THE SUBMARINE REVIEW

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EDITOR'S COMMENTS

Leading the diverse and interesting material in this issue of **SUBMARINE REVIEW** is a special tribute to the Strategic Submarine Force delivered by the Chairman of the Joint Chiefs of Staff, General Colin L. Powell, on the occasion of the completion of the 3,000th SSBN patrol by USS TENNESSEE (SSBN-734). General Powell's words, however, are not just accolades for past deeds and congratulations for a major part of the Cold War victory, they are a very succinct and strong endorsement of the need for continuing such effort in the uncertain world to be faced by the United States in the days and years ahead. Many in the submarine community have recommended the Chairman's speech to the **REVIEW**. We are honored to present it here for all our readers, and we do so in appreciation of the recognition accorded to our Force.

Several of the presentations given at the submarine Technology Symposium in May are also published in this issue as matters of particular interest and importance to members of the League. They range from the cogent geo-political view offered by Mr. Bob Murray, through the strategic-organizational picture as seen by Professor Jim Tritten, to the political-programmatic realities of congressional action by Mr. Ron O'Rourke. Finally, Admiral Shap Shapiro's words about the threat should serve as a damper to over-optimism about the new world order.

An interesting literary side note emerged from the June Symposium. One of the Chapter representatives who has been involved in making League presentations to junior submariners was asked by a young officer to recommend some non-technical reading about submarines. It was decided to publish such a bibliography in the **REVIEW**. Accordingly, it is requested that those members with recommendations send their choices of selected readings to the Editor and we will publish a first cut in the October issue.

A great deal of coverage has been given to the SEAWOLF issue over the past year or so, both in the general press and in these pages. Admiral Kauderer briefly describes the League's efforts in his notes. IN THE NEWS summarizes several of the pertinent news stories with reprints from the nation's papers. Ron O'Rourke may have the most concise wrap-up in his paper with his remark on "the termination of the SEAWOLF pro-

gram." The final word may well go, however, to ex-SecNav John Lehman at a recent meeting of the Naval & Maritime Correspondents' Circle. Mr. Lehman was asked what had gone wrong with the SEAWOLF and he answered, "Nothing was wrong with the SEAWOLF, it was the times that changed."

Jim Hay

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FROM THE PRESIDENT

With the publication of this volume of THE SUBMARINE REVIEW, we mark the end of an exciting calendar quarter. The 1992 Submarine Technology Symposium at Johns Hopkins University Applied Physics Laboratory was, once again, a great success. One of two SEAWOLF Class SSNs, previously cancelled as a budget reduction measure by the Administration, was restored and funded. And the Annual NSL Symposium and Business Meeting was well-received by the faithful.

SubTech featured keynote addresses by Vice Admiral Roger Bacon, Assistant CNO (Undersea Warfare) and Mr. Gerry Cann, Assistant Secretary of the Navy (Research, Development and Acquisition). Roger presented his vision of the future of submarine warfare, while Gerry described the grim realities of a budget in "free-fall" and the impact on procurement. Our luncheon speakers, Mr. Robert J. Murray, President, Center for Naval Analyses, and Mr. Ronald O'Rourke, Specialist in National Defense, Congressional Research Service, addressed, respectively, the rapidly changing geopolitics of the new world and the Navy's role therein, and a wake-up call to our Force to come *out of the closet* and educate the Congress and the staff on the versatility and importance of submarines to our national strategy. Banquet speaker Dr. Victor Reis, Director, Defense Research and Engineering, presented the new plan for technology development and transition to acquisition in an era of reduced budgets. In an effort to bring as much of this thinking, and that of some of the unclassified papers, to our membership as quickly as possible, we have included several of the presentations in this issue of the **REVIEW** for you. The League owes a special expression of appreciation to the five Session Chairmen

for their efforts: Professor James J. Tritten, U.S. Naval Postgraduate School; Dr. Edward Y. Harper, AT&T Bell Laboratories; Mr. Richard E. Metrey, Naval Surface Warfare Center, Carderock Division; RADM G. H. B. Shaffer, USN(Ret.), Martin Marietta Aero and Naval Systems; and RADM Sumner Shapiro, USN(Ret.), former Director, Naval Intelligence; and especially to the Program Chairman, Dr. H. Lee Dantzler, Jr., and the Arrangements Chairman, Mr. Ralph Brown, both of the Applied Physics Laboratory. It was a pleasure to work with such an outstanding group of superstars!

The battle for SEAWOLVES spanned about two months. Your League leadership was heavily involved in a program to educate the public and the news media on the important and growing role submarines play in our defense posture, the fragility of the very thin and unique technology and industrial base that supports the Force, and the risk inherent in a disruption of the submarine building cycle prior to the advent of the New Attack Submarine (Centurion) about 1998. In the end, the industrial base and jobs won the day. The education process will continue.

As for the Annual Symposium, I told you in the last issue that it would be a winner -- and it was. From the very first event, Lance Schultz and his film taken aboard a TYPHOON SSBN enroute to patrol, to the banquet address by Secretary of Defense Dick Cheney, the program was exciting. RADM Ralph Tindal described the stand-up of the new Strategic Command, the Force Commanders, VADM Hank Chiles and RADM Hank McKinney, discussed new and innovative operations, VADM Roger Bacon projected the future of the Force, including a view from the recently conducted submarine flag officer conference in Monterey, while Congressman Ron Machtley enjoined us to get over to *the hill* to carry out missionary work for submarines. The program included addresses by RADM John Mitchell, Director, Strategic Systems Project Office, Admiral Bruce DeMars, Director Naval Nuclear Propulsion Program, Captain Joe McCleary, Office of Legislative Affairs, RADM Mike Barr, Commander, Naval Recruiting Command, Ambassador Lint Brooks who spoke of START and the implications for our SSBN force, and our luncheon speaker, RADM Ted Sheafer, Jr., the Director, Naval Intelligence, with a sobering assessment of the *real* threat.

The high point of the Symposium may have been the presentation of our annual NSL Fleet Awards. For everyone present it had to be a special thrill to see the superb quality of the officers and enlisted men and women who continue to man our Force. The people of the United States are fortunate to have such bright, young, dedicated professionals serving in their defense.

A special note: We continue to be asked if certain submarine special operations have been declassified so that participants would be able to discuss details with the press, or even publish them as part of their memoirs. **Without exception, those operations remain classified and are not releasable to the public.** You must assume that the personal security safeguards enacted for each operation remain legally (and morally) binding. I trust that message is clear.

Bud Kauderer

1993 NSL SYMPOSIA

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REMARKS BY GENERAL COLIN L. POWELL
Chairman of the Joint Chiefs of Staff
at the
Ceremony for the 3000th SSBN Patrol
U.S. Submarine Base, Kings Bay, Georgia
25 April, 1992

Thank you very much, ladies and gentlemen. And thank you very much, Admiral Kelso, for that most kind introduction.

Indeed, Alma and I are very, very pleased to be with you this afternoon to join the men and women of the Submarine Service and the commands who support them, and all of the distinguished guests who are here, to celebrate the return of TENNESSEE and her magnificent crew -- and to commemorate this 3000th Patrol.

It is also a great delight to be back in Georgia, to be here in St. Mary's and in Camden County, this wonderfully supportive Navy community.

It also feels good to be back in my *Navy Suit*. These whites, I have got to tell you, have a long and honorable tradition of their own. But they come in especially handy for an Army Chairman of the Joint Chiefs, when he has to participate in a Navy ceremony, at an old Army base.

What an impressive sight TENNESSEE and her crew are behind us. I know a lot about TENNESSEE. She is a boat that our dear friend and the Navy's First Lady, Mrs. Landess Kelso, sponsored. She was the first boat to carry our new TRIDENT D-5 missile. She was the first boat to arrive here in Kings Bay. Over 16,000 tons of power for peace. Two football fields long. Able to carry 24 missiles. Built and maintained by superb American workers. And manned by superb American sailors.

There are many ways we Americans have devised to prevent war and they have all played their roles successfully: The infantryman with a rifle in the field patrolling the wire; the pilot scrambling to a fighter, responding to an alert; the marine honing combat skills during landing exercises off an amphibious warship; the coastguardsman putting out to sea in a cutter. They each have their special job to do. They each make their special contribution. And they each require their special sacrifices.

But no one -- **no one** -- has done more to prevent conflict --

no one has made a greater sacrifice for the cause of Peace -- than you, America's proud missile submarine family. You stand tall among all our heroes of the Cold War.

To a soldier like me, sailors are different. Wonderfully different. I never cease to be awed by the extraordinary dedication and devotion to duty shown by you who go down to the sea in ships, in defense of your country. Routinely, for months on end, the sailor endures a brand of hardship that the rest of us in uniform seldom face; separation, loneliness, deprivation, confinement.

For the sailor on submarine patrol, the hardship is even greater. Not for you do the liberty boats leave the ship for a foreign port call. Not for you do the replenishment vessels come alongside. Not for you do the airplanes and helicopters land on board each day, bearing their precious cargoes of mail and news from home.

And if you, our sailors -- and especially our submariners -- are often so alone in your great work, you are never, never alone in your great sacrifice. That sacrifice you share with your families, with your parents and with your wives and with your children waiting silently at the pier for all those long, lonely months. How many children here today were born while Daddy was away at sea? So many wives are here today who successfully manage jobs and households and family crises all by themselves. How many birthdays and anniversaries and graduations and school plays were missed, all through the years?

We owe a debt of gratitude to our sailors and to their families. And a special debt is owed to you who wear the Dolphins so proudly on your chests.

America's leaders place special trust and confidence in the members of their Submarine Force. You go to sea entrusted with weapons of incredible destructive power. You go to sea propelled by power plants of unbelievable sophistication. You go to sea armed for Armageddon, while charged with the solemn responsibility of preventing it. No other members of America's Armed Forces have been given so great a burden of responsibility as the sailors of the Ballistic Missile Submarine Force. No other members of America's Armed Forces have so earned America's trust.

Americans believe in and love their Navy. And Americans believe in, trust, and love their Submarine Force. It would be unimaginable for them to ever weaken that Force, for you are

as necessary to America's security in time of Peace as you are in time of War.

Today we are gathered to commemorate 3,000 SSBN patrols -- 3,000 patrols for peace.

As was mentioned, it was on a November day in 1960 that USS GEORGE WASHINGTON left Charleston on that first patrol. It was at the height of the Cold War. We were all on guard against a belligerent, nuclear-armed Soviet Union that had crushed rebellions in Eastern Europe and was causing trouble in the Middle East and in Southeast Asia. Fidel Castro had just taken over in Cuba. John Kennedy had just been elected President. I was a young Lieutenant in Germany on my way out to my deterrent patrol position along the Iron Curtain.

Our SSBN patrols continued as the Cold War continued. The Berlin Crises came and went. The Cuban Crisis came and went. The Vietnam War came and went. Through it all, the sailors of the Submarine Force continued to guide their craft far beneath the surface of the ocean, deterring a Third War that so often looked like it was threatening to break out and destroy us all.

You did your job well. That terrible War we feared never came.

And then, finally, at long last, things changed. As Mikhail Gorbachev's *perestroika* and *glasnost* permeated fully into Soviet society, they created cracks and fissures that split forever that unnatural community and the artificial structures that held it together. The captive nations of Eastern Europe broke their rusty shackles. The long suppressed Baltic Republics declared themselves free.

Borders opened. The Berlin Wall fell. Germany reunified. And last year, the Soviet Union collapsed.

The Cold War was over.

It was indeed over. America had won. We had won through the efforts by our sailors and marines and coastguardsmen and soldiers and airmen who served and fought and died around the world for 45 years. And by American civilian workers and by the American people, who supported us in uniform so superbly.

Won most especially by you -- America's Blue Crews and Gold Crews manning America's nuclear-powered Ballistic Missile Submarine fleet. And won by all of you who sustained them. By the families. And by the communities across America like those represented here, who hosted and nurtured our men

and women in uniform.

Yet, even with their Cold War victory, the Boomers have continued their patrols.

Why is this? Why, with the Cold War won, do the boats still go out? The answer is because freedom is still not free. Because America's security still must be protected. Because there are still thousands of nuclear warheads in Russia, in Ukraine, in Belarus and in Kazakhstan. Warheads that, if ever launched, can still destroy America's cities and her way of life in half an hour.

So however warm our relations might grow with the new former Soviet Republics -- however close our friendships become -- we will always, **always** place our faith in our Boomers. And not in anyone else.

The landmark patrol from which TENNESSEE has just returned will be followed by others. There are patrols out now. And there will no doubt be a ceremony here again years from now, when the count reaches 4,000. Kings Bay, its family, and its new facilities will endure.

And from other homeports, the intrepid attack boats will still deploy as well. The marvelous sailors of the Submarine Service will continue to wend their way silently through the watery depths. And the families of those who go out will continue to wait, the pages of their lives still turning, while their loved ones serve beneath the waves.

So we stand here today on this important day, in this great place, before this mighty warship and its crew. We lift up our faces and our hearts from the waters around us to the heavens above.

And we ask God's blessings on us all.

On those of us who are leaders, that we may always make our decisions with wisdom. On those of us who are workers, that we may always provide our support with skill. On those of us who are family members, that we may always endure our separation with courage.

And most of all -- most of all -- on those of us who must go down to the sea in ships, that we may always conduct our patrols with dedication, and that we may always safely return home again -- to this base, to our loved ones, to this beloved country that God has blessed and we are proud to call America.

Thank you very much.

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ADDRESS to the SUBMARINE TECHNOLOGY SYMPOSIUM 12 May 1992

by Robert J. Murray
President, Center for Naval Analyses
[Ed Note: Emphasis added]

Mr. Chairman, Admiral Trost, Admiral Long, Admirals, Dr. Bostrom, distinguished guests, ladies and gentlemen, I thank you for inviting me to be with you today. And thank you for the kind introduction, Mr. Chairman.

This is the second time I have been asked to participate in activities of the Submarine League. I guess I haven't been saying anything sufficiently outrageous. I'll have to try harder! Admiral Rickover would be ashamed of me.

The last conversation I had with the Admiral was during my tour at the Naval War College. I had written a book review of the book, RICKOVER. The Admiral had noticed my review and had called me on the telephone to discuss it and other things. I knew he didn't entirely disapprove of the review because he only chewed me out at half-speed rather than the usual flank speed.

Toward the end of the conversation, he said to me, "The only thing that matters is the material condition of the ship, don't you agree?" It was a line he had tried on me before. I was ready. I replied, "No, Admiral, I don't agree with that. The material condition of ships is obviously important, but so, for example, is the tactical employment of the ship, and so is the concept of operations for the fleet of which the ship is a part. These are also important."

Well, the admiral turned up the decibel level on me. "NONSENSE!," he yelled. "It is the material condition that matters." "Admiral," I said, "why don't you come to the War College for a day? It would be an honor to host you, and we could talk about this."

"NO!," he shouted, "I've never been to the War College and I am never going!" He slammed the telephone down in my ear.

I made a vow that day: hereafter to take every opportunity to lecture submariners about everything except the material condition of ships! So here I am, fulfilling that vow. (I hope the Admiral isn't listening!)

Admiral Kauderer asked me to give my views today on the geopolitical and military environment and its impact on the Navy. I shall try to fulfill that commission.

The facts of the international environment are well-known and, by and large, not in dispute. What is in dispute in our country is the question: How much should we care?

The collapse of communism, the dissolution of the Soviet empire, and the ending of the Warsaw Pact, are matters for great rejoicing. They happened so quickly, however, they caught us off balance. We were (and are) unprepared for victory.

One consequence of this victory is a national debate, simmering this year but inevitably heating up after the election, about America's role in the world. It is a debate we should welcome. Our democracy can have no enduring policy without consensus, and no consensus without debate. So we should not shy from the debate, but encourage it and put forward our best arguments in support of it.

In many ways, our present situation resembles the immediate post World War II years. There was vigorous debate then about America's role and a consensus emerged in support of the containment policy. That consensus proved powerful and enduring. Whatever deficiencies we Americans have in conceiving and executing a steady foreign policy, however high the decibel level of debate during the last forty-odd years, the policy of containment was widely and consistently supported, whoever was in the White House, whatever the composition of Congress, regardless of what else was happening in the world or within our society. We and our allies are now reaping the reward of that policy success.

The debate now, as the debate in the 1940s, is between advocates of strategic disengagement and advocates of strategic engagement, between those who define our national interests narrowly and those who define them broadly. It is an old dilemma.

There is much sentiment in our country to let others stew in their own juice, as my grandfather frequently chose to put it, and in general to be skeptical about extensive involvement in international affairs.

Those advocating strategic disengagement are not saying the world will now be peaceful, or less tragic; they are saying that

we shouldn't care sufficiently to involve ourselves in overseas affairs in more than narrow, self-centered ways. We should stop meddling, they argue.

Some Americans on this side of the argument would have us draw back from Europe and Asia, politically and militarily, and concentrate our attention on domestic and trade issues, and organize our military entirely on defensive lines. Strategic defenses against ballistic missiles would have a high priority, but expeditionary forces would not. The Navy would be deployed along the Atlantic coast and, in the Pacific, in American territory -- Wake, Guam, Hawaii -- with the capacity to sortie as necessary to defend ourselves or protect American citizens. In general we would have a small, stay-at-home military.

Other Americans in this same camp, less inclined to leave the world to stew in its juices, still want to avoid American involvement. They argue that we can leave intervention to international institutions, particularly the United Nations, or to other nations who, they argue, have been getting a free financial ride during the Cold War. They too advocate a small, largely stay-at-home military at much lower cost.

There are two important differences between the 1940s and the 1990s that bear on this debate. The first and obvious is that in the earlier period a major threat to our security was increasingly manifest, and that threat is now gone. The second is that in the 1940s we were relatively rich, controlling then about 40% of the world's gross national product, and now we are poor, or think ourselves poor, which comes to the same thing. These two differences, at least superficially, weigh on the side of those advocating strategic disengagement.

Of course, we are not poor. We are the richest nation on earth. But we have gotten ourselves in an awkward financial spot:

- We have accumulated in recent years a vast national debt approaching $3 trillion, requiring each year debt servicing of over $200 billion, heading toward $300 billion, and
- We have assumed we can have benefits at high levels and pay taxes at low levels, and in consequence each year we are spending more than we are earning, annually adding between $200 and $300 billion to our debt.

This profligate behavior cannot be indefinitely sustained, but in the meantime it limits our options and strengthens the *"Come home, America"* line of argument.

Furthermore, there are real domestic needs now insufficiently financed that are vital to our future; problems like education and retraining that are essential to our long term economic welfare and the health of our society. These, too, weigh on the side of fewer international responsibilities.

So those of us who argue that America has important international interests that need to be articulated, advanced, defended, and therefore financed, will have an uphill argument to make when the debate gets hot and heavy in next year's Congressional season. Nevertheless, it seems to me that strategic engagement is the right policy for the United States, and therefore needs to be argued. The interest we have in a stable, constructive world environment is great, and the dangers are real.

The collapse of the Soviet Union, warmly welcome, has created, as well as solved, problems. The governments in the various states emerging from the former Soviet empire are democratic and market oriented, but very weak. The Commonwealth of Independent States is an arrangement destined to fail, for it depends on cooperation among governments and peoples who deeply disagree on fundamental matters. A return to authoritarian rule in Russia and other CIS states, however unwanted, seems as likely a prospect as the success of the embryonic and undernourished democracies. Such a return cannot fail to harm our interests overseas, and at the extreme could refuel international competition in harmful and costly ways.

The present struggle between Russia and the Ukraine, as Paul Nitze recently observed, contesting the disposition of former Soviet military forces, and potentially control of the Crimea, and ultimately the independence of the Ukraine, poses dangers for European security generally. Already, there are now four nuclear powers on former Soviet territory, where a short time ago there was but one. Each of these nuclear powers has weapons sufficient to devastate if not destroy our country, and these nuclear weapons are in the hands of not-yet-stable governments. It is a cause for concern.

The world outside the former Soviet Union is also of interest to us. The stakes we have in the Middle East, for example, are large and long-standing, and the political circumstances there are no less difficult than they have been since World War II. The three Middle East conflicts -- Arab vs. Israel, Arab vs. Persian, Arab vs. Arab -- continue unabated. The peace negotiations between Israel and her neighbors are failing, Iran and Iraq are re-arming, Saddam Hussein is still in power, still as ruthless, and probably still as ambitious as ever. There is political and religious ferment in that part of the world, from Morocco in the west to Indonesia in the east, including central Asian portions of the former Soviet Union, that we do not sufficiently understand but which could have profound effect upon our interests. There is also the spread of nuclear weapons and other technologies that pose new dangers in that part of the world, as in other parts of the world. North Korea, for example. I won't belabor the point. I simply say that in these circumstances of uncertainty and instability in the world, with considerable American political and economic interests at stake, strategic disengagement does not appear to many of us to be a wise course for the United States.

Strategic engagement will obviously have to be accomplished at lower levels of resources. The hunt for the peace dividend will be in full flower next year. Indeed, everyone on both sides of the debate wants and expects some peace dividend, and it seems right that there be less defense spending when the principal threatening power has collapsed. The principal question is: how much less?

It is important that the Naval Services be well positioned for this coming debate. Strategically, naval forces are relatively more important that they were in the Cold War era. Naval forces, if forward deployed, will be on hand for deterrence and initial intervention, and for enabling the introduction of army and air forces, as well as other naval forces, and these are the tasks of the future world as we now see it.

Success in this new environment -- well, not entirely new, but new enough -- will require new attitudes and new approaches by Navy and Marine leadership, and these are beginning to emerge in useful ways. The CNO and the Commandant agreed at Quantico earlier this year that **the naval services needed to focus on being successful in littoral warfare** and on greater

integration of Navy and Marine forces, mainly for success in future battle but also to increase efficiency in the use of available resources. We haven't yet defined our terms or specified our actions, and until we do there is reasonable skepticism in Congress about our intentions. But I am confident the Navy and Marines can do this well. It seems essential to making the Navy case next year.

The subject of joint operations is also gaining way. The work being done by the Navy leadership in the Atlantic and Pacific Fleets and in the Sixth Fleet in the Mediterranean, to better understand the requirements and the opportunities for fighting integrated forces, and to increase Navy capacity to command and support joint operations, is another important step in the right direction. Also, the work of Admiral Owens, Sixth Fleet Commander, in developing new ways to cooperate with old allies in multilateral operations is very much in the spirit of the future.

These three new approaches -- to joint and combined operations, littoral operations, integrated operations -- are right in themselves, and will strengthen the naval position in the coming debate.

They are not sufficient, however, as a description of all naval operations. It remains a very uncertain world, and we need to hedge against unlikely but, were they to occur, highly dangerous circumstances. This means we cannot walk away from strategic deterrence, for example, and the role of the SSBN in deterrence strategy. It also means we need to maintain the capacity for mobilizing and deploying in the event of future trouble on a broad scale. This applies particularly to the Army and Air Force, but it also applies to the Navy.

Ironically, in strategic terms, control of the sea is becoming more, not less, important, for as we bring our forces home the only way we can return in force if need be, is by having firm control of the sea. Desert Storm, for example, depended on control of the sea, and it doesn't take much imagination to see now that control might have been threatened.

We need to maintain technological superiority in all vital areas of warfare. Submarines are obviously one such area, but there are others. Technological superiority increases the prospects for success in combat and reduces the number of casualties, both highly important objectives for Americans.

We also need to stay intellectually superior. By which I do not mean that Americans are intrinsically smarter than other folks, but that military leaders need to work hard to ensure the officers and petty officers stay on top of their military profession, both in education and training. In this regard, we need to continue making better use of the war colleges and major centers of professional education for tomorrow's naval leaders.

The rest of this decade will be a time of challenge and adjustment. It will be a time to make sure our naval forces fit and are sufficient for national purposes in the new environment.

Next year will be a year of defense debate, a debate that will be important to our country's future. This year is the year to prepare for the debate. Preparing well is an important responsibility.

One man who had a leading role in the post World War II strategic debate, and who has a leading and influential role in today's post Cold War debate, is Ambassador Paul Nitze. Mr. Nitze gave the keynote address at the recent 50th Anniversary Conference of the Center for Naval Analyses, and in that address he said:

> *"Now it is time to re-examine our long-standing, central strategic theme, and devise a new concept more appropriate to the changing future. But we should also ask ourselves whether our basic motivation shouldn't remain unchanged. In 1947, we assumed the mantle of leadership because we felt it our moral obligation to use the great resources of our nation to help protect and improve the condition of all. Today, as we stand alone as the sole remaining superpower, wouldn't anything less be unworthy?"*

Paul Nitze is a wise man. Those are wise words. They are good words to end on. Thank you.

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ADDRESS to the SUBMARINE TECHNOLOGY SYMPOSIUM 12 May 1992

by James John Tritten
Naval Postgraduate School
Monterey, California

Dr. Tritten is an Associate Professor in the National Security Affairs Department at the Naval Postgraduate School. Professor Tritten holds a Ph.D. in International Relations from the University of Southern California. He is the recipient of the Alfred Thayer Mahan Award for Literary Achievement from the Navy League of the United States and two prize essay medals from the U.S. Naval Institute. He is currently engaged in research for the Director of Naval Intelligence.
[Ed Note: This is an extract from a longer introduction at the Submarine Technology Symposium appearing in the STS Proceedings.]

THE SUBMARINE'S ROLE IN FUTURE NAVAL WARFARE

Roles for the armed forces of the United States are being recast into a more benign international security environment that will change service and combat arms roles and missions as well as influence our worldwide command and control structure. These new environments will result in both diminished roles as well as new opportunities to exercise submarines to their full potential.

There are a few general approaches to arguments which justify maintaining a submarine force. One approach is to concentrate on the deployed and emerging technologies and argue for the most capable submarine that can be built. Another approach is to concentrate on stated requirements.

Strategic Planning

Planners today are faced with the unenviable task of attempting to adjust to near-simultaneous changes in all three elements (threat, goals and resources) that drive strategy. This strategic planning construct drives the roles and missions of the future fleet.

Our new regional defense strategy is very much top-down and driven by budgets and the breakup of the Soviet empire. The 1990 budget summit's 25% reduction over five years was

due to Congress watching the old threat crumble and the perceived need to reallocate resources from defense to other sectors of the budget. The President's new strategic concept was developed in response to the budget agreement rather than as a result of a long-term formal, bottom-up study involving the inputs of the CinCs and services that focused on goals, objectives, or available technologies.

The Base Force, therefore, was designed to support the new national security strategy which was developed to fit within the agreed 25% budget reduction. **The new regionally-focused defense strategy does not ask the armed forces to perform missions which the Base Force cannot handle.** Scenarios associated with the new regional defense strategy call for programmed responses that can be met by forces that do not exceed the Base Force. The submarine force's future programming roles and missions, by the same token, derive from budget assumptions rather than serve as an input to them.

Submarine program planning , therefore, revolves around an appreciation for a changed threat perception, a new regionally-focused defense strategy, and the resource limits of the Base Force.

Military Threats

The direct military threat to Western Europe that drove program planning for years has simply gone away. On the other hand, there obviously are existing Russian and other former Soviet republics' nuclear and conventional capabilities still facing the United States and its allies and which far exceed those necessary for self-defense. Existing allied and American forces meet that challenge and interim plans will govern their use during the transition period from the confrontational world of the 1980s to the programmed world of 1995 and beyond. The real problem is to be largely focused on the programming world of 1995 and beyond, and not on the residual threats facing current forces today.

Resurgent/Emergent Global Threat

Leaks of the administration's planning scenarios in the February 17, 1992 New York Times indicate that the Pentagon may be using the phrase "resurgent/emergent global threat" (REGT) to describe a generic (non-Russian/Soviet) threat which

requires a U.S. global war fighting capability similar to that of our military force structure of the 1980s.

Within the new strategy construct, programmed forces for a global war, and perhaps even a major regional war, are put into the category of reconstitution; i.e. wholly new forces that are developed once strategic warning is recognized and appropriate decisions are made. According to the Vice Chairman of the Joint Chiefs of Staff (VJCS), "...we can now expect **eight-to-ten years' warning** (emphasis added) time, in which to reconstitute larger forces."

The point to all this is that for programming purposes, the strategy does not require the military to develop active or even reserve forces to meet the challenge of the old European-centered global war. **The new missions for the active and reserve programmed force are, instead, strategic deterrence and defense, forward presence, and crisis response.**

Regional Threats

Threats less than that of a global war, generally assumed in the past to be handled by forces procured to globally fight the former Soviet Union, now occupy the mainstream of programming warfighting contingencies. A series of conventional conflict scenarios used by the Joint Chiefs of Staff were contained in the 1991 Joint Military Net Assessment (JMNA). These threats range from generic counterinsurgency (COIN) to lesser regional contingencies (LRC), to major regional contingencies (MRC). An MRC might, if not properly handled, escalate into a regional war. **Regional war is not viewed as a smaller version of the old global war.**

The point to be made is that current discussions of wars or crises in Europe do **not** contain any discussion of responses that shift the conflict to a new theater or sub-theater as geographic escalation over time.

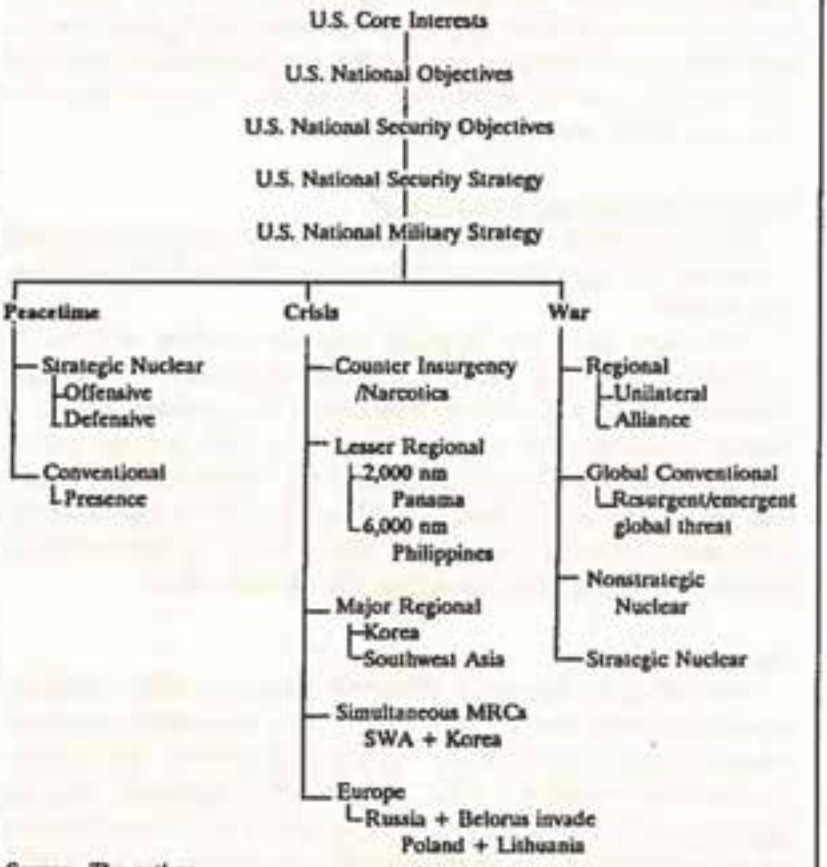
A complete schematic of programming military threats based upon administration sources and the leaked scenarios is contained in Figure 1.

The LRC threat scenarios are at the tactical-level of warfare, not the operational-level of warfare.

The Navy and the submarine force must be able to explain how their traditional operations and missions support scenarios such as these in the programming world of today.

FIGURE 1.

U.S. MILITARY PLANNING SCHEMATIC 1992



Source: The author

All of the MRCs, including the European contingency and war, present threats at the operational-level of warfare -- below the strategic-level of warfare.[1]

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1. The strategic-level of warfare is a global war fought generally between coalitions. The operational-level of warfare is a major campaign; such as DESERT STORM, Vietnam, or Korea. The tactical-level of warfare is the Panama/Grenada invasions, or something less, and does not necessarily involve all the armed services and combat arms. The operational-level of warfare may be further divided into operational-strategic, operational, or operational-tactical.

Planning Goals and Objectives

The new regionally-focused defense strategy has four elements: (1) strategic deterrence and defense, (2) forward presence, (3) crisis response, and (4) reconstitution. Although the first three of these appear to be terms with which we are well familiar, a careful reading of the administration's words on these subjects reveals significant differences that will impact on fleet and submarine programming.

Strategic Deterrence and Defense

The cornerstone of American defense strategy will remain deterrence of aggression and coercion against the U.S., its allies, and friends.

One new area for strategic nuclear warfare will be to respond flexibly to lower levels of aggression. Strategic defenses can be effective in countering the growing threat of ballistic missiles from nations other than the former USSR. Indeed, Secretary Cheney used the term "extended protection" instead of "extended Deterrence" in his 1992 Congressional testimony when he referred to the role of deterrent forces providing coverage for American friends and allies.

Forward Presence

According to Secretary Cheney's February 1991 Congressional testimony, the U.S. will also devise a dynamic *peacetime engagement* strategy to deter low intensity conflict and support international stability. The August 1991 National Security Strategy of the United States says that the U.S. "...cannot be the world's policeman with responsibility for solving all the world's security problems." Indeed, America's presence and crisis response role under the new national security strategy should not be akin to that of a policeman but rather a fireman. The U.S. armed forces will participate in that strategy largely in the form of overseas presence.

Expanded definitions of presence should be viewed as attempts by the administration to ensure that all planned future activities will satisfy the requirement to maintain an overseas presence with a smaller force, the Base Force. Simply put under the new grammar, **presence no longer primarily conjures up the image of forward-deployed combat-capable forces.**

Generally, the submarine force has been excluded from American discussions on presence and naval diplomacy. Foreign governments, however, have not always turned a blind eye to our including submarines in foreign exercises or in port visits. An argument to include submarines as a presence force will not be accepted easily by other parts of the Navy or even other services or the Departments of Defense or State. **Presence as a mission for the submarine force will not be a force builder and will not drive the problem unless it is tied to an effective concurrent role in crisis response.**

Crisis Response

There is a risk that the end of the Cold War may bring an increased risk of regional conflicts and greater unpredictability in the international security environment. Today's crises are extremely dangerous due to the proliferation of advanced weaponry and weapons of mass destruction and the demonstrated willingness of Third World nations to use them.

U.S. crisis response forces will provide presence and the ability to reinforce with adequate forces to prevent a potentially major crisis from escalating or to resolve favorably less demanding regional conflicts. The U.S. crisis response strategy focuses on the use of decisive force for swift termination and containing the conflict to the theater of origin.

Naval crisis response goals have been described as using peacetime presence forces to respond to a crisis area within seven days. Forward-deployed and surge forces are expected to combine into *Expeditionary Strike Fleets* within thirty days. If the crisis is not contained by these efforts, the combined air, land, and sea forces would be organized within sixty days.

The submarine force must explain how its traditional operations and missions support contingency operations such as these in the programming world of today.

Reconstitution

A fundamental component of the President's new national security strategy is that, assuming a significant warning of a Europe-centered global war, the U.S. can generate **wholly new forces** -- rebuild or "reconstitute" them if necessary -- in order to deter aggression. Reconstitution is considered as the ability to provide a **deterrent** against a REGT, **not** necessarily a 1980s global **warfighting** capability.

The Base Force

The Base Force, or the new force structure advocated by General Colin L. Powell, USA, CJCS, will be organized into four basic military components: Strategic nuclear offensive and defensive; Atlantic; Pacific; and a Contingency Force.

The Strategic Force

According to the START Treaty, and under President Bush's 1992 State of the Union proposal, the U.S. will deploy ten OHIO-class nuclear-powered ballistic missile submarines (SSBNs) with the TRIDENT II (D-5) missile and the first eight OHIO class with the older TRIDENT I (C-4) SLBM. These actions are consistent with a direction in favor of relying primarily on SSBNs with a **survivable, non-prompt, counter-value** targeting strategy.

In his February 1991 testimony to Congress and subsequent written report to Congress, Secretary Cheney outlined a reorientation of the Strategic Defense Initiative (SDI) to a system of Global Protection Against Limited Strikes (GPALS) providing protection from limited ballistic missile strikes against the U.S., its forces overseas, and friends and allies -- indicating that it would be space, ground, and **sea-based.** There is no reason that the submarine force cannot be a major contributor to the sea-based component of GPALS.

The Atlantic Force

The Atlantic Force will include residual forces in Europe, those forward-deployed to Europe and Southwest Asia (SWA), and the continental U.S.-based reinforcing force (including heavy ground forces). This force would be responsible for Europe, the Middle East, and SWA.

To set the Atlantic Force into the context of the missions outlined in the new regional defense strategy, we find the following military forces recommended by the administration in early 1992:

- **Presence** -- One corps with two divisions, slightly more than three Air Force fighter wing equivalents (FWEs), one carrier battle group (CVBG), a Marine Expeditionary Unit (MEU), and prepositioned material in Europe; one carrier battle group (CVBG), a MEU, some air defense batteries, and prepositioned material in SWA. Presumably the Navy's current Middle East Force is also included.

- **Crisis Response** -- three AC roundup divisions, 6 RC divisions, 2 AC FWEs, 6 RC FWEs, 4 CVBGs, and 1 Marine Expeditionary Force (MEF).
- **Reconstitution** -- 2 RC cadre divisions, 1 training carrier, 32 frigates, and probably the Marine Corps Reserve component.

The Atlantic Force would be responsible for the most demanding scenario -- that of an European crisis escalating into a regional war. According to the Washington Post report of the DPG, in this scenario, the U.S. would spearhead a NATO counterattack with a minimal force of 7 1/3 heavy Army divisions, a MEF, 49 Air Force squadrons, and 6 CVBGs. After 89 days of combat, including 21 days of very high intensity counterattack, NATO was expected to win.

The Pacific Force

To set the Pacific Force into the context of the missions outlined in the new national security strategy, we find the following military forces recommended by the administration in early 1992:

- **Presence** -- Slightly less than one division and one FWE in Korea; slightly more than one FWE and one home-based CVBG in Japan; a MEF headquarters and a MEB on Japanese territory; and a forward-deployed at-sea MEU.
- **Crisis Response** -- one AC light division, 1 reduced capability RC division, 1 AC FWE, 5 CVBGs, and 1 MEB.

The Pacific Force will be responsible for the MRC in Korea. The U.S. response included 5 Army divisions, 2 MEFs, 20 Air Force squadrons, and 5 CVBGs. U.S. and Korean forces are expected to win after 91 days of combat, including days of very high intensity counterattack.

Contingency Force

Perhaps the most dramatic innovation of the Chairman's recommended force structure is the idea of a Contingency Force based in the continental U.S. (CONUS). For the present, existing CinCs will still retain their own forward-stationed and deployed forces for immediate contingency response. CONUS-based contingency forces will be available, as a quick-response force, to assist CinCs as well as to provide significant conventional capabilities for those areas of the world not covered by the Atlantic or Pacific Forces.

According to General Powell's Congressional testimony in

September 1991, the Army will commit 5 divisions and the Air Force 7 wings to the Contingency Force. A MEF, most of the rapid response sealift and inter-theater airlift will also be available to the Contingency Force. The Navy will apparently provide dual-committed forces from the Atlantic and Pacific Forces. Special operations forces (SOF) appear to have a role both with the Contingency Force and the CinCs.

It appears that the forward-deployed Atlantic and Pacific forces will perform tactical-level crisis response while the reinforcing units assigned to these forces and the Contingency Force are primarily dedicated to the operational-level of warfare. Most of these forward deployed crisis response forces will probably remain maritime forces and there is no reason to ignore the capabilities that the submarine force can bring to bear. The sea services should, however, be prepared to participate in joint crisis response operations with light Army divisions, Air Force composite wings, and SOF.

With their advantage of speed and endurance, forward-deployed submarine forces might well be the first maritime forces on the scene.

Base Force Revisions

The concept of the Base Force precedes that of the DPG associated scenarios. It should be no surprise, therefore, that the sizes of the military responses associated with each of the scenarios do not exceed that contained in the overall Base Force. If the Base Force is dependent upon a strategy that is largely budget driven, then the existing scenarios are subject to considerable fluctuation if the 25% budget agreement fails to hold.

Despite the best efforts of the administration to hold the line at the Base Force, there have already been public discussions of possible revisions to the composition of the Base Force. The administration has already said that the number of attack submarines will not remain at 80. An on-going JCS submarine requirements study will report out with some number less than 80. Navy flag officers have recently hinted at numbers like 50-65, while recent Congressional debate seems to center between 20-50.

In this election year, it appears that the administration is attempting to hold the line at the 25% budget cut by daring Congress to take the actions that might put more ex-servicemen

and defense contractors on the street and in the unemployment lines. One might conclude that no matter who wins the elections in November 1992, the military will be cut again. Either Congress will take the initiative in order to fund domestic programs which it views with a higher priority, or the re-elected or a new administration will recommend cuts again. The Base Force, which was originally viewed as the ceiling for the new force structure, has become a temporary floor. At best, it will survive until the elections of 1992.

The challenge for industry is not to make submarines more capable and quieter but rather to find ways to reduce prices without sacrificing our technological edge. This is not a minor challenge and will take our best and the brightest.

Exercising the Submarine Force to its Fullest Potential

The submarine force of the future must consider a new international security environment, a major change in overall roles and missions for the armed forces, and a greatly constrained fiscal environment. It must also be designed in line with the new emphasis on jointness.

Submarine Forces for Strategic Deterrence and Defense.

The mission of day-to-day deterrence is gradually being assumed more by the submarine force. The new U.S. Strategic Command will involve Navy assets.

The submarine force will have a continued important role to play in the verification of arms control agreements and the unilateral measures being taken in our great *disarmament race*. All too often, non-specialists equate national technical means (NTMs) of verification solely to unmanned overhead systems without a recognition of the key role played by the undersea service.

Strategic Offensive Forces

The U.S. has not yet announced a basic shift in nuclear targeting, but clearly such a shift must be contemplated. As we reduce in overall warheads, our strategic nuclear forces will be unable to *service* all the military, leadership, and other targets associated with our *countervailing strategy* and we will be forced to consider a shift to countervalue targeting. If the U.S. shifts to countervalue, non-time-urgent targeting, there will be no reason to retain a land-based or air-breathing nuclear force -- nuclear deterrence can and should be totally accomplished by the sea-based force.

As we reduce the overall numbers of strategic nuclear warheads, and if we simultaneously place more emphasis on our sea-based forces, there will be those that again raise the issue of the few numbers of SSBNs being magnets for attack since the payoff could be so high. In the new international security environment, the burden of proof is on detractors who need to demonstrate that an at-sea threat exists to the OHIO-class SSBN. It surely does not exist today. We will need to monitor, however, the evolving technologies of foreign nations and take the obvious prudent steps necessary to ensure that our deterrent forces at sea remain invulnerable.

Strategic Defensive Forces

The President's restructuring of SDI into a mobile GPALS may not be a viable program if one assumes an even more austere fiscal climate. Submarines carrying mobile theater or strategic ballistic defenses are but one possibility for the future. Submarines deployed well-forward offer the opportunity to catch a ballistic missile in its relatively vulnerable boost phase where an interception would net all warheads and not just one. Related missions could include submarine-launched satellites as attrition fillers or the use of submarines for anti-satellite attack.

The dispersal of Russian SSBNs, and other nuclear offensive forces, from known peacetime locations can be used by the Russian government or CIS during a crisis to send a message of political resolve. With fewer nuclear warheads expected in the Russian arsenal in the future, the U.S. must consider strategic ASW more seriously than when each side had over 10,000 warheads to manage.

But one can make a strong case that strategic ASW as a declaratory programming mission should be dropped. The only real programming threat that requires attacks against enemy SSBNs is the REGT. Despite our programmed threats and programmed response, however, if a global war were to actually occur, our submarine force would and should be tasked with the conduct of strategic ASW.

One should also consider how high in priority strategic ASW is in the programming crisis/contingency scenarios developed previously. The issue is one of priorities: do we approach the problem from the perspective of what submarines are currently optimized for, or do we deal with the threat, strategy, and fiscal resources that we have been given.

Submarine Forces for Forward Presence

Admiral Frank Kelso's 1991 annual report talked in terms of fourteen SSNs on forward deployment with a Base Force of 450 ships. If the total numbers of ships or simply the total numbers of submarines is reduced, it will be difficult to sustain such high numbers on forward presence.

The obvious other alternative is a high/low mix. The French Navy has maintained a forward presence for years in the South Pacific and used low-capability units to accomplish this mission. This option will need to be considered for the fleet, in full recognition that these forces will have little or no combat capability for crises or in war.

The issue here is the new, less robust, words that the administration has associated with the phrase presence and whether the submarine force wishes to participate under those terms. The risk, of course, is that the submarine required will have only a marginal military capability. The benefit is that the numbers of units will be greater with a high/low mix.

The U.S. maintains a strategic nuclear deterrent and shore bombardment presence in the world that is significant and often overlooked. Are there opportunities to make the submarine force more visible and help reassure allies? Are there opportunities for standing regional naval forces, outside of NATO, in our new regionally-focused defense strategy?

Submarine Forces for Crisis Response

Crisis response, in an era of no significant opposition on the high seas, means that the fleet can assume an essentially unopposed transit to the area of conflict and shift its emphasis to power projection ashore. The focus for naval warfare's battle space has shifted to the littoral. This power projection will be at the operational and tactical levels of warfare and set into the context of a joint response -- not the old "Navy/Marine Corps Team." The submarine force must now become an integral part of the "AirLand Battle" as well as battle group defense.

Forward-deployed submarines can arrive in a crisis area rapidly and be positioned to launch unmanned surveillance systems and deliver shore bombardment prior to the arrival of the Air Force composite wing or the Navy CVBG. Submarines are the best platforms for the rapid search and location of foreign submarines that must be identified prior to the introduction of an amphibious ready group. Simply put, the submarine

can accomplish the limited sea superiority that will be required for LRCs or even initially in an MRC.

Submarines have been generally underrated for their contribution to presence and crisis response. The submarine force will need to fund the studies that will correct that perception. Rather than just focus on the ability to **respond**, however, naval officers should also obtain the historical short-term and long-term political effect of the commitment of various types of armed forces before they have the President asking "*Where* are the submarines?" instead of "*where are the carriers?*" The submarine force must also explain the historical role that it has played in successfully **resolving** past crises -- not just responding to them.

Submarine Forces for Reconstitution

Perhaps the most controversial aspect for the future submarine force will be its role in reconstitution. With a lengthening of the warning time for a REGT to 8-10 years and the lack of a high seas threat over the next decade that cannot be handled by the Improved LOS ANGELES class submarine, keeping the existing industrial base intact will be extremely difficult. Industry and the submarine force will need to present new alternatives for keeping critical skills honed and our deployed technology ahead of any potential competitor.

The whole subject of decision-making and reconstitution is one that does not bode well for actual responses to an REGT. The armed forces should develop contingency plans for a response to an REGT that does not include courageous decision-making by democratic governments and the need to provide a rapid deterrent response.

Traditional Roles and Missions

This paper has largely been cast in terms that are new to most submarine officers. That has been done by design. The old Cold War logic of warfare has changed. We must now change the grammar as well.

The submarine force appears to be a key element in our overall new national security strategy. It has a premiere role in deterrence that most of us both understand and can foretell. The submarine force also has major roles to play in presence and crisis response.

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ADDRESS to the SUBMARINE TECHNOLOGY SYMPOSIUM 13 May 1992

by Ronald O'Rourke
Congressional Research Service
Library of Congress

Mr. Ronald O'Rourke has worked for the Congressional Research Service since 1984. In 1986 he testified on SEAWOLF before Congress and in 1987 he authored a report on strategic submarines. In 1989 he wrote a special analysis on attack submarine procurement options that outlined a notional reduced cost submarine, which some people view as the intellectual precursor to Centurion.

These comments are my own views and do not necessarily reflect those of CRS or the Library of Congress. My talk is not going to be technical; it's going to focus on politics, particularly the politics of submarine acquisition on Capitol Hill.

I want to talk about two things today. The first is how attack submarines are doing in the overall debate on force structure on Capitol Hill, and the second part of my presentation will be on the Centurion.

In recent weeks, attention has focused on the SEAWOLF rescission debate. But this debate, as important as it is, is really a side show to a much bigger and more important debate that it is going on more quietly on the Hill right now, and that is the debate over force structure, in particular how many attack submarines the Navy and the nation needs for the post Cold War era. I'm going to give you the bottom line right up front: at the moment attack submarines are not doing very well in this debate. In fact, if I had to call it one way or another, I would say they are losing it right now.

There are two important public indications of this that I want to go over. The first is the 180-day study that Deputy Secretary of Defense Atwood commissioned. That study is re-examining the attack submarine force level, among other things, with an eye toward lowering it. The CNO hinted broadly that the result of this study could be a force level of 50 to 65 attack boats, down from the 80 called for in the Base Force. That gives attack submarines the distinction of being the only element of the Base Force that is currently subject to publicly

acknowledged downward reassessment. What I think is significant about this from a congressional viewpoint is that virtually nobody has batted an eye at this or come to the defense of the 80-boat figure, or has expressed any kind of anxiety about the fact that submarines have been singled out in this fashion, for a reassessment looking toward a numerical reduction.

But there is a second and even more direct indication of the fact that the idea of a relatively large attack submarine force is in trouble on Capitol Hill right now, and that concerns the alternative force structure recommendations that have been put out by Representative Aspin, the Chairman of the House Armed Services Committee, in a policy paper that came out in late February. These are alternatives to the Base Force, and they are referred to as options A, B, C and D. Right now, they constitute the main congressional counterpoint to the Base Force proposal. For those of you that are not familiar with these recommendations, the Naval portion of them is shown in the chart below.

Chart 1.

	Base Force	Option D	Option C	Option B	Option A
Ships	450	430	340	290	220
Amph	50	82	50	50	50
CVs	12	14	11	7	5
SSNs	80	50	40	40	20

The Base Force is on the left side and options A to D are on the right. There are two points to note. The first is that the component of the Navy that is the most strongly supported in the options is the Amphibious Force. Very strong support for the amphibious fleet has been evidenced in the hearings this year on Capitol Hill. The carriers are treated more or less proportionately as you go down in fleet size. So they're not really winners, so to speak, but they're not losers either. Surface combatants are not broken out in Aspin's recommendations but my guess is that, again, they would be treated more or less proportionately, the way carriers are. The component of

the Navy that, in effect, is losing (as you can see in the figures) is the Submarine Force. Even under the most robust option (option D) an option which would actually increase the amphibious fleet and the carrier fleet above the Base Force level, a major reduction is recommended in the force level for submarines (50), and those numbers go down even further as you move out toward option A (20 submarines).

The second thing I want to point out about this chart is that option D is really only academic at this point. The one to focus on is option C (40 submarines). Option C was endorsed by Representative Aspin, and the House-passed version of the defense budget resolution for this year is viewed in the House as being consistent with option C, or in the long run with options B or A as well. So, the House in effect is indirectly on record as supporting an attack submarine force of 40 or fewer boats.

Now the fact that supporters of a relatively large attack boat force are in trouble right now is due in part to factors which are beyond the control of submariners. Submariners can't talk publicly in detail about many of the things that they do. Compared to surface ships and aircraft, submarines look more affordable in life-cycle terms than they do in procurement cost terms; but the way the budget system is structured, the attention is for the most part focused on procurement costs. These two difficulties complicate the ability of the submarine community to argue the cost effectiveness of submarines. But to a significant degree, the difficult situation faced by the submarine community, in justifying a relatively large force level for itself, is a problem of self-inflicted wounds. In other words, submariners are not doing a very good job of making their case and I want to spend a few minutes talking about this right now.

Two years ago, when the ending of the Cold War was beginning to pose a challenge to justifications for a relatively large submarine force, one of the first arguments that was put forward in response to that challenge was the one that focused on the fact that, aside from the United States and the Soviet Union, there were 41 countries that operated upwards of 400 attack submarines around the world. This argument was counterproductive. It indiscriminately lumped together allied nations with potential adversaries, it indiscriminately lumped together technologically obsolete boats and boats of dubious

operational status alongside modern capable boats, and it suggested, implausibly, that we would somehow be fighting a lot of these nations at the same time. As a result, it looked like submariners were grossly exaggerating the threat in a desperate attempt to find new missions and justifications. This damaged the credibility of submarine advocates, reducing the impact of the other arguments they were trying to make at that time. But it was also counterproductive in another sense; namely, it reinforced the stereotype that submarines in the post Cold War era should be viewed primarily as ASW platforms, which was precisely the point that submariners do not want to make.

A second example of a mis-step was the reiteration over and over again, going even into late 1991 that there was, as of yet, no evidence of a reduction in the rate of Soviet submarine construction, by which it was really meant a reduction in the rate of launchings and acceptances into the fleet. This was like blowing up a balloon, even though you know somebody is standing a foot away from you with a pin. It was just a matter of time before that evidence was going to come in and explode that balloon, and when it did finally come in, it further damaged the credibility of the submarine community.

This argument hurt the submarine community in two other ways. It further reinforced the two stereotypes that submarines are primarily ASW platforms, and that submarines are primarily Cold War weapons. Again, this is the opposite of what submariners are trying to get across.

Part of the submariner's outreach effort goes to the press. I think mistakes have been made in that area as well. I was on the phone some number of weeks ago with a reporter, not from the Washington area, who wanted to write an article about how submarines are adapting to the changed world situation. He was invited to go onto a submarine for a short time at sea. I asked, "Well, how did it turn out? I haven't seen the article." He said, "Well, I got on board and they didn't tell me anything; everyone was really closed lipped." I asked, "Well, what did you do?" He said, "I didn't have any choice, I had to wind up writing one of those articles about the life of submariners." So that was a wasted opportunity. Don't invite somebody aboard with that kind of a purpose unless you are prepared to support it.

The second example also involves inviting some press people aboard a submarine (including a correspondent from the Washington Post). This was a trip up under the ice. The result of that was the headline "The 'Silent Service' Breaks the Ice." This is exactly the wrong thing submariners should be trying to get on the front page of the Washington Post, a picture of a submarine coming up through the ice like we are back in 1986, and we are talking about the maritime strategy. A front page picture like that and an associated story that focuses on submarines going up under the ice do not make for a good argument. Again, it just reinforces the stereotype that submarines are Cold War weapons, oriented primarily toward Russian submarines, and that since they've got nothing else to do now, they will take civilians for joy rides up to the ice pack. That wasn't just a wasted opportunity, it was, again, counterproductive.

Another example is the white paper on submarine roles and missions in the 1990's that was put out in January. This was a step in the right direction; at least somebody was trying to get something out. But the white paper was too long, and the executive summary was way too long. The report did not sufficiently highlight the most important things you would try to get across to a non-specialist audience; it was way too technical and abstract. The result is that the paper did not have anywhere near the impact that it should have had. I only received one semi-favorable comment from a staffer about this paper and it was along the lines of "Well, at least they are trying to do something." And that was from a staffer, frankly, who was already a submarine supporter. For readers that the submarine community is trying to persuade, I really don't see that the white paper had any effect at all. I am very happy to hear that there is a new six-page version of the report. I had argued at the time that there should be a much shorter version.

One final example, and this isn't really to note a mistake so much as to make a comment. A lot of emphasis has been paid to the combat missions that submarines can perform in regional conflict situations in the third world. That's fine, and I think that should be part of what is said. But I think it must be understood that those kinds of missions will not form the basis for an effective justification for a relatively large submarine force. Somebody can agree with every one of those combat

missions and nevertheless conclude that you don't need very many submarines to do them. You could double the number of submarines that are publicly acknowledged as having been used in a direct way in Desert Storm, and then you can do two regional contingencies at once, and you still wind up with a requirement for only 20. These combat missions will not justify a large force, and if that is really the only thing that is emphasized, then the result is likely to be support for a submarine force level requirement more along the lines of options A or B (20 to 40).

The need for a relatively large force of submarines -- something more than 50 or 60 boats -- is dependent much more on the kind of ongoing, day-to-day, missions that generate a requirement for sustained forward deployment. If the submarine community can show that you need to have 11 boats forward deployed on a continuous basis, then that is a justification for a force of 60 to 65 boats. More focus needs to be put on this kind of argumentation, this kind of day-to-day forward deployed mission.

Now presumably a lot of that is intelligence and surveillance, indications and warning. I don't think that there is any shame in admitting that this is what submarines are doing. The focus should not be just on how submarines are monitoring the Russian submarine fleet, but rather on how they are monitoring military and political activities in the third world. There are an awful lot of countries out there that people are concerned about, and that we don't know a lot about. The submarine community can make a good case that it can help fill in a lot of the intelligence gaps that appear to exist concerning a number of these countries. But it goes even beyond that. Submarines can monitor and maybe do things against terrorists. They can monitor the international trade in arms. Weapon proliferation around the world is a very big concern on Capitol Hill. And, in a more marginal way, they can play into the debate on tracking drug shipments and getting good intelligence there.

All communities within the military are parochial to one degree or another, but the submarine community, because of the largely classified nature of its work, appears to be more insular than most parts of the military. I think this has had three unfortunate side effects. The first is that although submariners were aware two years ago that the ending of the

Cold War would pose a challenge to the justification for submarines, the insularity of the community, I think, prevented the community from recognizing the full extent of that challenge. Within the submarine world the value of submarines and the need for submarines is almost never fundamentally questioned. But it was being questioned fundamentally on the outside, and I think submariners were slow to realize this, because they were mostly talking to each other and not so much to people on the outside.

A second unfortunate side effect of insularity is the fact that submarine affairs on Capitol Hill, until recently, have been dealt with within a fairly limited number of members and staffers. As a result, there is a fairly limited base of understanding of the value of submarines and of difficult points such as the submarine industrial base. In other words, now that the submarine community needs friends, it doesn't have many to call on, because it didn't spend much time, over the years, dealing with more than a fairly limited number of people.

The third unfortunate side effect of insularity is that, because the submarine community has largely been speaking with itself, it lost or never developed fully an ability to speak to outsiders. I think that has resulted in some of the mis-steps that I was going over earlier.

So, on the issue of the force level debate, the submarine community has a good story to tell, and the submarine community has been trying to tell it. But it hasn't been doing a very good job of it, and this is beginning to have consequences, which, if allowed to go on much further, are going to be irreversible. The attack boat force level is currently melting down, and if submariners don't work hard to reverse that trend, then a force level along the lines of 30 to 40 boats becomes an increasingly likely possibility. I'm not sure myself how many attack boats the United States needs for the post Cold War era, but I don't want policymakers to make a decision on that issue without hearing the best argument that submariners can make. I don't think that they've made that argument yet, and it's in that spirit that I've been offering these remarks here, as unwelcome as they might be.

I want to turn now to the second part of my presentation, which focuses on the Centurion program. Here I want to make three points.

The first is for complete realism on the A topic -- Affordability. If you examine where the defense budget may be going in Congress, and if you look at past trends on the share of the budget that goes to the Navy, and the share of the Navy's budget that goes to shipbuilding, then it is possible, when you run the calculations out, to project a potential shipbuilding budget by the turn of the century on the order of 6 or 7 billion dollars per year in today's dollars. I'm not sure what percentage of the shipbuilding budget will be devoted to attack submarine acquisition. Until recently, the average has been about 20 percent. If that percentage holds true then you've got about 1.2 billion dollars potentially to work with. That's the cost of one 688I Class submarine in the current production environment.

The Navy stated last year that it hoped Centurion could be designed so that you could get two Centurions for the price of one SEAWOLF. But, given potential funding trends, it could be that if you wanted to get two boats a year, then you're going to have to design the Centurion so that you can get two Centurions for the price of one 688I, and that is a much more difficult task. If you can't do it, then the alternative is to accept a procurement rate of less than two boats per year and, in the long run, a correspondingly smaller force. Again, something along the lines of 30 or 40 boats. Of course, the funding situation may not be that rough. For one thing, in this time period, it may be decided that there won't be any construction of SSBNs. The fraction of the budget that may have gone to SSBN construction could be devoted to SSNs. So there are ways of speculating about why there may be more money available. But for every excursion that you can do on the high side, you can throw in a reason for why the budget may in fact be lower for submarines. For one thing, as I mentioned earlier, there is strong support on Capitol Hill for the amphibious force. Of the 60-odd boats currently in that force, about 40 will be hitting block obsolescence starting around the turn of the century. Almost the entire force is going to have to be rebuilt. That's going to make a big claim on shipbuilding funds. As another example, Congress has held hearings this year on the future of naval aviation. The affordability of the Navy's plan for beginning to procure fairly large numbers of carrier aircraft around the turn of the century has been called into question. Already it's being speculated that, to help to make that plan

affordable, funding should be shifted into the aircraft procurement account from other places. The shipbuilding account is likely going to be one of those other places, and maybe the primary other place, where that money is taken from.

The point here is not to make a prediction about exactly what the shipbuilding budget may be. Rather, it is to highlight the fact that the amount of funding available for shipbuilding, in fact, may be quite limited, and that the Centurion design effort should avoid optimistic assumptions about funding and be prepared to cope with low funding levels. For this reason the application of technology toward the goal of cost reduction must be a very earnest effort. I've been briefed by Naval Reactors regarding their efforts to simplify the next-generation reactor plant, and I think those efforts look very promising. I hope that more along these lines can be done.

The second of the three points that I want to make about Centurion is that, with the termination of the SEAWOLF program (and it's terminated, whether it's two boats or three, it's dead), the standard of comparison for the Centurion program has shifted away from SEAWOLF to the 688I. In other words, to demonstrate that it's worth going ahead with the Centurion, it will no longer be sufficient to show that the boat is simply substantially less expensive than the SEAWOLF. It will now have to be shown that the boat is worthwhile going ahead with as an alternative to the 688I. I have three charts that will help develop this point.

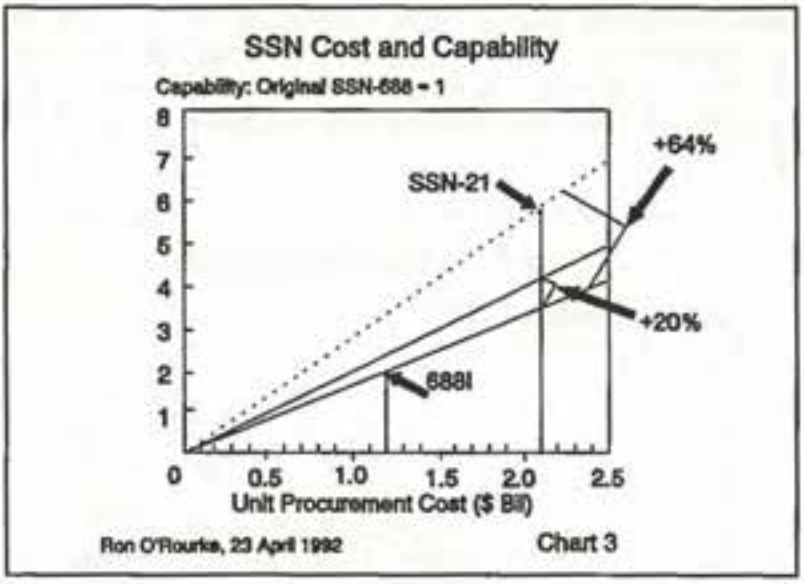
Relative to the 688I, the Centurion can either be less expensive, it can be about equal in cost (which I defined here as plus or minus 10 percent), or it can be more expensive. And the boat can be less capable, about as capable, or more capable. On the resulting tic tac toe chart, if you wind up in the Centurion effort with a boat that is about the same capability as a 688I and about the same price (the middle cell), you're not going to be able to sell that boat. And you're certainly not going to be able to sell the designs that fall into the other unnumbered cells. The numbered cells -- 1 through 5 -- are the ones that you have a chance of selling. Cell 5 is going to be at best a difficult design to sell, but I didn't want to rule it out. I do want to include that at least in the realm of possibility.

Chart 2.
Notional NAS options relative to 688I

Capability	Cost		
	Less	About same (+/-10%)	More
More	3	4	5
About same (+/-10%)	2	---	---
Less	1	---	---

But this chart doesn't capture the whole situation. For example, you can design something in cell #1 that is 15 percent less expensive, and 15 percent less capable than a 688I and people might well say that it's not worth it. You have to get more into the idea of capability per dollar. That's a term that people aren't going to express explicitly on Capitol Hill, but implicitly that is the concept that many will work with.

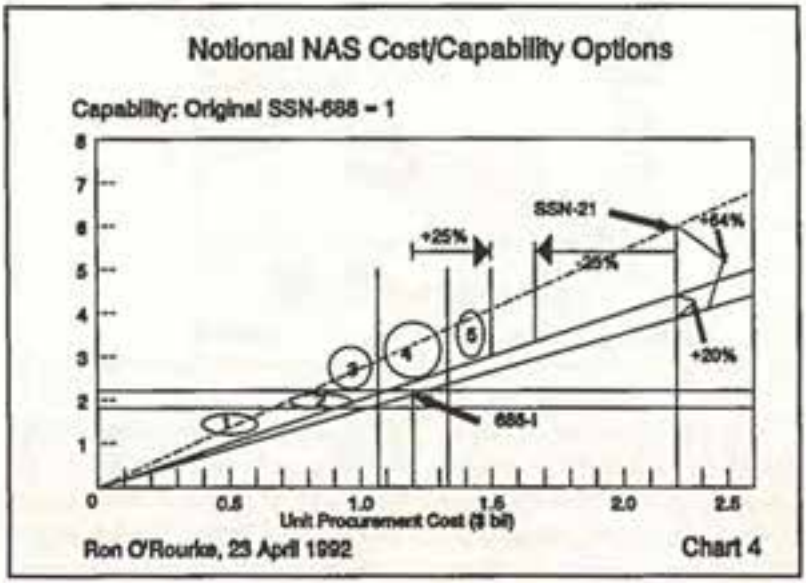
Chart 3 is one way of doing it. Cost is at the bottom. This could be life-cycle cost but, for the reasons that I discussed earlier, the focus is going to be probably on unit procurement cost. In the current production environment the price quote for a 688I is that the lead boat is 1.4 billion and the follow-ons are 1.2 billion. Capability is measured on the vertical axis, relative to the original 688. This is based on the open testimony regarding relative capabilities of the original and improved versions of the 688 and the SEAWOLF. The Improved 688 is about twice as capable as the original 688 and the SEAWOLF is about 3 times as capable as the Improved 688. The sloped lines, connecting the boats back to the origin, represent capability per dollar. The steeper the slope, the more capability per dollar.



I asked myself how much of a boost in capability per dollar would be needed for people to think it is worthwhile to go ahead with the up front costs involved in doing a submarine design and development effort, and at a minimum I think that's 20 percent. I don't think that's too difficult for the submarine design community to do, given advancing technology, but you have to make sure that you are going to be above that 20% steeper slope. If you can get up toward the SEAWOLF slope on capability per dollar, which is a much larger increase, that's fine, but I don't think that's so important anymore. I think it's more important how much you get above the 688I slope, and I think the minimum is 20 percent. I've put the SEAWOLF slope in as a dotted line to reinforce the fact that this really isn't the key standard of comparison anymore.

You can take chart 2, with the tic tac toe, and chart 3, and you can put them together to form chart 4. The five numbered ellipses on chart 4 are the five numbered cells from chart 2. These are the boats that I think are sellable. This is not a chart of what is technically possible; I don't know what that line might look like. It's certainly going to be at zero capability, until you get some way out on cost. I don't know if boat 1 is possible at all. This may be the one boat that can violate the rule of having to stay above the 20% line. People may accept going

below that line for boat 1, simply because the cost is so low, in the same way that the Navy accepted purchasing frigates in the past, even recognizing that frigates don't provide that much capability per dollar, because they help you keep your numbers up.



This isn't a recommendation of what Centurion should look like. And again, it's not a chart of what is technically possible. It's simply a way of presenting in pictorial form the mental map that I think a lot of people will have in their head, whether they express it this way or not. There are different solutions to the problem. If you are going to be out here at boat 5, you need to be fairly capable to justify the increase in cost. It's no longer enough to say that the boat is 25% less expensive than the SEAWOLF. You wind up with a boat that is probably too expensive at that point. I don't think you can go anywhere much beyond 25% more than the current 688I and that's already pushing your luck.

The third and final point that I want to make about Centurion, to close my presentation, is the need to engage Congress during the design process of the Centurion program much more fully than was the case during the SEAWOLF program. The SEAWOLF design was essentially handed to

Congress as a done deal. There was very little explanation about where that design came from; what the options were that were examined.

Engaging Congress more fully than that during the Centurion design effort is going to have two benefits that I think are very important. The first is that it is going to build a broader sense of ownership for the Centurion program than was the case with SEAWOLF. In the past, when submarines were basically an issue for committees, and therefore an issue for a few key members of Congress and their staffers, it was OK just to work with that relatively small number of people. But submarines are no longer a stealth item in the budget. They are a high-profile item. They are an item that goes to the floor of the chamber. As a result, in the future, submarines are going to need a much broader base of support. Engaging Congress more fully during the design process can help build that kind of sense of ownership. That sense of ownership was lacking when the SEAWOLF program got into trouble.

The second benefit of engaging Congress more fully in the design process of the Centurion is that, if members are presented, at the beginning of the process, with an honest presentation of the advantages and disadvantages of various submarine designs, in terms of cost, capability and technical risk, then those members and their staffers will understand what is possible in submarine design and what is not possible. They'll understand the difficulty of having to balance all of these characteristics at the same time to arrive at a reasonable solution. And they'll be better prepared to defend the Centurion design against poorly supported second-guessing that may come later. Much of the various strains of criticism that were leveled against the SEAWOLF design focused separately either on cost, or on its capability, or on the technical risks that were involved in the program. They did not focus on the difficult issue of how best to balance all of these competing concerns in a single design. That kind of argumentative shell game was easy to play for SEAWOLF critics because the Navy did not widely explain the process about how it tried to balance all of these things at once. The critics really had a wide open field to pick one characteristic, without having to be held accountable for what would happen to the others. Involving Congress more fully in the design process will, in a sense,

inoculate the Centurion program against this kind of single-factor criticism and allow people to recognize that, by themselves, these kinds of criticism often are of little value.

Now, involving Congress more fully in the design process might be understood as a euphemism for Congressional interference. And, when you get down to it, yes, Congressional participation often means Congressional interference. That can slow things up. The problem isn't just getting programs started, the problem is getting them finished. It's possible to get a program started in Congress (as was the case with SEAWOLF) by just sharing it with a small number of key people, early on. But in future years, with defense budgets declining and new procurement programs subject to increasingly high levels of scrutiny, that approach is less and less likely to result in a program being completed. Involving a greater number of people up front takes more time and more energy, but it is an investment in the long-term success of the program.

Last year, the Senate Appropriations Committee, in its report on the appropriation bill, directed the Navy to investigate a wide range of conceptual design options for the Centurion and to report back to the defense oversight committees this year on those options. This report is an ideal vehicle for beginning to involve Congress in the Centurion design process. It was asked yesterday at the luncheon session, "How can we educate Congress?" Well, this report is a perfect opportunity. A lot of benefits can accrue to the Centurion program, if real effort is put into the writing of this report. As I said, engaging Congress is an investment in the future of the program. It's an investment that the program will likely require if it is to remain on track, with broad support, throughout a 12-year process, in a time of declining defense budgets and widely disparate ideas of where those defense dollars should go. ■

PROLIFERATION OF MID-RANGE MISSILES AND OF NUCLEAR WEAPONS IS DEVELOPING AS A KEY ARMS TREND OF THE 1990s. THIS TREND WILL CHANGE THE NATURE OF REGIONAL WARFARE, ENHANCING THE ROLE OF U.S. SUBMARINES.

Looking ahead, the nuclear submarine is the only U.S. platform that has no meaningful opposition. Cruise-missile-equipped U.S. attack submarines now control not only the deep seas and shallow water, but they can also attack land areas hundreds of miles inland. In the next decade, as more and more nations gain nuclear weapons, U.S. nuclear submarines will remain unchallenged. In any scenario, they remain far less vulnerable than any other kind of air, land, or sea platform. Construction of submarines is thus the wisest choice today because no potential opponent, with any known weapon system, will be able to counter them.

Let's prepare for the next conflict, not the last one.


In the defense
of our nation, there can be
no second best.
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Newport News
Shipbuilding

ADDRESS to the SUBMARINE TECHNOLOGY SYMPOSIUM 14 May 1992

by RADM Sumner Shapiro, USN(Ret.)
Former Director of Naval Intelligence
[Ed. Note: Emphasis added]

FOREIGN TECHNOLOGY and the CONCEPT OF THREAT

Oh, for the good old days -- when we knew who the bad guys were, what they could do to us, assumed that they would do it, and we prepared and positioned ourselves to deter or counter them. Articulating and selling the threat was fairly simple then. As a result, we were successful in gaining both Government and Public support for the platforms and weapons systems needed to meet the challenge.

It's a whole new set of rules today. There seems to be no great interest in the threat per se, certainly not among the guys with the keys to the money locker -- and particularly not during an election year, in the midst of a recession, with all the other domestic problems we face. In fact, it is hard to find anyone in town who will acknowledge that a threat to our national security could exist at any time in the foreseeable future -- not now, now that the Soviet Union and the Warsaw Pact have collapsed. We won the Cold War, and everyone is looking for that peace dividend. The fact is, though, that **we could be facing equally daunting and even more complex challenges as a result of having won the Cold War.** Instead of the well-defined bi-polar world of the past, we look out on a multi-polar world of conflicting interests. Threat scenarios in that environment could run the gamut from hostage rescue to regional conflict on the order and scale of Desert Storm. It is a constantly changing world where alliances and coalitions abound, and we can find ourselves in with some very strange bed-fellows. Under these conditions, it is hard to tell when or from where the threat will come. It is also hard to tell who our friends or enemies are today. It's even harder to fathom who they might be tomorrow.

At the risk of being tagged as an unreconstructed relic from the Cold War, I submit that the situation I describe has the potential of constituting a significant threat to our national well-being. True, the threat to the continental U.S. posed by

the strategic nuclear forces of the Soviet Union has diminished. But this depends to a significant degree on the continuing peaceful intentions of Russia -- guardian of all sea-based and most land-based strategic weapons of the Former Soviet Union. I, for one, have some difficulty banking on the peaceful intentions of anyone else, particularly the Russians. I certainly am not prepared to bet the lives of my children and grandchildren on that. I am also not encouraged by the fact that the basic capabilities of that strategic nuclear force remain, and continue to improve. **This is particularly so in the case of the Russian sea-based component, a thoroughly modern force which will be operational well into the 21st century.**

This is recognized in our national security policy and defense strategy. We fully intend to maintain our deterrent posture, but at a significantly reduced level. The assumption is that we will have adequate warning to reconstitute our forces in order to meet a renewed global threat. At first they were talking about two to three years warning -- as opposed to 14 days at the height of the Cold War. Now they're talking about having 8 to 10 years warning. I hope they are right.

In the meantime, I submit that we would be well advised to monitor most carefully all developments in the Former Soviet Union. I find quite disturbing the instability and uncertainties that I see there -- resurgent nationalism, ethnic problems, Islamic fundamentalism in the Central Asian countries, regional rivalries -- especially between Russia and Ukraine who cannot reach agreement on control of nuclear weapons and the disposition of the Black Sea Fleet. I worry about *loose nukes* -- tactical weapons unaccounted for, and four sets of national command authorities (instead of one) with a finger on the button. Of great concern, too, is a restive military establishment, suffering the loss of its privileged position, threatened with massive reductions in force, and facing overwhelming problems of grossly inadequate housing and severe shortages of food and consumer goods. Most worrisome, in the long term, is the continued R&D in the defense sector -- despite cutbacks in other areas.

Some will argue that the former Soviet Union is an economic basket-case today, unable to feed itself much less be a threat to anyone. I recall that post World War I Germany was also an economic basket-case, as was the U.S. and most of the world,

including the U.S.S.R. They managed to recover from that to wage the most destructive war in history. Nations have an interesting way of solving or finessing domestic problems. They look inward to find a scapegoat, but if that doesn't work, they turn outward for some pretext to get the population's mind off the problems at home. War has often provided that pretext. The point is that there are parallels between the picture today and that existing before World War II. I don't suggest that we are on the threshold of World War III, but only a fool would dismiss entirely the possibility of history repeating itself. We have to be on the alert for warning signs. We should take full advantage of *glasnost* and other conditions that now exist which permit us to gain access to all aspects of the Russian society, and especially the scientific and technical community, which could provide some of the earliest indicators of a resurgent global threat.

As for the threat -- or in the current lexicon, the challenge -- which may confront us from the rest of the world, this presents us with a problem which can be more complex and harder to forecast. Even the terminology tends to be different:

Threat -- Because of the multi-polar character of the world, and the constantly changing political environment, a specific threat (or challenge) tends to be ill-defined, and often is not recognized as such until very late in the game. As a result, we are forced to look in many directions at once -- something we are historically not very adept at doing. It is not always possible to anticipate where the next crisis will arise. This requires us to be very flexible and prepared to respond quickly and decisively as a situation develops. Thus, the emphasis on *forward presence* and *crisis response* in our next national security policy. Ron O'Rourke addressed this in his address (reprinted in this issue of **the SUBMARINE REVIEW**), emphasizing the role that the submarine force could and should play in support of this mission. I am in complete agreement with him, and in particular, with the statements he made concerning the intelligence role of the submarine in the forward areas. Intelligence collection is one of the best things submarines do. Under many circumstances and for certain types of collection, nobody does it better.

Enemy -- Any state, group or individual who is not my friend today, or who might not be my friend tomorrow. Something of

an overstatement perhaps, but not too far afield, considering the shifts in alliances we have witnessed in the brief post Cold War period. Today's friend can easily become tomorrow's enemy. That calls for a whole new set of rules, and new M.O.'s (modus operandi) for collecting, analyzing and reporting intelligence.

Foreign Technology -- Anything in the hands of any non-American which could be used against me. Keeping tabs on foreign technology, always a problem, is made all the more difficult today by the ease with which it migrates from one country to another. It can and frequently does include technology developed by our erstwhile allies, or by U.S. industry as well. Of major concern is technology which migrates from the Former Soviet Union and Warsaw Pact countries. This is not only hardware and documentation, but expertise as well -- technical and operational. It is an extremely serious problem. The bottom line is that virtually anything or anyone can be bought these days -- and at bargain prices to boot. Anybody with the money -- or a friendly banker -- can play. Keeping tabs on foreign technology is thus an extremely difficult problem. Proliferation -- not only weapons of mass destruction, but all manner of technology with potential military application -- is probably the biggest challenge facing the Intelligence Community today.

Of most immediate concern to the Submarine Community, of course, is undersea warfare technology under development by, or potentially in the hands of, foreigners which could pose a threat to U.S. naval forces. Given the criticality of sea lines of communications in most foreseeable scenarios, I would place logistics support ships high on the target list of a prospective enemy. The merchant ship could replace the carrier as the high value platform in regional conflict. I would also point out once again that the enemy does not necessarily have to be a well-established hostile government, but could be an erstwhile ally gone sour, a disaffected group, or an individual with his own agenda.

Finally; some basic observations to consider when assessing the state of foreign technology and how it might impact undersea warfare:

- The U.S. no longer has a corner on the technology market, or the world's technology *smarts*. It is fallacious (even

dangerous) to hide behind the old *NIH (Not Invented Here)* banner as we Americans are wont to do.

- After concentrating on Soviet developments for over forty years, the Intelligence Community now faces a formidable challenge in shifting its attention in order to stay abreast of foreign technology developments throughout the rest of the world.
- Some of the best sources of information on foreign technology are to be found within the academic and scientific communities, our R&D establishments, and industry.
- Many advanced concepts and materials developed for other purposes are directly applicable or can be adapted to undersea warfare. This is particularly true in the non-acoustic realm.
- Such developments, and relevant information on the state-of-the-art, will most often be resident in other than Navy institutions and Navy-related industry.

Summary

A few comments by way of summary. First, I reiterate that as unpopular as the thought may be in some circles these days, **there is a threat out there.** It is different from the threat we faced the past several decades, but it is a threat all the same. It is much more difficult to articulate, and more complex and demanding than before in many respects.

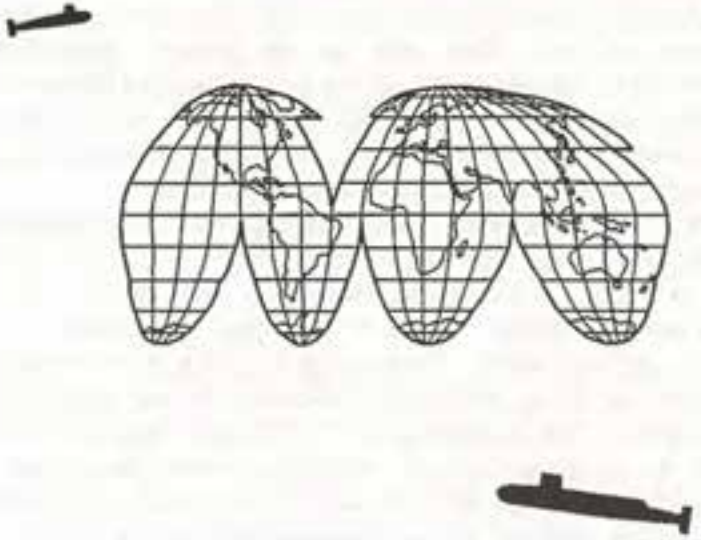
It is hard to know where the threat will come from, or who the enemy will be. **This calls for the greatest degree of flexibility and responsiveness on our part. Forward presence and crisis response are thus key tenets of U.S. national security policy and defense strategy. The Submarine Force can and should have a major stake in those missions.**

In this uncertain world, **maintaining our technological advantage was never more important than it is today.** And maintaining our technological advantage was never more difficult than it is today. The U.S. no longer has a corner on the technological market. Technology migrates all too easily these days, including technology developed by our erstwhile allies, and from U.S. industry as well. Of major concern is the transfer of technology and the *brain drain* from the Former Soviet Union. For the moment, the U.S. has what might be considered *first right of refusal*, but some of our allies (most

notably Japan) are actively exploiting that market, and we could find ourselves in some disadvantageous bidding wars. **Technology and expertise are also available to the highest bidder in the Third World**, and we are already witnessing some unsettling movements in that direction.

Keeping tabs on foreign technology developments is becoming increasingly difficult. The Intelligence Community faces major problems in coping with the entire non-proliferation issue. They must rely on what is to them non-traditional sources and methods of collection. They will be turning to academia, the scientific and technical world, the R&D community, and to industry for help. Industry can play a significant role in this regard. Who better to keep tabs on the competition?

Finally, to restate my views on the intelligence role of the submarine in the forward areas. I am in agreement with Ron O'Rourke in that regard. It is safe to assume that in crisis situations of the future, the President will continue to ask "Where are the carriers?" I would like to believe that on appropriate occasion, he will also ask "Where are the subs?" I hope that the answer will be: "On station as before, Mr. President, collecting and reporting critical intelligence, and ready immediately to respond to your further orders." ■



FURTHER ALONG "IN HARM'S WAY"

by Harlan Ullman

Reviews and reviewers rarely satisfy either an author's expectation or indeed, ego. Robin Pirie's recent and generous review of my book, In Harm's Way: American Seapower and the 21st Century, was no exception to that general rule. My intent in the book was to provide a strategic chart and compass for setting the future direction for U.S. naval forces and not to issue specific *"rudder orders"* which, in all probability, would have been swiftly overtaken by the extraordinary and swifter flow of events that ended the Cold War. Hence, the reviewer's single qualification that "the author leaves a good deal in this book to further study" seems to have missed this point.[1] However, perhaps a few rudder orders might now be useful in stirring up debate.

As most readers of this and other journals will not know, In Harm's Way was written in 1990, sent to the publisher in early 1991, and released a few days before the Soviet coup attempt in August 1991 precipitated the end of the USSR and its Communist party.[2] The central argument of the book was that the Cold War was over and the traditional American view of national defense was being fundamentally and irreversibly altered by the combination of the passing of the old threat and the emergence of powerful domestic determinants that would redefine the future meaning of national security. The long-standing and highly successful strategic framework to deal with the Cold War, based on containment and deterrence, was evaporating. For the Navy, the end of the Soviet threat meant a return to the classical and historical role of influencing campaigns and events ashore but without the menace of any worthy enemy fleet to challenge the use or command of the sea. Simultaneously, domestic determinants no longer checked by

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1. I also wish the review had commented on the book's postscript *Reflections on the Gulf War* and the appendix, *Selected Military Capabilities of Selected States*, as both sections remain very relevant to the role and utility of military forces in the future.

2. The book's greatest understatement appears on page 3 and, in retrospect, should amuse the reader: "For reasons perhaps coincidental, during this century the month of August has been significant in defining and setting much of the course of history." And how!

Cold War considerations of responding to an overarching threat were changing perceptions of and priorities for national security amidst a government trapped in gridlock and drowning in an ocean of debt that was threatening the well-being of the nation. The consequences of these powerful factors would lead to a much smaller Navy and a difficult period of transition in reaching this end point that could easily prove disastrous to America's ability to exercise naval power unless there was careful, courageous, well-argued, and disciplined leadership and planning to fill the void left by the end of the Cold War.

From this argument, the book reached three broad conclusions. First, it was possible to identify plausible, conceptual, operational and political criteria for setting, justifying and maintaining a certain level of naval forces and budgets for the future. Absent a Soviet threat, the book argued that naval forces of about 8-9 carrier battle groups or their equivalent, about 300-350 ships including a Marine Expeditionary Brigade on each coast and an annual budget of about $65-70 billion (FY 1991 dollars) were both politically affordable and acceptable in this new era. This level of capability was reached by examining three independent criteria: the basic combat requirement to respond to a single future crisis on the scale of the war with Iraq; the requirement to respond to two smaller crises simultaneously; and the level of force and defense budget the public would support. Polling techniques were used to determine these force and budget levels and whether such forces would be seen as affordable and supportable by the public. From these three different criteria, the overall size of politically supportable naval forces was projected. Interestingly, each criterion led to roughly the same levels. However, getting from today's force to the new base force set by the Bush administration and, ultimately, to lower force levels that seemed to be politically and practically inevitable would test our powers of governance. This daunting transition in downsizing led to the second conclusion.

Merely reducing forces and budgets to respond to new conditions would be disastrous unless there were a far-reaching and comprehensive plan that included reducing the support facilities, basing structure, defense industrial base and remaining infrastructure (of which personnel, training, intelligence facilities were crucial parts). Thus, the interested observer or member of Congress would need to see a fully integrated trade-off analysis for specific levels of spending that would present the

forces, the infrastructure and the operational consequences of what these forces could or could not achieve. Without such an approach, the book argued that business as usual would magnify the pernicious effects of the defense drawdown and could easily return us to the hollow forces of the 1970s or worse.

Third, the book argued that the Navy and Marine Corps, as this pertains to naval power, must take the lead in responding to this brave new world with innovation, imagination and careful thought. To quote: "No matter how relevant our forces and force structure were to prevailing in the Cold War, one conclusion is clear. A change is inevitable. Although we apply lip service to recognizing this condition, as a nation, we have yet to take any substantive action on what to do next." A year later and despite the administration's base force, that statement still stands.

Let me translate those broad conclusions into specific rudder orders which may prove useful in this period of transition and downsizing. First, the return of naval forces to traditional roles of influencing campaigns and battles ashore has several principal consequences. One is fully integrating the Navy and Marine Corps. This integration is not an argument for specific numbers of ships or marines. It is simply what it means -- integrating the Navy and Marine Corps in influencing events ashore. But this may not prove to be as simple as it sounds.

At face value, this shift in Navy priorities towards what used to be called amphibious warfare sounds like a bureaucratic and strategic victory for the Marine Corps. That is not the case. What will be required, however, is a great deal of compromise on the part of both services in accommodating to the need to support campaigns ashore. In particular, there must be major changes in which service provides what capabilities for these new missions.

Tactical aviation is the first step for this new integration. Fixed wing aircraft must be made largely interchangeable in their ability to operate from ships and from shore stations and in providing capability both for air superiority and ground attack. My own view is to give the Navy responsibility for virtually all fixed-wing tactical aircraft and fully integrate Marine pilots into Navy squadrons. In action, ship-based airwings can go ashore once basing is secure and reserve wings can be used either in shore roles or as replacement aircraft on carriers whose planes were transferred to land operating bases. Clearly,

such a move would likely provide relief for the already strained aviation plan by reducing aviation units some could argue were duplicative and others would agree simply could be reduced.

Marines should become permanent ships company in, say, frigates and above much like the practice in the Royal Navy with its Royal Marines. This would give most combatants a self-contained mini-air, sea and land capability likely to conform with future uses and new operational requirements. And, in fully integrating Navy and the Marine Corps, the political response by Congress is likely to be overwhelmingly in support. Should the Marine Corps find this shipboard assignment distasteful, the Army might not, and Army light forces could conceivably find a role at sea serving on ships.

A second principal consequence of the return to traditional naval missions is the well-understood need to upgrade littoral warfare (i.e., mine detection, close-in ASW and close-air and ground support) and to reduce the need for open ocean ASW and sea control. This will mean far fewer SSNs, probably 50 or less (and less than the 50-60 level of SSNs recommended in the book). This is a tough pill for readers of this journal to swallow. However, with no major navy in sight as an enemy and with more than a dozen SSN-688s still to be built, the U.S. has more than enough underwater seapower for a long time to come. Even though SSNs are relatively inexpensive to operate, I advocated developing a still cheaper form of a cadre or *stood down* status both as insurance in the event of a reconstituted threat and as a way of maintaining a minimum level of nuclear technical proficiency.

One means of coming to grips with the impact and implications of upgrading littoral warfare is to consider combining <u>all</u> the platform "barons" (OP-02, -03, and -05) into a single littoral warfare directorate. This recommendation was made in the book although I did not formally call for a littoral warfare directorate, which I now would.

To cope with the new operational and domestic realities, there needs to be a draconian consolidation of the shore and supporting infrastructure less we have a Navy of few ships and many land installations. My concept is to move towards one or two major operating bases on both coasts combining, where feasible, navy and marine installations. The devil here is not in the detail but in the political mechanism for overcoming the fierce opposition to base closings. Either using the current base

closing commission or establishing a new commission charged with the authority to shrink the military safely and sensibly is essential to these ends.

Finally, as spelled out in the book, the requirements and weapons acquisition processes must be recast. Pages 181-182 called for streamlining and codifying all acquisition regulations, removing redundant oversight including the number of Congressional Committees with overlapping jurisdiction and reaching pre-agreement between Congress and the President over budget and force structure levels. These steps are crucial and need not be repeated in greater detail.

In retrospect, I would offer a self-criticism not made in the review. My expectation was that 1992 would end up with a massive run on the defense budget. The looming election and political travail surrounding Congress have made that institution unwilling, or more likely impotent, to take action. That will change after November 1992. The nearly $400 billion deficit this year and the symbolism of the recent Los Angeles riots regarding the need to address what is seen as a domestic crisis are likely to constitute clear and present dangers to future defense spending. The trends seem to me to be irresistible. In my judgement, the DoD and the Navy have been granted only a stay of fiscal execution and defense budgets will drop to $150-200 billion a year or lower within a few years.

At the end of the day, we need strong, well-trained, highly-motivated forces. Only, in my view, we can get along with far fewer of them. With no Soviet threat and using my assumptions, the long-term number would be around a million people in uniform and a budget of about $150-200 billion a year. But, we must be absolutely ruthless in ensuring that any drawdown is done sensibly and protects the military institution that has become perhaps the best representation of the values this nation holds dearest. Maintaining jobs and not destroying the fiber of this military institution through careless cuts are worthy caveats. These are not, however, sufficient justification, in my view, for maintaining even the base force. We need a new, understandable framework.

Whether readers agree or disagree with my arguments and with my framework is far less important than the need for the nation to act in a reasoned and rational manner in charting a safe course in the post Cold War world. That is the most important point I hope In Harm's Way has contributed to the debate.

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THE ADMIRALTY REGRETS ...
The Loss of the French Submarine LA PERLE

by Paul J. Kemp

In a recent television documentary about the loss of the French submarine SURCOUF, a distinguished British submariner expressed the view that he was of the opinion "that the French submarine LA PERLE had come to an equally mysterious end." The records show, however, that there was nothing mysterious about LA PERLE's demise: she is what is rather euphemistically referred to in British Admiralty records as a "self-inflicted loss."

LA PERLE was a mine-laying submarine of the SAPHIR[1] class built by the Dockyard at Toulon and launched on 30 July 1935. In addition to her armament of three 550mm torpedo tubes and two 400mm triple torpedo mountings, she carried 32 mines in external wells housed in the ballast tanks. PERLE avoided decommissioning under the terms of the 1940 Armistice with Germany and at the end of 1942 was on a routine transit to Dakar when the Anglo-American forces invaded North Africa and she came over to the Allied side. In 1943 and early 1944 she participated in a number of special operations in the Mediterranean and Bay of Biscay before proceeding to the USA for a much-needed refit.

On 8 July 1944 LA PERLE was returning to the Mediterranean after a refit in Philadelphia Navy Yard when she was bombed and sunk by Swordfish aircraft operating from the MAC ships[2] EMPIRE MACCOLL and EMPIRE MACCALLUM which

1. LA PERLE: laid down January 1931; launched 30 July 1935; commissioned March 1937. Displacement 761/925 tons. Dimensions 65.9m x 7.2m x 4.3m. Machinery: 2 Normand Vickers diesels; 2 electric motors, 2 shafts, 1300 HP (on surface) 1,100 HP (submerged). Speed: 12/9 knots. Range 4,000 miles at 12 knots. Armament: one 75mm AA gun; one 13.2mm AA gun; three 550mm torpedo tubes (two bow, one stern); two triple external 400mm revolving torpedo tube mountings; 32 mines. Complement: 42 officers and men (as built).

2. MAC ships, Merchant Aircraft Carriers, were bulk grain carriers or oil tankers with the superstructure removed and fitted with a flight deck (some also had limited hanger facilities) for operating four aircraft. They successfully combined the functions of merchant ship and aircraft carrier without detriment to either. Though the aircrew and supporting personnel were from the Royal Navy, the ships sailed under the Red Ensign and their officers and crew were from the Merchant Navy. Indeed some of their aircraft had Merchant Navy painted on their fuselage instead of the usual Royal Navy.

were part of the escort for convoy ONM.243. There was one survivor, Chief Petty Officer Emile Cloarec who was picked up by HMCS HESPELER. He reported that fifteen of LA PERLE's ship's company of 58 officers and men had escaped from the submarine before she sank but the others had been unable to keep afloat.

That the attack should have occurred at all was a cause for concern. It was the practice for allied submarines, when making transit of areas in which friendly forces were operating, to move in a *haven* in which all attacks on submarines by friendly ships and aircraft were prohibited. The position of the *haven* was adjusted daily by rough DR computation of the submarine's likely position. To move out of the *haven* could have disastrous consequences for the submarine[3] but could also impose constraints on submarine operations[4].

LA PERLE, under the command of Capitaine de Corvette Tachin, left New London CT, on 26 June for St. John's Newfoundland under escort by the American destroyer COCKEREL. After a short stay in Newfoundland she sailed for Holy Loch. In coastal waters she was escorted by the Canadian destroyer CHICOUTIMI but would make the crossing of the Atlantic alone and travelling on the surface.

Sailing across the Atlantic at the same time and on a roughly similar course was the Halifax-Clyde convoy ONM.243 which included the MAC ships EMPIRE MACCOLL and EMPIRE MACCALLUM. The convoy was escorted by the C.5 escort group commanded by acting Commander C. H. Stephen OBE DSC RCNR, in the destroyer HMCS DUNVER. The Escort Group, since sailing, had received daily situation reports from Western Approaches headquarters at Liverpool which included details of LA PERLE's movements. However signals advising *friendly* forces of the bombing restrictions in force around LA PERLE's likely position were not passed to the Escort Group. Adequate information, however, was available to Commander

3. The Soviet submarine B.1 (ex-HMS SUNFISH) was sunk by an RAF Liberator on 27 July 1944 when she inadvertently left her *haven*.

4. HMS UPRIGHT had the mortifying experience of watching a U-boat sail right past her on the surface at night. UPRIGHT was prevented from attacking because of a restriction placed on attacking submarines at night due to the large number of British submarines at sea.

Stephen, to indicate that LA PERLE would pass sufficiently close to the convoy to be within the area covered by his air patrols. This was realized by Stephen who sent two signals on 7 July warning of LA PERLE's proximity to the convoy. The signals were to be passed by HMCS DUNVER to the convoy commodore, vice-commodore and the MAC ships. As no evidence was available from the commodore's ships it is not possible to establish why the procedure was not adhered to.

Prior to the convoy sailing, a general agreement with regard to air patrols was made, by telephone, between Commander Stephen and the Air Staff Officer in EMPIRE MACCOLL, Lieutenant Commander Neale. No patrol orders were given to the MAC ships while at sea, so no special precautions were taken to advise aircrew prior to morning patrols on 8 July that a friendly submarine was in the area. Stephen may also have been lulled into a false sense of security by a message, received at 0038Z on 8 July from Western Approaches headquarters which placed the submarine, wrongly, further away from the convoy than she actually was.

LA PERLE was first sighted by a Swordfish at 1253Z. The pilot, Lt Otterveanger, an officer of the Royal Netherlands Navy, resolved to shadow the submarine and call up reinforcements rather than make an immediate attack which he felt might not be successful given the quick diving time of a U-boat. He noticed the recognition signals made by LA PERLE but disregarded them.

Between the time of LA PERLE being sighted and the attack being carried out, an interval of more than an hour elapsed. Surprisingly neither the pilot nor the air staff in EMPIRE MACCOLL thought it strange that the supposed *U-boat* should remain on the surface keeping a steady course and doing fifteen knots while making no attempt to dive into safety. It was not until 1358Z that Stephen realized that the submarine which his aircraft were bent on destroying might be LA PERLE. Even then, there was no degree of urgency about his signal and no attempt was made to halt the attack by communicating directly with the aircraft. Stephen's failure to realize the situation was probably due to the latest Admiralty intelligence report indicating that a U-boat might be in the vicinity of the convoy.

Before take-off, the aircraft were advised of the current recognition signals then in force. On sighting the aircraft LA

PERLE made the correct signals in good faith having been informed of the total bombing and attack restrictions in force around her, which were totally disregarded by the aircraft. Presumably because the pilots had not been warned of the LA PERLE's presence, they disregarded any signals coming from a potentially hostile submarine.

Once Otterveanger had been joined by the other seven Swordfish, he led the attack dropping three depth charges alongside the submarine. The explosions stove in LA PERLE's hull in the region of the control room causing flooding which in turn caused electrical fires.

Chief Petty Officer Emile Cloarec[5] had just asked permission to spend a quarter of an hour on the bridge when the attack began. The bridge and conning tower[6] were crowded with seamen getting some fresh air. The fire in the control room vented up through the conning tower and most of the men there and the officers on the bridge were horribly burned. Lieutenant Long, the Royal Navy liaison officer, fired off a number of Very cartridges indicating that the submarine was *friendly* but to no avail.

On receiving reports from inside the submarine that the fire and flooding were out of control, Commandant Tachin gave the order to abandon ship. LA PERLE began to settle by the stern and eventually sank -- twelve minutes after the Swordfish attack. Cloarec together with fourteen other members of the crew, had escaped from the submarine and were left swimming. One by one the Frenchmen drowned or succumbed to exposure until only Cloarec was left alive. He was eventually picked up by the Canadian destroyer HESPELER which had been detached by Stephen to look for survivors. Cloarec was picked up practically unconscious and initially taken for a German seaman. It was only when he was heard to speak French, HESPELER having a number of French Canadians in her ship's company, that the

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5. Cloarec's French rating was Premier Maitre Mecanicien.

6. In French submarines directly beneath the bridge was a small compartment containing the attack instruments and known as the "kiosque." It was in this compartment that Cloarec was standing since the bridge was occupied by all five of the submarine's officers and a quartermaster.

awful truth of what had happened was confirmed.[7]

The French Navy received an expression of regret from A. V. Alexander, the First Lord of the Admiralty, for what happened but it was not enough. The French wanted a full scale enquiry which was held under chairmanship of Rear Admiral Lionel Murray CBE, Commander in Chief Canadian North West Atlantic, at St. John's, Newfoundland. The Board found that LA PERLE was sunk at 1410Z on 8 July 1944 in position 55°27'N 33°50'W by a concentrated attack by Swordfish aircraft from the EMPIRE MACCOLL and EMPIRE MACCALLUM. If the French wanted blame to be apportioned then they were to be mistaken. Commander Stephen was exonerated as were the aircrew from the MAC ships. Only the signals officer in HMCS DUNVER, Lt Benson, was reprimanded.

The sad affair of LA PERLE is fraught with questions. Why was LA PERLE given a route that would take her so close to ONM.243? Why were Stephen's two signals not received in the MAC ships? Why did the aircrew ignore the correct recognition signal when fired by LA PERLE? Most important of all, why did LA PERLE not dive[8], rather than bother with identification, as soon as the Swordfish was sighted at 1253?

In the end the matter boils down to *human error* and a series of *ifs*. Submarines, by their nature are vulnerable and in the heat of the moment are likely to become the victims of their own side. This state of affairs will certainly be true in any future conflict, for although modern communications and computerized action information systems have given commanders more information they do not always *clarify the fog of war.* The truth of the matter is that the submarine in war is as much at risk from the attentions of her own side as she is from the enemy.

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7. Cloarec's account of the last moments of LA PERLE is preserved in the French naval archives in Paris: file no. SHM TTY.771.

8. Most British submarines of the period would dive at the approach of any aircraft. "Estimated time of arrival XXXX, friendly aircraft permitting" was a frequent signal made by British submarines.

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ADMIRAL H. G. RICKOVER AS HISTORIAN

The following article is excerpted from
THE RICKOVER EFFECT: How One Man Made a Difference
by Theodore Rockwell. (Naval Institute Press, October 1992).

Act as if you were going to live forever and cast your plans way ahead. You must feel responsible without time limitations, and the considerations of whether you may or may not be around to see the results should never enter your thoughts.

H. G. Rickover

Admiral Rickover had always had a strong interest in history. From early youth he had liked to read history, and he always saw and evaluated important events in a broad historical context. In this he was competently aided and encouraged by his first wife, Ruth. When he first began to realize the relevance of the weakness in the American educational system to the problems he encountered in training people for nuclear power, Ruth helped him with research for the books on education he wrote and published.

As each new submarine put to sea for the first time, Rickover wrote a letter while aboard, telling of the ship and her place in the growing nuclear fleet. This too ultimately grew into a historical project. He described that development as follows:

> *Ever since the first nuclear submarine -- the USS NAUTILUS -- went to sea in January 1955, I have been responsible for directing the initial sea trials of each of our nuclear ships so as to make sure that their nuclear propulsion plants functioned properly and that the officers and men had been well trained. Because many members of Congress had given strong support in getting the NAUTILUS built, I decided that it would be no more than proper for me to send each of them a letter reporting what the ship had done. I remember writing some 80 letters in long-hand during that first voyage. Soon I expanded the list of recipients to include all members of Congress and appropriate officials in the executive branch.*

When it came time to test our first Polaris submarine, the USS GEORGE WASHINGTON in 1960, I thought it would be appropriate to include in my letter a brief biography of the man for whom the ship was named, and I continued this practice for each of the 40 Polaris submarines which followed. These letters were well received, and most of them were printed in the Congressional Record. Frequently I was urged to publish them in book form. This I agreed to do and Congress, in 1968, passed a resolution authorizing the printing of this book.

The book he was referring to was a beautifully bound volume called Eminent Americans: Namesakes of the Polaris Submarine Fleet, published by the Congress as House Document no. 92-345 but copyrighted by Admiral Rickover.

It had been traditional to name submarines after fish and other undersea life, but with the missile ships, great capital ships displacing over nine thousand tons -- larger than many cruisers -- each carrying sixteen nuclear-tipped long-range missiles, it was decided to name them after well-known figures in American history. The distinguished patriots chosen for this purpose were remarkably diverse, ranging from George Washington, Thomas Jefferson, and Patrick Henry to Daniel Boone, Will Rogers, Simon Bolivar, George Washington Carver, Tecumseh, the Shawnee chief, and Kamehameha, the Hawaiian king. Rickover noted in his preface to the book, "The careers of the men for whom the Polaris submarines are named span the full range of American history from the time of the Revolution to the present century. The preparation of these essays therefore required me to explore many aspects of our national history."

He soon found that he had undertaken quite a chore: "Because these letters had been written aboard ship, they had been necessarily limited to two or three pages. For the purposes of a book, I wanted to expand the original brief sketches of these figures into more complete essays. During the past 4 years I have devoted virtually all of my spare time to this task. Had it not been for the devoted efforts of my dear wife, who did most of the research for these essays, I could not possibly have completed this task."

Rickover described his long-term fascination with history and added, "This broader interest in the history of the United States

led me to the conclusion that I should try to reflect in these biographical essays some of those historical themes which seem to me to have particular relevance for the kinds of problems our Nation faces today... I therefore decided to use the careers of the men for whom the Polaris submarines were named as the focus for essays which would be broad enough to include some of the significant events which occurred during their lifetimes."

The result was a unique history text, both authentic and readable, which was popular among a wide variety of readers. Sadly, Ruth Rickover died just before the book was completed, and the Admiral dedicated it to her, as "at once the most human and intelligent person I ever knew, the greatest influence on my life and work." And he closed his dedication with words of Tibullus, leaving the translation as an exercise for the reader: "*Tu mihi curarum requies, tu nocte vel atra lumen, et in solis tu mihi turba locis*" (You are my refuge from care, my light in darkest night, and in my loneliness a place of activity").

His wife's death was a severe blow to the Admiral. Although he always kept his personal feelings to himself, we could not help but feel his pain. So we were surprised but pleased when, some years later, he married Eleonore Bednowicz, a Commander in the Navy Nurse Corps since 1954. She had taken care of the Admiral when he was in the hospital with his first heart attack in 1961, and he had kept in touch with her all through the subsequent years.

Rickover's final foray into historical publishing was quite a different effort. Partly as a result of the time he spent in Panama and in the Philippines, he came to look at the Spanish-American War as a turning point in American history. So in 1974 he was quite impressed with a story by John M. Taylor in the Washington Star-News entitled "Returning to the Riddle of the Explosion that Sunk the MAINE. Taylor noted that the question of whether the MAINE was sunk by an enemy mine or by an accidental explosion had never been settled satisfactorily, although the battle cry "Remember the MAINE!" had fanned the lust for war on the premise that the Spanish were in fact the cause of the tragedy that had cost 266 lives. That much was not new. But Taylor noted that an atmosphere of rushing to a predetermined verdict seemed to prevail throughout the Navy's investigations of the matter, and he reported that although the chief of the Navy's Bureau of Steam Engineering had said that

the cause of the disaster was an explosion in one of the ship's ammunition magazines, he was not asked to testify despite his official position of expertise and responsibility within the Navy.

These points intrigued Rickover. He believed that modern knowledge and analytical techniques concerning explosions and structures might be able to shed some light on the nature of the explosion, and a reexamination of how the Court of Inquiry was selected and how it carried out its business might also be illuminating.

He carried out his investigation with characteristic thoroughness. First, he determined to work with the Navy's Director of Naval History, who made available to him historians and archival material, and who published the report of his investigation in hard cover, with an endorsement in the foreword: "In this work, Admiral H. G. Rickover makes a unique contribution by studying the loss of the MAINE in the light of modern technical knowledge... The result is this volume which presents significant new insights in an important event in American history." Rickover also obtained material from the Spanish, British, and French naval archives, through their respective naval attachés. For a broader view of the picture, he brought in the President of the Naval War College and a professor of international law. He then commissioned a special study by explosives and structures experts from the Naval Surface Weapons Center and the Naval Ship Research and Development Center, who examined reports, photographs, and drawings from the Court of Inquiry of 1898 and the Board of Inspection investigation of 1911. The report of this technical study was included as an appendix to Admiral Rickover's book. He even brought in the Curator of the Division of Naval History at the Smithsonian Institution, an expert on mines and mining techniques of the Spanish-American War period. He then had the book reviewed prior to publication by a number of independent historians and technical specialists.

Rickover's investigation and report present persuasive arguments that there was no evidence to support the conclusion that a mine had destroyed the MAINE and that there was considerable evidence pointing to, although not proving beyond doubt, that an internal explosion was the cause. The type of bituminous coal carried on ships at the time was often the source of fires resulting from spontaneous combustion. On the

MAINE, only a single thin metal wall separated some of the coal bunkers from munitions magazines, and this was an invitation to an explosion sooner or later. The lesson for us, Rickover concluded, is that "we can no longer approach technical problems with the casualness and confidence held by Americans in 1898. The MAINE should impress us that technical problems must be examined by competent and qualified people; and that the results of their investigation must be fully and fairly presented to their fellow citizens."

He closed with the following somber warning, even more relevant today that when it was written in 1976:

> *With the vastness of our government and the difficulty of controlling it, we must make sure that those in 'high places' do not, without most careful consideration of the consequences, exert our prestige and might. Such uses of our power may result in serious international actions at great cost in lives and money -- injurious to the interests and standing of the United States.*

As was the case when he published his views on education, Rickover's words were viewed condescendingly by some of the professionals in the field. The Naval War College Review ran such a review, bewailing attempts by amateur historians to add anything to the field. Rickover responded simply:

> *I could approach the problem technically, and this I did. I did not 'avail' myself of the 'opportunity' to make a full historical study of the interplay of administrative, political, personal, human, and technological factors in the loss of the battleship since this was not my intention and, further, there were limitations of time and professional qualifications in these areas. Nor did I write a psycho-history -- a morass into which historians too often descend. Dr. Comas criticizes me for restricting myself to areas of my knowledge and experience. I would have criticized myself if I had gone beyond them.*

Rickover then went on to note that a learned journal "is no better than its reviews," and "there are several publications already covering the same fields... at no expense to the govern-

ment." He therefore suggested that "in these days, when the government is attempting to reduce paperwork, do away with superfluous employees, and save money, eliminating the Review would be a noteworthy, precedent-setting action by the War College."

Eminent Americans did not add any original material to scholars' historical data base, but it was good, readable history, and Rickover hoped it would interest and inspire young people and their teachers. He was disappointed that it did not receive the attention he had anticipated. The MAINE, on the other hand, was -- and is -- a real contribution to a hundred-year-old historical controversy. It continues to be cited in various historical works. This could not have happened if the Admiral had not tackled its writing in the same exhaustive way he undertook all of his technical projects -- a truly novel procedure for the field.

[Theodore Rockwell is an engineer-scientist with 45 years in nuclear power development, starting as a Process Improvement Engineer at the war-time atomic project in Oak Ridge, Tennessee. For 15 years he reported to Admiral Hyman Rickover, the last 10 as Technical Director of the national program to develop nuclear power for naval propulsion and to build the world's first civilian nuclear power plant. With Robert Panoff and Harry Mandil, he founded the respected engineering firm MPR Associates in 1964. He has medals and citations from several branches of the Government, and is known for numerous patents, books and articles, including one entitled "Grit and Steel," with the first stroboflash pictures of fighting cocks in action.]

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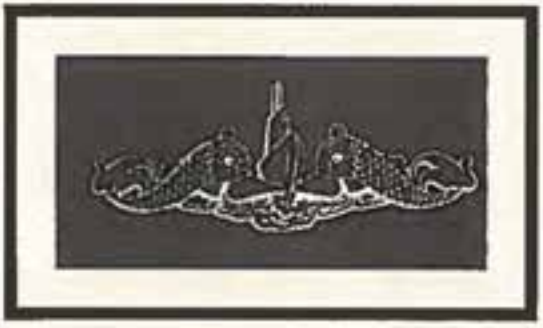

SUBGUIDE: THE WORLD'S LARGEST

by Norman Polmar

The world's largest and, in several respects, most innovative undersea craft is the Russian AKULA (Shark). No, not the high-speed attack craft that surprised western intelligence in the 1980s with its low noise levels, but the giant SSBN known in the West as the TYPHOON. AKULA is the Russian class name for this undersea behemoth.

Probably the first specific indication that the West had of a new Soviet SSBN being constructed came in November 1974, when Communist Party Chairman Leonid Brezhnev revealed to President Gerald Ford, at their summit meeting in Vladivostok, that the Soviet Union was building a giant strategic missile submarine. Brezhnev -- using the term Tayfun (*typhoon*) to refer to the new undersea craft -- declared that the new SSBN was a response to the U.S. TRIDENT submarine program. Brezhnev tried unsuccessfully at the meeting to get Ford to halt production of U.S. TRIDENT submarines and to cancel the B-1 bomber.

Collaborative information was coming from U.S. reconnaissance satellites, which showed expansion at the Soviet submarine building yard of Severodvinsk in the Arctic. Erected by Stalin in the 1930s, the original battleship building hall at Severodvinsk had since been supplemented with two other, large submarine building halls, making it unquestionably the world's largest submarine construction facility. At the same time, Soviet missile test flights and other sources of information gave evidence of intensive efforts underway in the development of another large Submarine-Launched Ballistic Missile (SLBM).

The lead submarine of the new class -- given the Soviet project designation No. 941 -- was laid down in 1975 at building hall No. 3 at Severodvinsk and launched in September 1980. Western intelligence assigned the code name TYPHOON to the craft, based on Brezhnev's comment about the *Tayfun* made at Vladivostok. The new submarine was, by a significant margin, the largest undersea craft yet constructed by any nation -- publicly estimated by western intelligence at 18,500 tons surface displacement and 25,000 tons submerged; the latter number (in metric tons) is also used by some Soviet sources. However, a number of U.S. analysts have estimated that the TYPHOON's

true displacement is much greater, possibly 30,000 to 35,000 tons submerged.

As impressive as the submarine's size, the TYPHOON SSBN revealed an innovative *trimaran* pressure hull design. The submarine has twin, longitudinal pressure hulls constructed of titanium with a diameter of 32 5/6 feet. Between them are three identical pressure modules: the bow module is fitted with six torpedo tubes and holds reload torpedoes, "several dozen" according to Russian sources; the central module contains the command center; and the stern module houses the submarine's steering gear.

(Russian sources cite the titanium pressure hulls. Significantly, the TYPHOONs were built in Severodvinsk building hall No.3 while the titanium-hull ALFA, PAPA, and MIKE, submarines were built in hall No.2. Thus, the Russian report may have been in error, or a new titanium welding procedure that does not require the argone-gas environment of hall No.2 has been developed.)

This unique configuration was selected, according to a Russian submarine commander, because it was not possible to fabricate a larger pressure hull to accommodate the missile tubes within a conventional SSBN design. Thus, once again, the Soviets showed a highly innovative approach to meeting performance requirements. The submarine's 20 large missile tubes are thus fitted **forward** of the sail, between the main pressure hulls, aft of the torpedo room module and ahead of the command center.

The TYPHOON's outer hull measures 557½ feet in length with a beam of 82 feet, and a draft of about 37¾ feet; the distance from top of the sail to keel is 85¼ feet -- truly a giant undertaking.

Within each large pressure hull the submarine has a pressurized-water reactor with a capacity of 190 megawatts; a steam turbine within each hull generates 45,000 horsepower -- a total of 90,000 to turn the two, six-blade propellers. Western estimates of speed for the TYPHOON vary from about 25 knots to in excess of 30 knots; the latter appears more likely, with some credible sources estimating about 35 knots. Special quieting features have been incorporated in the submarine.

The TYPHOON, according to the chief designer of the class, Academician Sergei Kovalev, was totally innovative:

"She had no prototypes. We couldn't even use our own experience in full measure. Many things had to be done from scratch.

"We had developed and discussed in detail 200 versions of this submarine before choosing the optimum model. Incidently, every version is not just a blueprint; it involves most complex computations and experiments."

Beyond the unprecedented size and unique design, the TYPHOON is impressive for the ship's under-ice features and ballistic missile battery. The TYPHOON is likely the first submarine built from the outset for Arctic operations. The submarine rides high when on the surface, a result of at least a 30 to 45 percent reserve buoyancy, which can be expected to clear the ice from the missile hatches after surfacing. The sail is heavily *armored* for breaking through the ice; and the propellers appear to be partially protected. Unlike the previous YANKEE and DELTA SSBNs, which have sail-mounted diving planes, the TYPHOON has bow planes that retract into the hull, a means of avoiding ice damage.

Beyond standard torpedoes -- both 21-inch and 25.5-inch diameter -- the TYPHOON appears to carry the rocket-propelled torpedo, a underwater weapon reputed to have a very high speed and possibly a nuclear warhead. It may be intended for a *quick reaction* snap-shot against an attacking SSN.

The TYPHOON has a main battery of 20 RSM-52 missiles, known in the west by the NATO designation SS-N-20. It is the first Soviet solid-propellant SLBM to be deployed in significant numbers. With an estimated launch weight of 132,000 pounds, the SS-N-20 is the world's largest SLBM. The SS-N-20 is rated by Western intelligence as having a range of 4,480 n.miles while Russian writings indicate a range of over 4,800 n.miles while armed with up to ten nuclear warheads that can be aimed at separate targets within a given *footprint*. The Russian warheads are unofficially estimated to be approximately the same size as U.S. warheads -- 100 kilotons for each re-entry vehicle.

Manning each TYPHOON SSBN are 170 men -- 50 officers, 80 warrants or specialists (similar to senior U.S. petty officers), and some 40 conscript sailors and petty officers. The officers live in two- and four-man paneled cabins, each of which has a wash basin, television set, table or desk, bookcase, wardrobe, and bunks. There are also similar small cabins for warrants and

enlisteds. The submarines also have a sauna, dip pool, greenhouse, and an aviary.

But working and living conditions for TYPHOON submariners are major problems. According to Kovalev, "From the outset, the TYPHOON was conceived as a system of ships, their main armament (missiles) and all necessary coastal and sea support, including cantonments for submariners. Relative design work was duly done. However, items bearing on base support of the TYPHOON systems leave much to be desired."

The TYPHOON SSBNs are based in the Bolshaya Litsa Fjord on the Kola peninsula, about equal distance from the ports of Petchenga and Polyarny, and only some 35 miles east of the Norwegian border. There are four harbors at Bolshaya Litsa: Litsa north is a submarine maintenance area, Litsa south is a base for nuclear attack submarines, and Litsa southwest is used for TYPHOON and other SSBNs. These facilities are on the western side of the fjord; on the eastern side is another submarine support facility. Norwegian specialists, working from commercial satellite photography, estimate that there are a total of 67,570 feet of piers in the fjord.

By 1984 the Soviets had completed the construction of several large, underwater *tunnels* for strategic missile submarines in the fjord. The tunnels, in which SSBNs can be rearmed during a conflict, are said to be large enough to accommodate the TYPHOON-class SSBNs, apparently giving them protection from conventional and nuclear attack when they are undergoing maintenance or are being rearmed.

Discussing problems at the TYPHOON base, Russian journalists have written: "transport is a particular worry at the base. The submariners live 8½ miles from Nerpichya -- in Zapadnaya Litsa. There is practically nothing to take them to and from their work, and you cannot go on foot in blizzards and ice. In 1987 the then Defense Minister Dimitri Yazov visited the garrison. He gave an order for the submariners to be allocated eight Ural trucks with cabs. Thereafter they were nicknamed *Yaziks*."

But the transport problems continued -- more than 1,500 personnel manning and supporting the TYPHOONs have to be transported every day. Commercial buses have been hired, being paid for by the officers and warrants!

These and other personnel-related problems, especially pay, plague the TYPHOON program as well as most other aspects of the Russian armed forces. For example, the captain 1st rank commanding a TYPHOON earns about 5,000 rubles per year, including his Arctic bonus, submarine pay, nuclear pay, etc. His senior engineer officers, captains 3rd rank, each earn 3,600 rubles. But the commercial bus drivers at the base earn 5,600 rubles!

While the submariners have certain privileges and receive food and services not available to the bus driver, the pay situation is critical. The cheapest cigarettes in the area cost 20 rubles per pack and a 2.2-pound package of crackers costs 37 rubles. It is a bad situation and cannot be expected to endure.

The lead TYPHOON began sea trials in June 1981 and entered service in 1983. The period from keel laying to completion was about eight years; this compared to just over 5½ years for the first U.S. TRIDENT submarine (which was considerably smaller). Series production of the TYPHOON SSBN followed, with additional underwater giants being completed at a rate of almost one per year, the sixth being launched in 1989 and completed the following year.

Western intelligence anticipated that a total of seven or eight TYPHOON SSBNs would be built by the early 1990s. However, there appears to have been a conscious Soviet decision not to continue TYPHOON construction beyond six units, although other SSBNs were being built.

The six TYPHOON submarines remain in service and are apparently undergoing modernization, being rearmed with an improved missile. It is not clear if they are continuing to conduct SLBM patrols, as are DELTA-class submarines and, as recently as 1991, the single YANKEE II SSBN.

According to Captain 1st Rank Sergei Yefimenko, the commanding officer of a TYPHOON, the submarine's missiles are normally targeted "nowhere." He explained, "The flight program, which is recorded on punched tape, is only entered into the ship's computer complex during the performance of combat service at sea (on patrol). The rest of the time it is kept sealed in my safe."

Further, the submarine commander cannot himself make the decision to launch a missile. This can be done only upon

receipt of a coded signal from one of the briefcases or *footballs* held by the top Russian officials. (See Ensign Kate Woodruff, USNR, "Who's Carrying the Commonwealth Ball?" Naval Institute Proceedings, April 1992, p. 47.)

Does Yefimenko know where his tapes will guide his 20 missiles? Have the tapes been changed since the breakup of the Soviet Union? "My tapes have not been amended by anyone, yet, and I do not know where my missiles are targeted; this information is held only by the General Staff where the program is written," he recently told journalists. He added, "I suspect that they are targeted at the military installations of one of the countries that (is) now supplying us with humanitarian aid."

Yefimenko is 37 years old and has held command for five years. He is approximately the equivalent of a U.S. one-star admiral, reflecting the Russian belief that the submarine is the capital ship of the fleet. The youngest TYPHOON commanding officer, Yefimenko has carried out 11 training missile launches, although it is not clear how long his submarine has been operational.

All SSBN construction in Russia has apparently ceased. The TYPHOON, however, was not the last SSBN built at Severodvinsk. Concurrent with the TYPHOON production, the Soviets produced the DELTA IV-series SSBN, with the first DELTA IV being launched in February 1984 and completed in 1985. The seventh and probably last DELTA IV was launched in 1990.

Sources: Interviews with Soviet submarine and engineering officers; Viktor Litovkin, "Three Days on the TYPHOON," Izvestiya, 29 February 1992, p.3, and 2 March 1992, p.3; and Sergei Ptichkin, "The Birth of the TYPHOON," Soviet Soldier, No. 10, 1991, pp. 32-35.

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THE TYPHOON SSBN:
An Inside Look at the Boat and Its Crew

by George F. Kraus, Jr.

Reprinted from Analytical notes of the Foreign Systems Research Center
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Greenwood Village, Colorado.

[Ed. Note: These notes complement the foregoing SubGuide article]

Typhoon in the News

In a series of front page articles, *Izvestiya* in late February reported on its correspondent's "three days on the Typhoon." These articles were in some ways reminiscent of the early CBS documentaries when the USS GEORGE WASHINGTON first went on patrol, or of the more recent PBS program based on an entire patrol on a Trident SSBN. The *Izvestiya* coverage is notable for both the detail provided on these largest of submarines, and for the candid discussion of problems within the force. The reader is left with a sense of the Soviet (Russian) pride in technical accomplishment, the skill of professional crews, and wonder at the incredibly difficult conditions under which these men serve. It seems clear that the inadequate shore support provided for Typhoon SSBNs and crews will lead to reduced readiness, continued manning problems, and potential premature retirement of some units.

Typhoon - *Force-Wide Problems*

Personnel difficulties *[Ed: noted in the earlier article]* are but one of the problems for the Typhoon force in particular, and Northern Fleet more generally. Key shortfalls noted by Northern Fleet Commander Admiral Gromov include the "dire shortage of (funds) for equipping ships." The correspondent observes that this fits the old, "peculiarly Soviet tradition -- the weapons and combat equipment first, all the rest sometime later." He notes that the Typhoons were built at great expense, but little was done to provide bombs, repair shops, arsenals and depots, or housing and facilities for the crews. For example, plans for a diesel charging unit and a nine-story training block for submariners, to include extensive simulators for every specialist, have not been carried out. The training facility in particular is a major loss, as its simulators would have reduced

the requirement to operate the boats, thereby saving "engine time and equipment."

Moreover, the only training facility for submariners today remains the lone center in Paldiski, Estonia -- no longer even in the CIS, much less Russia ("Indeed, Paldiski is now abroad: you cannot go there without visas, without agreement with the republic government").

The lack of supply depots and armament storage arsenals is also a big problem. Construction was begun on such facilities, but was abandoned when money ran out. Now ammunition is kept in unfinished depots and the spare parts for submarines and instruments are kept in inconvenient buildings that submariners built themselves. Trucks, graders, and other equipment are kept in the open in all weather. The inadequate facilities and harsh climate make any work more difficult and rapidly degrade the equipment.

Transport for the crews from their quarters is also a problem. Submariners live 14 km from the Typhoon facility and have practically nothing to take them to and from the pier, a unique difficulty in view of the frequent bad weather. Submarine officers and warrants pay up to R50 each a month for bus service under contract, but even with the large salaries paid the drivers (see above), civilian drivers don't show on "icy Arctic nights." As a consequence, young sailors never go anywhere -- they stay on board -- and officers make the hazardous journey in any way they can.

Another personnel problem has been the small increment of sea duty pay for officers over that paid to their shore-based brethren, only R150 a month. This is the price of a kilogram of sausage, and is widely viewed as inadequate. A shore-based officer gets quarters, a food ration with which to feed his family, and works from 0800 to 1800. The sea duty officer eats on board and stands watch every third day, doubling his normal "40-hour" work week.

This situation of shortage and lack of support seems unlikely to improve soon. There is no money for construction, and thus crews must continue to depend on their own resources, however limited they may be. Shortages extend to the families of the men as well. The 6,000 children in the garrison attend school in four shifts, and there are only 800 places in the 3 kindergartens.

Even more fundamental shortages exist. For the three days that the correspondent spent aboard the boat, the crew did not have fresh meat once. Canned meat or fatty sausage was the rule. The ship still lacks heated rescue suits, a requirement for survival in the waters patrolled by Typhoon. It has been three years since the KOMSOMOLETS was lost and there are still "no effective rescue facilities." As equipment like these rescue suits is not produced in Russia, and there is no money to purchase them abroad, the shortage will likely persist. Even shoes and boots are in short supply. The divisional depot serving the Typhoon force is short 2,000 pairs of footwear.

In the face of such conditions, Captain Yefimenko has seven letters of resignation from his officers. These are "experienced, able specialists...[and] by no means all those who want to leave the Navy."

Typhoon - *A Tempest Without a Teapot?*

This series of articles highlights again the endemic Soviet, CIS, and Russian Navy problem: expensive units are built and deployed with inadequate attention to the supporting infrastructure. Shortages abound, even for the SSBNs and their elite crews. Similar critiques have appeared regarding the KIEV and KUZNETSOV class carriers, citing the lack of pier or mooring space and facilities, poor or nonexistent shore support, inadequate provisions for crew and families, lack of even simple requirements -- much less amenities -- and lack of safe storage for everything from gear to ordnance. This is now complicated by the independence of republics, which has caused further erosion of key facility access such as Paldiski, and the wrenching split of loyalties and expectations as navy men contemplate their future. The impact on morale is obvious, and the loss of trained officers and warrants will be particularly hard to absorb as the ability to replace them with experienced hands is questionable. Ultimately, readiness suffers. Add to this the shortfalls identified by the Fleet Commander, and one must estimate the situation will get worse before it gets better.

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HISTORY OF THE DUTCH SUBMARINE FORCE

by Pieter L. van Ewijk

Luctor et Emergo certainly is an appropriate name for a country's first submersible. Translated from Latin, it means *Struggle and Emerge.* This is the story of a small country's struggle through submarine history, and its triumphant emergence from tough times.

The first submarine in the Royal Netherlands Navy did not get accepted into the fleet roster without its share of difficulties. A Dutch shipbuilding yard, De Schelde in Vlissingen, approached the Dutch Navy in 1903 to enquire if the Navy would be interested in purchasing a submarine. Many nations were then getting into the submarine game, and The Netherlands should not fall behind. The Navy, however, was not fully convinced. Since De Schelde thought it could convince the Dutch Navy if it actually had a working sub, the company started construction anyway. Plans were purchased from the U.S. Electric Boat Company, and construction was started June 1, 1904. After about a year of construction, the privately owned and funded LUCTOR ET EMERGO was launched on July 8, 1905.

A crew was brought in from the Electric Boat Company to test the boat, and acceptance trials were set up by the Dutch Navy. All De Schelde had to do was show the boat lived up to its promises, and the State would purchase and commission it. The test runs, however, were disappointing, and as a result, the sub failed to qualify. De Schelde blamed the failure on the U.S. crew men who, though experts in their respective technical fields, were not seamen, and therefore were not able to show the operational value of the submarine. The yard did not give up that easily. They went through the Navy ranks to find volunteers to crew the boat. After months of training and practicing, the Dutch sub commander felt confident that they could go through the paces again, meet the standards set by the Navy, and get the submarine accepted into the Dutch Navy. In December, 1905, the boat passed inspection, and was commissioned as ONDERZEEBOOT 1 (O-1).

After commissioning, the Navy was quite impressed by the performance of this little craft. It was observed, however, that there were no spare parts available, no blueprints, nor were

there any instructions regarding battery operations available. In early 1906, while running at periscope depth, the periscope collided with an ice floe, and was bent out of shape. Since there was no spare periscope available, De Schelde bent it back as well as it could, and it stayed like that until the boat was scrapped many years later. One additional problem is interesting to note: O-1 had a petrol motor for surface propulsion, but since petrol was deemed too volatile to store in the shipyard or the Navy Yard, it had to be delivered in small quantities every time the boat had to be refueled.

Despite the various problems encountered with their first sub, the Dutch Navy was now convinced that it should build submarines, since they had enormous potential as weapons in the defense of Dutch neutrality. The O-2 was built in 1907, and commissioned in 1908. This sub was built to plans purchased from Whitehead and Co., since the Dutch wanted some other designs to evaluate and experiment with.

The Dutch had only five or six submarines in service when World War I broke out. During this war, however, The Netherlands remained neutral, and as a gesture of goodwill, halted the construction of all submarines during this period. When the war ended in 1918, the Dutch Yards were allowed to continue construction, and finish building the boats that had been started before the war.

After the First World War the Dutch expanded their submarine fleet to include their overseas possessions of Indonesia. In order for submarines to make the voyage half way around the world and patrol an area with a hot climate, a new class of submarines were designed and built. These boats carried the designation "K" (for "Koloniaal", or colonial), followed by Roman numerals. In 1922 a submarine pier was added to the Navy Yard in Surabaya, Java, where the Dutch had had a naval presence since the 1600's. In early 1923 the K-II, K-VII and the K-VIII began the voyage from the Den Helder Navy Yard to Surabaya, escorted by the submarine tender HMNLS PELIKAAN. 1924 saw the establishment of a permanent submarine squadron based from Surabaya. The first K-Boats to be permanently assigned to this squadron (as opposed to being based from the Netherlands) were K-III, K-V and K-VII.

The period after the First World War was an exciting time

for the Dutch Submarine Force. During this time the very first courtesy visit to foreign countries was made by the O-6 and the K-III, when they visited Norway and Sweden. As mentioned, new designs were entering the fleet for service overseas. O-class subs underwent changes and updates also. One experiment got worldwide attention at that time: K-XIII's voyage half way around the world to *Show the Flag* and conduct gravity experiments. Professor F. A. Vening Meinesz was a well known gravity expert, who accompanied the sub on its voyage, conducting experiments and recording observations along the way. K-XIII left Den Helder May 27, 1926, and travelled, unescorted and without incident, through the Panama Canal to Surabaya, arriving December 12, 1926. When the sub arrived at the Panama Canal, the American submariners enviously inspected this 670-ton craft's air conditioning unit. It was only in 1934 that the first U.S. fleet sub was outfitted with an air conditioning unit.

The 1930's were a quiet time for the Dutch Submarine Force. Though faced with cutbacks in naval spending due to increased security for Holland and its colonies, there were a number of expansions planned. A few more O-class subs were built, and a number of K-type submarines were commissioned for service in both Netherlands East Indies (now Indonesia) and Netherlands West Indies (now Netherlands Antilles and Aruba). In 1934 there was another trip around the world, this time the honors fell to K-XVIII, to follow up on the gravity experiments of the previous decade. The major port of calls were St. Vincent, Dakar, Pernambuco, Rio de Janeiro, Montevideo, Buenos Aires, Mar del Plata, CapeTown, Durban, Mauritius and Fremantle. K-XVIII served as a radio beacon between St. Vincent and Dakar for the first trans-atlantic KLM (Royal Dutch Airlines) plane flight to the West Indies.

The O-13 and O-14 had a few interesting patrols in 1939, when they were called upon to serve as patrol vessels, and participate in convoy duties in the Straights of Gibraltar at the start of the Spanish Civil War. These patrols, however, were only limited to passive observations, and when it was determined that the Spanish Civil War would not interfere with the general operation and safety of traffic using the Straights, the patrols were stopped. The subs involved had not fired a shot in anger.

New technology was also put to work in Dutch submarines. As mentioned previously, air conditioning was installed in all boats serving overseas. One of the best known Dutch inventions was the **Snorkel**, which will be discussed later, and the **poppet-valve**, an ingenious device that vents air used for torpedo firings into the submarine, rather than letting the air bubbles rise to the surface. At this point the Dutch Navy decided that it would be more economical, more versatile and efficient to have only one type of submarine, so that all subs built after 1936 would have the "O" designation.

When Germany declared war on Poland in September, 1939, the Netherlands again announced its neutrality. As Hitler became more aggressive he would not accept Dutch neutrality, and invaded Holland May 4, 1940. An executive order was given to the armed forces to surrender with their weapons intact. The Queen and government evacuated to England. The majority of submarines that were on the building slips were demolished so that they were of no use to the Germans, offices and documents were destroyed as much as possible under the hurried conditions, and any submarines that were able to do so slipped away from the Dutch yards and ports, and made it to British ports. The boats stationed overseas remained there as transit time to the Netherlands was too long to use the subs in the defense of Holland, and there was an ever increasing threat of Japanese hostilities in the Far East. When on December 7, 1941 the Japanese declared war on the United States, the Dutch submariners were involved in a two-theater war: the Atlantic war against Germany and the Pacific war against Japan.

Dutch involvement and successes during the war were varied. The normal chains of high command were destroyed by the German invasion of Holland, and the boats that made it to England would be under British command. The boats in the Antilles, since there were no proper submarine piers and facilities, were to sail to England by way of teaming up with a UK-bound convoy from Canada. The boats in the East Indies were to remain there under local Dutch control for the defense of the colony.

The most spectacular success came at 4:30 AM on November 28, 1941, when the O-21 sank the U-95, just off the Spanish Coast. The U-95, under the command of KapitanLeutnant Gert Schreiber, was on its way from its base at Lorient to the

Mediterranean. At about 4:30 AM it spotted the silhouette of a submarine off the bow, and tracked it for about two hours. Although the distance between the two subs had decreased, it was still impossible to identify the other sub. It could be another U-Boat on its way to the Mediterranean, it could be an Italian ally or an enemy sub. To find out for sure, the captain of the U-95 decided to challenge the unidentified boat for the proper identification signal. With the torpedoes ready, the deck gun and machine guns manned and ready, they sent the signal. The Dutch captain immediately recognized the signal from the enemy, and fired a torpedo from one of the stern tubes. This torpedo missed, and just grazed the U-95's rudder as it started to turn. The O-2 started to turn also, and, realizing that their first shot was going to miss the U-Boat, they fired again, two-degrees off the U-Boat's bow. This torpedo hit, blew the bow off the U-Boat, and the U-95 sank in about thirty seconds. The O-21 picked up twelve survivors, and took them to the British base at Gibraltar.

The O-15 was in the Netherlands Antilles when hostilities broke out. In March, 1942, it was decided to send this sub for a refit in Philadelphia, from where it would travel to Halifax, Nova Scotia. When the O-15 arrived at Halifax, it was decided that the old boat would not be able to cross the Atlantic, and it was decided that the sub should stay in Halifax for training of Canadian Navy ASW units.

When war broke out in the Far East, Britain decided to send a number of submarines to Singapore in defense of British and Dutch possessions in that area. Among them were a number of O-Boats that were placed under the command of the C-in-C Singapore.

When Surabaya fell to the Japanese in March 1942 a number of the subs there were not in any shape to leave, due to the fact that no spare parts had been shipped from Holland for about two years. The submarines that could, fought for several weeks around the East Indies, but when they ran out of supplies, and when most of the islands were taken by the Japanese, the submarines went to Fremantle, Australia.

Some of the boats that did make it out to Australia were not deemed to be in any fighting shape. The K-VIII and the K-IX were pressed into service to supply power to a shipyard; the K-IX was used for hauling larger ships from the water onto the

slipway. Towards the end of the war, the RAN commissioned the K-IX into their navy for training purposes.

The O-16 was able to sink a few Japanese ships, but was lost December 15, 1941, after it ran into a British minefield on its approach to Singapore. There was only one survivor. The O-20 was scuttled December 19, 1941, after it was disabled by the Japanese destroyer it had attacked. The Japanese destroyer SAGIRI was sunk with a single torpedo from K-XVI. The returning depth charging by other escorts, however, spelled the end for the HMNLS K-XVI. Some others were met with this same fate. The K-XVII did not return from her patrol off the Malay coast in December '41.

The mine-laying sub O-19 had a number of kills to her name. This boat was equipped with a snorkel, which was praised as an essential piece of equipment during pursuit of the enemy. On January 10, 1942, it sank the TANYU MARU and the AKITA MARU with a spread of three torpedoes. In the same month it also damaged a number of Japanese ships. The K-XIV was another successful boat. On December 21, 1941, it had sunk the 9800-ton cargo ship KATORI MARU, and damaged three other marus. On January 23, 1942, she again struck it big when she sank the JUKKO MARU. When U.S. destroyers heard reports of the attack, they rushed in, the K-XIV withdrew in a hurry in order not to be confused with a Japanese boat. An incident that happened in November 1943, however, serves as a reminder of how difficult it was to recognize a submarine. The K-XII was on its approach to Perth Harbor when shortly after surfacing, it was attacked by a U.S. patrol plane. Fortunately all the bombs missed. No damage was done, other than a few shattered nerves on the sub.

The Dutch government in Britain received an additional submarine from the British government in November of 1943. The tide was turning in the Atlantic war, and now the American and Allied forces were on the move in the Pacific as well. The British government recognized the many services rendered by the Dutch submariners, and in return wanted to show their goodwill. So the ex-HMS TALENT was commissioned as HMNLS ZWAARDVISCH (a name rather than a number, to show that it was not built by the Netherlands!). The ZWAARDVISCH was also a very successful submarine. In her short one-and-a-half year war career, despite a reduced number

of targets left in the Pacific, she managed to damage a Japanese aircraft carrier and cruiser, sink four Marus, a Japanese minelayer and another U-Boat! On October 5, 1944, the U-168 was on the homeward voyage from Japan to Germany with much needed supplies. In the Java Sea, the ZWAARDVISCH spotted her, made her attack, and sank her.

During the war, Germany was able to repair and commission five Dutch submarines that had been scuttled or destroyed on the building slips. These were commissioned as UD-1, UD-2, and the O-25, 26, and 27 as the UD-3 to 5. One interesting story to note about the UD-4 is that it was used for official testing of underwater replenishing in the winter of 1943. The UD-4 met another U-Boat on the surface, the fueling hoses were connected, both boats submerged to a depth of about 100 feet, and refueled for about four hours at a speed of four knots.

Of the 27 submarines the Dutch had in service when the war broke out, only 14 survived, and of these only 5 were kept on the fleet roster. Towards the end of the war, two more "T" class submarines were provided by the British Navy, and for a number of years these formed the backbone of the Dutch Navy. In the late 40's, however, the Dutch government realized that a new class of submarines had to be built, and four *Triple-Hull* design subs were built. These were the first submarines commissioned that had a name, rather than just a hull number, and replaced the old O-Boats still in service from before the Second World War. For a detailed description of these boats (the HMNLS DOLFIJN class) please refer to the article *The Dutch Triple-Hull Design Revisited*, in The SUBMARINE REVIEW, January 1991.

In the 1960's yet another design was completed. The design was based on the USS BARBEL class, but was envisioned to have a small nuclear reactor for primary propulsion. Public opposition against nuclear powered ships forced the Dutch government to reconsider their plans, and the design was left intact, but with standard diesel-electric propulsion. This class became the ZWAARDVIS-class, with the ZWAARDVIS and TIJGERHAAI replacing some of the old British WWII boats. This design was very efficient, quiet and reliable, and the Dutch government allowed the yard that built the first two units to build two for export to Taiwan, with an option for a further two units. The Taiwanese units were commissioned as the SEA-

DRAGON class, but mainly due to pressures from the Chinese government the Netherlands prohibited the yard to build the two follow-up units for Taiwan.

Then in the early 1980's it was decided to start work on a replacement class for the aging DOLFIJN class submarines. The Dutch again looked at their own yards for designs, and the WALRUS/ZEELEEUW class was born. Most of the components and electronics were supplied by Dutch companies. Due to a fire in 1986, the lead ship of this class, HMNLS WALRUS was delayed, and on June 20, 1987, the HMNLS ZEELEEUW was launched as first ship in this class. When it entered service, it replaced HMNLS DOLFIJN, which was then purchased by the Rotterdam Drydock Co. (RDM), for trials with a Dutch version of an Air Independent Propulsion (AIP) unit.

Although the Netherlands is only a small country, with a population of about 15 million people, it has a long shoreline along the North Sea. Holland has a long seafaring history, with many famous explorers and a large naval presence in the 1600's. The Netherlands maintains a modern and well balanced fleet. Modern submarines are a small, but essential part of this. The WALRUS class submarine now coming into service presents the Royal Dutch Navy with a strong backbone for its defense in the next two decades. What the future holds as far as expansion of the current class of design of new classes will depend greatly on the stability of global peace. With the Cold War over, this will certainly be reflected in the defense budgets of the next few years. But one thing is sure -- with a proud naval tradition spanning several hundred years, and a continuous submarine force since 1908, the Royal Netherlands Navy will be a strong and modern force until well into the next century!

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PRESIDENTS AND SUBMARINES

by William Galvani

[Ed Note: In order to give adequate notice to each President's association with submarines, this Reflection is being given in two parts. This first section covers the period through Mrs. Eisenhower's christening of NAUTILUS.]

Submarines have played a minor but interesting role in the history of the American presidency. Teddy Roosevelt was the first president to go aboard a submarine, and since Franklin Roosevelt every president has, at one time or another in his life, been aboard a submarine.

The U.S. Navy had barely five years experience with submarines when Theodore Roosevelt became the first president to go aboard a submarine and to travel underwater in one. Roosevelt's trip took place near his home on Oyster Bay in Long Island Sound on August 23, 1905. He spent almost three hours aboard USS PLUNGER (SS-2), the Navy's second submarine; fifty-five minutes of that was submerged.

Roosevelt had been interested in submarines prior to the visit. He had planned a trip on one at Annapolis two years earlier, but his wife and his Cabinet had dissuaded him on grounds of safety. Their concerns were valid; the American experience with submarines had been uneven. During the Revolutionary War, David Bushnell's Turtle had successfully dived and surfaced but failed to blow up its British target. In the Civil War the Confederate submersible HUNLEY sank on four occasions, killing almost forty of its own crew, including its builder for whom it was named.

Many people thought it was unwise for President Roosevelt to undertake anything as risky as submerging in a submarine. Mrs. Roosevelt was one of the last to be won over. On August 23 she watched PLUNGER maneuvering in Long Island Sound and agreed that it was safe for her husband to go aboard.

The Navy had prepared for the president's trip, thoroughly overhauling PLUNGER prior to the descent. It took the precaution of welding eyebolts to the exterior of the hull should an emergency rescue be required. The Navy also placed a diver aboard PLUNGER as well as on her tender APACHE.

With President Roosevelt onboard, LT Charles Nelson, PLUNGER's C.O., demonstrated all of PLUNGER's abilities, powering full ahead, stopping, reversing, and even operating with the lights out. Roosevelt toured the boat, which didn't take too long, since her length was only sixty-three feet. He operated the controls and became the first of many presidents to look through a periscope. The next day Roosevelt and members of his family boarded the presidential yacht SYLPH and watched PLUNGER on maneuvers, the high point of which was the firing of a Whitehead torpedo. Roosevelt's experience on PLUNGER impressed him. He recognized submarine duty as being hazardous, confining, and demanding of perfection. He observed that PLUNGER's crew "incurred a certain risk every time they go down in her and ... have to be trained to the highest point as well as ... show iron nerve in order to be of any use in their positions."

Roosevelt believed the Navy should encourage submarine development. He found, however, that senior officers were hindering it through various bureaucratic regulations that discriminated against submariners. He corrected these, issuing Executive Order 366 in November which recognized duty on submarines as the equivalent of duty on surface ships; it had previously been classed as shore duty. The order also initiated submarine pay for enlisted men.

Franklin D. Roosevelt

Following in the footsteps of his famous fifth cousin, Franklin D. Roosevelt displayed a strong interest in the Navy and maritime affairs. He served as Assistant Secretary of the Navy under President Woodrow Wilson from 1913 until 1920. His first contact with submarines came in May 1918 when he visited the Lake Torpedo Boat Company in Bridgeport, Connecticut. Simon Lake's company had expanded its capacity for building submarines for the Navy during World War I. Roosevelt spoke to a mass meeting of shipyard workers from a platform amidst the submarine building ways. Later that year FDR went to Europe on an inspection trip. On August 22, while touring Belgium, he stayed overnight at La Panne and witnessed an action between destroyers and a German submarine off the Belgian coast.

In 1921 Roosevelt contracted polio; his subsequent use of braces prevented him from going aboard submarines. On August 12, 1940, he visited the Naval Submarine Base at Groton. His open car tour of the base passed several submarines, including the recently commissioned USS TAUTOG (SS-199) and its crew standing in ranks for inspection. His final visit to a submarine occurred on September 24, 1942, while he was touring the West Coast to inspect defense plants and military installations. Roosevelt's visit to Mare Island included a drive past USS POMPANO (SS-181) which was in overhaul following her third war patrol.

Harry S Truman

The second president to go aboard a submarine was Harry S Truman. He was vacationing in Key West, Florida, in November 1946 when he went to sea on the former German submarine U-2513. U-2513 had surrendered to the British at the end of World War II, and they had given it to the U.S. for study. An American crew, commanded by LCDR James Casler, operated the boat, conducting tests and studying German technology.

The President's trip began on a Thursday morning when he and a party of twenty-one boarded U-2513. Included in the group were Admiral Leahy, his Chief of Staff, and Rear Admiral Styer, Assistant Chief of Naval Operations. As U-2513 put to sea the President and his group had breakfast in the wardroom. U-1513 began its dive at 9:30 and, as it passed 100 feet, rigged for silent running and briefly went to flank speed. In twenty minutes it descended 450 feet where it leveled off and cruised for about a minute. It then began to surface and about five minutes later was at periscope depth with President Truman manning the scope.

The trip developed some unanticipated excitement when the port engine flooded and smoke escaped into the after battery room. The President stayed calm during the casualty and the sub surfaced without any other difficulty.

USS WILKE (DE-800) had escorted U-2513 to her diving area and, during the return to Key West, put on a demonstration of anti-submarine warfare firepower. WILKE first fired a salvo of practice hedgehogs and depth charges. The destroyer escort then made a high speed run that took her within 2,000

yards of U-2513. At this range she fired live hedgehogs and depth charges, the force of which was readily apparent to everyone on the sub.

Enroute to Key West, LCDR James Casler signed cards for President Truman and his group certifying their diving achievement and designating them as *Honorable Members of the Ancient Order of Deep Dunkers*. Back in port the C.O. presented the President with a *Deep Dunkers* certificate. The President and his group disembarked at noon.

President Truman liked his submarine experience. He admired "the perfect teamwork exhibited by the officers and crew at their assigned diving stations." Their business-like performance impressed him and he commented on it very favorably.

In December 1947 President Truman briefly revisited U-2513, and LCDR Casler presented him with several souvenirs of his dive, including a gold dolphin tie chain and a certificate designating him as an honorary Commanding Officer of U-2513.

President Truman visited USS REQUIN (SS-481) on the morning of February 28, 1948, in Key West. Greeting the President were Captain L. R. Daspit, Commander of Submarine Squadron Four, and REQUIN's Commanding Officer, Commander George H. Street. Commander Street had met the President on two previous occasions -- once when the President presented him with the Medal of Honor, and again when Mr. Truman presented him with a Gold Star in lieu of a second Silver Star. During his twenty minute visit, the President toured REQUIN, inspected the crew, and met with five crewmembers from Missouri.

The construction of NAUTILUS, the nation's first nuclear powered submarine, marked the first time a President had participated in a submarine keel laying. President Truman travelled by private railroad car from Washington to Groton, Connecticut, arriving directly in the Electric Boat Shipyard late in the morning of July 14, 1952. Cheers greeted the President as he left the train and walked to the speakers' platform for the ceremony. After a noontime speech that was broadcast by four major radio networks, the President signaled a traveling crane to lay the keel plate in its cradle. Afterwards he left the platform and chalked "HST" in the keel plate. A welder then burned the presidential initials into NAUTILUS's keel.

Following the ceremony the President and his party went to the Officers Club at the Naval Submarine Base for lunch. During the meal, O. P. Robinson, General Manager at Electric Boat, presented Mr. Truman with a model of NAUTILUS. The President returned to Washington by air.

Dwight D. Eisenhower

The early years of the Roaring Twenties found Major Dwight D. Eisenhower stationed in Panama. In the winter months of 1924, LT Everett E. "Swede" Hazlett Jr., a longtime friend from their hometown of Abilene, Kansas, brought his submarine USS S-32 (SS-137) into the Submarine Base at Coco Solo. S-32 was new, having been commissioned on September 25, 1922, and Hazlett was her first C. O.

The submarine had been training with her squadron and came into port for replacement of the port motor armature. This lengthy repair took from late January until the end of March. At its completion, Swede took Ike for a cruise, including a dive, in Panama Bay. Ike enjoyed the trip and went through the entire boat, examining the machinery and talking with the crew about how things worked. He displayed a great interest and enthusiasm for the submarine's operation; Hazlett later noted that "he never had a passenger who was more avid for information."

More than thirty years later, Ike, now President Eisenhower, became the first Chief Executive to go aboard a nuclear submarine and the first to travel by nuclear power when he visited USS SEAWOLF (SSN-575). SEAWOLF, commanded by CDR Richard Laning, was the nation's second nuclear powered submarine. The visit took place in September 1957 when the President was vacationing in Newport, R.I.

With Ike aboard, SEAWOLF got underway from anchor in Narragansett Bay and headed out to sea. In the crew's mess Ike was greeted by a rendition of "The Eyes of Texas Are Upon You," played by one of the crewmembers. (Though Ike was born in Texas, he grew up in Kansas and considered himself a Kansan.) He ate steak and mushrooms with the crew.

A few miles southwest of Breton Reef Lightship, SEAWOLF submerged and dove to sixty feet. The C. O. and RADM Frederick Warder, COMSUBLANT, gave Ike a tour of the boat. His interest in submarines and their operations was as sharp in

Newport as it had been in Panama. As he told the crew: "Everything was of interest to me -- all the gadgets and machines."

After almost two hours of operations, fifteen minutes of which was spent submerged, SEAWOLF returned to Newport. Short though it was, the cruise on SEAWOLF clearly impressed the President. Addressing the crew on the 1mc, he said "... more interesting to me (than the machinery) was to see the United States Navy at work. I'm proud of every man aboard ship. It was a memorable experience." At the end of the cruise, the ship presented Ike with a submarine tie clasp and a card designating him an *Honorary Atomic Submariner.*

President Eisenhower logged another presidential first when he visited a fleet ballistic missile submarine. On July 25, 1960, while on vacation in Newport, Ike went aboard USS PATRICK HENRY (SSBN-599) which was at anchor off Fort Adams. The President toured the submarine and had lunch in the wardroom with the Commanding Officer, Captain (later Admiral) Harold Shear, and Rear Admiral William Raborn, head of the Navy's Special Projects Office. Ike, with his typical curiosity, asked numerous questions about the submarine and its operations. The highlight of the visit was the firing of a dummy missile called a Launch Test Vehicle. The ship's crew presented the President with a framed color picture of the submarine.

Mrs. Eisenhower, affectionately known to the public as Mamie, made submarine history when she became the first First Lady to christen a submarine. The vessel, appropriately enough, was USS NAUTILUS (SSN-571), the world's first nuclear powered submarine. The date was January 21, 1954.

A crowd estimated at 20,000 people gathered at the Electric Boat Company in Groton to watch the historic launch. It was a banner day for the city, and Groton schools had been dismissed for the launch. Mrs. Eisenhower arrived from Washington in the president's railcar, the train pulling into a siding in the shipyard only thirty yards from NAUTILUS' building ways.

Fog had encased the city for over a day, but about 10:45, only minutes before the launch, the breeze blew it away to reveal a bright sun and blue sky. The temperature was a generous 57 degrees. The speaker's platform was crowded with dignitaries, including the Secretary of the Navy, the Chairman

of the Atomic Energy Commission, the President of General Dynamics, the Chief of Naval Operations, the President's naval aide, and Rear Admiral Hyman Rickover. When the speeches were over, Mrs. Eisenhower moved to NAUTILUS' bow. She was accompanied by her Matron of Honor, Mrs. Eugene Wilkinson, wife of NAUTILUS's prospective commanding officer. Mrs. Wilkinson carried an enormous bouquet of red roses which had been presented to Mamie.

As the time for the launch neared, CDR Edward Beach, the President's naval aide, gave Mrs. Eisenhower last-minute instructions about striking the bow. Mamie smiled, waved to the crowd, and held up the bottle of domestic champagne for the crowd to see. As the minute approached, a newsreel cameraman yelled for all to hear: "Hit it good and hard, Mrs. Eisenhower!" Mamie smiled back at him.

She was as good as her promise. Just as NAUTILUS began her historic slide into the Thames River, Mamie smashed the bottle against the sub's port bow and said: "I christen thee NAUTILUS." A deafening roar went up from the crowd and the horns of the boats gathered on the Thames. The age of nuclear power had begun.

(To be continued in the October 1992 issue.)

[William Galvani is Director of the Submarine Force Library and Museum at the Naval Submarine Base New London, Groton, Connecticut.]

■

IN REMEMBRANCE

Captain Daniel P. Brooks, USN(Ret.)

Joseph H. Emery

Thomas O. Paine

THE SUBMARINE EXECUTIVE OFFICER

by William P. Gruner

I consider the job of Executive Officer to be the most important job aboard ship. I want to share my view on this matter with submarine officers in the fleet because I am dissatisfied with the definitions of the duties and responsibilities of the Executive Officer as set forth in official Navy documents.

My opinion is derived from a practical, not theoretical point of view, based on years of experience at sea. In this matter I hold myself to be an expert. I became the Executive Officer of a fleet type submarine a year before the U.S. entered WW II. I subsequently made seven war patrols as Exec of three different fleet submarines, putting two new-construction submarines in commission. As Exec of those new construction submarines it fell largely upon my shoulders to prepare them for war, for Commanding Officers with both fleet boat and battle experience were scarce in the early war days. In short, I had to organize the officers and men and establish procedures for war operations. The latter included procedures for battle station actions; countering of emergency situations; routine operations such as watch standing, diving and surfacing; and more prosaic matters such as *rigging for red*, dumping garbage, blowing sanitary tanks, and the like. Although that experience had to do with the operation of fleet submarines, the functions of an Exec are timeless and apply equally to sailing ships and nuclear submarines.

I learned more about what it takes to be an effective Executive Officer after my first seven war patrols. I acquired that additional knowledge both at sea and in the business world. I served as Commanding Officer of a fourth fleet submarine during three successful war patrols. After the war I left the Navy for civilian life and spent over thirty years in a large corporation. There I learned more about the job of management, a critical function of an Executive Officer.

Duties Prescribed by Official Documents

Duties of the Executive Officer of a naval ship are spelled out in two major documents; U.S. Navy Regulations and OPNAVINST 3120.32B.

U.S. Navy Regulation This document is quite general in nature as demonstrated by the following excerpts:

- Par. 0806. "The commanding officer shall keep the executive officer informed of the commanding officer's policies, and normally shall issue all orders relative to the duties of the command through the executive officer. Normally, the commanding officer shall require that all communications of an official nature from subordinates to the commanding officer be transmitted through the executive officer."

- Par. 1061. "The officer detailed as executive officer shall be an officer eligible to succeed to command who, when practicable, is next in rank to the commanding officer."

- Par. 0851.b. "During action, station the Executive Officer where he or she can best aid the commanding officer, and, if practical, where he or she could probably escape the effects of a casualty disabling the commanding officer, and yet be able to assume command promptly and efficiently."

- Par. 1005. "The executive officer, while in the execution of duties as such, shall take precedence over all persons under the command of the commanding officer."

OPNAVINST 3120.32B The duties of the Executive Officer set forth in this document are much more specific than the above. Of particular importance are:

- Par. 302.a. (In part) "BASIC FUNCTION. The Executive Officer is the direct representative of the Commanding Officer. All orders issued by him/her will have the same force and effect as though issued by the Commanding Officer. The Executive Officer will conform to and carry out the policies and orders of the Commanding Officer and shall keep him/her informed of all significant matters pertaining to the command. The Executive Officer shall be primarily responsible under the Commanding Officer, for the organization, performance of duty, and good order and discipline of the entire command. He/she will recognize the right and duty of a Head of Department to confer directly with the Commanding Officer on matters specifically relating to his/her department."

• Par. 302.d. (In part). ORGANIZATIONAL RELATIONSHIPS. The Executive Officer is directly responsible to the Commanding Officer. All Department Heads and Executive Assistants report to the Executive Officer regarding internal administration of the command."

• Par. 302.c. DUTIES, RESPONSIBILITIES, AND AUTHORITY." Included in this section are over twenty specific duties of the Executive Officer. They include many duties such as those pertaining to the handling, training and supervision of personnel; planning and scheduling; ship inspections; and organizing and administration of command.

Critique

I have no specific complaints regarding the statements presented in Navy Regs or the OPNAVINST other than that both fail to give a clear picture of the basic function of a submarine Executive Officer. To me, the OPNAV instruction bears a semblance to a recipe for making a cake. That is, it speaks to the ingredients. For example, 2 cups of flour, 1 cup of milk, 3/4 lb. of butter, a pinch of salt and 1/2 tsp of sugar. That's all very well if you know that you are trying to make a cake. However, not every submarine officer, nor every C.O. or Exec really grasps the fact that the sole reason he is aboard his ship is to prepare for the wartime mission(s) assigned his ship. As a matter of fact, he may be so occupied in diverse peacetime activities that he devotes little effort to preparing his department or his ship for war.

In simple language, the U.S. possesses combat submarines in order to carry out their assigned wartime missions at the drop of a hat. They must be ready in all respects at all times. At the start of WW II, we submariners were not well prepared for fighting the Japanese in terms of operational concepts, crew organization, weapons, and fuel capacity. A submarine hull and its equipment consists of the sum of its design, manufacture, installation, maintenance and support. Without its personnel, it is *cold iron*. It took two or more patrols for most of our submarine crews to learn how to organize, operate and fight effectively with what we had at the time. At the same time we had to learn the soft points of our ships and their equipment under wartime operating conditions. The same situation could apply in the future.

So, what does this have to do with the Executive Officer? It is his job to weld the men, hull, equipment and supplies into a fighting machine for employment as directed by the Commanding Officer. To do so he must be the **Submarine Manager**. As such he is the crew actuator, the ship overseer, coordinator, integrator and enforcer. No list of duties such as that presented in OPNAVINST 3120.32B can ever be complete. What is required is a General Prudential clause that states in effect that the Executive Officer is the Manager of the ship for the Commanding Officer.

As the Boss, the Commanding Officer should be the distributor and enforcer of higher command level policies and directions. Aboard ship he should set internal policy and make himself totally aware of the readiness of his command. He should also make strategic and tactical operational decisions. When he orders, "Take her down to 600 feet", or, "Fire tubes 3 and 4", he expects those orders to be carried out rapidly and precisely. If the Exec has done his job well as ship manager, the C.O. will get that performance. ■

USS DRUM

Submitted by RADM M. H. Rindskopf, USN(Ret.)

[This is an interesting and amusing notice from the War, written during DRUM's 2nd patrol. The Exec's name has been deleted to protect the deceased or innocent.]

MEMORANDUM: July 29, 1942

To: Engineer Officer
Chief Electrician's Mate
All men in electrical gang.

1. It has come to the executive officer's notice by personal investigation that the electricians on watch in the maneuvering room or the night watches make so much noise by loud talking,

arguing among themselves and unseemly and loud laughter that it is impossible for anyone in the After Torpedo Room to get any sleep and relaxation during the night. It is believed that this noise making is not malicious in any sense of the word but it is a result of the thoughtlessness on the part of the electricians on watch. It may be added in passing that *thoughtlessness* among submariners, particularly where the welfare of your shipmates is concerned, is one of the worst possible traits and entirely inexcusable.

2. The situation described above is intolerable and must be corrected. Each man on this ship stands his share of watches and is entitled to his share of rest. Any person who contributes in any way to the deprivation of rest and relaxation where due, is not a proper *shipmate.*

3. This memorandum is an attempt to correct an *intolerable situation* by an appeal to gentlemanly instinct. However, if this is not met in the proper spirit the executive officer has other methods up his sleeve which he will not hesitate to produce. Your cooperation is requested. If not forthcoming, the first action will be a man with a duty belt standing watch back there. As this man must be senior to all watch standers he must necessarily be a chief or a first class from another section. He will of course lose some sleep in the process.

4. Another practice that must be stopped is the habit, again due to thoughtlessness, of the auxiliary electricians who, when going into the battery well, blithely bangs the hatch cover against the bulkhead making a lot of noise, particularly at night when all officers are sleeping, and then perhaps engaging in a loud conversation with some other electrician in the passageway of officer's country. This is unseemly and must likewise be stopped.

Executive Officer

To be posted in Maneuvering Room
Copy to: Chief Engineer
Chief Electrician's Mate
Chief of the Boat

ON PATROL FIFTY YEARS AGO

by Dr. Gary E. Weir

[Ed. Note: USS NAUTILUS (SS-169) was a V-class submarine built at Mare Island during the interwar period and not a fleet boat of the GATO design. She displaced 2,730 tons standard and was powered by New York Navy Yard Bureau-MAN diesel.

This second war patrol was a special mission for which this submarine was paired up with USS ARGONAUT (SS-166) -- which was the V-4, the U.S. Navy's first submarine minelayer. It was patterned on the German U-boat minelayers of World War I. These two submarines delivered Colonel Evans F. Carlson's Marine Raiders to Makin Island. After the Marines completed their mission to reconnoiter the island, to destroy its most important facilities, and to divert Japanese forces from Guadalcanal, the submarines recovered the raiders and returned to Pearl Harbor. This report provides an interesting look at submarine involvement in amphibious operations and the close logistical and gunfire support provided by NAUTILUS and ARGONAUT for the Marine effort on the island.]

USS NAUTILUS -- Report of Second War Patrol
Period from August 8, 1942 to August 25, 1942
Area Makin Island. Operation Order No. 71-42

NARRATIVE: August 8, 1942

0900	VW	Underway in company with ARGONAUT and PC-476.
1500	VW	ARGONAUT and NAUTILUS dived for trim and tightness.
2015	W	ARGONAUT left formation.
2100	W	PC-476 was released as escort.

August 9, 1942

0821	W	Made dive for trim and training.
0837	W	Exercised crew at stations for battle surface and fired five rounds from each gun.
0840	W	Exercised marines on deck for twenty minutes.
1017	W	Fired machine gun for training.
1601	X	Made dive for trim and training.
2000	X	Exercised marines on deck.

August 15, 1942

0701 M Dived
1702 M Surfaced after much deliberation.
1920 M Exercised marines on deck and took suction through boat.

August 16, 1942

0309 M Sighted Little Makin Island on starboard bow; set course so as to pass northeast coast of Makin one and one-half miles abeam to starboard.
0538 M Commenced periscope reconnaissance of Makin Island. Discovered that eastern tangent must be inaccurate on chart. Very few prominent objects were noted to establish position. Range and bearing on Ukiangong Point seems to be best for fixing position of vessel. Decided to try and round Ukiangong Point and proceed submerged to reconnoiter lagoon entrance at Flink Point.
1555 M Decided it would be impossible to round Ukiangong Point and be in position for rendezvous with ARGONAUT at 2100 M bearing in mind necessity for charging batteries enroute rendezvous.
1924 M Surfaced and proceeded to rendezvous.
2027 M Sighted large object in moonstreak distance about 7,000 yards. I believe this was ARGONAUT but could not be sure. Before we could verify whether it was the ARGONAUT or not, an intense rain squall set in making visibility zero.
2037 M Arrived at rendezvous and commenced circling.
2105 M Visibility increased and at 2116 M sighted ARGONAUT. Maneuvered to pass plan for attack on Little Makin and other plans to ARGONAUT. Upon completion started steering various courses approaching Point Baker; ARGONAUT following movements of this vessel.

August 17, 1942

0140 M Commenced making preparations for disembarkation of raiders. NAUTILUS personnel standing by for battle surface.
0328 M Company A left the ARGONAUT.
0334 M Company A arrived NAUTILUS.

0408 M All boats clear of ship except we are having difficulty having a boat come alongside for Colonel Carlson and his runner.

0421 M All raiders clear of ship.

0513 M Established voice radio communication with raiders on shore.

0543 M Had message from Colonel "Everything lousy."

0547 M Had message from Colonel "Situation expected to be well in hand shortly." From this time until 0656 M we had difficulty with voice radio and received parts of messages that indicated marines wanted us to open fire on Ukiangong Point Lake area where Japanese reserves were supposed to be located. More information was not forthcoming hence at 0703 M this vessel opened fire on Ukiangong Point, hitting after second salvo.

0710 M Received word that a merchant ship was in harbor 8,000 yards from government pier.

0711 M Checked fire. Our vision was obscured by trees and indirect fire had to be used. At this time the frequency was jammed and we could not contact our prearranged spotter. However, at 0716 M steadied on course 262 and with bearing of 84 degrees relative, range 14,000 yards, opened fire on lagoon. Trying continuously to contact spotter to no avail so used the idea of many changes in range and deflection to make sure entire lagoon was covered, hoping that luck would be with us.

0723 M Ceased firing having expended 65 rounds of ammunition and in as much as we could not observe our fall of shot it seemed to be an unwarranted expenditure of ammunition. However, it appears that luck was with us and that we sank two ships according to evidence brought back by the marines.

Statement made by Walter D. Carroll, Sergeant, USMC:
"0700 Got into position on right flank near lagoon side. Saw two ships in lagoon. One seemed to be a tanker or transport, the other a gun boat. Both just at edge of lagoon. Both at anchor at that time. Guns started firing and they started running in circles in lagoon. Tried to head out towards sea and

the tanker was hit near water line and burst into flames a little later. Gun boat sank after being hit in lagoon.

"There was a white ship in lagoon also which was smaller than others, carried sails and was not hit.

"Saw tanker sink near island in lagoon entrance."

Other marines state they saw this action also. Colonel Carlson states that the transport was about 3,500 tons. The gun boat about half that size.

0814	M	Heard marines trying to contact us. Reported merchant ship in harbor, range 8,000 yards, bearing 350 magnetic from King's wharf.
0850	M	ARGONAUT acknowledged for range and bearing.
0901	M	Radar contact and plane sighted.
0904	M	Emergency dive.
0958	M	Surfaced.
1003	M	Observed smoke rising from island.
1022	M	ARGONAUT acknowledged message for orders to fire on merchant ship.
1030	M	Asked marines if entrance to lagoon was protected and was informed there was no evidence. Decided to run over to lagoon entrance and fire on merchant ship by direct fire or if possible with torpedoes while ARGONAUT was firing indirect fire.
1039	M	Sighted a two winged plane off port beam and dived.
1253	M	Surfaced.
1255	M	Contacts by radar at 12 miles and 14 miles moving in. O.O.D. sighted about 12 planes flying at high altitude, reported he thought we had been seen.
1256	M	Dived to 90 feet and told ARGONAUT not to surface due to enemy air activity. ARGONAUT was given orders by group commander to proceed to Point Baker submerged and NAUTILUS was ordered to remain submerged until 1830 M.
1843	M	Surfaced.
1900	M	Mounted machine gun; heading for Point Baker. Marines were due to leave the beach at 1930 M.
2046	M	Sighted several rubber boats heading our way and by 2121 M had received 53 marines in 4 boats. ARGONAUT had three boats. For remainder of

night maneuvered to remain as close to beach as possible in effort to locate other boats. Stories of marines received on board indicated that all boats had apparently tried to leave but experienced great difficulty in riding the surf outbound, that many had turned over and weapons were lost or ruined. The task group commander ordered ARGONAUT to send rescue boat with volunteers to beach which boat never did get off. Decided to scour the beach at daylight and to run as close as safety would permit.

August 18, 1942

0651 M Sighted several boats with men apparently making preparations to come out. One was already headed out. NAUTILUS headed for this boat until fathometer readings and cut indicated one half mile off reef.

0719 M First boat alongside.

0737 M Second boat alongside. Task group commander decided to send this boat back with volunteers, extra guns, paddles and line throwing gun to assist in rescue. We had been informed that most of the paddles and motors had been lost the previous evening. Information was to be given Lt. Col. Carlson that if we were forced down we would be back at 1930 M and remain there indefinitely. Apparently one man swam ashore from this boat, gave Lt. Col. Carlson the message and swam back. Nothing more has been heard of these men -- five in number. Lt. Col. Carlson is sure these men were strafed by aircraft machine guns. Two more boats were headed out by 0740 M so task group commander ordered ARGONAUT to pick up these boats. By 0800 M ARGONAUT had picked up both boats.

0821 M The ARGONAUT dived on what they thought to be a sight plane contact. This plane was not seen by this vessel.

0825 M Decided to make a trim dive while ARGONAUT was down and dived.

0901 M Surfaced and ARGONAUT came up shortly thereafter.

0914 M Radar contact at 11 miles followed it in to 5 miles, trying to sight planes but could not pick them up due to clouds.

0917 M Dived to 80 feet.

0920 M Two bombs were dropped by high altitude bombing but missed NAUTILUS by a great distance. Ordered 150 feet and in as much as group commander had ordered us to remain submerged all day if we were forced down, remained at that depth.

1405 M Came to periscope depth to fix position and head back for Point Baker.

1536 M Started hearing what appeared to be screws. Called ARGONAUT with no response. Screws were heard continuously until we surfaced at 1810 M.

1824 M Sighted ARGONAUT surfacing about five miles south of us. I believe it was the ARGONAUT screws we heard. Both vessels now headed for Point Baker and by 1930 M we were one-half to three-quarters of a mile off the reef trying to contact the marines. Saw signalling from beach which proved to be Lt. Col. Carlson telling us to meet him at the lagoon entrance at Flink Point at 2130 M.

2005 M Started for Flink Point.

2127 M Arrived near Flink Point and called the beach by Aldis Lamp.

2213 M Had first contact with marines.

2308 M Four rubber boats and one native boat came alongside. Marines embarked and at 2353 M on orders of the group commander started for Pearl.

August 19, 1942

Ran on surface all day. Doctor MacCracken operated on five seriously wounded men all day.

August 20, 1942

Sent dispatch to COMSUBPAC reporting our position on 1,000 mile circle and desire to rendezvous with ARGONAUT.

August 25, 1942

Arrived Pearl Harbor

Radio Reception

The TBX voice transmitter and the RAS-1 receiver with preselector were used aboard ship to communicate with the marines ashore. The marines had portable radios of type BC-611-A. Great difficulty was experienced in talking to the marines because of the low signal strength of their BC-611-A sets and because the marine sets were separated from the ship by a half mile of dense foliage and woods plus two miles of water.

No enemy interference was experienced. However, gunnery spots from shore spotters were frequently not received because of high background noise caused by increase of sensitivity of the shipboard RAS-1. Sensitivity was increased in an attempt to receive the very weak signal from the marines ashore. NPM on 4115 Kcs was also heard when sensitivity was increased.

Sound Conditions and Density Layers

Sound conditions were poor close to Makin Island, probably due mostly to a strong current and heavy surf. Surf was heard at 3,000 yards while approaching the island several times.

Surface communication by QC with ARGONAUT was very poor. Signals faded entirely out much of the time. The ship rolled moderately, and neither submarine made sufficient speed for its propellers to be heard. Consequently the operator was unable to keep the projector trained on the other ship.

There was no difficulty communicating submerged at 11,000 yards. This range was determined by *Relay Echo Ranging*.

At the area of meeting of the north equatorial and the counter-equatorial currents (about 6° N) the ship was running submerged and gained about 7,000 pounds in weight. The change of water temperature experienced (1°, 84°F to 85° F) accounts for only 1472 lbs. The balance must have been the result of a decrease in density of the sea water in the counter-equatorial current.

Miles Steamed Enroute to and from Station

To:	2029 miles
From:	2029 miles
Total:	4058 miles.

Fuel Oil Expended

Expended 74,630 gallons fuel oil.

Factors of Endurance Remaining

(a) Torpedoes -- None expended: 10 remain.
(b) Fuel -- 61,000 gallons, four engine speed was used both to and from station.
(c) Provisions -- 35 days.
(d) Fresh water -- 4,000 gallons, 271 hours remain on each of two stills and 400 hours remain on third still.

Factor Which Caused Ending Patrol.

Loss of armament and equipment of marines and orders of task group commander caused ending of this patrol.

Remarks

Many valuable lessons were learned incident to the operations just completed. Among the outstanding items are:

(1) Where two or more submarines are operating with raiders, raider boats should not rendezvous at a single submarine. Each submarine should be complete in itself and not need boats from another submarine to pick up personnel.
(2) Better radio communication is essential. Communication via TBX was excellent between this vessel and ARGONAUT but communication with the raiders on shore left much to be desired. A special communication unit equipped with a TBX should be utilized. As a stand-by the raiders on the beach should be given certain times during the night to send messages by Aldis Lamp. A group of flags flying on the beach could be used during daytime to mean certain important phrases such as change time of departure and etc.
(3) Submarines should carry one hundred percent spare boats and armament.

(4) Submarines should be equipped with one diesel powered motor whale boat.
(5) Submarines should be equipped with more air conditioning.
(6) Submarines should have their entire bunk installation modified.
(7) Small kedge anchors with line and line throwing gun should be provided submarines as stand by equipment.
(8) Bombardment ammunition should be provided for six inch guns.
(9) Marines should not be given a definite time of withdrawal but withdraw when the job is completed.
(10) This vessel could have used an additional day for reconnaissance, in which case the lagoon near Flink Point could have been reconnoitered probably giving us much valuable information.
(11) Limber holes in vicinity of ladders where boats tie up should be blanked off.

It was especially noted that the marines turned to with a will at standing watches and other duties assigned them and soon became proficient in their work. It was a pleasure to have them aboard. It is strongly recommended that submarine orders be issued the officers and men for the time on board so that they will get the benefits of submarine pay.

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NSL

LETTERS

May 7, 1992

Editor, The Submarine Review

Regarding my request for history (April 1992 Review) about submarine operations in the Soviet Far East during August of 1945, there is some new information. I got a letter from a CCCP-Vladivostok submariner the other day. And in that letter, on 23 August 1945 at 10:22 AM, CCCP submarine L-19 was escaping from an enemy submarine at the west-coast of Hokkaido near the Soya Straits.

Japanese submarines were completely off-campaign from 15 August. So I presume the enemy submarine of CCCP was the one of U.S.

We Japanese don't know what occurred at the west-coast of Hokkaido (the Soviet-Far-East Sea) in August 1945.

Please give me good information.

I want to know the truth of history.

Sincerely yours
Hiroaki Shimizu
NHK - SAPPORO
1 -chome WEST Oh-Dori
Chuo-ku, SAPPORO
JAPAN 060

■

REGULUS DETERRENT PATROL DATES

May 14, 1992

In the April issue of The Submarine Review, Captain Jack F. O'Connell commented on the appropriate credit for the first strategic missile patrols. For three years I have been researching the Regulus program for a book that I hope will be the definitive history for the system. Early on in this research I became aware of confusion on issue of the dates of initiation of the patrols and have since continued to seek out the answers. Interviews with crew members (including Captain O'Connell) of the five submarines involved, USS TUNNY (SSG-282), USS BARBERO (SSG-317), USS GRAYBACK (SSG-574), USS GROWLER (SSG-577), and USS HALIBUT (SSGN-587), as well as archival research, indicate that the record is still not clear. Requests for deck log information to settle the issue have been

submitted and I await the answer. Meanwhile, several basic points can be made.

Two possible dates exist for the commencement of strategic missile deterrent patrols by the Regulus forces of COMSUBPAC, Submarine Division ONE. The GRAYBACK left on patrol 21 September 1959 for what has been referred to as a strategic missile deterrent patrol. Three officers onboard at the time confirm this date as do two *unofficial* ship's histories. Simultaneously, officers from the TUNNY state that 23 October 1959 they began the first such patrol. As for Captain O'Connell's reference to the BARBERO, the first strategic deterrent missile patrol of the BARBERO was indeed in the fall of 1960. The GROWLER had made her first deterrent patrol, the GRAYBACK two or three more and the TUNNY an additional two.

Captain O'Connell is correct in his overall premise that strategic missile deterrent patrols, albeit cruise missiles and not ballistic, were made well before the first such patrol by the GEORGE WASHINGTON. His reference to *black and blue* reflects that the Regulus boats did not have the *blue and gold* system of crew relief and were in fact instrumental in demonstrating the need for such a system. I can also confirm his count of 41 such patrols by the Regulus boats.

An interesting additional note is the deployment of both the TUNNY and the BARBERO during the Lebanon Crisis in 1958, the TUNNY to relieve a carrier in the Northern Pacific and the BARBERO to take up station above the Arctic Circle. TUNNY did actually conduct a patrol while the BARBERO was recalled 48 hours after deployment. If we don't split hairs then perhaps these two patrols were really the first "missile deterrent patrols."

The Regulus program is all too often overlooked in its contribution to the strategic defense of our country. While its role was small in numbers, the thermonuclear warheads the Regulus missiles carried made them a force to be reckoned with in the northern Pacific from late 1959 to mid-1964.

I continue to seek information from personnel involved in the Regulus program. Please write to 630 N. La Cholla Blvd., Tucson, AZ 85745, or call (602) 624-3690.

Thank you
David K. Stumpf

MEMORANDUM TO THE NAVAL SUBMARINE LEAGUE

Several years ago the Submarine Review issued a call for volunteers to donate blood for a young boy who was seriously ill with leukemia at Bethesda Naval Hospital.

The response was good and the follow-on news is wonderful.

Aaron Thomas, son of Senior Chief Thomas and Mrs. Teresa Thomas, has celebrated his thirteenth birthday by successfully completing his leukemia protocol. The medical staff at USNH Bethesda celebrated this event with a party in his honor on 27 May 1992. His parent wished to thank the NSL for its interest and support; and, asked that we continue to keep Aaron in our thoughts and prayers.

Mrs. Ross N. Williams

■

June 6, 1992

Editor, The Submarine Review

On the advice of Mr. Norman Polmar, I am requesting that you place a note in your letters column for information regarding a possible submarine loss, which would have occurred on July 28, 1951. The location is 124-30 East, and 37-32 North, in the Yellow Sea, northwest of Inchon. The submarine would have been Soviet or Chinese (former Soviet).

The incident with the submarine involved screen units of Task Element 95-11. This action occurred following the retrieval of a MIG-15, in shallow water off the mouth of the Ch'ongch'on River.

Your assistance in this matter will be greatly appreciated.

Sincerely

Donald C. McElfresh
9121 Summer Glen Lane
Dallas, Texas 75243
(215) 343-8337

■

June 8, 1992

Editor, The Submarine Review

I was wondering if you could help me locate any information on the German submarine U-662. It was depth-charged July 21, 1943 by USN aircraft somewhere in the vicinity 03-56N, 48-64W. Its commanders' name was Muller, and the U-662 was of the VII FLOTILIE.

What I am looking for is a list of the crew. It appears that a long lost relative served aboard but under a different name (for reasons unknown).

If you could help me in any way or give me an address in Germany (War Museum, etc.), it would be deeply appreciated.

Thank you for your time.

Sincerely

Paul Snyder

P.O. Box 1368

Madison, CT 06443

■

SUBMARINES IN THE NEW WORLD ORDER

I must take exception with Bud Kauderer's statement "During the decades of the Cold War, a force of 100 nuclear attack submarines was accepted as an affordable goal" in the April 1992 SUBMARINE REVIEW.

There was no force level for SSNs during the first decade of the post-World War II/Cold War era. The first force level goals for SSNs appear to have been established in 1957. A long-range force posture produced by the Navy that year was signed out by Admiral Arleigh Burke as "The Navy of the 1970 Era" on 13 January 1958. This document set fleet objectives as 65 SSNs (plus 40 SSBNs and 12 SSGNs in the strategic role).

The paper is particularly significant because it called for no further construction of non-nuclear attack submarines. Only SSNs and nuclear-propelled missile submarines were to be built, the decision having been made less than two years after the NAUTILUS went to sea. (At that time H. G. Rickover was a rear admiral and surely too junior to overcome opposition from the Navy's leadership, including Admiral Burke, if more diesel submarines were wanted by Navy leaders.)

From that point onward the force level goal for SSNs was a moving target. The fiscal 1963 shipbuilding program, the first defense budget fully developed by the Kennedy-McNamara team, asked Congress for eight attack submarines -- the most proposed by any administration in one year. The Congress voted funding for all eight SSNs. The next two McNamara budgets (FY 1964 and 1965) requested six SSNs each, which were also funded. With an expected submarine service life of at least 20 years, that meant that the Navy was building toward a force of 120 or more SSNs. However, this was not a formal goal and discussions with several senior Navy officials at the time indicated that few thought such numbers could be achieved, especially while maintaining 30 to 41 SSBNs.

Attack submarine procurement then declined because of Vietnam War costs. By 1970 the Department of Defense and Navy had agreed to a force goal of 125 attack submarines, of which 68 would be SSNs (the diesel boats being submarines already in existence). Subsequently, Admiral E. R. Zumwalt, Chief of Naval Operations from 1970 to 1974, proposed a goal of 90 SSNs (with a building rate of 3½ submarines per year). This force goal was accepted, despite strong opposition from Rickover, who argued for 120-plus SSNs. The goal of 90 was approved by the Department of Defense.

Only after the Reagan Administration came into office in January 1981, and Secretary of the Navy John Lehman advanced his plan for a 600-ship fleet, was a goal of 100 SSNs established. That goal -- which was never achieved -- existed but one decade.

With the end of the Cold War and the collapse of the Soviet Union, the force level goal for SSNs has declined precipitously. The most SSNs that can be expected to be in service in the year 2000 is 65 submarines -- 1 SEAWOLF, 62 LOS ANGELES, and probably 2 special operations-configured SSNs. However, some estimates by knowledgeable persons have predicted force levels of half that number.

Norman Polmar

■

CONGRATULATIONS!

To the following winners of NSL Submarine Essay Contests:

- *NROTC/NSL:*
  First Prize: Midn 1/C Gordon Paisley, The Georgetown University
  Second Prize: Midn 3/C Scott S. Daniel, Univ. of Texas, Austin
  Third Prize: Midn 2/C Scott S. Graybeal, USD/San Diego State

- *USNA/NSL:*
  First Prize: Midn 1/C Drew Wolff
  Second Prize: Midn 3/C Kirk Clermont
  Third Prize: Midn 2/C Damian Bridges

- *USNI/NSL: RADM W. J. Holland, Jr., USN(Ret.)*

- *NSL SUBMARINE REVIEW:*
  First Prize: Dr. Richard F. Hoglund
  Second Prize: CDR Robert B. Pirie, Jr., USN(Ret.)
  Third Prize: LCDR P. Kevin Peppe, USN

To the following winners of the annual NSL Fleet Awards:

- *Frederick B. Warder Award for Outstanding Achievement:*
  CDR John A. Stone, Naval Submarine Support Facility, NLON

- *Charles A. Lockwood Award for Professional Excellence:*
  CDR Richard E. Self, USS George Bancroft (SSBN 643)(Blue)
  FTCM(SS) Arthur W. George, USS Florida (SSBN 728)(Blue)
  IC1(SS) Franklin R. Chambers, USS Albany (SSN753)

- *Levering Smith Award for Submarine Support Achievement:*
  LT David B. Wilkie, Naval Submarine Base, Pearl Harbor

- *RADM Jack N. Darby Award for Inspirational Leadership and Excellence of Command:*
  CDR David A. Duffié, USS Helena (SSN 725)

IN THE NEWS

The SEAWOLF actions regarding the Administration's decision for recision of the already authorized funding for the second and third SEAWOLF class submarines continued to dominate the news. The resulting publicity has focused public attention on the necessity to protect the very unique, and vital, industrial base which builds nuclear submarines. It has also focused public attention on the question of need for a Submarine Force in the new security environment being envisioned by many.

Submarine Force Levels

• Navy News & Undersea Technology - May 4, 1992. "A pair of senior Pentagon officials last week indicated the number of nuclear attack submarines in the American inventory could slip dramatically in the future.

"Testifying before the House seapower subcommittee, Admiral Frank Kelso II, Chief of Naval Operations, speculated the number could drop to as low as 50 submarines. The Navy is operating 85 right now, with 13 more under construction.

"The Navy is evaluating the question of future force levels as part of the submarine industrial base study ordered by Defense Secretary Dick Cheney last January when he canceled the SEAWOLF program. 'We're starting a study to come to a department decision, and like any study, it will take time,' Kelso told the subcommittee. The results are expected this summer.

"'I think it will be in a range of 50 to 60, maybe 65 submarines,' he said. 'I'll have to wait and see what the results are. The important point, in my view, is this nation needs to maintain a submarine capability. The size [of the force] 25 or 30 years from now is the important issue.'

"The report is being prepared for Deputy Defense Secretary Donald Atwood. He told Congress last week he doubted the proper submarine force level was anywhere near the current figure."

SEAWOLF Court Case

• NEW YORK TIMES - March 18, 1992. "In a ruling expected to help shape the U.S. shipbuilding industry through the 1990s, a federal appeals court upheld the Pentagon's choice of General Dynamics Corp. to build the Navy's second SEAWOLF submarine.

"While the submarine may never in fact be built, the decision is important to the defense industry for what it says about the Pentagon's long-term role in preserving the industrial base for building sophisticated, nuclear-powered vessels -- an issue that has surfaced in some Democratic presidential primaries. A three-judge panel in Richmond, Virginia, concluded that the Pentagon adequately considered economic factors when it awarded the contract last year to the company's Electric Boat unit in Groton, Conn."

SEAWOLF Editorials

The recision action, and the reaction of those in Congress, prompted a number of editorial comments, both pro and con, throughout the country. Two of the *pros* and one of the *cons* are cited here as examples.

• NEW YORK TIMES - April 21, 1992. "Jobs, jobs, jobs. That's the rallying cry of defense contractors who want to keep building arms America no longer needs. Regrettably members of Congress, of both parties, are heeding the cry and trying to restore funds for weapons like the SEAWOLF submarine, whose mission sank with the Soviet threat.

"The legislators need to look skeptically at the contractor's job claims. Beyond a brief transition period, the size of the defense budget is unrelated to the unemployment rate. That's because gains in civilian employment will offset the defense job losses -- even in Connecticut and Rhode Island, where much of the work on SEAWOLF is done.

Indeed, defense contractors worry greatly that they will soon have to compete for workers with non-defense industries. This competition will be good news for laid-off defense workers.

"Defense industries now employ about 3.1 million people. Under President Bush's proposed five-year, $50 billion cut in the defense budget, that will decline by about 900,000 by 1997, according to the Defense Budget Project, a Washington think tank. Cuts of $149 billion over five years would reduce defense jobs by 200,000 more -- in a private sector that employs nearly 100 million."

• Sacramento BEE - May 13, 1992. "Seven weeks ago, President Bush challenged Congress to rescind $5.7 billion worth of spending he described as *pork barrel* projects exemplifying lawmakers' habit of squandering taxpayers dollars. Of the

$5.7 billion in savings, half was to come from canceling an earlier appropriation to build a second and third SEAWOLF submarine. Are the decisions by the House, to go ahead with one SEAWOLF, and the Senate, to build both, just another sign of a congressional addiction to spending to preserve jobs for constituents back home?

"But the issue is more than a simple matter of not building a costly submarine whose mission has become a low priority. Submarines are among the most complicated and sophisticated weapons systems. Building them requires skills, machinery and facilities that are not readily available in the civilian economy. If the SEAWOLF is discontinued, the industrial base necessary for future submarine production will be severely disrupted, as shipyards close, skilled workers are laid off and suppliers go out of business.

"The House and Senate certainly had jobs partly in mind when they decided to build at least one more SEAWOLF. But given the questions about costs and the future of submarine construction, that decision involved a lot more than pork barreling. The SEAWOLF is a difficult call, on which the president has yet to make a convincing case."

• Defense News - May 18, 1992. [By Everett Pyatt]. "The SEAWOLF submarine has become many symbols at once. It was the future of the submarine force pitted against a Soviet force that had made significant strides in the last two decades. In the running time of a torpedo, this threat disappeared and the submarine force was caught looking for a mission.

"They launched a few Tomahawks in the Iraqi war for reasons I still do not comprehend, but were then faced with a new and equally stealthy enemy. It was the peace dividend.

"Alliances formed quickly. The rallying call became the industrial mobilization base (jobs in an election year). At first two yards could be involved in the program, but one got so at odds with the customer that it was dropped from the next-generation ship program and found itself in a lawsuit against the customer and the competition.

"It was easy to deduce that only Electric Boat was in consideration to be the submarine yard, so the New England delegation quickly found a cause. The result was a Senate position that includes two submarines and a House position of one.

"Calmer heads must prevail. The root question is whether a minimal submarine construction base is needed in the foreseeable future. Current programs will keep two yards in operation through 1995 and one yard in the late 1990s. During this period, more activities will end starting with machinery fabrication, then hull components, followed by outfitting and test capabilities.

"Restarting any of these capabilities will be difficult and expensive. It cannot be achieved by refueling and maintenance work. It certainly cannot be waved off with a simplistic reconstitution argument as some in the administration have tried.

"If one concludes there is no need for future submarine construction, then current programs should be completed and the facilities shut down. If there is any plan to build additional submarines in the future, then construction capabilities must be maintained. This means the U.S. should start a new SEAWOLF submarine every other year at each facility it wants to retain."

Everett Pyatt is former assistant secretary of the Navy for shipbuilding and logistics

SEAWOLF Budget Actions

• Providence Journal - March 29, 1992. "Washington (AP). The Navy is lifting stop-work orders for several components for the second SEAWOLF submarine because paying contractors to finish the units is cheaper than paying termination costs, according to a published report.

"The Day of New London reported in yesterday's editions that some congressional sources say the Navy's action supports arguments that building at least the second SEAWOLF nuclear-powered submarine is cost effective."

•Washington Post - April 10, 1992. "A House subcommittee yesterday approved the restoration of funding for one $2 billion SEAWOLF attack submarine.

"The action by the House Appropriations defense subcommittee would reverse part of a budget proposal by President Bush to eliminate funding for two SEAWOLFs that had been approved in previous years by Congress."

• NEW YORK TIMES - May 1, 1992. "The Senate Appropriations Committee voted today to preserve two SEAWOLF submarines President Bush wanted to eliminate but still cut

$424 million more in Federal spending than the Administration had proposed.

"The committee action reflected conflicting trends. Members of Congress are forced to demonstrate support for programs that provide jobs. But they also want to appear to be greater cutters of pork-barrel spending than the President and to back a balanced Federal budget.

"The committee decided to go ahead with constructing the SEAWOLF submarines at a cost of $2.9 billion by cutting $1.3 billion in Strategic Defense Initiative research and $1 billion in B-2 bomber expenditures instead.

"Senator Robert C. Byrd, the West Virginia Democrat who is chairman of the committee, said Mr. Bush 'threw down the gauntlet' by proposing the cutbacks and Congress was forced to react."

• Defense Daily - May 22, 1992. "The White House is likely to step away from its opposition to continuing the SSN-21 SEAWOLF submarine program and agree to a Senate-House compromise that would rescue one more of the ships, Secretary of Defense Dick Cheney said yesterday.

"'Right now, if I had to predict, I would expect the Administration would support the conference report,' Cheney told the Senate Appropriations Defense Subcommittee. 'On balance, it does achieve a level of savings we were looking for -- it's a package we can live with.'"

• Wall Street Journal - May 26, 1992. "The Pentagon, in its strongest statement yet about protecting critical defense technologies, said it is considering extraordinary steps to help companies building nuclear-powered submarines.

"In a *white paper* spelling out the military's new research priorities and procurement rules, Donald Yockey, the Defense Department's acquisition chief, called nuclear-submarine propulsion 'an essential, unique capability which will be difficult to maintain' without special federal assistance during a period of shrinking defense budgets. The report released last week indicates that senior Pentagon officials are *examining options to ensure* that the facilities, suppliers and expertise to build such vessels *will be available when needed* in the next century, though it doesn't provide details.

"Echoing this theme, Defense Secretary Dick Cheney said in a speech in New York Friday that the Pentagon may 'have to

make some specialized investments' to safeguard 'certain elements of (the) production line' for future nuclear-powered submarines. Mr Cheney didn't provide any details either.

Russian Submarines

• Wall Street Journal - March 27, 1992. "The navy of the Commonwealth of Independent States is trying to barter its way out of a financial and political crisis by selling hundreds of tons of ship-metal scrap and granting business concessions at its major naval bases.

"A delegation of 15 top CIS admirals arrived here this week with a proposal to sell scrap from 79 obsolete nuclear submarines, among other vessels, in an effort to raise funds to build houses for 30,000 officers who are being retired from its rapidly shrinking fleet.

"The delegation, believed to be the biggest group of Russian naval leadership ever to visit the U.S., also hopes to get advice from the U.S. Navy on how to destroy the submarines without harming the environment. But so far, they haven't even been able to get their U.S. Navy counterparts to agree to a meeting."

• Journal of Commerce - April 23, 1992. "LONDON — The Commonwealth of Independent States has offered to sell the U.S. Navy a nuclear-powered VICTOR II attack submarine, Jane's Defense Weekly said.

"The London-based magazine in its April 25 edition said the United States was considering the offer.

"No price was given.

"VICTOR II class submarines are 338 feet long, carry a crew of 100 and can reach 30 knots submerged. Armaments include nuclear missiles with a range of 20 miles and torpedoes with conventional or low-yield nuclear warheads.

"Quoting sources at a naval show in Washington, Jane's said the commonwealth's cash shortage was spurring offers of military hardware to the United States.

"It also said U.S. officials were visiting naval research and development centers in the former Soviet Union with the intention of buying anti-submarine technology.

"The magazine said there was a perception the commonwealth's shallow water anti-submarine warfare sensor technology may be further developed than similar systems in the United States.

"It said there were plans for a joint U.S.-commonwealth conference on shallow water anti-submarine warfare in California in mid-1993."

• London Financial Times - May 19, 1992. "Russia is continuing to build big warships despite funding problems, and its submarine operations have hardly been affected by the dissolution of the Soviet Union, a western naval authority said yesterday.

"Captain Richard Sharpe, editor of Jane's Fighting Ships, the 1992-93 edition of which was published yesterday, said production of nuclear missile-carrying submarines had come to a temporary halt last year, but three nuclear-powered hunter-killer submarines and three diesel-powered craft had been launched.

"He warned that proliferation of submarine expertise was one of the main problems posed by the break-up of the Soviet Union. Iran is said to be interested in buying one or two diesel-powered submarines.

"Of the former Soviet Union's 24 naval yards, 14 were now under civilian control.

"Captain Sharpe predicted that if this trend continued, Russia would probably have only two major submarine yards, with perhaps another two yards producing large surface vessels and three building minor warships.

"However, at least three of these yards were each equivalent to any other naval yard in the world."

• Defense News - May 18-24, 1992. "Washington — A dispute between Russia and Iran over the flagging of two diesel submarines is delaying their delivery to Iran, according to a senior Latvian defense official.

"Valdis Pavlovskis, Latvia's deputy defense minister, discussed the submarine dispute during a May 12 interview with Defense News at the offices of the U.S. Baltic Foundation, a non-profit institute in Washington.

"Two Russian KILO-class diesel submarines were to have been dispatched from a Russian naval base in the Latvian port of Riga to Iran on April 29, said Pavlovskis. The Iranians had purchased the submarines and their crews were training in Riga.

"The Iranians wanted the submarines to be Russian-flagged on their voyage to Iran, he said. The Russians have refused and the issue is deadlocked. Pavlovskis left Latvia April 29 and at

that time neither the submarines nor their crews had departed, he said. Pavlovskis said he did not know why the Russians refused to deliver the vessels under Russian flags."

• Inside the Pentagon - June 4, 1992. "A top CIS military official says the CIS Navy intends to scrap 150 nuclear-powered submarines by the year 2000, which would drive their nuclear submarine force to a numerical level comparable to the U.S. Navy. While details are vague, observers say the plan has important implications for the U.S. submarine fleet, which long justified its existence on the presence of a large and growing Soviet threat. They say Navy leaders will be hard pressed to defend maintaining an attack submarine force of more than 40 or 50 boats if the Commonwealth of Independent States can scrap the submarines as planned.

"The announcement of CIS intentions was made last month by Admiral Vitale Zaitsev, deputy commander in chief of the CIS navy for operations and overhaul. Zaitsev said the CIS plans to 'scrap totally' 150 nuclear submarines by the year 2000. This includes both ballistic missile submarines and multipurpose and attack submarines. Zaitsev had been part of a CIS delegation that came to the United States seeking help from the U.S. Navy and industry in scrapping the submarines and disposing of the nuclear waste. The CIS representatives said the plan to scrap 150 submarines has the full support of Russian President Boris Yeltsin."

Other Submarine News

• Navy Times - March 30, 1992. "KETCHIKAN, Alaska — A nuclear-powered attack submarine in early March glided through Southeast Alaska's frigid waters in the first trial of the Navy's $50 million sound-testing center at Back Island.

"The USS NEW YORK CITY, a LOS ANGELES class submarine, cruised back and forth for three days over a fiber-optic cable on the floor of western Behm Canal, about 15 miles north of Ketchikan in the Inside Passage.

"The cable transmits noise from the testing grounds to the nearby Southeast Alaska Acoustic Measurement Facility, where Navy scientists monitor the results.

"The center is still working out some bugs with the first test, said Chuck Henson, director for the Naval Strategic Warfare Center in Bremerton, Wash., which oversees the Back Island operation.

"The Navy says the center, built to test the stealthy new SEAWOLF attack submarines, will initially test the LOS ANGELES- and TRIDENT-class submarines."

• Jane's Defense Weekly - March 21, 1992. "The Thyssen Nordseewerke (TNSW) shipyard in Emden, Germany, is to start sea trials early next year with a closed cycle diesel (CCD) air independent propulsion (AIP) developed by UK company CDSS.

"Air independent propulsion is a general term used for non-nuclear power sources for conventional submarines, allowing them to remain submerged for long periods without having to schnorkel when running their diesel engines to recharge the batteries.

"The CCD is being installed in the type 205 submarine U-1 in the submarine assembly hall at TNSW. The boat is to be re-launched late this year." ■

MEMBERSHIP STATUS

	Current	Last Review	Year Ago
Active Duty	1014	1002	992
Others	2739	2765	2841
Life	240	232	225
Student	28	29	28
Foreign	79	80	70
Honorary	20	22	24
Total	4120	4130	4180

PLEASE RECRUIT 2 NEW MEMBERS FOR 1992!

SEEKING INFORMATION

A researcher writing a book on U.S. Navy operations in the Cuban Missile Crisis of October 1963 desires to hear from members who served in units that participated in the crisis. He requests you write him at the following address:

CDR Joseph F. Bouchard
HQ AFSOUTH
PSC 813 - Box 2
FPO AE 09620-1000

He is particularly interested in contacting former crew members of the six submarines that were awarded the Armed Forces Expeditionary Medal during the crisis: USS ATULE (SS-403), USS GRENADIER (SS-525), USS QUILLBACK (SS-424), USS SEA LION (APSS-315), USS SEA POACHER (SS-406), and USS SEACAT (SS-390).

SEEKING - The CO of the submarine whose torpedo nose-dived into the mud of the Pearl Harbor testing range in 1944 or 1945 (exact time forgotten). The torpedo surfaced about 0600 one morning bobbing against the hull of the USS DAVID W. TAYLOR (DD-551), waking up the First Lieutenant (me) whose bunk was on the opposite side. The torpedo was retrieved and returned to you at the submarine base. After welcoming home and bestowing a forgiving kiss on the errant torpedo, you tore up a multi-page "Lost Torpedo Report" you were writing. To celebrate the return of the wayward torpedo, you promised me and the boat crew a "fatted calf" dinner at the Royal Hawaiian that night. Unfortunately, the DWT was returning to the South Pacific that afternoon, so you gave us a verbal IOU. The DWT is having its fist reunion this September in Independence, Missouri, and we are now ready to collect. However, location and date are negotiable. Contact Captain Vince Colan, USNR(Ret.), P.O. Box 2207, Hendersonville, NC 28793. (704) 697-2748.

I am writing a book about the submarine USS S49 (SS-160) that was sold by the Navy in 1931. It toured the Great Lakes in the 1930s under the ownership of Captain F. J. Chrestensen. It was registered as the oil screw yacht "C" in 1937. It left the Great Lakes in 1938 or thereabouts. It then toured from halifax to Miami, stopping in New York and various East Coast ports. It was reacquired by the Navy in 1942 and accidentally sunk in 1943.

If anyone has photos, memorabilia, or firsthand (or even secondhand) knowledge of S49, please contact:

Joseph J. Beard
St. John's University
School of Law
Grand Central and Utopia Parkways
Jamaica, New York 11439

OPERATION DRUMBEAT

by Michael Gannon
Harper & Row Publishers, New York, NY 1990
ISBN 0-06-016155-8
Paperback, Harper Perennial Edition 1991 - $12.95

Reviewed by Daniel A. Curran

Operation Drumbeat provides an important piece to the historical puzzle that we call, "The Battle of the Atlantic." For approximately six months, from January to July 1942, the German U-boat arm in an operation called Paukenschlag (Drumbeat) moved almost unopposed up and down the East Coast of the United States. The convoys forming off Newfoundland crossed the Atlantic to supply the beleaguered allies virtually untouched, while five Type IX (700 ton) and later a group of Type VII (500 ton) German submarines sank almost 400 merchant ships from Boston to the Caribbean during the first half of 1942.

Michael Gannon, a prominent historian, relates the now familiar story from a new angle: why did senior naval officials, Admiral Ernest J. King in particular, ignore the warnings of British Naval intelligence? The British, who had been reading the encrypted German radio traffic, reported to the American authorities the U-boat's positions and courses from their departure at the U-boat base in Lorient, France, to their arrival off the American coast.

British intelligence was able to break and read the German naval code because of the capture of German crypto equipment during a series of commando raids in May 1941 and, in an enormous stroke of luck, the capture of a German Enigma (Schlussel M cipher machine) and handbooks from U-110 off the coast of Greenland a few days later.

While the British naval intelligence was at its zenith, American naval intelligence was reaching its nadir. Practically ignored by King and the other operational commanders, Navy Intelligence not only received the reports of the U-boat's positions in Washington but also disseminated them to the operating forces on the East Coast. However, no fleet units

were assigned to oppose the German onslaught.

Gannon concentrates the American side of his story on this lapse. Eventually in June 1942, General George Marshall, prompted by President Roosevelt, admonished the senior U.S. naval officials and questioned their lack of aggressiveness.

By this time, a fleet of patrol craft and subchasers were pouring from small American boat yards in New England, the Midwest, the South and on the West Coast. These small ships would relieve the American ASW destroyers that were so vital for convoy duty. The question remains, however, why these larger fleet units were not assigned to aggressively prosecute the U-boat enemy at their known locations.

The German side of the story, seen through the patrols of Reinhard Hardegen, a winner of the Knights Cross of the Iron Cross in U-123, is a fascinating recollection by Hardegen, who survived the war. Through the auspices of Jurgen Rohwer, the prominent German naval historian, Gannon interviewed Hardegen concerning the first and second patrols of U-123 during the early days of Operation Drumbeat. The story is detailed in both operational and human terms and confirms the previous stories told by Doenitz, Peter Cremer, and E. B. Gasaway in their books about the World War II U-boat offensive.

The consensus right after the war from both sides, Allied and German, was that the American Navy, distracted by the war in the Pacific and bureaucratic inertia, simply absorbed the punishment by the German submarines in the early days of the war. This continued until the U.S. Navy operations were focused enough on the East Coast to aggressively pursue the enemy.

The next piece of the puzzle was revealed when the details about the Allied effort in breaking the German cipher codes was declassified. People like William Stevenson told these stories and the Battle of the Atlantic took on a new light.

The Naval Institute republished Doenitz's memoirs in 1990 with a new introduction and afterword by Jurgen Rohwer (reviewed by this writer in the October 1990 **Submarine Review**). Here the U-boat activity in the North Atlantic is cast in a new light. While Allied tactical superiority was gained over the U-boats with the new radars and direction finders, the key to defeating the German submarines was the Allied knowledge

of the U-boat movements. In fact, Rohwer revealed the details of the British intelligence activity to Doenitz before his death.

Concentrating on the American Navy's knowledge of the U-boat positions during Operation Drumbeat, Michael Gannon fits another piece into the puzzle -- the lack of aggressiveness by the senior U.S. naval officials on the East Coast.

Ned Beach, in his excellent review/article of Gannon's book in the Proceedings, April 1991, tends to blame the Washington bureaucracy and chalks up the disaster to mismanagement. Vice Admiral Dan Cooper sent me another article/review by Ken Ringle, a Washington Post staff writer, printed in the August 21, 1990 Post. Ringle quoted Dean Allard, Director of the Naval Historical Center, as saying, "I have a feeling that there's more of the story yet to be uncovered by future historians to explain King's inaction." This should be the final piece of the puzzle.

This writer is presently researching the same period with concentration on the small subchasers that were built in the U.S. boat yards around the country from late 1941 to 1944. There is much evidence of the bureaucratic morass affecting the Navy in those days. In fact, President Roosevelt had to personally order the wooden subchaser program to start in the late thirties, as he had done in World War I when he was Assistant Secretary of the Navy. These subchasers, earlier scorned by King, coupled with the aggressive actions by the Army Air Force, Coast Guard, and the coastal Navy freed the larger fleet units for convoy duty after July 1942. This caused Doenitz to return to attacking the convoys along the northern route. The six months of U-boat activity along the East Coast against the unescorted merchant fleet ranks high on the list of U.S. naval disasters, perhaps higher than Pearl Harbor in numbers of ships lost and effect on the war.

Those of us who are students of the "Battle of the Atlantic" will find Gannon's book fascinating. Those who just like a good sea yarn will also enjoy the book. Gannon has provided a major contribution to U.S. Naval history.

[Daniel Curran is a former submarine officer, an attorney and a Marketing Manager for the Submarine Signal Division of Raytheon Corporation.]

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SUBMARINES OF THE WORLD

by David Miller
New York, NY Orion Books, 1992
ISBN: 0-86101-562-2
$30.00

Reviewed by Larry Blair

Not in their wildest dreams did the conceivers and builders of the submarine in the late 1800s realize the impact underwater vessels would have on warfare through the following 100 years. During World War Two, there weren't many U.S. and Allied navy brass who envisioned the profound importance submarine warfare would achieve by 1992. Also, not in their wildest nightmares did our Japanese adversaries believe so few submarines and manpower would create the devastation that expedited the Empire's downfall.

David Miller is a recently retired British Army officer with five other submarine works under his belt, and is also a writer of many military articles. The book illustrates how far maritime nations have progressed in undersea technology, to arrive at its position of dominance in naval warfare.

Any writer who undertakes such a diverse subject in 189 pages, is sure to have been faced with hard choices on content, style and parameters. He has written a chronology of events in salient terms, coupled with photographs and superior color and black and white artwork including cutaways. Credit for these go to artists Tony Gibbons, Terry Hadler and James Marffy. The author's verbiage is a breath of fresh air, compared to the numerous technical tomes written on the subject.

The seasoned submariner, historian, writer or just plain lay person is given an overview of the art of submarining. This reviewer, however, wishes the treatise could have been longer, allowing for more classes to be covered, especially in the USA section. It undoubtedly was the author's dilemma on how to depict a cross-section from the various countries represented.

The introduction does just that. It takes the reader from the Early Days to the First World War and Post War period; then into the *big war* which proved undersea warfare's worth. From the Cold War era, the author succinctly touches upon Weaponry, Propulsion and the important roles submarines have played in each country's history.

The meat of the book begins with the boats of the USA. Seven major submarine oriented countries follow – the former USSR, Germany, Great Britain, Japan, France, Italy and China. The following section continues in alphabetical order with Argentina through Turkey, and discusses the strategic and tactical places the eleven nations hold in underwater warfare. In all, some 70 classes are represented. A highlight of the book is the aforementioned artwork, dramatically positioned in the middle of each double-page spread.

One cannot help be impressed by the Royal Indian Navy's appetite for a meaningful submarine fleet. History has shown how the British were the catalyst in breeding an RIN surface fleet. Since the end of World War Two, it has grown to a size and stature worthy of recognition. Its involvement with submarines began in 1968 with Soviet FOXTROTs and began delivery of KILO class boats in 1991. In 1988, it received, on loan, one Soviet CHARLIE SSGN for training purposes.

An alliance is underway with the German company Howaldswerke-Deutsche Werft in Kiel for Type 209 submarines. Follow-ons will be built in Bombay. The Type 1500 is from a design by Ingenieurkonto Lübeck (IKL). This series incorporates the Gabler escape sphere. It holds a full crew and is located forward of the sail, flush with the flat-topped upper casing. When released, it rises to the surface and floats to await rescuers.

Sophisticated training and technology, nuclear warhead and missile capability and at-home construction growth shows the RIN has sights on Indian Ocean supremacy. In the future, SSBNs are likely.

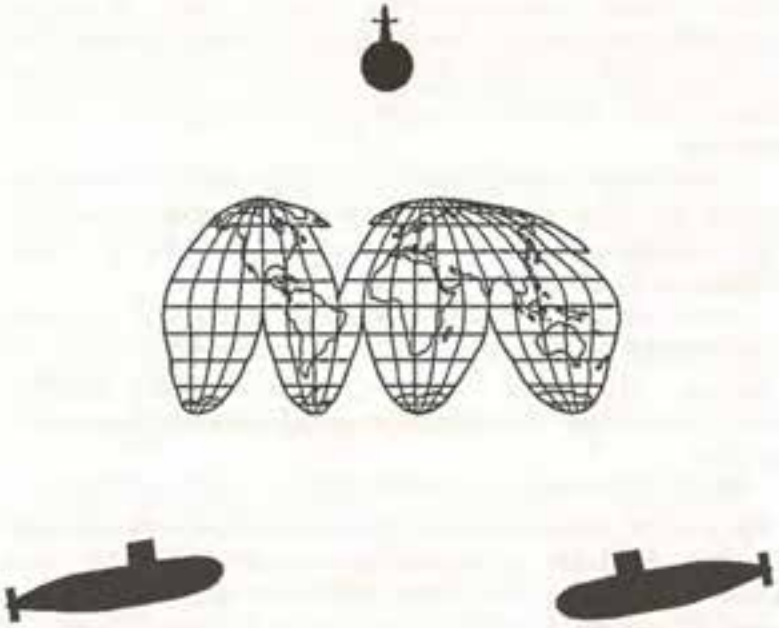
Of all the current submarines being designed and built, diesel-electrics are prolific. The Australian COLLINS class is an example. This boat is based on the Swedish VÄSTERGOTLAND. The Kockums design attack boat will begin service in 1995.

Sweden is a well known self-contained producer of submersibles and for many years has had a fine reputation for construction. Kockums of Malmö has a unique 159 foot diesel-electric in the Type A-17 class. The reader will want to see the unusual bow, sail, propulsion and turtleback design found in the book's artwork.

Protagonists, People's Republic of China and Taiwan show their wares. In their HAN class SSNs, four of which have been commissioned since 1991, and first SSBN (XIA class) in service since 1981, the PRC has made impressive achievements. Both classes were produced at a yard in Liao Ning province.

The Taiwanese have opted for the Dutch company of Wilton-Fijenoord to construct their two HAI LUNG class attack boats. They have been in service since 1987 and 1988 respectively. However, political pressure on the Dutch from the PRC has halted follow-ons. They are looking into Type 2000s from IKL of Germany.

Contained within the pages of this pictorial narrative is information for the armchair adventurer and professional sub watcher. It is chock-full of requited dreams nurtured in the minds of Day, Bushnell, Bauer, Lake, Holland, and other inventors, not the least of whom was modern day visionary, Rickover. In an easy to read treatment, Mr. Miller has captured the quintessence of past and present submarining. ■



REUNIONS

USS RAY (SSN-653) - INACTIVATION CEREMONY - 24 July 1992 - Charleston, SC. Former crew members and all interested in attending contact:

Commanding Officer
USS RAY (SSN-658)
FPO AA 34092-2399

USS CLAMAGORE (SS-343) - 22, 23, 24, & 25 October 1992 - New London
Contact:

Jim Storms
3029 Thrush Drive
Melbourne, FL 32935
(407) 254-9223

USS GUDGEON (SS-567) - 16, 17, 18, & 19 September 1993. To be held in conjunction with U.S. Sub Vets Inc. National Convention in Vallejo, CA.
Contact:

Clifford A. Smith
407 Roleen Drive
Vallejo, CA 94589

USS ROBERT E. LEE (SSBN-601) 22 - 23 October 1993; Orlando, FL.
Contact:

Ronald C. Kimmel
7019 Tracyton Boulevard NW
Bremerton, WA 98310-8909
(206) 692-9487

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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 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.