

THE SUBMARINE REVIEW

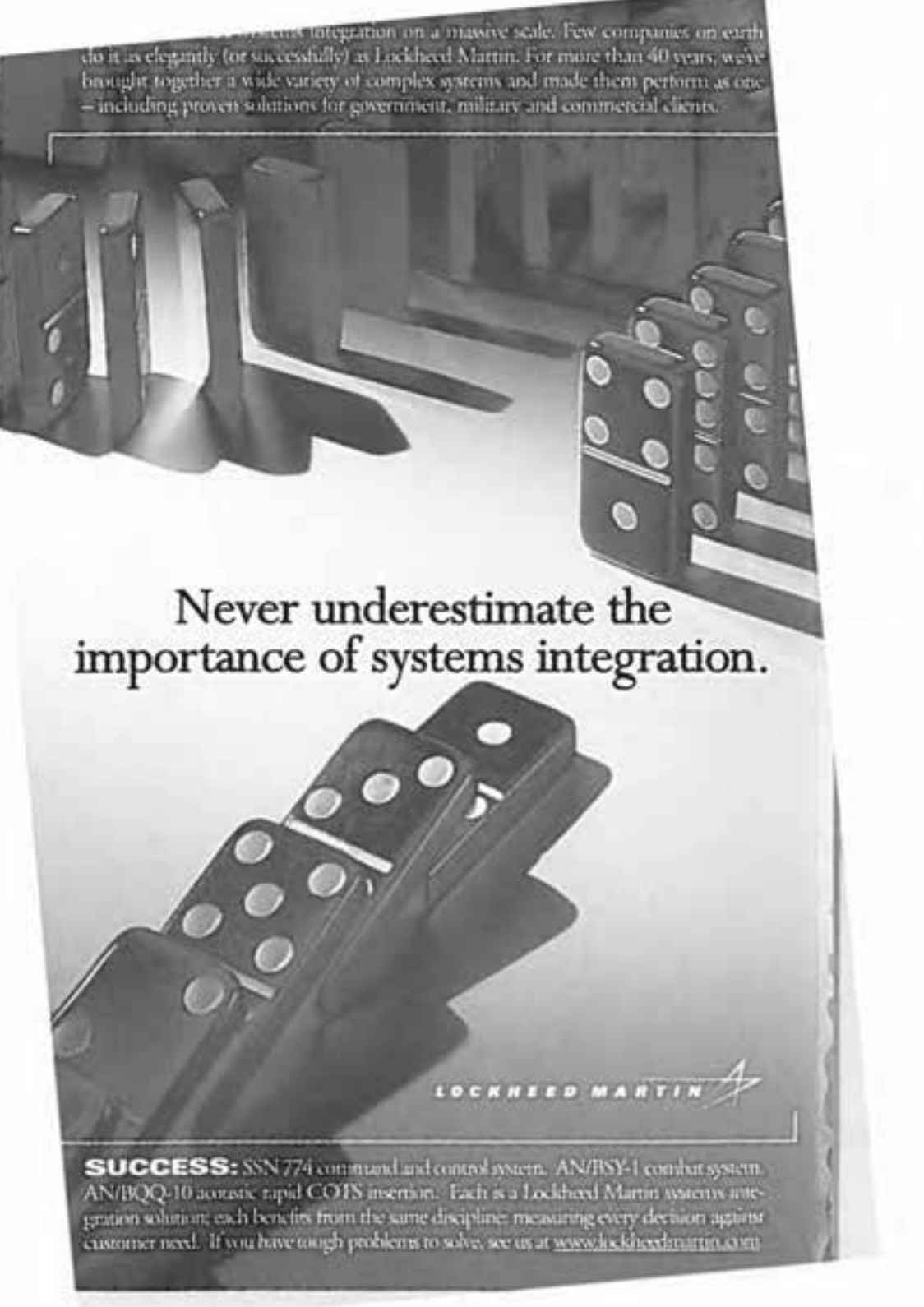


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EDITOR'S COMMENTS

The three FEATURES at the front of this issue of **THE SUBMARINE REVIEW** offer about the best summary of what is happening, what is about to happen, and what can be expected to happen (or not, as the case may be) which a submarine advocate may find in these times of indistinct objectives, unstated aims and shifting sands in international affairs.

As usual, Admiral Skip Bowman did a masterful, and most informative, job of commenting on the status of the submarine building program and the context of need for submarines in his address to the Annual League Symposium in June. As we see the signs of change in the national understanding for the place of the modern submarine in America's future security plans, we have to recognize the effort and insight of the uniformed leadership of the Submarine Force in helping to bring this about. Plenty of that leadership shines through Admiral Bowman's words. This is a *don't miss* presentation.

Again, as was the case at last year's Symposium (and in the July '00 issue of this magazine), Admiral Tom Fargo, Commander-in-Chief of the Pacific Fleet, has provided the League's membership with a *grand tour* of the Pacific area, with all its political and maritime concerns for America's future. Everyone concerned with the governance of the Submarine Force is particularly directed to the remarks of both Admirals Bowman and Fargo regarding the GREENEVILLE affair.

The third of this issue's FEATURES is Captain Sam Tangredi's follow-on to his survey article in the April issue about the security environment to be faced in the first twenty-five years of the new century. His first article reported the consensus found in a number of authoritative studies about the most likely threats and situations to occur in that time frame. This July article considers the *outliers* on that curve of situational probability. It is consideration of these *less-than-likely-but-still-serious* futures which complicates the work of planners and the problems of decision-makers struggling with today's force acquisition questions. Of particular concern to all of us in the Naval Submarine League is the degree to which the modern U.S. submarine fits the nation's needs across the entire

spectrum of future security interests.

The first of the ARTICLES, by Rear Admiral Jerry Holland, grew out of several conversations which arose during the Submarine Technology Symposium in May. His charge to submarine advocates is one of perseverance in our advocacy and steadfastness in our integrity in not letting stand any misunderstanding or misinterpretation of the place of submarines in this uncertain world. This magazine wholeheartedly endorses his position and fully agrees that there are many, in the Navy and in the larger government circles, who do not fully realize what submarines can do and the difference they can make.

Another of the ARTICLES of special interest is Captain Harry Caldwell's account of the DARTER/DACE action during the Battle of Leyte Gulf. Rarely do we have a personal witness to such an interesting action. There has been a good deal written about the loss of DARTER and the anti-cruiser action which preceded it. This short history, by one who was privy to the decisions and saw the action develop should stand as the definitive account.

A very interesting point is raised by Captain Dave Smith as he asks what happened to all the presentation material given to the submarines launched and commissioned in the 50s, 60s, and 70s. Several members of the League's Editorial Review Committee, on going over the copy planned for this issue of the magazine commented on the question and offered several suggestions for finding out what did happen to them and what accountability trail was maintained. Comments or suggestions from anyone out there in the submarine community who has any information on these items will be gratefully accepted. Thanks.

Jim Hay

FROM THE PRESIDENT

We have completed the second and third principal events for 2001 and made a good start in the implementation of our theme, *The Second Hundred Years*.

The Submarine Technology Symposium was held May 15-17 at the Johns Hopkins University Applied Physics Laboratory. It was an unqualified success, with a completely sold out theater. New features this year included outstanding exhibits that demonstrated some of the technologies presented in the papers.

Our Annual June Symposium was a success by any standard. The Chief of Naval Operations, Admiral Vern Clark, caught our vision for the second 100 years accurately when he told our Awards Luncheon attendees, "I love the optimism of it. It says that you know you've been successful and you intend to continue to be successful."

The Fleet Awardees reflected the pride and professionalism of the Submarine Force. TCM (SS) Frank A. Lister, USN (Ret.) presented the first Award for Excellence as Chief of the Boat named in his honor to MTCM (SS) Jeffrey S. Hudson, USN, Chief of the Boat of USS WYOMING (SSBN 742)(BLUE). In addition to the CNO, we heard from our Senior Submariner, Admiral Skip Bowman, who discussed the lessons learned from USS GREENEVILLE and the budget outlook. Admiral Tom Fargo, CINCPACFLT, also gave us his perspectives on this incident and provided a great summary of current events in the Pacific and their impact on submarine and naval operations. In addition to the normal presentations by the submarine leadership there was a presentation by the Kellogg Brown & Root team leader and two of his divers on their diving operations on the Russian submarine KURSK. The banquet speaker was Peter Maas, author of *The Terrible Hours*. He provided a fascinating perspective on submarine rescue operations.

The high point of the symposium was honoring Captain Edward L. Ned Beach, USN (Ret.) as our Submarine Hero for 2001. He conducted twelve war patrols in three submarines and served as George Street's executive officer in TIRANTE for that submarine's Medal of Honor Patrol. As a submarine hero and distinguished American, Captain Beach is a great representative of our past, present and a terrific role model for the future.

I am pleased to report that Admiral Frank Kelso relieved Admiral Bill Smith as Chairman of the Board of Directors of our League on July 11, 2001. He brings a wealth of experience and vision for the League. He will ensure that the League continues its support of our Submarine Force. We will report more about this transition in our NSL UPDATE e-mails. If you are not receiving these e-mails, please contact your Chapter President. In our efforts to improve communications every member of the NSL has been assigned to a Chapter. Please help us in this effort by making sure we have your correct e-mail address.

J. Guy Reynolds

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FEATURES

OPENING REMARKS AT ANNUAL NSL SYMPOSIUM

by ADM F.L. Bowman, USN

Director, Naval Reactors

13 June 2001

As leadoff hitter, I'd like to set the stage for discussions to follow today and tomorrow by providing a *tour of the Submarine Force horizon*"—from my perspective. After a somewhat prolonged scene-setter, I'll summarize briefly what I see as the current state of play in five areas: **people, platforms, payload, propulsion, and prognosis.**

You undoubtedly notice an uncharacteristic gimmick—the *five p's*. This partial alliterative approach was selected as I searched for a way to help Admiral Padgett remember what I've said. (John, there *will* be a quiz.)

But before jumping into the *five p's*, let's review the bidding for a moment, to help set the scene. We meet today in the wake of last year's resounding centennial celebration. That euphoric year, to me, continues to reverberate and fuel a sense of excitement for the next 100 years of submarining.

I'd argue that, together, this organization and the active Submarine Force have turned the corner. After 10 years of post-Cold War, ad nauseum study deliberating the requirement for the attack submarine in this so-called *new age*, it seems to me that we've emerged stronger than ever—widely accepted as a *necessary*, although not independently *sufficient*, part of the Nation's 21st-century arsenal for peacetime deterrence and wartime muscle.

The persistent and consistent 10-year call for 68-72 attack submarines from our Navy's Fleet CINCs has been validated—in spades—by the Joint Staff Study that canvassed the Unified Commanders for the *minimum required* attack submarine mission days on station in their theaters. They'll need 68 SSNs through 2015, building to 76 SSNs by 2025, just to execute the top-priority peacetime missions in their theaters.

We've turned the *inactivation tide* and have leveled out at

around 55 SSNs today. I continue to argue that we *must* refuel the remaining five Los Angeles class SSNs slated for early inactivation. Although there is universal support for keeping these submarines in the inventory, I do not yet have a clear signal on the 688-class refueling program.

But to begin moving toward the proper number requires more. We should refuel and convert to SSGNs the four Trident submarines coming out of strategic service over the next two years. That action would not only add four submarines to our numbers, but would represent the kind of transformational capability that we've all been reading about. I believe we'll see funding for this initiative this year.

As the only long-term solution, we must begin building more than one new SSN a year—soon. I believe we'll see plans for this acceleration this year.

"Whence this optimism?" I see some asking. Well, there are signals in the air. What little has been leaked from the various ongoing studies invariably places great value on platform stealth, mobility, and endurance—our hallmarks. Many of the leaks have *explicitly* named the submarine as the platform of choice, and several have referred to the transformational SSGN.

In fact, in his Naval Academy graduation speech, President Bush noted that many of the class of 2001, as they approached command, could hear a future President describe a far different range of naval deployments: to include modified Trident submarines carrying hundreds of next-generation smart conventional cruise missiles.

At our Submarine Technology Symposium last month, a high-ranking Pentagon official predicted rewards for the Submarine Force for having been the only community to radically shift gears in the early 1990s: that is, to design a submarine specifically suited for littoral warfare at a cheaper life-cycle cost. To focus R&D efforts toward an end that supports a 21st-century vision of employment. To develop *transformational* concepts—even before the word was popular. And to have done so despite arguably being at the top of its game. To have been *constructively dissatisfied* with the status quo and to have moved forward with *real* change.

This official hinted that the rewards would take the form of support for SSGN conversion and accelerating the new SSN build

rate.

The SSBN has not been challenged throughout this period. There remains strong bipartisan support for the boomer as the *only* guaranteed survivable element of our strategic deterrence.

We're almost to the *five p's* but I need to make one last digression—this one, more somber...this one, more sobering...this one, definitely not upbeat. I refer, of course, to the GREENVILLE tragedy. As a community, we *must* discuss what we learned—what grave errors were made that sent nine Japanese to their deaths.

Speaking from my position, but with unanimous agreement from the Submarine Force leadership, we are, put simply, *embarrassed* by our failure. *Shame* is another word that comes to mind, and I could probably stop there. But the discussion would be incomplete.

There are no heroes to emerge from this tragedy. We do take some moral solace from the acceptance of accountability and responsibility that was displayed. We are at ease with the rigor of the investigation and the full public disclosure of the proceedings. We who have been there, who have been in Teddy Roosevelt's *arena*, may even feel sympathetic to some of the compounding aspects of the tragedy.

But there are no heroes.

Admiral Tom Fargo had it right at Rear Admiral Al Konetzni's change of command, when he said: "We don't expect these kinds of mistakes to be made ... and we have a hard time believing they could have been made ... But clearly, mistakes were made ... We are better than this. We train to a higher standard."

To that end, we are continuing to train to our standards—right now.

After the facts were known (and some letter- and editorial-writers might want to take note of this radical thought), Admiral Fargo, Rear Admiral John Padgett, Vice Admiral John Grossenbacher, and I huddled by telephone. We reviewed the factual lessons learned, mostly revolving around the submarine fundamental, written in too much blood, that submarining must be a team business.

We all need the trusted backup, the minority opinion, the junior officer or petty officer willing to cry out—before the fact—that *the*



captain has no clothes.

Rear Admiral Padgett and Vice Admiral Grossenbacher listed the lessons we saw in a Joint Submarine Force *Personal for Commanders*. They directed immediate action for wholesome discussions between the Force Commanders and their Group and Squadron Commanders; followed by Squadron Commanders with their ship skippers; and further followed by those skippers with their wardrooms and senior enlisted.

These training discussions were ordered to evaluate *other* lessons that might be learned—up and down the chain of command. But their fundamental purpose, in the *Captain's Call* phase, was to ask, "Why could this never happen on our ship?" and "How will we not allow this to happen on our ship?"

There were no heroes. We must not let this happen again.

Now, at last, the *five p's*. Let's start with the best of the news—people.

On the *officer* side: As you know, I meet our new crop of submarine officers—our future Carl Trosts, Frank Kelsos, Jim Watkinses—long before they order their first dive. The quality, energy, and intelligence of these young men and women today are eye watering. They are as good as we remember we were.

That *Centennial year euphoria* I spoke of has spread and is spreading. Here's proof: after nine years of failing to achieve *officer* recruiting numbers, we brought into the fold 102 percent of goal in 2000. Even better, this year's graduates are really banging on our topside hatches—we're sitting at 111 percent of the 2001 goal!

Let me break that 111 percent out:

- Last month's graduating Naval Academy class of 2001 volunteered 150 midshipmen against a goal of 130.
- Our NROTC future dolphin-wearers are 129 this year, exceeding their goal of 120.
- Rear Admiral George Voelker's guys made our NUPOC numbers with another 116 terrific young people from across the country's finest colleges.

Of these YG 2001 submariners, 68 come from minority populations. We did listen to Secretary Danzig two years ago, and have made remarkable progress. I'd ask this Naval Submarine

League and each of you to keep talking it up—the ball is rolling our way.

And by the way: Yes, we already hedged our bets by assuming that the SSGN conversion, the Los Angeles class refueling, and the accelerated Virginia class build rate would be approved. For several years, we've recruited our officers under this assumption—that our vision would *take*.

We're not where we want to be in *officer* retention yet, but we have a lead angle on that duck. One satisfying statistic is that nearly 84 percent of our JOs go ashore after their first sea tour. **This is the highest percentage in 16 years.** Great news!! We all need to work to get them swept up in the excitement and get them back out to sea as department heads.

With four officers (who left for what they saw as greener pastures) coming back into the fold already this year, we are also emphasizing to our JOs the importance of making stay/leave decisions intelligently when the time comes.

On the *enlisted* side, there's more good news: After we took a round turn on unnecessary attrition in our nuclear pipeline three years ago, Rear Admiral Voelker is having no problem filling our requirements with top-quality nucs. But we have struggled somewhat over the past few years to make numbers on the non-nuc side. The successful lowering of nuclear training attrition dried up one source of non-nuclear accessions, and so the Recruiting Command had to step on the gas a little harder. Last year, they were short (267 Sailors) of their goal of over 2,600.

But this year, CRUITCOM is on track to make their non-nuc goal for the first time in several years.

On the retention side, we're pounding the ball out of the park! Our first-term all-submarine reenlistment rate is 72 percent, and we have three boomer crews with first-term retention in excess of 90 percent!

Rear Admiral Kontezni's assault on first-tour enlisted attrition has been adopted as the Navy-wide *plan du jour*. Because of this initiative (which is simply to exhaust all means to find square holes for our square pegs, and round holes for our round pegs), our overall Submarine Force attrition is at an all-time low of under 9

percent—down from 18 percent in 1998.

If you've been keeping track and realize I'm only on the second *p*, you'll be happy to hear that we did most of the platform discussion in the scene-setter. So all that's needed is a quick status report on VIRGINIA and SEAWOLF.

As you all know, VIRGINIA—the submarine for tomorrow—was designed by Electric Boat (EB) and is being co-produced under the truly unique teaming arrangement with Newport News Shipbuilding (NNS). The first three Virginia class submarines have already been authorized, with the fourth to be authorized in FY02.

Detailed construction drawings for VIRGINIA are 97 percent complete, and ship construction is 50 percent complete. The first increment of the new construction crew is aboard, and propulsion plant testing is now in progress.

It's important to note that in October 1994, we laid out a tentative schedule for reactor plant fill in December 2000. *Actual* plant fill occurred in February 2001—only two months off the tentative schedule made more than six years earlier, before the ship was authorized or construction started! I'd say that's a pretty tightly disciplined program.

The second submarine of the class, TEXAS, is already 38 percent complete. Her new construction crew reports aboard in six months.

It is happening—right on schedule.

With regard to funding of the Virginia class, there have been three partially accurate stories (with less accurate headlines) in recent weeks. Here's the truth: The Virginia class *rolling account* is short about \$1.2B for the first four ships and the one-time design contract.

I call this a *rolling account* because the last dollar of the \$1.2B needs to be coughed up by the time the last of the first four ships delivers in FY08. Over the 30-ship class, there will be near-continuous puts and takes—and even borrows to *pay Paul*. Indeed, \$339M of the account shortage has been taken off the top for other Navy and DOD programs.

So let's look at the *real* \$860M shortfall over these four ships and the one-time design contract that must be funded before FY08. The majority of the shortage, \$596M, is due in large part to higher

than expected costs of material, equipment, labor, and overhead. Inflation and escalation in these areas have exceeded what Rear Admiral Davis was allowed to plan for. Fact of life. Plus, we are feeling the real affects of an inefficient submarine production rate.

There's another \$88M projected shortfall on that one-time \$1.45B design contract (due primarily to increased cost of computer services). And a \$55M accounting charge that used to be paid by NAVSEA, but is now charged to each project. And a \$32.5M increase to apply hull treatment for each of the four ships, based on actual SEAWOLF experience.

So now that leaves \$26M—or 0.3 percent of the construction contract—for what is rightfully called *requirements growth*. And this is mostly for crew berthing at the construction yards and new life-of-the-ship training curriculums. In addition, a smaller portion of this \$26M is for a shipboard LAN.

My point is obvious: only a portion of \$26M on a \$10.7B contract is for shipboard requirements growth—a *portion* of 0.3 percent. Yet you'll notice that the *entire account shortfall* has been unfairly characterized as *overrun* or *growth*. In fact, the Virginia class funding program has reportedly been acknowledged by key staff of congressional oversight committees as the most disciplined in the Pentagon. And we aim to keep it that way.

SEAWOLF and CONNECTICUT are operational today as 2 of our force of 55 attack submarines. CONNECTICUT is deployed, and SEAWOLF will deploy later this month. We stressed our best state-of-the-art technologies and now have at sea submarines that will have unmatched tactical superiority into the foreseeable future.

The third submarine of the class, JIMMY CARTER, is living evidence of vision made good. The 100-foot multimission, special operations plug will be operational evidence that we heard our critics loud and clear. This new section, about 17 percent complete today, will provide the so-called *flexible interface with the ocean environment* that the 1998 Defense Science Board challenged us with. And large, innovative, futuristic payload will be deployable from the modular bay—freed from the *tyranny of the 21-inch torpedo tube*.

Which naturally brings us to the third *p* — payload. And to a

discussion of revolutionary sensors and badly needed Joint Task Force connectivity. And of a payload that includes unmanned underwater vehicles (UUVs) and unmanned aerial vehicles (UAVs), just around the corner.

You'll hear a lot about this area in the sessions ahead, so I won't steal any thunder. But I want you to hear this from me—we're seriously committed. We started five years ago corralling our R&D efforts to this end. Remember *get payload, get connected, get modular*, and *get electric* as our goals?

Well, last year's DARPA / N77 / Industry partnership brought us another huge step closer to them. And now there's JIMMY CARTER—and our advertised goal of installing these submarine force multipliers on VIRGINIA beginning in 2006—bringing us closer still.

Now to the fourth *p* — **propulsion**. To you 594 / 637 / 598 / 640 / 688 vets out there: You wouldn't recognize today's boats aft of the reactor compartment bulkhead. Today's submarines are being outfitted with microprocessors, propulsion plant LANs, automated chemical analysis equipment, solid-state electronics, automated log-taking, plasma displays, and whisper-quiet high-capacity deck mounts, to mention a few.

And if you could walk onboard tomorrow's VIRGINIA, you'd wonder where you were: There are fewer components—fewer *primary* components. Systems you worked long and hard to qualify on, are not even installed. There are fewer watchstanders. Someone is missing from maneuvering—and *authorized* to be missing by the EDM.

All that? Just a baby step to where we're headed. Electric drive, currently being aimed for the 2010-authorized Virginia, will bring the next-generation acoustic health *and* provide needed power for all the sensors, and payload, and then-year weapons. Next, the fully electric—*all-electric*—submarine, without air or hydraulics to move things, will be quieter and quieter, need less and less maintenance, require fewer and fewer watchstanders, and cost less and less money.

And then the direct conversion of the heat energy of the reactor to electricity to do all this. How stealthy could a submarine be, do you think, with no steam cycle, no coolant pumps?

Then, finally, I can retire!

And the last of the *p*'s is — **prognosis**. How is all this tied together—or is it? Obviously, the answer is yes.

Several years ago, Vice Admiral Ed Giambastiani pulled together a Future Studies Group composed of a handful of really bright submariners and career technologists. This group sometimes futuristically drove, and sometimes synergistically supported, the concepts and developments I've been describing.

But over the years, their work evolved into the so-called Submarine Force Strategic Employment Vision that feeds off—and employs—the wonderful **people**, the dynamic **platforms**, the revolutionary **payload**, and the supporting **propulsion** that I've just discussed.

This vision ... this strategy ... is at once wonderfully simplistic and overwhelmingly crucial to the country's future. It's about four elements that indeed undergird the absolute necessity for submarines tomorrow:

- **First:** To gain and sustain access—anywhere, anytime, all the time.
- **Second:** To develop and share with the Joint Commander dominant knowledge of the battlespace by linking the sensors and payload, and connecting back over the horizon.
- **Third:** If required, to project power ashore and in the littoral waters while underneath the enemy's defensive umbrella.
- **Fourth:** But hopefully, to *deter* conflict by leveraging this knowledge and powerful capability at the diplomatic table.

This team—the Naval Submarine League and our active-duty submariners around the globe—this great team is more than ever before recognized for what we have brought—and now will bring—to the country's security table. But we can't relax. There are probably people out there, even now preparing impassioned rebuttals to all I've said.

Well, let them rebut! I fully believe, just as it has over the past 10 years, that truth will prevail ... and especially among those who count: those in the arena.

I therefore look forward to working with you to move all this down the road for another 100 years.■

A PACIFIC UPDATE

by Admiral Thomas B. Fargo, USN
Commander-in-Chief, U.S. Pacific Fleet
NSL Annual Symposium
14 June 2001

Bill, many thanks for the kind introduction and early tee time this morning; I'm sure it's just a coincidence that the U.S. Open starts today. Here is an interesting fact that I learned in the car on the way home from the reception last night from my driver; every time Tiger Woods wins a golf tournament the stock market has gone up. So there is hope for all of us today.

It is a great privilege to see so many old friends, mentors and shipmates of the submarine force. I was fortunate to see Admiral Bob Long earlier this week, and in fact, had lunch with him in Annapolis on Tuesday. He looked really good and sends his regards.

My talk today has been billed as a *Pacific Update* and you will have one. As you can imagine, I spend quite a bit of time talking about our Navy's history in the Pacific. In fact, commemorations of the Battle of the Coral Sea and the Battle of Midway always dominate the months of May and June. And of course, the premiere of the movie *PEARL HARBOR* in Hawaii gave me an opportunity to speak about the Navy to 3000 of my closest friends as well. I mean it; if you really want to know how many old friends and distant relatives you have, just hold a premiere.

How many folks have seen the movie? There is a great line in it where President Roosevelt says, "I like those submariners, there's no B.S." The CNO called me the very next day and said, "Where did they get that from?" I attributed it to the good work of the Naval Submarine League.

So, let's get on with the business at hand. I'd like to spend my time discussing two areas:

- An update on our interest and interaction in the Asia Pacific region, including some of the challenges we face in the Pacific today,
- And then, the naval capabilities I think we will find important to the Pacific Fleet's future.

I'll conclude with a couple of thoughts on readiness and people and then I'll be happy to take some of your questions. Skip Bowman addressed GREENEVILLE straight off and I'll elaborate afterwards, as you desire.

I'm sure many of you have read of the strategic reviews underway at the direction of the Secretary of Defense. And while these are a work in progress, the emphasis and priority on the Pacific and Asia in my estimation are good ones and maybe overdue. The implications are also clear that most of the scenarios under discussion are maritime in nature. The reasons why are equally clear. The region is now our largest trading partner in the world. If you were to visit Singapore, Hong Kong or Taiwan, you would see that there is unprecedented growth in containerized shipping, the need for imported oil and gas from the Persian Gulf, and the production and consumption of manufactured goods.

And while the new globalized world economy may be triggered by the push of a button on a computer keyboard, more than 99 percent of its products move by sea—a vast portion of which transits through the Strait of Malacca, the Strait of Hormuz, the South China Sea and throughout the Pacific. This fact alone leads us to one undeniable truth; the economic health of the U.S. and all of our friends and partners in the Pacific depends on the ability to ensure the freedom of the seas in the region.

You have to be there to get this job done. The Pacific Fleet guarantees the free flow of commerce and encourages economic prosperity, not just for us, but for all nations, while at the same time dissuading regional competitors from seeking military advantage. We provide combat-ready forces for crisis response and if necessary, these forward forces can fight and win at a time and place of our own choosing, away from our own shores, and away from our own home. So I think our current direction recognizes this capability.

Now, usually at this point, I like to say that it is a busy time in the Pacific these days. But that seems to strike some folks as somewhat of an understatement. Last year I went to some length to discuss our strategy in the Pacific and our relationships. Rather than cover that same ground, I'll try to pick up where I left off and

update the most recent issues.

Northeast Asia and Japan

Our alliance with Japan is our most important in the Pacific. The new administration has made this point with great clarity. The strength of any relationship is its ability to endure the most difficult situations and the GREENEVILLE-EHIME MARU collision was certainly that. In the aftermath, our relationship with the Japanese government and the Japanese Maritime Self Defense Force is absolutely rock solid. We will announce the final plan for the recovery of the missing EHIME MARU crewmembers here shortly, and I can tell you we have been working closely on the recovery effort from the very beginning—as we have with every aspect of this tragic accident—from the immediate notification, to the Court of Inquiry and on through the care and compensation of the families. Once again, the JMSDF will be a valued partner in this recovery effort.

There is always lots of chatter about our force posture in Japan and the future. So it is healthy to review the facts. It would take three to five times the number of ships homeported in the United States to replace both the I.O presence and the similar crisis response capability the KITTYHAWK BG and the ESSEX ARG provide in the Western Pacific. Japan provides \$5.6 billion dollars in host nation support to our forward deployed naval forces in Japan. Enough said.

The Japanese plainly recognize the enormous stabilizing influence our forward deployed forces have in the Western Pacific. And all those that think strategically about the region recognize the broad and enduring requirement for our presence.

Korea

I said last year that this was the place where the stakes are highest and that is the loss of life. That's still the case today. Over the past year, there have been some advances in both the U.S. and Republic of Korea relationships with North Korea, but this is really slow going. We are on the lookout for the signals that would add

confidence to the peace process—like North Korea's repositioning of their combat ready units rearward. But we haven't seen it yet.

I continue to be impressed with the readiness and enthusiasm of the ROK Navy. Their operations around the peninsula have been very professional and responsible. The Korean submarine force continues to amaze with the pace of their development. I toured the type 209 that made the 3000nm transit to Hawaii and operated in RIMPAC last year. It was clean, well operated and always tactically aggressive.

China—Taiwan

We maintain a very careful relationship with China and we have experienced both the highs and hopefully, the lows in the last twelve months. In August last year I visited China and had a chance to walk through a mod Ming class submarine. It reminded me a little bit of my weapons officer tour in SKATE. Most recently, China's excessive sovereignty claims and interpretation of exclusive economic zone rights have resulted in the F-8/EP-3 collision and their challenge to the USNS BOWDITCH's military survey in international waters in the Yellow Sea. We have issued a demarche in response to the BOWDITCH incident and have resumed our operations. We expect the EP-3 aircraft recovery to be completed in the near term, but it is obvious the PRC views the adjacent international space differently than the U.S. We have no desire to make China an enemy, but we also have no intention of ceding the freedom of the seas.

Their desire to be the principal influence throughout the region is real. They are working the region hard—diplomatically, in business and to an extent militarily as well. As always, we are concerned with the tension and rhetoric between China and Taiwan. Fortunately, it appears the rhetoric on both sides is within limits right now.

Southeast Asia

Of course, Southeast Asia sits astride the most important sea-

lanes on the globe and there are lots of players in this area. These are important relationships. There is growing acceptance of our U.S. Naval presence there and we are viewed as a positive force for stability. This is also where we see some of the ill effects of globalization: transnational concerns like high seas piracy, international drug-smuggling, environmental degradation, humanitarian assistance needs, ongoing peacekeeping operations, the potential mass exodus of refugees and the need for cooperative search and rescue. But we have truly good friends and allies in Southeast Asia.

Singapore

Singapore is a key supporter of the Pacific Fleet's presence and just this spring, opened with our CNO in attendance, a pier at their naval base at Changi both designed for, and now capable of having a U.S. nuclear aircraft carrier alongside for visits and maintenance. Pretty amazing. They are also a leader in facilitating multi-national exercises and conferences for regional naval cooperation. EXERCISE Pacific Reach—the first-ever multi-national submarine rescue exercise with many Pacific Rim navies participating including China and Russia, was facilitated by SUBGRU SEVEN and was a great success last fall. They are hosting the first multi-national Western Pacific Mine countermeasures (MCM) exercise this month as well. Joe Enright and Joe Krol before him are fully engaged with the development of their submarine force. Singapore will be a great partner in the region for years to come.

Australia

Our bond with Australia remains solid. Not surprisingly, this bond is centered on our Submarine Force. We are conducting joint submarine Prospective Commanding Officer training and our submarine type commander relationship is the foundation on which we are building a larger Navy-to-Navy cooperative structure. The COLLINS class performed well in both RIMPAC and TANDEM THRUST, and that is due in large part to help from many of you in this room.

Indonesia

The more one learns about Indonesia, the more intrigued and concerned one becomes. This is a country with more people than Russia. They are spread over 17,000 islands and span more than 3000 miles in the region; further evidence of the maritime context of the Pacific theater. Indonesia is the largest Muslim country in the world and there is no better example of the importance and critical link between economic prosperity and the security equation. When the economy collapsed, so did the internal stability and given the size of the country, the impact on Southeast Asia is potentially very high. Now, we have a difficult period of political turmoil in front of us. A refugee crisis would strain the resources of most of the region—we are watching this one closely.

South Asia

South Asia, and by this I mean India and Pakistan, is also a very dynamic area and we understand our relations have an effect on all the nations of the region. We are well aware of the nuclear character of the ongoing dispute between Pakistan and India. At the same time, Pakistan is grappling with democracy and corruption while India is on a path of economic reform.

We did manage to send Jim Metzger to India to get a dialogue working once again. It is pretty clear they are looking forward to building a much closer and more substantial bilateral relationship. USS COWPENS' visit to Mumbai at the International Fleet Review in February was very successful and of course, India has a substantial and professional submarine force. It would however be a mistake in my view to forget the long-standing relationship we've had with the Pakistani Navy and their moderate views.

I could talk more...Papua New Guinea and the Solomons were imploding late last year. Russia is clearly riddled with economic and security challenges. The Philippines continues to have domestic political and security concerns. New Zealand has legislated their way out of a meaningful bi-lateral relationship, and Iran is still tremendously complex, with President Khatami earning

a landslide victory for his moderate regime just this past weekend. I could go on, but as you can see, the Pacific Region will capture our attention and most of these remain essentially maritime issues.

Operational Focus

The focus of Pacific Fleet forces is on serving the nation's interests that I talked about at the beginning: to operate to the far corners of the earth to protect American interests and our citizens. That is what we do each and every day. While I don't have time to discuss our operational focus this morning, I do want to mention one area. In the past nine months I have probably spent more time on Force Protection than any other single issue and rightfully so. I won't go into this in depth in an unclassified forum other than to say it has required a philosophical shift to instill an operational focus and is at the top of my priorities for resources. We all need to understand that it is here to stay.

Naval Capabilities for the Future

To maintain the viability of our naval forces, I see four overarching capabilities the U.S. Navy will require as we look toward the future. That is, the ability to:

- influence events ashore
- project defense
- achieve knowledge superiority, and
- adapt the manner in which we employ our people.

Now, we can call these priorities, requirements or capabilities, but I think fundamentally what they spell out is the kind of transformational change we require to operate effectively in the 21st century. Skip Bowman talked to this yesterday. Although the words may be slightly different, they deal with what we will need to be able to do in the immediate future.

Fundamentally the first two, influencing events ashore and projecting defense, means ensuring our access to the battlespace and setting the conditions that enable the entry of other joint forces into the theater or area of operations. In the simplest terms—and you have heard me say this before, this means dealing with mines,

missiles and submarines to do the first. We'll have to provide credible precision strike and conduct new missions like Theater Missile Defense to do the latter as well.

It would appear to me that the investments we have made in designing a truly survivable submarine weapon system that can contribute across a spectrum of operations will be well recognized in the different studies supporting the ongoing defense review. We will continue to build tough ships that can fight effectively and sustain themselves in any environment. Ships that not only take advantage of our stealth and endurance, but also extend our firepower and ISR reach with offboard sensors and the ability to communicate rapidly.

That last point brings me to achieving knowledge superiority. This means leveraging and capitalizing on our information technology edge to translate our information advantage, that is to say our robust ISR systems, into an operational advantage and hence, derive power from robust networking and the improved command and control of well informed, geographically dispersed forces.

Adapting the manner in which we employ our people is also critically important. Our future systems must rely on less people to man, maintain and fight them. I'm sure our charge to our wardrooms hasn't changed and won't change in the future. We need a naval officer to be a good leader and then, a good nuc and a tactical wizard. But we need to find ways through automated systems to allow our personnel to concentrate on the awesome warfighting capabilities they guide.

Along these lines I thought I would put a marker down on three important, near and mid-term programmatic needs. They stand out in my mind because of the unique strategic implications of the Pacific.

First and foremost, we will need greater ASW capability than we have today. At the top of my tactical problems in the Pacific is dealing with other submarines. And dealing with them is imperative to both our naval forces and our ability to enable the joint force's entry into the battlespace. I think the homeporting of three SSNs in Guam is an important first step in this regard. Fully funding the five unfunded SSN engineering refueling overhauls is

the next programmatic step. These boats will help close the gap on our mission shortfall in the Western Pacific. Increased production of TB-29 arrays is also a critical near-term requirement needed to continue to exploit our technological superiority.

ASW improvements shouldn't be limited to the submarine force either. We need periscope detection systems on our ships and aircraft and better coverage from cueing systems. A multi-static receive and passive narrowband replacement for the SQR-19B array is required. At the risk of repeating myself, a commercially based, multi-mission maritime patrol airframe to replace the P-3 with roll-on/roll-off ASW and ISR capability is overdue.

Second, we need a sustained and robust logistics capability in the Pacific. Not every ship has the advantage of our endurance and self-sustainment.

Third, we need to pursue better and faster knowledge superiority technologies. The U.S. Navy has always been able to leverage critical and time-sensitive information into battle success—the Battle at Midway is just the first example. We should start by accelerating the IT-21 installations on our submarines. We are behind where we need to be. We must facilitate the netting of the full range of national and theater sensors while remembering that organic sensors may be all we have at a given point in time.

People and readiness. Finally, I'd like to leave you with one more thought, a bottom-line if you'll let me. And that is, despite everything I've said today on the situation in the Pacific, our programmatic needs for the future, and our operational focus, the capability and future of the fleet boils down to some pretty simple basics. And in our case, the basics haven't changed much over the years.

Twenty months ago when I sent my first message to the Pacific Fleet, I said we had two overarching priorities as leaders:

- our readiness to fight—to protect our nation's interests to the far corners of the earth, and
- to ensure the personal as well as the professional development of each man and woman onboard.

These are the same words I issued as my command philosophy as CO of SALT LAKE CITY. I know that Admiral Archie Clemens said in advance of me at Pacific Fleet that these were his priorities.

They are fundamental to our success and I'm positive the CNO would tell you the same thing if he were standing here right now.

Our people are the important bridge to our future. And you can't help but admire this new and present generation. They work hard, they take pride in what they are doing and they understand the importance of their mission. As leaders, it is important to recognize that our readiness and our retention of our skilled men and women are mutually supporting efforts. Nothing breeds high morale like doing a difficult job well. An organization that attracts and *retains* a trained workforce reaps the benefits of its own efforts and investment. And readiness is about ships that can fight and perform to a high standard.

I for one, am convinced we can have both good retention and solid readiness. We are looking for the complete athlete that can do both as Commanding Officers. Our real legacy as leaders has always been the people we train and motivate to lead our ships and our Navy in the important days ahead.

I look forward to those days. The Pacific Fleet faces a bright, but challenging future. The legacy our predecessors have left us—good men and women dedicated to the development of their people, to the readiness of their ships and to the future innovations that will allow us to succeed, will serve us well as they represent America's interests—once again—to the far corners of the earth. As always, they will exceed our expectations. Thank you.■

Editor's Note: After his speech, Admiral Fargo answered the following question.

Q. Why wasn't the Commanding Officer of USS GREENEVILLE referred to a General Court Martial?

A. I think it is important to note that the Court of Inquiry unanimously recommended Admiral's Mast for the Commanding Officer of GREENEVILLE because they found no evidence of willful misconduct or criminal intent on his behalf. In addition, I also viewed my decision through a 'three-test' rationale.

The first test was: 'Could any additional information pertinent to this incident be gained from a court martial? Would we learn

anything new?' I felt the answer was no. The Court Of Inquiry provided a full, open and fair hearing of all the circumstances and evidence available. All of the facts were laid out. We understood why this happened and could apply the lessons. Additionally, I reviewed the transcripts that the National Transportation Safety Board (NTSB) had obtained from the civilians to make sure there was no conflict with the evidence produced by the Court. There was none.

The second test was: 'Did we want to incarcerate the Commanding Officer? Did we want to lock him up as a result of this tragic but avoidable accident?' It was clear to me that the Commanding Officer had taken full responsibility for this accident. Additionally, I had to consider the impact on the good order and morale (discipline) of the fleet and our Commanding Officers. The answer once again was no. I did not think this was a message we wanted to send to the fleet.

The third test was: 'Can we hold the Commanding Officer accountable at Admiral's Mast?' That answer is clearly yes. We have a history and tradition of being able to do so. He was dealt with in a punitive manner. Every aspect of this case was examined in the full view of our American citizens. He was detached from command and his career effectively terminated. That is accountability.



FUTURE SECURITY ENVIRONMENT 2001-2025

Part II: Divergent Views, Debates and Wild Cards

by CAPT Sam J. Tangredi, USN

[Editor's Note: Part I identified views concerning the security environment of the next 25 years about which current studies form a rough consensus. What follows is a discussion of the divergent views expected to fuel the strategy debates of the 2001 Quadrennial Defense Review, as well as wild card events that may require strategic hedging. Both parts are a summary of the monograph All Possible Wars? Toward a Consensus View of the Future Security Environment, 2001-2025, published by National Defense University Press in November 2000. For brevity, footnotes and references have not been included. The complete work is available on the web at: www.ndu.edu/inss/macnair/mcnair63/m63cvt.html.]

Debates on defense policy inevitably mirror diverging views of the future. Defense programs, if they are to be effective, must be tailored to the anticipated threat, or—if not designed for a specific threat—provide capabilities that are seen as essential for future security. Thus, force structure alternatives identified as the result of any comprehensive defense review—such as the forthcoming Quadrennial Defense Review 2001 (QDR 2001)—are, at their core, reflections of alternative views on the probable shape of future wars and the likely means of their deterrence.

The intent of this article is to outline those elements of the future security environment about which there is no consensus among the experts. Analysis of the thirty-six survey sources reveals diverging views concerning at least nine specific aspects of the future security environment in which the United States will conduct its international relations from now until the year 2025. These alternative assessments of the future are presented below as *either-or* statements, but there are admittedly varying degrees of agreement and the *either-or* statements generally represent the extreme ends of the range. For the purpose of defense planning, an identification of the contending positions on the future security environment is the

prelude for making deliberate choices on how to prepare for and perhaps hedge against an analytically uncertain future.

- 1. It is unlikely that two Major Theater Wars (MTW) would happen simultaneously...or...Two near-simultaneous MTWs will remain a possibility.*

A number of critical assessments—some of which are linked to a recommended strategy or force structure different than the current posture—discount the possibility of two major theater wars occurring near simultaneously. Preparing for two such overlapping contingencies is dismissed as unsupportable worst-case thinking. Taking a cue from the National Defense Panel of 1997, many analysts find the two MTW construct inconvenient to their recommendations for transformation, since readiness for the simultaneous scenarios requires considerable expenditure of resources and the maintenance of considerable standing forces.

But when assessments of potential regional conflicts are combined, the possibility of crises or conflicts developing near-simultaneously in two or more regions seems quite plausible. There are both historical precedents and strategic logic for a potential regional opponent to make aggressive moves when conflicts are occurring in other parts of the world. While the United States is responding to the first conflict or contingency, an aggressor might believe that the objectives of a second conflict would be easier to achieve. In a general sense, this was Nazi Germany's strategy of declaring war on the United States immediately after the attack on Pearl Harbor. Unexpectedly, the United States reversed its anticipated priorities, initially focussing on the European theater.

It has become common to describe recent NATO actions against Serbia—presumed to be a Smaller-Scale Contingency (SSC)—as using an MTW's worth of air power. If SSCs occur at a near-continuous rate, it is almost inevitable that two or more will occur near-simultaneously. The United States may not choose to involve itself in more than one SSC, but if it did choose to handle two, what would happen if one or both were to require two MTW's worth of effort?

The divergence of views on the probability of overlapping major

theater wars, like the other contradicting statements, form the fundamental issues of the debates to be expected in the QDR 2001 process.

2. *Future wars will be more brutal with more civilian casualties... or... Information operations and precision weapons will make warfare less deadly.*

The question of whether future wars will be characterized by greater brutality and greater civilian casualties or will be characterized by more discriminate attacks and fewer civilian casualties often arises in debates concerning the existence and effect of a Revolution in Military Affairs (RMA) and the importance of information warfare.

At one end is the view that the trend towards a *world of warriors* in which youthful populations of the less economically-developed world are involved in ethnic, religious or tribal conflict. This gives rise to more brutal forms of warfare, in which the international laws of war are rarely observed. The ethnic cleansing of Bosnia and Kosovo (along with myriad civil wars), conducted largely by para-military terror squads whose primary skills involve the killing of unarmed civilians, are cited as representations of the future of war. Combatants and non-combatants are rarely distinguished. Victory consists of complete destruction of the lives and property of the enemy. Such wars will involve ethnic cleansing, genocide, mass movement of refugees, famine, torture, and rape. Weapons can range from the primitive to the merely unsophisticated. While armored vehicles, artillery, and shoulder-held anti-air missiles may be used, the dominant platform is the individual warrior—possibly under the age of twelve—and the small arms carried. The use of commercial GPS and cellular phones are useful, but not essential for operations.

The implication is that the sophisticated precision weapons, along with the information systems, that characterize U.S. armed forces have relatively little effect against such an enemy.

At the other end is the vision that precision weapons and information warfare will make warfare both less likely and less bloody. Kosovo is also used as an illustrative case—this time as an

example of how precision bombing, with considerable effort to spare civilian lives and property, was able to win a modern war and reverse ethnic cleansing. Because such precision strikes rely on accurate intelligence, surveillance, and reconnaissance (ISR), the processing of information is a dominant feature of this style of war. Proponents of information warfare argue that the manipulation of information may, in itself, preclude physical combat in future conflicts. Under perfect conditions, it is argued, the manipulation of information will prevent a populace from going to war by persuading them that the war is unjustified or is already over, or turning them against governments intent on war.

Somewhere in between these views is the argument that future wars will not necessarily be more brutal, but that precision strike and information warfare does not presage an era of immaculate warfare.

3. *Chaos in littorals or panic in the city are more likely contingencies than major theater war...or...Major theater war will remain the primary threat to security.*

The issue of the separation between military personnel and civilians, or combatants and non-combatants underlies the question of where and how future warfare will take place. Classical warfare is assumed to take place between clearly identified armies in terrain suitable for direct engagements. History—replete with siege warfare, attacks on infrastructure, and massacres of civilian populations—may demonstrate that the ideal is actually an exception. However, there remains the popular impression that just war is, or at least should be, about defeating the cross-border aggression envisioned in the current major theater warfare scenarios.

Of course, armed forces are used for more than MTWs. Throughout its history, America has called on its armed forces to deal with many contingencies outside of formally declared wars. These contingencies have ranged from punitive expeditions to humanitarian interventions. Current wisdom is that the number of such small-scale contingencies (SSCs) has greatly increased since the end of the Cold War, along with a greater propensity on the part of American decision-makers to intervene. Sources also point out

the relative rarity of American military involvement in major theater warfare against cross-border aggression. From this perspective, Desert Storm is an exception rather than a rule. Given the apparent increase in the number and frequency of non-state threats and the potential for asymmetric operations, it has been suggested that the primacy of the Defense Department's focus on preparing for classical major theater warfare is a mistake. The threats of the future, according to this view, will be significantly different, and require a different emphasis in preparations.

One perspective is that future conflicts—particularly those within failed states—will present little opportunity for firepower-intensive warfare. There will be no front lines, rear areas, and in some cases no clearly identifiable enemy force. Rather, there will be an overall atmosphere of chaos in which the primary mission of U.S. military forces will be to establish order and quell violence in the most humane way possible. Forecasts sponsored by the U.S. Marine Corps point to the continuing urbanization of the world's population—a driver identified by many other sources, and the continued breakdown of failed states as leading to numerous tribal-like conflicts. With over 70 percent of the world's urban population within the operating range of a coastline, *chaos in the littorals* is shorthand for such future contingencies that occur within that region.

Spurred by the potential use of chemical or biological weapons in urban areas, a slightly different perspective can be termed *panic in the city*. Proponents of this view are concerned that asymmetric or terrorist attacks could create similar chaotic conditions within the U.S. homeland. The U.S. military would not simply have to stabilize chaotic conditions overseas, but would be expected to do the same at home. While many emerging strategy alternatives call for increased military involvement in homeland security, most assume that the military would merely play a support role to civil authorities, providing resources that may not be readily available in the civil sector. In contrast, those who view *panic as the new weapon* envision homeland security as the preliminary, or even the primary mission of U.S. armed forces. The implication is that civilians simply can not face the physical or psychological aspects

of the chem-bio threat, and both precautions and responses should be a direct military function. Once the perception of homeland sanctuary is broken by an actual asymmetric attack, the American population would panic into fleeing towards areas of perceived safety, while demanding that their elected officials cease whatever foreign activities may have provoked such an attack.

In order to prevent such a scenario, sources argue, the military needs to refocus its efforts away from the less likely case—classical military response to cross border aggression—and towards the more direct and more likely threats of asymmetric attacks against the homeland and the use of panic as a weapon of the globalized future. In contrast, a significant number of sources view major theater war as the most likely warfare in which the United States would become involved, and job one for her military. From this perspective, America's large-scale warfighting capability is the primary deterrent of both chaos and asymmetric attack.

The divergence of opinion on whether future warfare will *primarily* take the form of chaos in the littorals and panic in the city, or will mostly resemble the expected forms of major theater wars, appears to be more related to preferred prioritization of threats than any conclusive forecast of wars to come. But there is evidence on both sides of the issue.

4. Space will be a theater of conflict...or...Space will remain a conduit of information, but not a combat theater.

The question of the so-called militarization of space is particularly contentious. Space-based intelligence gathering, surveillance, and reconnaissance (ISR) are critical to U.S. military operations and gave such an informational and command and control advantage during Operation Desert Storm, that some have called the Gulf War as *the first space war*. However, there are great distinctions between the military *use* of space, a war *from* space, and a war *in* space. Every future assessment predicts increasing use of space assets by the military, however, there are wide differences in whether a war from or in space could occur in the timeframe to 2025.

A number of sources are very certain of the potential for a force-on-force space war. The U.S. Commission on National

Security/21st Century states explicitly: "Space will become a critical and competitive military environment. ...weapons will likely be put in space. Space will also become permanently manned."

An opposing viewpoint is the forecast that militarization of space is not likely to occur prior to 2025. This reasoning projects a continuing U.S. advantage in military space systems based on its previous investment and infrastructure development. From this posture, "the United States is in a good position to win any ensuing arms race." Other potential inhibitors of space-based weapons are the international treaties governing space activities.

But skeptics of treaty prohibitions tend to share the inevitability view of the introduction of space weaponry in the 2001-2025 timeframe. As former Secretary of the Air Force Sheila E. Widnall argued: "We have a lot of history that tells us that warfare migrates where it can—that nations engaged in conflict do what they can, wherever they must. At a very tender age, aviation went from a peaceful sport, to a supporting function, very analogous to what we do today in space—to a combat arm. Our space forces may well follow that same path." A similar argument is made by Major General Robert Dickman, who was the DoD Space architect in 1997: "To hope that there will never be conflict in space is to ignore the past."

5. A near-peer competitor is inevitable over the long term; we need to prepare now...or...Preparing for a near-peer will create a military competition (thus creating a near-peer).

As previously discussed, there is general consensus that the development of a global military near-peer competitor to the United States prior to 2025 is unlikely. However, that forecast does not quell the debate on whether such a near-peer is inevitable in the long term. Sources that view a near-peer as inevitable base their argument on historical example; every aging leader is eventually challenged by younger, growing competitors. To ignore this is also to ignore the past. In terms of the academic study of international relations, there appears always a struggle among states to become the hegemon that dominates the international system. Even scholars

who question the morality of hegemonic control—and in particular the United States apparent position as the current hegemonic power—appear to believe that such a struggle is the natural order between states.

If the struggle for hegemonic control is the natural order of the international system, it would also be natural that those responsible for the security of the United States—including its freedom, its institutions, its population, and its prosperity—would prepare for such a struggle. While there may be a continuous debate as to which preparations are most appropriate—and how the outbreak of hostilities can be deterred in the near term, there seems agreement among many that a dissatisfied state could eventually build itself into a military near-peer to the United States sometime after 2025. The belief in the inevitability of a near-peer is also reflective of the consensus point that *advanced military technology will become more diffuse*. As military technology becomes more diffuse, it appears inevitable that any American advantage in military technology would gradually shrink, creating de facto near-peer competitors. There is, however, an alternative view on the inevitability of military near-peer competition. In this view, it is not the natural order for near-peer challengers to occur, but, rather, the actions of the leading power that *causes* such a competition. Supporters of this view range from those who see a competitive international system as an anomaly of the capitalist world, to those who view gradual world democratization as eventually leading to a world free from major war—under the premise that democracies do not fight democracies. Others subscribe to the belief that near-peer competition is not inevitable as an unspoken corollary to their idea that a leading power can take actions that *prevent* such a competition from occurring. To some extent, such a view underlies the premises of former defense officials Ashton Carter and William J. Perry's proposals for a "preventive defense."

The question of the inevitability of a near-peer competitor after 2025 is not merely academic. If an inevitable conflict with a near-peer competitor is expected after 2025, it would behoove the United States to take distinct steps to develop a defense policy and force structure that would retain a measure of military superiority sufficient to dissuade, deter, or—if necessary—defeat a potential

near-peer opponent.

However, if it is actual or proposed military preparations of the hegemon that propel other states to seek parity, it may be in the interest of the United States to break the cycle of increasing military expenditures in order to prevent the development of a near-peer. Specific policies could be adopted—along the lines of *preventive defense*—that seek to co-opt or manage a potential near-peer by allowing a degree of American vulnerability in order to preserve the current balance, which appears in favor of the United States.

6. Overseas bases will be essentially indefensible...or... Future capabilities will be able to defend overseas bases.

The potential reach of opponents into space, along with the adoption of other techniques of anti-access or area denial warfare would have a damaging impact of the overseas bases upon which Americas current power projection forces appear to be dependent. If the 2001–2025 period is indeed one in which potential opponents strengthen their anti-access capabilities (as appears to be the consensus), then the threat to overseas bases would appear to increase. However, there is a debate among the sources as to whether the nature of the future security environment will conspire with the laws of physics and diffusion of technology so as to make an overwhelming threat to fixed land bases permanent.

In the eyes of the *bases will be indefensible* school, defensive measures simply can not keep up with the offensive threat that places fixed military forces at grave risk. In this perspective, the action-reaction phenomenon of military technological development naturally favors offensive systems. Even with theater ballistic missile defenses in place, overseas bases could be attacked with WMD by other means of delivery, such as cruise missiles, attack aircraft or artillery shells.

At the same time, there may be political vulnerabilities that make overseas bases, particularly those within the sovereign territory of a host nation, much more difficult to defend. The host nation may seek to placate a potential aggressor by insisting that defenses be kept to a minimal in order to maintain the current strategic balance. If the base relies on the movement of mobile

defense into the theater, such as the arrival of Patriot missile batteries, they are vulnerable to pre-emptive attack or coercion. The host nation may decide not to let the United States use its base facilities lest such permission provoke an attack by a regional aggressor. Certainly, this would make mounting a power projection campaign considerable more difficult.

It may be a reaction to the implications for American power projection that causes other sources to insist that overseas bases could be successfully defended in the 2001–2025 time-frame. To admit the growing vulnerability could cause undesired revolutionary changes in the allocation of defense resources. However, *the bases can be defended* view also argues that emerging military technologies can make defenses against WMD more effective. The continuing lead of America and her allies in emerging military technology causes some to conclude that defenses can match offenses, particularly when backed by the eventual triumph of qualitatively (and possibly quantitatively) superior U.S. power projection. Likewise, the regional use of WMD may be deterred by the vast U.S. nuclear arsenal, use of which might be provoked by significant casualties of U.S. military personnel or host nation civilians. Other sources argue that overseas bases can be defended by sea-based or space-based systems.

Additionally, there is the argument that vulnerability of land bases actually works to the advantage of the United States. If an attack on overseas-based U.S. forces occurs, it is likely that the United States would be reinforced in its determination to pursue the end-state of a regime change. This perception could potentially deter a regional aggressor from launching such a strike. Also, vulnerability might provoke the host nation to seek greater, rather than lesser military cooperation with the United States. Certain sources also argue that any host nation which could be coerced to restrict U.S. access to bases (potentially threatened by the regional aggressors WMD), is simply not an ally worth defending.

7. *Current (legacy) U.S. forces will not be able to overcome anti-access strategies except at high cost...or...Techniques of deception or denial of information will remain effective in allowing legacy systems to penetrate future anti-access*

efforts.

The debate on the defensibility of overseas bases has a parallel concerning the continuing effectiveness of power projection forces. Supported by the same data concerning the growing development of anti-access systems and strategies, a number of sources suggest that the power projection forces of the United States—as they are currently constituted—will have increasing difficulty in penetrating anti-access defenses in the 2001–2025 period.

The proponents of this view do not necessarily see these developments as an evolutionary challenge to which the United States can modify and adapt its current forces. Rather, they see this as a revolutionary development that is enabled, in part, by foreign adaptation to the RMA. This position leads to the advocacy of radical changes in the U.S. defense posture. Indeed, the perception of the growing strength of anti-access strategies is a major impetus to the calls for defense transformation.

In contrast, there remains a body of literature that characterizes anti-access strategies as natural aspects of war that require incremental improvements in American power projection forces, but are not a revolutionary development requiring radical change. This view argues that current developments, particularly in theater missile defense and stand-off and precision weapons, allow U.S. power projection capabilities to keep pace with anti-access systems.

8. Nuclear deterrence will remain a vital aspect of security...or... Nuclear deterrence will have an increasingly smaller role in future security.

Sources are split in their assessment of the importance of nuclear weapons and the validity of traditional nuclear deterrence in the 2001–2015 period. On the one hand are those who see nuclear weapons as less effective tools in deterring war. On the other are those sources which concede that nuclear weapons may have a different role than they had in the height of the Cold War, but insist that they remain the ultimate deterrent even against rogue states.

Many who state a moral opposition to nuclear weapons have translated their desires into forecasts of a globalized world in which nuclear deterrence no longer makes sense. With greater economic

interdependence, this argument runs, even the so-called rogue states will be reconciled into the international order, renouncing or reducing their overt or covert nuclear arsenals.

Sources that view future conflict as consisting primarily of brutal civil wars in undeveloped states—along with Western intervention to prevent suffering and injustice—simply see no utility in nuclear weapons. From a considerably different perspective, some suggest that the RMA has simply passed nuclear weapons by. If information operations will be the dominant form of conflict in an internetted world, the use of nuclear weapons would seem merely suicidal. Nuclear effects, such as EMP, hold the potential of destroying much of the technical access to information on which both war and international society are dependent. There would seem to be no utility in nuclear warfighting, and therefore nuclear deterrence is confined to a background role.

Others who focus on the potential for RMA advances to make national missile defenses effective, argue that a defense-dominant world will eventually lead to the abolition of nuclear arsenals. Additionally, some sources simply argue that nuclear deterrence has little effect on irrational rogue regimes and terrorist groups, the two threats that are most likely to attempt asymmetric attacks on the U.S. homeland.

In opposition to this composition of views stand those sources that view nuclear weapons as retaining considerable deterrent effect, even on rogue regimes. Since, it is argued, active defenses can never be one hundred-percent effective, the potential for nuclear destruction will remain. Nuclear deterrence, therefore, retains a considerable role in protecting the homeland from weapons of mass destruction.

9. *Conventional military force will not deter terrorism or non-state threats... or...U.S. military capabilities will retain considerable deterrent or coercive effects against terrorism and non-state threats.*

Sources that focus intensely on the increasing vulnerability of the U.S. homeland and on the potential for asymmetric attack tend to doubt the ability of conventional military force to deter such attacks. Although there is not necessarily a direct correlation with

specific views on the validity of nuclear deterrence, many of these sources tend to down-play the role of nuclear weapons and assume that potential opponents would concentrate on developing chemical or biological weapons of mass destruction, rather than expend resources on developing an extensive nuclear arsenal. Biological weapons, in particular, are frequently assumed to be immune to deterrence by conventional military forces—and possibly by nuclear weapons as well. The logic is that opponents who would be so irrational or immoral to use biological weapons (particularly against civilian populations) would not easily be swayed by the threat of extensive damage to their own people. More importantly, terrorist groups—having no state or population to protect—do not necessarily present the vulnerabilities of a traditional military opponent. If it is assumed that there is an inherent difficulty in determining the actual perpetrators of a biological attack, there may be no apparent target for conventional (or nuclear) forces to attack.

An opposing viewpoint is that there are always vulnerabilities than can be attacked—even for terrorist groups. Presumably, terrorists act for causes that have overt elements such as political independence for a certain population. Contrary to the most alarmist speculations, effective terrorist groups tend not to be crazy or self-destructive.

Proponents of the deterrence is possible position point to the example of the 1986 Eldorado Canyon reprisal on Libya, which appeared to cause Muammar Qaddafi to reduce his support of terrorist activities. With a combination of intelligence, overt reprisal, covert reprisal, effective law enforcement, and some degree of consequence management preparations, it would seem possible that terrorist activities—particularly with weapons as sophisticated as WMD, which are extremely difficult to obtain or utilize effectively—could be prevented, dissuaded or deterred.

Events to Hedge Against

The nine points of divergence described above are based on differing assumptions concerning the implications of the previously identified consensus points. The identification of divergent

viewpoints helps to frame the more contentious issues of the defense debate. But, in addition, it suggests that there may be potential developments that future defense policies may need to hedge against. If reputable, well-informed sources differ as to the future impact of chaos and urban warfare, or the future role of nuclear deterrence, it may be prudent to develop policies that are effective under multiple alternatives. Another element that suggests the need for hedging strategies is the identification of wildcards.

Wildcards can be defined as risks to national security which, by their very nature, can be conceived, but not predicted or fully anticipated. However, the effects of these wildcards could be so devastating to American security that their consideration in creating hedging strategies is of vital importance. These include: (1) an eventual military near-peer competitor; (2) potential alliance of regional competitors; (3) attempts to *leap-frog* into space warfare; (4) collapse of key ally or regional support; and (5) trend towards a world of warriors.

This list is based on both a review of the points of divergence and an examination of wildcards identified during the survey of sources. The five events selected to hedge against hold three criteria in common: (1) they are events for which preparations in military planning or force structure are practicable, (2) if they occurred, their effects would be magnified by the expected trends identified by the consensus security environment, and (3) they hold the potential to create significant danger for the United States.

A hedge against an unexpected event could take two forms. First, contingency plans could be developed and a select group of resources could be maintained in reserve in order to carry out the plans. A second form or means of hedging would be the development of systems that could operate under unexpected conditions as well as perform optimally in anticipated missions, in other words, operate as a highly-adaptive system.

Conclusion: Towards an Effective Defense Review

The debates that defense reviews engender are always messy. The media makes quite a sport of pointing out the conceptual disunity and lack of jointness among the *squabbling* Armed

Services. Rarely mentioned is the fact that defense policy in a democracy was meant to be contentious and inefficient. To debate up until the very moment the guns sound was always considered a healthy thing. This is in clear contrast to the policies and procedures of authoritarian regimes. As Chinese Communist Party Chairman Deng Xiaoping advised his political and military strategists: "Don't debate... Once debate gets started, things become complicated." But powerful militaries that do not debate, such as the German Wehrmacht or Soviet Armed Forces, seem to end up on the wrong side of history.

Americans like debate and we generally view the future as complicated, even if we would like to be able predict it. QDR 2001 will also be complicated, as will any subsequent review. One of the ways we can begin in cutting through such complications is to start by identifying both a consensus view of the characteristics we expect in the future security environment, and the diverging views and issues worthy of debate.■

ERRATA

The April *In Memoriam* should have read
RADM Harry Hull, USN(Ret.).


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ARTICLES

ACQUIESCENCE IS AGREEMENT:
REFLECTIONS ON SUBMARINE ROLES AND MISSIONS
FROM THE SUBMARINE TECHNOLOGY SYMPOSIUM*by RADM W.J. Holland, Jr. USN(Ret.)*

On one hand, the future is very bright. The United States is not just the dominant world power but has no peer or even serious threat. This rosy picture makes the future difficult for warriors convinced that the end to war is not yet in sight. The present Administration has made it clear there will not be significantly more money for defense and indeed, it takes no special prescience to recognize that present programs will have to be reduced in order to fund the Administration's chief defense priority, National Missile Defense. Every component of every service already complains about their inadequate force size to execute present missions and the shortage of funds to accomplish the necessary modernization. These conditions won't change: the technological emphasis of the present administration will be on space and national missile defense, not on conventional forces, submarines or strategic arms.

Whether infantry divisions or submarines, it is safe to predict that the force sizes that exist now are the largest we will see during this administration. Attempts to enlarge the force will probably be fruitless no matter how eloquently and convincingly portrayed. Recognizing this environment does not mean those with knowledge and experience should shrink from promoting submarines. Because the government of a democracy operates on advocacy not truth, those who understand the problems must attempt to make their concerns clear to responsible officials and to their fellow citizens. Within this context, the collective and individual advocacy for larger forces should continue.

David Rosenberg, the historian, observed that by the late '70s the submarine had become the capital ship of the Navy because submarines were to lead the rest of the fleet into enemy waters. Every war game set in the 2020 or later time period demonstrates

the same characteristic continues. Access to the places the United States is likely to be needed is not always going to be uncontested. The list of places where the Navy will have to fight its way into the littorals will grow. But a Navy of less than 100 surface ships, 8 to 10 carriers and about the same number of amphibious ready groups will be too small to use its customarily cavalier Nelsonian tactics. Too few to be risked lightly, the surface ships will either be too busy with area missile defense or too vulnerable to be able to force that access until the submarine has reduced the opposition to manageable numbers.

Submariners should not be fooled by their own propaganda into believing that submarines will be rewarded for their unique character. There are some aspects of that character that are not well understood or appreciated even within the submarine community itself and where misrepresentations are allowed to stand because of politeness or political comity. However, acquiescence is agreement: it is important to challenge unfounded beliefs and half-truths regardless of their author.

First and foremost, the pressure for smaller, cheaper, less fully capable submarines will never die. The arguments for properly sized and effective submarines must be made clearly and distinctly, not by claiming to be all things at all times but by being very clear as to what submarines can do. Even well grounded analysis will not convince some who prefer not to understand, but to hear naval officers on active duty suggest the United States invest in conventionally powered submarines indicates submarine advocates' arguments have been ineffective.

Navy planners, strategists and policy makers do not appreciate that the speed and endurance of nuclear submarines give them an unmatched ability to bring mass to the scene of action—not in individual platforms but in their ability to aggregate large numbers of platforms and thereby large numbers of weapons quickly. Dispatching every submarine not in overhaul in a day, each fully armed and outfitted for three months, is a capability that has been demonstrated in both oceans. Because others cannot match this performance, air and surface warfare specialists remain ignorant of its ramifications while submariners do not appreciate how truly unique it is. But in times of conflict, submarines will not only be

on the scene early in their normal deployed stance, but if useful or needed their numbers can be multiplied quickly with the new arrivals coming armed with the weapon load tailored for the particular conflict.

The durability and resiliency of submarine stealth is not well understood or appreciated. While only occasionally will some ignoramus suggest submarines launching missiles are threatened by *counter-battery* fire after a missile launch, many have been led to think that the submarine conducting operations at periscope depth or communicating with a satellite is somehow readily apparent. In truth the submarine, even in these situations, is next to invisible. Most vulnerable to the human eye, detection is limited to relatively near and narrow fields. (Most feared are helicopters and how many of them are around?) Further more, the submarines' stealth comes not from their shape or padding but from the medium in which they maneuver. Hard to detect in the first place, difficult to classify even when detected, able to clear datum quickly, submarine operations are not particularly hampered by concerns about stealth—a concern voiced most often by Rand planners, Air Force advocates, and others without experience in the field. In an earlier age, *Hollywood* Art Van Saun demonstrated these truisms on BARBEL by snorkeling through an ASW formation without being detected.

As early as 1923, submarine officers began to preach that submarines were best used not as scouts for the battle line but independently far in advance of the fleet to disrupt enemy preparations, assembly and logistics. The logic of that design ought to be revisited. There won't be enough submarines to be allocated to battle group operations and provide the forward presence that is the submarines' forte. Submarines in a real conflict will be working directly for the numbered fleet commander or the naval component commander—not the battle group commanders.

Communications limits are as much process related as technically limited. *Being like any other small combatant platform* is a poor slogan. First because any antenna improvement that gives the submarine more capability will also give an order of magnitude more gain for a platform operating well clear of the air-water plane

interface. But more importantly, submarines don't need the kind of communications that air defense or amphibious ships do—but only enough to properly plan and execute the assigned operations, perform as the forward sensor nodes in the sensor network and to fire the fast reaction, early on target weapons. Comparisons in bit rate or *poor mouthing* communications capabilities only disguise the nature of the command and control issues inherent in operating submarines. Communications can be arranged and executed without compromise to stealth, have been that way since early in 1942 and can be in the future. Kow-towing to the dreams of commanders raised in cultures where communications involve a steady flow of chatter disguises the real issues.

Admiral Stan Arthur's proposition that the first action in mine warfare must be to sink the minelayers should be reinforced at every opportunity. Laying mines in international waters is an act of war and should be responded to just as vigorously and immediately as if a gun was fired. Wary policy makers in the safety of the nation's capital shied away from such actions in the past and will in the future unless the groundwork for this kind of response is laid well in advance of the need for such a decision. Every CINC plan ought to have Arthur's admonition as the first line of the Rules of Engagement. Submarines will be especially effective in executing this mission—obtaining weapons that will allow accomplishment should be a near term priority.

Submarine roles and missions are fairly well understood within the Force and by the Department of Defense leadership. Education of those in between remains an effort that needs to continue.■



THE ARABIAN GULF AS A MODEL FOR LITTORAL USW

by LT Travis M. Petzoldt, USN

Introduction

It has been one decade since the fall of the Soviet Union and the disappearance of the monolithic threat that drove United States force levels, strategies, and tactics for nearly 50 years. In the short period since then the U. S. Navy has redefined its role and shifted emphasis to influencing events on land from the sea. This requires access to the littoral waters of the world. Proliferating technologies are making safe access to this area increasingly difficult for the principal platform for power projection in the U. S. Navy, the carrier battle group. Three weapon technologies in particular are responsible for this, the missile, the modern sea mine, and the submarine. Now, smaller nations that cannot afford conventional naval power (or even larger nations who simply don't have the resources or technology) can disrupt the operations of larger navies operating in these coastal waters and prevent them from achieving their objective. The United States faces this possibility in several areas of interest, specifically the Korean peninsula, Taiwan, and the Arabian (Persian) Gulf. How might undersea warfare impact this situation? A scenario style study can be used to gain insight; here the Arabian Gulf will be used as the model.

Why the Arabian Gulf?

The Arabian Gulf is an excellent model for littoral warfare. It has a geographic chokepoint in the Straits of Hormuz, which are a mere 12 nm across at its narrowest point. It also happens to be the outlet for 20 percent of the world's oil production,¹ making it important for western nations to keep open and extremely attractive

¹ David Foxwell, "Sub Proliferation Sends Navies Diving for Cover," *Jane's International Defense Review*, (30/008-1997)

for an adversary to close. Anti-ship missiles, sea mines, and submarines are good weapons for access denial. Any U.S. battle group wishing to operate in the Gulf must pass through the Strait. The Gulf is shallow, its maximum depth being about 300 feet, and the waters are warm, with a high salinity and a high concentration of marine life. It also has a high shipping density. This is a poor acoustic environment. Reliable deep sound channels do not exist; it is predominantly an isothermal layer of water that traps sound between the surface and seafloor. While this sounds almost ideal it is anything but; the multiple reflections produce multiple returns for an active sonar system, making detection of targets and determination of range difficult, and multiple bottom interactions prevent accurate propagation loss predictions for passive sonar. The high shipping and high marine life levels produce higher ambient noise, further decreasing sonar performance. The increased density of marine life also produces higher attenuation and scattering, reducing the target information available.

The Arabian Gulf also features an excellent example of a littoral adversary: Iran. Iran has undertaken an expansion and modernization of its Navy in recent years. It is determined to be the pre-eminent naval power in the Gulf, and to control access through the Straits.² Iran also wishes to be able to make it difficult for adversary naval forces to operate in the Gulf and project power.³ Iran is well positioned to control the Straits, with naval bases in the Arabian Gulf and outside on the Gulf of Oman. Iranian access denial capabilities have concentrated on submarines, missiles, and mines. The anti-ship missile threat posed by Iran is credible; it includes a possible 24 SS-N-22 Sunburn coastal defense missiles with eight launchers, several hundred CSSC-2 Silkworm coastal defense anti-ship missiles (ASMs), and an additional 100 CSSC-3

² Foxwell

³ James Bruce, "A New Arms Race in the Gulf," *Jane's Intelligence Review*, (007/001-1995)

Seersucker ASMs.⁴ Iranian Thondor and Kaman class fast attack craft carry the Chinese built C-802 ASM, which was recently tested in the Unity-79 military exercise held in late October.⁵ The Sunburn flies at 3075 km/h and skims the surface at a mere 4.5 m as it flies toward its target, making it difficult to shoot down.⁶ Combine these missiles with submarines and a mined Straits of Hormuz and passage into the Gulf becomes a challenge.

The Submarine Threat

Iran has three Russian-built Kilo (Type 877EKM) diesel submarines. This is a very capable submarine. It carries the Test-71 ME and Test-96 wire guided torpedoes. The Test-71 ME is primarily an ASW weapon with active/passive homing, while the Test-96 is an ASW/ASuW (ASuW: anti-surface) weapon with active/passive sensors and wake homing. These Russian-built weapons have a range of about 8 nm.⁷ The Kilo has six torpedo tubes that have a rapid auto-reload capability; 18 torpedoes or 24 mines can be carried.⁸ Its detection/attack capabilities are supported by the MGK-400EM Shark Teeth hull-mounted low/medium frequency passive search sonar and the MG-519 Mouse Roar hull-mounted, high frequency, active search/attack sonar. The MVU-110EM combat system can track five targets simultaneously, two

⁴ *Jane's Sentinel Security Assessment*, The Gulf States- Navy- Iran, (22 Nov. 1999)

⁵ Ed Blanche, "Iranian Navy Test-Fires New and Modified Missiles During Exercise," *Jane's Defense Weekly*, (15 Nov. 2000)

⁶ Bruce

⁷ *Jane's Underwater Warfare Systems*, (2001-2002) (JUWS)

⁸ Naval Technology-The Website for Defense Industries-Navy (www.naval-technology.com)

automatically and three manually. It has two diesel engines for driving on the surface and recharging batteries, which typically drive the 5,500 hp main motor. The Kilo also has a 130 hp economic speed motor for slow speed (< 6 kts) operation in an ultra-quiet mode. Operational range is 6,000 nm when snorkeling at 7 kts and 400 nm when submerged at 3 kts. The Iranian Kilos may possibly carry the SA-N-10 SAM (surface to air missile) for defense against airborne threats.⁹

The first Kilo was delivered to the Iranians in 1992 and arrived with a Russian crew to provide training. The last Kilo was delivered in 1997; the second two did not come with Russian crews. The Iranians had some problems early on with the batteries due to the hot weather but corrected this with help from India who also operates Kilo submarines.¹⁰ This led to some shortfalls in training and proficiency. Now all three are operational and operated together in the Unity-79 exercise, proving that Iran can sortie all three at once.¹¹ Their operational proficiency is rapidly improving. Many analysts in the past have underestimated the ability of a country that has recently acquired submarines to become proficient in their use, due to the large amount of expertise and experience necessary to run them. A historical analogy can help put this into perspective. On the eve of World War I Germany was the last nation involved to acquire submarines, they commissioned U-1 in 1906.¹² A mere eight years later Germany was able to sail these U-boats out into the North Atlantic and sink merchant shipping at will, without homing torpedoes. The Iranians should be considered proficient enough to surprise a modern warship with a wake homing torpedo.

The Iranians operate their Kilos out of Bandar Abbas on the

⁹ *Jane's Fighting Ships*. (2000-2001) (JFS)

¹⁰ JFS

¹¹ *Blanche*

¹² John Winton, *Below the Belt*. (London: Conway Maritime Press 1981) 89

northern shore of the Straits of Hormuz. There are plans to move them to Chah Bahar on the Gulf of Oman. This planned base may have hardened bunkers to protect these assets while in port.¹³ It is obvious that the Iranians take these submarines very seriously, evidenced also by the money put into these vessels with little similar investment in their surface forces.

The Mine Threat

It is painfully obvious to any naval planner that the Straits of Hormuz are easy to mine. To anyone versed in mine warfare, they are also painful to clear. The poor acoustic conditions make it difficult to find mines, especially bottom mines. And once found, they have to be swept or cleared, actions that keep friendly forces within the range of anti-ship missiles. Also, the minefields could be patrolled by the Kilos as an additional hazard. Iran has an estimated 3,000 mines, including the Chinese built EM52 that lies on the bottom until activated, and then rockets to its target.¹⁴ The Kilo can lay mines covertly. Once mined, any ship sunk in the Straits becomes a further hazard to navigation and will eventually block this vital passage itself. This is probably the most potent threat Iran has.

A Model for Countering the USW Threat

Any military planner who wishes to operate in the Arabian Gulf in the presence of these threats must plan how deal with them. In an article published in 1988, Jan Breemer proposed a "model" for conceptualizing alternative means for defeating the submarine

¹³ Bruce

¹⁴ *Jane's Sentinel*

menace.¹⁵ His historical frame of reference was the U-boats of WWI and WWII, but these ideas can be extended to today's littoral USW threats, both submarines and mines. First, the war-making purpose(s) of the enemy's undersea campaign must be identified. What is it he plans to accomplish by the use of submarines or mines? Then the question becomes one of how to defeat this purpose. For example, in World War II it was Germany's intention to strangle Great Britain by sinking his merchant shipping. Therefore, any ASW effort by Great Britain should have been aimed at preventing Germany from accomplishing this. The most effective means turned out to be the convoy system, which while it did not directly destroy the menace it did prevent Germany from achieving its submarine warfare purpose.

When confronting undersea threats there is a spectrum of options available. They fall into two categories: how to defeat the enemy's purpose and where to do it. There are three basic options for each. His purpose can be defeated by destroying his ability, by containing this ability, or by limiting the effectiveness of his undersea methods (called blunting from here on.) These can be done at the source (such as the submarine's home base), while he is transiting to his mission, or while he is engaged on that mission.¹⁶ Some of the lines between locations are less distinct in littoral USW than they are in the open ocean. The matrix below summarizes this model.

Undersea Threat Decision Matrix

How Where	Destroy	Contain	Blunt
At the Source			
In Transit			
On Patrol (Attacking)			

¹⁵ Jan S. Breemer, "Defeating the Submarine: Choosing ASW Strategies- Part 1: The First World War," *Naval Forces*, October 1988: 34-41

¹⁶ Breemer 34-41

Iran's Undersea Purpose

Iran's USW purpose can plausibly be inferred from the country's overall naval aspirations. It wants to be the pre-eminent naval power in the Arabian Gulf and be able to control the flow of shipping through the Straits of Hormuz.¹⁷ Submarines and mines serve this purpose: to deny access to larger naval forces seeking to operate in the Arabian Gulf or the Gulf of Oman. Success at doing so will prevent or at least make it very costly for a U.S. carrier battle group to operate in these littoral waters, and thereby possibly defeat U.S. war-making purposes. Conversely, it will be necessary for the United States to defeat the aim of the Iranian USW effort.

Destroying the Menace

The first option that most naval planners are likely to consider is destruction of the threat, and for good reason. It is the most final of all the methods, especially in the case where the enemy's numbers are limited. Iran only has three Kilos and no indigenous production capability, so once those three submarines are destroyed there would be no recurrence of the problem. This is the case for many nations that the United States may have to face in the foreseeable future. Destroying the Kilos at the source is the most attractive, since it solves the first and most difficult problem associated with anti-submarine warfare, finding the submarine. The U. S. has proven in operation Desert Storm that it has the precision strike capability and intelligence assets to hit the submarines in their homeport of Bandar Abbas. This is the best option if it presents itself. This operation used to entail a great deal of risk when done by aircraft or surface units due to the typically heavy defenses around an opponents home base, but the land attack cruise missile changed that. The United States can now launch attacks against heavily defended bases with little risk. The key will be to send enough weapons to overwhelm the anti-air defenses around the

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submarines and allow them to reach and destroy their target. Due to the small number of targets the battle group commander will most likely have these resources at his disposal. One difficulty arises if the submarines are moved to Chah Bahar into what may be hardened submarine pens;¹⁸ they won't be as easily destroyed by U.S. Tomahawks, nor will it be as easy to ascertain if they are even there. The second problem is that this strategy assumes Iran has committed a strategic error and initiated hostilities without sortieing their Kilos. This should not be taken as a given. So while destroying the submarines at their base is the best option, the U.S. fleet commander cannot rely on the opportunity to do so before he is faced with the problem.

This same option, i.e. destroying the threat at the source, exists with mines, but is more difficult. One, they are easier to hide from intelligence assets. Two, they can be more readily distributed and protected from land-attack missiles and attack aircraft. Three, they also will most likely be deployed before the outbreak of hostilities, giving the fleet commander no time to destroy them before they are planted. If the opportunity exists, destroying Iran's mining capability at the source solves the much more difficult task of having to find them in the water and dispose of them there. Again, however, the fleet commander can't depend on this happening.

The second option is to destroy the threat while in transit. This is a little different in a littoral region than it would be in the open ocean. Transit should be considered to start once the submarine is underway from its homeport. Intelligence assets may notice that the submarine has left port, giving a warning to the fleet commander. If the carrier battle group is already on station, it can monitor the sub's passage to some extent, depending on the location of assets. A submarine getting underway will use radar (that can be detected and identified) to make a safe passage out into open water, or it may be sighted (or picked up on radar) by units in the region while on the surface in water too shallow for submergence. This depends on having assets in a location able to pick up these indicators. Surface ships could be used, but these are vulnerable to

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shore or patrol craft based missile attack. Aircraft could also be used, but their endurance is more limited and they are also vulnerable to attack. The best platform for this would be a submarine, which could lurk in the area undetected waiting for the opposing submarine to come out. This is the best time to attack and engage an underway Kilo; it will make more noise while running on the surface using its diesel engines and it may be using radar. It may also be tracked visually. The problem with using the submarine is that it has to operate in water that is safe to dive in, thus giving the target an opportunity to also submerge before it can be detected. This is a function of how well trained the two opposing crews are; the more proficient crew will be more willing to operate a submarine in shallower water than the less proficient crew. It is also a function of ship size. Submarines maneuver better when they are shorter and wider. The Kilo has an advantage here over the Los Angeles class nuclear submarine used by the U. S. Navy, and may be able to operate in shallower water. Currently the Iranians seem to operate their Kilos in the deeper Gulf of Oman,¹⁹ which may indicate that they are not yet comfortable operating in the shallow water of the Arabian Gulf and the Straits of Hormuz. If so, this should give U.S. forces some opportunity to locate them while transiting out. However, the Kilos proficiency will continue to improve so that crews will become more comfortable with submerging before leaving the Strait.

In that event, the target could then be prosecuted once he was underway and not under an umbrella of shore-based protection. Surface units have to be further away from the harbor choke point in order to stay out of missile range, or an assessment has to be made as to how survivable the surface unit is from any possible missile attack. In the Arabian Gulf this forces surface units to set up a line to the west inside the Gulf, the northern end of which may still be inside shore-based missile range (which may be used to cover the Kilo's transit), or they must set up to the east of the Straits out in the Gulf of Oman, depending on where the Kilo is

¹⁹ Jane's Sentinel

going. This would be a wider area to cover for which the commander may not have the assets and will give the Kilo time to submerge, at which time the poor acoustic conditions will hide it well. The problem only gets worse as the area that needs searching becomes larger. Once the Kilo has moved out of port and submerged, it will not have to surface again, since it can snorkel to recharge its batteries. Now, the battle group commander needs the Kilo to make a mistake, for example, having the snorkel mast detected by a search-radar or creating enough noise that it can be heard. Due to geography, the Kilo may not even have to snorkel before reaching its target, robbing the battle group of a valuable opportunity to detect it. If operated with skill, it is unlikely that the battle group will be able to relocate the Kilo until it reaches its target.

Another possible method of detecting submarines as they leave port is to place sensors outside harbors and roadsteads. The United States is working on this in the form of the Advanced Deployable System (ADS), a system of transportable acoustic sensors that could be placed in the area of interest prior to the outbreak of hostilities or the arrival of the battle group. The U.S. Navy plans for initial production to commence sometime this decade.²⁰ These kinds of sensors can provide the cuing needed to shrink the area that surface, air, and subsurface units need to search and free up units that would otherwise be tied up in surveillance. It gives the fleet commander more flexibility with his limited resources. Once the Kilo is detected underway, the battle group could send assets to prosecute it. It would still be a difficult task, and success would depend on the proximity of the attacking units and on the ability of the cueing system to send timely data to the battle group. This method also points to another way of destroying the submarine in transit, namely by mining his homeport. This also reduces the number of assets required to maintain a vigil on the port, but does not eliminate the need for them entirely. An un-patrolled minefield will be cleared

²⁰ David Foxwell and Richard Scott, "Offboard Sonar Charts a Fresh Course for ASW," *Jane's Navy International*, (104/002-1999)

and allow safe passage of the enemy submarine. Another submarine is the ideal platform for mining the harbor covertly and patrolling it once the minefield is laid. The shallow water depth may prevent the submarine from placing the mines as close as desired, however.

Mining and then patrolling the harbor again assumes that Iran failed to get their boats to sea prior to initiating hostilities. This scenario is unlikely and will most likely not be a solution available to the fleet commander.

The last opportunity to destroy the enemy submarine occurs while it is engaged in its purpose, attacking the battle group or merchant shipping. This makes the enemy submarine easier to find since the area that needs searching is smaller than when it is in transit. It also allows the battle group commander to keep his limited assets close to the carrier where they are needed for other roles such as air and missile defense. The Kilo will still be difficult to find and will be on its best behavior while getting into position for attack, it cannot be depended upon to make any revealing mistake at this stage. The Kilo also carries weapons that make its standoff range considerable; it could launch wake homing torpedoes from as far away as 5-8 nm if it can detect and track the target from that range. The Kilo is completely capable of making an acoustic attack on a large warship since it will hear the ship before the ship can detect the submarine. Active sonar from surface units will do little more than give the Kilo targeting information; they will probably not find it before it can attack. The Kilo's six torpedo tubes provide for a large salvo ability and the ability to rapidly reload them makes it hazardous for a surface ship to approach the submarine's position. At this point an aircraft is probably the best means to attack an exposed submarine threat. Surface units that carry the Mk 50 torpedo have a weapon with good shallow water capabilities and a high probability of target kill, but the Mk 50's range is roughly equivalent to or inside that of the Test-96 wake homing torpedo carried by the Kilo. This makes it unsafe for a surface unit alone to prosecute a Kilo submarine.

Submarines could also be used here; they are still the most effective acoustic sensor and weapons system available to kill

another submarine. There are two issues here, acoustic advantage and ASW proficiency. The submarine with acoustic advantage will get to shoot first. It is difficult to tell which submarine will have it since both a Kilo and a Los Angeles class submarine are both very quiet targets. And no matter which submarine has it, the ranges are likely to be fairly small and now the effects from an own ship's weapon become important, as well as counter-fire from the opposing submarine. The Los Angeles submarine has an advantage in submerged speed and is more capable of evading a weapon than the Kilo is. The Los Angeles class could make up for lack of a positive acoustic advantage by using active sonar and depend on evasive maneuvers to keep itself out of trouble. This is very risky not only because it gives the opposing Kilo a better chance to fire but also may not help to find the Kilo in the poor acoustic conditions. A long-standing difficulty in using submarines to directly protect the battle group concerns communicating with and coordinating the submarine's efforts. A submarine generally has to be at periscope depth to communicate and receive cuing information from other sources; this limits the submarine's maneuverability. However, due to the surface duct nature of the acoustic environment, this should not degrade its sensor performance as much as it normally would in deep water. Despite the poor acoustic conditions of this littoral region, there is generally no strong layer that a submarine can hide beneath. This is not always true; very low sea states and high temperatures during the daytime can create a surface layer of warm water from 30-45 ft deep which will have some effect on the acoustic performance of a submarine's sonar.²¹ There is also a marked difference between day and night biological concentrations, making ambient noise levels near the surface higher at night and degrading sonar performance. The submarine could stay in contact with the battle group, using its own sensors to search the area, and be available to send a threat warning to the battle group commander or receive target information that will allow the

²¹ Brian Longworth, "Solutions to the Shallow-Water Challenge," *Jane's Navy International*, (101/005-1996)

submarine to go prosecute a submerged contact.

Another detection method being considered is low frequency (<1 kHz) active towed sonar systems. These systems could be deployed off surface units that screen the carrier and used in a traditional mono-static (source and receiver the same) or multi-static (source and receiver are physically separated) configuration with other units. This option is being investigated by the Office of Naval Research (ONR) and shows some promise. However, due to the long wavelength false target detection rates could be fairly high.²²

Prosecution and destruction of the submarine in close proximity to the enemy submarine's objective requires a concentrated, coordinated effort on the part of the battle group. It becomes more important than ever for all platforms to be able to share data and a common tactical picture.

Destroying mines in this phase of the *scenario* is nothing more than traditional mine hunting. As stated before, poor local acoustic conditions make this difficult. It is also time consuming. Since the most likely area to be mined is the Straits of Hormuz, traditional mine-clearance forces will be subject to shore-based missile attack. The minefield is also likely to be patrolled by fast patrol craft armed with anti-ship missiles, or Kilos. Thus, destruction of the enemy's missiles and patrol forces is needed; it may also be necessary to destroy the Kilos prior to sending in traditional mine counter-measures forces. The perfect mine hunting and clearance platform may be a submarine. They are not vulnerable to missile attack and have a better chance of defending themselves against any Kilos patrolling the minefield, if detected at all. This will require some development of mine detection and localization capability aboard the submarine. The safest method lies in the development of unmanned undersea vehicles that can swim out and localize the mines, then return to the submarine. The U.S. Navy has a Near-term Mine Reconnaissance System (NMRS) UUV that can be deployed and retrieved through a torpedo tube and can be used to search out minefields. The Navy is also working on the follow on

²² Foxwell/Scott

Long-term Mine Reconnaissance System (LMRS) UUV, expected to be operational in 2003.²³ Once the mines are detected, the submarine could deploy divers to destroy the mines, though this would require decompression ability onboard the submarine.

Containing the Threat

The mine threat can be contained by destruction of the Kilos, thus eliminating any covert method of deploying mines, and next by establishing air and sea superiority to prevent other forces from deploying mines. This assumes that mines have not been planted yet and the United States has the strategic initiative. Otherwise, containment of the mine threat is not possible.

Containment of the enemy submarine starts with the threat of destruction. The Kilos could be contained at the source by a naval presence off their home base, but this would subject those forces to missile attack until the opposition's missile capability can be destroyed. Doing so also ties up forces that may be needed elsewhere. Submarines can also be used to contain the Kilos in port. The submarines may have to be a semi-overt presence, which may require the occasional use of active sonar or the destruction of another unit. Keeping containment leak-proof is probably impossible, for the same reasons it is difficult to destroy the Kilo while it is in transit out of port. It does bring up a slightly different method of containment, which is to shadow the threat submarine as it leaves homeport, and be ready to destroy it at some point or to report its movements to the battle group so they can take early defensive action. This is difficult due to poor acoustic conditions; it also takes one submarine per Kilo to carry out. The battle group commander may not have these assets available. This strategy is more acceptable if hostilities are imminent but not started, so the fleet commander can monitor the Kilos as a precautionary measure. The off-board sensors described earlier are especially useful in this case. They could be placed well in advance of anticipated hostili-

²³ Josh Corless, "The Silent Service Gets Vocal," *Jane's Navy International*, (105/001-2000)

ties and provide warning of the Kilos movements, which could be a pre-cursor to hostilities. The battle group commander could then dispatch units to intercept the Kilo and ready his forces for a possible attack. A minefield laid around their homeport could also contain the threat submarines. As in the destruction case, these minefields would have to be patrolled to be effective.

Limiting the Threat's Effectiveness (Blunting)

The enemy's USW effectiveness can be blunted while his submarine is transiting to its patrol area or while it is engaged in attacking. While in transit, it can be harassed by air patrols, which may make it more risky and more difficult to expose its snorkel mast, and by surface or submarine patrols using active sonar. This may force the enemy submarine to take a longer, more circuitous route to its original target to avoid possible detection. This method requires either an ability to keep track of the submarine's movements (in which case it could probably be attacked) or numerous forces to increase the likelihood of intercepting it. While this does expose those forces to an attack by the Kilo, such an event would surrender the submarine's element of surprise in pursuit of its desired target, the battle group itself. This is not a preferred method of dealing with the Kilo but may have to be used to protect higher value units. The Kilo will not be able to achieve its war making purpose of preventing U.S. forces from projecting power if it does not get an opportunity to attack the carrier. This is the basic idea behind surface escorts screening the carrier from ASW threats. In this case the objective must be to keep the Kilo out of weapons range of the carrier, this is about 8-10 nm with existing weapons.

There are two other methods of blunting the Kilos war-making purpose. The first is trivial in terms of undersea warfare capability; eliminate the need to operate in the littoral areas. Since this is not yet a possibility it will not be discussed here. The second is to find some method to make submarine attacks less effective. This is the idea of torpedo defense, or the ability to destroy an incoming torpedo before it gets within range to damage its target. This is

being worked on by many of the world's navies but is not yet a reality. Some of the problems are in detection of the torpedo, especially in the poor acoustic environment of the Arabian Gulf, targeting the torpedo, and then launching a weapon that can intercept the torpedo.²⁴ The best options currently available are evasive maneuvers and torpedo decoys; these tend to be ineffective against wake homing weapons.

Conclusion

For now and the foreseeable future the U.S. Navy will be the world's largest and best. Most nations will not be able to challenge that supremacy and will seek to undermine it by making it risky for the United States to deploy its power projection assets in the littoral regions of the world where they are most effective. The best assets available to these nations will be quiet diesel submarines, sea mines, and effective anti-ship missiles. As can be seen by the example Iran provides, this is exactly what these nations are procuring. We need to devise strategies, tactics, and technologies to deal with these threats or risk watching our most powerful assets sit outside the areas they are most needed or be lost trying to enter them. ■



²⁴ David Foxwell and Mark Hewish, "Awake to the Torpedo Threat," *Jane's International Defense Review*, (031/003-1998)

DARTER AND DACE AT LEYTE GULF

by CAPT H.H. Caldwell, USN(Ret.)

Editor's Note: Captain Caldwell was a junior officer in DACE during the action described.

Fought in October of 1944, the Battle off Leyte Gulf was the greatest naval battle of all times. It gets top marks for complexity and for the number of combatant units committed to the struggle. While most of the action took place off Leyte in the Philippine Sea, peripheral skirmishes occurred from Japan to Borneo.

The opening salvo of this mega-melee was fired by two 7th Fleet submarines operating as a wolfpack in Palawan Passage near the entrance to Balabac Strait. Their orders were to patrol this focal point, and to report to the Commander, 7th Fleet the presence of any naval task forces or major units of the Japanese Navy. Once reported, they could be attacked.

Shortly after midnight on 24 October DARTER (Commander D.H. McClintock, USN) and DACE (Commander B.D. Claggett III, USN) were lying to about 50 feet apart while the two commanding officers chatted by megaphone. Suddenly DARTER's radar operator broke in to report a ship contact at 15 miles. Both submarines cranked up flank speed and took course to intercept the contact, which developed into a formation of ships making 15 knots up the Palawan Passage from the south. The high speed indicated a naval task force.

By dawn the Japanese task force was still churning northeast on a steady course at 15 knots. During the mid-watch DACE and DARTER had taken station ahead of the Japanese ships, using radar to map their formation and count targets. The Japanese task force appeared to be aligned in two parallel columns about two miles apart. Based on the size of the radar pips, each column contained several major ships and a large but undetermined number of escorts. Both submarines had reported their observations to headquarters and were cleared for attack.

As the sky lightened in the east, DARTER turned back toward

the left hand column and dove. DACE continued on for 20 minutes—then she too submerged into the quiet deep to await developments.

They were not long in coming. At 0632 DARTER closed the lead ship of the left column to less than 1000 yards, and pumped five torpedoes into the heavy cruiser ATAGO. Turning sharply away to expose her after torpedo tubes, DARTER then scored four hits out of four shots from the after nest into the next ship in column, the heavy cruiser TAKAO. Damage done, DARTER stole away listening to the racket of exploding ships and retributive depth charges.

DARTER's attack was unquestionably the most damaging individual submarine attack of the war. This came as the result of DARTER's near perfect attack on the two lead ships of the left column, plus an incredible double dose of good luck. The first piece of luck was that the cruiser ATAGO happened to be the flagship for Vice Admiral Takeo Kurita, the task force commander. ATAGO sank fast enough to put the Admiral in the water whence he was picked up by a destroyer and taken to the battleship YAMATO, which became his new flagship. ATAGO sank with considerable loss of life, including about half of the flag communications division. Poor communications would hamper the task force for the remainder of the Battle of Leyte Gulf.

The other piece of good luck was that TAKAO stubbornly did not sink. DARTER's four torpedo hits wrecked TAKAO's main propulsion plant (she never sailed under her own power again) and tore off her rudder, but apparently missed the ship's magazines, so damage control prevailed. Had the extent of the damage been recognized by the Japanese at the time she might well have been scuttled. But she was saved, and two of Kurita's destroyers had to be left behind to protect her while the rest of the task force pushed on toward Leyte Gulf. There to meet them a few miles up the Palawan Passage was DACE. She had earlier expended all her torpedoes aft, but had six loaded in the forward torpedo tubes. As the Japanese task force closed, DACE scored three hits in IGUNO, another cruiser of the same class as ATAGO and TAKAO. IGUNO sank almost immediately, and the task force fled north after delivering 36 depth charges—some close.

It is said that in war, fortune favors the bold. DARTER, in one slashing attack, effectively removed four Japanese warships from the task force sent to destroy our amphibious forces bringing General MacArthur and his troops back to re-conquer the Philippines. Professional competence and good luck went hand in hand.

But the day was not over. With the departure of the Japanese task force, DARTER came to periscope depth and found the injured cruiser lying to, guarded by two destroyers and the cruiser's scout plane. DARTER had six torpedoes remaining, all in the forward torpedo tubes. It seemed to Commander D.H. McClintock, DARTER's skipper, that the sea surface would be tidier if he could sink the cripple. DARTER bored in, but was foiled by the alert Japanese escorts. DACE also made a pass, but was chased away. Both submarines drew off and rested their crews.

After dark on the 24th, DARTER and DACE surfaced, located the cruiser and its escorts, then conferred on a plan of action. The three Japanese ships were headed southwest back down the Palawan Passage toward Singapore. One destroyer had taken TAKAO in tow while the other provided protection and led the way. Formation speed was about five knots.

DACE and DARTER took stations on either bow of the Japanese formation. The initial plan was for DARTER to attack first on the surface. If she missed, DACE with her four remaining torpedoes was to finish off the cruiser.

With the target's course and speed well established, DARTER built up speed to 17 knots for her run at the target. As the submarine started to turn and head for TAKAO, five miles astern, she ran up on Bombay Shoal, a half mile wide reef near the middle of Palawan Passage.

DACE, waiting for a message from DARTER announcing that she had commenced her attack, instead received one which said, "Aground". Breaking away at once, DACE ran back around the rear of the Japanese formation, up the starboard side, and closed DARTER.

DARTER had run up on the reef at close to full speed. When she slid to a stop the bow was elevated about six feet and the stern lay over deep water. The deceleration was so smooth that none of

the crew was knocked off his feet when DARTER took ground. It was quickly evident to Commander McClintock that DARTER was too far up on the reef for any efforts by ship's company to extricate her, so the crew was set to destroying code books and breaking up equipment such as the radio transmitter and the torpedo data computer. The three scuttling charges, 55 pound blocks of TNT, were removed from the magazine, wired up and distributed through the boat. In the forward torpedo room a torpedo was pulled from a tube and one of the demolition charges was placed just under the warhead. Husky crew members attacked electronics equipment with sledge hammers and crowbars in a dedicated effort to leave nothing useful for the Japanese. The rubber boat was taken topside, inflated and made ready for use. All this was done as quietly as possible since the three Japanese ships were coming slowly by on their way south, and were predicted to pass within three or four miles.

When DACE arrived at the scene, it was time to take off DARTER's crew. DACE maneuvered near DARTER's stern with a mooring line over to DARTER's after capstan to help keep the boats close together without having DACE wash up on the reef. Each submarine deployed its rubber boat and started ferrying DARTER crew members over to DACE. When they arrived in groups of four or five they were sent down the conning tower hatch to the crew's mess for a large bowl of soup, then off to find a place to sleep. Such places became increasingly hard to find.

After the timer for the demolition charges was set, the last boatload of DARTER crew paddled over to DACE. The rubber boat and the line to DARTER's stern were discarded and DACE backed away from the reef. DACE took a position about 1000 yards off DARTER's beam to await the explosion. At five minutes to six with the sky getting light in the east, a light explosion was detected by sonar, but the charge planted under the torpedo was apparently a dud. DACE then lined up and fired her last four torpedoes at DARTER's abandoned hulk. Although torpedo depth was set at zero, all four exploded harmlessly on the reef before reaching the stranded submarine. DACE's gun crew was called and quickly began to pump four inch shells into DARTER, starting at the conning tower, then moving up to the bow in an effort to set off

DARTER's torpedoes. No major damage was observed, except for igniting the forward fuel group. This produced a large puff of black smoke which may have caught the attention of a Japanese aircraft which soon joined the party. While the gun crew and the bridge watch scrambled below, the Japanese plane dropped his bomb near DARTER.

DACE submerged and drew off to let all hands catch their breath. The Japanese cruiser and its escorts were far past by now. The problem to be solved was how best to accommodate 81 unexpected house guests—DARTER's crew.

Since everyone was physically and emotionally exhausted, the most important logistic requirement was a place to sleep. Every flat space was soon staked out, with DARTER sailors asleep in the torpedo stowage racks, on the narrow walkways outboard the main engines and anywhere else they could find. The existing bunks were never empty for more than a few minutes at a time.

The wardroom now had a population of 19 officers. Eight bunks were available, with room for three more sleepyheads on the deck in the three staterooms. Two DACE officers were on the bridge at all times, and the remainder played non-stop poker in the wardroom (except when a meal was served) for 11 days.

In addition to having a superior enlisted crew, DARTER had a lot of talent in the wardroom. Ten years later two DARTER officers emerged as pioneers in the nuclear power program. Lieutenant E.P. Wilkinson, Jr., USNR, a mathematics major in college, joined the regular Navy after the war and, following an active career in diesel electric submarines, was picked by Admiral Rickover to be the first commanding officer of USS NAUTILUS (SSN 571). He was a Commander at that time, later he retired as a Vice Admiral. Ensign D.M. Miller, USN, was a very junior officer, who later as a Commander in 1961 helped place in commission USS ABRAHAM LINCOLN (SSBN 602) as Commanding Officer of the Gold Crew. ABRAHAM LINCOLN was one of the five initial Polaris submarines.

Food was a matter of concern. DACE had loaded stores for 90 days expecting to be at sea for 60. She actually was out for 67 days and served double rations for the last 11. The food was wholesome



and well prepared, but lacked variety as the days wound down. Remarks were made about a steady diet of mushroom soup and peanut butter sandwiches, but no one went hungry and DACE never ran out of coffee. Two meals a day were served to the 166 people on board, requiring seven sittings each in the crew's mess and three sittings in the wardroom.

Once clear of Bombay Shoal, DACE headed for Fremantle, Australia, some 2,200 miles away. Her track took her through Karimata Strait into the Java Sea, through Lombok Strait into the Indian Ocean, then down the west coast of Australia to Fremantle.

Bombay Shoal was a lonely piece of foul ground rising barely to the surface, well out in Palawan Passage. It had snared victims before, but all traces of them had vanished. No lighthouse or buoy marked its location to warn away ill-starred mariners, but DARTER changed that. Immovable, she stood as a sentinel on the shallow coral reefs, and ships that came her way knew not to follow in her track.■

VIDEO OFFER

The Naval Submarine League has prepared video tapes of the three panels that comprised the *Rickover*, *Submarines*, and the *Cold War* seminar conducted by the Smithsonian Associates and the League at the Naval Memorial auditorium on April 29, 2000.

The three video set covers *Nuclear Power Comes of Age* with panelists Elenore Rickover, Carl Schmitt, Bill Wegner, and Ted Rockwell; *Designing and Building the New Subs and Their Payloads* with panelists ADM Ken McKee, RADM Bob Wertheim, and CAPT Harry Jackson; and *Silent and Stealthy Sentinels—Their Contribution to the Cold War Victory* with panelists ADM James Watkins, RADM Sumner Shapiro, Rich Haver, and Dr. David Rosenberg.

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SINUSOID OF THE ARMS RACE AND AMERICAN STRATEGY

by Dr. George Sviatov
Captain First Rank, Russian Navy (Ret.)

Sinusoid of the Arms Race

If somebody tries to characterize the bygone century from the point of view of war and peace, burden of wars and military preparations, he or she could use the not uninteresting methodical instrument for analysis of these problems called the *Sinusoid of Arms Race*. It could be applied both to war and peace time.

Regarding an individual country—it is the percentage share of military expenditures (for a war or military preparations) in a country's gross national product (GNP) as a function of time (years). In essence, all is very simple and sufficiently indicative. Such an approach is also usable relating to a coalition of countries. All works of the well known (for specialists at least) Stockholm International Peace Research Institute (SIPRI) are based on monitoring and comparing all absolute and relative military expenditures of all leading countries of the world.

Let us try such a methodology for an enlarged analysis of war and peace problems in the 20th century.

First of all we'll begin from a fact which few people now remember. Exactly 100 years ago the troops of Germany, Japan, Great Britain, the USA, France, Russia, and Austria-Hungary occupied Peking, having suppressed the people's anti-imperialist Ichetuan rebellion, which was called the Boxers' Rebellion by foreigners. That action had been finished in 1901 by signing a one-sided agreement. The second hotbed of war on the break of the 19th and 20th centuries was the Anglo-Boers War of 1899-1902. It was ended by Great Britain's victory and transformation of the Orange Free State and Transvaal into the British colonies.

To complete the picture of these centuries' period of changes, it would be reasonable to mention the Hispanic-American War of 1898, that ended by joining to the USA, Puerto Rico, Guam, Philippines, and in fact part of Cuba. In addition, there was the

Russo-Japanese War of 1904-1905, which was ended by the defeat of Russia and tearing away from it South Sakhalin and Port Arthur. By that action Russia lost its dominating role in Manchuria and Korea. That defeat was a cause of the first bourgeois-democratic revolution in Russia, the result of which became transformation of the absolute Russian Empire into the constitutional parliamentary monarchy.

The beginning of the 20th century gave evidence not only of the above mentioned [in contemporary terminology] major nation local wars but also the start of arms race (especially naval) in Germany, England, France, Russia, and the United States of America. But it was a peacetime arms race and its burden on the economy of these states was hardly more than 10 percent.

The geopolitical situation in the beginning of the 21st century is well known for all of us. To their amusement, the USA lost its main opponent and appeared as the only superpower in a delicate role of the world's gendarme. As in a perfect French movie *Fanfan Tulip* "Our enemy had betrayed us—he had turned his back to us!" Nevertheless, the expensive Cold War had ended. In the last decade the United States and the Russian Federation had reduced the burden of their defense expenditures down to 3 percent of GNP—the lowest levels after World War II.

But let us return to the bygone century and our sinusoid.

The first peak was due to World War I, with up to some 40 percent for the leading war waging countries. Its victims numbered 10 million persons killed. And the results of the four years of bloodshed in Europe were revolutions in Russia and Germany with the subsequent creation there of the communist and national-socialist regimes. As to the USA, which had entered the war only in 1917, its military spending and efforts were up to some 20 percent of GNP.

The second huge peak of the sinusoid fitted to World War II—up to 50 percent of GNP for the main participants of the war. Its victims became 50 million persons killed. The result was the complete defeat of the main states-aggressors: Fascist Germany and militarist Japan. It also brought the Nuremberg and Tokyo trials with the execution of the major war criminals—the first of such kind in the history of mankind. In the time of the Second World

War with Japan and Germany, the USA carried a very significant burden: the share of their military expenditures from GNP reached up to 45 percent and the number of their active armed forces was more than 12 million persons, and 400,000 killed. The share of the USSR in the war in economic sense was comparable with the USA. (Editor's Note: If the cost of the post-WWII Marshall Plan is added, the American economic burden due to the war expands significantly.) The number of its active military forces also was more than 12 million, but the people's losses were many times more: 10 million military personnel killed and the same number of civilians.

Almost immediately after the war the share of the defense spending in the USA GNP had been reduced to 4 percent, and the number of active troops to 1.5 million. The USSR also had reduced drastically the number of its regular armed forces but in less degree—to 3 million of military servicemen—and the defense expenditures—approximately to 8 percent of GNP. It took into consideration the USA nuclear monopoly and strategic effect of their nuclear strikes on Japan at the end of the war.

The first post WWII peak of the sinusoid fitted to the war unleashed by Kim Il Sung and Joseph Stalin; the Korean War of 1950-1953, when the military expenditures of the USA in the GNP had grown from 4 to 14 percent and the number of active armed forces—from 1.5 to 3.6 million servicemen. The number of American troops who participated in war actions approached 400,000. The burden of USSR military efforts was correspondingly increased—it provided the North Koreans and Chinese doing the fighting with weapons and ammunition, and a number of Soviet flyers directly participated in war actions against American pilots. The number of the Soviet regular armed forces had been increased up to almost 6 million servicemen.

In the middle and the second part of the 1950s, after the Korean War, the USA military expenditures were again reduced but not quite as significantly. The share of their military spending from GNP had been reduced from 14 to 8 percent and the number of active military from 3.6 to 2.5 million servicemen. After the death of Stalin in 1953, Nikita Khrushchev, who succeeded him, sharply

turned the rudder wheel of the Soviet state ship.

He disclosed Stalin's crimes against his own people and drastically reduced the number of Soviet armed forces from 5.8 to 2.4 million of regular servicemen, and improved by such a way the civil economy of the country. At the same time he accelerated the nuclear arms race. He began increasing the Soviet Missile Strategic Forces fast and provoked the extremely dangerous Caribbean nuclear missile crises in 1962.

The period of Kennedy's and Johnson's Administrations in the 1960s fits the second post-WWII peak of the arms race sinusoid, especially in the height of the Vietnam War, when the share of the military spending in the USA GNP had grown from 8 to 10 percent and the number of their active armed forces again had risen from 2.5 to 3.6 million of servicemen. More than half a million waged the war in southeastern Asia. In that period the USSR doubled its military spending (according to official data from 9.3 to 17.9 billion rubles) and had increased the number of its regular armed forces from 2.4 to more than 4 million, having deployed on the Far East more than an additional million servicemen in connection with the sharp worsening of the Soviet-Chinese relations and the military incidents on the border with China.

In the 1970s, after ending the Vietnam War and commencing the period of detente in the American-Soviet relations, the Administrations of Nixon, Ford, and Carter reduced the share of military expenditures from 10 percent of GNP in 1969 to 5 percent in 1980. In that period the USSR reduced its share of defense spending in the state budget from 12 to 6 percent, having reduced insignificantly their absolute amount (from 17.9 to 17.4 billion rubles) of direct spending for the armed forces.

The third post-WWII peak of the USA and USSR arms race could be known as Reagan's. He became a bold American President and decided to frighten his external enemies, and first of all the "evil empire"—Soviet Union. Having joked on one occasion that he was ordering to strike it by nuclear weapons, he announced his intention to begin realization of the Strategic Defense Initiative (SDI)—the program of a national system of antiballistic defense, which should have made strategic missiles *obsolete*. He had deployed in Europe the nuclear cruise missiles of intermediary

range and the lesser range ballistic missiles, Pershing-2, and mortally frightened the gerontocratic Soviet leadership, which ordered the KGB to search at night time additional electric bulbs burning in the defense departments of the leading NATO countries. *Having ruined* by such a way three General Secretaries of the CPSU (Brezhnev, Andropov, and Tchernenko), he had opened the road to Michail Gorbachev.

Having created for the USA military-industrial complex a paradise environment, Reagan promised to increase the share of the USA military expenditure in their GNP by one and a half times (from 5 to 7 percent) and to reach the figure of \$400B for their defense budget. He realized that program only partially, the share of the military spending in the GNP was increased only to 6.2 percent and the number of armed forces from 2 to 2.2 million of active servicemen. The USSR answered in the first five years of the 1980s by a symbolic increase of its official military expenditures (from 17.4 to 17.9 billion rubles), intensified the works on its SDI and implemented under the leadership of Marshal of the Soviet Union Nikolai Ogarkov, Chief of the General Staff of the Soviet Armed Forces, an increase in readiness of the Warsaw Pact Armed Forces and the Far East contingents. In such an environment of *increased vigilance*, the tragic incident with the Korean passenger airliner took place when a pilot of the Soviet antiaircraft fighter had downed the Boeing 747 with 269 passengers and crew members near Sakhalin Island.

What happened after the coming to power of Gorbachev and later Yeltsin, it is not necessary to write (it is a separate subject); and all that is fresh in our memory. It was mentioned above, that today's level of the sinusoid for the USA and the Russian Federation is 3 percent from GNP—the lowest level after World War II, although in the last election the USA outlined some tendency to increase that indicator and again expressed a wish to create a national strategic antiballistic system, although a limited one.

In conclusion, it is reasonable to ask of what practical use is all that reasoning. Because it is clear that when wars are ongoing, the military expenditures will grow fast. And the Cold War was not always cold, but also had sufficiently hot peaks with Korea and

Vietnam. The sense is that in contemporary conditions the burden of the arms race in the USA (and also in Russia and even to a greater degree in China) hardly could be called high. The USA spends on defense less than 3 percent from GNP, although in absolute figures their defense budget is approaching \$300B, with the number of their active duty servicemen at 1.4 million. With a maximum percentage in the magnitude of WWII (45 percent) their military budget would have approached \$4T and the number of active duty armed forces to 25 million servicemen.

On the other hand, there is a recently announced plan of an additional reduction of the Russian regular armed forces in the next five years by 365,000 servicemen from some 1.2 million men and the number of strategic nuclear warheads from 2,500-2,000 to less than 1,000. The relevant decrease of the Russian defense budget seems hardly achievable because the reduction of the Russian defense spending is lower than 3 percent of GNP. Although directed to improve efficiency of the Russian nuclear and conventional armed forces would not be easy to achieve from strategic and international points of view.

Two Local Wars or More? Strategy of Credible Deterrence

It is a very strange phenomenon, but the United States of America, for a couple of decades, has had no name for its political-military strategy.

The last one was named the Nixon-Ford Administration's strategy, which was called *Strategy of Realistic Deterrence* with two main concepts: 1) rough strategic nuclear parity with the Soviet Union in the number of deliverable offensive warheads on ICBMs, SLBMs, and strategic bombers; and 2) preparation of the United States' general purpose forces to initial fighting of one big war with either the USSR or PRC and a half a war with such countries as Korea or Vietnam. In essence it was preserved by the Administrations of Presidents Jimmy Carter, Ronald Reagan, and George Bush.

The previous strategy of the John Kennedy and Lyndon Johnson Administrations had been *Strategy of Flexible Response* also with two basic concepts: 1) strategic nuclear superiority in comparison

with the Soviet Union in 3 to 5 times in the number of strategic deliverable warheads on ICBMs, SLBMs, and strategic bombers; and 2) preparation of the United States' general purpose forces to the initial waging of two and a half wars with the USSR and PRC simultaneously and a half a war somewhere else (with such countries as Korea or Vietnam—in practice it became the Vietnam War).

But the first name of post-World War II American political-military strategy was *Strategy of Massive Retaliation* of President Eisenhower's Administration. That strategy, which was born as a result of the Korean War, did not have a concept relating to the United States general purpose (mainly conventional) forces, and in it there was no mentioning of the USSR and PRC. It told definitely that in response to a major aggression whether in Europe or Asia, the USA would have reacted by massive nuclear strikes in time and places by the American choice. In conditions of some 25 times superiority over the USSR in deliverable nuclear weapons, the USA calculated a victory in an unlimited nuclear World War III. The major nuclear power of the USA in those times was their strategic bombers.

It is necessary to mention that just after World War II and in times of the Korean War, the United States also had no name for their political-military strategy. Immediately after the end of the Great War nobody thought about a war between the major allies in that war. And the nuclear monopoly of the USA guaranteed their security. After the USSR tested its first nuclear bomb in 1949, the situation changed drastically. Stalin and Mao Tse-tung, by the hand of their puppet regime of North Korean communist leader Kim Il Sung, had unleashed the aggression against South Korea. The United States, together with their allies under the auspices of the United Nations, entered the war, which later was called in strategic theory *a half a war*. That half a war officially was against North Korea but it almost directly involved the USSR (directly by its aviation and indirectly through providing of armaments and ammunition) and the PRC (by sending a million of its so-called volunteers). The world situation at that time was extremely dangerous. The Commander-in-Chief of the United Nations

Forces, American General Douglas MacArthur, after the invasion of the Chinese *volunteers*, requested the use of nuclear weapons for complete victory in that war, not only in Korea but also against the PRC and even the USSR, but President Truman replaced him with General Matthew Ridgeway and began finding a compromise in reestablishing a pre-war status quo.

It should be mentioned that in retrospect the political-military strategy at the time of the Korean War could be called *Strategy of Flexible Response* by analogy with the Kennedy-Johnson strategy, because of the same potential major enemies (the USSR and PRC). So, the formula of two and a half wars in principle is applicable to both cases. *A half war* was the war with North Korea.

In the time of the Korean War, the first peak of the post-World War II arms race sinusoid between the Soviet Union and United States took place, when in the USA the share of military expenditures from GNP had risen from 4 to 14 percent and the number of active armed forces was increased from 1.4 to 3.6 million servicemen.

In the time of the Vietnam War (with the formula of preparation to the *two and a half wars*, the USA share of military spending from GNP had risen from 8 to 10 percent and the number of active armed forces was increased from 2.5 to 3.6 million servicemen. And that time *a half a war* was the Vietnam War. The second post-World War II peak took place in the Vietnam War period on the sinusoid of the arms race between the USA and USSR.

The third peak of the sinusoid could be called as Reagan's, when the share of military expenditures in the USA GNP had been increased from 5 to 6.2 percent and the number of active armed forces from 2 to 2.2 million servicemen. His political-military strategy also had no official name. Some called it a Strategy of Direct Confrontation with the Soviet Union. It had its nuclear strategic concept of superiority through the Strategic Defense Initiative (SDI) and preparation of the USA general purpose forces to *one and two-thirds wars* (one big war whether with the USSR or PRC and two local wars, for example in the Middle East and in Eastern Asia).

A significant number of people in the United States believe that the Reagan's military buildup and his *decisive* anti-Soviet rhetoric

played a major role in the collapse of the Soviet Union. Certainly it played some role. But the major role was played by the internal factors in the Soviet Union. With improvement of quality of life levels of its citizens and drastic growth of electronic communications means (an especially important role was played by the Russian Service of the Voice of America, Radio Liberty, and BBC), increased exchange of people between the USSR and West, the role of the CPSU had been decreasing and the capitalism and liberalism-oriented forces became prevailing. With help of a reformist leader of the CPSU, Michail Gorbatchev, and the crucial role of the renegade-communist, President of the Russian Federation Boris Yeltsin, the Soviet power and the Soviet Union had collapsed.

In the last decade of the 20th century (two years of the George Bush and eight years of the Bill Clinton Administrations) the United States of America also did not have an explicit name and formulation of their political-military strategy. With the collapse of the Soviet Union, mysteriously disappeared one big war with the USSR or PRC and later appeared the formula preparation for *two major local wars simultaneously*. As a result, the share of military expenditures in the USA GNP had been reduced from 6 to 3 percent, in other words by half, and the number of their active military forces from 2.2 to 1.4 million servicemen. Correspondingly the indicators of the Russian defense preparations (the share of military spending in GNP) also had been reduced to some 3 percent and the number of the regular armed forces from 3 to 1.5 million servicemen). As a result of START negotiations and some unilateral actions, the number of strategic nuclear warheads in America and Russia have been reduced in half (roughly from 12,000 to 6,000). At the same China did not reduce the number of its military forces (some 3 million of active duty servicemen), and increased its number of strategic nuclear warheads by a small amount, although the share of its military preparations in the GNP was also reduced because of the rise of the PRC's GNP in the last decade (it is less than 3 percent).

Such a significant reduction of the share of defense expenditures in the GNP of the USA in the 1990s created the *most favorable nation status* for President Clinton's Administration. It allowed

liquidation of the budget deficit and creation of significant budget surpluses for reduction of the federal debt. As to local wars, the USA in that time had at least two major *victorious* local wars (with Iraq and Yugoslavia) but not simultaneously.

It is not known why the Clinton Administration did not *invent* a name for its political-military strategy. It seems the name *Strategy of Selective Response* with one concept of rough strategic nuclear parity relating to the Russian Federation and another concept of preparation to two-thirds wars (or two local wars simultaneously), would have been proper. Such a name would have been consistent with another strategy name of democrats of the past—*Strategy of Flexible Response*.

But now the most interesting question is about the name and content of the political-strategy of the new George W. Bush Administration. First of all, about historical analogies. The last republican strategy's name was *realistic deterrence*, which does mean less response and more deterrence.

As to the essence of the strategy, it seems that a major novelty would be real development and deployment of a limited strategic ballistic missile defense and step-by-step deployment of a number of American tactical ballistic missile defenses in Europe and Asia. At the same time the Russian federation (mainly by financial reasons) will push on additional reductions of the Russian and American offensive strategic nuclear forces to some 1,500 warheads. But the USA probably would be reluctant to accept it without Russian concessions relating to American strategic BMD. Such a combination could provide for the USA a kind of limited strategic nuclear superiority.

Probably significant changes would be introduced to the concept of the general purpose forces' development. It seems probable to return to the concept of preparation to initial waging of *one and a half wars* simultaneously (with China or Russia and *a half a war* in some other place—in the Middle East or in East Asia). Such a development would require an increase in the number of the general purpose armed forces of some 20 percent and the share of USA defense expenditure in their GNP from 3 to 4 percent.

In conclusion it would be reasonable to suggest a name for the new American political-military strategy. Maybe the name of

Strategy of Credible Deterrence with two concepts: 1) some degree of strategic nuclear superiority relating to Russia and, of course, China; and 2) preparation of the USA general purpose forces to *one and a half wars* (with China or Russia and a half war somewhere else) would be relevant. At the same time, mentioning in such a strategy of the Russian Federation and the People's Republic of China might be improper for diplomatic reasons. In this case it would be possible to use a more vague language and call such a power *a potential hostile major power*.¹

For more than a century (since the Spanish American War) United States defense policy has been based mainly on protecting U.S. economic and political interests overseas when those interests, as well as regional and sometimes global peace and stability, were threatened and disrupted by hostile powers. The U.S. Navy played, is playing, and will play a very important role in American military posture. Today it is in first place in the U.S. defense expenditures. Tomorrow in connection with the decision of President George W. Bush to proceed with development and deployment of limited strategic and significant theater ballistic missile defenses and a possibility of a crisis, which might be connected with Taiwan, its role will be increasing in deterrence and defense of American vital interests. ■



¹In a major speech at the National Defense University on May 1, 2001, President George W. Bush said: "I am committed to achieving a *credible deterrent* with the lowest possible number of nuclear weapons consistent with our national security needs, including our obligations to our allies." (Italics added.)

DOLPHIN SCHOLARSHIP DISTINGUISHED ADVISORY BOARD

The Dolphin Scholarship Foundation (DSF) recently hosted the second biennial meeting of their Distinguished Advisory Board on May 10, 2001.

Rear Admiral A.L. Kelln, USN(Ret.), Chairman of the DSF Board of Directors, and Mrs. Kathy Grossenbacher, DSF President, welcomed the attendees and extended a special *thank you* to Mrs. Grenfell, who started the Foundation in 1961. Following lunch, members of the office staff began formal presentations covering Dolphin Scholarship's history, scholar selection, financial posture, and special projects. Currently, DSF sponsors 130 students with annual grants of \$3000 per scholar. Rear Admiral Kelln announced the Foundation's goal of supporting 200 Dolphin Scholars by the year 2009, and attendees discussed fundraising initiatives to attain this goal. It is important for the Dolphin Scholar Foundation to reach out to both the corporate community and individual benefactors to enlist their aid in providing educational assistance to the children of the Submarine Force. The Distinguished Advisory Board encouraged DSF to continue to pursue estate planning and corporate fundraising as viable avenues of increasing the funds available to support the goal of 200 scholars. Additionally, the staff addressed the procedures for naming scholarships in recognition of significant contributions made to the Foundation.

The Distinguished Advisory Board, consisting of prominent retired submariners and civilian friends of the Submarine Force, was established in 1999 to develop a closer relationship between the submarine and corporate communities. Members of the Distinguished Advisory Board are: Dr. Robert Ballard, CAPT Edward L. Beach, USN(Ret.), Mrs. Rebecca Burkhalter, ADM Henry G. Chiles, Jr., USN(Ret.), ADM William J. Crowe, Jr., USN(Ret.), RADM Eugene B. Fluckey, USN(Ret.), Mr. William P. Fricks, Mr. L. Patrick Gray III, Mrs. Martha Grenfell, ADM Frank B. Kelso, II, USN(Ret.), ADM Robert L. J. Long, USN(Ret.), Mrs. Eleonore Rickover, ADM Carlisle A.H. Trost, USN(Ret.), ADM James D. Watkins, USN(Ret.), and Mr. John K. Welch. ■

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U-2513 REMEMBERED

BY LCDR M.T. GRAHAM, USN(RET.)

by Harry Cooper

In early 1945 I was a Second Class Motor Machinist Mate. I had been a crew member of S-11 and we had just returned to the States and decommissioned the boat in Philadelphia, Pennsylvania. I had qualified in submarines in 1944 on S-11.

After S-11, I was transferred to the Subase in New London and assigned to what was called the Rainbow Division. This division was made up of skeleton crews that were to be ready to board a captured or surrendering submarine. The war in Europe was in its final days and the Navy was planning for the inevitable surrender of the German Navy. We were attached to Flag Allowances so we could continue to draw sub pay and we were on a one hour standby at all times with bags packed and ready to go.

As I recall, sometime in early March, at about 2200 hours, we were told to assemble and get ready to travel. We were loaded on busses and taken to the local civilian airport in Groton (it was a small place). We were placed on all kinds of planes, mostly small ones. The one I was assigned to only held about four passengers. We were flown to an air base in Maryland, put on Army bombers and flown out. There were about 150 of us including the officers. We stopped in Newfoundland for fuel and breakfast, then on to the Azores for fuel and another meal. Thence into Orly Field in Paris.

We had only expected to be gone a couple of weeks at the most when we left New London and did not bring service or pay records. We ended with about a six month trip.

Our stay was brief in Paris due to a *misunderstanding* with some of the locals. We were standing in line to change a few of the dollars we had for invasion money so we could get a beer, when one sailor asked a local in the same line how he felt about Paris being liberated. When he replied that our money didn't spend any better than the Germans, we proceeded to clean the Frenchmen out of the airport—so we were flown to Plymouth, England, to a based called Vicarage. We stayed there for three weeks.

The stay to Plymouth was terrible. No money, cold and damp,

and right next to a bridge the Germans were trying to buzz bomb. But the worst of it was the food. We were being fed by the British Army and let me tell you, they have lousy chow. Of course rumors flew like crazy—some had us going to Germany, some to France, others to Norway, and just about any place a submarine could go.

After three weeks we were flown to Londonderry, North Ireland on British bombers. We were taken to a base with many Quonset huts that had been used by the invasion forces. Some British, New Zealand, and Australian troops were there and the U.S. Navy had a radio station not far away. We were assigned living quarters in one end of the complex and set up our own mess, hired a local barber, and made arrangements for a canteen type store.

The German submarines had already started to come into the pier area and at one time there must have been about 80 boats in nests of about six. The crews were kept on board and the British brought rations down to them about once a week; and once a week, they marched prisoners up to the barracks area to take showers and get de-loused.

Our forces were commanded by Captain Sharp, and we were told that instead of getting six boats we would get only two and the crew to which I was assigned would get one of these. Captain Sharp did get one other older boat—it was a rubber covered one that had gone into some other port. One crew was sent to bring this one back and as I recall, most of the rubber washed off on the way back. Other crews were sent home.

Both crews were assigned an old Type VII; it seemed to me that it was similar to the old S boat I had come off of. We were very disappointed, but commenced to clean the thing up. It was extremely dirty and filthy. We took all the bedding out and everything else that could be removed, and cleaned and painted; learned the systems; charged batteries; jammed air and in general, operated alongside. About the time we thought we had it about ready to go, guess what? They pulled this boat and gave us a Type IX, a newer boat, one that had a schnorkel. It was in the same condition as the Type VII and we proceeded to do the same thing with this one. We didn't get as far when this one was pulled and U-2513 was given to us. The other crew got U-3008. We finally had what we had come to Europe for, a pair of Type XXI U-boats.

These were the latest thing in Uboats and they were new and I don't think any of them ever made a patrol. They had a very modern schnorkel system, the head valves of which were rubber covered to help defeat the Allies' radar. They had a complete new hull design coupled with about twice the normal battery capacity that gave the boat a 16 knot speed underwater. The boat also carried a noise maker that could be towed at a distance to thwart enemy sonar. This device was not very practical as it was too much trouble and time consuming to launch and recover. At this stage of the war, U-boats that were able to make one patrol and sink one ship were considered successful and worth the money. They were becoming almost like the Japanese Kamikaze pilots. A lot of boats were being lost on the first patrol.

As with the others, we started to learn the boat; re-label equipment, write operating instructions, reface gauges, clean and paint the boat, and run the systems and operate alongside. We were also given one other Type XXI for spares. We had the German crew aboard for some time and then all but five men (one officer and four enlisted) on each boat was removed. These ten men came back to the States with us.

During this period of time, the British were removing prisoners, putting them on trains, and sending them home. However, the prisoners didn't know where they were going and thought they were going to the Russian front. Some of the prisoners had fought on various fronts, had been wounded and after hospital treatment and convalescing, were assigned to a U-boat. I remember one in particular who had a very bad scar on his face and head from a wound he had received on the Russian front.

Some of these people were extremely glad they didn't have to go to sea anymore or for that matter even once, as the odds at this stage of the game were the first trip out could also be their last, and they knew the submarine could be their *iron coffin*. As a result of the use of a lot of submarine non-trained personnel, the Germans developed a nice little book that was presented to each crew member. It was about three inches wide and a foot long and about 100 pages, and it had colored piping diagrams of the various systems; descriptions and operating instructions for most of the

systems on board and was a most helpful tool for us.

As I said, we had three Type XXI boats. They were in a nest on the north end of the long jetty at this base. At 9 PM each night, the hatches of the boat would be closed and the prisoners not allowed to come topside until the next morning when we arrived from the barracks. During the night they were guarded by a couple of U.S. Marines from the radio station. They would stay on the pier and keep watch on the hatches and as far as I can remember, we had no trouble. The British also guarded the other nests in this fashion. The prisoners were not allowed up until 9 AM. They did have one or two, after drinking some homemade booze or alcohol, stick their head u out of the hatch and were shot by the sentries.

When we were ready to leave and the excess prisoners were being transferred off, one torpedoman approached our First Class Torpedoman Kazzeta, and presented him with a fully loaded 9mm Luger. He said he was afraid the British would find it when they took custody of them. They were treated much better by us than the British and they received the same rations we did.

I can't remember all the dimensions of the boat. Staring forward, you had one large torpedo room. It was elliptical in shape, had six 21 inch tubes and had electrically operated racks for fast re-load. I think it had a capacity of at least 24 fish with all the tubes loaded and racks full.

Next came the forward battery compartment. The upper deck here was the Officer's Country, sick bay and I believe, radio and sonar. It had two levels below this for batteries. Sick bay was manned by a person who was the equivalent of an intern and he had to tools to operate and amputate, and the boat carried plasma for transfusions.

The next compartment was the control room with the pump room below and the conning tower above. It had the diving stations on the starboard side. This compartment also held the galley and ice boxes.

The next compartment was the after battery and this one was the crew's quarters and mess on the upper deck.. Bunks had to be folded down and tables folded out at mess time and two levels of batteries below.

The next compartment was the engine room. It had two six-

cylinder M.A.N. diesels. It also held two Junkers diesel air compressors and refrigeration equipment for heating and cooling.

The next compartment was the electrical maneuvering room where the propulsion was controlled. The main motors and the silent creeping motors were also in this room.

Next was the tiller room, primarily a small area for the hydraulic rams on the stern planes and rudder. It had a small lather, a bilge pump, and a head.

Topside there were anti-aircraft gun turrets fore and aft. Each turret had a pair of 20mm guns. We never did get to test these out.

The boat was not built for crew comfort; it was better than the VII and IX Types however. This boat had a telescoping schnorkel, the earlier types had horizontal units on the starboard side of the conning tower that was raised to the perpendicular with hydraulic ram. The vertical one we had was raised and lowered by an air operated motor using a rack and pinion arrangement. We should also note here that the engine exhaust was used as a low pressure air system to blow the water out of the ballast tanks when the boat surfaced.

Both periscopes were hydraulic operated. The attack scope (smaller of the two) was very unique. The Approach Officer sat on a bicycle seat and rode the scope. The right hand controlled the height of the scope and the left, the focus and stadimeter. It was a very good attack scope design.

The boat had been built in sections and then brought to a central yard and assembled. It was very apparent. The pipelines didn't match too closely and had very sharp bends and configurations at the various bulkheads as well as the electrical wiring runs. The boat was well designed but was built near the end of the war and they were scraping the bottom of the barrel for materials and using slave labor to weld the thing together. We were not allowed to dive the boat until we returned to the States and inspected it in drydock. The prisoners fully agreed to this because they even suspected some sabotage and maybe a hidden charge or two.

The living compartments both fore and aft were divided off with a heavy oak veneer, and there were dozens of brackets on the sides of the battery room passageways to hold cans of acid neutralizer.

These cans were about 6 inches thick and 15 inches tall and 12 inches wide. The battery jars were very prone to breakage during a depth charge attack. The compartment was fitted with pipes that went to various levels and areas of the battery compartments. This allowed the "*Caulkmilch*" to be poured down the appropriate pipe to neutralize the acid. The electricians then went down and isolated the affected cell or cells.

Fresh water was limited. The boat had one very small evaporator and it was run strictly for battery water. Water to the heads was cold salt water and warm salt water from the engine cooling systems. The fresh water outlet was in the galley and was used only for cooking and drinking. A drink was obtained by a hand operated pump and this was locked at times, we were told.

The boat had forward and after trim tanks, two forward and two aft. These were in pairs, port and starboard, and connected with about a three inch line between the two on the starboard side and also on the port side. In the control room there was a plug valve that could be opened or closed rapidly. Also in the control room there was a manifold for each set of these tanks that permitted either the forward or aft one to be pressurized with about 10 pounds of air and the other one vented so on a dive, one side was pressurized forward and the other aft. The three inch line also had a meter installed so when the diving officer wanted to transfer water forward or aft, all that had to be done was open the appropriate plug valve until the specified amount had been moved. This was a lot quieter and quicker than starting up a pump. These tanks were cleaned out in port and fresh water filled. Thus they carried an extra amount, and when the fresh water tank was empty, one side of the time system was transferred to the water tank and they started using salt water in the trim tanks.

The boat had no emergency lighting. Instead, large areas of ventilation lines and areas around hatch coamings were painted with a luminescent paint, similar to the paint used on watch dials in the '40s. It was determined in Portsmouth that this was unsafe and it was removed.

The galley was very small. There was a laminated chart on the galley bulkhead that told the contents of cans. The boat had canned goods everywhere by the hundreds! Bilges, lockers under bunks,

in waterways—anywhere you could stick one. There were no labels, but the can had a number stamped on it and you could identify the contents using the chart in the galley. Cigarettes were canned, as were canned, lots of dried potatoes, vegetables, and brown bread. The bread was not too bad and there were some meat products. We were still getting cans off the boat in Charleston at overhaul two years later.

The two Junkers air compressors in the engine room were very unique and except for the valves, were good equipment. The compressor was an opposed piston unit. The pistons were free floating and the air was compressed in four stages to 3,000. One piston had the first and third stage piston on one end and the other, the second and forth stages. The pistons were timed with a rack and pinion. The pistons came together in the middle and fired, pushing them apart, jammed air on both ends. At the end of the stroke, air forced the pistons back together and to fire again. The electric compressor located in the pump room was shock mounted and very modern. High pressure compressors on U.S. submarines were generally Hardy Tynes units, copied from the German World War I design and very little changes had been made. On the other hand, the German compressor had been updated and was very easy to work on. Bearings were inserts instead of the pour and scrape kind. Valves came apart with a twist of the wrist instead of a hammer and heavy tools. All in all, a very good piece of equipment.

During our time in Derry, one of the electricians wanted a spare part off another Type XXI that was tied up just aft of us. I can't remember why he didn't get the spare off the boat that was assigned for parts. In any case, he, his German counterpart, and an interpreter went to the other boat to get a part off the main motor control center. These boats did not have battery disconnect switches and when one of them dropped a wrench across the main battery buss, a hell of a fire developed with both batteries discharging into the room. The German went up the ladder in the maneuvering room and shut the hatch. The interpreter, a fireman by the name of Mann, ran aft, shut the door and was trapped in the tiller room. The fire was so hot that the pressure hull was red hot,

cherry red above the waterline. Inside, you could not get beyond the control room. We had dragger masks on, but the heat was just too intense. We tried to flood down the bow enough to lift the stern out to permit us to cut a hole in the hull, but the stern was too low in the water, and the fire just burned itself out. We cooled the compartment and finally got the hatch open and sent Mann to sick bay. He was okay, just scared. The motor room was nothing but molten metal in the bilges. The sea valves would have melted except the outside water kept them cool enough to prevent melting. The cubicle, motors, and even the ladder and deck plates were melted.

Spare parts and the method of storing and keeping record of them was very good. For the most part, a box or metal reinforced chest with compartments and layers of trays held the parts so when you got the box or chest and took it to the job, it held all the necessary paper work and instructions as well as any special tools that were required.

As mentioned before, the food situation was not up to U.S. submarine standards, so once we got our pay records over and started having a little spending money, we looked for a place to get good food. Rationing was still on in the civilian world; but in town you could go to Mom Malloy's. It operated like an old-time speakeasy. Knock on the door and be identified through the peep hole. All they served was steak, fresh eggs, and potatoes—and the price was right. They had smuggling set up to bring anything across the border and I suppose fresh food was the most profitable. I also had them get some Irish linen goods for me.

Arrangements for a laundry service was provided with weekly service. We sorely needed this as our work clothes would really get greasy and oily, and no matter how dirty—they always came back clean, starched, pressed, buttons, sewn on where needed, and rips and tears mended. If anything was left in the pocket, it was returned no matter what...even a nut, bolt, washer, stub of a pencil—anything at all. All this at a very reasonable price. We found out the story on this when one of our people made a special trip to the laundry. It was a convent! No machines, all hand labor from boiling pots of water in the yard and hand scrub boards to charcoal heated irons. The girls doing the laundry had been

arrested or picked up in town on vice matters and sentenced to 30 days or more by the local judge to the convent to pray and repent. The good sisters made sure they had plenty to think about and not want to come back.

We finally got the go ahead to leave and head for home. The war was still on with Japan when we left Ireland. It took us 21 days to cross the Atlantic on the surface and escorted by an ATF; we could have made better time without him. While we were at sea, the atomic bombs were dropped. The war with Japan ended and the point system was put in place for troops going home. We made a brief stop in Newfoundland to offload a couple of very ill sailors. When we arrived in New London, a band met us and a lot of brass was on hand for the welcome. A lot of the crew was mustered out and in just a few days, we sailed for Portsmouth, New Hampshire.

In the yard, we got a new commander, Lieutenant Commander J.B. Casler, and other new members for the crew. On arrival in Portsmouth, the power-that-be decided to make U-2513 operational and keep U-3008 in the yard until later. At this time the boat was placed in commission as USS EX-U-2513. We drydocked and had a good inspection of the boat, made other repairs and modifications for several months, and then we sailed for Key West with a brief stop in New London.

In Portsmouth, they had several other U-boats in dock. One I recall was a cargo sub and supposedly it was on its way to Japan when the war was over, and a couple of Japs had committed suicide onboard. While in drydock, they drilled a small hole in the sealed flasks that was located in the ballast tanks to determine the contents. The flasks contained mercury.¹

As the months and days went by, we had started to let the prisoners be one of the crew. In fact, once a week the Master-At-Arms would take them up to the beer garden in the yard and let

¹ It was announced that the flasks contained mercury because it was shown on the manifest as *quicksilver* but it was actually 550 kilograms of uranium oxide consigned to the Imperial Japanese Army to use in their atomic bomb.

them drink beer. The CO figured the war was over and prisoners were going home, so why not let them have a beer. This went on for several weeks and someone told the admiral about it and we had to transfer the prisoners to Fort Devens the next day. I understand the machinist that I had working with me escaped but was caught and sent back to Germany with the rest.

On arrival in Key West, we operated for a short time out of the subbase, then moved to the section base—I can't remember why we moved. We did have a closer barracks, a work shed on the dock, and we installed a diesel generator on the dock to carry the auxiliary load in order to save the battery. The ASW forces operated the hell out of us. This boat could do 16 knots submerged for one hours, and was twice as fast as any of ours. Everyone wanted to operate with us. We would operate and repair, charge batteries, and operate some more. During this time we took President Harry Truman out for a ride.■

Harry Cooper is president of Sharkhunters, the world's largest research source (outside Germany) on the topic of German U-boats. Lieutenant Commander Graham has been a member for many years and shares his memories of the war, answers questions, etc. for other members. For free information on how you may become a member and receive the monthly magazine, send a stamped, self-addressed envelope to: Sharkhunters, P.O. Box 1539-AT5, Hernando, FL 34442; phone (352) 637-2917; fax (352) 637-6289; website: www.sharkhunters.com.



MISSING and IN ACTION

by CAPT David G. Smith, USN(Ret.)

Where did they go? What has happened to all the valuable gifts and historic memorabilia presented to Navy submarine crews over the years—the mementos, works of art and silver items? Perhaps a reader will know the whereabouts of some of the items and can help get them returned to their proper place at the Naval Historical Center.

Just over a year ago, I read Admiral James Calvert's *Silent Running* [an excellent account of his service on USS JACK (SS259) during WWII], and noticed the paucity of illustrations. I recalled that around 1970, Admiral Calvert had visited the second JACK (SSN 605) and presented several significant items: a replica of the WWII battle flag from USS JACK (SS259), the ship's bell and a great photograph of JACK returning from a war patrol (the crew was standing topside with the First Lieutenant, Lieutenant James Calvert, on the bow). Surprised by the absence of that significant photograph in his book, I contacted Admiral Calvert and learned that his gift to JACK represented his only copy. I was determined to locate the photo and return a copy to him. While considering the best course of action, I remembered other items that had been presented to the ship and wondered what had happened to them.

Many ships received gifts and mementos from their sponsors or distinguished visitors. For example, when JACK (SSN 605) was launched in 1963 we were honored to have Mrs. Leslie R. Groves as the sponsor. Her husband General Groves, who headed the Manhattan Project, presented a unique gift to the ship in the form of a remarkable scrapbook he had assembled, mapping the key events of that landmark initiative. Among the many informative and important documents it contained were a letter from General Groves to President Harry Truman requesting that key scientists (PhDs from DuPont) be appointed as Second Lieutenants in the Army, the telegram to the President notifying him of the successful test of the first atom bomb and details of how General Groves managed the project. Groves created two of these scrapbooks and registered both with the National Archives. As Commanding

Officer of JACK in 1968, I registered JACK's scrapbook with the Naval Historical Center. It is now unaccounted for.

Other items of note now missing include several oil paintings by the noted British artist E. Tufnell which hung in the ship's wardroom for at least six years, along with an autographed copy of General Groves' book Now It Can Be Told.

I contacted the Naval Historical Center to see if they had any record of Admiral Calvert's photograph, General Grove's scrapbook, the paintings and the other items. The head of the curator branch, Norman Cary, reported that his archives held little of significance from USS JACK (SSN 605) and that until about the mid-1990s very little was provided to the Historical Center from decommissioned submarines. He did find a catalogue record for the scrapbook from General Groves, but had no indication that it was ever returned.

Next on my list was the Portsmouth Naval Shipyard in Portsmouth, New Hampshire. The response was more encouraging. They held the bell and the reproduction of the battle flag. Unfortunately, the whereabouts of the most valuable items, the scrapbook and the paintings, remained unknown.

The Naval activities at Keyport, Rhode Island, and Groton, Connecticut, were then contacted, but with negative results. Then I began to remember items from other ships. For example, USS ROBERT E. LEE (SSBN 602) was given an original letter written by Robert E. Lee to his wife during one of his Civil War campaigns. The letter was presented to the ship by one of the Lee descendants. Considering the great historical significance of such an item, one wonders where it might be today.

Are these missing items the only things vanished from record? If many more are missing, is it from our own inaction that they remain in private hands, probably forgotten in an attic box, rather in their proper place? Together, we can create a list of notable items that were presented during our command tours. This list can serve as a comparative inventory against current holdings at the Historical Center. This would allow the curator to identify any truly significant items that might be in the *missing in action* category and, with some research, return the items to the collection.

Certainly those in possession of any items of historical value are

encouraged to contact the Historical Center directly. In the meantime, we can all assist in this effort if we take the following action:

- Jot down a list of historic items of value that were on your ship during your tour.
- Forward your list to:

Norman Cary, Head, Curator Branch,
Naval Historical Center
Washington Navy Yard
805 Kidder Breese SE
Washington DC 20374-5060
(202) 433-2318
e-mail: Cary.Norman@nhc.navy.mil)

Together we can help build the collection and return missing items to their rightful place where they can be protected and cared for to inform and enlighten future generations.■



FAST ATTACK DILEMMA

by MIDN 2/c Robert C. Watts IV
University of Virginia
Navy ROTC Unit

Are nuclear powered attack submarines valuable and effective weapons in today's security environment? Since the end of the Cold War, old missions have changed and new ones continue to be developed. Nevertheless, attack submarines have been vulnerable to budget reductions. Especially as the new administration reviews our defense posture and expenditures, it is important to emphasize the submarine's unique contributions to our national security strategy. The SSN has certain characteristics and capabilities that broaden and deepen America's ability to discourage conventional conflict. This argument is affirmed by contemporary security challenges, particularly in the Taiwan Strait. In that case, U.S. submarines create a dilemma for Chinese military planners and preserve a tenuous peace.

The People's Republic of China and the United States have a profitable but problematic relationship. Trade relations improve and expand, but significant tensions remain. According to a recent RAND study, the most dangerous questions involve China's claims to territory it does not truly control.¹ Taiwan is the most prominent "unsatisfied claim" and a potential catalyst for conflict. This issue has multifaceted military and political dimensions, but we focus on the military possibilities, neglecting others. Within the limited scope of this essay, we make three critical assumptions: 1) America will intervene to defend Taiwan; 2) Outside powers will not militarily support China; and 3) Although militarily feasible, some of the options discussed may not be politically advisable. Nevertheless, Chinese defense planners must consider the full range of potential American military responses. It is in the minds of China's planners and national leadership that deterrence is forged.

It is rewarding to examine how American military capabilities

¹Zalmay M. Khalizad, et al, *The United States and a Rising China* (Santa Monica, CA: RAND, 1999) 6.

constrain China's strategy. In fact, America's power is so uniquely advanced and asymmetric that it may even deter Chinese aggression. America's Submarine Force is particularly capable and unmatched. This analysis will contrast the attack submarine's capabilities with China's limited counterforce. Three Defense Department scenarios for China-Taiwan conflict will then be presented. Finally, submarines will be introduced into each scenario, demonstrating how they complicate China's ultimate goal of enforcing sovereignty over Taiwan.

The fast attack submarine is a stealthy, multi-mission platform. Its captain and crew can remain submerged for an indefinite period of time. The nuclear plant allows sustained high speeds, while sound absorbing technology and sound tactical operation can make the boat practically invisible to most acoustic sensors. Silence is important for survivability and these nuclear powered subs are among the quietest in the world.² Submarines can detect, track and destroy targets above and below the surface with torpedoes and missiles. Furthermore, the boat can also attack land targets from great ranges with Tomahawk cruise missiles.

By comparison, China is weak at sea and even weaker underneath the sea. Most of the ships in the People's Liberation Army Navy (PLAN) are obsolete and lack adequate anti-sub sensors and weapons.³ Even China's newest acquisitions, the Russian Sovremenny class destroyers, are optimized for surface rather than subsurface warfare.⁴ China's submarines have limited combat capabilities and a short operational radius.⁵ The PLAN's submarine service has a few nuclear boats and about 30 antiquated Romeo

²United States Office of Naval Intelligence, *Worldwide Submarine Challenges*, 1996, 11.

³You Ji, *The Armed Forces of China* (London: I.B. Tauris, 1999) 187-190.

⁴Norman Polmar, *Guide to the Soviet Navy* (Annapolis, MD: Naval Institute Press, 1983) 158.

⁵Office of Naval Intelligence, *Worldwide Submarine Challenges*, 1997, 19.

class diesel boats. The SSNs are both loud and unreliable,⁶ while the older diesel subs are "mostly inoperable."⁷ China has fielded newer Kilo class diesel submarines purchased from Moscow, but reports indicate that the PLAN is "unwilling to invest in proper training or maintenance."⁸ Clearly, American attack boats would have practically unimpeded access to the Chinese seas.

How are submarines directly relevant to Taiwan's defense? In February 1999, the Department of Defense released a report on the cross-Strait balance of power. *The Security Situation in the Taiwan Strait* compared China and Taiwan's military capabilities and then evaluated them in the context of three different contingency situations: sea denial operations, limited missile and air strikes, as well as full scale invasion.⁹ The Hong Kong media have reported that *China's National Defense Newspaper* discusses similar "blockade", "attack", and "land on" options for "solving the Taiwan issue by force".¹⁰ The Defense Department concludes that in each situation China would succeed in defeating an unaided Taiwan, forcing its return. Considering submarines in the context of a coordinated American response, these contingencies will be reevaluated. With submarines playing a vital and unopposed role, the United States can foil China's objective of aggressively reasserting sovereignty over Taiwan. If Beijing similarly evaluates our capabilities and their own liabilities, American's deterrent value is particularly high.

It is important to establish what sort of deterrence submarines

⁶John Wilson Lewis and Xue Litai, *China's Strategic Seapower* (Stanford, CA: Stanford University Press, 1994) 109 and 120.

⁷*Jane's Defence Weekly*, "New PLAN to Train, Purchase Vessel Mix," 16 December 1998, online, Lexis-Nexis, 14 February 2000.

⁸A.D. Baker III, "World Navies in Review," *Proceedings*, March 2000, 31.

⁹United States, Department of Defense, *Security Situation in the Taiwan Strait*, February 1999, online, www.defenselink.mil/pubs, 25 February 2000.

¹⁰"Three Options on Using Force Across Taiwan Strait Cited," *Hong Kong Ta Kung Pao*, 7 August 1999, online, FBIS, 24 March 2000.

can provide in each scenario. Patrick M. Morgan, a security strategist, defines two different kinds of deterrence: general and immediate. General deterrence applies to situations where a potential opponent is not expected to launch an attack.¹¹ America's peacetime military posture rests upon general deterrence. It is a credible force, but is not directed at any particular threat and can react to evolving situations. Submarines contribute towards a robust general deterrence, especially against an adversary who is blind beneath the waves. Beijing must always assume that one or more boats may be offshore or only hours away. The first two contingencies are likely to be most influenced by general deterrence.

Immediate deterrence is practiced when one country prepares an attack while another readies its specific retaliatory capabilities to prevent it.¹² Desert Shield established retaliatory capabilities in Saudi Arabia, transforming American deterrence towards Iraq from general to immediate. Deploying two carrier battle groups to the waters around Taiwan during China's bellicose 1996 exercise can also be interpreted as preparing a retaliatory capability. Immediate deterrence is most relevant to an invasion scenario.

Blockade

According to *The Security Situation in the Taiwan Strait*, "the primary intent behind a blockade of the island would be to cripple Taiwan economically and isolate it internationally."¹³ The report anticipates that increasingly severe restrictions would be placed upon Taiwanese shipping by establishing exercise zones outside of major ports and stopping merchants in the Strait. Sheer numbers, rather than technological advantage, would allow China to quaran-

¹¹Patrick M. Morgan, *Deterrence: A Conceptual Analysis* (Beverly Hills, CA: Sage Library of Social Research, 1977) 28.

¹²Morgan 28.

¹³*Security Situation in the Taiwan Strait*.

tine the island. The Hong Kong press asks, "How long can the isolated Taiwan, being short of natural resources, hold out?"¹⁴ Challenging China's attempt to restrict freedom of navigation, the United States could keep Taiwan's ports and sea lanes open.

If China tried to blockade Taiwan, how might the United States intervene? American forces can coerce China to completely lift its blockage. A 1999 RAND study, *The Use of Air Power as a Coercive Instrument*, provides a framework for assessing steps taken to compel an opponent to cease military aggression. Successful coercion must: 1) Defeat enemy strategy, 2) Demonstrate escalation dominance, and 3) Magnify third party threats.¹⁵ Although coercion is only possible when deterrence has failed, Chinese planners must consider American reactions. Because America would likely defeat Chinese efforts to militarily isolate Taiwan, China should be deterred.

Against a blockade, fast attack submarines can potentially contribute to each of the three conditions of coercion. The U.S. can unleash submarines against blockading forces. China can then either restrict its actions or suffer some losses. Both choices defeat their strategy. Anti-blockade operations present significant opportunities for retaliatory escalation. American escalation dominance could be demonstrated by broadening the scope of attacks. Submarines could escalate horizontally, attacking targets outside of the primary theater of operations. Transportation infrastructure and exposed coastal shipping essential to the movement of natural and defense resources within China could be inviting targets for a submarine 1000 miles north of Taiwan concealed beneath the Yellow Sea.¹⁶ If planners are concerned about American horizontal escalation, China might dedicate forces

¹⁴"Three Options in Using Force Across Taiwan Strait Cited."

¹⁵Daniel L. Byman, *Air Power as a Coercive Instrument* (Santa Monica, CA: RAND, 1999) 29.

¹⁶People's Republic of China, Institute of Geography of the Chinese Academy of Sciences, *National Economic Atlas of China* (Hong Kong: Oxford University Press, 1994) 200 and 203.

to other regions, leaving fewer for cross-Strait operations. Any action by American submarines distracts and diminishes China's focus on sustaining the blockade, enhancing Taiwan's own ability to more aggressively defend itself. With the help of submarines, China can be coerced to lift a blockade.

Attack

"High-volume, precision strikes against priority military and political targets," are the hallmarks of the Defense Department's second contingency.¹⁷ Large numbers of rockets and aircraft would overwhelm Taiwanese defenses. This sort of attack would aim to disable or destroy Taiwan's seaports and airfields. Executing the "attack" option, China would hope to economically isolate Taiwan, while leaving it vulnerable to continued or future attacks. China hopes Taiwan sees capitulation as its only option. This scenario is the most complicated one for the United States to solve and the solution would rely upon delivering massive amounts of weapons to targets like air bases or rocket launchers within China and would also test American's ability to supply and rebuild Taiwan in trying conditions.¹⁸

Although submarines qualify for neither mission, they could still help fulfill the three conditions of coercion. TLAM strikes from hidden submarines against air defense sites could precede larger air attacks. Furthermore submarines could help defend the numerous ships required to keep Taiwan provisioned. Through these and other actions, SSNs contribute to the defeat of China's aims. Just as in the blockade scenario, submarines could broaden the theater commander's options for vertical or horizontal escalation. The Silent Service would play a tangential role in magnifying Taiwan's threat to China. Achieving the first two conditions of coercion

¹⁷*Security Situation in the Taiwan Strait*

¹⁸Robert C. Watts IV, "Imbalance of Power", unpublished paper, Univ. of Virginia, 2000, 34.

would facilitate the reestablishment of an indigenous Taiwanese fighting force, but only after significant time and effort. General deterrence is again important; America needs no unusual preparations to handle this contingency.

It is important to stress that in operations against China the attack submarine would be more than just an additional *TLAM* shooter. Consider the platforms that accurately attack land targets with standoff and other munitions. Surface ships are easier to locate and track while aircraft are, to a certain degree, vulnerable to Chinese air defenses.¹⁹ Consequently, the SSN's relative invulnerability increases both the attack's surprise and its chance of success. Both benefits capitalize upon the submarine's asymmetric advantages and give critical capabilities to a theater commander.

Land On

The Defense Department report considers an amphibious invasion, "a highly risky and most unlikely option for the PLAN".²⁰ Lacking adequate amphibious lift, airmobile forces would have to seize a port and possibly an airfield to secure an entry point for soldiers aboard numerous combatant and noncombatant vessels. A successful invasion would require the PLAN to conduct a large, complicated and coordinated operation that would be costly in many ways.²¹

An assault on Taiwan would have to be handled differently from the first two contingencies. Although China has obstacles to overcome, a well and quickly executed assault would shock Taiwan and the world. If China lands ground forces, its desired *fait accompli* is achieved. Once the troops *hit the beach*, countering assault forces would become a defense priority, limiting U.S. ability to attack more strategically valuable targets. America's

¹⁹United States, Office of Naval Intelligence, *Worldwide Challenges to Naval Strike Warfare*, 1997, 17.

²⁰*The Security Situation in the Taiwan Strait*.

²¹*The Security Situation in the Taiwan Strait*.

technological superiority and strategic flexibility would be trumped by brazen Chinese action. The United States cannot let a Chinese invasion begin.

Instead of general deterrence and coercion, this scenario demands intelligence and immediate deterrence. Fast attack boats can provide both. By virtue of their stealth, submarines can conduct covert surveillance of an opponent, complementing other intelligence assets and creating a more complete picture of preparations and movements. With accurate intelligence, policymakers can make a more informed decision about American's next move. Furthermore, having already lost strategic surprise, Beijing could not be certain that it would even have much tactical surprise. If immediate deterrence is called for, submarines can be dispatched to the theater along with other men and weapons. If American forces are deployed in sufficient numbers, Beijing confronts an enlarged initial retaliation threat that could cripple assault capabilities and damage critical national defense elements. Submarines introduce surprise and uncertainty to Chinese assessments of the size and concentration of American strength. Again, Chinese military planners and national leaders cannot ignore American attack submarines in their cross-Strait calculations.

Against the People's Republic of China, and other countries lacking comprehensive subsurface warfare capabilities, the nuclear powered fast attack submarine is an advanced and asymmetric weapon. The submarine diversifies and multiplies American military options, ensuring victory. As a result, a potential opponent will hesitate to challenge the United States and its allies. Attack submarines compound an opponent's planning dilemma and conventionally deter conflict. It is therefore imperative that fast attack boats remain a security and budgetary priority.■



NAVINT NEWS

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From NAVINT issue 15th March 2001.

India to Get Another SSN from Russia

According to *Vremya Novostyei* of Moscow, the Indian Navy and the Russian Navy are close to finalising an agreement to transfer a nuclear powered attack submarine (SSN) to India. The agreement will, it is said, be signed by the Chief of the Russian Navy, Admiral Vladimir Kureyedov, quoting Viktor Komardin, the Deputy Chief of the *Rosoboronexport* arms export agency.

The SSN, of a type still unspecified, will be leased, suggesting that a serving SSN such as a Project 971/971U Akula I/II, Shchuka-B class, will be transferred, either from the reserve fleet or from the active strength. The Russian Navy is hardly likely to release its most modern SSN to another navy, however friendly. The Indians started negotiations some years ago, and this was rumoured to be the acquisition of an Akula; the Project 670A Skat class (Charlie I) INS CHAKRA was leased (minus her cruise missiles) in 1991-96.

Clearly this acquisition, if it goes through, will be seen as checkmating Pakistan's new Khalid class SSKs, but it raises doubts about the viability of the Indian Navy's ambition to design and build its own SSN. The CHAKRA lease was intended to give experience in SSN operating procedures, but that SSN had already sunk twice in Russian service, and was apparently unreliable.

Russia has also agreed to sell the Indian Navy four Tupolev Tu-22M3 bombers, Viktor Komardin said on 10 February. But because of their high price, Russia will first lease four aircraft to India and subsequently sell them at residual cost, he said, according to Interfax.

HDW and Kockums Outline Joint Submarine Portfolio

Kockums and HDW now share a joint product portfolio, marketed by their combined Submarine Division and outlined last month. The portfolio includes the German Submarine Consortium's Type 214 and the Swedish Navy's Gotland class submarines, as well as both air-independent propulsion (AIP) systems, fuel cell and Stirling. A Stirling section is currently under development for the Type 209 series.

The joint portfolio comprises the following products:

- Type 209/1400 submarine, with AIP systems—both fuel cell and Stirling
- Type 214 submarine, with fuel cell AIP system (already ordered by two navies)
- Type A-19 Gotland class submarine, with Stirling AIP system (in service with Royal Swedish Navy)
- URF underwater rescue system (used by the Royal Swedish Navy). (See *Kockums Launches New Submarine Rescue Vehicle* on pg. 108.)

Many Type 209 submarines have been sold throughout the world, and many are soon due for upgrades. "Customers are therefore likely to be interested in inserting Stirling AIP sections, enhancing the operational efficiency of their submarines," the companies say. The Stirling system will be promoted for this market. Kockums' URF underwater rescue system is said to be "highly effective, capable of rescuing an entire submarine crew in a single lift". The URF has attracted considerable interest, they say, "further fueled by the tragic accident with the Russian nuclear submarine KURSK."

Collaboration between HDW and Kockums is starting to bear fruit. As a sub-contractor to HDW, Kockums in Karlskrona has been commissioned to build three stern sections for the German-designed Type 209/1400 submarines order by South Africa. The order is estimated to be worth about SEK100 million. The work starts next month and will continue for several years. A total workforce of some 50 people will be engaged on the project, which involves engineering workshop production. The companies'

collaboration will no doubt also include work on Sweden's two future *Viking* type submarines.

From the NAVINT issue 1 April 2001.

Work Starts on Greek Type 214 Submarines

By pushing a button, the Greek Minister of Defence Apostolos-Athanansios Tsochatzopoulos started the welding of the first frames for the construction of the first submarine of the new Type 214 at HDW on 28 February. This boat is the first of HDW's submarines equipped with a fuel cell for air-independent propulsion (AIP) for an export customer. HDW's executive vice president Hannfried Haun said that about 500 employees of HDW will be engaged in the building of these submarines for five years. There will also be work for nearly 2000 employees in the components industry over the same period. HDW, Ferrostall and Hellenic Shipyards signed the contract for the construction of three submarines of this new class in Athens in February last year. The value of the order exceeds DM2 billion. The first of the three submarines will be constructed in Kiel, and the next two by Hellenic Shipyards at Skaramange, near Athens. Thyssen Nordseewerke also participates in the design and construction of the submarines.

The delivery of the first submarine is scheduled for 2005. The order also includes an option fourth boat, to be built in Greece. Ferrostaal and HDW will implement considerable offset business. "So, among other things, Hellenic Shipyards will be extended to become a submarine yard", HDW says. The Type 214 was developed by HDW and combines the advantages of the Type 209 and Type 212. Type 214 submarines feature fuel cell technology and these oceangoing submarines will be 65m long, and displace about 177t. The armament will consist of eight 533mm torpedo tubes and there will be a crew of about 35.

From NAVINT issue 15 April 2001.

Progress on Astute Propulsion System

Power Magnetics & Electronics Systems (PMES) Ltd. has been awarded a contract worth over £1 million by BAE Systems Marine Ltd. to supply the Emergency Propulsion System (EPS) for the new Astute class submarines. The newly designed EPS replaces the DC motor drive system in previous nuclear submarines. It incorporates an innovative AC variable-speed induction motor drive using the latest Insulated Gate Bipolar Transistor (IGBT) technology. The first system is to be delivered in the last quarter of this year.

Rolls-Royce had delivered the largest single component of the propulsion system intended for the Astute herself, to BAE Systems Marine. The reactor pressure vessel (RPV) for the PER 2 pressurised-water reactor has been delivered a month ahead of contract date, despite the stringent quality- and performance-testing mandated by the prime contractor.

The RPV houses the reactor core, also made by Rolls-Royce in Derby, and is the heart of the nuclear steam-rising plant. Early delivery assists the shipyard in the installation of pipework. In common with earlier nuclear propulsion designs, the Astute class power plant has a design-life of more than 25 years, but the new submarines' plant will have the new long-life core, which will outlast their operational life, and eliminate the need for costly refueling.

From the NAVINT issue 15 May 2001.

France Tests M45 Missile

The French defense procurement agency Délégation Générale pour l'Armement (DGA) and the French Navy carried out a successful test-firing of an M45 nuclear submarine launched ballistic missile (SLBM), to test and assess, under operational conditions, measurement and test equipment that will be used on the next generation of M51 SLBMs. The test also verified systems in

the nuclear submarine INFLEXIBLE. The test took place on 21 April, when INFLEXIBLE, positioned off the Quimper naval base, launched the missile across the Atlantic to its impact area off the coast of Guyana. DGA scientists monitored the missile and its environment throughout the flight.

Technicians from Directions des Constructions Navals (DCN), Centre d'Essais d l'Atlantique (CEA), European Aeronautic and Defence Systems (EADS) and the French navy used radars at different locations on the west coast of France and close to the impact area to gather telemetry for further analysis and study. According to the DGA, the test was designed to test new technologies under real conditions and to help select the best materials and equipment for the M51 strategic missile, for which the French Government signed a Eur2.85 billion development contract at the end of last year.

HMS TIRELESS

The crew of the damaged UK Royal Navy (RN) Trafalgar class attack submarine HMS TIRELESS began to make preparations for her return to service following the successful completion of repair work in Gibraltar, it was announced last month. An exhaustive series of safety checks have been conducted to ensure that the repair of her reactor coolant circuit was satisfactory. These culminated in a hydrostatic pressure-test of the system on 16 April. The crew then underwent a standard training programme before the submarine left Gibraltar early this month.

From the NAVINT issue 1 June 2001.

Australia Awards Submarine Care Package to Rolls-Royce

The Royal Australian Navy (RAN) has awarded a £1.5 million (approximately A\$4.5m) contract to Rolls-Royce to provide systems and service expertise for its Six Collins class diesel electric submarines. The contract will run for three years, with an option for two more, and covers the complete submarine, including hull, propulsion, electric generators, weapons and auxiliary systems.

Rolls-Royce will develop and implement processes for the review, validation and reduction of maintenance. It will also help the RAN in other important activities, including project- and risk-management and configuration-control. All these measures will increase operational availability and reduce through-life cost. The company has a proven record in submarine maintenance services, providing a similar service to the UK Royal Navy for the Vanguard class strategic submarines (SSBNs).

Work on all six boats will be carried out by the Australian Submarine Corporation (ASC) at its Adelaide, SA shipyard, and at the RAN's Fleet Base West at Garden Island, WA.

Kockums Launches New Submarine Rescue Vehicle

Kockums announced at IMDEX Asia on 3 May that it is launching a new submarine rescue vehicle. The new vehicle is a further development of the Royal Swedish Navy's existing URF submarine rescue system. Using an already proven system offers a whole range of operational benefits, says Kockums. "We have what is probably the most effective submarine rescue system in the world. The URF can rescue an entire crew of 35 men in a single lifting operation, a capability that can be decisive when time is short. Our system also makes it possible to transfer a crew from the pressurised environment of a sunken submarine via the URF direct to the decompression chamber of the mother ship," said Lars Larsson of Kockums, part of the HDW Group.

The second generation URF, which is known as an S-SRV, can rescue an entire crew of 35 men in a single lift from depths down to 700m. Compliant with the new NATO standard, the URF's navigational aids include advanced sonars and underwater cameras. The system can be transported by rail, road, various types of ship, and air. It can then be deployed from different types of surface vessels, and even submarines.

Updates

The Royal Malaysian Navy (RMN) was reported by the Kuala

Lumpur Business Times early last month to be negotiating with DCN International for the supply of two ex-French Navy Agosta class diesel electric patrol submarines. The two boats, presumed to be the former LA PRAYA and OUESSANT, would be refitted before delivery to the RMN. A deal would put DCN International in an ideal position to supply between two and four new Agosta-90B boats over the next five years, the newspaper said. Malaysia plans to buy four submarines, Navy Chief Admiral Abu Bakar Jamal said last month. "Acquiring the submarines is the top priority of the Navy now," he said, adding that Defence Minister Najib Tun Razak would soon announce the type of submarine to be bought. He pointed out that in preparation to operate the submarines, RMN personnel have been sent to France, Pakistan, Australia, and Turkey in the past few years for training.

An Indian Navy Project 877 Kilo type diesel electric submarine now being modernised at the Admiralty Verft shipyard in St. Petersburg has entered the final stage of modernisation, the company said on 23 April. The shipyard is also upgrading a second Indian boat, and is building a Project 677 Lada boat that is also likely to be handed over to India, the yard says. Designated the Amur 1650 (the export version of the Lada), this new design displaces 1756t, and is armed with eight weapon launch tubes. ■



THE SUBMARINE COMMUNITY**SUBMARINE RESERVE STATUS REPORT***by RADM G. Judson Scott, USNR**NSL Annual Symposium**June 2001*

I appreciate this opportunity to speak at the Annual Symposium. I have been a member of the Naval Submarine League for sixteen years and your Vice President for Reserve Affairs for the last three years. I strongly support the vital role fulfilled by the League.

I will discuss an aspect of today's Submarine Force which is not known to all of you—the Submarine Reserve. Now that we have achieved *One Submarine Force*, the full integration of the Submarine Reserve into the Submarine Force, it is a good news story that will likely have implications for other Navy and Naval Reserve programs as they review our successes and lessons learned. It also offers new areas for reserve participation and support in the work of the Submarine League, just as we did a lot to work with you to support and carry out the work of the Centennial events for the Submarine Force.

The Submarine Reserve is unique among Naval Reserve programs. Over the past three years, we have fully integrated ourselves into the active duty component. We are now organized, equipped and funded to work together with the active duty commands we directly support as a single integrated force. Now, there is only one mission and, indeed, only one integrated Submarine Force to accomplish it.

I would like to use this opportunity to discuss where we are today in our integrated Submarine Force and some of our ambitious plans for the future. But to set the stage, a bit of history....

The Evolution of the Post-War Reserve Force

Like the rest of the Naval Reserve Force, the Submarine Reserve was conceived as a source of trained manpower in the

event of a rapid military mobilization. After World War II ended, some fleet submarines were decommissioned and assigned to the Reserve. Weekend submarine training aboard the boats continued for a few years until wartime experience levels dropped and it was no longer believed to be safe to take the reserve submarines to sea. Most of the reserve submarines became museum ships, just as the USS PAMPANITO (SS 383) at San Francisco's Pier 45 is today, and the Submarine Reserve transitioned to the Reserve Centers spread throughout America. During the 1950s and 1960s our reserve training was conducted primarily in Reserve Centers and reservists had little interaction with their active duty counterparts except, perhaps, during their individual two weeks per year on *Active Duty for Training* or other special cases. In the 1970s the Naval Reserve was reorganized to link individual reserve units to specific Navy commands and the concept of a *gaining command* was born. Evolutionary change began to occur in the 1980s and 1990s, as individual reserve units took a more proactive approach to supporting the gaining commands with which they now had a more direct relationship. Reserve units began to take on some project work on behalf of their gaining commands, but still remained inwardly focused with respect to their administration and training and their responsibilities to their gaining commands. Reserve support still tended to be ad hoc and dependent upon the quality of the personal relationships between reserve unit leaders and their gaining commands. The interface between the reserve and active systems still more resembled a wall than a bridge, and long lead times and uncertain funding made reserve support hard to obtain and subject to last minute change or cancellation due to lack of funding.

The Vision for Change

As we all know, the active Submarine Force underwent dramatic change following the end of the Cold War. We now have less than one-half the force structure, manning and funding that we had in 1988—yet the mission requirements and demand for submarines remain high, and in many key areas, have increased. In response to the struggle of the active force to do more with less, and in full

recognition that the existing reserve systems and structure required a dramatic change before the needed level of reserve support could become possible, the Submarine Reserve leadership developed a ground-breaking proposal to fully integrate the Submarine Reserve into the active Submarine Force and to shift responsibility for the training and readiness from the reserve force to the submarine force. Even the terminology was to change, with *gaining* commands becoming *parent* commands in recognition that a fully integrated force would already be a part of the active command at all times. The fitness reports for submarine reserve commanding officers would be written by their parent commanders, and control of the reserve funding to provide needed reserve drill support at parent commands on a timely basis would also shift to the active force, and would be managed for them by the reserve Flag Officers and by an increased number of TAR officers on the staffs of the TYCOMs. Administrative support for the Submarine Reserve would remain with the Reserve Force system.

This proposal reached fruition when an historic Memorandum of Understanding (the MOU) was signed in May 1998 between the Flag leaderships of the Submarine Force and the Naval Reserve to implement these new policies. The result was to erase the operational division between active duty and reserve units and to fully integrate reservists into the day-to-day operations of their parent commands. A mutual dependence between active and reserve components of the Submarine Force quickly developed and resulted in the more efficient allocation of manpower and resources, and a better trained and more ready reserve component.

This ambitious goal has also resulted in a change of culture for both components. For the reservists, it meant a new outward focus upon the needs of the Submarine Force and full accountability to provide reliable and valuable service across the full spectrum of real Submarine Force missions and tasking. For our active duty shipmates, it meant ownership of, and accountability for, their reserve units and their training and readiness and the ability to define and monitor their reserve tasking. To reinforce this vision, parent commanders began to write the fitness reports for their reserve unit commanders and became much more involved in

reducing barriers to the full integration of the reserve support and resources they needed.

When we got underway with our new policy in 1998, we were confident that we could do it, but we also knew it would not be easy. Complete integration of operational force active and reserve units in peacetime had never been done before. There were ingrained cultures on both sides that had to be overcome. For starters, we didn't even have a single comprehensive database to identify and locate qualified submarine officers and enlisted personnel throughout the Naval Reserve. There was no easy way for us to know where our reserve submariners were, to what units they were assigned, and what their skills and qualifications were. We had to create new approaches which have largely solved these problems. And while we still have improvements and refinements to make, we have achieved the first active/reserve integration of operational forces. We are now realizing the return on our intense effort and investment in the One Submarine Force policy as we can point to a steadily increasing number of direct and meaningful contributions made by the Submarine Reserve to the operational community, with new opportunities being generated almost daily.

The Submarine Reserve Today

So where are we today? Currently composed of almost 2,400 reservists in 89 reserve units located across 27 states, the Submarine Reserve program now supports 34 Submarine Force parent commands and continues to grow. The percentage of our available reserve time utilized to directly support the Submarine Force reflects the benefits of this new approach, and has already risen from 46 percent in 1998 to 66 percent in 2000.

FY 2000 saw tremendous improvements in performance within the Submarine Reserve in our integrated role within the One Submarine Force and several new initiatives to increase our involvement.

We played a central role in planning for and conducting many of the events of last year's highly successful Centennial celebration. It was a reservist who filled the full time public affairs position established at N77 to deal specifically with Centennial issues,

supported by other reserve personnel. We provided technical and installation support, along with volunteers from the Naval Submarine League to prepare and assemble the popular Smithsonian submarine exhibit, and developed and maintained the submarine Centennial website. As Admiral Chiles mentioned yesterday, many submarine reservists, acting in our dual civilian capacities, successfully lobbied their Congressional Representatives and obtained scores of new co-sponsors for the stamp legislation which ultimately resulted in approval of the Centennial stamp set.

As Rear Admiral Padgett mentioned, reserve support to Battle Group Staffs (BGS) provides another highly visible example of our support. There are four large BGS reserve units on the east coast and fifteen smaller BGS and Undersea Warfare Commander staffs on the west coast which directly manage and coordinate the battle group's submarine assets. Also, reservists from these units will provide key staff support for the new concept of senior active duty submariners as the Battle Group Undersea Warfare Commander.

In another important area, maintenance and repair, many of our submarine reserve units provide much-needed, direct support to the Submarine Force through new programs. We now have waterfront maintenance teams in Norfolk, Kings Bay, Bangor, San Diego and Pearl Harbor which work directly to assist submarine crews. These teams have also relieved or augmented much of the weekend submarine workload from active repair commands. In Groton, the Naval Submarine Support Facility's weekend repair center is operated primarily by the submarine reserve and saves the force about \$2 million per year in avoided direct costs for military or civilian manpower on weekends while providing skilled, responsive support to waterfront crews, and valuable training and the satisfaction of valued effort for the submarine reservists.

Through innovative thinking and technology, we have established new Reserve Intermediate Maintenance Activity (RIMA) capability for our units located in mid-America. These inland units use available resources and skilled reservists, many of whom possess directly applicable civilian skills and training, to cost-effectively manufacture and/or repair items needed by the Submarine Force. Currently, our RIMAs have 18 projects in various

stages of planning or production, including manufacture of clamshell handles, man-movable brows, guard shack, anti-terrorism hatch covers, bunk and berthing curtains, and special lockers for specific ships and the list continues to grow as we learn more how to match active requirements and these expanding reserve capabilities and resources.

Both Submarine Force tenders (CABLE and LAND) are supported by seven of our reserve repair units. We have also developed and tested a very successful surge concept for clustered maintenance support to the Cable and Land. Last year, as Rear Admiral Padgett told you, USS CABLE conducted a successful reserve mobilization to the ship in Yokosuka. With 160 reserve personnel augmenting the tender crew over a three week period, the tender reached C-1 readiness status and enhanced levels of productivity within one week. A similar exercise with the same results occurred in 1999 when USS LAND deployed to La Madellena with embarked reserve manpower aboard to bring her to C-1 for the first time during the deployment, while providing excellent added reserve manpower for the tender's workload during that time.

There are also two decommissioned submarine tenders (ex-LAKE and ex-MCKEE) which are in a reduced operational *Category B* status, meaning *cold standby*, capable of reactivation in 180 days. With the current planning assumptions, if it really took 180 days to get one of these tenders reactivated, they would not be included in the warplans, so they were ignored as having marginal utility. Realizing the potential if these two tenders could be reactivated differently and more rapidly, the Submarine Reserve partnered with other reserve and NAVSEA expertise to study the issue, and discovered how to accomplish smart reactivation on an accelerated basis in only 50-70 days, providing the Navy with two more \$350 million ship assets it had not previously known it could use.

The Submarine Reserve is also fully integrated into the Navy's underwater surveillance systems. We have completely reorganized our prior support and now train to complement active duty acoustic experts to analyze acoustic data from fixed and mobile undersea acoustic sensors during peacetime and will provide at-sea surge team manning for the Advanced Deployable System upon mobiliza-

tion. The high morale and close working relationships between the active and reserve components of this important command make the benefits of full integration clear to all who see them in operation.

In addition to BGS, maintenance/repair activities and IUSS, the Submarine Reserve is integrated into a wide range of other Submarine Force commands as well. For example, the reserves provide new Deployable Environmental Support Teams through COMSUBLANT, comprised of reservists who possess valuable civilian training and experience in environmental areas and can be requested to assist Submarine Force commands anywhere in the world. Submarine School enjoys the training and administrative services of a new supporting reserve unit. Submarine Reserve Force Protection units, manned by reservists who are in civilian law enforcement, are in high demand to provide some of the security services for the Submarine Force and its units that Force Master Chief Kulti mentioned, and we can POM for added billets and more units if the Submarine Force desires. We are working to establish reserve billets to support CTF 12/84 to enable 24/7 operations during real world ASW events. Finally, our reservists continue to contribute to watchstanding during real world operations when needed, as well as support to many afloat and ashore large scale exercises.

Our Challenges for the Future As We Begin the Second Century of the Submarine Force

I have described what we do in the integrated Submarine Force and how we got to this point. The process is deliberately designed to be continually evolving and we will continue to pursue new opportunities for meaningful contribution. We are motivated by, to use Admiral Bowman's phrase, "constructive dissatisfaction with the status quo." Our challenge for the future is to apply our own reserve resources, and those from other parts of the Naval Reserve (such as medical, supply, engineering, etc.), to the specific areas of greatest need of the Submarine Force, when needed, in a seamless and timely manner.

I expect the Submarine Reserve to undertake a number of

expanded or modified roles and missions over the next several years of our next century. Among these are:

1. Increased reserve participation in the Submarine Force strategic planning and resourcing process.
2. Developing new roles in areas like: support to a senior USN submariner as battle group Undersea Warfare Commander; an increasing role in submarine maintenance and repair, including the ability to reactivate the Category B tenders; and increased use of reservists in planning and liaison with joint/combined commands.
3. Meaningful contributions and participation in expanded and new mission areas, such as mine warfare and UUV employment, and added support to the new submarine presence in Guam.
4. Capitalize on reserve expertise in civilian business, manufacturing, environmental and other science, engineering and technical skills to improve and enhance Submarine Force practices. The new web-based Reserve Force civilian skills database (www.usnrskillsonline.com) will facilitate identification and optimal allocation of reservists' skills to the needs of the One Submarine Force.

The One Submarine Force is a reality made possible by our shared submarine culture and experience, as well as the talent, dedication and flexibility of the officers and enlisted personnel in both the active and reserve components of the Force. Over the last three years we have clearly now begun to contribute in a more meaningful and measurable way than ever before, and this has contributed to the overall efficiency of the Submarine Force. Our continued success serves as a model for other Navy and Naval Reserve programs to consider as they work toward similar goals to fully integrate their reserve components, as the Navy's active and reserve medical community has just done with our assistance.

I am pleased that I have had this opportunity to tell you more about what we are doing. There are many new opportunities before us all to work together as the wider submarine community. The synergism that comes from combining the talents, energies and resources of the active, reserve and civilian/retired/industrial components of the Submarine Force is formidable. Our shared

challenge is to work together in partnership to share these talents, energies and resources to build the best Submarine Force in the world for the 21st century.■

UNDERSEA WARFARE—THE NEXT 100 YEARS

Following the Annual Symposium in June, the Naval Submarine League's leading role in establishing excellent networking events for the undersea defense community continues.

Supported by the Naval Submarine League, *UDT Hawaii 2001* will unite policy and decision makers from the United States, Europe, and Asia-Pacific.

Now in its 14th year, *UDT Hawaii 2001* will be the first time the authoritative conference and exhibition series has been hosted by the U.S.

The conference, featuring nearly 150 technical papers from over 14 countries, is supported by the Naval Submarine League, NUWC, NAVSEA, ASTO, ASME, CEROS, DARPA, and ONR and is chaired by NUWC's Technical Director, Dr. John Sirmalis.

Featured U.S. keynote speakers are Admiral Bowman and Admiral Fargo.

UDT Hawaii 2001 will take place at the Hilton Hawaiian Village between 30 October and 1 November. For further information log on to www.udtnet.com/hawaii or call the UDT Secretariat at: +44 1322 660070.

THE SUBMARINE REVIEW

THE SUBMARINE REVIEW is a quarterly publication of the Naval Submarine League. It is a forum for discussion of submarine matters. Not only are the ideas of its members to be reflected in the **REVIEW**, but those of others as well, who are interested in submarines and submarining.

Articles for this publication will be accepted on any subject closely related to submarine matters. Their length should be a maximum of about 2500 words. The League prepares **REVIEW** copy for publication using Word Perfect. If possible to do so, accompanying a submission with a 3.5" diskette is of significant assistance in that process. The content of articles is of first importance in their selection for the **REVIEW**. Editing of articles for clarity may be necessary, since important ideas should be readily understood by the readers of the **REVIEW**.

A stipend of up to \$200.00 will be paid for each major article published. Annually, three articles are selected for special recognition and an 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**, P.O. Box 1146, Annandale, VA 22003.



Victory on Land Begins Under the Sea

The role of SSNs has changed, reflecting the challenges of the post-Cold War world. So, we are aggressively incorporating new technologies into the *VIRGINIA* Class. Optimized for the littoral, near-shore environment, these submarines will be the *first in* and *last out* to prepare the battlespace, launch land attack missiles, deploy Special Forces and more.

We are teamed to build the *VIRGINIA* Class. And we're proud to serve the Navy as it charts a new course *Forward from Under the Sea*.



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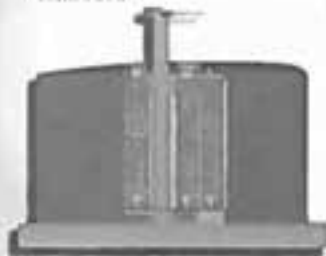


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A SUBMARINE INTERNET SITE

by Ron Martini

M*eat and Potatoes or submarines.* Those were the choices I faced in 1995 as the Internet came to my small community in the Rocky Mountains where I was raised and from where I am writing this. A friend and computer store owner asked me to write a page for the new Internet service he was bringing into our town of Sheridan, Wyoming (pop. 15,000) that would bring people from out of state to his site. That would give him the numbers to show prospective local advertising customers as he tried to sell them on this new technology. He was targeting the tourist/travel industry and real estate companies in the area.

Meat and potatoes was the job I had held since 1968 when I left the Submarine Service after eight years, the last five on USS PATRICK HENRY, and went right into the grocery business. I had been promoted to grocery store manager after a year and a half. Submarines and the grocery business were the only two jobs I had done in my life.

I decided to write a page about submarines as I felt I could give something back to the service that I had enjoyed from 1960-68 and help my Internet Service Provider (ISP) at the same time. I had spent my time in the best of submarine worlds having served on a diesel boat, then graduating from Nuclear Power School and reporting to PATRICK HENRY. I also had some guilty feelings for never having tried to find past shipmates. So I would write a page and rely on the old adage that if I built it, they would come. And did they ever come.

What was a page? That was a key obviously. My friend, the computer store owner and ISP, really didn't know how to create one and I didn't either, but we would figure it out. I had been playing with computers since 1984 so that part was easy, but I really had no clue as to how to write a page.

I was also the president of our local computer users group which at one time was the largest such group between Minneapolis and Seattle. From that group a couple of us figured out, without texts and outside assistance, how to write a page. There is a way you

can view the source code (language) of any page you are looking at. If you find an easy page you can look at the code, copy it to your computer and change it to see the effect of your changes on your own machine before it's put on the Net. The language is simply plain text with some tags at specific locations telling the program what to do and how to place things on the screen. That's what I did—searched for a page that I liked and started plugging in my own pictures and text. There was a lot of trial and error but it works and is not difficult.

I had managed to save some pictures from my days aboard USS CATFISH and USS PATRICK HENRY and I found some technical data on those two boats from reference books. I made a page with actually three subjects or sub-pages. The two boats and a general page on links to other pages and information that I had found surfing the Net. When my page first hit the Net there were only five other pages: SubNet; Silent Service; Sturgeon; Hot Rod's Page (actually done by a lieutenant commander at Kings Bay); and a page that had some information about nuclear reactors.

Was my venture successful in the minds eye of my friend? Wildly so. The number of visitors to his server increased exponentially as did the number of pages. From back in the days of 25 *hits* or visits per day being very good, it has evolved into a Bulletin Board Service (BBS) for submariners that has received 115,000 posts since its inception three years ago. Hit counters placed on the BBS page indicate that over three years, people who stop just to read the posts outnumber the people who place the posts about 3-1, which translates to about one-half million people who have come to the board. That BBS is just one of four that I currently maintain. I have another for serious submarine book readers, one for my SubVets Base, and one for the officers of SubVets to discuss issues. I have also written and maintain some 21 other pages ranging in interest from boat pages, collectibles, officers, veterans rights and benefits, videos, a bookstore, ports and yards, official U.S. Navy sites, humor, pictures, history, accidents and much more. One of the BBSs' raised over \$1100 to help give some needy boat sailors at Norfolk a good meal over the holidays. I have held three on line auctions to benefit ongoing work on museum submarines. We gathered up stuff from guys on line and auctioned it off and have

raised over \$7000 for CAVALLA in Galveston, CROAKER in Buffalo and TORSK in Baltimore and another planned this coming November and all without benefit to any individual. The next auction is going toward benefitting the planned USSVI/SubVets Library Foundation Fund.

One interesting side note of all these pages and interest is the accumulation of pages and Web sites written by others that are designed to track and record crew members. Nearly one half of the boat pages in my *Fleet* page maintain crew lists. Many reunions have occurred because of these lists. The Internet has given people an extraordinary ability to track down former shipmates. There are other services on the Net that are huge lists of submariners and veterans. The U.S. Navy Memorial in Washington, DC, for example, maintains an on-line listing of Navy veterans.

One of the pages mentioned above (SubNet) was the first to recognize the need to maintain such lists. Don Merrigan of SubNet has more than 27,000 people recorded on his system. I do something a little unique, in that I also maintain a list called D.O.S.—the Directory of On-line Submariners. It currently lists more than 13,000 submariners with email addresses, the city and state where they live, and boats they served on. I receive 8-10 entries per day now for that system. It is used also for planning reunions and finding shipmates. You can look up and find a shipmate if he has an email address in less than five minutes.

Here are some numbers of interest. My *Fleet* page contains page links to over 350 submarines. In that page are some 143 different nuclear boat pages alone and many of them have multiple pages. That means more than one person wrote a page for a particular boat. My total link count (the address of another page embedded in the one you are viewing) is over 2000. That means if you explore three pages per day thoroughly you will spend two years of surfing just for submarine related topics.

I have over 174 foreign boat links to pages from Australia and Brazil to Russia and Sweden. I list over 150 new submarine books to buy. There are 75 *Ports and Yards* to visit, hundreds of official Navy sites, 75 links to *Veterans* and pages on models, salvage, search aides, stores and shops that sell submarine memorabilia,

Veteran groups, photo pages, historical pages and odds and ends. Also there is a humor page called Golden Rivet that is a collection of *how to relive your days on the boats*—such as converting your closet to a bedroom and running emergency drills in your home. Want to keep up on Groton news? Visit the *New London Day* online or the *Dolphin News* from Groton Subase or how about the *Trident Times* from Bangor.

Don't ever think you are too old to use this new technology. I used to talk regularly with a man named Tom Parks who served on S-39. Tom passed away last year but he used his computer daily out of his retirement home in Mexico. Two regular visitors to my system are Ron Smith who served on USS SEAL in WWII and who wrote the book *Torpedoman* and Frank Toon who rode USS BLENNY in WWII. Get aboard the USS Internet. Along the way stop and view NSL's new website at: www.navalsubleague.com. The Navy recently has opened up the channels of email to the ships at sea. Communications to and from family members has changed greatly since the days of *family grams*.

So my *meat and potatoes* is now submarines. It consumes my days since I have retired from the grocery business and it is an ongoing journey of meeting new people on the net and talking about submarines and *old* days. My system address is: wavecom.net/~rontini and my email address: rontini@wavecom.net. ■



DETERRENT PARK HONORS ALL WHO SERVED— BUY A BRICK!

by *RADM C.H. (Chip) Griffiths, Jr., USN*
Commander, Submarine Group NINE

"We built it one brick at a time, and it looks just like the real thing!", World War Two submarine veteran TCM(SS) Ed Ferris, USN(Ret.) told friends before the official opening of Deterrent Park on 25 May 2001 at Sub Base Bangor. Ferris was referring to a full length replica of the topside areas of USS WOODROW WILSON, centerpiece of the newly completed Deterrent Park memorial located in the traffic circle in the center of Bangor's upper base *campus area*. The park was formally opened in a combined ceremony that honored the completion of the 3500th Strategic Deterrent Patrol by USS FLORIDA (SSBN 728)(GOLD), and also included the traditional *Tolling of the Boats on Eternal Patrol* in honor of Memorial Day Weekend. Rear Admiral John Padgett, COMSUBPAC, made his first official visit to Submarine Base Bangor as the principal speaker. Over 700 people attended the ceremony, including local dignitaries, a large group of U.S. submarine veterans, and a group of Canadian submarine veterans from Victoria, British Columbia.

The bricks to which Ferris was referring are engraved commemorative bricks honoring individual sailors, family members, and other friends and supporters of the Submarine Force. These bricks are the heart and soul of the memorial. They honor wartime heroes such as Dick O'Kane, two submarine sailors from the First World War, a host of sailors lost in World War Two and peacetime accidents, many of today's living veterans, active duty sailors, civil servants, and the wives, sons, and daughters of submarine families. The bricks are set into the *missile deck* area of the WOODROW WILSON replica. Ferris pointed out that nearly 2000 bricks have already been placed in the memorial, and that an additional 3000 are available for purchase through the Pacific Northwest Submarine Heritage Association (PNWSHA) or *the Association*. The Association is an umbrella group of submarine veterans and active duty sailors who formed a partnership three years ago to build the

memorial. "The bricks are called *pavers* by the folks at the brick yard for a good reason. They should last at least 100 years," Ferris added.

The Association is justifiably proud of the park. The submarine replica includes the actual sail, periscopes, and rudder of the ex-USS WOODROW WILSON, salvaged from the submarine recycling process at Puget Sound Naval Shipyard. The superstructure was sculpted out of reinforced concrete by professional concrete sculptors who added every possible touch of realism, including the weld beads of the hull and superstructure, and seams in the concrete approximating the locations of the missile hatches, access hatch, and radio buoy door. The result is so realistic that one contractor attending a recent Strategic Weapons Systems (SWS) Week seminar observed that "it must have cost a lot of money to get the actual steel from the pressure hull and superstructure brought in from the shipyard." Several other SWS Week guests were noted tapping on the concrete hull as if they suspected it was actually steel. The Association leadership now believes that hiring the concrete sculptors was probably the best decision they made.

Tom Roper, a retired submarine LDO who works for Electric Boat, headed the Association's construction effort. It was he who engaged professional engineer Jay Martram to design Deterrent Park. Roper also saw the park through each step of construction. "Moving that sail was the toughest thing we did," he noted. "I was relieved when we finally got it off the truck and mounted on its foundation. It went off without a hitch, but I got some of my gray hairs because of it." Lowell Sweet, a Reserve CPO who drills at COMSUBGRU NINE, and an employee of Puget Sound Naval Shipyard, was one of the workers who cut the sail from the ex-USS WOODROW WILSON during the submarine recycling process. Sweet noted that "the normal method for removing the sail from an ex-SSBN was to cut it into six pieces and lift it off the hull piece by piece. This one was a lot more challenging because we had to preserve the integrity of the sail. We were able to make it light enough to lift by cutting out a pathway through the lookout stations so the fairwater planes could be lifted out first. Then the sail and planes were placed on a barge for the trip to Bangor. Sweet noted that he was able to see construction progress on his Reserve

weekends at Group NINE. The lookout stations were welded back together once the sail and fairwater planes were mounted in the park by Naval Reservists drilling at Intermediate Maintenance Facility Northwest (formerly Trident Refit Facility).

From my office I can see the full length of the memorial in one vista starting with the rudder, located about 20 feet from my window and running across the traffic circle and through the park about 450 feet to the bow. Although only two feet of freeboard show above ground level, one cannot look at the park without being taken by its enormity and authenticity. Sometimes it strikes me as a submarine moored placidly at its berth, and yet when I drive into the campus area at night or in the early morning and see the bow-on aspect at short range with running lights ablaze, it has the appearance of being underway. Captain Bruce Gustin, Commanding Officer, Strategic Weapons Facility Pacific, and the Navy's longest serving submariner, recently claimed that the replica looks better than the actual ship ever looked, "and she was a good ship when I sailed on her." Gustin has been a strong supporter of the park ever since the plans were first drawn up, and has worked behind the scenes to ensure that construction moved forward.

Retired Captain Mike Gray served for two and one-half years as President of the Association and has been the driving force keeping the volunteers pointed towards the common goal of building the park. He recently commented that "Deterrent Park is foremost about people—the men who manned our submarines, especially the ones we lost in war and peace, the families who supported them, and the myriad uniformed and civilian men and women who built, outfitted, repaired, supplied, and guarded our submarines. He pointed out several park features that were added to focus on the people. A World War II vintage Mk 14 torpedo has been mounted as an *Eternal Patrol* memorial. A massive bronze plaque mounted at the base of the torpedo honors 3914 men lost in U.S. submarines that did not return, including 52 U.S. submarines lost in World War Two, and 15 U.S. submarines lost in peacetime accidents. The bell from the former submarine tender USS HOLLAND (AS 32) has been mounted in the park in honor of all uniformed and civilian workers who have provided support for the U.S. Submarine Force.

Gray also noted that a number of plaques have been placed in the park honoring individuals and contractors who made gifts or provided services to help build the park, and indicated there is space for more.

Since the WOODROW WILSON sail first arrived in the park in early 1999, Deterrent Park has played a key role in the ceremonial life of Submarine Base Bangor. Commander Angus McColl, former Vice President of the Association and the Operations Officer at Submarine Group NINE, noted that "even when the park was just the sail on a vacant dirt lot, we noticed more than a handful of sailors go out there to reenlist. It was almost a daily occurrence." McColl also noted that several other key events happened before construction really got moving. Bangor's, first annual Tolling of the Boats on Eternal Patrol occurred over Memorial Day weekend in 1999 with the sail as a backdrop. Tolling the Boats at Deterrent Park is now an annual Bangor tradition. The Woodrow Wilson Reunion Association (WWRA) held a memorial service for fallen shipmates at the sail in the fall of 1999. "After the service the WWRA made the first major financial gift to the construction fund," McColl said. "We look forward to other reunion groups using the park in years to come."

Over the summer of 2000 the park was used nearly every day for reenlistments, retirements, Submarine Centennial events, crew award ceremonies, reunions, and a memorial ceremony in honor of the lost Russian submarine KURSK. In May 2001 former crew members of USS WAHOO held a reunion and memorial service at the park. In June 2001 it was the stage for honoring the Blue and Gold crews of USS FLORIDA with the Omaha Trophy as the nation's best strategic submarine for the year 2000. The first two Trident submarine Change of Command ceremonies at the park were also held in June. Future active duty command functions and submarine veterans reunions may be booked with the COMSUBGRU 9 Master at Arms by calling (360) 396-6513.

The Association invites all who served in submarines or supported the Submarine Force to play a role in building Deterrent Park by buying an engraved brick. Bricks will be engraved and set in the missile deck of the WOODROW WILSON replica until they are all sold. Individual and corporate sponsors are also still being

sought. Although the park appears complete, the Association has a long list of additional features that will be incorporated in the park and the surrounding grounds as money becomes available. A maintenance endowment is also needed to keep the park looking good in future years. The Association may be contacted through Lieutenant Commander Steve Kintzel on the COMSUBGRU NINE Staff at (360) 396-6591.

Brick applications and information on individual or corporate sponsorship may also be obtained at the Association's web site at www.y-comm.com/-pnwsha. Please do what you can to help support Deterrent Park.■

IN MEMORIAM

CDR Grant Apthorp, USN(Ret.)
CAPT William H. Ayres, USN(Ret.)
CDR James C. Cunningham, USN(Ret.)
RADM Dempster M. Jackson, USN(Ret.)
CAPT Paul Mansell, Jr., USN(Ret.)
CDR Rufus B. Moore, USN(Ret.)
CAPT John E. Niese, USN(Ret.)
CDR Frank F. Zechlin, USN(Ret.)



REFLECTIONS**A DEPENDENTS CRUISE—
ON A FLOATING DRY DOCK?**

By LCDR Jack Hunter, USN(Ret.)

Thought you'd heard everything, have you? Well, I'll wager you haven't run across this one before.

It was late spring of 1977 and I was eight months into my tour as CO of WEST MILTON (ARD-7), one of two floating dry docks (WATERFORD (ARD-5) was the other) at the Subase in New London. We'd had a busy winter of dry dockings behind us and a full schedule of more dockings loomed ahead with no down time (no pun intended) to rest and recover. I was looking for something to do that would pick up sagging spirits.

I had participated in several dependents cruises in previous duty stations—one a destroyer and two others in submarines. So, why not hold one on the dry dock? Who doesn't like to show off their work place and let the family see what they do? I canvassed the wardroom and goat locker and got "never done that before, Captain, but sounds interesting" type responses. I think this was their polite way of saying I was slightly crazy. How do you hold a cruise securely fastened to the pier? But, ignoring their less than enthusiastic comments, I went ahead and floated my idea past the CO of the Naval Submarine Support Facility (NSSF) and then the Commodore of Squadron TWO, the immediate upper links in my chain of command. No one posed an objection, but both wanted to know how I planned to pull this off safely before giving their final OK.

In my experience, a typical dependents cruise consisted of getting underway, proceeding to sea, demonstrating how the ship worked (firing guns, formation steaming/changing station, running man-overboard drills, activating the NBC water wash down system, diving/surfacing, firing water slugs—those kinds of things) and putting on a good meal. Obviously a floating dry dock couldn't do most of those things, so what could we do? After considerable discussion with the wardroom and chiefs, we decided to hold a cookout while actually docking a submarine. Back to my bosses

with our plan and got the OK to proceed. During the docking conference with the next boat on our schedule, I told the CO what we planned to do and asked if he had any dependents that might like to watch and join in our cookout. I got a "you're doing what?" look and a polite "no thank you".

We borrowed chairs and tables from NSSF and set them up under canvas awnings on our large, open upper deck. Docking day was sunny and warm and all our guests were aboard by mid-morning as we began ballasting down in preparation for the noon slack water docking. The chief mess management specialist had prepared a menu consisting of barbecue chicken, charcoal grilled hot dogs and hamburgers, potato salad, tossed salad, hot veggies, rolls, a frosted sheet cake, ice cream, and plenty of coffee, soda, and juices. (Not bad considering we were feeding on a skimmer ration rate.) He and the cooks and mess cooks set up the grills and got the food going as we lowered the stern gate and prepared to receive the sub. Right on time the sub appeared off our stern, lines were passed, and we began drawing the boat into dock. Once the sub was positioned above the blocks and we began deballasting, we relieved all hands on station so everyone had a chance to eat and spend time with the family/friends. It was late afternoon before the sub was on the blocks and the dock pumped dry. By the time the food was all gone, all our guests had been given the opportunity to have a guided tour of the interior spaces of the dock.

We had two more dependents cruises before I left WEST MILTON. When offered the chance, the same sub CO who was the guinea pig for our first cruise sent some of his dependents over on a subsequent docking of his boat. He commented that we looked like we were having fun and he wanted to give his dependents a chance to experience a docking evolution. He provided some of his good submarine food to augment our menu and contributed mess cooks to help us out.

Our cruises got some good local notices, but never to my knowledge became popular outside of New London.

NOW you can say that you've heard everything!■

ONE SUBMARINER'S SEA STORIES

Part I

by CAPT Robert T. Styer, USN(Ret.)

Captain Styer graduated from the Naval Academy with the class of 1948B. He served for two years in USS McKean (DD 784) spending most of that time with the U.S. Seventh Fleet as part of Japanese Occupation Forces patrolling the islands of Japan. After graduation from Submarine School in 1950, he served on seven different submarines—two diesels and five nuclear powered, the latter two of which he commanded. These short stories are centered mostly on experiences on these submarines. He retired after 30 years of naval service in 1978, and now resides in Florida.

My First Skipper and Angles and Dangles

Captain Enders Huey was my first submarine skipper (USS CHOPPER (SS 342) in 1951. I reported to CHOPPER at the Electric Boat Company Shipyard where CHOPPER was undergoing overhaul. Captain Huey had a beef with the Bureau of Personnel over the policy that the time requirement for an officer to be eligible for Qualification in Submarines, which was one year, could not include time in a shipyard. He believed that was a perfect time for young potential qualified submariners to study the ship's systems and components as part of their qualification program. He ordered me to have my Qualification Notebook completed in six months instead of the usual twelve months to be ready for my final examination earlier than the required year. I did that, but as it turned out the Bureau did not agree with his view and I had to re-do my lengthy notebook which was completely rewritten in the following six months. In the meantime, Captain Huey made me make almost all of the landings and underways as Officer of the Deck for my first six months, much to the consternation of some of the other less junior officers who wanted the experience. The idea was to be ready in six months. I was required to make eight different periscope approaches in practice firings at surface ships, and as torpedo officer spent many long nights supervising preparing the torpedoes to be used in an unprecedented spread of ten torpe-

does at our practice destroyer target. I then had to supervise the recovery of those practice torpedoes on the forward deck to be lowered into the forward torpedo room, an exercise normally taken on by small torpedo recovery vessels which had better gear to do the job.

And the angles and dangles part of the story...Captain Huey handled that old diesel boat much like we were able to do many years later when nuclear submarines came along. These latter boats are much more stable during high speed maneuvers. Another of his feats was to submerge the ship while making full speed astern, a maneuver he required all of his officers to accomplish. We all learned how to handle just about any expected emergency through daily drills.

One day in Key West we had an occasion to host a group of naval aviators on a day's run at sea surfaced and submerged. He pulled a trick on those unsuspecting officers which gave them the thrill of their lives. While submerged in deep water, when these officers were enjoying a cup of coffee in the wardroom, word suddenly came over the loud speaker system: "Rig ship for outside loop!" Captain Huey had briefed the stewards serving the guests in the wardroom. Three of them started running around putting everything away that wasn't tied down, locking all drawers, and stuffing pillows everywhere to contain any flying object. All the while they were muttering loud enough for the aviators to hear words like, "Lawdy, I wish the 'ol man wouldn't pull this maneuver again!!"... And "Hang on, gentlemen!!" or similar comments. Shortly thereafter CHOPPER would slowly be placed in a very steep down angle, between 20 and 30 degrees, and at the very steepest angle the propellers would be placed in reverse and the main ballast tanks blown...an emergency measure called *back, blow, and pray*. We all had to learn as diving officers to pull out of any unexpected extreme down angles. Needless to say, our aviator guests were impressed, and probably a little bit frightened by these high jinks.

My Encounters with Lord Mountbatten (*Louis Albert Victor Nicholas, First Earl Mountbatten of Burma 1900-79, British*

Admiral)

In 1951, I was the youngest and most junior officer (grade Ensign), in my early twenties, serving in USS CHOPPER (SS 342). My skipper, Enders P. Huey had led us on a Mediterranean cruise with the U.S. Sixth Fleet—my first deployment overseas. We had occasion to visit a Mediterranean port where Admiral Mountbatten also happened to be visiting. Admiral Mountbatten was invited to dinner in our tiny wardroom.

Toward the end of our dinner and a lot of pleasant and enlightening conversation (for me, anyway), Captain Huey told the Admiral that he wanted to have a set of Honorary Gold Submarine Dolphins presented to him, and decided (for some reason) that the junior officer on board should make the presentation. I stammered through a few words and managed to pin the Dolphins on the Admiral's chest without harming him. Finding an empty spot amongst the mass of insignia, medals and ribbons already there was a challenge.

The real meat of the story follows. In 1963, I was serving as Executive Officer (Gold crew) in USS THOMAS JEFFERSON (SSBN 618). We were moored at the Newport News Shipbuilding and Drydock Co., Newport News, Virginia (where the ship was built) when Admiral Mountbatten happened to pass through town. Our skipper, Captain Chuck Priest, had the entire wardroom lined up on the main deck to greet the visiting Admiral when he crossed the bow.

I noticed he was wearing the American Dolphins I had pinned on him 12 years earlier. I didn't figure he would notice me. To my surprise, he said as he met me in the greeting line, "How are you, Lieutenant Commander Styer? As you can see, I am still wearing the Dolphins you presented to me." What an impressive memory!

Ted Haselton—Engineer Extraordinaire

This story is about my friend Ted Haselton who was engineering office of USS CHOPPER on my second excursion into the fun of Mediterranean cruises under the command of Captain Verner Utke

Ramsing. In those days he was a Lieutenant and I was still an Ensign. Today, he goes under the Internet banner of *Imagineering*, which also is the name of the company he started up after retirement. Anyway:

Early in our deployment one of our four 8 cylinder main General Motors diesel engines suffered a catastrophic failure of one of the main bearings where one of the cylinder piston arms connected to the crank shaft. The engine was obviously out of commission until we could receive major help from a shipyard facility. A casualty report was sent, and we were told to proceed on our deployment...three working engines would certainly handle anything we had to do.

Ted did some thinking and figured that he could repair the engine, which seemed nonsense to the rest of us, but he made a bet with the skipper that if he repaired the engine, the skipper would agree to take the first in-port overnight duty officer assignment when we returned to homeport Key West—an assignment usually reserved for one of the bachelors, certainly not the skipper who never stood in-port watches. Ted then further negotiated and said he would have to be taken off the watch bill (Officer of the Deck for four hours every 16 hours plus Diving Officer Duty when submerged). Plus, two of his trusted Petty Officer Engineering Mechanics had to be freed from routine watch standing. A done deal.

Those guys built themselves a special grinding rig/Rube Goldberg kind of device that would make tiny grinding maneuvers across the damaged (egg shaped) journal bearing surface of the crank shaft whenever they turned the crank shaft a few degrees to accomplish the job. The idea was to make the journal round again and then somehow find an oversized bearing surface to place in the end of the piston rod to safely carry the load of the associated cylinder. They accomplished the job of making the journal perfectly round again in several weeks, and when we made our final port call at Gibraltar, the local British Navy Facility built us a set of babbitt bearings to fit the new over-sized configuration designed and required by Ted Haselton. The end of the story, of course, involves the skipper's loss of the bet and he did indeed keep his

promise, much to the consternation of his lovely wife who had to settle for a nice dinner in the wardroom of CHOPPER the night we moored after a lengthy deployment away from home.

But, not completely...the real end of the story is this: When Ted left CHOPPER for another submarine assignment, I became Chief Engineer. CHOPPER was scheduled for a routine overhaul. My immediate task was to put together all the necessary paperwork to submit to the overhauling shipyard which consisted of a mile high of all the work orders necessary for the shipyard to proceed on repairs the ship needed. The first work order was simple: *Replace the main crank shaft on the defective main engine.* I left the ship for my next assignment before CHOPPER entered the shipyard, but I learned later that the shipyard turned down my request for repairs to that engine. Instead, they provided CHOPPER several oversized bearings made to British Specifications.

Penetrating the Straits of Gibraltar

In 1953 I was a member of the wardroom of USS TIRANTE, one of the first snorkel conversions in the fleet. I was headed for my third deployment to the Mediterranean led by my second skipper, Captain Jack Barrett. One of the frequent exercises our fleet submarines became involved in was working with the U.S. Sixth Fleet Anti-Submarine Warfare Force, which consisted of many destroyers and aircraft. We were directed to make a submerged penetration of the Straits of Gibraltar from west to east at a given time interval when many ASW ships would be hunting for us to detect and make simulated depth charge runs. The penetration usually was done at low quiet speeds and deep depths through this very deep valley between Spain and North Africa. Obviously there was little room to maneuver in this narrow valley of water, so the exercise gave us no opportunity for simulated counterattacks on destroyers once we detected their sonars. Needless to say the exercise which lasted around 15 hours was great practice for both submarine and ASW foes with no holds barred, except the confinement of the Straits.

This was prelude to my fourth deployment to the Med six years later in USS SKIPJACK (SSN 585) with my skipper, Captain Bill

Behrens. Captain Behrens had an aggressive approach to submarining, and he had command of the fastest submarine in the world, a fact that he quickly demonstrated to our ASW friends. On approaching the Med, we were provided the same instructions to penetrate the Straits of Gibraltar for some ASW practice with the Sixth Fleet. Captain Behren's plan was to penetrate this narrow but deep trench at flank speed. As navigator I was a little concerned about how best to accomplish safe navigation. I was allowed a final periscope visual accurate fix on land objects on either side of the Straits and an opportunity to make at least one sounding in the middle of the Straits to confirm our position while at high speed and deep depth. In 15 minutes we were on the eastern side of the Straits at periscope depth watching a group of frustrated destroyers milling around about three miles away pinging their hearts out at nothing. The finale was a strongly worded message we received later from the Senior Destroyer Officer-in-Charge of the exercise claiming foul play. I guess he expected another 15 hour exercise rather than a 15 minute scramble. That was not the last time these folks would be frustrated by SKIPJACK.

My Interview with Admiral Rickover

Many of us have uncomfortable, if not terrifying, memories, of their interview with Admiral Rickover who did the painstaking task of personally taking on the face-to-face interview and acceptance or rejection of every officer desiring to enter the Nuclear Power Program. Mine may not be unique, but as I remember, it was interesting.

At the time I was accepted for interview, I was a Lieutenant on the Instructing Staff at the Nuclear Power School, New London, Connecticut. I was there because Admiral Rickover had decided that the Bureau of Naval Personnel should take over instructing officers and enlisted men in appropriate advanced academics and submarine nuclear engineering systems. Selected by BuPers, I had spent 18 months in Idaho at the Nautilus prototype reactor to qualify as a Reactor Engineer in order to become part of the teaching staff at the new school in New London. The school was

under the leadership of Commander Bill Behrens who eventually became my Commanding Officer in USS SKIPJACK (SSN 585). My total time becoming qualified as a Reactor Operator (Engineer) and instructing at the school came to approximately two years.

When it came time for me to go to sea again, the logical choice was to go to sea in a nuclear submarine. In spite of my encounters with Admiral Rickover in Idaho, which were not infrequent, there still had to be a formal interview and acceptance in the program. Before going to Washington for my interview, my boss, Bill Behrens, who knew both Rickover and Styer like a book, gave me some advice. He explained to me that Rickover did not accept officers who did not stand in the top of their Naval Academy class (which I didn't), and he explained to me that I would have to do something during the interview to keep his mind off my obvious lack of education.

I made up my mind to go down to Washington and go through (or get killed during) the interview wearing civilian clothes. Admiral Rickover almost always wore civilian clothes, so I knew it must be legal at least in Washington. My first real discomfort came in the waiting room before our interviews with three pre-interviewers and then the final with the KOG (as we referred to him—the *kindly old gentleman*). I was sitting there in my finest pin-striped suit with about 20 other junior officers all of whom were in uniform and staring at me wondering who the hell I was. My pre-interviews with people of the KOG's staff went fairly smoothly, but they all warned me that the 'ol man would see through my ruse.

The interview went something like this: When I walked in and greeted the Admiral with courtesy, he went ballistic and raised his voice more than I had ever heard before when he asked me what in hell I was doing out of uniform. I told him that I was comfortable in civilian clothes, as he seemed to be in the same attire. I also reminded him of our encounters in Idaho and expounded on my obvious qualifications for the program as a result of that Idaho experience. He shifted the subject to my class standing at the Naval Academy. I told him that I stood academically about half way down the class ladder, and he caught me in a lie. He told me that I tried to hide the fact that the class of 1948 was split into two different classes academically during the war, and that I graduated

in the class of 1948B ('48A graduated in three years in 1947; I graduated in 1948). He then went on to explain that the B after my class year group stood for *Bucker!* At that point he told me to get out! I figured I had nothing to lose, and remembering my skipper's advice, I told him "No, sir, you haven't heard me out." The next few minutes was a one-sided story by me that in spite of the fact that I was not up to his high academic standards, he would not find many other officers who would work as hard as I would for the program. I was already dedicated to it, and that I felt that my practical experience was more important than high grades which I failed to achieve as a young man. I rambled on for another few minutes and when I finally paused, he asked me if I was through. I said "Yes, sir", and he said, "OK, now get out!"

On the way home to New London on the train, I figured I had really messed up badly. But I was wrong again. My wife greeted me and told me to call Bill Behrens, which I did. He said that the Admiral had called asking him if he wanted me on the commissioning crew of SKIPJACK. When Bill said "Yes", I think the retort was something like: "OK, you've got the obstinate idiot."

I personally thought that was the greatest decision the KOG ever made. In my opinion, it made my career, because Bill Behrens taught me in the two years under his command just about everything I needed to learn about running submarines and working the *loyalty up and down* discipline with the crews that I had the privilege of commanding in future years.

Tweaked by Green Flares

The next story is also about SKIPJACK and how Captain Bill Behrens tweaked an aircraft carrier. Later in SKIPJACK's deployment to the Med we were invited again to join the U.S. ASW Forces in further exercises. This time we were pitted against a carrier group in the middle of the Med. Our task was to penetrate a formidable destroyer screening group spread out ahead of a large aircraft carrier and try to *sink* the carrier with practice approaches after passing through the screen. Again this group found that SKIPJACK was indeed a new kind of underwater foe. Once we

passed the search destroyers deep and at high speed, we slowed and conducted a conventional torpedo approach on the carrier who had no idea where we were. We made a few normal practice approaches, and when in position to simulate a firing of a spread of torpedoes released green flares. While our position of the simulated firings was usually 1000 yards or so on the beam/bow of the surface target, by the time the flare floated to the surface, the flare was usually spotted floating down on its parachute somewhere astern of the target. When the carrier failed to acknowledge that it had been *fired upon*, SKIPJACK did the unusual maneuver of placing herself directly beneath the carrier matching her course and speed. During one phone exchange, the carrier made a hollow threat to drop an anchor on us. The final coup occurred when we calculated roughly where we should be when we launched our next green flares, taking into account the ascent time of the flares and estimated parachute drop time, so as to place them on the carrier's deck to really get his attention. We proceeded up ahead of the carrier, took the calculated position and launched our flares. The exercise ended with another cry of *foul play*, and we quit the fun when we learned that a couple of flares had landed squarely on the carrier's deck which proved to be dangerous with all the gasoline fueled aircraft sitting around. Needless to say, when Captain Behrens attended the post exercise briefing at the next port of call, he was surrounded by a hostile group of ASW surface officers, some of whom praised his new tactics but asked that future exercises be confined to restricted maneuvers on the part of SKIPJACK. That never happened.■



**NAVAL SUBMARINE LEAGUE
STATEMENT OF FINANCIAL POSITION
MARCH 31, 2000**

ASSETS	
CURRENT ASSETS	
Cash	\$ 11
Cash Equivalents	48,360
Investments at Market	240,993
Prepaid Expenses	5,653
Accounts Receivable	<u>3,629</u>
	\$298,646
FIXED ASSETS	
Furniture & Computer Equipment	39,257
Office Condominium	<u>251,021</u>
	\$290,278
Less Accumulated Depreciation	(109,322)
	<u>180,956</u>
TOTAL ASSETS	\$479,602
LIABILITIES	
CURRENT LIABILITIES	
Accounts Payable	\$ 1,776
Deferred Income	67,800
Deferred Membership Dues	38,836
Rental Deposit	<u>675</u>
Total Current Liabilities	\$109,087
LONG TERM LIABILITIES	
Deferred Membership Dues	<u>\$120,486</u>
Total Liabilities	\$229,573
NET ASSETS	
UNRESTRICTED	
Undesignated	126,240
Board Designated for Equipment	21,150
TEMPORARILY RESTRICTED	
Centennial Funds	102,639
TOTAL NET ASSETS	<u>250,029</u>
TOTAL LIABILITIES AND NET ASSETS	\$479,602

NAVAL SUBMARINE LEAGUE

PROGRAM ACTIVITIES
FOR THE YEAR ENDING MARCH 31, 2001

Program	Revenues	Expenses	Net
Annual Symp.	\$ 95,090	\$ 94,600	\$ 490
SubTech	190,044	142,925	47,119
Centennial	635,671	868,939	(233,268)
Awards & Grants		78,637	(78,637)
Publishing	19,000	77,173	(58,173)
Promotion		42,337	(42,337)
Chapter Support		11,350	(11,350)
Special Events		1,261	(1,261)
Total Program	\$939,805	\$1,317,222	\$(377,417)
Contributions	\$124,233		\$ 124,233
Dues	79,527		79,527
Bank Interest	670		670
Investments	21,579		21,579
Rent	8,100		8,100
Gain on Invest.	45,409	\$135,735	(90,326)
Other	5,624	148,683	(143,059)
Total Add. Income	\$285,142	\$284,418	\$ 724
NET PROGRAM INCOME	\$1,224,947	\$1,601,640	\$(376,693)



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THE SUBMARINE REVIEW continues its list of E-Mail addresses with those received since the April issue. We can be reached at subleague@starpower.net

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CDR Donald Shelton, USN(Ret.)



LETTERS**ANOTHER DICK LANING STORY**

April 29, 2001

Bill Matson's article about Dick Laning in the April **SUBMARINE REVIEW** brought to mind another anecdote about that fine guy. During the pre-commissioning days Dick was constantly on the lookout for opportunities to enhance SEAWOLF and its capabilities. I was the pre-commissioning torpedo officer and became one of Dick's targets for seeking out ways to better the boat's offensive capabilities. In pursuit of this, he arranged for a 1956 visit to MIT's Lincoln Lab. He hoped to gain some insight into how the Lincoln Lab SAGE system could benefit submarine search and attack capabilities. As we explored the cavernous halls of their site in Lincoln, it soon became clear that digital computers were a tremendously powerful tool for data analysis. But, with the then state-of-the-art, significant advances would be necessary to make the computer of the mid '50s submarine compatible. (As we now know, that was done in time to outfit GEORGE WASHINGTON with NAVDAC and the MCC computers.) As we drove home, Dick, with his usual insight, commented, "one day we'll be able to walk around with a computer as powerful as those SAGE computers, and it will fit in the palm of our hand". Thank God Dick lived long enough to see this prediction come true.

Thought you might be interested.

*Best wishes,
Charles A. Orem
284 High Head Road
Harpwell, ME 04079*

A REMINDER TO ALL MEMBERS OF THE NSL FAMILY

June 2, 2001

There are many highly visible advantages to being a member of the Naval Submarine League. We are all cognizant of these outstanding advantages and utilize all of them to our own personal needs.

I would like to get members to think about those small, but very important uses, things that may seem to be just a routine, but on closer examination these small things become increasingly more and more useful.

First, I would like to applaud the staff for our annual roster. I belong to many organizations, fraternal, military, and civilian oriented. None of them, not one, publish a complete annual membership roster as does the staff of the NSL, especially Mary McKinney, (round of applause) and probably ably assisted by others on the staff. (Continue the round of applause.)

And another kudo for the annual up-to-date roster. I think it should be considered as a very important feature of our overall operation of our organization and I think it is a useful tool in getting new members to sign up.

I have been an *information booth* for many people to call and inquire about many problems, many people, odd ball questions, "how do I do this", "can you help me get in touch with", "what is the procedure for getting ashes scattered at sea", and a multitude of other questions concerning submarines or submariners.

People are pleased that I can, in most cases, come up with a quick answer to their questions. How do I do this? Nothing magic; I use my NSL roster, USS SubVets WWII roster, local listings, and books on hand about the Force, lists supplied by other organizations, and rosters that I try to keep current.

*Keep a zero bubble,
Joe McGrievy
PNP Sub Vets WWII*



BOOK REVIEWS**AT WAR AT SEA:
SAILORS AND NAVAL WARFARE IN THE
TWENTIETH CENTURY**

by Ronald H. Spector

New York: Viking Press, 2001

447 pp., index, maps, photos, bibliography, notes

\$27.95

Reviewed by Theodore L. Gaillard, Jr.

Lee Gaillard is a Philadelphia-based writer specializing in defense issues and military technology. His articles and reviews have appeared in Naval Institute Proceedings, The SUBMARINE REVIEW, The Smithsonian's Air & Space Magazine, Defense News, The San Diego Union-Tribune, The Fort Worth Star-Telegram, The Philadelphia Inquirer, and other newspapers, magazines, and journals throughout the country. His review of At War At Sea: Sailors and Naval Warfare in the Twentieth Century first appeared in the Books section of the San Diego Union-Tribune on Sunday, May 6, 2001.

The ceremony was unprecedented. Date: April 12, 2001. Place: deck of USS MISSOURI, moored in Pearl Harbor. Exactly 56 years earlier, the MISSOURI's captain buried at sea with full military honors the body of the Japanese kamikaze pilot who had crashed onto the ship the day before. Many of the battleship's crew had objected. Now William M. Callaghan was being honored for his compassionate act—and the Japanese pilot commemorated for his bravery. Keynote speaker Senator Daniel K. Inouye asked, "Was it at that moment that [the captain] saw not his enemy but simply a man?"

Just published, Ronald K. Spector's *At War At Sea* includes a superb account of the relentless and stupefying waves of kamikaze attacks that characterized the ferocious battle for Okinawa. The author also reveals how these suicide pilots returned to naval warfare that almost medieval sense of personal combat. (Roughly 1900 suicide planes sank 57 Allied ships and incapacitated more

than 100 others.) Quoted from the memoir of a destroyer sailor: "When a [kamikaze] approached my ship and I was his target[,], then it was between me and the other man. One of us had to die, that was on my mind."

Such highly focused approaches to naval history come naturally to Spector, a Marine veteran and professor at George Washington University's Elliott School of International Affairs. The first civilian appointed as Director of Naval History and head of the Naval Historical Center, he also served as senior Fulbright lecturer in India and Israel and Visiting Professor of Strategy at the Naval War College. His book, Eagle Against the Sun: The American War with Japan, was a recent best seller.

Spector's current book often examines historic events from new angles. Beyond crossing his enemy's T, for example, what enabled Admiral Togo to wreak such havoc on the Russian fleet at Tsushima in 1905? While treatment of 1916's climactic Battle of Jutland gives the requisite nod to the German tactical victory and British strategic dominance, Spector goes on to examine differences in armor, gun sizes, and fire control systems, commenting on the more stable gun platform offered by German battleships' wider beams. (Other sources remark that while the British built their ships to fit their drydocks, the Germans built drydocks to accommodate their ships.) He describes destruction witnessed by surviving sailors, laments faulty Royal Navy communications, and cites British failure to use wireless and other new technologies effectively.

Unlike the British, the Germans learned from experience. Perhaps we should be reminded that after the battlecruiser SEYDLITZ endured hits and nearly catastrophic turret fires during the Battle of Dogger Bank in 1915, German shipyards installed interlocking antiflash doors in the Imperial Fleet's main ammunition hoist shafts and across magazine and ammunition handling room entrances. The Royal Navy made no such changes. Result at Jutland? Spector describes how a shell penetrating one of INVINCIBLE's turrets caused "the same gigantic explosion that had destroyed INDEFATIGABLE and QUEEN MARY. "INVINCIBLE blew up, splitting almost exactly in half so that the bow and

stern rested vertically on the bottom of the [North Sea] and could be seen protruding out of the water."

During World War II, aircraft carriers replaced battleships as the new technological paradigm, bringing with them a steep learning curve. (Indeed, until 1942, U.S. carriers LEXINGTON and SARATOGA both mounted four turrets of twin 8-inch guns more befitting a cruiser.) Spector shows that admirals with no previous carrier combat experience would quickly have to teach themselves—about tight coordination of torpedo plane and dive bomber attacks against an enemy fleet, about proper distancing of defensive combat air patrols.

After his discussion of the crucial Battle of Midway in which Admiral Nagumo lost his four carriers, their aircrews, and trained mechanics, Spector insightfully observes that Japan kept its remaining experienced fliers at the front, whereas U.S. aces, before returning to combat, rotated home to train new pilots. (Aces like Commander John S. Thach, whose famous two-plane *Thach Weave* enabled heavier *Wildcats* to defeat more nimble *Zero's*.) Result? As the dwindling cadre of experienced Japanese naval pilots was replaced by novices, the U.S. rotation system provided increasingly experienced aircrews.

But as much as DREADNOUGHT and aircraft carriers, the lowly submarine revolutionized the nature of war at sea. In World War I's opening months, German submarines formed defensive picket lines across the Heligoland Bight, protecting Imperial dreadnoughts against an expected British raid. The Royal Navy never came. Admiral Scheer's subsequent submarine reconnaissance probes revealed that subs had more range than expected. Germany then rapidly developed submarines into an offensive weapon that, far more than Tirpitz's battleships and Hitler's bombers, in two world wars almost defeated Great Britain. Given that grain- and petroleum-laden ships constituted England's crucial "life lines across the Atlantic," Prime Minister Winston Churchill declared "The U-boat attack was our worst evil"—truth in both 1917 and 1942.

"At one time [in World War I]," writes British historian A.J.P. Taylor, "there was less than a month's supply of wheat in England"; in mid 1942, fuel oil was down to two and a half

months' supply. Then, with nuclear power, submarine evolution accelerated during the Cold War as huge Soviet Kursk class subs patrolled with carrier-busting supersonic cruise missiles and five nations launched ballistic missile subs with city-smashing capabilities once reserved for strategic bombers.

Spector emphasizes that it was the officers and sailors who had made all this technology work—from submarines to code-breaking computers to torpedoes. He includes examples of crucial decryption in both world wars. He mentions frustrating U.S. torpedo problems that were eventually solved. (In fact, it was Vice Admiral Charles A. Lockwood who bucked the system, running calibrated tests on Mk 14 torpedoes that had never been tested in peacetime. His discovery of defective depth controls and fragile firing pins proved as valuable to U.S. submarine operations as the *Thach Weave* to carrier aviation.)

Occasional slips will probably be corrected in the second printing: Chapter Eight opens with the Galapagos Islands located in the Atlantic; CO² is credited with causing "fatal carbon monoxide poisoning"; one destroyer officer reports that "our 5-inch machine guns did their best"; but their "little bullets" weren't much use. (Text should read ".5-inch"—as 50-caliber machine guns are often known.) And regarding MacArthur's "surprise amphibious attack against the port of Inchon", historian John Toland (*Mortal Combat: Korea, 1950-1953*) writes that it had been predicted to the day by Mao Tse-Tung, who relayed the information to Kim Il-sung and his intelligence officers.

Surprising, however, is absence of the 20th Century's final paradigm shift as reflected in the 1991 Gulf War and subsequent Balkans operations. Here is a technological leap as significant as the Dreadnought revolution of 1906—with ships, submarines, and naval aircraft attacking hostile ground targets with cruise missiles and precision-guided weapons guided by laser beam and global positioning satellite.

First hints of this high tech revolution appear in World War II, perhaps specifically in 1943. In that year: the cruiser HELENA first fired proximity-fused antiaircraft shells at attacking Japanese aircraft in the Pacific; German precision-guided *Fritz-X* glide bombs

sank the battleship ROMA and damaged five other ships off Salerno: Allied technology began to turn the tide against German submarines with aircraft and Leigh lights; sonar, forward-firing *Hedgehog* depth mortars, High-Frequency Direction Finders, and undetectable 10-cm. radar.

During the Cold War this revolution transformed navies as missile-derived guidance systems metamorphosed into Ship Inertial Navigation Systems (SINS) and as the seminal Program Evaluation Review Technique (PERT) streamlined production management for Admiral William Raborn's Polaris ballistic missile program. The high tech downside, Spector suggests, is that computerization reduces response time to minutes or seconds, raising stress and jeopardizing decision making. Example: the captain of the missile cruiser USS VINCENNES, who, while simultaneously coping with several hostile patrol craft, acted quickly on faulty radar information, initiating the tragic shootdown of an Iranian airliner in 1988.

But when all is said, Professor Spector's purpose is not to provide a traditional chronological narrative. *At War At Sea* offers a richer experience—even though we may not encounter World War I's Adriatic skirmishes or D-Day's Normandy invasion. Given the author's aim to "illustrate important stages in the development of naval warfare", for most of the 20th Century Spector's account serves us extremely well, providing evocative and fresh perspectives on cultures, technologies, and innovations that influenced sailors' lives and shaped naval warfare. ■



UNRESTRICTED WARFARE**How a New Breed of Officers Led the Submarine Force to Victory in World War II**

by James F. DeRose

(Foreword by Roger W. Paine Jr.)

John Wiley & Sons Inc.

New York, NY 2000

ISBN 0-471-38495-X

Reviewed by CAPT Len Stoeck, USN(Ret.)

These last few months have brought out a number of newspaper stories dealing, at least peripherally, with submarine leadership. The extensive reporting of USS GREENVILLE's collision with a Japanese training vessel left one with the impression that the Commanding Officer was a victim of the hubris brought about by many earlier successes. (And how many former COs have not said to themselves, "There but for the grace of God..."?). The downing of a jet fighter by our old prop-jet EP-3 and the subsequent incarceration of its crew in Hainan led to a number of comments and articles concerning USS PUEBLO and its capture off North Korea. I saw no articles noting that PUEBLO's CO, Pete Bucher, is a submariner. Then, on Sunday, April 22, the *Washington Post's* feature article in its Style section told of a shooting death, in Alexandria, Virginia, during World War II. The victim, a German U-boat CO POW, may have committed suicide as a result of overpowering stress laid on him by his U.S. captors.

All of the above are brought to mind by the subtitle of *Unrestricted Warfare—How a New Breed of Officers Led the Submarine Force to Victory in World War II*. This statement led me to believe that there might be some enlightening conclusions on the subject of leadership to be found between the covers. There is an exciting wartime submarine story to be found there, but the answer to the question of "What does it take?" is more elusive.

Mr. DeRose, who is not a submariner himself, has done an admirable job of research and analysis prior to writing his book. He tells the story of a group of officers who first met as shipmates in the wardroom of WAHOO and then went on to serve in other

heroic boats, in particular TANG and FLASHER. He spoke to many of the participants in his story, turned up first person accounts by crew members that had never been used before, and thoroughly researched available records in both the U.S. and Japan. Having done his research and writing, he also had the benefit of a careful review by Rear Admiral Roger W. Paine, USN (Ret.), who served in WAHOO with many of the main characters carrying the book's plot. Captain Murray B. Frazee, USN (Ret.), who served as XO of TANG during her first three patrols, is also credited with having closely read and edited the manuscript. While I don't recall the author's having noted other submariner reviewers of the draft of his book, the almost complete lack of technical errors and the author's meticulous research leads one to think that there were other tough reviewers as well.

The author uses the wardroom officers of WAHOO from the early part of the war as a microcosm for tracing the transition of World War II submarine commanders from the caution in which they were trained in the pre-war fleet to the aggressive and calculated risk strategies and tactics that were so successful in the later stages of the Pacific submarine war.

As the WAHOO story unfolds, we meet Dudley W. *Mush* Morton. A prologue grippingly describes Morton's first attack after having assumed command. The attack was conducted in the uncharted waters of a harbor on Mushu Island, a small bit of land off the north coast of New Guinea. The target was a Japanese destroyer which was in the process of attacking WAHOO. After firing five torpedoes that all missed, WAHOO hit the DD (HARUSAME) with a down-the-throat shot at a range of 800 yards. The story clearly and dramatically illustrates the fearlessness and coolness under fire of both Morton and his Exec, Dick O'Kane.

Following the attack prologue, Mr. DeRose uses a flashback to tell the story of WAHOO's first two patrols and the circumstances under which Morton took command. Mr. DeRose tells a warts-and-all story in which none of the main participants (Morton, O'Kane, and the previous CO, Marvin Kennedy) comes off with the sweet smell of, must I say it?, an officer and gentleman. The junior officers, in particular George Grider and Roger Paine, come across in this story as the two most sensible members of a wildly disparate

wardroom. Without going into the details, Morton and O'Kane are two of a kind. They work well together and have a great deal of mutual respect. At the end of the second patrol, Kennedy is relieved, Morton takes over as CO, and, as they say, the rest is history. Many stories have been told of the CO/XO team of Morton and O'Kane, arguably the most successful and certainly the most colorful among a stellar group of tacticians and leaders that populated our WWII Submarine Force. They were both wildly aggressive, with great self confidence and with the emotional swings that made them both unpredictable and capable of showing both cruel, even vicious, behavior toward the enemy and paternal kindness to their crewmembers.

After three highly successful patrols, the Morton/O'Kane team is broken up by O'Kane's orders to take command of TANG. At this point, WAHOO is sent to San Francisco for a quick battery renewal overhaul. Within three months she is back on the line and, two months later, in the course of her seventh patrol, she is lost with all hands. The date was October 11, 1943, less than ten months after the day that Morton took command.

Four days following WAHOO's sinking, Dick O'Kane became the commissioning CO of TANG. At the time, it was not known that WAHOO had been lost. However, by the time that TANG was ready for her first patrol, on January 21, 1944, WAHOO was long overdue and presumed lost. During the next ten months, O'Kane led TANG through four war patrols that accounted for at least 23, and perhaps as many as 31, sinkings. In those short ten months, TANG established a record that was unmatched throughout the war. TANG was lost, a victim of a circular run by one of her own torpedoes, on October 25, 1944. A number of her crew, including Dick O'Kane, survived this catastrophe and were imprisoned by the Japanese for the remainder of the war. Their travails are well covered in the book.

The book also covers the exploits of George Grider, who was one of the original wardroom on WAHOO and went on to become the highly successful commander of FLASHER. Grider learned a lot about aggressiveness from Morton and O'Kane, but brought his own thinking into his tactics and became a master of the *calculated*

risk."

Unrestricted Warfare is one of the best researched and most readable accounts of World War II submarining that I have read. All of the characters come alive through the author's frequent use of personal anecdote. The answer to what makes a great submarine leader remains elusive. It seems that wartime often brings forth men that, because of their aggressiveness, might not have been successful COs in peacetime. On the other hand, in order to survive, these very aggressive leaders need more than a little luck. In both war and peace, it may well be that the smart money should be placed on the calculated risk takers of the George Grider mold.

And what does this book tell us about today's leaders as mentioned in the first paragraph of this article? It would appear that Commander Scott Waddle of GREENVILLE comes closest to the Morton/O'Kane model and he too ran out of luck. Pete Bucher and the plane commander of the EP-3 were not willing to sacrifice their crews and ended up as detainees in a foreign country. The pilot of the EP-3 must have had a larger ration of luck behind him since he ended up with a medal while Pete Bucher, who certainly acted as bravely and honorably, finished with a lot less. The German U-boat commander had, according to the *Washington Post* account, almost as much sunken tonnage to his credit as Morton and O'Kane combined and also "assisted survivors of his sinkings when he could." Korvetten Kapitän Werner Henke essentially committed suicide by throwing himself in daylight against a barbed wire fence and into a guard tower's bullets because he had been led to believe that he was about to be transferred to England to be hung as a war criminal. His luck too had run out. Perhaps Dick O'Kane still had a little left—at least he survived the war.■



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