized interaction between individual cohorts. Finally, we maximized the use of virtual inspections or using personnel already at that geographic location with the appropriate subject matter expertise in order to minimize external vectors that could negatively impact the security force. The combination of common sense measures and innovative tactics have enabled SSP to continue to deliver results despite the pandemic, and I am confident we will emerge from these tragic and unprecedented events stronger and more resilient than we were a year ago.

Polaris Sales Agreement: Support to the UK

Development of the future SWS not only addresses known U.S. risks, it also supports the UK's critical need to recapitalize its deterrent. This is essential to our NATO partners' overall defense posture. Under the auspices of the Polaris Sales Agreement and the Mutual Defense Agreement, the paths and tools are in place to ensure each nation's sovereign needs are met. A critical component of the COLUMBIA-Class Program is the development of a Common Missile

Compartment (CMC) with the United Kingdom. Today, the U.S. Navy shares the TRIDENT II (D5) SWS with the UK aboard its VANGUARD-Class of ballistic missile submarines, through the Polaris Sales Agreement (PSA). Similar to the U.S. Navy, the UK's Royal Navy is recapitalizing its four aging Vanguard-Class SSBNS with the DREADNOUGHT-Class SSBN. the CMC will support today's TRIDENT II D5 SWS that will be deployed as the initial loadout on both COLUMBIA and the UK DREADNOUGHT-Class SSBNs. Our partnership with the UK also supports production of these two new classes of SSBNs in both U.S. and UK build yards. Ensuring that the COLUMBIA-Class program remains on schedule supports not only our Nation's operational requirements, but also the ability of the UK, one of our most important allies, to maintain its Continuous at-Sea Deterrent. For decades U.S. policy has recognized that the independent British nuclear deterrent adds to joint efforts to deter aggression and attack against NATO and thereby positively contributes to global stability. Under the 1958 Mutual Defense Agreement and the 1962 Polaris Sales Agreement, the United States has provided assistance and material, consistent with international law, to the UK deterrent program. Without this assistance, the cost to the UK associated with maintaining its independent deterrent would rise significantly and would certainly have a negative impact on the UK's ability to maintain conventional and intelligence capabilities which the US and NATO rely on to deter aggression and attack.

Conclusion

In keeping with the Administration's Interim National Security Guidance, the United States must renew its enduring advantages so that we can meet today's challenges from a position of strength. Our Nation's sea-based strategic deterrent has been a critical component of our national security since the 1950s and must continue to assure our allies and partners and to deter potential adversaries well into the future. SSP ensures a safe, secure, effective, flexible, and tailorable strategic deterrent, with a steadfast focus on the proper stewardship, custody, and accountability of the nuclear assets entrusted to the Navy. Sustaining and modernizing the sea-based strategic deterrent capability is a vital national security requirement. I am privileged to represent this unique organization as we work to serve the best interests of our great Nation. I thank the committee for the opportunity to speak with you about the sea-based leg of the nuclear triad and the vital role it plays in our national and global security.