STATEMENT OF

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Introduction

Madam Chairwoman, Senator Kennedy, distinguished members of the Senate Seapower Subcommittee, thank you for the opportunity to discuss the Surface Navy's role in the 21st century.

It has been my privilege to serve as Director of Surface Warfare for the past 22 months. I want to thank you, first and foremost, for the Committee's broad support, and, in particular, for taking the lead for substantive military pay and benefit raises that were part of last year's appropriations, to include the Surface Warfare Officer's Continuation Pay (SWOCP). Response to the SWOCP bonus was tremendous and reaffirmed Navy leadership's sincere concern and commitment to the careers of its Junior Officers.

People

As the CNO mentioned last month during his testimony, "Navy priorities are unchanged. The number one short-term priority is our people. The number one long-term priority: ships and aircraft in sufficient numbers to ensure our operational primacy throughout this century." Our continued focus on these priorities lead to accomplishment of our number one responsibility – mission accomplishment.

Our people are our greatest resource. There is no more compelling need than their welfare and that of their families. From enough spare parts, to the best tools and training, to the right compensation package for them and their families, nothing is more critical than providing the "quality of service" (quality of life plus quality of work) they deserve while defending our country. And they are the key to our success.

I have a commitment to our Sailors to provide a standard of living commensurate with their commitment and sacrifice. We are coming closer to providing monetary compensation equal to that of their civilian counterparts, and this is essential to retaining our best and brightest Officers and Sailors.

Taking care of our Sailors also means providing them the ships and resources necessary to sail safely in peace and prevail in war. We have moved ahead in adequately funding readiness, recapitalization, modernization, and people, but we clearly have to do more. We are committed to wise fiscal management and building systems capable of meeting the threats of today and tomorrow in these unpredictable times.

Junior Officer Retention

Last year, I spoke to you about a shortfall in retention that we were experiencing in the Surface Warfare Officer Community. I would like to provide you with an update of this important issue which is integral to the future of surface warfare. Retention for junior officers has been in steady decline for a decade from an historic average percentage of mid-30's, bottoming out in 1995 at 17% and slowly recovering to 24% in '98. Required retention of division officers to meet department head requirements for the next five years is from 34-38%, depending on year group size. The greatest impact of this low retention is the overtouring of surface line department heads aboard ships. Tour lengths of 36 months had grown to over 40 months with no end in sight.

Since I last spoke to you, the CNO and Fleet Review Board have made significant inroads in reducing the most onerous and inefficient requirements of the Inter-Deployment Training Cycle (IDTC). The CNO approved certain FITREP changes that remove some of the deleterious aspects on junior officers reports. The Surface Type Commanders had already embarked on an ambitious program to improve life aboard ships, particularly in homeport. We initiated the Early Roller Program to identify outstanding division officers to proceed to Department Head School early and we have 99 participants to date. Last but not least, Surface Warfare Officer Continuation Pay (SWOCP) is a reality. To date, 1217 officers have taken the SWOCP. Our FY00 goal is 1437. We are at the 84.7% of our first year goal, and confident we will reach it.

The figures for 1999 indicate a small but what we believe to be a significant improvement in JO retention to 26.6%. As a result of our Early Roller and SWOCP Programs,

Department Head classes are full again. Department Heads reporting to their ships in April 2000 can expect to serve 36 months as a Department Head. This is a big success story. We are turning the corner in our junior officer retention, but we are not there yet and must sustain the momentum.

"A Maritime Century"

The United States is today, and will remain, a maritime nation. Since the founding of the Republic, a sense of the importance of the sea to our nation's health and well being has been deeply rooted in our national character. We have recently worked with the Marine Corps to develop the organizing principles by which new naval concepts and capabilities will contribute to U.S. access and influence. This maritime concept is built upon two fundamental concepts: our enduring role of forward presence...and knowledge superiority, an emerging aspect of our operations that is truly transforming the Navy.

The enduring Navy-Marine Corps contribution to national security is combat-credible forward presence. Naval forces present and engaged forward -- where our most vital economic, political, and military interests are concentrated – routinely provide a framework of security and stability that helps other instruments of national power to shape regions of interest. During crisis or conflict, forward-deployed and forward-based naval forces are positioned for timely response. This same Navy-Marine Corps team, at the "tip of the spear," can enable the projection of joint and combined power into a theater of operations.

The Navy is building upon this expeditionary tradition, while at the same time transforming into a "network-centric" and "knowledge-superior" Service. Knowledge

superiority is the achievement of a real-time, shared understanding of the battlespace by warriors at all levels of command using high speed, high capacity networks and sensors. This understanding of the battlespace will facilitate our ability to remain forward by providing the means for timely and informed decisions... inside any adversary's sensor and engagement timelines. Knowledge superiority will allow us to be a more appropriate instrument for shaping and engagement during peacetime. It will also provide naval forces awareness of the threat and the ability to synchronize our actions for confident and timely combat operations.

The core objectives of our national security strategy will best be accomplished through a well-defined policy of political, economic, and military engagement on a global scale. In order to "engage" to shape the security environment in areas of our national interest, we must "be there." "Being there" demands almost continuous operations throughout the world's littoral regions. The realities of geography bound the challenge: 222 of the world's 265 countries border the sea and 75 percent of the world's population inhabit the littorals. It is essential for the United States to maintain a policy of forward engagement in these vital regions, in order to influence events in a way that is satisfactory to our long term strategic objectives. Naval forces provide this capability. Investment in them in order to preserve peace and stability is far less expensive than war.

Recent events testify to the increasing use of surface naval forces for forward engagement. In the 84 months between 1992 and 1999, naval forces responded to 80 contingencies. The unsettled nature of the international environment, coupled with the marked decline in our ground forces stationed overseas since the end of the Cold War, highlights the vital role played by surface combatants. There is no clearer signal of America's commitment

than a U.S. Navy warship off the coast, a multi-warfare dreadnought built to respond across the full spectrum of conflict in this, our Maritime Century.

I am proud to report our presence overseas is backed up with the capability to accurately place ordnance on target when directed by the National Command Authorities. Events in Kosovo and Iraq last year demonstrate the commitment and professionalism of U.S. Navy Sailors and the quality of the weapons we buy, in this case the Tomahawk cruise missile. Tomahawks led the way, day and night, in all weather conditions, with little concern for integrated air defenses, damaging or destroying 90% of assigned targets. Most significantly, Tomahawk validated its use as a tactical weapon during "Operation Allied Force," with unprecedented response rates allowing the targeting and destruction of mobile targets. Anytime, anywhere, projecting power remains the hallmark of our worldwide forces. Our future is validated by our past.

However, we are not content with our achievements, because we know adversaries continue to formulate strategies against us. Our response is continued emphasis on Assured Access and Projected Defense capabilities. Assured Access is our guarantee to defeat or negate an adversary's area denial strategy. The corollary to Assured Access, Projected Defense, is the ability to defend ourselves, forces ashore, and our homeland and those of our allies, with at-sea forces. These capabilities can be exercised without regard to the access and sovereignty issues that may hamper the rapid and effective use of land-based forces, and are crafted around a vision for the future, a vision that underscores our enduring mission of Maritime Dominance. This vision also incorporates our two new emerging missions, Theater Ballistic Missile Defense (TBMD), as part of Theater Air Dominance and Long-Range Precision Strike, as part of Land Attack. You can look at Maritime Dominance as what we do in order to get our Sailors there;

Theater Air Dominance is what we do that keeps us there; and Land Attack is what we do while we are there. From a foundation of Maritime Dominance, we will ensure entry and full participation in the 21st century joint battlespace through the twin missions of Land Attack and Theater Air Dominance.

Maritime Dominance

Today your Surface Navy maintains unquestioned superiority of the seas. However, continued maritime dominance requires a paradigm shift from platform centric to network centric warfare. This shift includes advancements in the distribution of firepower, with the ability to share extremely accurate raw sensor measurement data in real time between ships, aircraft and land-based units. This technique, known as sensor netting, is fundamentally different from the current practice of transmitting highly processed track information between units. Previously existing tactical data link systems did not possess the throughput and data processing capacity required to achieve sensor netting, but in the Cooperative Engagement Capability (CEC) we have the Navy's initial entree into the Network Centric Warfare construct for the new century.

CEC will permit coordination of air defense sensors and data integration of such fidelity that a network of individual systems will operate as a single distributed air defense system. If any one sensor can "see" well enough to engage, every unit "on" the network will be able to engage. High quality sensor data and fire control weapons information will pass among multiple units where it will be automatically integrated into each unit's combat system. As a result, engagement decisions will be automated and executed in real time across the entire force. Over

this past year we successfully rounded the corner on some initial technological challenges, and remain commited and excited about the capabilities of this evolving technololgy.

There is an equally compelling need to invest in the aviation aspect of our Surface Navy. The SH-60R armed helicopter is critical to our warfighting capability. Its role takes on even greater significance as onboard assets to our new Flight IIA ARLEIGH BURKE destroyers, which rely on the SH-60R to fill the void created by loss of towed array sonar and Harpoon missile launchers in its design.

Land Attack

While continuing its traditional maritime battlespace role in the 21st century, the Navy's focus has shifted to include developing capabilities to distribute offensive firepower among a number of platforms on, under, and above the water, and adjoining land mass. Operating in the littoral, often in shallow waters in close proximity to merchant and civilian shipping, with sensors masked by landmasses and the urban environment, poses an enormously complex warfighting challenge. Such an environment requires integration of sensors and combat systems in a common tactical picture. With battlespace and engagement timelines severely reduced, response times are greatly diminished.

Land attack is a critical part of conducting operations in the littoral. The land attack mission includes the capability to conduct precision engagement of the enemy in support of offensive operations against strategic and tactical targets or in support of friendly forces ashore. Today, Land Attack encompasses a myriad of tasks from long-range strategic precision strikes with Tomahawk cruise missiles to providing precision Naval Surface Fire Support to Marines or other forces on the land. Tomorrow, with a commitment to DD21 and Cruiser Conversion, the

Navy will greatly extend the depth and breadth of the land battle capability with the Advanced Gun System (AGS) capable of delivering 155mm Extended Range Guided Munitions (ERGM), the Advanced Land Attack Missile (ALAM), and Tactical Tomahawk (TACTOM). DD21 is the centerpiece of our Land Attack programs and is my top priority in the FY01 budget. Congress' unwavering support is critical to meeting the warfighting requirements for both the Navy and Marine Corps. Additionally, the Cruiser Conversion program, with its two 5 inch 62 caliber guns and Standard Missile-4 land attack missile (LASM), is vital for the Navy to meet the future warfighting requirements in Land Attack.

Our full participation in the joint battlespace is a technological extension of our proud heritage as a Navy/Marine Corps team. Our nation still needs the combined capabilities of the Navy/Marine Corps team and we continue to work closely with the Marine Corps to ensure the mutual development of capabilities and doctrine supportive of *Operational Maneuver from the Sea (OMFTS)* and *Ship-to-Objective Maneuver (STOM).* I am proud to say that the long-term goals and objectives of both services have never been more closely linked. The Navy/Marine Corps Team in the 21st Century, reinforced with the introduction of DD21, Cruiser Conversion, and LPD17, will dominate both "blue" and "littoral" waters, decisively influencing the joint land battle.

Theater Air Warfare Dominance

It has been a good, solid year in Theater Air Warfare and our Surface Navy is well positioned to continue positive movement. Our greatest contribution and our niche area for TBMD is as a "Mobile Sensor and Shooter," expanding the TBMD battlespace and increasing engagement opportunities. No one else can do that! A sea-based TBMD capability will likely

be the first on scene and will complement any air and land based systems being brought into theater. Further, the inherent capabilities of Naval Ships provides the CINC with a flexible, mobile, and highly responsive capability for defense of Amphibious Operating Areas, debarkation ports, joint combatant and logistics expeditionary forces, and designated inland regions over the entire theater of operations. The ultimate in Projected Defense!

When operating with other components of the TBMD family of systems like THAAD and PAC-3, the Navy TBMD systems (Navy Area and Navy Theater Wide) provide for defense in depth through early engagement of Ballistic Missiles, and ultimately enhanced TBMD protection for the forces ashore. To meet the TBM challenge, the Navy and the Ballistic Missile Defense Organization are developing a family of systems which includes sea-based TBMD capabilities. The Navy's Lower Tier systems, entitled "Navy Area" will provide area defense. The Upper Tier System, "Navy Theater Wide," will expand the engageable threat set, to include intercepts of Medium to Long Range TBMs in the exo-atmosphere with the Standard Missile–3, currently in development. The increased speed, and range of the SM-3 will eventually give the Theater Wide System the ability to engage TBMs in the ascent, midcourse and descent phases of flight, significantly increasing the size of the defended area. The remainder of this year we will validate our role in both Area and Theater Wide systems as we prove significant capabilities in guidance control and seeker development through live fire testing at sea and at test ranges. By the end of the year, we will have recognized Navy programs. Congress' support has been critical to getting these programs started. They now must be adequately funded and the Director, Ballistic Missile Defense Organization (BMDO) has accurately reflected the additional funding requirement for these two programs in his unfunded requirements list letter of 24 March 2000.

Translating Vision to Reality

Successful strategic thought is highly pragmatic, and such is our approach towards conducting future operations in the littoral. To be successful, we will evolve in stages, taking into account both changes in technology and the reality of the nation's near-term security requirements. This "measured" approach is reflected in the Navy's approach to littoral operations in the 21st Century.

Two perspectives are guiding our approach to the future. First, our determination of force structure and requirements are no longer threat-based, but capabilities-based. There is no longer a need to develop platforms designed to sweep the Soviet Navy from the seas. Instead, we can evolve a modernized Navy and design and build revolutionary platforms to influence events ashore, operating alone or in consonance with joint, allied, or coalition forces.

Second, our transition strategy is both evolutionary and revolutionary. The former allows us to leverage off the capabilities of what is already a great Navy. Evolving platforms currently at sea to meet early 21st Century requirements maximizes their "return" to the fleet and the American taxpayer. When technology permits and warfighting requirements demand both a technical and conceptual leap forward, such as DD-21, a true "revolution" in sea-based combat capability will result. The Surface Navy stands at the threshold of a true revolution in the application of sea-based military capability. Through developments in connectivity dramatically increasing the distribution and availability of data on the network, the Navy will develop the ability to widely distribute offensive firepower among a host of platforms: surface, air, and subsurface. In the final analysis, the Surface Navy will be interoperable with joint forces in net-

centric C4ISR and provide maritime force protection, precision strike and sea-based artillery, and theater air and ballistic missile defense to the air, land, and sea elements of the joint task force.

Surface Combatant Force Structure

Maintaining the Current Surface Combatant Force: Readiness

Historically, surface ship depot maintenance requirements were less rigorously defined than those of our submarine and aircraft carrier forces, resulting in reduced funding levels. This is changing. Previously, the surface ship maintenance program was based on outdated, "notional" requirements which failed to keep pace with changes in force structure or maintenance practices. Further, maintenance had migrated from less glamorous, but still important, distributed systems such as tanks, piping, and foundations, to short-term readiness-critical repairs like pumps, weapon systems, generators, etc. This created the situation where short-term readiness indicators were at historically high levels, while distributed system maintenance, as measured by INSURV inspections and increasing surface ship maintenance backlogs, had deteriorated significantly. That is where we are today.

To correct that problem, we are working with the Fleets to implement a new Maintenance Requirements System (MRS), which provides a depot maintenance requirement that is accurate, complete, believable, and defensible. This system uses historical execution data (return costs) coupled with estimated costs of validated deferred maintenance to project the *total* maintenance requirement for our surface forces. Additionally, we have placed increased emphasis on Condition Based Maintenance, where maintenance is only performed when there is objective evidence of need, while ensuring safety, equipment reliability, and reduction of Total Ownership Cost. This new approach is evidenced by initiatives such as the Surface Ship Maintenance

Effectiveness Review (SURFMER) for Sailor-performed maintenance and the Integrated Class Maintenance Plans for maintenance performed at Depot and Intermediate levels. To date, SURFMER has achieved a 35 percent reduction in planned shipboard Sailor maintenance requirements.

Finally, we have backed these initiatives with a renewed commitment to increase our funding level for depot maintenance in future years.

Building the Future Surface Combatant Force

As I testified last year, the 1997 Quadrennial Defense Review (QDR) established a level of 116 surface combatants as the minimum essential level. While the QDR stressed this force level was, "an acceptable level of risk," I would like to repeat that, "The Surface Navy cannot accept any more risk." As the CNO stressed in his testimony last month, "Our number one long term priority: ships and aircraft in sufficient numbers to ensure our operational primacy throughout this century." Analysis conducted to support the Surface Combatant Force Level Study (SCFLS) indicates the 1997 QDR number of 116 ships is no longer sufficient.

I continue to be immensely challenged to provide adequate resources to sustain current readiness of our deployed forces and simultaneously provide sufficient resources to apply to our recapitalization and modernization efforts. The FY 1999 Supplemental and the FY 2000 Appropriation adds have helped offset shortfalls and unfunded requirements in these areas. But our operational experience and the high demand for forward-deployed surface forces continue to result in the need to prioritize operational accounts at the expense of future readiness and shipbuilding. I do not expect any relief in the foreseeable future, and I anticipate that current

readiness of deployed forces, as was the case this year, will remain central to our budgetary decision making.

The President's Budget Submission for 2001 shows this challenge in the shipbuilding account. While the final plan reflects the same new ship construction program for FY01 as last year, there has been a reduction of two ships across the FYDP. Tight budgeting practices over the past several years in support of maintaining current readiness forced us to make some tough decisions across all shipbuilding programs this year, but in particular for surface combatant programs. DDG51 ship acquisitions were rephased and stretched across the FYDP as compared to the FY 2000 budget just enacted. Acquisitions for the DDG51 class ships changed from three ships per year in FY00-03 to a 3-2-2-2-1 profile starting in FY01. This change results in a net increase for the DDG program of one ship, and was needed to offset the industrial base impact of delaying the lead ship of the next generation surface combatant – DD21 – from FY 04 to FY05. However, these two changes in combination resulted in a net decrease of two surface combatants across the FYDP as compared to last year's budget.

The Vice Chief of Naval Operations testified last month that, "…increasing our investment to support the recapitalization and modernization of our Navy is essential to maintaining operational primacy. Adequate readiness can only be sustained in the future with a modernization and recapitalization program that delivers sufficient numbers of technologically superior platforms and systems to the Fleet." We in Surface Warfare are committed to this effort. The Surface Navy is building DDG51 ARLEIGH BURKE Class destroyers today. We have developed a modernization plan for our CG 47 TICONDEROGA Class Cruisers and procurement is programmed to begin in FY02, with the first install scheduled for 2004. This mid-life refurbishment program will add Area TBMD, AADC (for Baseline 3 & 4 only) and 5

inch 62 caliber Land Attack Gun upgrades into 22 ships and extends their service life to 40 years. The DD21 Land Attack Destroyer program – the next generation of surface combatant – represents the Surface Navy's commitment to the future and is my top priority in FY01.

As you will see in the chart below, the SCN plan associated with this year's President's budget has given back two of the eight ships we gained last year. Additionally, you will notice the rephasing of several shipbuilding programs in the outyears of the FYDP. These changes are indicative of the fiscal challenges we face today and are likely to face in the immediate future.

Shipbuilding Plan

Quantity	FY00	FY01	FY02	FY03	FY04	FY05
CVN-77	AP	1	-	-	-	-
CVX	-	~~0~~ AP	AP	AP	AP	AP
VIRGINIA SSN	AP	1	1	1	1	1
DDG-51	3	3	~~3~~ 2	~~3~~ 2	~~0~~ 2	~~0~~ 1
DD-21	0	0	0	~~AP~~ 0	~~1~~ AP	~~3~~ 1
LPD-17	2	2	2	2	2	0
LHD	~~0~~ AP	0	0	0	~~AP~~ 0	1
JCC	0	0	0	0	1	1
T-ADC(X)	1	1	~~2~~ 3	~~2~~ 3	~~3~~ 2	~~3~~ 2
Total New Con	6	8	8	8	8	~~9~~ 7
CVN RCOH	AP	~~1~~	~~AP~~ 1	AP	AP	~~1~~
SSN ERO	2	1	1	2	1	2
Sub Force Enhancements	-	-	TBD	TBD	TBD	TBD

Rephased DDGs and Delayed DD 21for a Net Reduction of 2 Ships;
Rephased TADC; Moved SSN RCOHs into SCN from OMN.

As I mentioned last year, there are several programs in the near term which are critical to the Surface Navy's ability to remain preeminent in controlling the battlespace and projecting power ashore. These are:

- DD21
- Adaptation of the DDG51 class to the Littoral
- Cruiser Conversion

- and, this year I have added one more, JCC(X)

DD21

DD21 is my number one priority in FY01 and its 2005 procurement is imperative to meet our future joint warfighting requirements. Navy has added a significant amount of R&D to DD21 and moved the first ship from a FY04 to FY05 start. This R&D investment is critical to develop the "leading edge" technologies associated with DD21; technologies which will not benefit only DD21, but the rest of the Navy. Some of them include reduced signatures; integrated power systems including electric drive; reduced manning; multi-function apertures; and total system computing. These technologies will apply to a wide range of ships. DD21 leads the way. The schedule change from FY04 to FY05 is likewise critical as this additional 12 months provides the time to satisfactorily reduce the risk to develop the advanced capability on DD21. The combination of increased R&D and moderated schedule is exactly right.

DD21 will be a multi-mission combatant which will establish and maintain land attack and maritime dominance superiority over the surface, subsurface and local air battlespace, providing independent forward presence and deterrence, as well as operating as an integral part of Joint and Combined Expeditionary Forces. DD21 will have a new, advanced 155mm gun system with extended range guided munitions, capable of providing high volume precise naval fires, and a next-generation advanced land attack missile, further extending the battlespace. DD21, being designed from the keel up to operate in the complex waters of the littoral, will incorporate new stealth technologies to aid in survivability, will have multi-function and volume search radars capable of exploiting that complex radar environment, and possess a fully integrated undersea warfare suite to address the littoral's complex undersea warfare challenges.

Integrated Power System (IPS) is the all-electric architecture for future ships, providing electric power to the total ship (propulsion and ship service) with an integrated plant. IPS offers reduced costs of ownership, reduced construction costs, improved survivability, and greater architectural flexibility. DD21 again will lead the way.

Evolving DDG51 Capability to Growing Littoral Requirements

Our DDG51 class today has excellent littoral warfighting capability. But as we embrace the new concepts of forward defense, the Marine Corps *STOM/OMFTS* concepts, and lighter, more mobile Army forces, we need to evolve this capability to meet those concerns.

The forward fit of the 5 inch 62 caliber gun, now aboard DDG81, USS WINSTON S. CHURCHILL (DDG81), which commissions in 2001, marks the beginning of the evolution of the highly successful ARLEIGH BURKE class destroyer design to meet the rapidly expanding littoral warfighting mission. Other class changes critical to littoral warfighting effectiveness include the incorporation of embarked helicopters (SH-60R), an organic minehunting capability and the introduction of area theater ballistic missile defense capability to protect near coastal air-fields and seaports essential to the flow of forces into theater in time of conflict.

Cruiser Conversion

Our Aegis Cruiser force will remain on the front line into the 21st century, with upgrades as part of the Cruiser Conversion program. This conversion program will ensure the relevance of these ships in the future. Without this program, their future is tenuous. In the program, the modernized combat system will address the growing theater ballistic missile threat by incorporation of area and theater-wide TBMD capability. Additionally, introduction of two five

inch 62 caliber guns with extended range guided munitions in 22 of these ships will help meet the USMC requirements for fire support. They will continue to receive upgrades to their command and control suites to ensure they remain full participants in the joint battlespace. Our AEGIS cruisers have proven their worth time and again to the American people, successfully completing all assigned missions. This conversion program represents a wise investment for the American taxpayer, taking advantage of the sizable investment ($22B) already made in these ships, and keeping them ready to meet the challenge over 40 years of service life. It is important to note that the first five AEGIS cruisers (CG47 – CG51) are not part of the Cruiser Conversion program because of affordability. I remain concerned that if we are unable to afford to eventually include these five ships, they will not ever be modernized and would be targets for early decommissioning.

JCC(X)

The Navy currently operates four dedicated command ships, which also serve as the flagships for four of the five numbered fleet commanders – USS LASALLE (AGF3) for COMSIXTHFLEET, USS BLUE RIDGE (LCC19) for COMSEVENTHFLEET, USS MOUNT WHITNEY (LCC20) for COMSECONDFLEET, and USS CORONADO (AGF11) for COMTHIRDFLEET. COMFIFTHFLEET, headquartered in Bahrain, does not routinely have a dedicated command ship, but there are plans for USS CORONADO (AGF11) to swing to the CENTCOM AOR should circumstances warrant. The current ships have been in service for 28 to 35 years. By the time replacement ships could enter the fleet, USS LASALLE (AGF3) will have more than 45 years of service.

Although the aging of current command ships is the catalyst for considering a replacement capability, any replacement will operate in a much different world than the one that existed when these ships were built. The information revolution is changing the way that civilian and military organizations operate. In addition, the international scene is much different than in the late 1960s and early 1970s. Military operations have also changed; not only are they more joint, but also involve increasing interaction with other governmental and non-governmental agencies. What then is the right answer for command ships of the future? In order to answer this question, we are currently completing Phase I of a II part Analysis of Alternatives (AoA) to support a lead ship award in FY04.

Surface Warfare Priorities:

Theater Ballistic Missile Defense (TBMD)

The threat posed by Theater Ballistic Missiles is real and exists today. Over 25 countries have, or will soon have theater ballistic missiles inventories, some of which include the capability to carry Weapons of Mass Destruction (WMD) warheads. In fact, we knew Iraq had this capability prior to Desert Storm, and we know that a number of other countries either have or will have the capability in the near future.

Positioning Theater Ballistic Missile Defense at sea can provide deterrence and war winning leverage against the enemy. The inherent flexibility of surface ships provides the CINC with a flexible, mobile, and highly responsive capability for defense of Amphibious Operating Areas, debarkation ports, joint combatant and logistics expeditionary forces, and designated

coastal regions over an entire theater of operations. In short, naval forces can be positioned where they are most effective, free of host nation support.

In countering this threat, the Navy has embarked on an evolutionary Theater Ballistic Missile Defense development strategy. Our first priority is to deploy the Navy Area TBMD or "Lower Tier" capability as early as FY03 to counter the predominant near term threat, and then follow that with an evolutionary step through the development of the Navy Theater Wide TBMD or "Upper Tier" capability. These capabilities leverage off of the over $50B investment in our AEGIS ships to date.

Navy Area TBMD

The Navy Area system is being designed to provide for an integrated Multi-mission AAW and TBMD capability to the AEGIS fleet. As currently envisioned, our Area TBMD capable fleet will be outfitted on 79 ships to combat the very real Ballistic Missile Threat. This mix of Cruisers and Destroyers will provide the Warfighter with a potent force capable of protecting U.S. and Allied forces as they move ashore to establish a warfighting presence.

So where are we today in our path towards fielding a Navy Area Wide capability at sea? LINEBACKER is our Area TBMD User Evaluation Operational System (UEOS) or test platform. The LINEBACKER system was installed in two ships in 1998, USS PORT ROYAL (CG73) and USS LAKE ERIE (CG70), and both ships continue to provide us with exceptional information and lessons learned as we progress toward deployment of the fully integrated TBMD capability.

The development of the STANDARD Missile –2 Block IVA, the Navy's first TBMD capable weapon, is making steady progress toward flight testing later this spring at the White

Sands Missile Range. Since my last report to Congress, the First Phase of the SM-2 Block IVA missile Live Fire Test and Evaluation program has been completed, and we have started Phase II. During our phase I test, the missile successfully demonstrated, through a combination of arena, fragmentation, and sled tests, the blast fragmentation warheads ability to effectively destroy all target payloads associated with the Navy Area TBMD mission.

Our Navy Area flight test program is programmed to begin with a series of missile firings against a combination of AAW and TBMD targets. Once this series of eight flights is complete late next year, we will take the weapon to sea aboard one of our LINEBACKER ships for an additional series of flights against TBMD targets. We will deliver the First Navy Area TBMD capable ship, McCAMPBELL (DDG 85), early in fiscal year 2003.

Navy Theater Wide TBMD

The Navy Theater Wide (NTW) program builds upon modifications to the AEGIS Combat System which are being developed to support installation and introduction of Navy Area TBMD capability. It further evolves technology within the STANDARD Missile family through introduction of STANDARD Missile 3, with a Hit to Kill Kinetic Warhead. NTW will be capable of exo-atmospheric assent, midcourse, and terminal phase intercepts of medium to long range Theater Ballistic Missiles, resulting in greater regional defended footprints. This Theater-wide capability will enable AEGIS Cruisers operating near threat launch sites to fully exploit their mobility, endurance, and forward presence to defend U.S. and Allied forces around the world. This is likewise a critical deterrent capability when positioned off the coast of the enemy.

NTW contributes to the Family of Systems (FoS) by providing upper tier defensive overlay for Navy Area and Land Based TBMD systems. The TBMD Family of Systems defensive capability provides the Nation with a layered defense for high value assets and target

areas critical to achieving the Operational Commander objectives. The large defended operational regions afforded by NTW increase flexibility for the warfighting CINCs.

In September of last year, the Navy moved into the next millennium of sea-based warfare, when the first STANDARD Missile –3, AEGIS LEAP guided missile was successfully fired from the forward Vertical Launcher of USS SHILOH (CG 67). During this test, all objectives were met, as we were successful in demonstrating our ability to control and guide the weapon through second and third stage separation and ultimately push the weapon into the exo-atmosphere. In addition to successful testing of the SM-3's propulsion system, the NTW program has also made significant progress in proving out several other components of the overall weapons system. As part of several TBMD tracking events, the program successfully tested the High Range Resolution (HRR) radar testbed at sea aboard USS RUSSELL (DDG 59) and USS PAUL HAMILTON (DDG 60).

Further flight testing of the SM-3 will continue later this summer, with the firing of Flight Test Round (FTR) – 1, where we will prove out the capability to eject the kinetic kill vehicle from the missile. An additional six flights, each a little more complex, are scheduled to be completed over the next year and a half. Our first attempt at an intercept in the exo-atmosphere will occur just after the first of the year. Once we intercept in the exo-atmosphere we will rapidly progress toward Threat Representative Testing (TRT) firings beginning in Fiscal Year 2003.

In an effort to provide sea-based Upper Tier capability to the warfighter earlier and in a manner which better paces the threat, the Navy has undertaken an effort to provide capability in incremental steps through evolutionary development and deployment known as "Spiral Development." Within this strategy, the Navy will deliver an initial NTW Block IA

Contingency Capability in Fiscal Year 2006, followed by an NTW Block IB Single Mission Capability in Fiscal Year 2008 capable of engaging the entire Block I threat set. Beginning in Fiscal Year 2010, the final Block I incremental step will deploy NTW Block IC to the fleet. This block step will be fully compliant with our Operational Requirements Document (ORD). The NTW program is funded only through testing in FY01 and FY02. Full funding will be required beyond that point.

We are in the process of completing the technical description and definition of the objective Block II system, which will push our engagement envelope to the longest of the Theater threats, including more complex and sophisticated counter measures. With each step we continue to conduct ground testing and flight testing in concert to further reduce risk and bring ourselves closer to delivering a capability to the warfighter. We continue to embrace the philosophy of "Build a little, Test a little, Learn a lot."

Standard Missile

Standard Missile has been the heart of our Navy's air defense capability for over 30 years. The Aegis Weapons System, with Standard Missile, provides a robust Area Anti-Air Warfare (AAW) capability against threat aircraft, Anti-Ship Cruise Missiles, and in the future Theater Ballistic Missile Defense. The Standard Missile is the enabler for operations close to land and within the theater of operations.

Standard Missile 2 Block IV provides an increased capability against maneuvering cruise missiles. This missile achieved IOC in FY99. USS O'KANE (DDG77) went four for four in successful Block IV firings, including engaging and destroying a maneuvering cruise missile in December 1999. We have been taking delivery since January and are loading these missiles on

today's deploying ships. Significant capabilities have been added to our Ship Self Defense capabilities and the success we have seen sets the stage for two very important follow-on systems to counter the TBMD threat. Specifically, the SM-2 Block IVA, Navy Area Wide Standard Missile, will enter its first phase of testing this summer. Following this test, we will buy the first 11 of the 1,500 missile acquisition objective. The second missile in our TBMD quiver will be the SM-3 exo-atmosphere Standard Missile, which is part of the Navy Theater Wide Capability. We enjoyed a very successful flight test of the first SM3 missile last Fall from USS SHILOH (CG67). We are embarked on a test schedule that includes three more tests in calendar year 2000. So important is this testing that we have dedicated a test ship, USS LAKE ERIE (CG70), full time to this mission.

Land Attack

Precision Naval Fires

We are continuing to invest in a robust land attack capability to support land attack requirements. Our investment in this critical mission area has grown to over $2B in the current FYDP. Not only does it support the Marine Corps in an offensive land campaign it also helps protect our forces and allies from attack. Land attack adds a whole new dimension to this mission area with the introduction of an offensive, long-range, accurate, responsive, and lethal capability not previously resident in our surface combatants. This new capability supports the ground commander and significantly contributes to the definition and execution of the land campaign.

This type of high volume, precise firepower is exactly what is called for by the Marine Corps' *Operational Maneuver from the Sea (OMFTS)* and *Ship to Objective Maneuver (STOM)*

concepts. In order to meet Marine Corps requirements for Naval Surface Fires in support of *OMFTS/STOM*, we are developing a variety of weapon systems that provides required range, lethality, accuracy, and responsiveness.

The Navy's near-term approach is to develop a set of NSFS weapon systems to install in the existing AEGIS fleet. These weapon systems include the 5 inch 62 caliber gun, the Extended Range Guided Munitions (ERGM) (which has an objective range of 63NM) and the Land Attack Standard Missile (LASM) (which has an objective range of 150NM). The first 5 inch 62 caliber gun is already installed in USS WINSTON S. CHURCHILL (DDG81). These NSFS capabilities will meet USMC requirements in accuracy, lethality, and responsiveness, but not in range.

Our long-term approach is to develop a more robust set of NSFS weapon systems for installation in DD21. These weapon systems include the Advanced Gun System (AGS) (which has an objective range of 100NM) and the Advanced Land Attack Missile (ALAM). These capabilities will meet all USMC *OMFTS/STOM* requirements and will allow our combatants to remain over-the-horizon and still deliver ordnance at substantially greater ranges inland against the enemy.

Both our near-term (AEGIS) and long-term (DD21) surface land attack programs include a family of munitions to meet *OMFTS/STOM* requirements. These gun and missile capabilities complement each other and together will meet the required range, lethality, accuracy, and responsiveness requirements.

As *OMFTS/STOM* becomes reality with the fielding of the MV-22 Osprey in FY03 and Advanced Amphibious Assault Vehicle (AAAV) in FY06, our near-term capability will be fielded and available to support the Marine Corps. And as *OMFTS* matures, so too will our fire

support capability. The Commandant of the Marine Corps has stated that this two-phased Naval Surface Fire Support program will meet Marine Corps requirements.

Extended Range Guided Munitions

Since the ERGM contract award in September 1996 Raytheon, the prime ERGM contractor, has experienced numerous technical challenges in ERGM development. As a result of the technical challenges encountered to date and the relocation of the guided munition development programs to Tucson, the Initial Operational Capability of ERGM has slipped to FY04, and there have been associated increases in development costs.

Both the Navy and Raytheon have aggressively tackled these challenges. The ERGM team is working closely with the gun experts at United Defense (UDLP) and NSWC Dahlgren Division (NSWC DD), and, by applying sound engineering principles, they have begun to turn the corner on some of the technical challenges they are facing. For example:

- The Rocket Motor Igniter, which must ignite the rocket motor at precisely the right moment, failed during early testing at the Yuma Proving Grounds. The new redesign has undergone multiple tests and appears sound.
- A critical new design in gun projectile technology, the Mid-body Obturator not only seals the gun gases to propel the round out of the barrel, but also must de-spin the fin-stabilized round. Raytheon Systems Corporation, United Defense Limited Partnership, and Naval Surface Warfare Warfare Center Dahlgren, Va worked together to overcome the problem.
- The Ram Brake must stop the round at precisely the right spot in the breach under all conditions of gun wear and over a wide range of temperatures. Tests indicate that the Raytheon Systems Corporation design is satisfactory.

- The preliminary Tailfin Assembly design, toughened to survive the 12,000 G's of gun launch, produced too much drag and severely restricted the range. The redesigned fins were subsequently validated in wind tunnel tests. The fins were flight tested and the design appears to work properly.

Raytheon has implemented several risk mitigation efforts, including pursuit of alternative guidance system venders. Raytheon recently achieved several successes in their ERGM development test efforts, including a series of rocket motor test flights and two gun-fired canister tests of guidance electronics components. These successes, coupled with new management and their self-initiated risk mitigation efforts, highlight Raytheon's commitment to successfully complete ERGM development.

When ERGM technical challenges surfaced in early 1999, Navy leadership reviewed the ERGM program and requested an independent assessment by MIT Lincoln Labs. Their assessment, completed in August 1999, was that Raytheon and the Government underestimated the ERGM development complexity. They concluded that ERGM development is blazing a new technology trail and problems are to be expected. Future war fighting demands accurate gun munitions with long range and the Navy should "Stay the course". ERGM will serve the Navy, Marine Corps, Army, and the Nation into the 21st century.

The Navy is currently conducting a re-baseline of the ERGM program. The Navy's priority is to achieve an affordable IOC in FY04, while developing a strategy for unit cost reduction and competition for production.

We are certain to face more challenges in developing this ground-breaking technology. However, I am confident in our government and industry team's ability to meet these challenges.

Land Attack Standard Missile (LASM)

Land Attack Standard Missile (LASM) is a land attack variant of the Navy's family of Standard Missiles, using older, obsolescing Standard missiles, which can be converted to a land attack role and makes this missile affordable. LASM is a supersonic missile that will provide the Marine Corps with highly responsive fire support to a range of 150 nautical miles. LASM will deliver a highly lethal, blast-fragmentation warhead that is extremely effective against a broad spectrum of targets, such as enemy troops, air defense sites, artillery batteries, and cruise missiles sites; and it will strike those targets with GPS accuracy. LASM will achieve initial operational capability (IOC) in 2004 and will be fielded in our land attack configured AEGIS ships, with a procurement objective of 800 missiles.

Advanced Gun System

The Advanced Gun System (AGS) is a fully integrated gun weapon system (GWS) which includes dual large caliber (perhaps 155mm) guns, fully integrated gun and fire control systems, and built-in test and fault isolation functions. Each gun will be capable of independently firing 12 rounds per minute from an automated magazine storing 600-750 rounds. AGS will meet DD 21's stringent reduced manning, radar signature and maintenance requirements, as well as provide the range, lethality, and volume of fire required by the Marine Corps.

The AGS program also includes development of a large caliber Extended Range Guided Munition (ERGM), a GPS/INS guided, precision munition with an objective range of 100NM. Employing GPS/INS guidance technology developed in the 5 inch Extended Range Guided Munition (ERGM) program and submunitions (M80 and, perhaps, Sense And Destroy Armor (SADARM) developed by the Army), the system will address a wide range of targets in support

of land forces. Future lethality enhancements may include high explosive (HE) and penetrator warheads. Efforts are underway to pursue potential commonality with U.S. Army munition developments. AGS is being developed as part of the DD21 Full Service Contractor acquisition strategy, with first system delivery to DD21 scheduled for FY06.

Advanced Land Attack Missile

To meet the full set of USMC NSFS requirements, we are developing an Advanced Land Attack Missile (ALAM). ALAM will be launched from DD21 and AEGIS MK 41 VLS ships, and potentially could be fired from submarines. ALAM is designed to meet all of the USMC requirements for Naval Surface Fire in support of the *Operational Maneuver From The Sea (OMFTS)*. ALAM completely addresses the full SC21 target set, including mobile/moving targets, and hardened and deeply buried targets. ALAM payload considerations include blast fragmenting warheads, anti-personnel/anti-material (APAM) submunitions, dual purpose improved conventional munitions (DPICMS), penetrators, and potentially Sense and Destroy Armor (SADARM) and/or Brilliant Anti-Tank (BAT) munitions.

The ALAM program has been designated a Joint ACAT I program, and is a FY01 new start. An Analysis of Alternatives (AoA) commenced in FY99. We are prepared to support a robust and competitive ALAM acquisition strategy that provides risk reduction funding in parallel with and supporting the necessary AoA. These efforts would focus on key technology and engineering issues, thus initiating the industry competition of several alternatives in FY01. The early results would complement the AoA in solidifying the system requirements.

Naval Fires Control System (NFCS)

In order to safely and effectively employ these long range, precision guided weapons in support of complex amphibious and joint land battle operations, we are developing the Naval Fires Control System (NFCS). NFCS is a battle management system that will be the enabler for surface land attack in net-centric warfare. NFCS will support mission planning for the 5 inch 62 caliber gun, ERGM, and LASM, and will be available for DD21. It will automate shipboard Land Attack battle management duties, support evolving Expeditionary Warfare capabilities, tactics and doctrine, and be interoperable and consistent with Joint C4ISR systems and Air Defense and Air Control systems and procedures. NFCS is the Navy program to plug into the digital battlefield, and will be completely interoperable with the Army and Marine Corps' Advanced Field Artillery Tactical Data System (AFATDS) and will IOC in FY03.

Tactical Tomahawk (TACTOM)

Our combat operations in Kosovo last year emphasized the requirement for an all-weather, responsive, deep strike weapon capable of striking both fixed and emergent tactical targets. Tomahawk proved to be the CINC's weapon of choice to fulfill warfighting requirements and demonstrated the need for an even more responsive and flexible weapon system.

Applying modern manufacturing technologies to Tomahawk's core competencies of long range, all-weather, precision, and survivability, Tactical Tomahawk will reduce unit production cost ($569K in FY99 dollars) while lowering life cycle costs and increasing the weapon's tactical flexibility. The net result to the warfighter is a significantly more responsive weapon system,

capable of in-flight communications and re-targeting, Battle Damage Indication messages and enroute imagery, and a loiter capability designed to respond to emerging and relocatable targets. Tactical Tomahawk, which will reach initial operating capability in FY03, will allow the battlefield commander to respond to emerging and relocatable time critical targets, while retaining the ability to strike long range fixed targets in typical Tomahawk fashion.

The operational successes of the Tomahawk Weapon System in Desert Fox and Noble Anvil during FY99 reinforced Tomahawk's standing as our premier precision strike weapon, but significantly reduced our TLAM inventory. Due to Congressionally approved FY99 Emergency Supplemental funding, we commenced a remanufacture and conversion plan in October 1999 to remanufacture 200 Tomahawk Anti-Ship Missiles (TASM) to TLAM Block III C variant (unitary warhead) and upgrade 424 Block II missiles to the preferred Block III GPS variant. These missiles will begin returning to the fleet by the spring of 2001 and will be closely followed by the introduction of Tactical Tomahawk in 2003. We must manage our inventory carefully, as we have expended, on average, 110 Tomahawk weapons per year since 1993.

Interoperability/BMC4I

Cooperative Engagement Capability (CEC)

CEC will permit coordination of air defense sensors and data integration of such fidelity that a network of individual systems will operate as a single integrated air defense system. High

quality sensor and fire control weapons information will pass among multiple units where it will be automatically integrated into each unit's combat system.

In recent tests, as in this past September's Underway #7, we demonstrated a stabilized AEGIS 6.1 baseline and basic AEGIS/CEC interoperability. September's underway test events gave us the confidence to deliver the Quality Assurance-7 software load for use in February's recently-completed underway #8 testing events. This software version will be the software used during CEC's upcoming Operational Evaluation. Test performance and initial data analysis indicate that software performance remains stable, and that Advanced Combat Direction System (ACDS) Block 1 integration with CEC also is stable. Underway testing continues in May 2000 and will include the first live-fire missile events with AEGIS Baseline 6.1 and CEC. The challenges are formidable, but I am pleased to report that we are poised for a successful Operational Evaluation in May 2001 that will make available the first operationally-certified CEC Carrier Battle Group in 2002.

As previously discussed, this quantum leap in warfighting capability did not come without its challenges. Two years ago USS HUE CITY (CG 66) and USS VICKSBURG (CG69) experienced significant problems with AEGIS Baseline 6.1 and CEC 2.0 integration, which forced re-scheduling their deployments and caused a major rework of these computer programs. Similar problems were experienced with CEC and ACDS Block 1 programs on our aircraft carriers and large-deck amphibious ships.

Today, functionality and stability of these computer programs is ensured through a series of rigorous land-based testing milestones and subsequent validation through scheduled underway events. Interoperability across our Battle Group is the return on our investment in the Navy Distributed Engineering Plant (DEP).

Preliminary results of CEC Underway #8 lead me to believe that we have turned the corner on AEGIS/CEC integration and remain on track for successful CEC OPEVAL next year.

AEGIS Baseline Development

AEGIS Baseline Computer program development continues to enable new warfighting upgrades and incorporation of new missions in our AEGIS Cruisers and Destroyers, further leveraging our multi-billion dollar investment.

Warfighting requirements have driven an increased need for computing power. Our efforts to field CEC have hinged on our ability to integrate this significant warfighting capability with the current AEGIS 6.1 computing architecture. I can confidently say we are on the path to success as we continue to mature this program to support CEC operational evaluation. We have put this program on our new construction AEGIS Destroyers and are using it as a springboard to develop the Baseline 6.3 computer program.

The need for a sea-based TBMD capability requires yet another increase in computing capability. Baseline 6.3 leverages existing UYK-43 computers and adds COTS adjunct processors to enable AEGIS ships to execute Area Theater Ballistic Missile Defense. This capability will first be introduced in new construction AEGIS Destroyers in 2003 and will be introduced into AEGIS Cruisers through the Cruiser Conversion program commencing in 2004. This capability will also be backfit into our legacy AEGIS Destroyer Fleet in 2005.

Continuing our evolutionary approach to warfighting upgrades and technology insertion, we are developing AEGIS Baseline 7.1. While I will discuss this advance in computer architecture in greater detail in a moment, suffice it to say that this baseline represents the next technological step by using a networked COTS architecture to address current and projected

computing needs. This architecture will not only support Area TBMD, but will provide an architecture for addition of even more warfighting missions including Navy Theater Wide TBMD.

Common Command and Decision System: The Combat Systems of the Future

The Common Command and Decision system (CC&D) consists of a set of computer programs (middleware and components) that perform command and decision functions within a common architecture. The benefits offered by proceeding along this course will potentially result in dramatic savings and a vast reduction in the interoperability problems currently experienced in the Fleet. Because of its focus on commonality, CC&D mitigates interoperability problems that result because we have implemented similar, or even identical, functionality differently in our array of combat systems.

CC&D does not represent a new start, but the evolution of both AEGIS and the Ship Self-Defense System (SSDS) Mark 2. As a Pre-Planned Product Improvement (P^3I), Navy will examine existing Operational Requirements Documents for functions common across the spectrum of existing combat systems and fold these into a Cornerstone Requirements Document. This document will literally become the "cornerstone" of the foundation upon which CC&D will be designed, engineered, and fielded.

The key to the CC&D strategy is development of a library of common applications. As an operational requirement is transformed into an operational capability, a developer can, under the direction of the appropriate Program Manager, pick up the interface specifications and develop the interface between the new capability and CC&D. This interface and the associated capability would, in turn, undergo component testing in an Engineering and Manufacturing

Development model for interface verification. Interoperability problems, if any, would be detected early in the acquisition process and engineered out of the capability well before Fleet introduction.

This program is our only path forward as we move to open architectures, commercial standards, technology-pacing combat systems and doing so while achieving affordability in the long-run.

Commercial-Off-the-Shelf (COTS) Refresh

While there are many reasons to re-examine the manner in which we acquire combat systems, they can be crystallized into three underlying factors necessitating a fundamental change in the acquisition process.

The first is Cost Avoidance. Each of our combat system elements and capabilities carries with it a substantial cost that we can no longer afford. In an era characterized by declining budgets, Navy and the other Services no longer dictate state-of-the-art technology. As a result of Acquisition Reform, driven in large part by the need to increase efficiency and savings, the joint community has adopted industry standards as part of the combat system design and acquisition process. A collateral benefit of this reform is the ability to rapidly update or refresh technology as the state of the art progresses. As an example, Navy need not be (indeed, cannot be) tethered to AN/UYK-7 computing technology that pales in comparison to even the most basic desktop processor.

In fact, some measure of COTS is already incorporated in Cooperative Engagement Capability (CEC), AEGIS Weapon System improvements, Navy Area, and Navy Theater Wide Ballistic Missile Defense.

In short, COTS technology insertion is required to support warfighting improvements and introduction of new warfighting missions because the MIL-STANDARD/MIL-SPEC process is unable to keep up with computing technology evolution.

This leads directly to the second underlying factor of Technology Refresh. Current threat advances have required exponential growth in required computer processor power. Through careful planning and design, and by using processes such as Object-Oriented Analysis and Design, the Services can design software that is relatively hardware-independent. This obviates the need to replace combat suites (hardware) in their entirety with the associated high cost. Should software require update in order to ensure compatibility with new hardware, only the affected objects require modification. Alternately, as new functionality is added, new objects can be coded which satisfy new operational requirements.

The last factor is Opportunity. Navy is currently upgrading its AEGIS Cruiser and Destroyer Fleet (either through backfit or forward-fit) to incorporate evolving AEGIS software. Baseline 6.3 uses COTS adjunct processors; AEGIS Software Baseline 7.1 is fully COTS-based and is the first fully-distributed, scaleable AEGIS Weapon system. This provides the computing architecture to support future warfighting upgrades and missions.

However, I'd like to mention that COTS introduction has associated challenges. The industry-driven technology lifecycle is faster than the current AEGIS development process, ship construction and overhaul cycles.

Key COTS components are generally unavailable after 5 years. Currently, 12 key AEGIS Baseline 7.1 components are no longer available and typically, key COTS systems become unsupportable after 10 years. It will take a considerable investment to keep current until we have fully open architecture systems. Paradoxically, this places us in the unusual position of

having to refresh technology in systems that have not yet even entered Low-Rate Initial Production (for example, the Advanced Integrated Electronic Warfare System (AIEWS)). We have also ceded some control over design to industry.

With an open systems architecture supporting both physical hardware and software capabilities, the industry teams are designing DD 21 to be easily upgradable with COTS technology insertion throughout its expected 35 year service life. As we make the leap to future technologies such as shared apertures, integrated topside designs, and improved integrated propulsion systems, DD 21 will be able to insert new systems to maintain the most current technological capabilities and keep pace with an ever-evolving threat.

The Tomahawk Weapon System (TWS) uses COTS. The useful COTS life cycle is approximately 3-8 years while military requirements are more than 20 years. The Engineering, Manufacturing, and Development (EMD) phase for a system is typically 3-6 years. Therefore, systems at IOC must either have an end of life buy for most COTS products and/or a COTS refreshment soon after IOC. Lastly, all COTS based systems must have a COTS sustainment plan and budget throughout its life.

A specific example of TTWCS COTS sustainment is the HP-744 processor. It was chosen after careful discussions with HP who indicated maintenance support well after IOC. Subsequently, HP announced it is halting production and support for the HP-744 processor in the ’02 timeframe. Additionally, HP stated it would not be developing a follow-on replacement. Additional COTS sustainment issues for TTWCS include the 9 GB Seagate Hard drives, Plextor CD-ROM, and 33cm NEC LCD.

The integration of COTS into Tomahawk makes sense from a strategic point of view. It allows the Navy to take advantage of existing technology to reduce development time and cost,

and rapidly deploy new state of the art systems. On the other hand, sustainment costs may be higher throughout its lifecycle due to the loss of control of the commercial lifecycle. These examples are but a few which represent those challenges which we are starting to face in many of our systems as we understand better the full meaning of the use of COTS.

Interoperability Improvements and the Single Integrated Air Picture

In 1998, key interoperability shortfalls manifested themselves while the Navy attempted to introduce the Cooperative Engagement Capability (CEC), a Battle Group capability, concurrently with individual platform improvements including AEGIS Baseline 6.1, Advanced Combat Direction System (ACDS) Block I and Model 5 Command and Control Processor (C2P). From the work that followed, an operational requirement for a Single Integrated Air Picture (SIAP) was born with interoperability as the centerpiece.

Navy has implemented a multi-faceted approach to improving Battle Group interoperability with the ultimate goal of achieving the Single Integrated Air Picture (SIAP).

Adherence to a rigorous Systems Engineering Process ensures iterative design, integration, test and validation, and certification processes that form the template for delivery of war-ready combat systems to the Fleet. This rigor has resulted in great progress in our ongoing efforts to field CEC, as I will discuss later.

The Navy's Distributed Engineering Plant (DEP) has been a resounding success. In 1999, our DEP employment encompassed the full spectrum of acquisition activities: from Test and Evaluation of fielded systems to system and element test of AEGIS Baseline software upgrades, as well as new programs such as CEC and satellite data links in a multi-system environment. During this past year alone, we successfully conducted full-scale Battle Group

Integration Tests on the KENNEDY, EISENHOWER, and WASHINGTON Battle Groups. We also used the DEP to ensure our Battle Group combat systems were Y2K-ready.

The DEP is now a vital part of the 30-month pre-deployment process. This process ensures that both our engineering and warfighting communities have full visibility in the Battle Group configuration control, testing, and certification process.

By netting actual ship and aircraft combat systems and computer program loads installed at previously existing land based design, engineering, test/evaluation, and training centers throughout the country, the Navy is able to emulate a Battle Group ashore. This virtual Battle Group, currently comprised of nine sites, forms a distributed "system of systems" that facilitates combat system interoperability through problem discovery, fault isolation, and resolution. This is systems engineering at the Battle Group level – a capability that could not be achieved at the individual sites.

Adherence to this process greatly facilitates the delivery of war-ready systems to the Fleet with a focus on providing improved capabilities rather than delivery of stove-piped systems. The first Battle Group to complete the entire D-30 process is the CONSTELLATION Battle Group, which deploys in February 2001.

At the direction of General Ralston, Vice Chairman of the Joint Chiefs of Staff, a Joint Engineering Task Force was formed to evaluate migration of the DEP into a Joint Distributed Engineering Plant (JDEP). The Task Force's feasibility analysis is complete and several options have been formulated. The Joint Requirements Oversight Council (JROC) has not yet been briefed on the options and a final decision is pending. However, adoption of the JDEP will be the first step in engineering interoperability across Joint systems regardless of Service affiliation.

Area Air Defense Commander (AADC) Capability

The AADC planning tool (using some of the most advanced "off the shelf" computing power currently available) assists planning staffs to rapidly develop high fidelity air defense plans. This level of planning provides for optimal utilization (placement) of air defense assets throughout the theater. The planning tool also allows for dynamic re-planning to capitalize on developments in the theater air picture – allows the Joint Force Commander to operate within the enemy's decision cycle.

The AADC capability is deployed today at sea on USS SHILOH (CG67) and USS MOUNT WHITNEY (LCC20). These deployed systems have been put to the test in numerous Joint and Fleet exercise. The Commander Sixth Fleet recently concluded a functional evaluation of the AADC at sea, and found it to be a highly valuable tool with enormous potential.

The AADC capability will provide our deployed Combined Joint Task Force Commander with unprecedented situational awareness; the capability to conduct planning at the operational level; the ability to support joint or combined theater operations; a capacity to conduct a variety of near real-time "what if…?" analyses; and threat evaluation and weapon pairing.

AADC Capability is a tremendous step forward in theater air defense planning and execution monitoring. The AADC capability gives the Joint Forces Air Defense Commander the ability to plan and carry-out the theater air defense plan against all air threats. The ability to rapidly plan and monitor the execution of theater air-defense (in real-time) is a capability that has never existed before. It will be installed in our AEGIS cruisers as part of the Cruiser Conversion Program.

Ship Self Defense

Rolling Airframe Missile (RAM)

RAM Block 1 recently completed successful operational evaluation live fire tests aboard the Self-Defense Test Ship at the end of FY99. We are proceeding with full rate procurement of this superb missile upgrade.

RAM Block 1 has also shown outstanding potential to defeat a growing fast small boat attack problem. We are working to add a Helo/Air/Surface (HAS) Mode Engineering Change Proposal to the system. The HAS mode upgrade will involve software changes that will allow RAM to acquire and track an expanded set of close-range, fixed wing aircraft, helicopters and small surface craft, while preserving its primary point defense mission.

Close-in Weapon System (CIWS)

Upgrades to the Phalanx Close-In Weapon System (CIWS) will enhance the system's ability to the rising threat from cruise missiles. The Block 1B surface mode ordnance alteration for Phalanx includes the addition of a thermal imager, an automatic acquisition video tracker and a stabilization system for the tracker to provide threat detection both day and night. The thermal imager also improves the accuracy of Phalanx's angle tracking information to the firing computer, enhancing the system's ability to engage cruise missiles. The Phalanx Block 1B uses the Navy's first fused radio frequency/electro-optical (RF/EO) sensor system to improve its AAW capability. The RF/EO system increases the number of hits, extends the initial hit range, eliminates radar glint, and eliminates the effects of multi-path propagation. This system has great potential to solve our challenging short-range surface gunnery problem.

Sea Sparrow

The Sea Sparrow Missile system, first introduced in 1970, has remained a front line, highly effective warfighting system due in large part to the constant improvements of the missile and fire control system. The Rearchitectured NATO Sea Sparrow Surface Missile System (RNSSMS) will replace the old processing and control elements with commercial, off-the-shelf (COTS) processors, and Navy standard consoles. Additionally, RNSSMS will bring major upgrades to the Mk 73 transmitter and Mk 17 Signal Data Processor. By using a fiber-optic LAN structure with the standard UYQ-70 consoles, RNSSMS will create a "plug and play" environment for NATO Sea Sparrow launchers and radars. This will reduce control console and manning requirements and will cut life cycle maintenance costs. For example, in the case of the Signal Data Processor (SDP) replacement, the time between critical failures is estimated to improve from 5,000 to 25,000 hours. An initial production contract for RNSSMS has been awarded to support LHD6, LHD7, CVN68 and CVN76. Future replacement of the current RIM-7P missile with the Evolved Sea Sparrow Missile (ESSM) will provide a foundation for the next generation of self-defense systems.

ESSM is an extensive upgrade of the RIM-7P missile incorporating a new rocket motor, new tail control and new warhead with the original guidance section. ESSM's improved speed, range, and payload give it the capability it must have to defeat next-generation cruise missiles. A versatile self-defense missile, ESSM is designed to be fired from three existing launchers, the Mk 29 GMLS, the Mk 48 Guided Missile Vertical Launching System (GMVLS) and the Mk 41 VLS. ESSM is planned to be the ship self-defense engagement system in Flight IIA ARLEIGH BURKE destroyers. Just last week we conducted our first live intercept in developmental testing for ESSM (CTV 4A) and the early results are positive.

Advance Integrated Electronic Warfare System (AIEWS)

The AN/SLY-2 Advanced Integrated Electronic Warfare System (AIEWS) represents the next generation in shipboard electronic warfare. The first increment of AIEWS will include an advanced display, improved emitter processing, enhanced combat system integration, a new receiver capability, and improved emitter identification. Increment two will introduce advanced radio frequency and infrared attack subsystems, and will be capable of employing off-board countermeasures. Moreover, the AIEWS program will be fielded with advanced open system architecture, providing the flexibility for rapid insertion of future technologies. It is on schedule for a FY04 IOC.

Infrared Search and Track (IRST)

Ship self-defense systems could be reinforced with the introduction of other advanced detection systems, such as the promising Infrared Search and Track Systems (IRST). The IRST program is developing a passive, lightweight, infrared, horizon detection and tracking sensor specifically for use against sea-skimming cruise missile attacks. IRST's infrared system provides ships with unique sensing capabilities and will improve maritime force protection in the littoral environment. It will perform 360-degree surveillance, detection, and declaration with high bearing accuracy.

An IRST engineering development model was tested at sea onboard USS O'BANNON (DD987) during *Exercise El Moro Castle* last year. The device demonstrated the ability to detect and track multiple inbound targets with its infrared scanner. A second engineering development

model, using a different set of optics and a new stabilized platform, is under contract and will be tested in FY02.

Undersea Warfare

Undersea Warfare, which includes ASW and Mine Warfare, is and will remain a Navy core competency and is critical to assured access. The littoral environment provides a challenge for USW. The proximity to coastal waterways, harbors, and shipping lanes increases ambient noise and significantly complicates the already difficult challenge of undersea acoustic detections. This continued acoustic space complicates the problem of sorting legitimate target echoes from random background echoes. Littoral sonar performance and prediction are highly problematic. Now more than ever, USW requires a team effort as the harsh littoral requires exploitation of each detection opportunity. We are evolving our tactics to adapt to this environment through multi-static ASW.

We are pursuing an aggressive two-pronged strategy. First, we intend on taking full advantage of the enormous advancements in computing power and networking. We have targeted these technologies for the AN/SQQ-89(V) 15 plus Multi-Function Towed Array Undersea Warfare Suite. Through analysis we have learned that our best payoff is gained by employing active sonar in conjunction with active acoustic processing techniques in the noisy and complex waters of the littoral. At the same time, we are investing in systems that afford surface combatants minehunting capability. The concept in which we are engaged is called organic minehunting and will allow us to sail in seas heretofore closed to us, simply because mines might be present. Add to the USW sensors described above, improvements in ship torpedo defensive systems, the improved SH-60 helicopter program, and better lightweight ASW

torpedoes, such as the MK 54 Lightweight Hybrid Torpedo, it is clear our intent is to build on our surface combatant USW effectiveness.

These systems, originally designed to counter the Cold War threat, are being upgraded to perform more effectively in environmentally challenging littoral areas against quiet, diesel-electric submarines. The move to shallow water ASW does not remove our need to reliably detect and kill blue-water targets at maximum theoretical ranges. In short, our ASW combat systems must be able to detect submarines regardless of speed, aspect, or water depth and our USW team must be more proficient than ever to operate the systems we build.

SH-60R

An important piece of undersea warfare and force protection is the Light Airborne Multi-Purpose System (LAMPS) SH-60B and its next generation, the SH-60R. Together with the aviation community, we are developing an advanced, highly capable system. The SH-60R will contribute significantly to our "assured access" strategy. The SH-60R will provide significant capability in surveillance - contributing to situational awareness in the littoral - specifically against an increasing threat from small surface combatants and quiet diesel submarines. The SH-60R will enable the execution of multi-static ASW, contributing to our ability to detect threats in the harsh undersea environment. In addition to the capability upgrade, the remanufacturing process includes concurrent Standard Depot Level Maintenance, a Service Life Extension Program (SLEP), and incorporation of engineering change proposals to reduce lifecycle costs. The SLEP will increase the life of the airframe an additional 10,000 hours and its structural

weight capability from the current limit of 21,884 lbs. to 23,500 lbs. During Fiscal Year 1999, contracts were awarded to Lockheed-Martin Federal Systems (LMFS) for EMD Phase II of the avionics upgrade, and to Sikorsky Aircraft Company for the SH-60R test articles. All exit criteria to support the March 2000 Low Rate Initial Production (LRIP) decision have been achieved. The first flight of the SH-60R prototype with Common Cockpit, to initiate contractor flight testing, occurred on December 11, 1999 at LMFS Owego, New York. The first SH-60B aircraft to be remanufactured to the SH-60R configuration was inducted into the Sikorsky Aircraft Corporation, Troy, Alabama facility on December 15, 1999. Also during Fiscal Year 1999, steps were taken to reduce lifecycle costs through the use of common avionics between SH-60R and CH-60S. This "common cockpit" development includes the use of a commercial off-the-shelf mission processor. This is a critical part of our warfighting capability for our surface combatants, especially for our DDG51 Flight IIA ships who are without Harpoon and without the AN/SQQ-89 towed array sonar system. We have completed the R&D investment. We must now get these through the remanufacture program and to the Fleet.

AN/SQQ-89

In the near term, USW capability centers on upgrading the AN/SQQ-89(V) sonar suite to meet future undersea challenges. The upgrade, designed to counter the quiet diesel-electric submarine threat in the littoral, enhances existing capabilities for shallow-water prosecution and adds new, robust capabilities such as torpedo recognition and alertment, and cross-layer active detection. The system will capitalize on open system, network architecture, and Commercial, Off-The-Shelf (COTS) functional enhancements to reduce procurement and development costs, and also simplify future capability upgrades. The AN/SQQ-89 undersea warfare control system

provides a fusion point for sonar data, bottom topography, and non-acoustic sensors. With the AN/SQQ-89(V), surface warriors will have superior data fusion and processing, combined with more effective sensor coverage. Additionally, surface combatants will receive the SH-60R with its ASW suite, including the airborne low frequency sonar. The SQQ-89(V) working in a coordinated manner with the SH-60R gives surface warriors a powerful ASW capability.

The AN/SQQ-89(V) configurations are using more and more COTS products and are targeted for forward-fit into new ARLEIGH BURKE class destroyers. System functions transitioned to COTS include displays, performance prediction, acoustic multi-processing, and passive sonar signal processing. The AN/SQQ-89(V)15 system design completes the transition to COTS and open architecture software; utilizing COTS-based technology for active sonar signal processing, onboard training, and integrated system fire control.

The vision for USW includes exciting technologies and improved tactics. For example, Multi-Static ASW will allow the Navy to exploit the best active projector to detect a subsurface target, by no longer requiring the source and receiver to be co-located on the same platform. Multi-static differs from traditional mono-static tactics in that the acoustic transmitter and multiple passive receivers are located on different platforms or at different shore sites. Key enablers to implement this tactic are integrated and networked platform sensors. This allows our ASW sensors, both active and passive, to work in a complementary fashion to address the ever-quieting threat, ratcheting up the challenge against the diminishing signal excess of threat platforms. The Advanced Undersea Warfare Concept (AUSWC) is a step toward achieving a network-centric ASW across Navy. AUSWC horizontally integrates existing air, surface, and subsurface USW systems by adding common models and tactical decision aids to support

enhanced detection opportunities. AUSWC will allow all members of the battle group to have access to a consistent set of data for the development of a common operational picture.

Further exploitation of multi-statics (active source and receiver located on separate platforms) is made possible by advancements in C4I, including the display, communication and automation functionality resident in the Computer Aided Dead Reckoning Trace (CADRT) and COTS processing upgrades. Critical to multi-static ASW is the Multi-Function Towed Array (MFTA), developed in concert with the Submarine and IUSS communities, it will provide warfighters with a below layer detection sensor, as well as a torpedo detection receiver. Today our ASW capable surface combatants transmit from a hull sonar and receive on that same sonar. The multi-function towed array will be towed below the layer, able to capture echoes and acoustic transmissions from a threat submarine below the layer. Warfighters can employ the hull sonar-to-MFTA, hull sonar-to-ALFS (Airborne Low-Frequency dipping Sonar), ALFS-to-hull sonar, as well as impulsive, echo-ranging multi-statics combinations to gain a decisive advantage over the submarine in every level of the water column.

Surface Ship Lightweight Torpedoes

As the shallow waters of the littoral environment became better understood it was clear that ASW acoustic torpedoes would require more robust detection and signal processing capabilities to further enhance performance in littoral environments. With defense-wide fiscal constraints prevailing, a new "bottom's up" development program was not feasible. The determination was made that technologies and performance features already incorporated into the MK 50 Lightweight Torpedo and the MK 48 (ADCAP) Heavyweight Torpedo, if effectively adapted to inventory units of the MK 46, would provide a cost-effective alternative to counter

today's threat. In 1995, the MK54 Lightweight Hybrid Torpedo program was initiated to provide a cost-effective shallow water performance upgrade to the lightweight torpedo inventory of MK46 and MK50 torpedoes.

The MK54 torpedo integrates the proven technologies of existing torpedoes, including the MK46 propulsion system, MK50 sonar, and MK48 ADCAP software with state-of-the-art digital signal processing technology available on the commercial market. Incorporating Non-Developmental Item technologies from existing weapons and commercial industry has resulted in a significantly improved shallow water performance while reducing total ownership cost. Extensive use of COTS and open systems architecture enables the MK54 to be readily upgraded via technology insertion and software upgrades to counter future threats.

The MK54 will be employed by CG47, FFG7 and DDG51 class combatants and SH-60B/F/R and P-3 ASW aircraft. The MK54 will be the first lightweight torpedo with a digital fire control interface to ease weapon employment while maximizing performance.

The MK54 Mod 0 program received authorization to proceed into an Engineering and Manufacturing Development (EMD) phase in 1995. The E&MD Contract was awarded in June 1996 to Raytheon Systems Company with initial delivery of engineering developmental models occurring in Feb 1999. Developmental Testing (DT-IIA) commenced in July 1999, with six successful in-water runs conducted to date. Developmental Testing will continue through FY00 with TECHEVAL and OPEVAL scheduled for FY01 and FY02, respectively. A Limited Rate Initial Production (LRIP) contract for 17 units was awarded in December 1999. Initial Operational Capability is planned for FY03, with a total inventory objective of 1,000 units.

Torpedo Defense

We have recently completed a year long, congressionally directed study for torpedo defense for our large-deck ships. The study was extremely thorough and provides several recommendations to address this difficult problem. Our intent is to assess the study recommendations and program funds starting in FY02 to field a capability for these ships. This is not to say we are waiting until FY02, rather, we have R&D efforts currently underway to transition existing subsystems to deliver a robust capability against a difficult threat.

Again, the advances in computing technology have allowed an increased sophistication and enhancement to our underwater defensive systems, specifically the AN/SLQ-25A and the Anti-Torpedo Torpedo. Critical to this development effort is the establishment of a Distributive Engineering Center that will dramatically enhance the process by which we develop these systems.

Central to our future undersea defensive systems will be a focus on the existing AN/SLQ-25A, which will be enhanced with state-of-the-art acoustic sensors and automated processing. Additionally, the advent of new technology and enhanced processing has precipitated the reinstitution of a previous AN/SLQ-25A system - the Anti-Torpedo Torpedo.

The AN/SLQ-25A system is currently a soft-kill countermeasure system that acts as a decoy to confuse incoming homing torpedoes. It is the most widely used torpedo countermeasure system fielded on our ships. The AN/SLQ-25A is a towed system that operates at all times when the ship is at risk of torpedo attack, and unlike some of the more sophisticated countermeasure systems, the AN/SLQ-25A in its current state does not rely on cueing from an Anti-Submarine Warfare (ASW) system.

If a ship is to react to a torpedo fired against it, there must be a way for that ship to detect a torpedo in the water. Our surface combatants, using input from both the hull sonar and towed arrays, employ a processor and display system to gain alertment and recognition of torpedo acoustic emanations. The alertment and recognition system is used in conjunction with maneuvers to evade a torpedo and deployable countermeasures to effect a soft-kill of the incoming torpedo. The AN/SQQ-89 Anti-Submarine Warfare combat system Torpedo Recognition and Alertment Functional Segment (TRAFS) will detect and localize torpedoes at tactically significant ranges when torpedo acoustic noise is received by the towed array or the hull sonar. In the development of this important system, recent advances in acoustic sensors and computing have provided some promise that the AN/SLQ-25 can be adapted to provide a significant improvement to torpedo alertment.

Anti-Torpedo Torpedo (ATT)

The ATT is the only near-term, single, countermeasure that is effective against all threat torpedoes. The ATT will soon complete an FY01 Advanced Technology Demonstration (ATD). OPNAV has worked very closely with the Office of Naval Research to further development of this promising weapon system, as well as integrate this as a significant piece of our evolving concept of operations for torpedo defense.

Mine Warfare

As the CNO, Admiral Jay Johnson said, "…mine warfare is a unique Navy core capability that must become a prime warfighting area we shall treat as important as strike."

While it is preferable to avoid mined areas (using our knowledge superiority), military objectives may require operations in close proximity to mined waters. Navy will continue to

aggressively research and prepare mine countermeasure (MCM) systems to ensure effective operational capability in littoral waters in support of land campaigns. Countermeasure technology must keep pace with the increased sophistication in mine fusing and stealth technology.

We must develop mine detection and clearance capabilities organic to combatant forces that will permit these forces to identify, avoid and/or neutralize mines within operationally acceptable timelines and with acceptable levels of operational risk. As organic capabilities are brought on-line, stand-alone or dedicated MCM must be balanced with organic systems to meet warfighting requirements. Additionally, we need the capability to transit mined areas in very shallow water.

The Navy has embarked on an effort to further decrease response time to commence the mine countermeasure campaign and to expand our overall mine countermeasure capabilities. This initiative is known as "Organic Mine Warfare," which is geared to mainstreaming mine countermeasures systems into our Battle Groups and Amphibious Ready Groups. Organic MCM forces will be integrated, both physically and doctrinally, into all Navy Joint Task Forces, reducing the reliance on dedicated mine countermeasures forces in the early stages of a conflict. Consistent with the Network Centric Warfare concept, our organic mine warfare countermeasures capability will be provided to the Battle group via a "system of systems" to include air, surface, and subsurface components. For surface combatants, a new addition to the AN/SQQ-89 USW suite will be the AN/WLD-4, Remote Minehunting System (RMS), first employed from DDG91 in FY03. The RMS is a semi-submersible vehicle that tows a mine hunting sensor suite to detect, classify, locate, and identify mines in the water column and on the sea bottom. RMS can operate autonomously and maintain a radio frequency link to the ship to allow sufficient forward deployment from the DDG thereby reducing risk and minimizing

interference with other ship missions. Through the AN/SQQ-89 and Global Command and Control System – Maritime (GCCS-M), RMS will communicate mine location information to the rest of the fleet and will integrate organic and dedicated forces.

We are routinely reviewing our USW capabilities and assessing their ability to meet the challenges of a technologically evolving threat. The overall message is clear: U.S. Navy's USW systems are formidable and getting better.

Summary

Today's operational environment is far more complex than at any time in recent history. Sixty-five nations are at war; twice as many than at any time during the Cold War. While we continue to successfully accomplish the number one priority, our mission, the increased OPTEMPO is putting a strain on our Sailors and their ships. Because of this continued high demand for our multi-mission surface combatants, it is imperative that we adequately fund our SCN and depot maintenance accounts.

Each year I am constantly challenged to maintain my topline. The fact of the matter is that without OSD and Congressional plus-ups last year, several key programs would have been in jeopardy. I am absolutely committed to maintaining current readiness, while not losing focus on modernization and recapitalization, but this will continue to be a difficult balancing act.

I want to close by offering my sincere thanks for your continued support of the Surface Navy. You can be rightly proud, as I am, of the community's continued success over this past year. We are a proud community, excited about the future with the addition of our new warfare areas of Theater Air Warfare and Land Attack, and look forward to receiving the funding commensurate with this growth.

Thank you for the opportunity to testify and your continued support in this regard.