

THE SUBMARINE REVIEW



FALL 2013

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EDITOR'S COMMENTS

The purpose of the Naval Submarine League is to: *"To stimulate and promote an awareness, by all elements of American society, of the need for a strong submarine arm of the U.S. Navy."* As a publication of the League, **THE SUBMARINE REVIEW** strives to keep our membership informed of news and discussions in the national security world of issues effecting public understanding of that need. A primary source of that information is the body of policy statements made by the uniformed leadership of the Submarine Force. Another source is the public release of the discussions of members and staff of Congress reflecting ongoing considerations within the Legislative branch of government impacting the Submarine Force. An important third source of information has to do with the knowledgeable commentary of non-governmental academic and public policy forums.

In this issue we are fortunate to have examples of all three of those sources to illustrate the major issues impacting the greater submarine community. First in order is the Submarine Force leadership's presentations at the League's Annual Symposium in October. Their message, of course, is the management of the acquisition and operation of the Submarine Force. The day-to-day business of building and running the Submarine Force is a modern day success story highlighting exceptional management, leadership and—most of all—tenacity. It is good news, and it is the responsibility of the entire submarine community to get that word out to the public so America can have confidence in our people and their hardware to safeguard the nation's interest in the great waters of the world.

Next in the order of the publication are some of the proceedings of a non-governmental forum recently held at Kings Bay to examine the prospects for the continued effectiveness of the nation's Nuclear Deterrence posture as reflected in current policy discussions about the need to recapitalize our Strategic Force structure. That is; the TRIAD may be in trouble. The good

news/bad news here is that Nuclear Deterrence, as a strategic concept, may become a victim of its own success. We have enjoyed a decades-long run of post-Cold War very effectively deterring nuclear confrontation by any form of unfriendly adventurism, concurrently avoiding any expensive modernization of the means by which we do that. Now the bill is due and there are folks who do not recognize the fundamental need for U.S. Nuclear Deterrence in terms of force structure. The close-to-home impact here is the urgent need to finance and build the OHIO Replacement SSBNs. Once again, to paraphrase Sec Def Schlesinger's statement of the 70s, we have to show it cannot be done with smoke and mirrors.

Our third source of information and inspiration come from a report to the House Armed Services Committee's subcommittee on Seapower and Projection Forces by Mr. Ron O'Rourke, a respected analyst of naval affairs for Congress. Mr. O'Rourke placed some commentary on the Navy's place in American national security in his report on the Navy's Shipbuilding Program. Those words can very adequately answer the question "*Why Navy?*" Of course, we all have to know that answer before we can discuss "*Why Submarines?*" Once again our thanks to Mr. O'Rourke for his insight and straight logic.

Jim Hay
Editor

FROM THE PRESIDENT

During a time of intense budget discussions within our government in Washington, DC, the U.S. Submarine Force is broadly acknowledged as providing exceptional “value for money invested” and the contributions of the submarine industrial base, the submarine shipbuilders, and the men and women who operate, maintain, and modernize our submarines are well known and greatly appreciated.

Operationally, our strategic deterrent and attack submarines meet the highest standards of training, maintenance, and operations around the world, day in and day out, in support of our Combatant Commanders.

The Submarine Community continues to excel. Our strategic forces sustain a vigilant posture in support of stability in a turbulent world. Our attack submarines respond to the myriad demands of operational commanders in every theater. The exceptionally high professional standards and superb combat capability demonstrated throughout the Submarine Force are exceptional and reflect the high standards, hard work, and strong leadership that exists throughout the Submarine Force.

The execution of the design and engineering effort in support of the OHIO Replacement Program, the Submarine Force’s top priority, is proceeding well and has enjoyed strong funding support from Congress in anticipation of the program’s construction start in 2021. The importance of strategic deterrence, and the OHIO Replacement Program, as the cornerstone of our nation’s security was emphasized this past fall in Kings Bay, Georgia, during the second of what is anticipated to be several conferences on Strategic Deterrence, the TRIAD, and the challenges of sustaining strategic stability. Notable speakers, to include former Air Force Chief of Staff General Larry Welsh, Honorable Frank Miller, Ambassador Linton Brooks, and Rear Admiral Rick Breckenridge, addressed the conference. Their remarks are included in this issue of THE SUBMARINE REVIEW and provide insight into the complex issues surrounding strategic

deterrence and should be used to inform the discussion with regard to this most important topic.

Our attack submarine force is operating forward deployed, around the world, delivering ever improving capability to the Fleet through targeted and effective modernization of the existing force, as well as through the addition of new VIRGINIA Class Submarines. The VIRGINIA Class Submarine Program is expected to deliver the first of the Block III submarines, USS North Dakota (SSN 784), this spring, under contracted cost and ahead of schedule, continuing to demonstrate that program's superior performance. Of note, the VIRGINIA Block III submarines will provide the Fleet increased combat capability, with two large diameter tubes forward of the sail capable of firing twelve Tomahawk Cruise Missiles, as well as providing flexibility to accept additional payloads developed in response to Combatant Commander emergent demands.

The way ahead for our Submarine Force has been clearly and consistently defined by the senior leadership team charged with the task of ensuring the essential high standards of professionalism, quality, efficiency, and value are met throughout the Submarine Force. This was reinforced at the Annual Symposium last Fall by the senior uniformed leadership and their remarks are included in this issue of THE SUBMARINE REVIEW. Of note, the remarks of Force Master Chief Koshoffer provide an interesting insight from the deck plates—well worth the read.

The efforts of each of you, the membership of the Naval Submarine League, in support of our Submarine Force, is greatly appreciated and much needed. We are working hard to make our web site responsive to your needs and our periodic NSL Updates strive to keep you abreast of issues that are of interest to the Submarine Force family. Your feedback is encouraged and we will strive to tailor our web site, our NSL Updates, and THE SUBMARINE REVIEW to your needs. As always, we solicit your input and your articles for THE SUBMARINE REVIEW.

While there appears to be some budget stability in the near term based upon the Bipartisan Budget Agreement, there are fiscal challenges to be met as we move forward and an informed

discussion is the best way to ensure that thoughtful and responsible choices are made when the time comes. THE SUBMARINE REVIEW strives to inform as well as entertain the Naval Submarine League and others engaged in important discussions about our nation's security. Your support, and the support of our Corporate Benefactors, ensures that we are able to stimulate and promote an awareness of the need for a strong submarine arm of the United States Navy and that we are able to articulate the value, the efficiency, the quality and the professionalism of our Submarine Force and the robust industrial base that supports that Force.

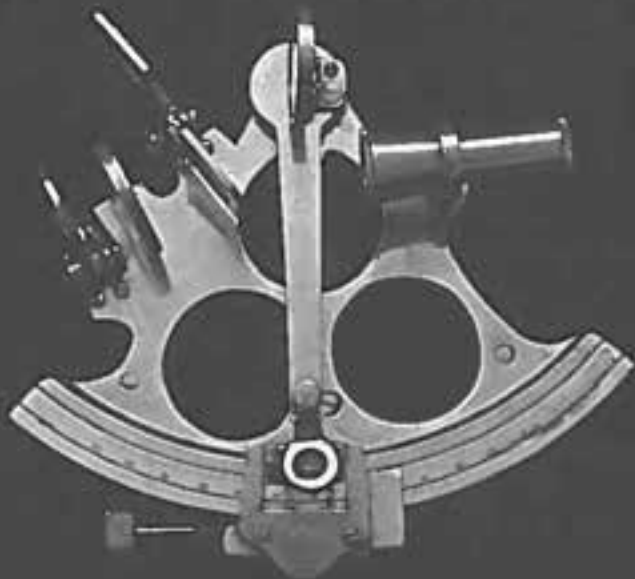
As yet another winter storm works its way up the East Coast and the I-95 corridor, I send my best regards to you all and I hope that the *Pineapple Express* continues to bring moisture to Northern California and the Pacific Northwest and I wish that we could send some of our East Coast precipitation to Southern California.

Hawaii, as usual, seems just about right.

John B. Padgett III
President

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IN MEMORY OF**ADMIRAL KINNAIRD R. MCKEE, USN (RET.)**

Admiral Kinnaird R. McKee passed away on December 30, 2013 in Annapolis, MD at the age of eighty-four following an extended illness. Admiral McKee, a Distinguished Graduate of the U.S. Naval Academy, was known for his extraordinary submarine career, his leadership as Superintendent of the United States Naval Academy and as the man who took the helm of the U.S. Navy's Nuclear Power program after the retirement of Admiral H. G. Rickover.

Admiral McKee was born on August 14, 1929 in Louisville, Kentucky, and raised in Memphis, Chicago and Dallas before his family moved to Gulfport Mississippi where he attended the Gulf Coast Military Academy and first learned to sail. From GCMA, he entered the Naval Academy in 1947 with the class of 1951. Still an avid and competitive sailor, he was on the varsity sailing team.

After his graduation and Navy commissioning in 1951, he was assigned to the destroyer USS MARSHALL (DD-676) where he served during the Korean War. Following his duty on the MARSHALL, he met and married Betty Ann Harris from Montgomery Alabama, and began his submarine career.

After serving on diesel-powered submarines PICUDA (SS-382), SEA CAT (SS-399) and MARLIN (SST-2), Lieutenant McKee took command of the experimental hydrogen peroxide-powered submarine USS X-1 as Officer in Charge. He subsequently was accepted into the second nuclear power school class and later assigned to the commissioning crew of USS SKIPJACK (SSN-585), the first of a class of high-speed, highly maneuverable attack submarines. As SKIPJACK's engineer, he worked closely with the Royal Navy in the nuclear training of the Royal Navy's first nuclear submarine, HMS DREADNOUGHT.

Lieutenant Commander McKee followed this tour with assignments as Executive Officer of USS NAUTILUS (SSN-571) and USS SAM HOUSTON (SSBN-609).

Commander McKee was later assigned to the Office of Naval Reactors working for Admiral Rickover. Upon completion of this assignment, Commander McKee took command of the nuclear submarine USS DACE (SSN-607) and DACE earned a fleet-wide reputation for exceptional performance over the next 3 years.

With orders to the Navy Staff in Washington, Captain McKee founded the Chief of Naval Operations (CNO) Executive Panel and became its first Director, charged with providing the CNO with expert outside advice and a systematic method for setting future Navy policy and goals. While in this job, he was promoted to the rank of Rear Admiral.

Rear Admiral McKee was next assigned command of Submarine Group 8 and NATO's submarine forces in the Mediterranean, during a time when U.S. submarines maintained a critical role in monitoring Soviet Mediterranean Fleet operations in such crises as the 1973 Yom Kippur War and the Cyprus Conflict of 1974.

Rear Admiral McKee then assumed command of the United States Naval Academy as the 48th Superintendent in 1975. As Superintendent, Rear Admiral McKee refined the diverse curriculum and provided leadership for successful entry and integration of the first women midshipmen at the Naval Academy. During his time in Annapolis, he was promoted to Vice Admiral.

Vice Admiral McKee assumed command of the Third Fleet in Hawaii followed by duty on the Navy Staff as the first Director of Naval Warfare, quickly followed by his reassignment as the Director of Naval Reactors following the retirement of Admiral Hyman Rickover. McKee was awarded his fourth star at this time and spent the next seven years leading the Navy's program for development and maintenance of the nuclear power plants in all U.S. Navy aircraft carriers and submarines. Design work for the SEAWOLF class of fast attack submarines was initiated and funded during his tour.

In 1988, Admiral McKee completed his extraordinary 41-year naval career and retired to the Eastern Shore of Maryland, where he pursued his love of sailing, and boat model building. His post Navy career included serving on the board of directors of PECO and ENTERGY corporations and providing engineering and management consulting services to several major engineering firms.

Following the death of his first wife Betty Ann in 1997, Admiral McKee met and married Patti Bailey Kirkpatrick in 1999. Admiral and Mrs. McKee continued to live in Oxford and Easton on the eastern shore of Maryland until the summer of 2013, when they moved to Annapolis, MD.

Admiral McKee was honored in 2006 as a Naval Academy Distinguished Graduate. The Naval Submarine League also honored him in 2011 with its Distinguished Submariner Award.

Admiral McKee is survived by his beloved wife Patti Bailey McKee, son James H. McKee of Easton, MD, daughter Anne A. McKee of Burke, VA and Mercer Trapp of Augusta, GA, as well as Patti's children Patti Kirkpatrick of Phoenix, AZ, Mac Kirkpatrick of Glenmore, PA, Lynn Demast of Santa Barbara, CA and Andrew J. Kirkpatrick of San Jose, CA and 14 grandchildren.

A memorial service was held at 1 pm on Tuesday, 28 January 2014 in the main chapel at the United States Naval Academy in Annapolis, Maryland.

In lieu of flowers, memorial donations in Admiral McKee's name may be made to the U.S. Naval Academy Foundation at 410-295-4115.

VADM PATRICK J. HANNIFIN, USN (RET.)

Patrick J Hannifin, Vice Admiral USN (Ret), a resident of Solana Beach, CA for almost three decades, passed away on January 9, 2014; he was 91. Born in Oklahoma on January 26, 1923, he was raised in Roswell, NM, where he attended New Mexico Military Institute prior to entering the U.S. Naval Academy. Graduating with the Class of 1945 in June 1944, he was commissioned an Ensign and in 1978, he retired as a Vice Admiral.

Following graduation, he completed Submarine School and then joined USS BALAO (SS-285) in the Pacific. While in BALAO, he participated in three war patrols. After the war, his service included duty in multiple diesel submarines: U-858, SEA ROBIN (SS-407), GRAMPUS (SS-523), RASHER (SSR-269) and he commanded USS DIODON (SS-349). After completing Navy Nuclear Power Training, VADM Hannifin served as the commissioning Executive Officer of the Navy's first Fleet Ballistic Missile submarine, USS GEORGE WASHINGTON (SSBN- 598); he was then selected as the first Commanding Officer of USS LAFAYETTE (SSBN-616). He later served as Commander Submarine Squadron FIFTEEN in Guam.

Ashore, he was one of the early students at the Armed Forces Guided Missile School at Fort Bliss, TX and was subsequently assigned as a Department Head at the Navy's Guided Missile School in Point Mugu, CA. He also had duty in Washington at the Bureau of Ships, in the Office of the Chief of Naval Operations, and on the Joint Staff. As a flag officer, VADM Hannifin served as Commander THIRTEENTH Naval District in Seattle, Commander Submarine Flotilla EIGHT/ Commander Submarines Mediterranean (the NATO Submarine Forces in the Mediterranean), Deputy Director for Strategic and Nuclear Plans for the Joint Chiefs of Staff, on CNO's staff as Assistant Director, Plans and Operations, as Director Plans and Policy (J-5) for JCS. His final responsibility was as Director of the Joint Staff for the Joint

Chiefs. VADM Hannifin graduated with distinction from the Industrial College of the Armed Forces, concurrently earning an MBA from George Washington University.

After retirement, he lived an active life in Santa Fe, NM and Solana Beach, CA. As a member of the Senior Executive Service, he conducted studies and provided advice to the Department of Energy on future nuclear issues. He was also President of HANESCO, INC., a family-owned oil and gas exploration company, for over 30 years. Pat was an active member of the Navy League of the United States, the Rotary Club of Encinitas, and was also a deeply involved parishioner of St. Peter's Episcopal Church in Del Mar—serving for years on the vestry and directing a multi-million dollar capital campaign.

A man of surprising talents, he also managed to fit in travel to Rome and Malta with his new-found Hollywood friends when he was hired as the Technical Advisor for the motion picture U-571. Subsequently, the television industry called upon him for technical expertise and commentary as they covered the loss of the Russian submarine KURSK. He was inducted into the New Mexico Military Institute's Hall of Fame in 1985; in 2012, the Naval Submarine League honored VADM Hannifin with their Distinguished Submariner Award.

Pat Hannifin was married to the former Mary Snyder—also of Roswell, NM and a childhood friend—for over 55 years. They raised three children, Steve (a retired Naval Aviator), Mary (Molly), and Margaret Jane (Margo). He has three grandchildren, Pat (also a Naval Aviator), Susan, and Honor; and four great-grandchildren—Justen, Sean, Kelsey and Jacob. He was preceded in death by his parents, Steven and Elizabeth, and by his younger siblings Betty, Kay, Marty, Dan and Bob. In addition to his children, grandchildren, great-grandchildren and their wives (Jane Hannifin and Grace Hannifin), Pat leaves behind two sisters-in-law (Maxine Hannifin and Barbara Hannifin), and several nieces, nephews and their spouses and children.

Phyllis Whittle, of Arlington VA, has been Pat's best friend and world-wide traveling companion since Mary's death in 2000. A memorial service was held at 12:00 noon, on Friday, January

17, 2014, at St. Peter's Episcopal Church in Del Mar, CA. Inurnment at the U.S. Naval Academy Columbarium will follow in the spring. In lieu of flowers, donations in Pat's name may be made to the Dolphin Scholarship Foundation, 4966 Euclid Road, Suite 109 Virginia Beach, VA 23462;

www.dolphinscholarship.org, or as a Memorial Gift to St. Peter's Episcopal Church, 334 14th Street, Del Mar, CA 92014; www.stpetersdelmar.net.

ETERNAL PATROL

VADM Patrick J. Hannifin, USN (Ret.)

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ANNUAL SYMPOSIUM**2013 ANNUAL SYMPOSIUM
NAVAL SUBMARINE LEAGUE
23 OCTOBER 2013****ADMIRAL JOHN M. RICHARDSON, U.S. NAVY
DIRECTOR NAVAL REACTORS**

ADM Mies, RADM Padgett, Tim Oliver, Corporate Benefactors, leaders of industry, fellow Flag Officers, family and friends of the Submarine Force, it is great to be here. I am coming up on my first anniversary as Director Naval Reactors and it has been an incredibly busy year, honestly the fastest in my career. It was also a year punctuated by some true milestones that we can all be proud about.

USS MINNESOTA, our tenth VA-class submarine, was christened last October and we commissioned her just six weeks ago, an astounding 11 months ahead of schedule. I sailed in her for sea trials this spring and what a ship. I wish everyone in America had the chance to tour one of these ships and meet the crew. They would be amazed at the technology in our ships and the spirit of our Sailors. In March, we laid the keel for PCU JOHN WARNER, and next week, we will christen PCU NORTH DAKOTA. The carrier fleet is also doing great work, and in August we completed sea trials on USS THEODORE ROOSEVELT and in November we'll christen the PCU GERALD R. FORD. USS ENTERPRISE was inactivated last December after 51 years of service, and 25 deployments. Her legacy, in peacetime and wartime, makes me wonder how anyone can doubt the value of a nuclear powered aircraft carrier.

Another event I would like to mention is the shooting that occurred at the Washington Navy Yard on Sept 16th, a mere month ago. It seems like a year since that tragedy, where we lost some dear comrades right in our workplace. And while many are

still hurting, it would be much worse were it not for the leadership of so many in NAVSEA, many in this room, who worked so hard to comfort the suffering and ease the pain of loss and insecurity. VADM Willy Hilarides and his leadership team of RDML Tom Kearney and Bill Deligne and many others, have done an absolutely terrific job taking care of their people. Please join me in a moment of silence.

NSL Symposium almost fell prey to the government shutdown, but here we are. And it's very important to get together like this to stay synchronized. We have almost every Submarine Force leader here to speak—Force Commanders, Director of Undersea Warfare, PEO Submarines, FORCMs, CO's. When you hear these leaders speak, I'm sure that you will get the same sense that I do—we are so lucky to have this team in place to navigate us through these rapids. If you leave this event with a question unanswered—it's your own fault! I look forward to some great conversations.

I'd like to start by bringing you all into the conversation about some of the forces that shape our situation and how we are responding. In essence, what we are discussing with our own teams. First and foremost, we're working overtime to figure out how best to design, build, and test the nation's most complex and high priority capabilities in a brutally austere and unpredictable budget environment. Some risks and opportunities emerge. I'd like to talk about two related shaping factors: budget and demographics.

First, demographics. In virtually every aspect of the Program, labs, shipyards, Headquarters, everywhere except the fleet, we are bimodal. If you plot our population versus experience, we get two peaks and a valley in between. In generally everyplace in the Program we have one big team with 35 and more years of experience, and one big team with less than fifteen years of experience. In between these two teams, a more sparse population. The older team has tons of experience, and is getting ready to transition to a well-earned retirement, after all, they've done their time—won the Cold War and a few conflicts since then! They built the OHIO class SSBN and the LOS ANGELES and SEAWOLF attack class submarines, and the SSGN. They turned

the undersea domain into our domain. That's an amazing generation and we need to tell that story better.

The young team is amazingly smart, talented, dedicated, and energetic. They have grit and perseverance. They are ready to learn. I'm not sure we've fully appreciated all the implications of this challenge. It affects everything we do today, and we need to get this right to secure our future. With respect to knowledge and experience transfer, how do we leverage the wisdom of the mentors to *horse up* this young posse of talent we have, before they depart the pattern? I'm very interested in meaningful ways to do that and I'd be happy to hear about yours. Fortunately, we're as busy as we've been in decades, and there's nothing like real work to get folks up to speed quickly. This conference is a great opportunity! I've brought a bunch of my junior engineers today to be here and be with you. Where are you team? Please stand up.

It doesn't come as naturally as it did with a more uniform population, with fewer mid-grade supervisors that traditionally were around in more numbers, on shop floors, in the office, on the test range. One could pick things up a lot easier just by being around the water cooler. Now it has to be more deliberate, and we're running out of time. Executing work is different. A lot more thought is required in every aspect of the nuclear work model: engineering and procedures, training, supervision, and oversight. The old models and assumptions don't apply. As just one example, the last time we started a new submarine design was for VIRGINIA in the early 1990's. What does that mean for the team working on OHIO Replacement?

Second, budget. In particular, two dimensions of budget—uncertainty and reductions.

It has been manifested in government shutdown, furloughs, sequestration, continuing resolution, etc. All have had a measurable impact. A tension emerges in all of our discussions. We have a very mission-oriented team. We all want to get the job done, but have come under personal stress—uncertainty. We are doing worthy work that supports top national security priorities.

The work is very complex and must be done to high standards. It takes a certain amount of proper resourcing to do this work.

Resources are under pressure we haven't seen in decades and some argue that this is a uniquely challenging time for defense budgets. My concern involves the dynamic that emerges as we strive to manage this tension. At first order, this is all a big distraction. As I travel around and talk to the workforce in the fleet, shipyards, and labs, there is more and more talk about the money and less and less talk about the technical work. In particular, senior management is almost consumed by budget drills—one after the next. The team is uncertain about the future and is spending an increasing amount of time conducting budget drills. This both consumes precious management energy and is highly distracting from the technical work at all levels. We need to do all we can to minimize these distractions, to keep our teams focused on the technical work for which we are responsible. I'm putting a lot of responsibility on my middle management, and they have naturally risen to the challenge, but they need support as I discussed.

The second order effect involves the response of our can-do industry. We are a highly motivated team that is generally anxious to get things done. To achieve the mission, in light of actual or perceived declining resources, people at all levels begin to think creatively about how they *can make ends meet*. This can manifest itself in many ways, trimming time off the schedule, trimming level of effort, trimming technical rigor.

This can happen at all levels of our work, from senior managers to the most newly qualified engineer or operator. Much of this activity, essentially taking risk, occurs in disparate parts of our Program, and may be happening without the direct knowledge of supervisors that integrate across all those separate and distinct parts. My concern is that as many of us reduce margin in the interest of getting things done, we'll lose sight of the cumulative effect of our activity.

Some specific areas where this can happen is in our testing community, an area that is under tremendous pressure. Cost and schedule pressures reduce the number and rigor of tests. More powerful computers allow more powerful modeling and simulation instead of actual testing. This can be a sound approach,

as long as we validate the code with data from prototypic tests. Our sense of optimism and history of success can also work against us here, giving us a false sense of certainty.

We've been here before in the Submarine Force with the MK-14 torpedo. In the 20 years before we started shooting the MK-14 torpedo in anger, we had tested exactly two armed warshots, and those were against an anchored ship. Every other warshot was deemed too precious to *sacrifice* to testing, and every other test was compromised a bit more. Short budgets and long optimism led to 3 of 4 warshots failing in combat. Not as the result of a single problem, but three separate problems that had gone undetected—run depth, proximity fuse, and contact detonator were all off. That failure resulted in a religious approach to torpedo testing that lasts today. If we're realists, we know the faults are out there, and the race is on to find them—and the rigor of our testing will determine who wins the race: the developer, the user, or the enemy.

What's the next MK-14 in our business?

There is also tremendous pressure on requirements. The questions go something like this: Does it need to go that fast? Dive that deep? Be that quiet? How many ships do we need? How many missile and torpedo tubes do we need? All extremely valid questions. All with an eye on reducing cost. But again, balance is needed. Again, we've been here before. How many people here have heard of the mighty *BOLO* bomber?

The BOLO was a Douglas aircraft, largely adapted from the DC-2. Designed in 1934, it competed against designs from Boeing and Martin—and won. Heavily in its favor was the lower price, almost half as much as the Boeing competitor. It started production in 1936 and hundreds were made and deployed to operational units by 1937 as the B-18 BOLO. At the time of the attack on Pearl Harbor, the BOLO was the most numerous bomber deployed outside of CONUS. Most of the US Army Air Corps squadrons had them.

But as war loomed more closely, the BOLO clearly started to come up short in a few areas. Specifically.... range.... speed....payload.... defensive armor.... and... offensive armament. So rather than send US aircrews to their almost certain

death in combat, the United States had to go back to the Boeing model that was originally too expensive, the model which achieved fame as the B-17 Flying Fortress, and was relieved by the B-24 Liberator. Flying Fortress, Liberator, BOLO...which one would you want to fly into combat? You're right. But how did we get it so wrong? It's too easy to say that they were just boneheads back then and that could never happen to us now. Again, success can work against us when it makes us unreasonably optimistic.

I'm not concerned about the questions I listed above as we can and must be able to defend our design. But I am concerned about the questions that we're not discussing. What are the implications of extending OHIO class to 42 years? For example material concerns, how much risk with a platform that carries almost 200 people and nuclear weapons? There is no margin for further extensions. Industrial base concerns—missile tubes and other strategic systems. Nation has not had to discuss nature of nuclear deterrence in 40 years. Are we taking too much risk with just 12 replacement SSBNs that will carry almost 75% of the nation's strategic warheads? The road to the first strategic patrol in 2031 is a brisk walk—we have to keep moving or we'll fall even lower.

As we go forward, let's be the ones to try to balance the discussion. We in this room need to ensure our leadership—in the government and private sectors—have visibility into the decisions that are trading away performance, understand the specific nature of the risk we incur, and communicate that risk to one another—most important to the person who owns and is accountable for that risk.

As always, we'll begin with the technically correct answer, a realistic schedule, and a realistic cost estimate. If we make a change from that starting point, we should be clear-minded about the risk we are incurring, and be deliberate about the decision making. Anything else may result in *drifting towards shoal water* without our knowing it, ending up breaking our programs or worse, unwittingly executing something that turns out to be unacceptable—the modern B-18 BOLO. This is always very costly.



I'd ask you all to keep that in mind, and set the tone in your lines of business that yes, we need to be creative, but we also need to have clear visibility and communication on decisions that increase risk to our programs. It is leaders, with their hands on the risk rheostat, who must ensure we stay balanced.

Admiral Rickover spoke often of the *Never-ending Challenge* to advance our nation and he said "progress, like freedom, is desired by nearly all men, but not all understand that both come at a cost."

What we do is hard—it is stressful. To do what is technically correct we must be judicious, but not cheap; efficient, but not sparse; challenging, but not unrealistic. The Navy, the Defense Department, and the Nation, look to us to uphold the standard—to be fixed stars to navigate by. The stakes are more than just financial—the lives of our Sailors and survival of our nation are in the balance.

2013 ANNUAL SYMPOSIUM
NAVAL SUBMARINE LEAGUE
23 OCTOBER 2013

VADM MIKE CONNOR, USN
COMMANDER SUBMARINE FORCE, ATLANTIC FLEET

Good afternoon. Thanks Admiral Mies for the introduction. I want to thank the Submarine League for sticking with this event. A few weeks ago I contacted Admiral Padgett and Tim Oliver to warn them that I was uncertain if we would be able to attend, as we had restrictions on travel spending and even participation in outreach events, whether or not there was any cost to the Navy. That goes double for the corporate sponsors whose names are posted behind me. I know many of you had people moving in this direction before we could guarantee that this event could happen.

We appreciate that you create this forum in which we can share our ideas and priorities. It is never more important to clarify our priorities than during times of fiscal uncertainty.

The message that I want to carry to you this afternoon is that the Submarine Force is doing well—even in these uncertain times.

- Our SSBNs continue to prove that they are the most reliable leg of the strategic triad.
- Our SSNs and SSGNs are turning in impressive returns on their deployments, and they do so in a deployed environment that is extraordinarily dynamic. Phil Sawyer will walk you through some examples.
- Our people are talented and motivated—they never took their eye off the ball despite the fact that it looked for a while like their paychecks, reenlistment bonuses and spare parts were going to be used for political fodder. Our Force Master Chiefs and two of our best commanding officers will talk to you about that tomorrow.

- Our fleet commanders stood behind us as we prepared ships for deployment and no ship that faced a patrol or deployment in the next 12 months was denied the resources to prepare for that deployment.
- The SSBN mission was protected in virtually all respects as we worked through sequestration and shutdown restrictions.
- We continue to deliver submarines—ahead of schedule and under budget. We just commissioned USS MINNESOTA in September in Norfolk and we will christen PCU NORTH DAKOTA in Groton next week.

The good news, I think, is that our priorities have not changed significantly. So what I would like to do, in this time of fiscal confusion, is reassert what our INVESTMENT priorities are from the perspective of a Type Commander charged with the man, train, and equip mission for the Submarine Force. We need to understand those priorities, because the country has yet to face our fiscal challenges; we have simply kicked the can a few months down the road.



Recapitalize the Sea Based Deterrent



Slide 2 Strategic Deterrence

(Actual Testing!!)

OUR NUMBER ONE priority was—and is—to reconstitute the Sea Based Nuclear Deterrent. I was careful in my choice of words there because while I am talking about the Ohio Replacement Program, I am not JUST talking about Ohio replacement. I am also talking about D5 life extension, Strategic Fire Control systems and sustaining the infrastructure that supports the SSBN Fleet. This is the most important mission in the Navy, perhaps the most important in DoD.

I have some concerns that while the country is justifiably happy with the performance of the current SSBN Fleet, that we have made this critical mission look too easy—much easier than it really is. As our SSBN crews and teams that maintain and train our fleet work very hard to meet their tasking, we have self-proclaimed experts who claim that the same level of deterrence can be achieved with a smaller force.

Similarly there is not enough appreciation for the work that we have to do during the next several years to lay the foundation for the next generation of the strategic deterrent. I am speaking specifically about the Research and Development necessary to achieve success with Ohio Replacement. We know what it takes to design, prototype and build a submarine of this size and technology density. There is no margin left. So—in a world of unpredictable budgets, continuing resolutions, and threats of government shutdown, we need to ensure that the RDT&E stays in the budget, work continues under continuing resolutions and work does not stop if we have more government shutdowns. The same logic applies to the many steps we must take to design and test critical components for D5 life extension.

Those of us in the operating forces need to make sure that when we get pressed to save money, that we don't do so in a way that would lead others to believe we lack the resolve to sustain our most important mission. This is hugely important as we take the Trident Fleet through its last 20 years of life. We will have to work harder to maintain our commitment of SSBNs at sea. To do so will require absorbing some financial inefficiency, to include overtime work during refit periods, conducting modernization during depot maintenance periods only. If we do not accept these realities, we

will eventually start to miss our required readiness standards, and if we accept that sort of compromise against this critical mission, we will define a new normal that will lead the budget programmers and congressional staffers to adjust the 'requirement.'



Meet SSN / SSGN Demand



Slide 3 Meet SSN / SSGN Demand

Our next priority is to meet the Combatant Commander demand for deployed SSN and SSGN presence. You all know that the combatant commander demand for SSN and SSGN presence far exceeds what we can supply. That has been true for so long now that we just accept it, and our ships get allocated by the Joint Staff, they essentially provide a share of the stated requirement. It's almost as if we assume that the Combatant Commanders are overstating their requirements. Well—they are not. Submarines are needed because they provide real things—like awareness of activity in terrorist networks, over watch for special operations forces, knowledge of adversary weapons capabilities AND intentions. And of course the hammers—or should I say Tomahawk—that back up the policies of our Commander in Chief. And while the allocation process recognizes that submarines can do all of these things, it does not recognize that we cannot do all of

these things AT THE SAME TIME with one or two ships in theater. This limitation has become very apparent lately.

So—what we need to do is ensure that we do our best to sustain our presence over the next several years. We will do that primarily by continuing to press for two Virginia class SSNs each year. We should be aware that we will need to have that fight EVERY year. We also need to continue to press to reduce the time between commissioning and first deployment. The incremental improvements that we have achieved in construction time and quality need to be sustained. We appreciate all that the people in this room in government and industry have done to make that so.

We also need to make sure that Block V of Virginia Class includes the Virginia Payload Module. It is absolutely essential to preserving the payload volume that will start to go away in 2026 as the SSGNs reach end of service life.



Payload Development



Slide 4 Payload development

Next priority (#3 if you lost count) is Payload development. Given that there are many circumstances under which the Submarine Force will be the only US asset that is able to deliver its payloads in the face of a mature A2AD threat, we need to expand the tools we carry. We need to do everything we can to extend the reach and influence of each submarine, because it will

be the Submarine Force that opens the door for the Joint Force of the Future.

That effort starts with resuming heavyweight torpedo production. Our existing weapons, while they are effective today, will become obsolete over the next decade. They become obsolete in one sense because things like the torpedo hulls and fuel tanks will be too old or too corroded to be serviceable. They will become obsolete in another sense because the existing weapons have not leveraged the tremendous leaps that have been made in autonomy, propulsion, navigation and communications. We have the ability to make the torpedo of the future a true precision, over the horizon weapon.

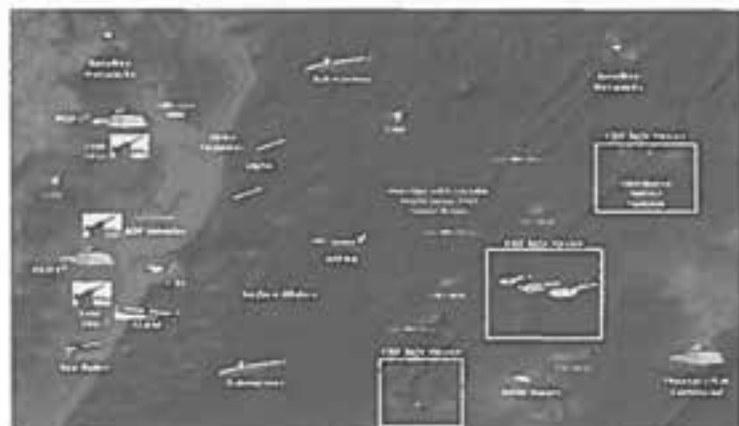
But it is about much more than torpedoes. We need to press with a portfolio of payloads to expand our capacity in the ISR, EW, offensive mining, and strike areas. The Tomahawk missile remains the country's primary precision strike weapon. But we only carry land attack variants. We need to reconstitute an anti surface missile capability for its obvious value, but also because an adversary that must defend against this type of strike makes himself vulnerable to other means of attack.

Rick Breckenridge and I laid out our strategy, and some first steps, in truly developing our undersea payloads earlier this week for the Undersecretary of Defense for Acquisition and Technology. The meeting went well. So well, in fact, that we are no longer able to discuss the details in a forum like this.

While the platform investments that I discussed earlier are the essential foundation of a successful Submarine Force, I don't think any investment will pay a higher return in terms of war fighting capability per dollar than investments in submarine-delivered payloads.



Unify the Undersea Domain



Slide 5 Unify undersea domain

Almost a year ago, we, or I guess I, was presented the task of leading the Navy effort in the "Undersea Domain." It's been an interesting journey...and it is far from over.

There is a lot of work to be done here in the refinement of operating concepts, harmonizing tactics, aligning command and control and producing a useful common operating picture.

We are putting NMAWC, the Navy Mine and ASW Warfare Center, in the forefront of this effort. They are the Undersea Warfare Warfighting Center of Excellence. They have the daunting task of pulling together the tactics developed by the surface, air, submarine and mine warfare communities into a coherent approach. They will be responsible for assessing performance of the individual communities at the advanced phase of their pre-deployment training and for assessing the performance of the Theater Undersea Warfare Commander. Rear Admiral Bill Merz just took over last week. We plan to leverage his experience as the Commander of Submarine Development Squadron

TWELVE to spread that level of rigor in tactical development to the greater undersea warfare community.



Submarine Force Investment Priorities

Recapitalize the Sea Based Deterrent

2 Per Year VCS Production

Payload Development

Unify the Undersea Domain



Slide 6 Summary

Just to be clear. Here are our investment priorities. They are pretty straightforward....as they need to be during times of fiscal uncertainty. We hope that we do not have to pick and choose—because they are all so important. However, if we do have to pick and choose we will work from the top of this list and go down.

2013 ANNUAL SYMPOSIUM
NAVAL SUBMARINE LEAGUE
24 OCTOBER 2013

COMMANDER NAVAL SEA SYSTEMS COMMAND
VADM WILLIAM H. HILARIDES, USN

Good morning, it's great to be back with the Submarine League and I want to start by thanking many of you who have helped us through the last month or so after the Washington Navy Yard shootings. The contractors around M Street, that have hosted displaced PEOs and contracts folks and technical folks, we really appreciate everything you've done for us and made it possible for us to stay in business for the last month and a half. First and foremost we had to take care of the families. That's a job that really will never stop. Those twelve families are our twelve families. Second, taking care of the workforce. I encourage you when talking to people who were in the building, or who were associated with folks who were in the building, continue to ask them how they're doing. I've grown very used to looking people in the eye and saying, "how are you doing?" and when you get that vacant stare, or you get them looking at their shoes, that's a time to probe into that and find out what's really going on. Finally it is getting everybody back to work. If I learned anything from 9/11, it is that work which gives you a reason to get up and get away from the TV and do the things that are important in your life it helps that healing process. So that's probably been the biggest challenge and I'll talk about that here in just a few minutes.

One of the things you may have noticed is about week three of the recovery effort; we issued our Strategic Business Plan. We've been working on that strategic business plan since before I took over. We did a canvas of the stakeholders, the industrial base, and the health and welfare of our maintenance facilities and looked at what we really want to work on for the next five years. The previous strategic business plan, which was a 2008-2013 product, had actually expired. Timing was pretty good. We looked

at it and asked if it was worth issuing. A bunch of good engineers made a list and ticked them off and so we decided that the plan was a pretty good idea.

Then for the strategic business plan, we picked three broad areas. They had to have taglines, nothing quite as catching as *two for four in twelve* but we tried pretty hard on that. The first one really is designed to stand alone. *It's All About the Ships*. It's something I've been fond of saying many, many, many times. Especially when people start saying "... it's not about the platforms it's about the network," or "... it's about the system of systems." Well, I would just argue that everything the Navy does for the nation gets to the point of effectiveness on a ship. So we build networks, but those networks go on ships to get to the fight. We build missiles, they go on ships. We build airplanes, they go on ships. So in that sense it is all about the ships. Those platforms, those two hundred and eighty four ships that make up our current Navy, are the capital investment that we put all those tax dollars against, and are the things most important to preserve as we look forward.

I know you have had some discussion about the financial environment. I look at it in the long haul. I came in the Navy in the seventies and it was pretty bad. Destroyers in Norfolk were tied up. We had race riots and ships that couldn't get underway. We kind of pulled out of that. The eighties build up, *six hundred ships, let's go beat the Russians*. Throughout the eighties...*tear down that wall*, well then they did. The budget tipped over and we spent most of the nineties going down. About the end of the nineties, boy we had gone pretty far down, so we probably thought about coming up. After 9/11 we spent all the two thousands going up...So by my calculations, we're in year three of a ten year downsize. That's my look at it. So all of this, "...we're gonna fix it this year," and "...it's gonna get better next year"-- I doubt it.

This is what it's gonna be like, we're gonna fight through this for four or five years. Hopefully that's what will happen. Because what normally pulls us out of one of those downturns is something really bad in the world. I actually believe that this just forms the

framework upon which you have to build your business plan. That's reality, that's what we have to work towards.

In the context of *It's All About the Ships*, that means that for the ones we have in our hands we have to figure out how to get every possible operational day out of them. For the ones which we are building, we have to build them with absolute precision with respect to executing the programs. In that sense I think we're in pretty good shape from the new construction perspective. All the things that we wrote, all those articles over the last few years about the LPD-17, the Littoral Combat Ships, etc., most of those ships are in serial production. We're in multi-year procurement for pretty much everything that's on the docket; for the DDG-1000, three ships are bought. The big deck ships are periodic ships, kind of in that five year time hoorah. A four to five year build horizon and we don't really ever get to serial production on those. Each one ends up being, by its nature, a unique challenge as workforce turn-over makes our learning curve struggle to bridge a five year time between building one and building the next one.

So the build program is actually what we need for the kind of a time period we're in. If you're on a downsize, you need to be in serial production on cost effective ships. You need to be pumping them out. Making doughnuts like I always tell my friend Dave Johnson go make some good doughnuts. It is very, very important that we execute those acquisition programs with precision.

The other two hundred and eighty four ships though, are ones that we want to keep in the force. We want to keep them up and running and the challenges there are fairly daunting. We had spent most of the nineties I'll say not doing our maintenance in those challenging financial times. I would exempt the submarines and in some ways the aviation parts of the aircraft carriers; they got the maintenance they had to have to be able to safely take human beings into the air and under the water. For the rest of the fleet, however, we spent a lot of time figuring out how to not do maintenance we knew we needed to do. We spent the end of the nineties and the beginnings of the two thousands buying much of that back, and to a great measure we have reestablished the technical basis upon which we are maintaining our surface ships.

We are on a pretty good path to resource that maintenance and make those ships get out to the end of their service lives. I give Kevin McCoy a lot of credit for having put us on that stable path, getting the surface maintenance business back up and running. Establishing an industrial base that can do that maintenance and in reality, getting to the technical understanding of the ships and how they're aging, what needs to be fixed, where we can take some risk...and that ends up being really the essence of what that first part of the business plan is. **Those two hundred and eighty four ships and caring for them.** That means for the surface ships, understanding the technical baselines, planning and executing those availabilities.

For submarines and aircraft carriers that means resourcing our public shipyards to the level that they need to execute the maintenance in front of them. Those public shipyards, like everything else in the budget over the past couple years, have been underfunded and the manning has reflected what we saw in the nineties. Throughout the nineties and the early two thousands we fought to buy back lost submarine days. We had these famous charts we used to put up at briefings like this. We counted the three or four submarines we lost each year due to delays in the public shipyards. We are marching right back down that path. Under-resourced in the public shipyards by more than a thousand people, and as a result, submarines are languishing in those yards and Phil yells at me pretty much every day for "...how come my ships aren't back at sea?" So those challenges are right in front of us. That is day job work of the entirety of the NAVSEA organization and so we're off working on it.

The second broad area is something that I have believed since I was a program manager. Really I think I understood it before that but program management is really what brought it out. **It is very difficult to be technically excellent,** but we're really good at it. There is a technical excellence in our ships, in our Navy, in the industrial workforce, a technical excellence that is undeniable. Most countries come to us for help in that area. The judiciousness and I use the CNO's word, a lot of people ask, what does that mean? What does judiciousness mean? I really think of it as -

okay, it is my money, and I am going to go buy something for myself, how would I spend it? And when I talk to the workforce I say, look those are our tax dollars and that is our Navy. I make a good argument that the Navy is as important to the nation today as it has been at any time since '45, that as we have recognized that Alexander was correct, land war in Asia is a really bad idea. The reliance on our Navy and reliance on it around the world, whether it be out in the Western Pacific, three or four problematic countries that Phil spends all his time with around the Indian Ocean and even into the Mediterranean, which has become an incredible hot spot of Naval activity. There are three sites that have Navy ships on station doing the nation's business. And so, the judiciousness part of that is it is easy to be technically excellent compared to being technically excellent and judicious, and for my technical workforce, that is a tremendous challenge.

Look, I want the very best that the nation can get, but I also need it to be affordable in the context of keeping enough ships at sea and having the money to do the few recapitalization things that have to be done over the next few years. Figuring out how to put that into words, I am always looking for examples of how to characterize that, where is the **balance point**? How do we make sure it is focused on the overawing challenge through 2080 and be affordable in the context of a fifteen or sixteen billion dollars a year ship building program. That is a challenge of the first order. It really does fully represent the challenge that is there, and in it we have to recognize we have been fairly judicious to now, and I will use the summary and example of the extension of the maintenance period as to the use of submarines. Pat Brady, Mike Jabaley, and many of you, spent a lot of time to get us from five and six year centers for big maintenance fails, all the way out to ten and twelve years. Well, there are some seams starting to show in that, and I will just give you one example of how close to the margins we can be at times. A standard Ohio class uses about 900 thousand turns a month on its propeller shaft and an SSGN uses about 1.1 million turns. We missed that math when we calculated the periodicity for our SSGN, and we have a couple of shafts on SSGNs that are a little bit past where we are comfortable with them operating, and

when you do the math on that, you say, whoops, I think we might have gone a little bit too far there. There are indications that we know how to do this, but we have to be really careful because we are going to go places that we have not been before. We are going to take systems and stretch them and find out how far we can really go between these major maintenance periods. I think that those challenges, putting those in front of a technical workforce who feel personally liable for the decisions they make and who will be held accountable if those decisions turn out badly in fleet operations and get them to take those risks, and they got to know that certainly their commander has their back and really that is the essence of what that discussion is about.

The third topic that is in there is sort of a no-brainer, a Culture of Affordability. How do we take that and permeate it into the entirety of the organization and have everybody thinking that way as we execute our business. Culture is the hardest of things to change, and so we have to lead by example and provide plenty of opportunity to show how that all works. I will just give you one example. I know there was a lot of discussion at last year's conference about the MIAMI fire. Ultimately, we decided to decommission MIAMI instead of overhauling it. I would tell you that without sequestrations and continuing resolutions, I think we would be repairing MIAMI right now. The financial condition we were in when we decided to repair it and the financial condition we find ourselves in today are completely different, but that decision is taken. MIAMI is on the road to decommissioning and that is a sad day for the nation, as she had five deployments left in her, but the other thing that comes out of that is we forgot how to fight big fires, particularly in our ship yards and maintenance depots. That is where you have a ship that is mostly shut down, a crew that is mostly not on board, and a hodgepodge of activities responsible for helping put fires out, whether it be federal firefighters, firefighters from out of town, the ship's force that is around, the shipyard that is around. Learning those lessons and trying to figure out what to do with all that has been a significant challenge, and we wrote a new manual.

Many of you know the 6010 manual and all the things that brought to ship safety in big maintenance availabilities. Well we wrote an 8010 manual for fire safety, and I think Admiral McCoy intended to sign it before he left but he did not. It is a big book on my desk, and I looked at it at my first opportunity. The first question I asked the entirety of my organization was how much does it cost? I think ultimately there are two main things that have to be done to make sure we do not have another MIAMI. First, we have to drill. We all know this, right? If you make a plan and then you make everybody show up, put in realistic conditions and show that you can actually put it out. That is not show up with one hose, pressurize it and call it done. That is spending an hour and a half hauling five or six hoses around with all the organizations collaborating to make it happen. It costs about a million dollars to run one of those drills in a public or a private yard. That is a lot of money, but it is a must do. It is an unequivocal need. You have to do that or else you will not be able to put out the fire.

The other one is that you have to be able to monitor the ship when it is minimally manned and there are fire causing activities that could be going on. You have a roving watch on board with maybe a Maneuvering Room watch stander and a couple of hot work sites, that is being at your most dangerous, and so in that condition you either need to put people on board or you need to put monitoring devices so that if a fire, smoke, pestilence breaks out that you have some indication and you can take action and respond to it quickly. So, figuring out how to take that manual, which is a very, very expensive manual, and as I tell the organization, look the day I sign that manual, those costs are sunk. They are sunk in every ship building contract. They are sunk in every maintenance availability, public or private, and they are gone. You will never calculate them again once we sign that manual, so we are going to go figure out exactly what it costs, stare that baby in the face, and say, yup we are going to pay those costs. We are going to make it happen. That is one of the examples I would use with the workforce about how we have a culture of affordability and it brings in that need for technical excellence and judiciousness. You have to do the things that are most important,

but have to do them in a way that makes a difference. If you are doing it just to make yourself feel good, you should not be doing it, especially if it costs money.

I will stop there on the business plan and just talk for a couple of minutes about the recovery. I know I got a lot of questions last night and again I appreciate all of the outpouring of both help and your support, which I appreciate. Many of you have sent me notes and sent my organization things. I really appreciate that. It is going to take us a while, and I'll try to give you a sense of what that is about. The old building, I do not like really calling it by its number anymore because it will not have a number when we are done, seats about 2700 people, a little over half of the Naval Sea Systems Command. The other half is in a couple of buildings. You have been in them, 201, where Team Sub and Team Carriers live, 176, where a lot of the design and engineering folks live, and then a couple of outbuildings, but more than half reside in that old building. The building, as a result of what went on that day and the subsequent recovery actions, is in pretty bad shape. Not to belabor the point too much, but the thing started at 8:15 and it was 2:30 before the FBI declared that there wasn't a second shooter. Actually it was much more difficult than you might think. I'll just give you a couple facts because it helps me to understand it. One of the people who were killed was still breathing and one of his coworkers got him out of the building in spite of being locked down. He convinced the policeman to take him out to a hospital. The policeman was only allowed, because of jurisdiction, to take him as far as the Metro station. So they dropped him off on the sidewalk waiting for an ambulance to show up and Kisan died on the sidewalk at the Metro station on M Street. The other is that the guy that runs our steam plant, Ken Proctor, was out by the back door a little bit away from it, the shooter got to the back door and we think he could have left potentially, opened the back door, there was Ken, Ken started running and he shot him and killed him from a hundred and sixty feet with a 9mm, unbelievable, not possible. And so Ken died out in the alleyway behind the building. The shooter is up on the third floor, there's a body in the alley and a body out on M Street so they assumed there was a second

shooter until they could prove otherwise. You can get a distinct appreciation of that if you've been in that building. You've probably not been on all five floors and have not been to the entirety of each of the floors. It is a rabbit warren; a very complicated building. They blew open every door if it didn't have a window and if it had a window they broke the window and opened the door. They cleared every single room on all five floors. The building is in pretty bad shape. The second part of it is, there's a whole bunch of my work force that is not that interested in going back in it and having it look the way it looks. So as we learned from the folks from the various things like this that have happened around the country, you have to change it at least. You go to Sandy Hook and they're razing the entire school. We can't, we need to be back in that building. I think the Secretary of the Navy said it pretty well, "Our ships get hurt all the time, and we put them back together." So this is our work, we'll put it back together, but it is going to take us quite awhile.

I know that many of you are very interested in our intent for working as you need contracts and need to get back at the business of supporting our Navy. Fortuitously, the Coast Guard moved out of their old headquarters building at Buzzard Point which is just to the east of National Defense University the Saturday after the shooting. That building will sit about 2700 people. It's in pretty good shape although there are some floors that have not seen human occupancy in a couple years so they have to be cleaned up, but I think within six weeks or so we will be predominantly up and running in our alternate headquarters at Buzzard Point. We'll probably be in that condition for at least a year while we go through the process of turning the old building into either the Joshua Humphrey's Building or the W. Lawrence Building. *don't give up the ship*, I kind of like that one. Joshua Humphrey, if you've read [Six Frigates](#), that's an interesting choice of a person to pick. The early US Navy bought six frigates, and sent them to six different yards. They built them all different ways and contracted each one individually, that may not actually be the best way.

Let me just close all that to give you a sense of what NAVSEA managed to accomplish in the five weeks since the

shooting. This is the part probably where my chest swells with pride at what people have done. NMCI computers with their cards at their house and contractor facilities, double stuffed, triple stuffed desks over in building 201 and SSP and CNIC. In that last two weeks we did 1.6 billion dollars in contract awards. Now we did that using the distributed power of the Supervisors of Shipbuilding, etc., but also a lot of folks from headquarters. We were worried. That week I told the CNO there was potential that we would have five hundred million dollars we could not execute in end of year funds and expiring end of year funds. We burned that down to five million dollars. It was an unbelievable accomplishment by Maggie Maguire and her team. The LPD-25 completed acceptance trials as first LPD17 with no discrepancy cards, clean ship, great fit and finish, we signed the DD-250 the eighteenth. The crew moved aboard and that ship is going to be ready to fight pretty fast. I think that really punctuates the journey we've been on to get the LPD17 class in the right place and it is in the right place. LCS-4, the CORONADO was delivered, SPEARHEAD, JHSV-1, completed her initial test and evaluation, MONTFORD POINT, MLP-1, completed final contract trials, that means the crew is on board and it's fully up and functioning. Second MLP was launched, NORTH DAKOTA was floated off and FORD got water on the hull for the first time; great job, floated level, a little heavy but that's good, right, we talked about that. MILWAUKEE, the third ship of the Freedom side of the LCS class is ready for christening and launch in a short period of time. A lot of ships there, if you go into the portfolio, several successful missile shots including the first integrated fire control, counter air missile success which was an E2, an Aegis destroyer and a missile that was handed off between the two, incredible series of events. I could not be more proud of our organization's ability to operate under adverse conditions. I can't wait to see what they can do when we're back together again.

If I have any time left I'd be happy to take a couple questions now. Thank you all.

Yes, my question is, during this time of fiscal frugality, is the Navy taking measures to develop its cyber warfare capabilities to protect itself from cyber attacks? We know the existence of open sources of the computer virus developed by BAE for the air force in which the attacker can become system administrator of an enemy computer and control the weapon system. So what measures are we taking? If you could comment something on that, thank you.

That's a great question. The essence of the question is cyber defense and what are we doing? And it really spans the gamut. I would tell you that I spend twenty percent of my day on that topic. Accreditation of ship and ship systems to insure because most everything we have on ships now connects in some way to other electronic systems that make them vulnerable. Our shore based networks, including our unclassified but protected network which is the target of several countries who would like to have all the information that's on there, the designs of our ships and airplanes, etc. That is a full time job, we are committing extensive resources to it, and a lot of management attention because ultimately these things are difficult. I think what we've come to recognize is if you have a well-engineered network, it's pretty defensible.

One of our biggest challenges is in making sure it is aligned in accordance with how it was designed. Now, this is where the innovative nature of people and the discipline required to be defensible conflict with each other. Some of you like computers, most of you probably don't, but watch your kids or your IT people like, "How did you do that?" "Well I know the back door to the thing." And so what we found predominantly is that our biggest problems are getting people to operate the networks the way they were designed, and when you do that you find out they're not as flexible, you can't use your Blackberry to do hyper text, the computer can't connect to public websites other than ones that are accredited. We all bridle at that. "Wait, how is it possible at home I can do that?" Well at home you're not trying to protect the design of an aircraft carrier or an airplane or a submarine. And so I think that ultimately it's a combination of well-designed networks

operated correctly by people who have discipline. When you write that formula down that is a pretty tough formula but we are working on that every day. Like I said, probably 20% of my executive bandwidth is on that. Thank you for that question. That is a great question.

31ST ANNUAL
NAVAL SUBMARINE LEAGUE SYMPOSIUM
FAIRVIEW PARK MARRIOTT, FALLS CHURCH, VA

RADM PHIL SAWYER, U.S. NAVY
SUBPAC
23 OCTOBER 2013



It's traditional we say *aloha* at a function like this, so I will. But before I start, I'd like to pile on my thanks with the previous speakers to the Naval Submarine League. For not only what you've organized here today but what you do throughout the year. I've had an opportunity to go through the charter of the Naval Submarine League and the very first is to educate the broader America about what we do in the Submarine Force and I will tell you I think you've done a very admirable job and I certainly appreciate all the support that I and my forces have been provided by the League.

I've been out at SUBPAC for the past two months and during that time we've had two submarines deploy from Submarine Forces Pacific. The last one finished up their FRTP, the process

for preparing themselves for deployment, just last week. At the very end of that process we have the commodore of the submarine squadron come in and brief the type commander and staff, and to the school house, the progress of his submarine over that time period.

It's an informative look. It allows me the opportunity to see the progress of that submarine as it went from the basic phase to intermediate to advanced and all the exams and metrics we have in between to mark their progress. Ideally, you want a nice, smooth, upward slope of their performance. Occasionally, it's not quite that smooth and upward and we have a lot of questions. The commodore explains how he's arrived at his determination that they are indeed ready to deploy. Following the Commodore's brief, I have a chance to sit down and talk to the CO before he finishes up whatever his ship needs to do and then deploys. And during that time we talk about the assessment, how the FRTP process went, what his strengths are, what his weaknesses are, what he needs to work on, get his view of his team's performance. It's very enlightening. There's three things that I draw from this meeting. The first is that it was a mere twelve years ago when I was sitting in the seat that he was sitting in and I was looking across the table at Admiral Padgett and going through the a similar series of questions and discussion. So I wondered, "would I rather be back in his chair or do I like where I'm sitting right now?" And all of us kind yearn to go back and operate the submarine, but I appreciate the seat I am in.

Secondly, it's very apparent that producing deployed readiness is a complex, integrated process with many, many stakeholders. Admiral Richardson talked about the process from his perspective. And I will tell you from my perspective as a type commander, that it's just not the ship and the squadron, and the type commander and the school house and the maintenance organizations that are involved in the process. It's also the dental, the medical, the supply organizations and many, many other organizations that have a play in that. It is extremely complex, and there are sometimes second or third order effects in that process that are not readily apparent for a period of time once the changes are made. And so, I'm concerned

with that as we move to the future, and we operate in a more fiscally constrained environment. We have to be very, very conscious and aware of second and third order effects for our deployed readiness.

The third thing is that no matter the fiscal environment that we find ourselves in - that the standards that we're going to maintain for our submarines will remain high. Whether it's tactical readiness evaluation, or an advance pre-deployment training for the ship, it's critically important that they remain high. Our standards are high because we operate in an unforgiving environment in operationally relevant, challenging areas. Because our standards are high, we will periodically have failures in that process. While that's not desirable, it's not unexpected. The ship that we did this assessment on, had a failure earlier on in the system and so we talked through his corrective action and it was very clear that they were able to work through the issues and at the end be at the standards we require for our submarines.

I think the whole process of preparing a submarine for deployment, and certifying for deployment is one of the most important things that we do. The other part I learned from this process is that out there at SUBPAC as a type commander, I'm somewhat insulated from a lot of the fiscal churn that goes on. Now, as I looked across my FY-14 budgets and what we're looking at for 15, we've taken cuts. We all have. But overall as I look at it, I don't think they are cuts that any of my predecessors haven't had to deal with. So I look at that and I think that it is, from my perspective, manageable. One area that I am most concerned with is the impact to our shipyards and the effect of shipyard hiring freezes which in essence, delays the fixing, the repairing, the maintenance of the submarines. This impacts ship's schedule. Which impacts my ability to produce deployed readiness. I don't expect this will be a significant issue in FY-14. Likely, it may start manifesting itself in FY-15 or 16 if we can't make some corrections.

As everybody up here prior to me has mentioned, our strategic forces, particularly Ohio Replacement Program, is our number one priority. And I'm not going to belabor the strategic forces too

much because following me, we have Admirals Rick Breckinridge and Dave Johnson, and both will speak about the Ohio Replacement Program. We have the CO NEVADA who will also speak. But let me give you my perspective as a type commander for SSBN forces. First of all, I think of all the areas under my portfolio, it's probably one of my most challenging. And that is generating SSBN readiness, SSBN deployments. These platforms are aging, the average age of our SSBNs is twenty three years. Squadron Seventeen in the PACNORWEST, and Squadron Twenty in King's Bay, produce year in, year out, more deployed readiness than all the rest of the submarine squadrons combined. They are doing an amazing job and the commodores, I'll mention them here; John Tolliver was relieved by Mark Benning up at Squadron Seventeen and Chris Harkins down in Squadron Twenty in Kings Bay. And the two leaders for those groups: Group Nine is Dietrich Kuhlmann, Group Ten was Joe Tofalo, he's just recently been relieved by Chaz Richards. When we say that they're doing phenomenal efforts by our people it is exactly that. They are producing deployed readiness at a level that nowhere else in our Submarine Force, do we do it.

Also while producing this deployed readiness, they also have aggressively gone after some of the lines of effort in our Design for Undersea Warfare. In particular, we have one that says, "Continue to hone our skills for our Op plans, for our war fighting, for contingencies." And those crews on board our SSBNs, as they go out and do their patrol deployments, are aggressively looking at the skill sets and the skills that they will need to employ in time of a higher DEFCON. Lastly, on the strategic force the timeline for an OHIO replacement program is already tight. The concern that I have as a type commander is that we are going to get into uncharted territory with the lives of these submarines. And the demand for our strategic force will remain strong – we will need to continue to deploy at the rate we do today.



Warfighting First Unmanned Vehicles

Unmanned Vehicles

- Unmanned Aerial Vehicles (UAV)
 - Sensor height of eye
 - Greater range
 - Unique perspective
- Unmanned Undersea Vehicles (UUV)
 - Force multiplier
 - Conduct basic missions
 - Finds us subs where truly needed



Unmanned Aerial Vehicle (UAV)

Submarine-Launched

- Expands organic sensor capabilities
- Available when needed

Submarine-Controlled

- Need not be launched from sub
 - More capability
 - Greater endurance



Unmanned Undersea Vehicle (UUV)

2

The CNO has a publication called Sailing Directions. He has three tenets in there: war fighting first, operate forward and be ready. So I'm going to walk through the first two of those. War fighting first.. Admiral Harris relieved Admiral Haney last week as Commander of the Pacific Fleet, and he closed his change of command ceremony with, and I'm going to paraphrase, "The adversary isn't pausing during this ceremony. Let's end it and get back to work." And I say that because we're going to go through challenges here in the future, our potential adversaries aren't going to care. They're going to continue to march to whatever their strategic plan is and so we have to recognize that and we have to look at both materiel and non-materiel solutions of how we would conduct contingency operations and war fighting. Two materiel ones that were also identified by Admiral Connors UnderSea Domanance Plan, and they are UUVs and UAVs.

The UAV perspective is a fairly simple one for us. We want to use UAVs to extend our 'reach' Depending upon the scenario,

this may mean we launch and control the UAV. The reach it extends is my ability to look over the horizon, my ability to organically understand what it is that's over there so I can best understand what I need to do to optimize my submarine's position or advise my operational commander. Second, are the UUVs, and there's a lot of continued discussion about UUVs. They also will extend our reach, go to areas that my submarines can't, and also as Admiral Connor said, it's about payloads. There are a lot of things that smart people can think of to do with UUVs and how they may fill a seam, cover a gap in some capability or area that would be beneficial to us. Along these lines, very recently we designated Devron Five as the Submarine Force lead for the TTP development for UUVs.

Strategic Force Operations

USS NAME

USS TOMMAGIO

- Unwavering 100% Coverage At - Sea
- Strategic Undersea Campaign Plan
- Numerous Readiness Initiatives Underway
- Phenomenal Efforts By Our People

Devron Five is working on a roadmap that will deliver capability and trained operators to the force. They are working with N97 and other stakeholders including in N2N6, to make sure they've got that right and then we'll publish it. They will be our go-to organization that has our subject matter experts on UUVs. I think that non-materiel solutions are very important also because we have to continue to look at what our potential adversaries are doing and how we're going to overcome what they're doing with or without materiel solutions. So on the non-materiel side, the two type commanders with intel support and the fleet support we look at this A2/AD environment. If we had to go to battle now with a potential adversary that could put an A2/AD environment out, what exactly would we do? How would we do our current missions and taskings given that type of environment? There are some things that you can do with our platforms as they are. Along with that A2/AD environment, we're always concerned about satellites and whether we'll have communications and whether we'll have GPS. We also have to plan in case that may be the eventuality. And part of those plans, and part of that experimentation, part of that real world TTP development that we are doing is being done by our forward deployed operational commanders.

We have two, one in Group Eight in the Mediterranean, Admiral Bob Burke, and one out in West Pac, which also covers the Persian Gulf Admiral Stuart Munsch. They both are doing phenomenal work; they are on the demand side of the supply-demand equation. We talk to them regularly. The relationship we have between our forward operational commanders and the type commanders, and the submarine leadership at large, is very, very tight, almost seamless if you will, which is a great advantage to us in the Submarine Force.

So, when I was CTF-74/ CTF-54 I had a lot of people that came by and visited. Oftentimes they asked the question, "Okay, you're the operational commander, you're looking at the Western Pacific and the Persian Gulf and what is it we could give you that would make your job easier?" Over time I evolved two answers for that. My first was, "Give me unlimited weapons capability." Of course, we want more, we want better. My point on that is that,

our heavyweight torpedo, is a phenomenal weapon, it really is, there's none like it. However, perhaps we ought to be looking at some way of delivering the same type of kill capability with an increased capacity. Unlimited would be ideal, clearly that may not be realistic, but since they asked me what I want, I'm telling them. I want to be able to send my submarine in and let him relentlessly hunt and kill all those that he is supposed to and not have to pull back out because he has run out of torpedoes.

The second answer I provided was I want a smart mine that can travel thirty to forty nautical miles and I can program it. I can tell it, "Blow up or not blow up." I want a smart mine with that capability. I think we should work hard on developing a long-range mine. Very recently we launched a Submarine Launched Mobile Mine out in Hawaii. I had heard, I don't know quite where I heard it, that we were out of the offensive mining capability, which is not true. We have offensive mining capability, we have the SLMM mine and we just shot some exercise shots out in Hawaii. So I think the mine is a valuable weapon. It's not only an offensive weapon but it also can be a cost-imposing weapon.



Operate Forward Guam



Admiral Padgett mentioned I was from Guam, I'm not a Guamanian but I'm very familiar with Guam and I would start with, if you haven't been to Guam within the last three years, it's changed a lot. From the Submarine Force perspective we have put considerable investment into our infrastructure. First, we've built a squadron building and co-located the training center with it. It's brought us a synergy that allows a squadron, the training command and the units that are deployed out there and home ported out there to have a place where they can sit down and talk about deployed operations. We have three home ported submarines in Guam, the fourth will arrive in calendar year 15. I always called the submarines we have home ported in Guam, "my 911 force", when I was CTF-74. If there was a contingency that I needed a submarine for, I was looking to Guam first. They had the experience, it was their back yard and I expected those guys to always be up on the ramp to be able to go do whatever it is I needed them to do as the operational commander.

We are training and building a cadre of submariners out there that have a significant amount of Western Pacific experience. That

experience they also bring to bear for deployers when they come to Guam. They are able to mass, if you will, in classified areas and talk about operations. They are able to share data deployer to deployer and between Guam boat to deployer similar to what our acoustic intelligence specialists do. So there's a great synergy of US submarine operations and knowledge out there.

Guam, historically, has been a stop for the Japanese and the Korean submarines as they come to Hawaii. They stop for fuel, food, relaxation, whatever, then they proceed to Hawaii, come to RIMPAC, or other exercises. It's been a good relationship. What we're trying to evolve to make Guam their destination also, in between exercising in HI. Bring their submarines to Guam, we can operate there bilaterally or multilaterally in a good environment for submarines. The value of having the Japanese and the Koreans continue to come to Guam is it provides our submarines experience with diesel submarines and that is precious. We get the opportunity to operate, to train and to practice a lot with our allies.

Guam is a logistics hub and it's a maintenance hub for Westpac. A kind of an 800 pound gorilla there is the tender. And I know we've got many tender folks here in the audience. A tender remains the submariner's best friend. On deployment you like nothing better than to turn the corner and to see the tender there and the repair department waiting to come down and to support your ship. Our two tenders, our forward deployed tenders, Frank Cable and Emory S. Land do phenomenal work for us. I'm not sure they get all the credit that they really deserve. But the submariners recognize and appreciate the value that the two tenders bring. You may have seen here just recently EMORY S LAND won the Secretary of Defense's Field Level Maintenance Award for 2013. One of the three winners and the only one in that category.

The other thing about the tenders that I think we need to do a little bit better job on as a Submarine Force is to educate the rest of the Navy on exactly what the tender provides. Because it provides much more than just deployed submarine maintenance. That's what we think of it as. But whenever there's excess capacity in the repair department, and periodically there is, we offer that excess

capacity out to the surface fleet and I will tell you there are no happier surface fleet sailors than the MCMs and the PCs when they get a tender alongside to do some work. The story I tell is of a minesweeper CO who only put in for 25 work requests. A typical submarine will drop 100 on you in a heartbeat. And this minesweeper CO said, "Well, I'm really kind of concerned, I don't want to give you guys too much work, I don't want to ruin this relationship I had with you." And I said, "You've got a 45-men crew, I have a 700-men repair department, give us all your two kilos, we will come, we'll fix those things you're unable to get fixed."

We sent LAND out to Fifth Fleet on a rotational deployment and I almost didn't think I was going to get the tender back to Seventh Fleet, because the Fifth Fleet commander, kept coming up with reasons to keep her inport. But they did a lot of work, they did a lot of work for our surface fleet, our amphibs and our MCMs and our PCs in particular.



I talk about RIMPAC 2012 to remind us all that as we move forward, we are going to rely more and more on support from our allies. We leverage it considerably, obviously both from NATO and our Westpac allies, friends and partners. Many things we could not do without their support. You can surge a lot of things. I can surge a deployed submarine in time of contingency, I can surge people to help, I can surge a lot of folks to Japan for Operation Tomodachi. And we did. But the one thing that you cannot surge is, you cannot surge trust. So you have to be there to build relationships and build partnerships with these folks. And so it's in our best interest. .

And lastly, Admiral Connor mentioned the Theater UnderSea Warfare Commander and that is a combination of the ASW commander and the Mine Warfare commander reporting under one hat, which is what we envision the future being. In 2014, we will test the concept by merging the Theater ASW team and Mine Warfare team into a Theater UnderSea Warfare team. So I'm sure there will be a lot of lessons to learn that come out of that.

I'm going to end as I started and tell the Naval Submarine League, for all you do for us, my sincere appreciations. And with that, thank you very much! I'll take questions.

Question: Admiral, the United States is taking a lot of international flak for having unmanned but armed UAVs. Do you think that's going to inhibit any future development of unmanned but armed UUVs?

Answer: That's a very good question, that's a very challenging question. And I know there's a lot of policy makers that are wrestling with that. I don't know what that answer's going to be, I do know that we can use the unmanned aerial vehicles in the issues that are going on to educate and inform us as we go down that path for arming UUVs.

Question: My question is are there plans in the future for the US Navy to increase the collaboration between US submarines in the Pacific and those submarine forces of allies, like Japan, their

submarine forces is said to be increased from 16 submarines to 22 and of course the South Koreans have a [?] Submarine Force and with the Australians and the nascent Singaporean submarine force. A sort of like a network cooperative engagement capability sort of collaboration might be possible, are there plans to do so in the future?

Answer: Thank you, it's a good question. In the Undersea Warfare magazine in spring of this year - that magazine's the one put out by N97 - that had as the main focus was what we're doing in the Pacific. And particularly, Pacific Submarine Forces. And that issue had articles written by Singaporean Navy, Indonesian, Australia, Republic of Korea and Japan. And if you read through articles from their Submarine Force commanders, it is very clear that they value operations and working with the United States Navy both from an ally perspective and also from an ability to learn from each other. So my view is they want to continue to operate and maybe expand operations with us. So I would be completely and very open to those types of operations in the future. Thank you.



2013 ANNUAL SYMPOSIUM
NAVAL SUBMARINE LEAGUE
24 OCTOBER 2013

FORCE MASTER CHIEF WES KOSHOFFER, USN

Thank you very much for that kind introduction. I would add to the rating discussion that we're having here that I am the offspring of a sonar man. My brother entered the Navy and became a sonar tech and I entered the Navy and became a Radioman...then a Chief of the Boat, CMC, and Force Master Chief. In my family, we call that evolution. As my counter part said, he has been doing this for awhile. This is not his first rodeo. This is, my first rodeo and I've got to tell you, I feel like a seaman that just stumbled in to the wardroom to give a report during a Department Head meeting with every chief and the skipper in there. This is unbelievable. I am generally not nervous during public speaking but to speak in front of this crowd and to represent the enlisted Submarine Force of the Atlantic is just awe inspiring.



Can we bring up the slides for me? I get to provide my perspective here today so this is the world according to me. I will try to show you some facts and some figures but I am glad that Cash (SUBPAC FORCM) covered some retention and attrition statistics saving me from having to field that hard question. I am going to talk about that just a little bit, after I thank the Sub League for inviting me here to speak and for everything that they do.

I want to point out two things that are special that the Naval Submarine League does. First, the speaking program that I observed when I was at Submarine School as a CMC there about six or seven years ago. That interaction between the Sub League and the sailors is extremely important, linking our past to our present and always discussing that great legacy and our responsibility to continue that legacy; very, very important. The other huge contributor is toward our Sailor of the Year Program. That is not just the Submarine League. That is the Navy League as well and I know there are some members here, and I say thank you on behalf of the Chiefs who would have to foot that bill out of pocket. We appreciate all the support that you provide in recognizing and taking care of our Sailors. The gist of my discussion is to talk about the State of the Union in the enlisted force. To do that I need to do a small scene setter for you. We need to dial back about three years ago. Our retention stats were not off-Navy norms, but we were seeing some unplanned losses that were much higher than we desired.

As a good deficiency-based organization, we decided to really dig into that and figure out what was driving higher than desired attrition in zone A and unplanned loss. Coincident with that, we were also at the bottom point of a manning issue due to some accession problems created almost ten years ago. We saw the bottom about two and a half to three years ago with manning levels really in the toilet. Where fit and fill were not as described here today. We were really hurting. We were in the 80% range and robbing Peter to pay Paul trying to man up crews to get out on deployment. I am here to report and to follow up with you, that we've corrected a lot of that. Our fit and fill numbers are steadily improving. Every submarine on the waterfront is better manned

and now we are able to start building depth on the bench at our shore commands so that we have the support and the ability to react to unplanned loss. We are much better, and much healthier. But we learned a lot when we went and really dug in to find out what does drive attrition and unplanned loss. Unfortunately, no new lessons learned here. It turns out that, as I am sure many of you know, that the driving factor is simply command climate. Perhaps also our attitude toward initial accession sailors. I think command leadership school was on to this before us. Many of you, not too many, might have gone through a model where we sent command leadership school out to boot camp for a very specific purpose. They wanted you to see first hand the kinds of Sailors that were entering the Navy today. You saw a very powerful ceremony out there where they would receive their Navy ball cap, and they were reduced to tears when they received that ball cap. Well, that changes your whole paradigm when you then see them arriving on your ship.

We have something even better than that. We have Naval Submarine School. I have started to call it the fountain of youth for old crusty Master Chiefs. In fact, MCPON West made it a frequent destination when he needed a battery charge. You've got to come to Sub School on a Thursday afternoon. You've got to watch all of the classes fall out in the afternoon. About 1400 they start to make formations and march down Hospital Hill. Each class in each school building starting to dismiss and come out and join the procession, arriving at Dealey Center for GMT. Every Thursday, where the CMC and other speakers get an opportunity to have a very intimate conversation with the most enthusiastic group of 19 to 24 year olds you are ever going to meet in your life. Some people would look at that as a problem. How do you manage a thousand 19 to 24 year olds? Very carefully, I would say. I can't take us all there. I wish I could teleport you. It would fill your heart with pride to see these Sailors actually doing it, but I did the next best thing. I sent word to the Sub School CMC last week and said I want live footage next Thursday. Get me some video of the sailors marching down to GMT with the Sailor's Creed in Dealey Center. I went ahead and had our staff splice and

edit it. Let's roll "A Trip to Sub School" for you here. (*Ed. Note: FORCM showed a film clip which met with broad audience approval*).

Hoo-yah. So there are a couple of things you can draw from that. Just the sheer numbers of sailors that we have going through the school shows we are still working to fix that accession problem that we had. It also shows the energy, the enthusiasm. The part that you can't see in the video is that they are ready to chew their own arm off to get out to the submarine and qualify—every single one. Even watching that you may still be skeptical and you may say, "Well, they can march. We'll give them that. They've got a little bit of hoo-yah but are they going to be a good Submarine Sailor? Are they respectful?" Much has been made about this current generation. We tend to do that. We label each generation. We have the Greatest Generation. We had the Baby Boomers after the Greatest Generation. We had Generation Next. I think that was my generation, perhaps the forgotten generation. We have no claim to fame necessarily. Then you have this Generation...is it generation X-Box, which you just saw in action. Is it a generation of children with over developed thumbs from game controllers?

In our study of unplanned loss, climate, and those kinds of things, we started to latch on that there was this subtle undertone of Generational Warfare that was going on. We all do this to some extent. Remember the slogan "Diesel boats forever"? That is not necessarily a negative thing. That emotes pride but you know those boat sailors always looked down their nose at the modern nuclear Navy; 637 Tough, 594 Tough (all depicted on slide). Deployed 364 out of 365 days a year, always gone... You do know that your parents walked uphill to school both ways at least they told you that. It probably rained every day of their adult life. There was never enough food to go around. Nobody will ever be as good as you were in your own mind. That is some of the slightly negative side of this generational warfare. The positive side is that we look at those generations before us and we understand our responsibility to carry forth this great legacy and so

do those young sailors at sub school. That is the powerful side of it.

What we have to do as leaders, and what we've been working on, is bracketing that and getting the right level of Generational Warfare, the positive side so that we are looking to our heroes and the last generation for inspiration. We are trying to avoid a self-fulfilling prophecy (assuming that this current generation is no good). I confess that I can remember using the phrase "is Sub School a pump or a filter?... out of frustration when I had a particularly challenging Sailor in front of me one day. But then when I went to work at sub school shortly thereafter as the CMC, it all came back to me....the problem was me and my attitude toward these new Sailors. It turns out that they are incredible young Americans. They're eye-watering. So I think that is where we are really turning the corner right now in retaining Sailors on that first tour. We are doing a fantastic job. This journey does not end at Sub school. Let's look at them when they reach the fleet.

I sent a few of the CMCs of the groups and squadrons a special assignment. I called Master Chief Garvin down in King's Bay, and I called Master Chief Wohlgemuth at Squadron 12 in Connecticut. I basically told them that I need you to leave your building and go to the waterfront with a camera, find a COB and have him point out a hot running Sailor.. Not a cell phone camera. You don't want to get in trouble. Don't go in the engine room or do anything stupid. I want you to go validate for me that you can't swing a dead cat without hitting a high quality Sailor. To use a fishing analogy; if you were out fishing in this lake with our people, the fish would jump in the boat. You wouldn't even have to get the line wet. So I sent them on this special assignment.



So Master Chief Garvin, in about 20 minutes, had gone and shot these two head shots on the left. They look like mug shots, I understand, but it just validates my point. It gives me an opportunity to talk about some of these amazing young sailors that we have. CS3 Smith there on USS WYOMING. It was actually one of the very first Sailors that he ran into in the Off Crew Building (next door to the Group Building down in Kings Bay). Pulled him aside, talked to him for a few seconds. Here are the quotes he forwarded... "Found out this sailor joined in 2011. He's from Woodbridge, Virginia. Now he's a Galley Watch Captain. He's been Bluejacket of the Quarter twice, Bluejacket of the Year this year. This sailor had a great attitude. It made me younger just talking to him. His COB said he always has a smile. Crew says he has an infectious personality, has a great sense of humor. Loves the Navy. A future chief. I would have this guy on the Flagstaff in a heartbeat. Everyone said... "he makes the mess decks run." So that's what his shipmates had said about him.

So the man next to him, ET1 Goodwin is a NAV-ET, Odessa, Texas. Joined in '05. He's the NAV-ET LPO. He's qualified Diving Officer of the Watch, Chief of the Watch, Duty Chief. Came to the ship as a seaman...now he is a first class. He's a qualified ANAV onboard that ship. He is their best Duty Chief Petty Officer on the boat, bar none, as told by his leadership. Not

only a leader in the first class mess but on board the ship period. He's on USS ALASKA.

The next sailor on the other side, Petty Officer Puddy, USS PROVIDENCE, Torpedo Division, Assistant Leading Petty Officer. Also qualified Chief of the Watch. Expert administrator. He was involved in the Sea Robin testing... planning upkeep... doing things that I couldn't even dream of doing as a Second Class Petty Officer. Again, just an amazing, phenomenal sailor. So, they're everywhere. Like being in this room, you can't swing a dead cat without hitting a retired admiral. Next year I'm going to bring a dead cat.

So every year, I go through a very humbling process, or at least I have for about the last ten or twelve years; that's the Sailor of the Year Competition where we try to determine the best of the best. I say it's a humbling experience because every year, the results are exactly the same for all the Master Chiefs that sit those boards. I'm embarrassed by what I was not doing when I was a Third Class or a Second Class, much like the NAV-ET that I just briefed. When I was a Radioman Second Class, I was looking for the bar. These guys are out pursuing off-duty education. They're EMTs and firefighters in their off-time. They're raising families. They're qualified things I couldn't even dream of.



This line-up right here was last year's group from the TYCOM competition. Petty Officer Scott on the far left. He's a Yeoman, SSBN out of Kings Bay, and he was probably their number two dive onboard the ship. As a Yeoman, are you kidding me? EM2 Walters there, the second guy. A sailor working at Trident Refit Facility. Of his own volition, pursued a Cat-3 Crane Operator's License and was helping out the command. Also pursuing a degree. Yeary, an ELT, the next gentleman. MM1. Actually an EMT. Has a degree. He was an Engineering Watch Supervisor, one of the best on the ship.

Haywood, an ACINT specialist trainee working in the sound booth in the lab up in Groton. A Sonar Supervisor. A Mission Supe. Amazing guy. MM1 Cox was our Sublant Sailor of the Year last year. He was off the USS MONTPELIER and to this day, anytime that I run into Fleet Master Chief Clarke, he wants to talk to me about this Sailor. He just can't stop. He will find me in a room, say, "I remember meeting ...(Petty Officer Cox...and I am thinking.... I know you've told me like 75 times. The guy is amazing. It gets locked into your brain after you've met some of these Sailors.

Radsminsky is an A-Gang 2nd Class. He is the leading Petty Officer in his division. I mentioned that little manning trough that we went through. We had a few divisions with almost no fleet returnees. Many divisions with Second Class LPOs and they absolutely kicked ass. This last guy, on the end there, STS-1 Zirk, left the Marine Corps after nine years. For some strange reason, joined the Navy to be a Submarine Sailor. In the Marine Corps, he was a heavy machine gunner. He just made Chief this year as did three of the other sailors in the picture and you want to talk about a PT monster. He brought some Marine PT to the Chief Selects down in Kings Bay this year. Just a phenomenal sailor. They're everywhere.

Next Slide...So I heard this quote...even today ("Chiefs are too young" is displayed on slide). In fact there are two things that Admiral Padgett said that I want to comment on now that I remember. My first comment is that I thought I was the only one who felt dumber the farther I've gone in the Navy...I can

appreciate that sir because I do feel like I should know more... sometimes I feel like I don't know anything anymore. The second was, "The Chiefs are too young." This is everywhere. This is so prevalent as a sound bite that we actually went and studied this at Sublant with the NI Shop. This is a strong fleet perception. It shows up on surveys all the time. Captains are pounding the table, "this Chief's Quarters is too young." I think it is parallax error. Have you guys looked in the mirror lately? I don't think we're getting younger. I think you're—never mind.

Average time to make Chief in '01 turns out was about 12 years. Average time to make Chief in 2013 – the same. So I was going to do a graph, but I thought that would be insulting because it would be a straight line. (At the bottom of the slide, it said "A myth debunked." I had to explain to somebody what debunked meant recently.... Cash (SUBPAC FORCM), it means not true and we've proved it.

Next slide displays picture of very young looking Chief.

Ok, so I get where this comes from. MTC Bates, Kings Bay off the ALASKA. I get it...he looks like he's 12. That's a little unnerving if you're in command. This guy shows up on your quarterdeck and your thinking...you've got to be kidding me. We can't get there from here. Where's your mom? Is she coming? Do you have a permission slip to be here kind of thing?

What you don't see in here is what the Kings Bay MT community says. He's one of the premier and pre-eminent experts in Strategic Weapons Systems. In fact, he's selected to be SWS Department Master Chief, which is a new position much like an EDMC onboard the ship, selected as a chief ahead of other senior chiefs to go to work with a troubled division. Amazing.

Next. Oh, by the way...this guy here is an eight year chief. He's got a whole nine years under his belt now. This is Chief Jedwabney. I know him personally from Groton because he made Chief just a few years ago and went to sea onboard USS TOLEDO where he is just crushing it right now. He's qualified everything. He's one of the best. The Command leans on him. They depend on

him. He's getting it all right, all the time. He is an amazing Sailor. So let's not discriminate based on age. That's my pitch.

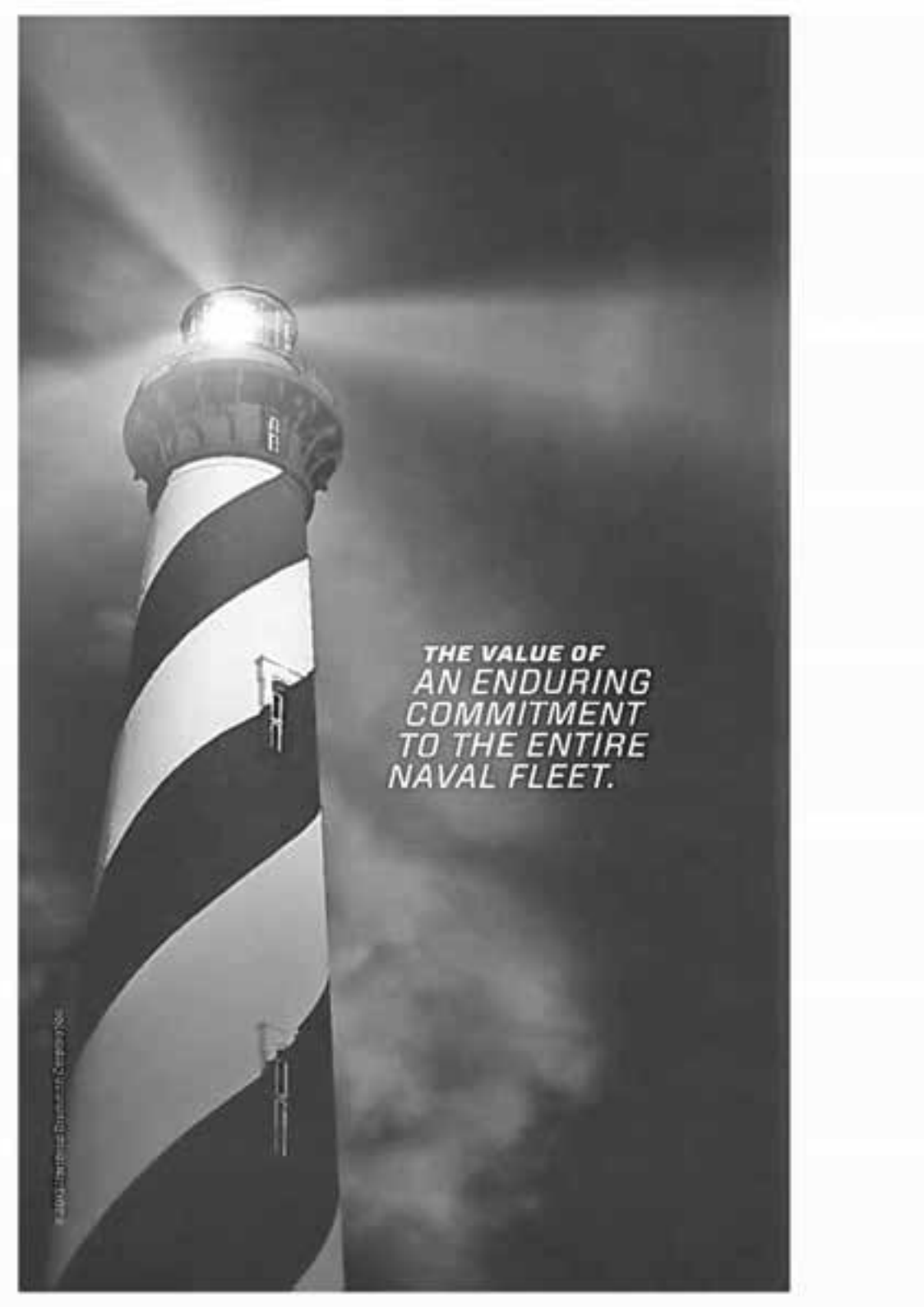
So you might ask, all right, I'm trying to sell you here that your beloved Submarine Force is in good hands. We've got some amazing people but does it look and feel the same? Are submariners the same today as they were then? Do we have the same cultural values? So I'm going to show you a short clip here, and I want you to pay attention to what the Sailor says. This is not a new clip. It's a couple of years old. We pulled it off a NAVY dot Mil site. The PA shop had showed me this video as were working this presentation and during my first view I told them to cut it...it didn't go with the theme I was presenting or the story I am trying to tell. But then it dawned on me as I listened to what he said and I realized that this fits in exactly. We trimmed it down to just this short sound bite. Roll. *Ed. Note: FORCM showed a clip of a young submarine Sailor speaking.*

So I have never spoken to that man. I didn't tell him those things. He didn't grow up on submarines that I grew up on. He hasn't served at a command but with me somehow we arrived at the same set of values; that it's about technical competence, that it's about good moral fiber, and it really doesn't matter what you look like or where you came from. It's what you can do on board the submarine. That is what we esteem as submariners. They are creative. They are driven. They have a strong work ethic and nothing has changed. Those attributes are intact; tenacity, integrity, teamwork. It's all there. It's palpable. You can feel it. I think he illustrated that point very well.

So you might say, well, of course these guys are qualified all these things. You must have lowered the bar. It must be really easy to qualify Dive these days. Absolutely not. In fact, we have just embarked on a Navy-wide initiative to reduce administrative distractions. It turns out we've never found a training requirement we didn't like or an admin requirement to go with it. It's very distracting. There is a lot. We ask a lot of these Sailors that are down there. Have you heard the expression, "Liberty is a mission"? I don't think many of you had to put up with that. As long as you made it back to the boat in one piece, ten fingers, ten

toes, we were good. Station the maneuvering watch. Now, we breathalize you. The requirements and the bar have only gone up for personal behavior, for expertise, technical competence, the complexity of the systems continues to increase. It is tough. We haven't added much to the technical training in quite some time. In fact, we've kind of watered some of it down. We're looking at all of that right now to try to shore it up. My point to you is that the bar is still high. It is not that we lowered the bar. These Sailors are getting over the bar. They are leaping over the bar. We should probably move the bar or else we may let our guard down.

I thank you for the opportunity to come and speak to you today. Hopefully, I'll be invited back next year. Thank you.



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KINGS BAY TRIAD CONFERENCE**KINGS BAY TRIAD DETERRENCE CONFERENCE****DETERRENCE AND THE TRIAD****GENERAL LARRY D. WELCH, USAF (RET.)****7 NOVEMBER 2013**

Given the experience and expertise of this gathering, it can be hard to find anything really useful to say. But it is because of the experience, expertise, and commitment of this group that it is useful to deliver a message. It is a message about the message—that is staying on message about deterrence, the Triad that underwrites deterrence, and the forces required in an effective Triad—forces powered by policy, people, platforms and weapons. I offer the message tonight to this group because our community of expertise and dedication to sustaining the nuclear deterrent needs to devote more intense attention to the message. We need that increased attention because there has been a national drift away from the message as amply illustrated by confusion about the importance of the deterrent, the Triad role in that deterrent, and what is needed to sustain needed deterrent capabilities. The message is not complicated. So I freely accept the risk of either boring or insulting you by reiterating that message.

For any message, it is useful to start with what are we trying to do. In this case, we are trying to do two things.

- Deter potential adversaries from actions that can be catastrophic to our national interests and those of our friends and allies—that is a nuclear attack
- Assure friends and allies that it is not in their national interest to develop their own nuclear weapons capability

The necessary conditions to achieve those two objectives are also uncomplicated and remain unchanged from the darkest days of the Cold War

- To persuade adversaries that the potential cost and risk of a nuclear attack on the U.S. or our allies far exceeds the potential gain and,
- To assure our allies that they can trust our capability and will to extend our nuclear deterrent to meet their needs

There are no reliable metrics for what it takes to create those conditions but there is a long history that informs our judgments about the subject

- One relevant historical fact is that two coalitions of nations, with irreconcilable political doctrines, armed to the teeth with heavy emphasis on nuclear forces, found that the cost and risk of using those forces against another nuclear power far exceeded the potential gain
- A second relevant historic fact is that some 30 nations that are capable of developing national nuclear weapons capabilities have seen it their national interest to, instead, formally or informally place their trust in confidence in the U.S. extended deterrent. The key word is confidence.

We have been able to sustain the conditions that produced those historic facts while reducing the U.S. deployed stockpile of nuclear weapons from the 10,000+ that we targeted when I was Commander of SAC and Director of the JSTPS, to the 6,000 in Start I, to the 3,500 proposed in START II, to 2,250 in the Moscow Treaty, to 1,550 in New Start.

The risk associated with these reductions was deemed acceptable by senior political and military leaders to include those directly responsible for ensuring a ready, effective strategic nuclear deterrent force. With those reductions, we remained confident in the effectiveness of the deterrent and our allies remained sufficiently confident in our extended deterrent.

But the risk was acceptable because of continued confidence in the performance of our forces and weapons. Take away that confidence and the risk becomes too great.

So, in the end, the relationship between capabilities, will, and deterrence is about risk and confidence

And that brings us to the Triad and sustaining the Triad. I suggest there are some specific capabilities essential to confidence that the strategic nuclear deterrent will continue to serve its intended purpose and there is a set of risks addressed by the characteristics of the Triad.

The needed characteristics to assure there are no exploitable gaps in the deterrent and that no potential adversary could imagine a successful first strike, are assured and unquestioned response capability, survivable second strike, resilience, and controlled demonstration capability.

Contrary to some of the discussion we are seeing as the number of deployed strategic nuclear weapons has been reduced in increments to 1,550, the size of the deployed force is not the determinant of the viability or need for a Triad. Instead, the determinant is the role or roles of each leg of the Triad that cannot be adequately provided by any of the other legs.

- The unique role of the SLBM force is assured second strike. This capability provides assurance that, regardless of the size or effectiveness of an attack on the U.S., no adversary can escape a devastating response. While some number of silo-based ICBMs will survive and there is a history of attempts to equip land based ICBM forces for this role, the burden for second strike falls heavily on the SLBM force.
- The single-warhead ICBM force most unique feature is its contribution to stability. It provides assurance that only a massive nuclear attack with high quality weapons could seriously compromise ICBM force's effectiveness and such an attack would elicit a prompt devastating response. So there can be no ambiguous attack or effective attrition campaign that could defeat the U.S. nuclear deterrent. The second role is

the unquestionable capability for a rapid response when authorized by the President.

- At one time, the bomber force overlapped all of the roles. When on alert, it provided assured second strike capability. With multiple bases and dispersal capabilities, it provided assurance against an effective cheap attack or attrition campaign. The continuing and unique role of the bomber as currently deployed is the power of demonstrating will and consequence. In past crisis, the visible increase in readiness for nuclear operations, to include launching to airborne patrol, provided a clear demonstration of capability and will.

It is the aggregate set of Triad capabilities that ensures there are no gaps or vulnerabilities in our deterrent forces that can be exploited by an adversary. Given the consequences, such gaps or vulnerabilities would create unacceptable risk.

Unfortunately, investment cost to sustain platform and weapons capabilities to sustain the deterrent has become a major issue. We are dealing with sticker-shock.

A major cause of the sticker shock is that the nation has become accustomed to the long-lasting effectiveness of the current forces operating largely on past investments. The life of the delivery platforms and the weapons has been extended far beyond the design life or the expected life.

- The first Ohio class submarine was commissioned more than 30 years ago. The first delivery of the next generation submarine is to be after 2030.
- The last B-52H was delivered 50 years ago and the first replacements are to begin in the mid-2020s.
- The Minuteman III entered service more than 40 years ago and the replacement is being addressed in an assessment of alternatives.
- On the weapon side, against a planned design life of 20 years, the B61 mods 3 & 4 entered service 35 years ago. The mod 12 is to start replacing those in 2020. The W78 on the Minuteman III has been deployed for almost 30 years and replacements

are scheduled to start fielding in the mid-2020s. The newest ballistic missile warhead—the W88—has been in service for 24 years and, with some upgrade work, is expected to serve for years to come.

Given all that, it would not be unreasonable to expect praise for the cost-effectiveness of our nuclear forces and weapons. That is a joke of course. We would all be shocked by such praise. But, not to worry, that won't happen.

But forces and warheads inevitably age to the point where we cannot sustain confidence in their reliability and effectiveness and the risk becomes unacceptable. The good news is that we have had, for at least a decade, people who are the nation's most informed and reliable experts in nuclear weapons design, people who thoroughly understand nuclear forces, and people who are thought-leaders in deterrence working together to define the solution to sustaining the right future nuclear weapons stockpile.

With the exception of the W76 which is in the process of completing a life extension program, every weapon type that we will retain in the stockpile for the long term will require a major life extension program. That is simply a fact of life. It is not a matter of if it is necessary; it is a matter of choice in how it is done. Do we just rebuild the cold war stockpile as best we can or do we take advantage of the billions we have invested in stockpile stewardship to apply greatly increased knowledge and more effective tools to use the needed life extension programs to deliver the right stockpile of weapons? The good news is that we have a strategy and plan for life extension that produces the right future stockpile. This widely supported strategy is commonly referred to as the 3 + 2 strategy. That strategy provides a future stockpile that:

- Remains highly reliable for decades,
- Reduces the needed numbers of non-deployed weapons needed to support the deployed stockpile,
- Cuts the numbers of warhead types about in half,
- Reduces the technical risks from a lack of alternative warheads for some of the deployed stockpile,

- Provides increased confidence in the long-term capability to sustain the nuclear deterrent without nuclear explosive testing,
- Leverages past investment in nuclear components by refurbishing and reusing vice new design and production, and
- Provides for quickly expanding the most survivable leg of the Triad to deal with the possibility of a breakout from a nuclear arms control treaty.

So what's not to like about those benefits. Turns out there are only four major issues—political will, national priorities, decision accountability, and wishful thinking about the nature of the world in which we live. You will note that I did not put cost on that list. We do not have a budget problem with funding weapons stockpile modernization. We have a priorities problem. As noted, the nation has invested tens of billions in the stockpile stewardship program to provide the knowledge and tools to deliver the right future stockpile. To now decide we cannot afford the incremental investment to use that knowledge and those tools to deliver the list of benefits I just reiterated would be foolish and irresponsible.

The 3+2 strategy calls for three ballistic missile warhead types with two of those warhead types using an interoperable nuclear explosives package in a warhead adaptable to either the ICBM or SLBM. Hence the first of these interoperable/adaptable warheads can be the life extension for the W78 Minuteman III warhead and also be the technical and geopolitical hedge for the D5 SLBM warheads—a hedge that is badly needed to reduce risk.

The second interoperable/adaptable warhead can be the life extension for the W88 warhead and the technical hedge for the ICBM.

The 2 part of 3+2 is for air-breathers—strategic and tactical. The first—the B61-12—is the life extension for four models of the existing B61. The second will be the warhead for the cruise missile. The degree of interoperability/adaptability is still being addressed.

It is hard to imagine a more straight-forward, executable, cost-beneficial approach to extending the life of the nuclear weapons stockpile. But it is not the lowest-cost possibility for the near term.

So I would remind all that we are extending the life of a stockpile that has served for decades so that it can serve for decades more. This should be the poster child for cost effective return on investment which is a concept that I hope is not totally obscured by near term budget issues.

So I would hope the message is clear and concise and stripped of obfuscating issues. It has five elements:

1. There remains, in the hands of a government that is not a reliable, trustworthy friend, the capability to destroy much of the world; and there is in the hands of nations whose interests are highly inimical to ours, the power to hold at risk our friends and allies.
2. The twin objectives of deterring a nuclear attack and extending our nuclear deterrent to friends and allies underwrite the most basic and essential national interests of this nation. There is no more compelling need.
3. Our strategic nuclear forces—delivery systems and weapons—have served for decades on past development and procurement investments. The useful life and return on investment in virtually every element of those forces has far exceeded design and expectation.
4. To sustain that deterrent, there is a strategy and plan in place that sustains the deterrent force while delivering a critically important set of benefits.
5. Executing that strategy and plan will continue to deliver a very high return on investment in national security for us and for our friends and allies.

That's the message. Let's stay on it.

Given the location of this conference, I want to close by reminding all, unnecessarily I hope, that the men and women in our nuclear forces in all three legs of the Triad do their jobs every minute of every day with dedication, professionalism, and deeply held convictions about the importance of what they do. It is up to the strategic community both inside and outside government to meet the obligation of continuing to ensure that they have what is

needed to perform the mission that must always be job one for national security. I hope that is what this conference is about. It is certainly why I am here.

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 VADM G. E. Miller, USN (Ret.)
 Mr. Daniel L. Millin, USN (Ret.)
 IC1(SS) Alfred J. Murphy, USN (Ret.)
 CAPT Norman C. Nash, USN (Ret.)
 QMCS (SS) Joseph O'Hara, USN (Ret.)
 CAPT Robert K. Slaven, USN (Ret.)
 CAPT Jeremiah F. Sullivan, USN (Ret.)
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KINGS BAY TRIAD DETERRENCE CONFERENCE

MAINTAINING STRATEGIC STABILITY

THE HONORABLE FRANK MILLER

Franklin Miller is a Principal at the Scowcroft Group in Washington, D.C. He served in the White House as a Special Assistant to President George W. Bush and as Senior Director on the National Security Council. He also served for twenty-two years in the Department of Defense in a series of progressively senior positions under seven secretaries. During his career he had unusual influence on the evolution of national deterrence and nuclear targeting policy.

Introduction

Good to back in Kings Bay again. First came here in the early 1980s....

I want to thank The Camden Partnership, The Camden-Kings Bay Council of the Navy League and The Camden County Chamber of Commerce and Peter Huessy for inviting me to appear at this breakfast. My goal is to start your day off right.

Peter is surely an unsung hero in our campaign to keep our nuclear deterrent. The current public debate in Washington on our nuclear deterrent is completely unbalanced and intellectually empty. Last year's report by the Global Zero organization was built on faulty assumptions, questionable if not downright incorrect assertions, and dangerous recommendations...yet you can't find a mainstream publication which ever seriously analyzed it. We are routinely subjected to stories sneeringly referring to our existing deterrence posture as *Cold War - like*, but no one steps forward to explain why, just maybe, the nuclear deterrence

equation in the 21st century may have to resemble that of the 20th century. But Peter, by keeping his speakers' series going provides a forum where some small degree of balance can be introduced into the debate.

Stability

Peter asked me to speak about the challenges to maintaining strategic stability.

Let me begin, therefore, by giving you my view as to what strategic stability means. The view I will give you this morning is from one who spent most of my career as an American official rather than a detached academic.

I take *strategic stability* to mean:

- the absence of state-to-state armed conflict involving any of our allies,
- the absence of overt hostile military threats to US or allied vital interests,
- the absence of military/political blackmail against us or our allies, and, finally,
- the management of regional security issues so that the risk of armed conflict is minimized to the maximum extent possible

Please note that I did not use the word *nuclear* in the above.

- *Nuclear stability* is a lesser included case. And it is critical to remember that. But nuclear weapons clearly still play a critical role in allowing us to maintain strategic stability.

Our nuclear weapons serve to deter direct military attack by a major state power against US or our allies' vital national interests.

- They serve to deter nuclear blackmail or intimidation against the United States or our treaty allies.
- They serve to moderate Great Power behavior...in essence, in crude terms, to make war among the major powers too dangerous.

- Their purpose is to prevent war.
- This means that our advanced conventional weapons cannot reduce our reliance on nuclear weapons because advanced conventional weapons are war-fighting weapons, not war-preventing weapons.
- So, what must we do, and what must we do differently, to preserve nuclear strategic stability?
- My starting premise is that critical to nuclear stability is our ability to maintain a credible retaliatory capability which threatens potential enemy leaderships' most valued assets, even in worst case scenarios for us. This means we and our allies have to have confidence in our deterrent, and potential adversaries must have respect for it.
- But we will have neither confidence nor respect if we continue along our current path. We are in serious danger, as my friend and CSIS colleague Clark Murdock has said, of "rusting our way into disarmament". The last time the triad was modernized was in the 1980s. Triad modernization is essential; the President promised the Congress, as part of the agreement to ratify the New START treaty, that US strategic nuclear forces would be modernized. But that's not happening. The program to build a new SSBN has suffered a two-year delay. The Air Force has said that new bomber will have a nuclear role but not at IOC: when it will is left unsaid. The Air Force has a program to choose a successor for the ALCM-B... but the way that program is structured—seeking to procure only several hundred nuclear-only missiles—makes it almost certainly unaffordable. Both of these lagging efforts, by the way, are from the Administration which, as it negotiated New START, resurrected the bomber discount rule, thereby making a modern and sizeable air-breathing force a political necessity. The Air Force is *study-*

ing Minuteman life extension, and will soon begin studying a Minuteman replacement, to include, according to the Administration's 2010 NPR, underground and mobile basing modes. Well, we have seen that movie a few times before in the '70s and '80s, and we know it doesn't end well. And the Administration has yet to announce the composition of its New START strategic deterrent force. So we have absolutely no idea how that reduced force might be allocated among the existing three Triad legs—which directly affects stability. The bottom line is that for clarity we have traded obfuscation; in response to major nuclear building programs in Russia, China, and elsewhere, we have chosen deferral; for action we have traded vacillation and study. This needs to change.

- The fact is that we *need* a strategic Triad, in spite of the nonsense from Global Zero that we should eliminate the ICBM force and reduce the number of SSBNs to a point where it will be difficult to maintain one at sea in each ocean at all times.
- Why do we need a Triad? With our Triad force structure, any Russian leadership, in a future crisis—and remember we are not talking about any of this tomorrow but in a hugely dangerous future crisis in which the use of military force is being contemplated in the Kremlin—including the use of preemptive nuclear strikes as Russian doctrine suggests—would have to consider launching a huge attack in order to neutralize our ICBM force as well as the other Triad legs and our national command and control.
- If you eliminate the ICBM force the problem becomes dramatically easier: to succeed you only have to destroy two SSBN bases, two bomber bases, and Washington and then demand a cease fire. Even a smaller nuclear power could figure this out.

- Let me put it more personally: the existence of several hundred Minuteman ICBMs makes Kings Bay a less attractive target to a Russian planner in a crisis
- So, keeping a strategic triad, some elements of which are always on alert, will remain vital.
- At this point some of you are surely concluding that I have reverted to type and am spouting Cold War rhetoric. But I urge you to look around the world. And that look around the world should convince you that another thing we have to change is the misbegotten belief that the world's nuclear weapons states either already agree—or shortly will agree given that we have blazed the path and thereby enlightened their benighted minds—that nuclear weapons should be eliminated one day and that the role nuclear weapons play in their respective national security postures should be reduced now.
- You will recall that in 2009 President Obama spoke in Prague and called on the world's nuclear weapons states "to put an end to Cold War thinking". He announced that "we will reduce the role of nuclear weapons in our national security strategy, and urge others to do the same". Well, the scorecard is in four years after the Prague speech, and the answer, except for here in the United States, is "it ain't happening". Actually, the reverse is happening....
- Russia is deploying a new class of SSBNs, two new types of SLBMs, a new type of ICBMs with two variants, and has placed nuclear weapons at the heart of its security policy. It continues to threaten nuclear weapons use against its neighbors. Just last week President Putin played a conspicuous role directing a Russian strategic nuclear force exercise, and, just to put a coda on that he sent two Blackjack strategic bombers first to Venezuela and then to Nicaragua (although American news media chose not to report that). **Reduced role??? No, exactly the opposite.**

- The Chinese government refuses to engage in any discussion of its nuclear policy, maintaining a total opacity except for making the operationally empty statement that it has a "no first use policy". That, of course is a meaningless statement since such a policy can be changed literally in an instant by the Central Committee (and it's worth recalling that the USSR had a "no first use" *declaratory* policy and "first use *operational* policy"). China is deploying two new types of ICBMs, is building a new class of SSBNs and a new type of SLBM and refuses to accept any limits on the growth of its nuclear forces. And, in case you missed it, and you have because again it's not carried in the US press, Chinese state run media carried stories last week—complete with photos and graphics—describing with great relish the ability of Chinese nuclear forces to destroy various named US cities. **"Reduced role"? Not apparently.**

- Nuclear modernization programs are proceeding apace in most of the other nuclear weapons states as well.

India is now deploying a sea-based element of its nuclear deterrent, completing its nuclear triad. Pakistan is doubling its fissile material production capacity and is deploying a new class of short-range tactical nuclear missiles to give new force to its doctrine of early use of nuclear weapons. **"Reduced role"? Exactly the opposite. The sub-continent resembles a nuclear tinderbox.**

North Korea continues its missile and nuclear warhead development programs. "Reduced role" evidently does not translate into Korean....

or Farsi, since Iran continues its missile development and deployment programs and continues to move closer towards a nuclear weapon capability.

It is not possible to maintain strategic stability if your policy does not reflect the fact that global realities are moving in a different directions than your aspirations.

The Arguments Against the deterrent

- I'd like to pivot now and take a few moments to discuss with you some of the arguments against maintaining a nuclear deterrent which are prevalent inside the Washington Beltway.
- One of the other arguments used most frequently against our nuclear deterrent is that it is said to be irrelevant to the threats of the twenty first century. Global Zero smugly points out that our deterrent did not prevent the September 11 attacks or the various terrorist plots we have uncovered since then. But nuclear weapons are not, never have been, and will never be, an all-purpose deterrent.
- They are not useful for deterring terrorism (even WMD terrorism by state-less entities) or piracy, or cross-border drug trafficking, or even low-level insurgencies. And it's a cheap rhetorical trick to suggest that nuclear weapons have outlived their usefulness by pointing to attacks they *failed* to deter when they were not intended or deployed to prevent such attacks.
- To meet the new threats of the 21st century, which are very real and which must be deterred, or defeated and destroyed, the United States must continue to rely on—and to modernize—its conventional forces, its ballistic missile defenses, its special operations forces, and its space and cyber capabilities. And I urge you to remember that nuclear weapons were not designed to serve this role and can't; they can, however, prevent the big war and allow us to use our other tailored capabilities to deal with more proximate and daily threats—threats which are more proximate and daily precisely be-

cause nuclear deterrence has made the threat of Great Power conflict less proximate.

- You will also hear it said that “Non-nuclear forces are also far more credible instruments for providing 21st century reassurance to allies whose comfort zone in the 20th century resided under the US nuclear umbrella.” Well, clearly some left-wing American philosophers believe so. But our Allies do not. And try as the philosophers may, and they have done so mightily, our Allies still make clear they want the reassurance provided by our nuclear umbrella. This is still the case in Asia and it is still the case in NATO, where twice in the last three years, the leaders of the Alliance have reaffirmed this.
- And, speaking of proliferation, we also are told *ad nauseum* that our nuclear weapons are contributing to the threat of nuclear proliferation. Once again, the evidence shows clearly that is not true. Our nuclear arsenal is in fact an *anti-proliferant*, because we protect allies who otherwise might and could build their own nuclear weapons. And it is fundamentally important to recognize that the oft-discussed linkage between the continued existence of the arsenals of the nuclear weapons states and further proliferation simply does not exist.
- The history of the last 20 years is that the US, British, French and Russian nuclear arsenals have declined dramatically in that time period while over the same period the Chinese, Indian, Pakistani, and North Korean arsenals have grown.
- North Korea has not pursued a nuclear weapons program because of our nuclear arsenal. It has pursued one because it seeks to intimidate its neighbors and to deter US conventional military action. The same holds for Iran. And while the continued existence of the nuclear weapons states’ arsenals makes for a convenient talking point in international (and domestic) NPT circles, it is factually wrong and intellectually patronizing to believe that proliferant governments are mindlessly aping P5 policies.

Concluding Thoughts

Let me conclude by leaving you with three final thoughts.

First, in thinking about nuclear deterrence, it is absolutely critical that we remember that the task is to deter a potentially hostile foreign leadership which possesses nuclear weapons. Our task is not to deter these states today; it is to deter them in a future crisis when they are contemplating the use of military force, including nuclear weapons, against our—or our allies'—vital interests. In such a perilous situation, US policy must reflect the fact that we deter hostile leaderships by threatening what they value most, *not* what we value most. We value our people. Hostile authoritarian leaderships value their ability to remain in power, the security apparatus which enable them to do so, their military forces, and the industrial capacity to sustain war. And so it is a strategic mistake of enormous proportion to believe an effective deterrent in a future crisis can be based on a few hundred weapons which threaten a potential enemy's cities. That strategy would be both immoral and self-defeating. *Mirror-imaging* is a dangerous and fundamentally flawed approach to deterrence, and we must never fall into that trap.

Second, there are those, including many former senior officials who should know better, who would eliminate or dramatically scale back our deterrent because they say eliminating the deterrent will accelerate the movement to a world without nuclear weapons, and this will increase global stability. This notion—that somewhere in the future there must be a world in which the instability of nuclear deterrence is replaced by the stability of conventional deterrence—reveals that its proponents neither study history or pay attention to the policies of governments who just might not be content to turn away aggression. My study of history does not reveal that the world before 1945—a nuclear weapons free world—was particularly stable. Nor was deterrence based on conventional forces ever particularly effective. There is a quote apocryphally attributed to Mrs. Thatcher. Speaking of all the memorials to the war dead in France, she said: "there is a monument to the failure of conventional deterrence in every French village". Since 1945, however, the major powers have

avoided war with one another...a sharp contrast to the average of five-to-seven wars per century between the major powers from 1648 to 1945. Something happened in 1945: nuclear weapons made war between the major powers too dangerous. And that was and remains a good thing.

Finally, when you encounter a proponent of Nuclear Zero, you will likely be asked "how can you support nuclear deterrence, a policy based on weapons which will never be used?" Don't be drawn into a silly and pointless debate of hypothetical war fighting scenarios. They just love that. Just answer plainly: "we use them every day. They preserve peace and freedom for us and our allies."

Thanks again to the Camden County community and particularly to those members of the King Bay based Trident force present here today for what you do every day.

KINGS BAY TRIAD DETERRENCE CONFERENCE

SETTING THE SCENE FOR THE PANEL

AMBASSADOR LINTON BROOKS

[This is an unofficial transcript provided by National Security Reports.]

AMBASSADOR LINTON BROOKS: Peter asked me, in addition to introducing the panel, to say a couple of words as a scene setter. This conference exists for two reasons. One is because we're concerned, many of us, with the overall level of commitment to the nuclear enterprise and to nuclear deterrence. But the conference specifically is built on two beliefs: most of us believe that the Triad makes an important contribution to national security; and many of us fear that the Triad is under assault.

I want to suggest one way of thinking about these problems, and then I'll introduce the panel, who will offer up a variety of perspectives. So I'll make a series of assertions. Assertion number one, the assault on the Triad is long-term, not short-term. It is a mistake to over-react to studies like the recent Cato study saying let's just go to submarines; or the Global Zero study or any of the comparable studies.

In the short-term the Triad will remain because there's absolutely no strategic, political or fiscal benefit to eliminating it. But that doesn't mean that there aren't going to be pressures in the short-term. The first pressure is actually going to come, who knows when, when the Russians decide they are no longer going to let missile defense serve as an excuse for not engaging on arms control. Because although what the press has spoken of in the president's proposal of a one-third reduction in warheads, it is virtually certain that the United States will include a comparable reduction in delivery systems.

And if you took a one-third reduction from the current 700 deployed delivery systems, you'd be under 500. And if you like the Triad, you will find us falling to fighting among ourselves about how to construct a Triad at that level. So that's the first point of pressure and that's an internal problem. The American people aren't going to vote on the balance among Triad levels, we are going to have to think through that issue ourselves.

Now as I say, right now we are being saved from facing up to that by the Russian Federation. And there's every evidence we'll be saved from facing up to it by the Russian Federation for some time. But the thing about authoritarian systems is that if they decide to change their mind they can do it pretty quickly.

In the long-term, we have threats to the Triad, and I assert that those threats are different for each leg. The ICBMs problem is it doesn't have a good bumper sticker. It really doesn't. With the Submarine Force, it's survivable second-strike. Put that on a bumper sticker and people understand that.

With the bomber force, it's the flexibility of having a man in the loop. People understand that. You've heard already today from Frank—and you heard last night from General Welch—the importance of the ICBM force, but it tends not to fit onto a bumper sticker.

So what we need to do is work very hard to make it clear to non-specialists why the ICBMs are a crucial element going forward. You've heard that argument a little bit from Frank. We need to keep working on it.

The challenge for the Submarine Force is quite different. The Submarine Force—submarine leg of the deterrent—is almost always what people want to default to. But the problem for the submarines is to avoid major disruption due to high unit cost.

There are two risks: one is stretch-out. We've already played that card and I'm not sure there's anymore that can be done there. The other is pressures to reduce or eliminate survivability features. We can explain why stretching out procurement of the Ohio follow-on is dangerous because, as you heard already, we're already assuming we can do something with the Ohio-class

operational life that's never been done before. So we can explain why assuming even more stretch-out is dangerous.

But we need to make sure that we continue to stress the importance of spending money on survivability when, we will be told by some of the people Frank referred to that, quote, "There is no threat." And I point out to you the grandparents of the last Ohio follow-on commanding officer are dating now... So we're talking about a world that is a very long time in the future. And that does not suggest to me that skimping on survivability features and the ability to maintain survivability against strategic surprise is a wise thing for the government.

The threat to the bomber force is to avoid getting the nuclear mission submerged in the important conventional missions of the future. You've heard Frank mention a plan to build the next bomber now but certify it for nuclear missions later. Okay, that's a rational decision. I understand that.

Maybe we'll build a long-range standoff weapon, and maybe we won't. I don't see a whole lot of excess money. The bomber force is crucial to the United States conventional superiority, so it will be modernized, sooner or later. The key will be not to let that drive out its important nuclear role.

And finally, as Frank has said so eloquently, we really face a conundrum. Nuclear war has been made essentially impossible between major powers through nuclear deterrence for 70 years. And in a somewhat bizarre twist of logic, the absence of that war is now being used to say nuclear weapons are irrelevant because, after all, there's been no war between major powers.

And we need to educate the American people why nuclear deterrence remains important. But we also need to continue to make sure that the men and women who are actually doing all this understand why that is important. Because as some would argue we saw in the Minot incident of a few years ago, if everything you hear tells you that your mission is obsolete, it's kind of hard to get excited about it on a day-to-day basis. So those are challenges for all of us.

The most important challenge we've been asked to address on this panel is the need for an affordable, relevant and executable

nuclear deterrent. We have four extraordinary panelists. Their bios are in your program.

Let me just mention briefly, Amy Woolf, who will speak first, is from the Congressional Research Service. She has two jobs. Her formal job is to be the source for Congress and staff on all technical aspects associated with nuclear deterrence. Her unofficial job is to explain to those of us who do nuclear deterrence, how the Congress works and why they don't see the clarity of our vision.

And secondly, we will hear from Mark Schneider. Mark is sort of a walking inter-agency—meaning he's served in a large number of government positions in multiple cabinet departments. Most recently he is associated with the National Institute for Public Policy, which is one of an unfortunately small number of think tanks that tries to counter some of the less accurate analysis we hear. They've recently produced a report on minimum deterrence, and I suspect Mark will be drawing heavily on that report.

Thirdly, we'll be hearing about the relationship between nonproliferation and deterrence from Matt Kroenig. He is part of an unfortunately small rising generation of scholars who are looking at the issues of deterrence and its intellectual underpinnings from an academic perspective, tinged in his case with a good deal of reality.

And finally, we'll hear from Peter Huessy. And if you don't already know who Peter is, you obviously wandered into the wrong conference. The small boat conference is down the hall.

KINGS BAY TRIAD DETERRENCE CONFERENCE

DANGERS OF OVER-OPTIMIZATION

RADM RICK BRECKENRIDGE, USN
Director of Undersea Warfare, Office of the CNO

Well, good afternoon. I know my work is cut out for me, after lunch, warm afternoon, with a message that's going to sound eerily familiar. And General Welch, sir, I give you all the credit for this because he gave us the charge last night to stay on message. And so a lot of the points that I'm going to cover tonight, if you look at the title in my program, it almost directly reflects what General Welch shared with us last night.

But what my hope is, is that years from now, even decades from now, we'll hear people talk about hey, do you remember that Kings Bay conference, the Kings Bay conference of 2013, and how that moment changed everything? And we'll speak to it in those kind of hallowed terms—some of these other things we've spoken of with years next to them, up on the screen with different treaties and agreements—the Kings Bay conference of 2013. I feel it.

I feel it here in the room. There's this certain gravitas just with the speakers, a certain clarity of message, a sanity, a soundness to it that just sort of resonates in my heart, just to see these like-minded people awaken and recognize what's really at stake here. And the stakes are very high.

And yet with that, an alarm, a concern, are we postured right? Are we putting our money where our mouth is? Or, have we neglected the very thing that has given us the peace and the prosperity that we've enjoyed as a nation, and the globe has enjoyed throughout?

So the grassroots effort that Frank Miller spoke of can start here, as we fan out, as we talk to five people we've never talked to before about strategic deterrence, a riveting subject, that we get their hearts and minds. And then that fans out and ripples out and we begin to have this national debate and dialogue.

Sheila, I do want to thank you so much for your leadership here and in Georgia and the southeast and for your delightful Camden County Partnership, the great team that's here with the white badges sprinkled in the midst of us—not a big large group, but just enough. You know, it's that salt that seasons these types of events, the real people, the real Americans from our hometowns that are trying to grapple with some of our military acronyms and say, how do I make this real for my neighborhood, for my church, for my schools? And so I'm very excited that you're here.

And I'll tell you, unlike General Welch, I'm going to dial this down a couple of notches because I'm a blue collar kid, lobsterman's son, from Massachusetts. And I'm going to try to talk to the 15 Camden County partners that are here, sort of at your level - there you go. There you go.

So in simple terms, you know, I learned budgeting when I was a young kid. I was the sternman on my dad's lobster boat fishing out of Green Harbor, Massachusetts on the south shore of Boston.

And my allowance was pretty straightforward. It was directly proportional to the week's catch. That's it. It was a very simple rule. You could calculate it. You could sort of see how the week was going with the number of lobsters you got how much money you were going to get in your allowance.

If I wanted to spend more money than my allowance, I had to work harder. I had to talk my dad into going back to the first trawl we picked up at the beginning of the day and take another look to see if there may be a few more lobsters there. Or, I had to go get a second job to have more money to spend.

I learned the value of saving and prosperity, because winter is coming and winters are lean years for a lobsterman and a lobsterman's son. So in the summer when the bounty was full, you had to put a lot of that away to make sure you can endure and pass through the winter. And honestly, if I wanted to take out my high

school sweetheart for dinner, I'd have to forego a needed pair of running shoes. You can't have both. You know, it's either the running shoes or the sweetheart. Well, you know, love prevailed.

As a lobsterman's son I also learned of deterrence. And I'd love to tell you some of the stories of how we deter out on the high seas as lobster fisherman. But let me just say there are weekend warriors in their motorboats who take great pleasure in pulling up our lines and stealing from our traps. And we'd have some rather cruel and dastardly things that we do to inhibit and deter that type of bad behavior, and I'll leave it at that.

Let's start off with a sea story.

Imagine with me for a moment that it is night-time and we're at sea and in the reaches of the mid-Atlantic. The sky is overcast and a thick blanket of fog surfaces the ocean. We hear a skiff off in the distance, the prow surging through the rolling waves. We strain our eyes and just make out a small dingy with three large men huddled at mid-ship.

As we look closer we recognize that they are the renowned corps of the king's protective service, the most feared bodyguards the world has ever known. Their names: Bomber the Fearsome; Boomer the Threatening; and IC the Defender. But on this night, they appear far from intimidating. They look beat and tired, weak and rundown and hungry - very hungry.

With damaged eyes they glance at a basket sitting between them: a quarter loaf of soggy bread and a small apple is all that remains. The grave reality has been slowly building these past few weeks that they have rationed their meager provisions to the leanest of the lean. The reality is there is insufficient sustenance for all three. One must die for the other two to live.

And as they prepare to draw lots, they once again wonder how did it ever come to this since their glory days of service in the presence of the king? The fog lifts and we look ahead of the skiff and we see that it is being towed by a luxurious cruise liner, the most decadent and magnificent in all the world. The cruise ship journeys at slow speed, half-ahead.

And now, we hear music and laughter and festive dancing. In the banquet hall there is lavish food, tables overflowing. And the

king orders another casket of fine wine opened and glasses refilled. He presents a toast, a toast to prosperity. The kingdom has indeed been blessed beyond measure this past half-century and the world has enjoyed unprecedented peace.

This was not always the case. There was a time when the very life of the kingdom was constantly threatened. The threat had become so intense that the king formed a triad of protection—protection around him and his kingdom.

But as the days of safety abounded into months and years, the king's protective service became a bit of a bother. They were always sort of underfoot and in the way. And they were disposed of to the outer reaches of the castle, and eventually, over time, became forgotten.

And then the king began to contemplate, I wonder whatever happened to IC and Boomer and Bomber. He was jarred back into the present as his court cheered back in a shout, to prosperity—to prosperity. Long live the king.

So this afternoon I would like to touch on three themes: the first, the problem with the blind and relentless drive to cost reductions and affordability; second, the inherent instability of an overly optimized and under-damped system; and third, how to lose at chess when you play against two grand masters. Point number one, our strategic forces are the nation's model of cost efficiency and effectiveness bar none. We have optimized each leg of the triad to incredible limits. And limits, some may say and I might add, to a fault.

And I just want to—I'm the expert on the sea-based leg. SAC, thanks so much for the other two legs that you presented. But I'm going to talk for a second about the sea-based leg. And just to make sure that each and every person here knows how much risk that we've taken as a nation with regard to this one leg of the triad.

We have optimized our model. At one time at the height of the Cold War we had 41 SSBNs—41 for freedom—that conducted this vitally important strategic deterrent mission. Again, you think of The Boomer, the Fearless—41 for freedom.

Well we were able to dial that down to a much smaller number with this recapitalization. With a longer-range missile, the C-4 and

then D-5 we were able to go from 41 to 18 and then to 14 SSBNs. This is that case study of optimization that you all learned in calculus in school, as we're asymptotically approaching the absolute minimum, the leanest that you can possibly do two-ocean strategic deterrence effectively and successfully.

And we are at that limit. The limit is 10 operational submarines. And to achieve that with our force today, the Ohio-class today, we need 14 SSBNs based on the mid-life overhaul when those are refueled and taken out of strategic service.

The good news, and this gets back to another point I think Peter made about cost avoidance, is that we're going to be able to do with 12 SSBNs what we've done for the last 30-plus years with 14 SSBNs. Saving two SSBNs out of the budget, and about a rough order of magnitude about \$5 billion a piece, it adds up. Well 41 to 18 to 14 to 12, that's sort of crazy. I mean, we're sort of at crazy talk right now as how lean can you go before the engine begins to knock and you begin to have a little bit of problem maintaining that momentum.

But get this, we're not content with that. Let's go ahead and do this. Let's throw in a bonus 12-year extension to the life of the submarine. The submarine of the Ohio-class designed in the '70s and built in the '80s with a 30-year outlook, we're going to go ahead and do this magic wand waving and extend that to 42 years.

You know, what's the threat going to be like in that timeframe as these things reach end of life? What's the material condition going to be? We don't have much experience operating submarines underwater, at pressure, in corrosive environments as was mentioned earlier today, much beyond 35 years. And the two submarines that we operated for that enormous stretch of time period were sucking chest wounds with regard to how we had to pay to maintain and keep them at sea. And that's what we have backed ourselves into with one slippery decision after another with regard to our sea-based strategic deterrent leg.

So here's the Ohio replacement. Dave Johnson and Terry Benedict gave you a great report of the momentum we have there in this austere time—very positive. I think Matt asked the

question, hey, I'm not following. Frank is over here saying this and you're saying that.

Well I'm going to answer your question. I'm not as optimistic. You know, a lot of this is PowerPoint. A lot of this is budget in the out-years. I know how much of a struggle it is each year, right now, just to maintain the current, the essential minimum investment to maintain that momentum.

And we have so thinned ourselves out with regard to this turnover between this 42-year old Ohio class and the Ohio replacement that there is no margin. Everything has to work right. Not just everything in the bubble, not just every subsystem of that space shuttle complex replacement SSBN with e-drive and life of ship core, but we have to make sure that it's not pertubated by things outside of our control like the budget process.

You know, I don't think I've ever seen, you know, a time like now where we need everything to click right to be able to do this without a gap. Get this, we're so bold as Americans that the first Ohio replacement does not come on service until the current fifth Ohio-class goes off service. You know, that's sort of crazy. I would like it to be the third, or maybe the first.

When the first Ohio goes off, the first Ohio replacement comes on. Then we'd have a little bit of margin. But no, no, we've stretched it all the way out so that we're going to go to 10 SSBNs running over a decade period, the absolute minimum number that you can possibly have to make two ocean sea-based strategic deterrence work.

And that's where we are as a nation. And the average American has no idea. They sleep in peace each night.

So, you know, it's a daunting task we face with this lean optimization, this optimizing that we've done for the God of affordability. But it doesn't end here. And I just want to bring up this other very important point, and you can quote me on this and you can spell it Rick Breckenridge.

I am a lover of the triad, okay? I am a zealot for three legs. Why? Because if we did the preposterously absurd thing of going to a dyad, I don't have enough SSBNs. And if we go to a dyad, I need more SSBNs to do strategic deterrence right.

And we have simply passed that off ramp about three states ago. There is no way I can ramp up faster than what I already am, which is already – you know, just to achieve 10. So we, by default, have ended up in a triad.

So although there's been quotes misattributed to me in the paper as I had my testimony, as Amy mentioned, let's get the money from the Air Force and move it to the Navy so we can pay for the shipbuilding account, that's not exactly what I said —just for the record.

So we've done our part to save costs. This is the key story, alright? We're not oblivious to the fiscal crisis our nation is under. We paid. We paid for the last two-plus decades with regard to shifting the bill forward by extending the Ohio-class and not having to recapitalize during two land wars in Asia. You know, we were able to save our country's checkbook with the decisions—the hard decisions that we made to meter out the strategic deterrent for this lean point.

Point number two, we are a prosperous nation that can well afford the small fraction of investment. The return on investment is so great and the risk of failure so disastrous. And I have to admit, and again this is for my Camden County blue-collar friends, I am also a closet budgeteer—not quite Peter and Amy level budgeteers, but I've dabbled in the budget. So I'm going to go ahead and slice and dice the numbers—same numbers—that Peter showed, slightly different perspective as we look at them. These are OMB table number 2005 constant year dollars for those that want all the asterisks.

But here you go, in the 45 years since 1965 to 2010, the gross domestic product of the United States has gone up by a factor of 3.7 in constant year dollars. And in fact it has gone up every year—virtually every year consistently over that time period. There's no inflation at work here. This is about wealth creation.

We, as a country, produce 3.7 times as much value in goods and services as we did in 1965. The federal budget has grown at about the same rate. In these same 45 years, the sum total of all federal spending on education, training, employment, social services, health, medical care, income security, disability, social

security and veterans benefits, went from \$184 billion to \$2.137—third decimal point is significant – trillion dollars.

Okay, this is an increase of over 11 times. So this portion of our budget during this era of prosperity has increased 11 times since 1965. Every sub-category I listed went up virtually every single year.

And this was not a selective list. It's basically true of every other non-defense major area in the budget. Non-defense federal spending grew 11 times in the past 45 years.

Let's take a look at defense spending. In the same 45 year period the U.S. defense budget went from \$364 billion to \$614 billion, an increase of 1.7 times. Unlike all the categories of the budget I mentioned, there was no gradual, continuous ramp here, no upward trend.

The defense budget varies significantly, up and down, up and down for the forty-five years. Over that period of time, it averaged about \$423 billion, again in constant year FY '2005 dollars. Can you see how very different this is from the rest of the budget?

Finally, similar to what Peter had, look at the OMB projected 2015 budget data, and the picture gets much gloomier. The disparity grows even more significantly. So over this 50-year window GDP grows by a factor of 4.3, federal outlays by a factor of 4.5, education, health, Medicare and Social Security, etcetera, grows by a factor of 12. Defense spending grows by a factor of 1.3, or about one-tenth the growth rate of education, health, Medicare, income security, Social Security and veteran's benefits.

You may wonder, what happened to the population during this 50-year window? Well, it went up by a factor 1.5 times. Let me translate this for you back into lobsterman's son terms. This means because of that population growth, in the statistics I just gave you, today we are paying less for defense per capita in constant dollars than we did in 1960, even though our per capital wealth has gone up over the same period of time by over threefold. Did you get that? We are more wealthy by greater than three times, and yet per American we are spending less on defense today than we did in 1960. As Peter mentioned, we're too busy going to the movies and buying our I-Pads.

In sum, the crystal chandeliers are lit in all their glory on each and every deck of the cruise ship. It is time to push out a little bit more bread into the basket for our warriors trailing in the skiff behind us. And if I may stretch the metaphor to highlight one other false dichotomy—and this Amy mentioned—the lunacy of using our general purpose Navy shipbuilding as the bill payer for sea-based strategic deterrence. That's two men in a life raft with, you know, only the apple. And that's where we are. That is as absurd as this has become.

Navy, stay within your topline. Figure out how to recapitalize this vitally important sea-based strategic deterrent that the CNO has made his number one priority. And, if necessary, you're going to have to tighten your belt and decimate your general purpose force ships, which has another conventional deterrence value of its own. These are the times that we live in.

Okay, number three—let me see if I can find my spot here. My third and final point, when I look forward I don't see good things. The threat—I'm also here to talk about the threat—I see an emergent China, resurgent Russia and assertive Iran, and the looming potential of large-scale Islamic sectarian warfare in the Middle East.

As a national security professional, I just cannot look at this data and say it is time for defense cuts, let alone defense cuts as proportionally large compared to the other cuts to our federal budget. However, politicians and polls will say there is no stomach for sustaining defense spending. It must be cut, either at the same rate or at a higher rate than other categories of spending.

And my gut tells me that the politicians are probably right. Sadly, there is no popular will to sustain defense spending. And therein lies the problem.

This is where we in the national security business are failing the American people and failing our civilian leadership. We cannot allow our professional military judgment to be pushed around by polls and popular will. Any objective reading of history indicates that we are shrinking our forces and undermining our national will just as threats are marshaling in at least three important geographic regions.

It is crystal clear what is going on. Our potential adversaries are arming themselves to increase their ability to intimidate. And our allies and friends are trying to make up for what we are no longer providing.

This cycle has been played out a dozen times in the last 100 years. History tells us that it will lead to regional instability and miscalculation. Flat out, it will lead to aggressive opportunism by our adversaries. We in the United States will watch for a while, sipping lemonade, and then regain the national will to intercede.

But this time, this time, it's different. This time is the first time the scenario includes assertive nuclear-capable regional powers that are beating their chests. This new dynamic will change the manner in which the scenario plays out and should be of intense personal interest to everyone in this room and to every American. This is not just going to be another nap cycle for America. This time, while we sleep, there will be mischief afoot and it may be impossible to undo the damage done while we slept.

My final word picture is that of chess. Ladies and gentlemen, today we are in a chess match and the game is already underway. This is not about a potential future chess match with Russia, China or Iran. This game is already going on.

Our potential adversaries are moving pieces on the board and trying to secure territory and hearts and minds. They are building layers of deterrence to keep us from taking their pieces, and they're good at this. And I want to give you two examples that have been mentioned at various times this morning. This is that summary lecture, so stick with me.

Chinese state run media this past week revealed for the first time that Beijing's nuclear submarines can attack American cities as a means to counter-balance U.S. nuclear forces in the Pacific. Several communist news lines ran identical top headline reports about the awesomeness—I'm not sure how that translates—the awesomeness of the People's Liberation Army Navy strategic Submarine Force. The article features 30 photos and graphics detailing among other things damage projections from Seattle to Los Angeles after being hit by Chinese nuclear warheads, and the

deadly radiation that will spread all the way to Chicago. That's pretty scary stuff.

And you might wonder, what in the world is China doing? What, are they trying to pick a fight? What's going on here? No, this is sophisticated posturing. This is that part of deterrence that we talked about earlier, the signaling of national will and broadcasting of possible future intent.

You may wonder, what was the top news story in America during this same time that the Chinese published these things? Certainly not many of our outlets covered this story. I'm not sure—I have a picture from one. This is a picture of the radioactive plume coming from Seattle and San Francisco reaching Chicago. The largest popular story in America, *Bad Grandpa* tops at the box office. We are too easily amused.

Meanwhile, our Russian friends, they've been conducting their own posturing. And as mentioned, this past week President Putin ordered a no-notice mass exercise of the strategic missile and Submarine Forces, combined with an air and missile defense exercise in the Kapustin Yar testing range. Two ICBMs and two submarine-launched missiles were near simultaneously launched, as were about 50 S-300 and S-400 air defense missiles, during this exercise, which Putin oversaw himself.

Now I'll tell you, when I was CO of the MEMPHIS I took great pleasure in walking into the control room and saying, officer of the deck, torpedo in the water bearing 137, and forcing him to do snapshot exercises. How quickly could he get the fire control system, get a tube flooded, get a snapshot out, and counter-fire against the incoming threat? Those are waterslugs—we always make sure that those tubes have no torpedoes whenever we run these snapshot drills.

This is President Putin, doing a snapshot exercise with pretty risky pieces of military apparatus. He has ordered at least four such no-notice snap drills this year and both he and the defense minister have indicated that there will be more.

So while the strategic forces exercises were taking place, and Frank Miller mentioned this morning, two TU-160 nuclear bombers were operating in South America. They arrived in

Venezuela on October 28 after a 13-hour flight from their base in the Volga region. On October 30, they went at it in Nicaragua and are scheduled to carry out patrols over the region.

Where is the American outcry to this? You know, how is it that in our hemisphere, in the northern hemisphere, we have Russian nuclear-capable bombers operating and we are oblivious to it? We are caught up in Miley Cyrus news stories.

So while China and Russia posture and unambiguously broadcast their strategic war power to us, what are we doing to them? What are we broadcasting to them? We talked about, actually, a couple of good things during General Kehler's remarks this morning, but by and large we are skipping our turn.

We need to realize that most Americans and American political leaders do not understand our military, and indeed our nuclear forces, what they're even for. Why are they confused? They are confused because we do our best to confuse them, by focusing so often on kinetics and warfighting.

Many Americans say, as reported this morning, we're not going to fight a nuclear war and therefore I don't understand why I need nuclear weapons. Or, they say, we're not going to fight a major war at sea so I don't understand why I need such a big Navy.

We confuse people by focusing too much on kinetics. We teach people that the purpose of a military is to break things. But just like nuclear weapons, our military's primary function is to deter aggression and to promote stability. Military forces achieve influence because of their latent ability to break things, and the strategy is about how do we employ that latent ability to serve our national interests.

So let's think about chess.

When you first teach children to play chess what's it like? It's about kinetics. There are dead pieces everywhere. The board gets thinned out and pretty soon only one side has anyone left and we're moving around the board trying to get them into check, let alone checkmate, and it's impossible. It ends up in a very—usually a thrown board at the end.

And that is how many people and many leaders see the military. They think that the military is just about killing the other side's pieces. But how do the grand masters play chess? They're not playing war, they're playing deterrence. Rarely do you see dead pieces everywhere.

As the skill of the players goes up, so does the likelihood that you will see a draw. The most likely outcome in high-level chess is a draw followed second by victory by white, only because white goes first. And the least likely outcome in grand master chess is victory by black.

So what does it mean to play to a draw? It means that each side has control of a certain area of the board with sufficient deterrent power to prevent the other side from trying to take more of it without risk of losing too much. In a draw, there are plenty of pieces that are held at risk by other pieces.

But there is a hidden escalation ladder behind each seemingly vulnerable piece. You take my piece, I take yours. It's about deterrence. It is about the looming potential of escalation dominance preventing you from taking that bishop or that knight.

But chess teaches us even more. At the start of the chess game the two sides are about equal. They control an equal amount of space with the same potential power. In many ways the outcome of the game is determined by the way that each player moves to claim and secure space on the chessboard.

Again, it isn't about killing the other guy's pieces. It's about arranging your own pieces in a manner that securely protects your part of the board and your own pieces. This is building your deterrent to protect your interests.

Remember, we are already playing chess with lots of players: other players, some adversaries, some allies. We are engaged in a contest to stake out our interests and to protect them with strong, layered, deterrent forces. And I don't mean just the military.

Even when we make decisions about the nature of our nuclear deterrent, we are making choices of where we put our chess pieces on the board. So let me emphasize that again. As we look at recapitalizing our strategic forces, that is a chess move. Do we have the fortitude, do we have the follow through, or do we

imperil even critical pieces on the board like this with the vagaries of sequestration?

So when we cut our budgets or thin our deterrent forces, we are taking a few of our own pieces off the board, sometimes as a gesture of goodwill, and letting the other side make several moves in a row while we, in effect, skip a few turns. While we take this holiday, I assure you, the other side is more than happy to take more strategic territory and enhance the layered deterrent they use to defend it.

This brings us to our final key point. There are other players in this chess game. These key players on our side are the nonnuclear-capable allies that we protect with our strategic forces. And so we have to remember that this isn't just about us and that they have strategic choices to make too.

And as truly as night follows day, if we don't provide them the right overprotection, they will make decisions to protect their own interests. And our adversaries will seek to also fill strategic vacuums left by us.

So the key point to remember is the sooner we re-engage the better. Even if we're pessimistic about Americans quickly waking up, it doesn't relieve us from starting now with the alarm clock or the horn or banging on some pots and pans. The sooner we send crystal clear messages about our resolve the better.

While we are napping, states caught in the middle will be faced with tough choices: selling out to red or crossing their fingers and hoping the bull wakes up. The longer we nap the more nations that will be compelled to throw in with red and the tougher the problem will become for us.

So in conclusion, your job is to teach. So arm yourself with what you've seen and heard at this conference, a rich conference that really does a pretty good job at comprehensively giving this clarion call of what's at stake. And we need to go out and educate.

Here are the key points from my address. We are not self-optimized. **We are over-optimized in our strategic forces, and the system is on the brink of instability.** Number two, remember that while everything else has been growing three or four or 10 times during the past 50 years, the defense budget has been

basically flat, and in terms of constant dollars has actually gone down on a per capita basis. There is no other important area of government that this has happened to in our history.

In short, we should not feel too generous about giving away defense funding, and you should not feel guilty about feeling this way. And lastly, remember that deterrence is part of our international relations that is best thought of as a chess match that was already underway. There are no time outs. There are no naps. There are no rewards for good behavior or good intentions. The longer we signal to our friends and adversaries that we are distracted by affairs at home, the more likely the world will move irreversibly in directions we will surely regret.

So ladies and gentlemen, thank you very much for this opportunity. Thank you for coming and the importance you've given this event. Thank you for the courtesy of listening to my remarks. And with resolve, I pray and hope that we go forward from this point ready to be much more vocal as we advocate this important national security staple of our country.

Thank you.

FEATURES**STATEMENT OF RONALD O'ROURKE
SPECIALIST IN NAVAL AFFAIRS
CONGRESSIONAL RESEARCH SERVICE
BEFORE THE HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON SEAPOWER AND PROJECTION
FORCES ON THE NAVY'S FY2014
30-YEAR SHIPBUILDING PLAN****OCTOBER 23, 2013**

Editor's Note: Mr. O'Rourke's statement concerning the Navy's FY 2014 Shipbuilding Plan is broad enough in coverage and sufficiently deep in detail to address the general fleet issues in this matter currently facing the nation. He does not specifically address special funding of the OHIO Replacement submarines, but in one of his footnotes on Submarine Programs he refers to the Navy's comments on the matter and the separate CRS Report R41129. Of the three excerpts presented here, two are of a strategic nature and succinctly address why America has a Navy. The other is about funding submarine construction within the general context of Navy Shipbuilding. It is both innovative and instructive about an issue which may well determine the future of submarine deterrence.

Strategic Considerations

As an opening comment, it can be noted that in discussing the 30 year plan, it is possible to lose the forest for the trees—to focus on details of ship numbers and procurement costs so much that one loses track of what is at stake strategically. Strategic considerations that help form the context for considering the 30-year plan include, among other things, the U.S. strategic rebalancing toward the Asia-Pacific region,¹ China's modernization of its maritime military capabilities,² and requests from U.S. regional combatant commanders for forward-deployed U.S. naval

forces that would require a Navy of more than 500 ships to fully meet.¹

More broadly, it can be noted that U.S. naval forces, while not inexpensive, give the United States the ability to convert the world's oceans—a global commons that covers more than two-thirds of the planet's surface—into a medium of maneuver and operations for projecting U.S. power ashore and otherwise defending U.S. interests around the world. The ability to use the world's oceans in this manner—and to deny other countries the use of the world's oceans for taking actions against U.S. interests—constitutes an immense asymmetric advantage for the United States, one so ubiquitous and longstanding that it can be easy to overlook or take for granted.

Given the current debate over the future of the federal budget and resulting choices for policymakers regarding U.S. strategy and the military forces for supporting it, strategic considerations such as these can be important to keep in mind when discussing the 30-year plan. The appendix at the end of this statement contains some additional comments relating U.S. naval forces to national strategy.

Major points of discussion about the 30-year plan, particularly the affordability challenge it poses, are now so well established, and repeated so often, that discussion of the plan is now at some risk of becoming stale and unproductive. Accordingly, the remainder of this statement is intended to offer some potential new perspectives on the plan, so as to refresh the discussion and make it potentially more valuable to Congress as it carries out its oversight of Navy shipbuilding programs and the Navy's budget in general.

1. For more on the strategic rebalancing, see CRS Report R42146, *In Brief: Assessing the January 2012 Defense Strategic Guidance (DSG)*, by Catherine Dale and Pat Towell, and CRS Report R42448, *Pivot to the Pacific? The Obama Administration's "Rebalancing" Toward Asia*, by Mark E. Matysin, Coordinator.

2. For more on China's modernization of its maritime military capabilities, see CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, by Ronald O'Rourke.

3. For examples of U.S. Navy testimony on this point, see Appendix A of CRS Report RL32665, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, by Ronald O'Rourke.

Appendix: U.S. Naval Forces and National Strategy

In addition to the strategic considerations mentioned at the beginning of this statement, an additional point to note in relating U.S. naval forces to national strategy is that most of the world's people, resources, and economic activity are located not in the Western Hemisphere, but in the other hemisphere, particularly Eurasia. In response to this basic feature of world geography, U.S. policymakers for the last several decades have chosen to pursue, as a key element of U.S. national strategy, a goal of preventing the emergence of a regional hegemon in one part of Eurasia or another, on the grounds that such a hegemon could deny the United States access to some of the other hemisphere's resources and economic activity.

Although U.S. policymakers do not often state this key national strategic goal explicitly in public, U.S. military operations in recent decades—both wartime operations and day-to-day operations—have been carried out in no small part in support of this key goal.

The U.S. goal of preventing the emergence of a regional hegemon in one part of Eurasia or another is a major reason why the U.S. military is structured with force elements that enable it to cross broad expanses of ocean and air space and then conduct sustained, large-scale military operations upon arrival. Force elements associated with this goal include, among other things, significant numbers of Air Force long-range bombers, long-range surveillance aircraft, long-range airlift aircraft, and aerial refueling tankers, and significant numbers of Navy aircraft carriers, nuclear-powered attack submarines, large surface combatants, large amphibious ships, and underway replenishment ships.

The United States is the only country in the world that designs its military to cross broad expanses of ocean and air space and then conduct sustained, large-scale military operations upon arrival. The other countries in the Western Hemisphere do not design their forces to do this because they cannot afford to, and because the United States is, in effect, doing it for them. Countries in the other hemisphere do not design their forces to do this for the very basic reason that they are already in the other hemisphere,

where the action is, and consequently instead spend their defense money on forces that are tailored largely for influencing events in their own neighborhood.

The fact that the United States designs its military to do something that other countries do not design their forces to do—cross broad expanses of ocean and air space and then conduct sustained, large-scale military operations upon arrival—can be important to keep in mind when one sees the U.S. military compared with those of other nations. When observers, for example, question why the U.S. Navy has 11 aircraft carriers, pointing out that other countries do not have anything like that number, it would appear they are overlooking or downplaying this basic point. Other countries do not need a significant number of aircraft carriers because, unlike the United States, they are not designing their forces to cross broad expanses of ocean and air space and then conduct sustained, large-scale military operations upon arrival.

A variation on this argument by comparison to other countries is that U.S. naval forces are clearly sufficient—or excessive—because they are equal in tonnage to the next dozen or more navies combined, most of which are the navies of allies. Those other fleets, however, are mostly of Eurasian countries, which do not design their forces to cross to the other side of the world and then conduct sustained, large scale military operations upon arrival. The fact that the U.S. Navy is a lot bigger than allied navies does not necessarily prove that U.S. naval forces are either sufficient or excessive; it simply reflects the differing and generally more limited needs that U.S. allies have for naval forces. (It might also reflect an underinvestment by some of those allies to meet even their more limited naval needs.) Again, it would appear that observers who make this cross-national comparison are overlooking or downplaying this point.

Countries have differing needs for naval and other military forces, and the United States, as a country located in the Western Hemisphere with a goal of preventing the emergence of a regional hegemon in one part of Eurasia or another, has defined a need for naval and other military forces that is quite different from the needs of allies that are located in Eurasia. The sufficiency of U.S.

naval and other military forces consequently is best assessed not through comparison to the militaries of other countries, but against U.S. strategic goals.

As a final comment, it can be noted that the point made at the beginning of this statement about U.S. naval forces giving the United States the ability to convert the world's oceans into a medium of maneuver and operations for projecting U.S. power ashore and otherwise defending U.S. interests would be less important if less of the world were covered by water, or if the oceans were carved into territorial blocks, as is the land. But most of the world is covered by water, and most of those waters are international waters, where naval forces can operate freely. So the point is not that U.S. naval forces are intrinsically special or privileged—it is that they have a certain value simply as a consequence of the physical and legal organization of the planet.

VIRGINIA-CLASS AND OHIO REPLACEMENT SUBMARINE PROGRAMS

Thinking more expansively about MYP and block buy contracting, some observers have raised the possibility of procuring both Virginia-class attack submarines and Ohio replacement ballistic missile submarines under a joint block buy contract covering both classes of ships. Such a contract—which, like all block buy contracts, would require special legislative authority—might generate savings greater than what would be possible under separate multiyear contracts for each class. Extending this thinking even further, a potential additional option in implementing a joint, cross-class block buy contract for Virginia class and Ohio replacement boats would be to modify the current division of shipyard work for building Virginia-class boats as needed to ensure an optimal joint strategy for building both classes.

The current division of shipyard work for building Virginia-class boats is set forth in the General Dynamics-HII joint teaming agreement for the Virginia-class. As a consequence, the division of Virginia class shipyard work is in effect a fixed factor, while the allocation of Ohio replacement shipyard work is yet to be determined and is a variable that can be optimized.

The Navy can *tune* the division of Ohio replacement work in the context of the fixed Virginia-class division of work to arrive at a good overall approach for building both classes. The resulting approach, however, might not be as efficient as a solution in which Navy treated the division of work for both classes as variables, and then optimized the build strategy for both classes together. The Navy, moreover, has testified recently that the Ohio replacement program is the service's top program priority*, and that if sufficient funding is not made available for all Navy shipbuilding programs, the Navy would continue to fully fund the Ohio replacement program while reducing planned procurement of other ship types, including Virginia class submarines**. Particularly in that circumstance, it might make sense to *tune* the Virginia class division of work so as to produce a solution that is better for building both classes not only in a situation of sufficient shipbuilding funding, but also in a situation where limits on shipbuilding funding lead to Virginia-class boats being dropped from the shipbuilding plan.

As mentioned above, the division of shipyard work for building Virginia-class boats is set forth in the joint teaming agreement for the Virginia-class. The terms of this agreement cannot be changed without the consent of both of the submarine builders. Given the success of the Virginia-class program as an acquisition effort, the Navy and the submarine builders may be averse to reopening the Virginia-class joint teaming agreement. The submarine builders might also be averse to reopening the agreement because a reallocation of the work might lead to a net loss of Virginia-class work for one of the builders.

On the other hand, reopening the joint teaming agreement might enable a highly efficient approach for building both classes whose savings could help make possible the retention of a larger number of Virginia-class boats in the shipbuilding plan in a situation of constrained shipbuilding funding. In 1997, in the third year of a debate over the acquisition strategy for the Virginia class, the submarine builders and the Navy presented to Congress a creative proposal for building the class under a joint teaming. In light of the Navy's expanded use of MYP and block buy

contracting, there might be a new opportunity for the submarine builders and the Navy to modify the division of Virginia-class work under that agreement as part of a creative effort to arrive at the best possible approach for building both Virginia-class and Ohio replacement-class boats.

* Statement of Admiral Jonathan Greenert, U.S. Navy, Chief of Naval Operations, Before the House Armed Services Committee on Planning for Sequestration in FY 2014 and Perspectives of the Military Services on the Strategic Choices and Management Review, September 18, 2013, p. 10.

** See the spoken testimony of Rear Admiral Richard Breckenridge at this subcommittee's hearing on September 12 on undersea warfare. The testimony in question appears in CRS Report R41129, Navy Ohio Replacement (SSBN[X]) Ballistic Missile Submarine Program: Background and Issues for Congress, by Ronald O'Rourke. (See section entitled "September 2013 Navy Testimony.")

Early Warning Blog**WHY FIELDING FEWER THAN TWELVE BALLISTIC MISSILE SUBS COULD BE DISASTROUS FOR AMERICA***Author: Loren B. Thompson, Ph.D.**Date: Thursday, October 03, 2013*

On October 1, the Capitol Hill weekly *Roll Call* ran a ridiculous commentary by an anti-nuclear activist arguing that the Navy was seeking a budgetary *bailout* at the expense of its sister services to buy more ballistic-missile submarines than it needs. The boats would replace the current Ohio class of subs, which provide the most survivable part of the nation's nuclear deterrent. The commentary was full of misleading statements, like the assertion that "the contract to buy the Navy's subs has raced ahead" when in fact construction of the lead vessel was recently delayed by two years. The fundamental flaw in the piece, though, is that the author clearly doesn't understand how nuclear deterrence works. I taught that subject at Georgetown University for some years, so I'd like to briefly explain why it dictates a future ballistic-missile submarine force of at least 12 boats.

The main goal of U.S. nuclear strategy is to prevent war. Nuclear weapons are so destructive that if even a handful of attacking warheads managed to penetrate U.S. defenses, it would be the greatest catastrophe in the republic's history. Millions of people might die in the first hour of war. Because scientists have never devised a reliable way of intercepting all—or even most—of the warheads that might be launched in a major nuclear exchange, policymakers have been forced to rely on a strategy of deterrence. Simply stated, deterrence threatens horrible retaliation in response to nuclear attack. The assumption is that no sane leader would launch a suicidal attack, so America must have a retaliatory force that can ride out a first strike and then respond in a devastating but proportional manner.

Ballistic-missile submarines are central to this strategy because, unlike manned bombers and land-based missiles in silos,

enemies can't find them when they are at sea. Obviously, the biggest goal of any aggressor in a nuclear attack would be to destroy the U.S. retaliatory capability, so if that isn't feasible then the attack is very unlikely to occur in the first place. That is why the current fleet of Ohio-class subs are optimized for accomplishing just one mission: staying hidden until they are called upon to punish an aggressor. The submarines are extremely stealthy, and their successors will be even more secure to guard against any breakthrough enemies might achieve in undersea detection.

The commentary in *Roll Call* contends that "the Pentagon needs to resize the sub program with the understanding that the U.S. can meet today's security challenges with fewer nuclear weapons at less cost." That statement is misleading on two counts. First, the Navy already has reduced the number of ballistic-missile subs in the fleet from 18 to 14 in response to the end of the Cold War, and it plans to further reduce the force when the Ohio replacement becomes operational to a mere dozen boats. Second, the next-generation subs for which the Navy is rightly seeking extra money will not be designed for dealing with today's security challenges, but tomorrow's.

Nobody can say what kind of threats the nation's nuclear force will need to deter 20 years from now. What we can say with near certainty is that preventing a nuclear exchange will remain the top priority of U.S. strategy. So what the nation needs in the sea-based component of its future deterrent force is a retaliatory capability that no enemy could conceivably destroy in a surprise attack. The author says eight boats would be enough, because they could carry "more than 1,000 warheads." That is fallacious reasoning. The nation would obtain a much more credible deterrent by dispersing the same number of warheads across a dozen or two dozen subs, because what matters in nuclear strategy isn't how many warheads you have before an attack, but how many you have after. It's the warheads that survive the attack that deter it from occurring in the first place.

The Navy arrived at the number of a dozen submarines after extensive analysis based on the character of potential threats in the 2030s and beyond, the operational features of future subs, the

requirements of national strategy, and the logistical demands of sustaining the fleet at sea. One very important factor in its thinking was the kind of innovations that might enable enemies to find the subs more easily. It was concluded that a force of 12 subs, perhaps eight or nine of which might be at sea on any given day, was the optimum tradeoff of capability and affordability. Any less would simplify an aggressor's targeting challenge in a surprise attack -- potentially depriving the U.S. of its most potent deterrent or forcing it to retaliate in a disorganized fashion.

Does that make the Ohio replacement program expensive? Yes it does—but nowhere near as expensive as the cost of even one nuclear warhead falling on an American city. Buying the right number of ballistic-missile submarines for future deterrence is much more important than getting the Army another tank or filling out the Air Force's fighter squadrons. Nuclear deterrence is about national survival. Trying to save money by purchasing a less capable deterrent would be really, really dangerous.

ARTICLES**STRATEGIC DISPERSAL AND SSBN(X) COUNT***by Mr. Joe Buff*

Joe buff is a novelist with several submarine-related books to his credit. He is a frequent contributor to THE SUBMARINE REVIEW.

Introduction

At the Naval Submarine League's 2013 open Annual Symposium in Falls Church, VA, Silent Service leaders reiterated that the highest priority currently for the U.S. Submarine Force is the timely commissioning of an adequate number of suitably capable SSBN(X) replacements for the aging OHIO-class strategic nuclear deterrence fleet. Planners and designers have determined that 16 nuclear-armed submarine launched ballistic missiles (SLBMs) carried on each of 12 separate SSBN(X) vessels constitute the minimum, irreducible requirement. If future Strategic Arms Reduction Treaty (START) ratifications reduce the total number of warheads allowed in America's arsenal, then missile tubes can be left empty or reduced in number on each vessel but the number of vessels should never go below twelve. Among the crucial factors behind these calculations is the need for *strategic dispersal* between the sets of SLBMs deployed on each such separate submarine.

One dire consequence of settling for fewer than twelve SSBN(X) vessels would be that—allowing for scheduled maintenance downtime and crew workups, transits to and from port, unexpected repairs, and so on—the small number actually in position out on stealthy strategic deterrence patrol at any one time would become too small. As a cohort, these far-flung patrolling submarines would be too vulnerable to attack or mechanical breakdown of any one member. Complete and continuous coverage of all planet-wide potential second-strike (i.e., deter-

rence) targets would be lost. The SSBN(X) fleet would then fail to be at all times a reliably potent global-reach strategic weapon system helping prevent a surprise, pre-emptive nuclear (or other WMD) attack on America and our worldwide network of friends.

This article will discuss strategic dispersal theory and practice in an intentionally very broad context, to help support the wisest shipbuilding and other defense appropriation decision-making. *Strategic* will sometimes be used in two ways at once here, meaning both 1) pertaining to nuclear weapons, and 2) pertaining to the widest point of view regarding smart national security policy implementation.

Strategic Dispersal is an Age-Old Responsibility

Strategic dispersal is an important military term of art that deserves discussion. Interestingly, unlike *strategic deterrence*, strategic dispersal has no entry in Wikipedia.org. A Google.com Web search's most relevant recent entry is some news reporting on the 2009 debate whether the U.S. Navy should base any nuclear supercarriers in Mayport, FL.

The essence of strategic dispersal is to never put all your eggs in one basket. Yes, the issue does date back (at least) to Aesop's fables from ancient Greece circa 500 BC. Modern strategic dispersal, much like the related imperative of strategic deterrence itself, can be an abstract or even invisible concept. But it is one whose vital importance must not be appreciated only in hindsight via the profoundly negative effects of dispersal's neglect. This article offers a general overview of the all-pervasive, perpetual nature of strategic dispersal, building on three (relatively recent) telling historical case examples.

How to Read the Case Examples

The three case examples have intentionally been chosen to be very familiar to readers, though not perhaps in the specific context of strategic dispersal effects. The first two, Pearl Harbor and September 11, 2001, are probably the two most infamous surprise attacks in America's history. These were both terrible shocks, and national calls to arms. They will help illustrate how widespread

and never-ending are the need for, and the benefits of, strategic dispersal, even when that dispersal is unintentional, inadvertent, only partial, or even accidental. The third, most recent case study, BRAC 2005 and the New London Naval Submarine Base, will focus on the now officially recognized critical requirement for strategic dispersal in current and future undersea warfare basing dispositions, even when benefits of that dispersal might be invisible or seem contrary to short-term cost cutting.

Case 1: December 7, 1941

The surprise attack on Pearl Harbor provides an excellent study in how a bit of strategic dispersal, even if unintentional, can profoundly affect the outcome of a world war. As is well documented in naval history texts, there was no specific policy at Pearl Harbor to disperse the U.S. Pacific Fleet's capital assets (including warplanes) as a precaution against surprise attack. On the contrary, most Army and Navy assets were intentionally concentrated to better protect against sabotage. The two operational aircraft carriers available that fateful Sunday to Pacific Fleet at Pearl Harbor were both well away from home port simply because they each happened to have business elsewhere. Thus they escaped the first wave of attacking Imperial Japanese Navy carrier aircraft. Japanese task force leadership decided to call off their second wave attack out of concern for a possible counter-ambush by said U.S. Navy carriers. That in turn mostly spared the submarines in port, as well as the torpedo stocks and workshops, plus the base's fuel oil and lubricant tanks, which were as important strategic targets as the battleships. The rest, as they say, is history.

What is Strategic Dispersal?

Intentional strategic dispersal can be defined for present purposes as the collective result of design, material fabrication, operational doctrine, and ongoing deployment steps taken to minimize the simultaneous damage to other friendly military units—and to one's entire defensive system as a whole—of an enemy attack on any one or more units. This pragmatic issue does

date back to the ancient Greek philosophers, who famously articulated the great truth that “no two objects can be in the same place at the same time.” By no means an obsolete concept nowadays, Mother Nature’s imperative to dispersal even infuses modern quantum theory via the Pauli Exclusion Principle. It dictates that two electrons cannot simultaneously occupy the same quantum state in orbit around the same atomic nucleus. The question for the Sub Force now is, how far apart should different SLBMs on deterrence patrol be emplaced in submarines under the sea?

But going well beyond the realm of philosophy and particle physics, military dispersal—whether tactical or strategic in scope—is something that occurs and yields benefits in the readily visible, practical world. Dispersal is always happening within the context of restricted resources, such as finite appropriated funding, limited available materiel quantities, tight allowable timeframes, and small number of trained personnel. As such, the achievement of real-world dispersal is always based on making intelligent compromises. Not enough dispersal can create overconcentration and thus excess vulnerability, while too much dispersal can lead to serious dilution of sufficient control and decisive effect. Either extreme, too much or too little dispersal, can also lead to excessive costs. (These include the loss of economies of scale within each separate small unit or platform, and overexposure to technology risk, mechanical faults, and human or cyberspace contagion within each large one). Either blunder, too much or too little dispersal, represents money thrown away—on national and coalition defense programs that fail in the face of aggressive adversary pressures and hard use in the field.

Dispersal is achieved by one form or another of spatial separation between similar objects in a nation’s arsenal. Examples include spreading out the foxholes of an infantry platoon subject to enemy artillery bombardment, subdividing a surface capital ship into many watertight compartments, building in redundancies of command and control pathways within and between various platforms, and isolating different data centers using disparate

locations with powerful digital firewalls and other rigorous cybersecurity and backup protocols.

Military practitioners know that a certain amount of dispersal results inevitably from meeting other operational needs, and in that sense some dispersal comes *by accident or for free*. Troops need to be spread out to assure each soldier a sufficient share of the local battlefield environment's concealment and cover; a too-dense disposition can also overburden local water and firewood supplies, and endanger group hygiene. Similarly, there is a practical limit to the maximum dimensions (displacement) of each ship within a task force, given concerns about such parameters as material strength and metal fatigue, low observability, maximum vessel draft, good steering radius, and the size of existing dry-docks and canals. The same thing applies to the weight of a battle tank or armored car, or the runway length needed for safe takeoff by a heavily loaded big aircraft, or the mass of a very capable, survivable satellite. Too bulky is as problematic to national defense as too flimsy.

A Bit of Inescapable Math

Another factor influencing the maximum practical size of any type (shape and layout) of platform (i.e., spatial container, whether stationary or a conveyance) relates to constraints on how much time is allowable to load and/or unload that platform. Mathematically, for any given unit of measurement such as the foot or the meter, the ratio of the square-unit area of the outside of a platform to the cube-unit volume inside that same platform declines as the linear-unit dimensions of that platform increase. By way of illustration, everything else being equal it is cheapest, when buying the lumber to build the outside of a bunch of cube-shaped cargo crates loaded to the hilt, if one puts the entire cargo load into one huge cube.

However, the time it takes to load and unload that one gigantic cargo crate on each occasion it is utilized, let alone the delay and monumental costs required to build it and the unique platforms and terminals required to move it, argue against this monolithic, monomaniac approach. In the military as in the commercial world,

time is money, and time is always critical to saving lives. To reiterate, in general, some but not too much dispersal is good. But too little dispersal can be disastrous.

Case 2: September 11, 2001.

Time also becomes an important safety consideration. Very efficiently packed human spaces might require unacceptably long periods of time to evacuate in an emergency. Al Qaeda's attack planning for 9/11/01 has been called a textbook example of the combined (perhaps partly unintentional) harnessing of kinetic (force of impact), chemical (burning jet fuel), and potential (collapse under gravity) energy to inflict maximum damage on selected targets. Were it not for precautions taken intentionally by airplane and building designers, which amounted to achieving some strategic dispersal among conveyance platforms (e.g., airliners) and within structures (e.g., office buildings), the total toll of killed and injured from the hijacked plane crashes (including the one in Pennsylvania) and the damaged or destroyed buildings would probably have been significantly greater.

Practical limits on the size, and passenger and fuel capacity, of commercial airlines—in essence, strategic dispersal of travelers all bound for the same destinations—placed limits on the direct death tolls from the four crashes themselves, and also on the additional deaths caused by the kinetic and chemical energy released into the three occupied structures, some of which, weakened badly enough after a time delay, then collapsed under their own weight.

The Pentagon and the World Trade Center designs represented different approaches to efficiently packing people into spaces that could be evacuated in an emergency. The Pentagon space planning spread horizontally; the World Trade Center, on crowded downtown Manhattan Island, had to rise vertically. News reports said that perhaps no one on or above the floors where the airplanes hit the Twin Towers got out alive, because the impacts and fires blocked all evacuation routes downward inside the structures. However, except for first responders, most of the occupants below the impact floors, who were not killed or critically injured by the aircraft impacts themselves, were successfully evacuated before

the Twin Towers collapsed some two hours after the planes hit. Had larger aircraft carrying more fuel been involved, the Twin Towers might have collapsed a lot sooner, causing many more deaths. Had the Twin Towers themselves been much taller, and with fewer other skyscrapers nearby to mask their lower floors from attack, the hijacked planes could have struck the towers much lower. The immensely taller towers would have collapsed under their own weight much sooner, and the death toll would have been perhaps an order of magnitude more severe than during the actual tragedy.

Discussions of 9/11/01 also noted that the Pentagon and the Twin Towers used very different design and construction philosophies, beyond their contrasting (and not entirely voluntary) choices of height versus footprint size. The Pentagon used many strong internal beams throughout, and also included airshafts and courtyards between the different rings—which amounted to a form of spaced armor and internal dispersal. The Twin Towers in contrast utilized a weight-supporting scheme based mostly on an innovative external framework, which lost strength when it was broken through and then exposed to prolonged jet fuel-fed fire heat. As a result of these differences, and given that jetliners travel mostly horizontally, many more people on or above the floor where the plane hit at the Pentagon were able to evacuate safely, compared to at the Twin Towers.

Case 2, like Case 1, illustrates how pervasive, both in need and in effect, strategic military dispersal really is throughout modern society. Choices, even if inadvertent or invisible, have consequences, measured in life and death.

“Too Big to Sail?”

The *NEW YORK TIMES* for 28 October, 2013, on page B1 ran “Too Big to Sail?” This article profiled how the problem has been raised by some maritime safety experts that the very latest cruise ship designs (with upwards of 3,000 passenger staterooms) are becoming so big they might, in a worst case nautical disaster, present insurmountable obstacles to saving everyone aboard.

This brings us from the wise old words of Aesop to the modern U. S. Navy paradigm of sea basing. The design, procurement, and employment of any SSBN fleet amounts to an application of survivable, covert sea basing, where the mission is undersea warfare strategic deterrence. The challenge for SSBN(X) is, just as with any concerted surface ship sea-basing process, to decide on the ideal number of platforms of the ideal individual payload capacities. As with luxury liner passenger lists—and with surface warship ordnance magazines—too many eggs in too few baskets become a potentially life-threatening conundrum in SSBN(X) procurement.

This connection might be made clearer and more immediate if we considered a *floating apartment building* cruise ship as a possible target for hostile pirate or terrorist or enemy nation-state submarine attack. As with our nation's precious deployed SLBMs, a single platform-as-target should not be made overly tempting to an adversary, nor allowed to become too crippling a loss to friendly forces if sunk. Modern adversaries, ranging from large countries to loose-knit terrorists, seek to damage entire national systems (such as the luxury cruise industry, the entire shipping industry, or the whole economy) via attacks on individual assets.

As a result, America must never allow one strategic deterrence platform to hold so large a portion of all deployed nuclear warheads and delivery vehicles that that platform's loss—in combat or by freak accident or mechanical failure—would cripple the entire system of effective, survivable strategic deterrence, and with it, threaten national survival. Since the literature and hard experience make it clear that strategic deterrence, to work, must have a very strong psychological effect on the enemy(s) *in advance* of any surprise attack, America's strategic dispersal choices must not simply be in fact unassailable, they must be *seen and understood by all* to be unassailable.

Case 3: BRAC 2005 and SUBASE NLON

The final pertinent and illustrative case example draws on a recent debate and decision process that applied specifically to the *land basing* of undersea warfare assets—namely, U. S. Navy fast-

attack subs from the Naval Submarine Base New London in Groton, CT. The review was part of the work of the 2005 Base Realignment and Closure Commission (BRAC), intended to eliminate (perceived) redundancies and other cost inefficiencies in the U.S. military. After significant controversy, the BRAC members voted overwhelmingly to keep open the New London Sub Base.

One argument in favor of closing the base was that costs would be saved by consolidating Groton subs (the ones not moving to the Pacific) with other East Coast subs already based in Norfolk, VA and Kings Bay, GA. One argument in favor of keeping the base open was that adequate strategic dispersal demanded three, not two, sub bases on the U.S. East Coast. (Of course, other factors such as tremendous economic impact also played major roles.) Sub Force leaders speaking afterward at the Groton Base, commenting on the decision process and the televised final Commission vote, emphasized that minimum adequate strategic dispersal of both fast attack and strategic deterrent sub basing simply could not be sacrificed, even under pressure for current cost savings.

Conclusion

These historical examples, woven together, demonstrate logically that strategic dispersal was and is a necessity, not a luxury. The costs are well justified to maintain a reliable national security system for America and, including our *nuclear umbrella*, for our friends and allies. Unpredictable surprise attacks and unwise cost-cutting alike can damage that system severely, if strategic dispersal is neglected. Ongoing fundamentals such as strategic dispersal and strategic deterrence matter deeply to American defense, invisible though their priceless benefits might sometimes be compared to their pricey implementation. They simply should not be sacrificed for lower expense numbers on today's national budget and deficit spreadsheets.

The minimum acceptable number of next-generation survivable undersea strategic deterrent platforms, the one dozen in the SSBN(X) fleet as already determined by detailed naval analysis

and planning, must be funded on a timely basis, in its entirety. To settle for even one SSBN(X) fewer than twelve will leave our strategic deterrence posture open to serious gaps. These gaps, in a modern world of so few real secrets, could be discovered and exploited by an adversary. Such gaps would make our strategic deterrence system as degraded as is any highway or tunnel, runway or flight deck, railway, or dike, levy, or aqueduct system that suffers from gaps. The adversary might be a terrorist cell of homicidal lunatics, or a future sociopath-led country bent on intimidation, or worse, in some sort of new cold or even hot war. The point is that we know that we don't know. The danger of unpreparedness lies in the implicit invitation to some unspeakable global catastrophe.

SYNTHETIC APERTURE AND SIDE LOOKING SONAR EXPANDING VIRGINIA-CLASS SUBMARINE INTELLIGENCE COLLECTION CAPABILITY

by CAPT James Gray, USN (Ret.)

Captain Gray is a retired submariner who commanded USS TEXAS (SSN 775) – the second Virginia-class submarine.

The seabed's growing importance to a maritime nation's defense and economic prosperity, and the ability of U.S. nuclear submarines to operate clandestinely in littoral areas, argue for improving the submarine's intelligence collection capability by installing synthetic aperture and side looking sonar systems.

Maritime nations are increasingly reliant on the oceans for economic and defense needs, including energy and mineral recovery, a source of protein, the transmission of government and commercial data on seabed fiber optic cables, and the deployment of sensors and weapons. These undersea trends highlight the importance of understanding the nature of an adversary's seabed infrastructure so U.S. forces can avoid, exploit or hold them at risk during conflict. Obviously, the U.S. must conduct these surveys as part of its Phase Zero intelligence operations so it can develop operational plans, tactics and countermeasures in advance of conflict.

The U.S. currently conducts bathymetric and other surveys with purpose-built oceanographic and surveillance ships operated by the Military Sealift Command. However, this approach has limitations. Specifically, there are a small number of these ships and the area requiring surveillance is increasing as the U.S. shifts its security focus to the Pacific. Second, and of greater concern, are extraterritorial claims by some nations who oppose foreign ship operations inside their economic exclusion zones. China, for

example, has been particularly aggressive in attempting to counter overt U.S. intelligence operations. Incidents involving Chinese forces and U.S. airborne and seaborne surveillance platforms have increased tensions between the two nations on several occasions. The near loss of a U.S. EP-3 surveillance aircraft in 2001 and the harassment of a U.S. surveillance vessel off Hainan Island in 2009 are stark reminders. In addition, China is not alone in asserting exaggerated territorial claims or interfering with other nations' intelligence collection operations. North Korea and Iran have acted similarly in the past.

Submarines can bypass nearly all of these concerns. U.S. attack submarines outnumber purpose-built oceanographic ships, allowing submarines to survey more locations while deployed for other missions. In addition, submarines represent a non-provocative intelligence collection capability. Their stealth allows them to operate undetected, which avoids interactions with foreign forces and the consequent antagonism of diplomatic demarche. Moreover, unlike their surface counterparts, weather does not limit submarine operations; nor does the presence of ice. Arctic energy exploration and recovery operations, and the possible introduction of surveillance or defensive systems by claimants, may become important intelligence targets in the future. For all these reasons, adding synthetic aperture and side looking sonar (SA-SLS) to submarines would significantly enhance U.S. intelligence collection capability, especially against seabed infrastructure.

Synthetic aperture sonar is an offshoot of synthetic aperture radar. While the phenomenology is different, the concept is similar. Both make multiple target observations from a moving source—in this case high frequency sound emitted by the submarine—and combine the information with advanced computer processing systems to produce resolutions that are an order of magnitude greater than traditional sonar systems can provide. The higher resolutions help operators discriminate between natural seabed topography and manmade objects like energy recovery systems, fiber optic cables, sensors or mines.

The U.S. is currently building Virginia-class attack submarines, which will eventually become the mainstay of its submarine

fleet. These ships are the stealthiest, most combat capable submarines in the world and have features that enhance their ability to operate in littoral environments. With each successive block, the Navy is adding capability through spiral development, while reducing construction time and cost through design and process improvements. Adding SA-SLS is consistent with this spiral development philosophy and can leverage the significant amount of research and development that has been accomplished to field mine hunting sonars. It is also consistent with the recently released Submarine Force Integrated Undersea Strategy that seeks to satisfy current defense needs with mature technology, and provide commanders with affordable capabilities that are operationally practical. Submarine-mounted SA-SLS systems would meet these criteria.

Virginia-class submarines are large relative to past attack submarines classes. It is likely they could accommodate a SA-SLS array in the bow, somewhere aft of the High Frequency Chin Array (HFCA), which only Virginia-class submarines possess.¹ Its forward location (providing an unobstructed view) and its ability to develop very narrow precise beams, would allow the HFCA to cue the SA-SLS to potential objects of interest in the water column or on the seabed. A future sonar advanced processor build and technology insertion could add the necessary processing and displays to provide real time seabed images and bathymetry information. Further, integration with the precision underwater mapping (PUMA) processing and display software would enable automatic target recognition and seabed feature change detection. These capabilities would be especially useful for counter-mine operations and help submarines penetrate anti-access / area denial shields.

One major goal of the Integrated Undersea Strategy is the addition of payload modules to future Virginia-class ships. This Virginia Payload Modules (VPM) would increase the ship's hull

¹ While Virginia is the only attack submarine class with chin-mounted sonar, the Navy installed a chin-array on USS Asheville (SSN-758) in 1995, as an operational test platform for the High Frequency Sonar Program (HFSP).

length and could provide an unintended benefit by accommodating longer SA-SLS arrays. Longer arrays support higher search speeds and sweep rates, while also creating opportunities for even more efficient array installation processes.

Operationally, some might question the wisdom of using active sonar, especially in an adversary's littoral area. That is a legitimate concern, because active sonar and other noise-producing operations provide detection opportunities for anti-submarine warfare (ASW) forces. However, the high frequencies these systems use attenuate quickly with distance and are typically above the threshold of sonar intercept receivers. Therefore, operating SA-SLS or the HFCA represents a small detection risk. Of course, that risk is not static—it could increase if adversaries invest in improved detection capabilities.

Undersea platforms have experience with SA-SLS systems. For example, Submarine NR-1 employed side-looking sonar for surveillance and navigation. Lessons learned from that experience could help design and operate new systems. However, equally important in developing new capabilities is experimentation. A demonstration and development project to add SA-SLS capability to a Virginia-class submarine during a scheduled availability would allow near-term experimentation. The ship could test the system to assess its capability and provide feedback for design improvements. Testing could also assess potential submarine vulnerabilities while using high frequency active systems and countermeasures adversaries might adopt.

Adding SA-SLS to U.S. submarines would not offset the need for purpose-built oceanographic ships that can cover significant portions of the world's oceans and provide needed bathymetric information. However, their vulnerability to harassment or attack when operating in foreign littorals, or even open ocean areas during conflict makes Virginia-class submarine SA-SLS installation a vital adjunct capability.

SUBMARINE EMPLOYMENT IN ANTI-ACCESS/AREA DENIAL ZONES

by *CAPT Jim Patton, USN (Ret.)*

Captain Patton is a retired submarine officer who is a frequent contributor to THE SUBMARINE REVIEW.

Background

There is no lack of examples of maritime areas where a littoral nation possessing the necessary assets could implement an *Anti Access/Area Denial zone (A2/AD)* to protect his ocean flanks from other nations' naval forces. For example, these include the Barents Sea, one or another of the Mediterranean basins, the Black Sea, the Persian Gulf, the Arabian Sea, the South China Sea, the Baltic Sea and the Yellow Sea. The physical capabilities of the sensors and weapons capable of being included in the A2/AD *portfolio* have increased dramatically through the years and include: sophisticated mines at the entry points to the A2/AD zone, modern Anti-Ship Cruise Missiles (ASCMs) fired from land, surface vessels, aircraft or submarines, very effective long range land or sea-based Surface-to-Air Missiles (SAMs), exotic sensors such as Over-The-Horizon (OTH) radars and even Anti-Ship Ballistic Missiles (ASBMs).

An additional complicating factor is the probable ability of technologically advanced adversaries to seriously degrade or deny access to satellite-based navigation, communications and intelligence gathering/dissemination functions within or near such A2/AD zones. A bit of good news is that submarines are largely invulnerable to many of these impediments, and are intrinsically capable of penetrating into these zones. However, there are a not insignificant number of preparations that these submarines must have taken if they are to optimize their chances of getting in—and more importantly, using that interior position to degrade the

A2/AD zone and facilitate entry by larger and stronger air and surface forces. It also must be taken into consideration that there will likely exist a much needed *coalition of the willing*, and that both advance preparations and actual execution of these submarine missions will involve different types of submarines from different allied countries.

In *enabling* access for larger and stronger air and surface forces, submarines will utilize traditional and non-traditional means and methods, both during the pre-hostilities phase and after hostilities have commenced. Also, some actions which seem intuitive will not be actively pursued because evolving technologies and an adversary's operational options have made them non-productive. For example, very slow and quiet adversary submarines armed with ASCMs are likely to be holding in some relatively *safe* locations, perhaps behind acoustic *trip-wire* sensor barriers and under shore-based SAM coverage, awaiting targeting information and launch orders from shore. These platforms would not be subject to detection in a reasonable period of time by any conceivable Anti-Submarine Warfare (ASW) search plan let alone be successfully engaged if hunkered down in *bastions*.

Discussion

With a few notable exceptions, most countries find it hard to justify maintaining a Submarine Force simply on the basis of defending their home waters. Justification for most includes having a reasonable expectation of successfully, on short notice, being a part of a coalition of the willing and conducting a transit to and operations within *distant waters*. These distant waters will, in all likelihood, be within an adversary's littoral spaces and probably involve A2/AD zones.

Interoperability and Commonality

In generating this reasonable expectation that one's submarines would be able to operate effectively (and safely) within a distant A2/AD zone, there are several discrete issues that must be addressed. For example:

- **Material**—the hull, propulsion plant and installed sensors and weapons must be of a nature that will not only support the mission, but be of adequate compatibility with others in coalitions of the willing.
- **Training**—attached personnel must have been taught, and practiced, the operational skills necessary to operate and maintain the systems, sensors and weapons provided, preferably under the same conditions (and ideally in the same geographic location) as expected in the A2/AD zone.
- **Interoperability**—units that are expected to *play well* with other nations' units within the coalition of the willing should preferably been involved in recent exercises with these units, using the same Tactics, Techniques and Procedures (TTPs) as would be used in the A2/AD zone.

All of the above issues are simplified if there is a high degree of commonality within the tactical equipments (particularly as regards connectivity) of participants within any proposed coalition of the willing. There has always been a concern on the part of the developers and owners of high-end equipments that if they allow the proliferation of these equipments and technologies to even what are currently *friendly* entities, that political upheaval or a regime change might put these equipments and technologies in the hands of a potential adversary. Although there are credible considerations in this point of view there are also mitigating historical precedents that reduce this concern. For example, the United States sold top-of-the-line F14 *Tomcats* to Iran under the Shah. After the 1979 theocratic revolution however, not only did the combat readiness of these aircraft readily degrade due to the lack of spare parts, but there was also some comfort in knowing the *actual* capabilities and limitations of a possible opponent's equipment.

If there is a piece of equipment or type of equipment that is not needed for local operations but would be needed for expeditionary operations, it is foolhardy to assume that it would be installed only when and if it is needed. At the time it is needed there will not be time to install, check out, and train personnel let

alone practice employing the equipment under realistic conditions. In many cases, it makes little operational sense than to do other than include such equipments during initial construction of the hull rather than *economize* by rationalizing that the capability could or would be backfitted (more expensively) later.

Interoperability is extremely important if a coalition of the willing is to effectively perform together. Again, interoperability exists on many levels, and as with most things involving *conditional probabilities* where the final probability of success is the product of a number of lesser included probabilities, a whole string of 0.99s can be ruined by just one 0.01. Interoperability generally equates to a large degree to commonality—commonality not only in equipment, but also training and TTPs. As far as commonality of equipment is concerned, it is not necessary that all of the equipments are identical as long as the least capable of equipments is a subset of the most capable and all others in between. Microsoft would describe this as a new operating system being *backwards compatible*.

Commonality in training is one of the easier things to orchestrate—after the non-trivial accomplishment of agreeing (within the actual or proposed coalition of the willing) upon the TTPs which will be the foundation of such training. The implication of this commonality, however, is that although the scenario requiring the rapid deployment of such a coalition to distant waters may be sudden and unexpected, the preparatory steps among prospective members of such a coalition must be well in advance of the implementing scenario. Latecomers to the group can be tacked on, but a lesser relative contribution would be expected of them.

Missions – Definition and Practicing of

Some specific skills that prospective members of a coalition of the willing should jointly define and practice in support of expected missions would include:

- Injection, support, and extraction of Special Operating Forces (SOF) across a broad range of potential missions, the goal being that any member of the coalition could successfully operate with any other's SOF personnel.

- Mine detection/localization and avoidance, and minefield mapping in support of follow-on forces, the goal being able to not only get one's own submarine safely through a minefield, but to compile and relay back to other forces mine localization information, using such as UUVs as necessary.
- Offensive mining to deny an adversary's naval forces exodus from or return to operating bases and/or to lock ASCM-armed SSGs into their deployed *bastions* while other actions deny them externally provided targeting information.

All human skills, whether they are individual or team-oriented, consist of three components which have to be conducted or acquired in the proper sequence. These are concepts, procedures and techniques. Concepts have to be taught (or identified, as they have loosely been in the above paragraphs), procedures must be developed (solidly based on good, fully described concepts) and then studied, and techniques must be practiced after the procedures have been learned. If the issue of multinational joint operations within an A2/AD zone is the identified concept, then the associated procedures have not even begun to be defined and promulgated, let alone the R&D for equipments to facilitate these joint operations been started. The practicing of these procedures, through joint multinational exercises, necessarily has to wait for the concepts to be refined and the procedures written and promulgated. The clock is ticking.

Conclusions

Since there would be clearly much for submarines to do (with a sense of urgency) once inside an A2/AD zone, the concept of a coalition of the willing is a valuable and needed one. The list of countries that are potential members of this coalition is long, and these countries have most of the world's best submarines and submariners—including many platforms with the most modern of Air Independent Propulsion (AIP) systems. The process of developing and practicing TTPs is a non-trivial one—especially

considering the commonality and interoperability issues that arise when many different platforms from many different countries are to be successfully integrated in a common effort.

It would be appropriate if preliminary studies and multinational meetings began defining the problems to be solved and the way ahead that would facilitate the timely deployment of such a coalition if required at some time in the future. The very existence and demonstrated (in exercises) effectiveness of such a capability would, in itself, be a deterrent against its ever being needed to employ.

REUNION:

Francis Scott Key SSBN 657 reunion takes place at the Hampton Inn at Frederick, MD which is the birthplace and burial place of that famous lawyer and poet who wrote the poem which became our National Anthem on June 11-15.

Link to the FSK website - <http://www.ssbm657.com/>

Pre-Registration is Mandatory

Date: June 11-15, 2014

Complete form below and return with a check by May 21, 2014

2014 FRANCIS SCOTT KEY REUNION REGISTRATION FORM:

Shipmate Last Name: _____ First Name: _____ MI _____

Guest Name: _____ Relationship: _____

Address: _____

City, State, Zip: _____

Phone: _____ Email: _____

Name Tag Info: Years when you were on the Key _____

Crew: Blue or Gold _____ Rate/rank when on the Key _____

Make checks payable to: USS Francis Scott Key Reunion Association

Mail to: Diane Singleman, 425 E. Campbell Rd. Ext., Schenectady, NY 12303

Questions?? Call me at 518-355-2119 or email me at diane@ssbn657.com

Don't forget to register at a Hotel before May 10th to get a reduced rate!!!



AMI HOT NEWS FROM AROUND THE WORLD

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From the October Issue

INDIA—Is the Submarine Program Finally Becoming a Priority?

In mid-September 2013, AMI received information that the Indian Navy (IN) was close to releasing an USS\$8B tender for six submarines under the Vertical Launch Missile Submarine (Project 751) Program. This follows information in mid-June that the program was being delayed by the Finance Ministry.

At that time, the Request for Proposals (RfPs) was expected to be released to international and local yards by the end of 2013 although the Finance Ministry delays could have pushed the RfP into 2014.

However, since June, the IN Submarine Force suffered a tragic accident with the explosion and sinking of the Kilo class submarine INS SINDHURAKSHAK (S63) on 14 August. The accident has lent some credibility to the aging and unserviceable submarine fleet that IN officials have been complaining about for the past decade.

It now appears that the Project 751 procurement may now be on the priority list for the Ministry of Defence (MoD). Reporting indicates that the Defence Acquisition Council (DAC) met on 13 September and approved the acquisition (third time around). On 16 September 2013, the IN's Vice Chief of staff Vice Admiral Dhowan announced that the proposal was being sent to the Cabinet Committee on Security (CCS) for final approval. The timetable for CCS approval seems to in the short term, possibly as early as the end of October. At that time in the IN will release the long delayed Project 751 RfP. Responses will probably be due by mid-2014.

The acquisition plan now appears to be for a 2 + 2 + 2 approach, the first two units from a foreign yard, and two each from domestic yards (Mazagon Dock Ltd (MDL) Hindustan Shipyard Ltd (HSL)). This is a departure from the insistence that all six units be built in India under the Defence Procurement Procedures (DPP) 2013 "Buy and Make with Technology Transfer" category (similar to Project 75). It is a combination of the "Buy and Make" and "Buy Global" categories in order to get units into service at a much faster rate.

When the RFP is released, the following suppliers will respond:

- DCNS of France with its Super Scorpene variant.
- ThyssenKrupp Marine (HDW) of Germany with the new Type 216 Design.
- Rubin of Russia with the Amur 1650.
- Navantia with the S 80 variant (may be dropped due to weight problems with first Spanish unit).

AMI still believes that the Russian Amur 1650 will be selected for this program as it was already designed with a VL system. Even though the INS SINDHURAKSHAK was a Russian-built Kilo class, the sea service still has close ties to Russia and will also utilize Russia to speed up the modernization efforts of the remaining kilos in the IN.

UNITED STATES

Future Ballistic Missile Submarine Funding Line Shift?

In September 2013 the US Navy (USN) requested Congress to provide up to US\$60B in supplemental funding in order to finance the Future Nuclear Powered Ballistic Missile Submarine (SSBN-X) Program. The funding line would be completely separate from the USN's annual budget and its shipbuilding and conversion (SCN) budget. The first installment of US\$4B would come in Fiscal Year (FY) 2019 and run for 15 years (through FY 2033) in order to design and fund 12 SSBNs to replace the current force of Ohio class SSBNs.

At current and project USN SC funding levels (US\$14.2B in 2013); the USN will not be able to afford the SSBNs as each hull

will consume approximately 28% of the entire SCN budget every year. The remaining 72% of the SCN budget would have to cover one nuclear powered carrier (every five years), two Virginia class nuclear attack submarines per year, one or two Arleigh Burke class destroyers (FLT IIA then transitioning to FLT III) per year and multiple Littoral Combat Ships (LCS) as well as amphibious and auxiliary ships.

In early 2013, the USN estimated that in order to meet its 30-year shipbuilding plan it would need to average around US\$18.8B in procurement funding per year. The current level of SCN funding at US\$14.2B may also continue to shrink as the Budget Control Act of 2011 (or Sequestration) kicks in with FY 2014 and FY 2015 becoming crucial years.

At the end of the day, if Congress does pass a FY 2014 defense budget, it will more than likely be well short of levels needed to fully fund all SCN programs. If Sequestration becomes the norm, the USN will fall even further behind in its shipbuilding programs making FY 2019 and the SSBN Program even harder to attain. Finding funds within other USN budget lines will be next to impossible and cannot be considered a realistic solution.

At US\$4B annually, it would be wise for Congress to fund these strategic assets from other sources as the SSBN force now accounts for 70% of all strategic assets in the US. The USN can no longer afford to carry the majority of the burden for the nuclear triad while trying to maintain a global naval force, which continues to shrink in size year after year.

A second and possibly more realistic option would be for the services to alter the current equal split of defense procurement spending amongst the three services allowing for increased funding for the SSBN Program.

AZERBIJAN

Replacing the Soviet Fleet

In mid-September 2013, AMI received information that the Azerbaijan Navy (AN) has established a requirement to replace some older existing naval units as well as to establish a Submarine

Force. This requirement is likely in response to continued Iranian naval build-up in the Caspian Sea as well as Kazakhstan's recent plans to procure new naval platforms.

Information received stated that the AN is looking to procure two submarines (likely midget submarines), two to three *destroyers* (frigates or corvettes), a mine countermeasures vessel (MCMV), and two *transport ships*, probably tank landing ships (LSTs). Sources indicate that the AN is looking to South Korea as the preferred supplier but other nations will likely seek to bid on the programs.

ASIA REGIONAL UPDATE

SOUTH KOREA – Son Won II Class Submarine (KSS-2): On 03 September 2013, the Republic of Korea Navy (ROKN) launched its fourth Son Won II class submarine, KIM JWA-JIN (SS 076), from Daewoo Shipbuilding and Marine Engineering (DSME).

INTERNATIONAL

Naval Vessel Design Developments

AMI is currently tracking new naval design developments. The following are the highlights for the months of September and October 2013:

CHINA – Fourth Generation Nuclear Submarine: On 22 September 2013, Mr. Tan Zuojun, former general manager of China State Shipbuilding Corporation (CSSC) revealed that development of the nation's fourth generation nuclear submarine had been completed.

The main characteristics between the current third generation and new fourth generation submarines are:

- The ability to launch torpedoes against ships as well as submarines in addition to firing missiles against ships and land based targets.
- A more silent nuclear reactor with lower vibrations resulting in lower noise output.

- A more advanced hull muffler system making the submarine less detectable during maneuvering.

The fourth generation submarines probably will not begin construction for at least five to seven years due to the time it will take to move the new technologies from drawing board to physical piece of equipment.

MODERNIZATION & SHIP TRANSFER NEWSLETTER
UNITED KINGDOM – Trafalgar Class Nuclear Powered Attack Submarines (SSN): In September 2013, the United Kingdom Ministry of Defence (MoD) announced that Babcock International had been selected to design and develop the first stage of an obsolescence update to the Communications Coherency for Submarines System (CCSM) at an undisclosed value.

Babcock developed the initial CCSM that was installed on the Trafalgar class in 2005. The CCSM consolidated previously independent autonomous systems into a single, off-the-shelf system architecture, covering frequencies from VLF to ELF. Due to its near term obsolescence for the final four units of the Trafalgar class, Babcock was selected to upgrade the system in two stages.

The first will include updated hardware and software for military signal messages and the second involving the update to communications equipment routing infrastructure. Acceptance trials for the first stage are scheduled for January 2014.

INDIA – Sindhughosh (Kilo –Project 877) and Shishumar (Type 209/1500) Class Submarines: On 26 August 2013, Indian Defence Minister A.K. Anthony directed that the modernization effort of the existing Submarine Force should be given top priority. Concern over the slow modernization process of the remaining Submarine Force is due to the explosion and sinking of the INS SINDHURAKSHAK (S 63) in August.

The sea service will probably attempt to fast track these units at Russian and Indian yards. The four remaining units of the Sindhughosh class (SINDHUDHVAJ – S56; SINDHURAG – S57; SINDHUVIR – S58 and SINDHUSHAstra – S65) are currently scheduled to have this refit completed by 2016. The four submarines were to have the work completed at HSL in Vishakapatnam under the direction of advisors from Rubin Design Bureau and Zvezdochka Shipyard. However, it is now possible that some or all of the units will be sent to Russia to move forward with the upgrades sooner.

The four Shishumar units have all completed mid-life upgrades since 2000. However, the next refit may also be split between Indian and German yards in order to complete the modernization efforts sooner.

From the November 2013 Issue

ASIA

VIETNAM: Kilo (636) Class Submarine: In October 2013, AMI received information that the first Kilo class submarine, HA NOI (HQ-182) will be delivered to the Vietnamese People's Navy (VPN) in January 2014. Acceptance will be completed by the end of November 2014.

Units two through four will be delivered to Vietnam in 2015 and units five and six in 2016.

VARIOUS DID YOU KNOW?

UNITED STATES – USS NORTH DAKOTA

On 02 November 2013, the US Navy's (USN) eleventh Virginia class nuclear powered attack submarine (SSN), USS NORTH DAKOTA (SSN-784), was commissioned at Electric Boat in Connecticut.

MODERNIZATION & SHIP TRANSFER NEWSLETTER

SPAIN: Galerna Class Submarines: The S80 (Isaac Perol Class) submarine program's delay has forced the Spanish Navy (SN) to

reconsider the requirement to refit the aging Galerna class submarines. AMI estimates that at least two of the Galerna class submarines will undergo a service life extension to compensate for the S80 construction delay.

The first unit, the SPS MISTRAL (S73) was refloated after a dry dock period in April 2013 as part of a service life extension program. The refit is expected to be completed by September following a series of at sea tests. The three Galerna class boats are based on the French Agosta 70 design and were commissioned into service in 1973, '85 and '86. The MISTRAL's refit will ensure the vessel will remain operational until the 2022 timeframe.

According to reports, the Spanish Ministry of Defence (MoD) has allocated US\$38M to refit another unidentified Galerna class submarine (SPS GALERNA or SPS TRAMONTANA). This life extension program will likely include:

- Hull maintenance, repair and preservation
- Overhaul of main engines, alternators and shafting
- Replace main batteries
- Software upgrades weapon control system
- Software upgrades to surface search radar and ESM sensors
- Software updates to sonar suite

With the S80 delayed for 3 to 5 years, AMI estimates that the Galerna class will remain operational until the 2020-2024 timeframe to allow sufficient time for the four S80s to be built to the modified design specifications and enter the fleet.

UNITED KINGDOM – Trafalgar Class Nuclear Powered Attack Submarine (SSN): On 18 September 2013, the Royal Navy's (RN) Trafalgar class SSN, HMS TRENCHANT (S 91) entered dry dock at Devonport Royal Dockyard for a two-year Revalidation and Assisted Maintenance Period (RAMP). The RAMP will ensure TRENCHANT is safe to operate for the remainder of its service life, to the mid-2020s.

The work package includes:

- Hull, mechanical and electrical (H, M&E) work
- Installation of a new rudder
- Overhaul of the port and starboard circulating water systems

- Upgrade to the nuclear steam raising plant (NSRP)
- Survey and repair of the Sonar 2076 flank arrays
- Installation of the new Defence Information Infrastructure (DII)
- Inspection of the new Defence Information Infrastructure (DII)
- Inspection of the tail shaft
- Galley upgrades

The dry dock phase will take 40 weeks. HMS TRENCHANT will reenter service by late 2015.

USED SHIP TRANSFERS/RECEIPTS/ DECOMMISSIONINGS

BANGLADESH – Chinese Submarines: On 05 October 2013, AMI received information that the Bangladesh Navy (BN) was still negotiating with China for up to three submarines. This follows information on 03 January 2011 that the sea service was close to completing a deal for two used Song class submarines that served with the People's Liberation Army – Navy (PLAN). According to the latest information, it appears that the total number of submarines may have grown to three units.

If this deal is approved, AMI believes that all three units will probably be overhauled at either Wuhan Shipyard or Jiangnan Shipyard where all of the Song class submarines were built. The submarines could be delivered as early as 2015. The procurement of submarines is part of the three dimensional naval force consisting of air, surface and subsurface units announced by the Minister of Defense in 2009.

INDONESIA – Kilo Class Submarines: On 05 October 2013, AMI received information the Indonesian Navy (TNI-AL) was offered up to 10 Kilo class submarines from Russia as a grant. The submarines, built from the 1990s through 2000, are currently being decommissioned from the Russian Navy (VMFR). The submarines are of the 877 and 636 series. Russia is currently building the latest model, the 636.3, for the VMFR.

Although the Indonesians are discussing the possibility, the TNI-AL, has already begun the Type 209 program with the South Koreans. The Type 209 program will deliver three units to the TNI-AL with two being built in South Korea and one in Indonesia.

The TNI-AL has an expressed requirement for up to 10 total submarine hulls by 2024. Budget shortfalls have made this requirement an almost impossible task. The granting of up to 10 used units would surely help the TNI-AL to meet its 2024 goals although absorbing them rapidly would be difficult to achieve.

The offer of the used Kilos by Russia is obviously a marketing strategy in order to break into the Indonesian naval market, which it has failed to do so for the past decade. Any acceptance of this deal would surely be premised by future orders of either Kilo 636.3 hulls or Amur hulls, both of which have yet to be exported.

With the South Korean Type 209 deal already in place, the TNI-AL could accept some of the used Kilos although it does not seem likely as operating two distinctly different Submarine forces (Kilos and Type 209s) with two different training and supply lines would cause major problems.

The Russians are obviously trying to displace the South Korean deal, which is already underway.

CHINA – Han Class Nuclear Powered Attack Submarine (SSN): On 29 October 2013, the first Han class submarine, Long March No. 1 (401) was formally decommissioned from the People's Republic of China Army – Navy (PLAN). Long March No1 was laid up in 2005 and its nuclear reactors were put into storage. With the new Shang class now entering service, the PLAN decided to decommission the hull as it is no longer needed. Hull 402 is also laid up and will probably be decommissioned in the next few years as more units of the Shang class enter service. The Han class will not be offered for resale as China does not offer nuclear vessels on the international market.

*From the December 2013 Issue***SAUDI ARABIA – Contacting Submarine Suppliers**

In mid-November 2013, AMI received information from several sources indicating that the Royal Saudi Naval Force (RSNF) was in contact with ThyssenKrupp Marine Systems (TKMS) for the procurement of up to five Type 209 submarines at a cost of US\$3.4B. Sources also indicated that the RSNF had a long term requirement for up to 25 submarines at a cost of around US\$16.5B.

Although AMI cannot confirm that the RSNF has met with TKMS concerning submarines, AMI believes that TKMS is one of several Saudi requests for pricing and terms to build new submarines for the Kingdom. In 2012, sources indicated that the RSNF was considering its submarine design options that included the DCNS Scorpene, DCNS SMX-23 Andrasta, the ThyssenKrupp Marine Type 214 (and now the Type 209) and the Pakistani Agosta 90B.

POLAND – Modifications to Naval Modernization Plan 2030

In early November 2013, AMI received information concerning the Polish Navy's (Marynarka Wojenna – MW) most recent update to its Naval Modernization Plan 2030 (US\$3.1B budget plan). The plan now calls for the following ship types and potential timelines:

- Three diesel electric submarines beginning in 2014 and running through 2022.
- One Gawron II class corvette (in progress – restarted in September 2013) to be finished as an Offshore Patrol Vessel (OPV) by 2016.
- Three Miecznik class corvettes (1900 tons) from 2014 through 2026.
- Three Czapla class OPVs (1700 tons) beginning in 2015 and running through 2026. Will be same hull as Miecznik class corvettes.
- Three Kormoran II class MCMV that began on 23 September 2013. Deliveries scheduled for 2016, 2019 and 2022.

- Seven auxiliaries including one Fleet Replenishment Ship (AOR), two intelligence collection ships (AGIs), one hydrographic survey ship (AGS), one Command Ship (LCC) and two Rescue and Salvages ships (ARS). All seven are to be completed by around 2026.

The latest variant of Naval Modernization Plan 2030 essentially replaces the entire sea service by 2030. AMI believes that this acquisition timeline is extremely aggressive considering all of the vessels are to be built in Poland.

The first program is expected to be, and is apparently the furthest along, is the diesel electric submarine. The two candidates being considered by the MW are the German Type 214 and the French Scorpene designs. The MW is planning to have this program under contract by 2014 with all three units in service by 2022. AMI believes that the three units will not be completed until at least 2030 assuming a 2013 start date.

SINGAPORE

Two Type 218SG Submarines Under Contract from TKMS

In late November 2013, AMI sources indicated that ThyssenKrupp Marine Systems (TKMS) completed a contract with the Singaporean Ministry of Defence (MoD) for the procurement of two TKMS HDW Type 218SG submarines for the Republic of Singapore Navy (RSN). Press sources indicate that the deal was worth US\$1.36B, which includes training and logistics support.

The two new submarines will be built at the TKMS yard in Kiel, Germany and the combat system will be co-developed by Germany's Atlas Elektronik and Singapore's ST Electronics. Both submarines will be delivered to the RSN by 2020 and will replace the three used Challenger class (formerly Sjoormen class) procured from Sweden.

AMI estimates that two additional submarines will be procured after 2020 to replace the two Archer class (formerly Vastergotland) built in the late 1980s, essentially updating the entire RSN submarine with four units of the Type 218SG design.

Although no details have been published on Type 218SG, AMI estimates that it may displace well over 2,000 tons as the RSN is probably looking for increased payload and capabilities above and beyond the current force of the Challenger and Archer classes. AMI estimates that it will be able to deploy anti-ship missiles (ASMs), mines, unmanned underwater vehicles (UUVs) and possibly special forces. The design may have characteristics from various successful TKMS designs including the Type 214, the Israeli Dolphin (Type 800) and Type 212.

The Type 218SG will be Air Independent Propulsion (AIP) capable with the majority of sensor and weapons systems being decidedly German although Singapore's ST Electronics will provide many of the sub-components.

UNITED STATES—Navy Selects Virginia Payload Module (VPM) to Replace SSGNs

In early November 2013, the US Navy (USN) selected the design concept of the Virginia Payload Module (VPM) to replace the four Ohio Class Nuclear Powered Guided Missile Submarines (SSGNs). The SSGNs were converted from Ohio Ballistic Missile Submarines (SSBNs) from 2002 through 2006 and are due to be decommissioned from 2026 through 2028.

In October, the US Naval Sea Systems Command (USNAVSEA) approved the design concept of the VPM as part of a US\$743M design change for the Virginia Class Nuclear Powered Attack Submarine (SSN). The VPM is scheduled to be added to the ten units of the Virginia Class SSN Program beginning with Block V around 2019. Each VPM will have four vertical launch (VL) tubes containing seven Tomahawk Land Attack Missiles (TLAMs) (28 missiles) in addition to two, six round Virginia Payload Tubes (VPTs) (already installed) (12 missiles) in the bow for a total of 40 TLAMS per hull.

The ten Virginia hulls of Block V will give the USN a 400 TLAM capability, a comparable replacement for the four unit Ohio SSGN force. The Budget Control Act (BCA) of 2011

(Sequestration) may well determine if this program moves forward as the cost estimates for each VPM is in the range of US\$400M – US\$500M (estimates continue to change) per copy, although it is still the least costly alternative to replace the Ohio class SSGNs.

DIMDEX 2014

Submarine Market Overview: AMI forecasts that MENA navies are set to acquire 27 new submarines in the next 20 years at a total estimated acquisition cost (2013 exchange rates) of almost US\$9.5B. While not as large as the region's MENA (Middle East and North Africa) surface combatant or patrol and fast attack craft segments reviewed in earlier articles, the MENA submarine and underwater systems market is still of significant interest for several reasons. First, it is capital intensive with a relatively higher amount of new spend planned per platform compared to other ship types in other segments. In the MENA markets, the average new spend per submarine is projected to average more than US\$350M over the next two decades.

Further, most of the new submarines acquired in the MENA market will be via export purchases. The developing shipbuilding industry in the Gulf and North Africa has not yet reached the extremely complex and specific levels of manufacturing and systems integration expertise that define the world's submarine market leadership today. Therefore, top tier submarine exporters such as Germany's ThyssenKrupp Marine Systems, France's DCNS, Russian shipyards such as Admiralty and other offers are expected to be very active in competing for new submarine sales in the region.

The MENA submarine market is also expanding beyond the small group of navies that currently operate submarines in their fleets. The *submarine club* in the MENA now includes Algeria, Egypt, Israel, and Iran. AMI forecasts that a number of countries will at least double the number of MENA navies with submarines over the next decade. While some of these submarines may be hulls originally built for or in service with other navies, others will be new construction orders for small and medium sized designs

below 1,500 tons full load displacement, presenting good market opportunities to builders and systems providers alike.

And the market for platforms and services for these new submarine operators is a long-term opportunity. This means not only new construction awards, but training, maintenance, submarine specific facilities and infrastructure and support services requirements stretching over the next decade plus.

As interest in new submarines grows in the MENA region, many navies are also accelerating investments in unmanned maritime systems—increasingly including underwater vehicles (UUVs)—to meet growing undersea mission requirements. In highest demand in the MENA region are unmanned systems for underwater survey, scouting and reconnaissance, as well as mine and anti-submarine warfare.

While construction and systems integration in the MENA region has advanced to see several locally-built unmanned surface vessels offered, the market for UUVs is also expected to be mainly exports. Here leading industry names such as Atlas Elektronik, Saab, Bluefin and others are expected to be heard, while new market entrants in the UUV market from countries such as Turkey are also expected to compete for new UUV opportunities in the region.

MODERNIZATION NEWS

Sweden – Gotland Class Submarines: In November 2013, Sweden's Defense Materiel Administration (forsvarets Materielverk – FMV) was awarded a contract (undetermined amount) to Kockums for the mid-life modernization effort of two Gotland class submarines, HMS HALLAND and HMS UPPLAND.

The award follows a 24-month delay due to funding shortfalls. The planned upgrades, beginning in 2014, will be completed by the end of 2017. The first unit, HMS GOTLAND, will not be modernized. The upgrade of the two units will include the following:

- Hull, mechanical and electrical (H,M & E) work (superstructure).
- Upgrade of the Air Independent Propulsion (AIP) system.
- The addition of an AUV/ROV capability.
- The addition of a diving lock built into the sail.
- Upgrade of the combat management system (CMS).

In 2011, Kockums, upgraded the inertial navigation system (INS) on the two Gotland class submarines (and two Sodermanland class boats) with the Northrop Grumman Mk 39 Mod 3C ring laser gyro system. A fifth INS system is used for crew training.

According to sources, the new unmanned capability for the Gotland class is the Saab SUBROV submarine deployed remotely operated vehicle. SUBROV is designed to be launched via torpedo tube and is guided by fiber-optic cable. It has a maximum range of 20km (12.4 miles). Missions include remote communications, electronic support measures (ESM) collection, hull inspection, mine detection and freeing submarine from obstacles.

In 2012, the FMV awarded Saab a US\$29M contract to upgrade existing Type 62 heavyweight torpedoes and provide systems support on the Gotland and Sodermanland class submarines. All work is to be completed by the end of 2015. The Gotland class is expected to remain in service until the 2030.

CONTROL YOUR OWN DESTINY—A SEA STORY

by CAPT Harry Sheffield, USN (Ret.)

Almost twenty years ago, after being the recipient of the last Submarine Group Tactical Readiness Exam (TRE) before these exams were turned over to the type commander staff to conduct, our ship was rated below average (BA) in all areas. This was quite a surprise as I will outline further. After taking control of our own training programs, a year later, our ship won the Battle Efficiency 'E' for COMSUBRON 20. The sea story follows.

After relieving command of the SSBN in off crew, we prepared for the next deployment, Patrol 3. We were to have a TRE and reviewing the previous year's exam results, several areas were rated BA. I reviewed the training plan already in place and it seemed to properly address the deficient areas. Off crew training was monitored and appeared effective. The team trainers conducted at Trident Training Facility (TTF) were rated by the instructors as effective and each of the various groups were rated excellent. It seemed we were ready. After the exchange of command, the refit was unremarkable and patrol was awaiting. The first half of the patrol was full, conducting a four missile FCET and a CNO project. We essentially had a couple of weeks of underway training to make the final touches on TRE preparations. The two-day TRE was a disaster, and we obviously were not ready. The out brief was painful, and the senior inspector rated the ship below average across the board. We were lucky not to have been given a failing grade. Back to the drawing board.

As we prepared for the off crew training period, I met with the Executive Officer (XO), Chief of the Boat (COB), and Department Heads to develop a plan. How could we have been so unprepared if the TTF had glowing reports of our operational readiness? How could our own training be so ineffective? No matter...we had to fix it. I told the XO we had to start with the officers. If we were monitoring the training and it was so ineffective, we had to raise

the standards. I told the COB that the chiefs were going to run the ship and the officers were going to get trained, be the experts, and think more tactically. We scheduled officer training for an hour every morning prior the normal training day. We went back to the basics, reviewing every NWP and operational directions, and conducting symptomatic seminars on every conceivable area, concentrating on those where we were rated deficient. It took a week of seminars just to get to periscope depth. The division and department training plans were tailored. Long-range training plans were put together with short-range plans that had metrics to determine if the goals were met. At the end of the off crew, each division leading petty officer had to present the results of their training to the Commanding Officer, and justify whether they had met their goals or not. They then presented their next quarter's short range training plan and goals. These first sessions were painful, but instructive to each division.

Each department training plan was made to include the team trainers at TTF. We would not accept the standard training that the TTF's proposed. Each department head and division officer who was responsible for the cognizant team trainers developed their team trainer plan and goals with the TTF instructors. The trainer sessions were tailored to achieve the specific goals in our plan. I consulted the Group and Squadron counterparts, and had them do the monitoring and critiquing of our final exams. These experts were much closer to knowing the proper standards than the TTF instructors. The Group and Squadron feedback was unvarnished and we achieved the standards we had set in our goals.

The next hurdle was the operational training schedule. Every checkout interview I conducted, the departing sailor complained about too much training and not enough time to get rest and be effective. I told the COB to put together an integrated project team and come up with a training schedule that met all our training requirements (e.g. officer training, drills, department training, divisional training, and of course, field day), but one that the crew could live with and had buy in. The crew's main complaint was that they didn't get enough sleep and couldn't effectively train. The schedule that the IPT came up with worked. The main

element was that the morning watch did not have any all hands evolutions or drills. The mid watch personnel could get several hours of sleep. The morning watch was devoted to modular training that would support the week's goals, whether it be a certain area of propulsion plant drills or operational areas from the TRE. Nothing was conducted that would sound the general alarm or cause IMC announcements. If this was a *fire* week, the morning was devoted to evolutions like running fire hoses to every possible area of the ship. If it was a *flooding* week, we took submersible pumps to each bilge to make sure we could actually pump them out. If the training goals for that week were more propulsion plant oriented, we did monitored instrumentation calibrations or equipment startup or shutdowns to ensure proper performance and knowledge of the evolution. The XO, COB, and chiefs conducted this modular training that supported the drills that would be conducted later.

Next came the drills. We woke up the previous mid watch personnel who were the drill monitors, observers, and safety personnel and we briefed the afternoon's drills prior to lunch. That way we could start the drill set immediately after lunch without waiting for a space to clear so we could brief the drill package. We ran two sets of drills with the next two watch sections (three hour shifts). They were critiqued before the evening watch, and the deficient areas were briefed or put in the night orders for reading prior the next day's drills. If the modular training needed modification due to the critique comments, that was incorporated into the next morning's evolutions. Evening was devoted to officer training and/or a movie. We retained this cycle to meet drill conduct schedules, divisional and department training, and officer seminars. The only day the mid watch personnel didn't get to sleep on the morning watch was Saturday morning for field day. Saturday afternoon was usually a large all hands drill or two, but not the whole afternoon. The midwatch personnel were able to get some sleep prior to having to take the watch that evening. Sunday was a day of rest except for the audits that the XO and I would conduct on various areas. It must have been effective from a crew standpoint, because after the training

schedule change, no complaints were made during checkout interviews.

The cycle of short range training plans that implemented the long range training plans and incorporated the lessons learned from the last training period continued. The accountability of the LPO's for their training goals was key. We knew what we had to work on and we made the plans and schedules execute the plans. Putting the chief petty officers in charge of running the ship and making the officers the experts in tactics and operations was absolutely necessary.

Sea stories like fairy tales should have a happy ending. The ship was rated above average on the next TRE, won several department awards, nominated for the Omaha trophy, won the COMSUBLANT *Bottom Gun* award for torpedo proficiency, and was awarded the Battle Efficiency "E". The end.

AN SSBN SEA STORY: AND WHAT MAY HAVE HAPPENED TO CSS HUNLEY

CAPT Larry G. Valade, USN (Ret.)

In the summer of 1969, I was the new captain of the Polaris submarine ANDREW JACKSON on her shakedown cruise following a refueling overhaul in Portsmouth Naval Shipyard. One of the events on our schedule was an Operational Reactor Safeguards Examination, to be conducted in the Charleston operating area. JACKSON was to meet a Navy tug in the outer Charleston harbor, embark the examining board, proceed to sea, and conduct the ORSE.

My navigator and submarine school classmate, Dick Cordova, and I checked the tide tables, and looked at the Charleston harbor chart. With a flood tide, I decided that our best bet was to meet the tug in a designated anchorage area off the Battery and landward from Fort Sumter. Upon approaching the outer harbor, there was no pilot, and I don't remember that one was expected.

We found two merchantmen anchored in the area where I had expected to meet our tug, leaving little room for JACKSON to maneuver and get turned around and headed to seaward. We met the tug, took the riders aboard, cast off the tug, lowered the Secondary Propulsion Motor, and proceeded to twist JACKSON's bow into the flood tide. However maximum turns on the SPM had no effect, and JACKSON was caught in the flood tide, headed for shallow water. Backing and filling did not help. I was about to drop the anchor, when the tug master recognized our predicament, came alongside and pushed our bow around.

I learned two valuable lessons that day. The first was never cast off a tug until you are sure it is not needed, and second, the currents in Charleston harbor are horrendous! JACKSON was to return to Charleston several more times during my four year command tour, and I always tried to come and go at high slack tide when possible.

Based on this experience, there is no doubt in my mind that the CSS HUNLEY in 1864, had their own version of being caught in the Charleston harbor currents and tides, and wound up hard

aground. If the 7000 ton JACKSON with her 80 Megawatt nuclear propulsion plant had difficulty maneuvering, the seven ton HUNLEY with her seven-man hand-operated propeller, must have been like a chip of wood against the flood or ebb currents.

THE SUBMARINE REVIEW

THE SUBMARINE REVIEW is a quarterly publication of the Naval Submarine League. It is a forum for discussion of submarine matters, be they of past, present or future aspects of the ships, weapons and men who train and carry out undersea warfare. It is the intention of the **REVIEW** to reflect not only the views of Naval Submarine League members but of all who are interested in submarining.

Articles for this magazine will be accepted on any subject closely related to submarine matters. Article length should be no longer than 2500 to 3000 words. Subjects requiring longer treatment should be prepared in parts for sequential publication. Electronic submission is preferred with MS Word as an acceptable system. If paper copy is submitted, an accompanying CD will be of significant assistance. Content, timing and originality of thought are of first importance in the selection of articles for the **REVIEW**.

A stipend of up to \$200.00 will be paid for each major article published. For shorter Reflections, Sea Stories, etc., \$100.00 is usual. Book reviewers are awarded \$52.00, which is that special figure to honor the U.S. submarines lost during World War II. Annually, three articles are selected for special recognition and an additional honorarium of up to \$400.00 will be awarded to the authors. **Articles accepted for publication in the REVIEW become the property of the Naval Submarine League.** The views expressed by the authors are their own and are not to be construed to be those of the Naval Submarine League. In those instances where the NSL has taken and published an official position or view, specific reference to that fact will accompany the article.

Comments on articles and brief discussion items are welcomed to make **THE SUBMARINE REVIEW** a dynamic reflection of the League's interest in submarines. The success of this magazine is up to those persons who have such a dedicated interest in submarines that they want to keep alive the submarine past, help with present submarine problems and be influential in guiding the future of submarines in the U.S. Navy.

Articles should be submitted to the Editor, **SUBMARINE REVIEW**, 5025D Backlick Road, Annandale, VA 22003.

A HALLOWEEN TO REMEMBER

by CAPT John F. O'Connell, USN (Ret.)

It was Halloween in Yokosuka, Japan in 1973 and the Submarine Group Seven staff officers and wives were enjoying themselves at a Halloween party hosted by one of the staff officers in his quarters on base. That event was billed as a costume party and everyone had gotten into the spirit of the evening, and into the spirits that the host provided as well. Many of us were *half in the bag*.

The telephone rang. It was a summons to the Command Cave, which belonged to Commander U.S. Naval Forces, Japan. The Rear Admiral wanted to see Commander Submarine Group Seven and his key staff officers to discuss certain highly classified submarine operations in the Sea of Japan. Apparently there was a problem.

The Commodore, myself, (the Chief Staff Officer), and the Group Intelligence Officer, set out for the Command Cave. The Commodore, Captain Jack Nunnely, was attired in a bunny suit with large ears, well suited for a costume party, perhaps not as well suited for an emergency meeting with an Admiral about highly classified submarine operations. The intelligence officer, Lieutenant Scott Van Hosten, was also wearing a bunny suit with large ears. You could certainly tell the rabbits apart because Scott was 6 feet 5 inches tall, and Jack was only about 5 feet 8 inches tall. I was costumed as a *great white hunter* in my safari suit.

We arrived at the Command Cave and the look on the face of the Marine corporal who checked our identification cards was unbelieving. We went in, talked to the Rear Admiral, who never even cracked a smile at our attire, answered all his questions to his satisfaction, and departed past the same bemused Marine corporal, to return to the party.

I always wondered what the corporal told his buddies back at the Marine Barracks about the events of the evening.

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NAVAL SUBMARINE LEAGUE
STATEMENT OF FINANCIAL POSITION
 March 31, 2013

	ASSETS
CURRENT ASSETS	
Cash	\$ 74,131
Cash Equivalents	64
Accounts Receivable	96,833
Investments at Market (Note G)	507,084
Prepaid Expenses	9,702
Total Current Assets	687,814
FIXED ASSETS	
Furniture & Computer Equipment	36,239
Office Condominium	251,023
Less Accumulated Depreciation	(188,207)
Total Fixed Assets	99,055
	\$ 786,869
LIABILITIES	
CURRENT LIABILITIES	
Accounts Payable & Accruals	\$ 25,808
Accrued Taxes Payable	2,629
Deferred Revenue	21,998
Deferred Membership Dues	13,172
Rental Deposit	-28
Total Current Liabilities	63,579
LONG-TERM LIABILITIES	
Deferred Membership Dues	200,820
Total Liabilities	264,400
NET ASSETS	
UNRESTRICTED	
Undesignated	410,151
Board Designated for Equipment	21,150
RESTRICTED	
Total Net Assets	431,362
	\$ 786,869

NAVAL SUBMARINE LEAGUE

STATEMENT OF ACTIVITIES
For The Year Ended March 31, 2013

REVENUES	Unaudited	Total
Contributions	\$ 167,727	\$ 167,727
Dues	37,010	37,010
Annual Symposium	291,649	291,649
SUBTECH Symposium	262,189	262,189
History Symposium	4,500	4,500
Bank Interest	1,247	1,247
Interest & Dividends	6,105	6,885
Advancements	44,200	44,200
Rent	6,435	6,435
Realized Gain (Loss) On Investment	- 0 -	- 0 -
Unrealized Market Gain (Loss) On Investment (Note G)	37,382	37,382
Royalties	- 0 -	- 0 -
CD Days Receipts	83,750	83,750
Other	654	654
	<hr/>	<hr/>
Total Revenue	942,849	942,849
EXPENDITURES		
Awards and Grant	8,895	8,895
Publishing	95,446	95,446
Promotion	10,492	10,492
C.D. Days Meeting	103,572	103,572
Annual Symposium	234,657	234,657
SUBTECH Symposium	214,081	214,081
History Symposium	9,138	9,138
Chapter Support	13,018	13,018
	<hr/>	<hr/>
Total	489,336	489,336
SUPPORTING SERVICES (Note C)	206,388	206,388
	<hr/>	<hr/>
Total Expenditures	695,724	695,724
INCREASE (DECREASE) IN NET ASSETS	<hr/>	<hr/>
	47,322	47,322
NET ASSETS, BEGINNING OF YEAR	384,580	384,580
	<hr/>	<hr/>
NET ASSETS, END OF YEAR	\$ 431,902	\$ 431,902

NAVAL SUBMARINE LEAGUE

STATEMENT OF CASH FLOWS
For The Year Ended March 31, 2013

OPERATING ACTIVITIES	
Increase (Decrease) in Net Assets	\$ 47,222
Adjustments to Reconcile Change in Net Assets to Net Cash Provided	
Depreciation	6,544
Decrease in Accounts Receivable	4,110
(Increase) in Prepaid Expenses	(7,704)
Increase in Accounts Payable & Accrued Expenses	1,487
(Decrease) in Deferred Revenues	(47,221)
(Decrease) in Deferred Membership Dues	(200)
(Decrease) in Rental Deposits	(673)
Net of realized and unrealized (gains) and losses on investments	(37,342)
NET CASH PROVIDED (USED) BY OPERATING ACTIVITIES	\$ 128,720
INVESTING ACTIVITIES	
Investment in Securities	(6,765)
Proceeds from Redemptions and Sales	6,765
NET CASH USED BY INVESTING ACTIVITIES	---
NET INCREASE (DECREASE) IN CASH	(13,824)
CASH ON HAND, BEGINNING OF YEAR	119,895
CASH AND CASH EQUIVALENTS ON HAND, END OF YEAR	\$ 74,213
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION	
Cash Paid During the Year for	
Income Expense	\$ 0-
Income Taxes	\$ 0-