

JULY 2007

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Rear Admiral Eugene Bennett Fluckey, USN (Ret.) by Captain Max C. Duncan, USN (Ret.)

Rear Admiral Eugene (Gene) B. Fluckey, age 93, died June 28 at Anne Arundel Medical Center, Annapolis, MD. Admiral Fluckey was awarded the Medal of Honor for his action as the Captain of a submarine during WWII.

Admiral Fluckey was born 5 October 1913 in Washington DC to Isaac Newton and Louella Snowden Fluckey, the second youngest of four children. He attended public schools in Washington and graduated from Western High School. He attended Valley Forge Military Academy before entering the U.S. Naval Academy in 1931.

Admiral Fluckey graduated from the Naval Academy in 1935 and his initial assignments were to the battleship NEVADA (BB-36) and the destroyer MCCORMICK (DD-235). In 1938 he attended submarine school in New London, CT and reported to his first submarine, S-42, in the Canal Zone. Later he completed five war patrols in BONITA (SS-165), followed by a short time at the Navy Post Graduate School in Annapolis.

On 27 April 1944, Commander Fluckey assumed command of USS BARB (SS-220) and began five legendary patrols. He is credited with sinking the most tonnage of any U.S. skipper during WWII. On his first patrol he is credited with sinking five ships, a first for a new skipper. On his next patrol, he is credited with sinking a carrier and a large fleet tanker with a single salvo of six torpedoes. On that patrol, he also rescued 14 allied POWs after their transport, taking them to Japan, was sunk by a U.S. submarine. On his third patrol, he also sank five ships and damaged a fleet carrier. For his first three patrols, he was awarded three Navy Crosses.

During his famous fourth patrol in command, Fluckey continued to revolutionize submarine warfare, inventing the attack on convoys at night from astern and by attacking convoys at anchor in island protected shallow water harbors. He attacked 30 ships anchored 26 miles from water deep enough for the submarine to safely dive. He fired all available torpedoes and observed many ships explode. Leaving the area, BARB was pursed by two frigates and escaped by broken field running thru a junk fleet at more than flank speed. For his conspicuous gallantry and intrepidity, Fluckey received the Medal of Honor and BARB received the Presidential Unit Citation for the four patrols of Fluckey's command.

Fluckey continued revolutionizing submarine warfare during his fifth patrol in command. During this patrol, while he sank three ships with torpedoes, he sent an eight man party ashore and blew up a train with a demolition charge. This was the sole landing by U.S. forces on Japanese home islands. Also on this patrol, Barb launched the first missiles from a submarine and Fluckey accurately predicted that missiles were a tremendous weapon for submarines in the future. For this patrol, Fluckey received his fourth Navy Cross and BARB the Navy Unit Commendation.

After WWII. Fluckey was chosen by Fleet Admiral Nimitz to be his personal Aide as Nimitz became the Chief of Naval Operations, This tour started a close personal relationship with Admiral Nimitz which lasted until Admiral Nimitz's death.

A tour as Naval Attaché in Lisbon, Portugal was followed by again returning to submarines with a tour in San Diego in command of Submarine Division 52, the submarine tender SPERRY and Submarine Squadron 5. He then went back to the Naval Academy as Head of the Department of Electrical Engineering. During that tour he headed a drive to raise funds for the Naval Academy's Memorial Stadium. He was successful; raising sufficient funds to build the stadium, a task that many seniors in the Navy said couldn't be done.

Fluckey next spent two years in Washington, at the National War College and at the National Security Council, Selected for Admiral in 1960, Fluckey's first flag assignment was as Commander Amphibious Group 4 with tours around Africa to gather information and gain favor for the United States. This was followed by assignment as President of the Board of Inspection and Survey.

In 1964, Admiral Fluckey again returned to submarines as Commander, Submarine Force, U. S. Pacific Fleet - an assignment he had dreamed of for twenty years. As ComSubPac he successfully conducted many submarine operations with both SSNs and SSBNs, as well as diesel-electric submarines then still performing front-line duties. After that tour he returned to Washington to be Director of Naval Intelligence, an assignment that resulted in his being recognized 30 years later for his correct assessments.

His final tour on active duty was as the initial Commander, lberian Atlantic Area, a NATO command headquartered in Lisbon. Admiral Fluckey retired from active duty in August 1972. He and his wife purchased a home in Sintra, near Lisbon, and planned to spend their remaining years there. They became very involved in supporting the orphanage of Escola Santa Isabela. Unfortunately,

Marjorie's health deteriorated and they returned to the states in the late 70s.

After Marjorie's death, Gene returned to Portugal. He married Eleanor Margaret Wallace in 1980 and moved to Annapolis in 1981. He was very active with the Midshipmen of the Academy.

Admiral Fluckey completed the requirements for, and became an Eagle Scout in 1947 at the age of 33. This was at the request of the National Headquarters, to assist in their efforts to recruit scouts that were being approached by communist sympathizers.

Admiral and Mrs. Fluckey were inducted into the Military Order of Knights of Malta in 1994. He was designated a Distinguished Graduate of the Naval Academy in 2003.

Admiral Fluckey's survivors include his wife, Margaret, his daughter, Barbara Fluckey Bove and her husband Dr. Charles Bove, his granddaughter Gail E. Fritsch and her husband Matthew, a grandson Stephen Bove, a grandson Thomas Bove and his wife Pamela, a grandson Anthony Bove and his wife Seigrid, four great grandchildren Jacqueline Fritsch, Carrie Fritsch, Michael Fritsch and Nicholas Bove.

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EDITOR'S COMMENTS

Item in this July '07 issue is a short obituary by one of his officers in BARB. Admiral Fluckey was one of a kind, but most definitely the kind he belonged to was a unique breed of sailor, leader, innovator and warrior. He was the quintessential Submarine Skipper and the direct thinking, hard charging, tenacious model of the Take-Charge-and-March-Off kind who win wars and bring their crews back home when it's over. It was my honor to meet him when he was ComSubPac and I was Executive Officer of his flagship, the second BARB. I can report to the submarine community that he never changed in his determination for mission accomplishment and in his earing concern for his people.

The two FEATURES of this issue are unclassified presentations from the Submarine Technology Symposium in May. VADM J. Guy Reynolds speaks to both of them in his <u>President's Letter</u> to the membership immediately following these <u>Comments</u>. The entire Symposium was excellent, but these illustrate two high points: the inclusion of Allied Submariners in the final session and the plain talking about challenges in our world and in the Navy in general.

The lead ARTICLES are both World War II tales of a different kind. In the first one, GUNNEL participates in the 1942 invasion of North Africa, limps back to the base in Scotland (near but not in Holy Loch) with bad main engines, and gets attacked by a German plane on its way back to the states. It was all high adventure. The second piece is the first part of the story of the survivors of FLIER 's sinking by a mine in a Philippine channel. Their trial by water in swimming to land and their experience on an inhospitable island gives credit to their personal endurance.

There are, of course, many other interesting, educational and thought provoking ARTICLES and special interest pieces in the issue. We offer everything from the early days of SOSUS and ALBACORE to modern mess cooking on a memorial submarine.

As a point of personal concern for the lure and lore of submarining I particularly want to recommend for your consideration the BOOK REVIEW I wrote for Paul Stillwell's <u>Submarine</u> Stories. I assumed that project to myself not only because I really enjoyed reading the stories in his book, but because there is much of real value there for the discerning student of sea stories.

> Jim Hay Editor

Save The Date

31 October - 1 November 2007 The 25th Anniversary Naval Submarine League Annual Symposium Hilton McLean Tyson Corner

FROM THE PRESIDENT

This has been a very good quarter for the NSL! VADM George Emery did a superb job as Chairman of the 2007 Submarine Technology Symposium (STS). This event celebrated the 20th Anniversary of STS with an international flavor, a first for STS. Three nations, Australia, Norway and United Kingdom participated by having the leadership of their Submarine Forces spend a day with more than 500 attendees at this year's symposium. The participation of these nations, discussing their Submarine Force operations, complemented two days of outstanding presentations by active duty and civilian authors discussing the theme "Enhancing the Submarine's Military Value". This was George Emery's fourth STS. Each one has been better than the last. George has agreed to chair STS 2008.

VADM Jay Donnelly's remarks to the attendees at the Banquet included the recognition of the loss of two UK submariners on HMS TIRELESS while on Artic Operations in March of this year. Attendees appreciated the candid report of this incident by RADM David Cooke, RN. Mr. Ron O'Rourke provided another penetrating analysis of the Navy's shipbuilding program. Both VADM Donnelly's and Ron O'Rourke's remarks are in this issue. I commend them to you.

The Sixth Annual Submarine History Symposium, "How Submarine Intelligence Collection Made A Difference - Lessons from the Past", was cosponsored by the NSL and the Naval Historical Center and the Navy Historical Foundation on 11 April 2007. Speakers included VADM Roger Bacon, RADM Tom Brooks and Mr. Richard Haver, RADM Tom Evans moderated the discussion and contributed to the operational aspects. This was the best attended history seminar of the series with over 200 in the theater. The speakers related how submariners and intelligence specialists used their individual expertise to develop actionable intelligence assessments that were used to change the Maritime Strategy of the Navy. This was a great event! Hopefully it will reinvigorate the relationship between the Submarine and Intelligence communities. The NSL appreciates the support of Northrop Grumman Corporation Marine Systems Division in underwriting the expenses of this seminar.

The League's next major event is the 25° Anniversary Annual Symposium. There is a significant change. This year the symposium will be at the Hilton McLean at Tysons Corner in McLean, VA on 31 October-1 November 2007. The Board of Directors approved the change of the dates for this event to increase the interval between the STS and Annual Symposium and to ease the travel requirements for the principal speakers. The Navy Submarine Force Leadership continues to support NSL activities. Look for the registration package that will be in your mailbox in August. Hotel reservation information and the draft Agenda will be on the League website.

Speaking of the website, by the time you read this letter the long awaited NSL Membership Directory will be online, through the League's website at www.navalsubleague.com. The League appreciates the support of Tim VeArd of VeArd Computer Research, Inc. for his support in donating his services and servers for this application. Tim and I have REL (Robert E. Lee) SSBN 601 in common. You will have access to well over 20,000 submariners for addresses and reunions. Tim is a former submariner now in private industry providing membership and website support for numerous ships and organizations including NSL Chapters.

The League continues to address issues that are important to the Submarine Force. I ask that you tell me how we can make the NSL better. We are all in the business of promoting submarines and their contribution to national defense. I encourage you to make your views on the build rate for VIRGINIA Class submarines known to your elected representatives. It is time for two VIRGINIA Class submarines to be built each year. It is a successful program.

I also ask you to recommend that your friends and associates join the League. You can do this easily by referring them to the webpage, www.navalsubleague.com and click on "Join NSL". Nobody has ever turned me down.

Please join Jan and me as we continue to pray for the safety of troops and submariners deployed around the world. I am honored to represent you as President of the Naval Submarine League. Enjoy your summer.

J. Guy Reynolds
President

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SUBMARINE TECHNOLOGY SYMPOSIUM ENHANCING THE SUBMARINE'S MILITARY VALUE

SUBMARINE TECHNOLOGY SYMPOSIUM BANQUET SPEECH REMARKS BY VADM JOHN J. DONNELLY, USN COMMANDER, SUBMARINE FORCE

embers of the technical community, supporters of submarines, and all of the members of the allied Submarine Forces from the United Kingdom, Australia, and Norway with us tonight, welcome and thank you for traveling such great distances to join us for this year's Submarine Technology Symposium. I am happy to see all of you here.

Thanks to all of the presenters who provided extremely informative and thought provoking presentations over the last two days. I know your work will bring you and the Submarine Force great success. Just remember what Henry Kissinger said, "Each success only buys an admission ticket to a more difficult problem."

Special Thanks to ADM Rich Mies, VADM George Emery, VADM J. Guy Reynolds, and Mr. G. Dan Tyler. These are the men who dedicated numerous hours coordinating and organizing this event which is so very important to the technological advancement of my Submarine Force. And gentlemen, I want to commend your organization for having such an astute and diplomatic Program Chairperson, Erik Johnson. Most program directors tell me they want, "a short speech - a real short speech". Erik put it in a much more tactful way. He said, "Admiral, your reputation speaks volumes. So you don't have to."

Erik, I'll do my best.

Today is the 16th birthday of the World Wide Web. Starting with military computer experiments in the 1960s, the next two decades saw a rapid increase in technological advancement as universities and research centers also got onto the Internet. In late 1990, the Briton Tim Berners-Lee devised the basic elements of what he named the "World Wide Web." He developed the basic languages of the Web (HTML and HTTP) and wrote the program for the first Web browser.

On May 16, 1991 Berners-Lee's vision of a universal medium for data, information, and knowledge exchange was first activated. In 1994, he founded the World Wide Web Consortium at the Massachusetts Institute of Technology, comprising various companies that were willing to work together to create standards and make recommendations to improve the quality of the Web. As we all know, with the advent of the personal computer its use skyrocketed as people looked for easier and cheaper ways to get their computers to communicate.

The maritime strategy of the future will also require a consortium: An international consortium of naval forces that will work together to build a global information network. This network will be necessary to enhance awareness and provide security on the high seas, into the littorals, and on the landward side of the littorals, because adversaries may use the maritime commons almost anywhere and at any time. Due to geographical, political, legal and capacity limits, the United States will require international cooperation to achieve the necessary domain awareness required to maintain maritime security. As part of Admiral Mullen's Global Maritime Partnership Initiative-the 1,000-Ship Navy, we are working with Submarine Forces from 27 nations, representing more than 224 submarines. Through operations, exercises, mutual agreements, and staff talks with our allies and partners around the globe, we continue to increase our interoperability and strengthen partnerships in the name of U.S. national security and to promote the economic and political stability that secures the benefits of globalization for all maritime nations.

First and foremost in the area of interoperability technological advances is communications. An affordable, secure communication system that allows multi-national interoperability and information exchange is necessary to facilitate the global domain awareness needed in the future.

While as submariners we speak the same technical language, our communication technologies and procedures are significantly different and in many cases behind the times. Even with significant effort and funding, we find ourselves falling further and further behind the above-water naval and military forces, at the risk of becoming obsolete.

I recently observed arctic operations with USS ALEXANDRIA

and HMS TIRELESS at Ice Camp. They were able to effectively use digital acoustic communications to communicate with the ice station and, to a limited extent, with each other. However, the communications were slow. Before our arrival but shortly after the ALEXANDRIA surfaced she began to develop a list due to a shift in the surface ice. The list soon reached 19° and ALEXANDRIA needed to submerge quickly. The TIRELESS was still deep and the ships had a difficult time communicating to coordinate safe water-space separation before ALEXANDRIA could dive. We need to continue to improve the interoperability and effectiveness of acoustic modems that will make communications with friendly forces throughout the normal operating limits of speed and depth possible.

As you all know, two British sailors tragically lost their lives during this exercise when an oxygen candle exploded. On behalf of the US Submarine Force, I would like to take this opportunity to voice my condolences to you, RADM Cooke, and your nation.

The allied maritime network of the future will require secure, affordable communications with crypto that allows us to talk with all friendly forces.

To support this, the cryptographic equipment will need to be:
Compact—with a significantly reduced footprint than current
systems; Interoperable—because multinational cooperation will
be required to establish a common operating picture; and Robust—with the ability to easily conduct chat, e-mail, and VoiceOver-IP communications. The Combined Enterprise Regional
Information Exchange System, referred to as CENTRIXS, is a
baby-step the U.S. military is taking toward this end.

CENTRIXS forms a network backbone of what is envisioned to become a global infrastructure, allowing the U.S. to share information rapidly with coalition partners worldwide, in support of local, regional, and global combined operations.

It provides secure operational and tactical information sharing between U.S. and Coalition maritime forces in the forms of classified e-mail and chat services with a future capability of Voice-Over-IP. The technology is already installed and operating on surface and shore facilities in the U.S. fleet. CENTRIXS has been used in the Pacific and in the Middle East by our coalition partners. I am working to fund this system on my submarines and, combined with new technologies that will allow submarines to communicate while deep and fast, the submarines of the future will be an integral part of the global information network. We will be able to quickly provide the kind of critical information that only a submarine can get, to anyone that needs it.

As I said earlier, communications technology is my first and foremost area of focus, but advances in interoperability can not stop there. By sharing responsibilities and coordinating all areas of technological advancement, we will not only bring critical capabilities to our fleets faster than a unilateral approach, but also at reduced costs, improved efficiencies, and greater effectiveness.

A great example of international cooperation and sharing of technology is the Submarine Combat System and ADCAP CBASS Armaments Cooperative Project between the United States and Australia. We have made great progress to jointly develop, produce and support the MK48 ADCAP CBASS Heavyweight Torpedo and the AN/BYG-1 Submarine Combat System.

Torpedo Maintenance and Analysis Facilities have been constructed and are up and operating in Perth and Adelaide respectively. HMAS WALLER, the first Collins Class submarine with this new capability, will put to sea later this year.

Just four years after the tragic loss of KURSK, ISMERLO, the International Submarine Escape and Rescue Liaison Office, was established. What began as the NATO Submarine Escape and Rescue Working Group, in the last three years ISMERLO has brought together global submarine rescue into a single capability. Each nation represented here today and almost every Submarine Force in the world has joined the Submarine Escape and Rescue Working Group. Through international exercises and four rescues or contingencies, most notably the rescue of seven Russia sailors from a Russian deep submergence submarine off Petropaylovsk in August 2005, the global submarine community has demonstrated our ability to work together to communicate effectively and respond quickly to any submarine disaster. ISMERLO is fully aligned with established global protocols developed to respond to civilian search and rescue at sea, codified in numerous treaties and international agreements with members from 37 nations around the globe covering all the world's oceans. Its success requires close and continuous coordination between nations to ensure that compatibility and interoperability are maintained across national rescue assets.

When determining the best method for communicating and coordinating response teams, the architects found a web-based information system to be more efficient and a better alternative than phone line communication. ISMERLO provides a Real-Time system to coordinate sub rescue response via its website. This is just a small step toward the dynamic and robust command and control structure we will need to provide security on the seas.

The United States Submarine Force is dedicated and working hard to increase the sharing of technology with our allies and to leverage each others knowledge. I look forward to exploring new initiatives and sharing ideas that will reduce the time for new technologies to reach our fleets and the cost of modernizing our submarines.

When I graduated from the Naval Academy 32 years ago, I could not have predicted the impact the internet and World Wide Web would have on our society. But in just a few years, it's become a fundamental part of daily life... providing education, trade, resources and community for the world.

Technology has become one of the great equalizers of our time. We no longer live in just local communities. We live in virtual communities that transcend borders and physical boundaries. We are only bound by two limits: imagination and determination.

Submarines are still at the forefront of technology. They are the platforms our nations will summon to establish and maintain maritime security in the anti-access environment if needed. We must continue to work together now to build the partnership, capabilities and processes necessary to push the limits so that we will be ready when called upon.



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SUBMARINE TECHNOLOGY SYMPOSIUM LUNCHEON ADDRESS AN ANALYST'S VIEW BY RONALD O'ROURKE CONGRESSIONAL REFERENCE SERVICE MAY 15, 2007

Thank you for the kind introduction — and for inviting me back to speak at this year's symposium.

And thanks also for the nice lunch, including especially

And thanks also for the nice funch, including especially the crab cake, which was quite good. As a kid who grew up in San Francisco eating Dungeness crab—including at cioppino nights at the Italian American Social Club, which my father was a founding member of, in spite of his last name—eating crab is always a treat.

It's an honor and a pleasure to be here, and I especially appreciate the symposium's continued willingness to hear my views, knowing that I don't try to give you the party line, whatever it might be in a given year, but instead try to call things as I see them.

It's been a busy time on the Hill this year, and there are several things I want to talk about today, so I'd like to start right in on them.

And as always, I should note that these views are my own and not necessarily those of my employer.

Activities on the Hill

I want to start by making three general comments about Congress' activities on defense issues this year.

The first is that there's a strengthened emphasis in this Congress on conducting effective oversight and seeking accountability. A lot of oversight hearings have been held, and a lot of tough questions have been asked at these hearings. Between January 11 and April 25, for example, the House Armed Services Committee and its various subcommittees held a total of 55 hearings to receive testimony from witnesses on various oversight issues. When you subtract out Saturdays, Sundays, and the recesses around President's Day and Easter, that works out to an average of almost one committee or subcommittee hearing each day for a period of more than 3 months.

The second general comment is that there is strong skepticism on the Hill about the concept of private-sector lead-system integrators, and a corresponding interest in shifting certain acquisition responsibilities back to the federal government. Section 806 of the House-reported version of the defense authorization bill would essentially prohibit the awarding of new contracts for lead system integrator functions after October 1, 2011, except under certain conditions.

And the third comment is that there's a strong skepticism among some Members regarding cost-plus type contacts, and a corresponding desire to shift acquisition programs back toward a greater use of fixed-price type contracts. Section 822 of the House-reported version of the defense authorization bill would require federal agencies that award more than \$1 billion worth of contracts per year to develop and implement plans for maximizing the use of fixed price-type contracts for the procurement of goods and services.

Additional ships, including submarines

I want to turn now to the core issue at hand for my address here today, which is submarine procurement. I'm going to spend a good portion of my time today on this topic, and then turn more quickly to some other issues.

I think a lot of you are aware at this point that there is strong interest, particularly in the House, in adding funding to the FY08 Navy shipbuilding budget to support the procurement of additional ships beyond those requested by the Navy for FY08. And a lot of you might also be aware that at the budget-review hearings this year, the Navy has reacted warily, if not outright negatively, to this idea. Listening to the Navy's unenthusiastic reaction, one might never suspect that an additional LPD-17 is the No. 1 item on the Navy's unfunded programs list this year, or that two additional TAKE cargo ships are the No. 2 item.

Navy leaders need to support the President's budget, and consequently can't openly argue in favor of an increase to the Navy top line. (This rule doesn't seem to apply to Air Force leaders, but that's a topic for another day.)

In any event, since Navy leaders can't argue in favor of a top line increase, they are concerned that, within a fixed FY08 Navy budget, funding for additional ships could come at the expense of other Navy priorities. That's understandable. But to discourage Congress from attempting to include funding for additional ships in the '08 budget, the Navy this year has resorted to a number of arguments, some of which I think are very unfortunate.

One of these is that since submarines are normally procured with two years of advance procurement funding, the earliest that you can procure an additional submarine would be FY10.

That's not true. Repeat: Not true. The use of advance procurement funding is permitted, but it's not required. Congress can and in the past has—fully funded the procurement of nuclearpowered warships in a point-blank fashion, without any advance procurement funding. Congress did it with a Nimitz-class nuclearpowered carrier in FY80, and did it again with another two Nimitzclass nuclear-powered carriers in FY88. And it wasn't the existence each time of an extra set of Nimitz class propulsion components that made Congress' action possible. That simply permitted the ships to be built more quickly. What made it possible for Congress to procure the ships in this manner was Congress' constitutional authority to appropriate funds for the purpose.

Congress, if it chooses, could fund the procurement of an additional submarine in FY08, with no advance procurement funding, or in FY09, with either no advance procurement funding, or a single year of advance funding in FY08. And don't let anyone try to tell you otherwise.

If one or more additional submarines were procured in this manner, they could be built in the usual way, with two years or so of long-lead component manufacturing, followed by five or six years of construction work on the ships themselves. The outlay rate on the funds for these ships would be slower than normal, and the interval between the nominal year of procurement and the year of commissioning would be one or two years longer than normal. But they'd look and perform the same as any other Virginia-class boats.

Another questionable argument that the Navy used this year to try to discourage Congress from the idea of funding an additional submarine prior to FY12 was that if you go up to 2 subs in FY10, then go back down to one sub in FY11 before going back up again to 2 subs in FY12, the resulting 2-1-2 pattern could place a strain on the workforce. The strategy behind this argument might have been to suggest to certain Members that if they wanted to fund an additional submarine in FY10, they'd also need to find the funding for another submarine in FY11, which is something that some Members might find daunting.

This is the kind of argument that sounds like it might have been cooked up in a public relations-type war room, and the premise on which it's based is weak. If you procure two submarines in one year followed by one submarine the next, you've procured a total of 3 subs over 24 months, and you can phase those subs so that you start one every 8 months. A rate of one submarine every 8 months might actually help, rather than hurt, the industrial base transition from the current rate of one submarine every 12 months to the planned eventual rate of one submarine every 6 months.

The Navy has retreated to a revised form of this argument, if I heard it right, that a 2-1-2-1 sawtooth pattern, as the Navy terms it, could place a strain on Navy program management. This is the same service, mind you, that has included a 2-1-2-1 sawtooth pattern for attack submarine procurement in the final 10 years of its own 30-year shipbuilding plan. Apparently, a 2-1-2-1 pattern poses a problem only when it's proposed by someone other than the Navy.

I pointed out the problems with the Navy's arguments in my testimony to the House Seapower subcommittee on March 8. Indeed, countering these flawed arguments formed a significant part of my remarks at that hearing. Which made it even more impressive, if that's the word, when later that same month, in testimony on the Senate side, the Navy casually repeated both of these flawed arguments again. It wasn't until May 3, when confronted directly on the point at another Senate hearing, that the Navy finally acknowledged that Congress can, in fact, fully fund the procurement of an additional submarine this year, if it chooses.

From my perspective, the Navy's testimony this year on the idea of procuring one or more additional submarines prior to FY12 was very unfortunate, not only because the arguments were flawed, but because of the attitudes that appeared, by implication, to be animating the Navy's testimony. The implication was that the Navy believes one or more of the following:

- that if you can mislead Congress into thinking that it doesn't have a funding option that it does in fact have, that's ok,
- or more generally, that the ends justify the means, so the quality
 of the arguments you make doesn't matter, as long as they
 succeed in getting Congress to do what you want,
- or that if you repeat flawed arguments to Congress often enough, even after their flaws have been pointed out, Congress will eventually agree with you.

Most recently, the Navy has argued that a down payment in FY08 on an additional submarine to be procured in a future year would create an unfunded out-year liability. That's true enough, but calling attention to this point, as the Navy has, is really just another way of saying, "We, the Navy, do not trust you, the Congress, to follow through on your own plans to fund an additional submarine." It's hard to see how at least some Members won't find that argument insulting.

It was twelve years ago, in March of '95, that I first testified on the projected attack submarine shortfall, which is the situation that has caused some Members to be interested in procuring one or more additional submarines prior to FY12. In the twelve years since that testimony, I've testified, reported, and spoken about the shortfall on numerous other occasions.

Last year, 11 years after I began issuing warnings about the shortfall, Congress began discussing the idea of procuring additional submarines prior to FY12. In response, the Navy acknowledged the projected shortfall but argued, without providing too many details, that it was manageable.

This year, as the Congress has continued to discuss the possibility of procuring additional submarines, the Navy began to talk a little more about non-procurement options for mitigating the shortfall, such as extending the service lives of up to 19 existing submarines by relatively short amounts of time, or increasing submarine operating tempo, or compressing the Virginia-class construction process by a year, which can give you a one-time addition of two extra submarines in the Force. These are all legitimate options. But the Navy also presented the questionable arguments I have just reviewed for why it would supposedly not be possible, or would not be a good idea in terms of the industrial

base, or Navy program management, or unfunded out-year priorities, to procure one or more additional submarines prior to FV12.

I don't want to give you the idea that the Navy has been focusing its lack of enthusiasm for additional ships solely on submarines, because the Navy has been similarly downcast in reacting to proposals for adding funding for other ships, including even the LPD-17 that is at the top of the Navy's own unfunded programs list this year. So submarines are not being singled out.

But as the latest turn of events in a story about submarine procurement that, from my perspective, goes back 12 years, I find this year to be a memorable one, and not because it stands out as a high point in the history of Navy testimony to the Hill.

So where do things now stand, legislatively, on the issue of adding funding in the FY08 budget for the procurement of an additional submarine prior to FY12?

Right now, only one of the committees—the House Armed Services Committee—has marked up and reported its bill. The committee recommended advance procurement funding for an additional ship-set of Virginia-class long-lead components that could support the procurement of an additional submarine in some year prior to FY12. The bill and its accompanying report do not make a commitment to procure that submarine, but the funding is intended to facilitate the option of doing so.

The chairman of the House Appropriations Committee has indicated general sympathy or support for the idea of including funding in the FY08 budget for the procurement of additional ships, including possibly some amount of funding for a submarine.

Senate authorizers and appropriators, meanwhile, are aware of the interest on the House side in funding additional ships, and have asked for the Navy's reaction to the idea, but have provided little indication one way or the other of what they might do.

Industrial base

I want to turn now to four other topics that I want to cover more quickly in the remainder of my time. The first concerns the industrial base. Members are impressed with the Virginia-class Capital Expenditure (CAPEX) program, and some of them, at least, would like to see this concept expanded to other Navy shipbuilding efforts. Section 125 of the House-reported version of the defense authorization bill would give the Navy authority to provide capital expenditure incentives for contractors in the shipbuilding industry.

Members also continue to be concerned about the future of the submarine design and engineering base. They were eager to learn the results of the RAND analysis on the issue, which appears to have validated the Navy's general thinking about accelerating the start of the next SSBN. My sense is that a number of Members strongly support funding for implementing that idea.

Nuclear power for surface ships

The second topic is nuclear propulsion for Navy surface ships. The House Armed Services Committee strongly supports expanding the use of nuclear power to a wider array of Navy surface ships, starting with the CG(X). The committee's interest in this idea is due partly to a concern over the future price and availability of oil, and partly to an appreciation of the operational benefits of nuclear power. As many of you may know, the Navy submitted a report to Congress earlier this year that concludes that nuclear power should be considered for near-term applications for medium-size surface combatants.

Section 1012 of the House-reported version of the defense authorization bill would go further by making it the policy of the United States to use nuclear power for future cruisers or other large surface combatants whose primary mission includes protection of carrier strike groups, expeditionary strike groups, and vessels comprising a sea base. The legislation appears similar in some respects to the Title VIII legislation of the mid- to late-1970s, for those of you who might remember that.

The Navy estimates that adding nuclear power to a mediumsized surface combatant like the CG(X) would increase its procurement cost by roughly \$600 million to \$700 million in constant FY07 dollars. Since the Navy wants to procure two CG(X)s per year between FY15 and FY21, adding nuclear power could therefore increase annual Navy shipbuilding costs in these years by \$1,200 million to \$1,400 million in constant FY07 dollars. This could put additional pressure on other Navy shipbuilding programs, including submarines. On the other hand, the Navy has also testified that building the CG(X) or other Navy surface ships with nuclear power would increase economies of scale in the production of nuclear propulsion components and thereby reduce the cost of these components by as much as \$115 million for each carrier, and about \$35 million for each submarine.

The Navy's AOA on the CG(X), which includes an examination of the option of nuclear power, is due to be completed by the end of September.

China

The third topic I want to mention briefly is China, China's military modernization, including its naval modernization, has become a topic of concern and discussion on the Hill, Section 1244 of the House-reported version of the FY08 defense authorization bill expresses the sense of the Congress that U.S. military war-fighting capabilities are potentially threatened by the strategic military capabilities and intentions of China, as demonstrated by its recent anti-satellite test and the October incident involving the Song-class submarine that surfaced near the Kitty Hawk.

China's submarine-building program is increasingly being cited by those who support U.S. submarine procurement. The argument that we need to procure submarines to counter China's submarinebuilding effort is simple to make and understand, and not without merit. But I am concerned that this argument could encourage a resurgence of the old Cold War stereotype that submarines are primarily ASW platforms, and that the primary reason for procuring submarines is to counter someone else's submarines.

As a naval analyst, I have worked for about 15 years to try to correct this inaccurately narrow stereotype of the roles, missions, and value of submarines. It's a stereotype that, if allowed to spread, could eventually come back bite the submarine community in the butt, like it did at the end of the Cold War.

In light of the momentum of China's submarine-building program, I think it's inevitable that people will cite China's submarine force as a reason for the Untied States to build new submarines. The challenge will be to take the merit in that argument without letting it slide into an oversimplified stereotype that could make it difficult to explain why submarines might also be needed for other reasons.

30-year shipbuilding plan

The fourth and final topic I want to discuss today is the Navy's 30-year shipbuilding plan. In my address to you last year, I noted how last year's 30-year plan would produce a huge shortfall in cruisers and destroyers that was more urgent, mathematically, than the projected attack submarine shortfall, which could give cruiser and destroyer supporters a reason to move ahead of submarine supporters in the line for claiming any additional shipbuilding funds that might become available. As a result, I urged you to offer your help to the surface community in finding ways to address the projected cruiser-destroyer shortfall, particularly in terms of reducing the cost of future cruisers and destroyers.

Well, perhaps the prospect of seeing all of you marching down the hall to help your surface colleagues on this issue encouraged them to focus their minds more sharply on the matter, because this year's version of the 30-year shipbuilding plan reduces the projected cruiser-destroyer shortfall considerably. Instead of a 26ship shortfall, it's now about a 10-ship shortfall.

And how did Navy officials accomplish this? Well, they did it by simply penning in a dozen additional destroyers in the final 12 years of the plan. Instead of procuring destroyers during this period at a rate of 2 per year, the new plan calls for procuring them at 3 per year.

And voila!, the shortfall is much reduced.

But get this: Although the Navy added a net total of about 10 additional ships to the shipbuilding plan, most of which are these additional destroyers, it didn't increase its estimated cost for executing the overall plan. The Navy, in other words, added ships to the plan, but it didn't add any extra money to build them.

With more ships for the same total amount of money, the implication is that the ships in the 30-year plan are now expected to cost, on average, less to build than was assumed under last year's plan. The Navy did this, moreover, at a time when it was learning that at least one of its ships — the LCS — is going to cost substantially more to build than the Navy estimated, not less.

This business of adding ships but not adding any money to pay for them isn't planning so much as wishful thinking. It reminds me of that new self-help book that a lot of people have bought, called The Secret. Perhaps you've heard about this book. You know what the big secret in the book is? Apparently, from what I've read, it's this: That you can get things simply by wishing for them. I'm not kidding, that's it—that if you simply wish hard enough for something to happen, it will.

The writers of the TV show Boston Legal had some fun with this idea on a recent episode, where they had the character played by William Shatner wish for Raquel Welch to walk through his door. But something went wrong and he wound up with Phyllis Diller instead.

Is the Navy wishing for Raquel Welch? And is it more likely to wind up with Phyllis Diller?

I spoke to you last year about the various budgetary risks to the executability of the Navy's 30-year shipbuilding plan. Since then, developments have increased one of those risks, and added a new one. The risk about the Navy's ability to build all the ships in the 30-year plan for a certain total amount of money has been increased by cost growth on the LCS, and by the Navy's decision to add ships to the plan without adding any extra money to build them. And the decision to increase Army and Marine Corps end strength has added a new risk concerning the Navy's assumption about its future top line.

So the executability of the Navy's 30-year shipbuilding plan, including two submarines per year, is as much a question this year, if not more of a question, than it was a year ago. As I've said before, the risk to the plan could become particularly acute starting in FY11 and FY12, when the Navy wants to start procuring two large surface combatants and two submarines per year, respectively.

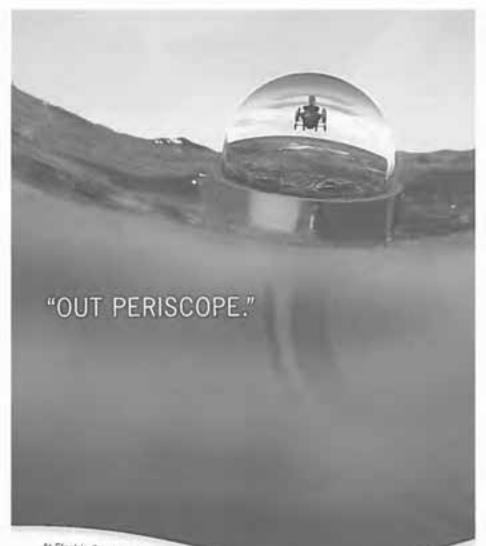
The Navy had a chance about three years ago to help address this looming shipbuilding affordability challenge by starting design work on a new attack submarine that could take advantage of new technologies in a more comprehensive, clean-sheet manner than is possible with the Virginia class, and consequently be equal in capability to, but less expensive than, the Virginia class. The Navy decided against that idea, in part because it wasn't attractive enough in terms of up-front cost vs. downstream break-even point. I don't want to reopen that debate, but I do want to note that this was one of two major opportunities, in terms of new ship class designs, for the Navy to take steps to reduce its downstream annual ship procurement funding requirements. Now that the window of opportunity on that potential new attack submarine has closed, there is only one remaining new ship class design opportunity over the next few years for the Navy to take steps to reduce the procurement cost of a major combat ship that is scheduled to be built in larger numbers, and that is the CG(X).

Because the CG(X) is the one current remaining opportunity in this regard, I have encouraged the Navy to do what it can to make the ship as inexpensive as it can while still being capable of performing its core missions. My hope is that those core missions can be performed by a ship that is substantially less expensive than the DDG-1000. But I have no great expectations in this regard. The Navy has commented several times that it would like to use the basic DDG-1000 hull design as the basis for the CG(X), and that the CG(X) might, if anything, need to be bigger than the DDG-1000, in part because of the powerful radar it is to carry.

If so, then the CG(X) could wind up being at least as expensive to procure as the DDG-1000, if not more so, which will not do much to ease the risk concerning the executability of the Navy's 30-year shipbuilding plan.

I am very concerned about where this situation may be heading, and I think you should be, too. I think I hear Phyllis Diller coming down the hall.

And on that lovely note, I want to thank you again for taking the time to listen to me, and I'll be happy to take your questions.



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ARTICLES

USS GUNNEL (SS253) FIRST WAR PATROL OCTOBER 19, 1942 - DECEMBER 7, 1942 by RADM Joe Vasey and Mr. Jim Lavelle

Editor's Note: This article is based on material in the GUNNEL web page established and maintained by Mr. Jim Lavelle. Mr. Lavelle's father was a torpedoman in GUNNEL during the first several war patrols RADM Joe Vasey was the Gunnery and Torpedo Officer during that time. The skipper was CDR John S. McCain Jr., who as a Vice Admiral in the late 60's was CINCUSNAVEUR and subsequently as a four-star was CINCPAC. He was also the father of now-Senator John McCain. For further information on GUNNEL in WWII please see the website at http://www.jmlavelle.com/gunnel/

Operation Torch

The invasion of North Africa

On October 19th GUNNEL set out for Fedala French Morocco. She arrived several days before D-Day to photograph the proposed heachhead and make a general reconnaissance of Casa Blanca and Fedala.



USS GUNNEL (53 253) Portable View 1945

GUNNEL, under the command of Lieutenant Commander John S. McCain Jr., was one of five American submarines assigned to Operation Torch, a major allied invasion of North Africa, the largest amphibious operation up to that time; a prelude to the subsequent defeat of Axis forces in Italy and the Mediterranean, setting the stage for the allied landings two years later across the beaches of Normandy to liberate France and subsequently crush the German war machine.

GUNNEL departed New London, Connecticut on her first war patrol at midnight on 18 October 1942 under sealed orders and on a secret course for Fedala, French Morocco, a town about 15 miles north of Casablanca. Mel Dry the Executive Officer/Navigator at the time, later reminisced on the importance of the mission during a speech shortly after the war at the Norwich, Connecticut Rotary Club: "One of my experiences on USS GUNNEL could serve as an example of a submarine war patrol in which not a torpedo was fired, but a secret mission was well done."

Prior to departure from New London, a wooden crate 6' x 2' x 2' had been delivered to the boat and carried into the control room, where in the words of Ed Leidholdt: "It was cussed and discussed throughout the voyage as the men maneuvered awkwardly around it in the performance of their duties. Only the Captain and possibly also the Exec, had received any briefing regarding its eventual disposition. The crew called it the secret weapon and speculated endlessly about what the box might contain."

The submarine set course for North Africa, and in the words of Mel Dry: "The Captain then explained our intended part in the Casablanca campaign. We were to be a lighthouse or guide post for our invasion force. We were to proceed to Fedala, a town about 15 miles north of Casablanca, arriving there five days in advance of the day set for the landing. We were to determine the best landing places and make a complete photo reconnaissance (with a camera which could be attached to the eyepiece of the periscope) of the area. We were to remain undetected at any cost and were ordered to fire no torpedoes at any French vessels until a specified time. This didn't mean we couldn't fire at a U-boat if we found one."

"During the crossing of the South Atlantic the Captain called for volunteers for a commando squad in case the sub was spotted by fishing craft—despite best efforts to avoid detection—during the final approaches to the Moroccan coast. The orders: sink, and neutralize the crews. The finalists included Ed Leidholdt, Rembrandt Witt and Lieutenant Lloyd "Joe" Vasey (does anyone remember the others?). Excitement ran high as the commandos trained, fashioned blackjacks, readied the rubber boat and small arms, and blackened faces with charcoal in anticipation of their first boarding. Sorely disappointed their services were not needed, some of the commandos later had the opportunity to show their mettle during war patrols in the Western Pacific." (Ed Leidholdt, Joe Vasey)

Mel Dry continued: "As navigator I found traveling 3000 miles and having to make a land-fall while submerged a new and interesting experience. After five days of submerged reconnoitering and picture-taking by day and nights spent on the surface dodging Moroccan fishermen we had developed some fairly good pictures of our objective. These were made ready for transfer to the first amphibious group."

"One day while we were photographing the Fedala Harbor, two French destroyers were observed moving and stopping. No doubt they were apparently listening on their sound gear. Everyone thought they had heard us, but we made like a dark hole and it was lucky for them we were not allowed to shoot." (Bill Stamper)

Ed Leidholdt continues: "Meanwhile the lid of the wooden crate was finally removed the afternoon of 7 November. Curious heads continually poked into the control room to witness the solution of the mystery. What they saw was a steel frame of approximately the same dimensions as the crate and, mounted on the frame, five small searchlights that resembled the automobile headlights of the time. To each headlight was attached a shutter that could be opened and closed by a 2.5- foot lever. It was clear that this was a signaling device."

"GUNNEL surfaced that evening at a pre-designated time and position two miles off Fedala, and the contraption was taken to the top of the superstructure of the boat, above the conning tower, where a sturdy bracket had previously been welded for mounting it securely. The contrivance could be rotated 180 degrees to cover the area from south to north. The method of operation was obvious to a trained signalman. It was disclosed at that time that the lights were infra-red and could not be seen by the naked eye; they were

visible only to the incoming fleet, equipped with special infra-red binoculars. This phenomenon was new to GUNNEL personnel and, they hoped, to the enemy as well."

The night was very dark, no moon and ideal for the occasion. But the action was soon to start as noted in the skipper's patrol report:

November 7, 1942, 2250 (Z): Pinging of large number of ships heard. Start making prearranged signal on infra red signaling device.

Shortly, Signalman 1/C Leidholdt, standing on the bridge, sighted through binoculars a number of ships approaching from the west. Mel Dry described the ensuing scene: "The armada arrived exactly on schedule, and a sight I'll never forget was my first glimpse of this huge fleet visible for only brief moments during flashes of lightning. All ships were completely darkened but we knew that our fleet was spread out from 500 yards to 25 miles in front of us."

"The Captain had previously ordered me to commence flashing the two-letter signal "FM" over the 180 degree arc. Throughout the night, the bridge watch observed the arriving vessels as they proceeded to their assigned positions, lowered their landing craft into the water, and loaded them with troops." (Ed Leidholdt)

Communications and recognition soon became a matter of life and death for GUNNEL as the approaches to the coast became congested with landing craft and maneuvering warships. American submarines were a rare commodity in the Eastern Atlantic, and nervous allied gunners were inclined to shoot at anything resembling a submarine.

2315: Challenged US Destroyer No. 600 and received proper reply. From then on, one ship after another passed in the dark. Lightning flushes indicated a much larger force than I anticipated.

Historian Samuel Eliot Morrison, in THE TWO OCEAN WAR, stated: "One of the most amazing things about this bold operation (Torch) was the secrecy with which so great an expeditionary force—105 sail (ships) in the Western Task Force (French Morocco) alone.....was assembled and transported......The Germans knew that something was in the wind, but never guessed what."

One hair-raising experience was described in <u>SUBMARINE</u>
OPERATIONS IN WORLD WAR II by historian Theodore
Roscoe: "Suddenly they (GUNNEL) were under the guns of a
passing cruiser—so obviously under the cruiser's guns, that McCain
with no chance to exchange signals, had to bellow his submarine's
identity through a megaphone."

"And if those boys shoot", he shouted down the conning tower, 'we'll give them a torpedo!' Happily the megaphone carried the word to the cruiser's bridge. A close call! It seems the British Admiralty had changed the recognition signals during the night, and the beacon submarines were not advised of the switch!"

"Not mentioned by Roscoe was an earlier message from the American task force commander reporting that Vichy French warships—cruisers, destroyers and submarines—were sorticing from Casablanca harbor. GUNNEL's bridge watch had been alerted to this dangerous situation unfolding and when the passing cruiser was first seen emerging from the mist like a grey ghost, an alert watchstander initially reported it as French."

"Just before first light GUNNEL, its mission as a reconnaissance and beacon submarine successfully completed was ordered by the task force commander to fly the American flag from the jack-staff, illuminate with a spotlight and clear the area at maximum speed, proceeding on the surface to an area off the coast in the vicinity of the Canary Islands. It was a thrilling sight for the bridge watch to see the Stars and Stripes proudly flying in a stiff breeze as the sub started through the armada of American ships." (Joe Vasey)

While American surface ships were still blasting the fortifications at Fedala and Casablanca in the early dawn, and engaged every French vessel they could find, GUNNEL's topside watch standers had a ringside seat to the spectacular fireworks display as noted by Bill Stamper: "I went on watch at 0400 and was in the conning tower by 0345. The excitement by everyone was apparent and when I climbed to the after lookout platform was astounded by the many ships. I was not prepared for the rush of sound that the huge shells made on passing overhead. Nor did I know that we could follow them by the halo-like glow that they made passing through the atmosphere (several of the one- ton projectiles fired by the battleship MASSACHUSETTS passed directly over the sub). There were a few rounds that headed back toward the fleet. I recall that the Vichy French battleship JEAN BART was in the area."

"The Captain allowed crew members topside in relays to enjoy the show. While some were on the bridge and the entire GUNNEL crew all feeling like heroes for having received a Well done from Commander Submarine Squadron Commander 50 then on board the cruiser AUGUSTA, an American plane mistook GUNNEL for a French submarine or U-boat." (Mel Dry)

November 8, 1942, 0430 (Z): Left area on surface at 18 knots, course 045" (T).

0735: Submerged when strafed by Army P-40 plane. This is the first time GUNNEL was fired upon, but not the last.

"A short time before I was to be relieved as aft lookout, I saw something passing before my binoculars. I pulled them down and realized that we were being strafed by one of our own planes. He had dropped out of the overcast shooting. None of us had any trouble making a fast trip down the conning hatch as we dove to safety." (Bill Stamper)

Chief Torpedoman Ralph Bottoms in charge of the forward torpedo room recalled his impression of the scene below decks when the aerial bomb suddenly exploded underwater, severely jolting the submarine: "Some of us crew members were always horsing around and I thought one of the guys had lost his temper and hit me on the jaw. The sudden concussion had knocked me down and I hit the floor plates. A red curtain seemed to fall over my eyes temporarily. The boat was going down at a very steep angle and all kinds of objects were falling off the shelves and out of the lockers. Finally we were able to surface by blowing all ballast tanks and reversing the motors."

Mel Dry commented: "We dived just in time to prevent any damage or personnel casualties. Cursing the zoomies we surfaced in about 20 minutes and proceeded as directed. A friendly plane which witnessed the encounter decided to protect us by giving us escort out of the area."

"The pilot of this single-engine float plane, carried by cruisers at the time, initially contacted the sub via flashing light with a witty greeting: 'Good morning sallow face, I am here to protect you.' Later another plane identified as French (2-engine pusher type?)

approached the sub from the coast but was chased away by our air escort, who pursued it toward the coastline. We never saw or heard from this brave soul again." (Joe Vasey)

0750: Surfaced. Watched bomburdment of Casablanca through glasses.

1202: Submerged from unidentified plane. 1203 plane dropped bomb which exploded over the conning tower knocking paint off bulkhead.

When the American bomber was sighted heading for the sub from the direction of the sun, Executive Officer Mel Dry—who had been called to the bridge—ordered a crash dive when the plane, ignoring our recognition signals, dipped a wing and turned into its dive toward the boat. He later recalled: "Again we dived just in time, but when his bomb went off we were passing 150 feet at such angle we thought we'd never get leveled off. It was a close one—some of the folks in the conning tower were nicked on the face by flying paint chips."

Bill Stamper was in his bunk in the forward torpedo room trying to get some rest after standing watch as a lookout on the bridge. "I was awakened by the diving alarm, and word was passed that a plane was bombing us. We took a really dangerous down angle, but we didn't seem to be going down. There was a report from a talker in the after torpedo room that the screws were breaking the surface. We seemed to just hang there and finally dropped, and the bomb exploded when it hit the water. Several of the lookouts that saw the plane reported it as ours."

Not surprisingly the men on duty in the engine rooms, accustomed to the regular banging and roar of the powerful diesels were initially unaware that the boat was under attack. Rudolph Velle, Fireman 3/c at the time picks up on the story: "Being relegated to the after engine room with all engines on the line, we didn't know or hear we were bombed until afterwards. Such was life in the engine rooms with the deafening noise of the engines pounding on our eardrums incessantly." There was even more danger for GUNNEL that day than was known by anyone aboard the submarine at the time. In a conversation with Bill Stamper after the war, skipper McCain informed him that he had met the captain of a Vichy French submarine who claimed to have fired two torpedoes at GUNNEL off Casablanca.

1800: Proceeded to assigned patrol area. (in the vicinity of the Canary Islands)

"Under orders to look for Vichy French warships, the sub spent the next few days running down and identifying numerous contacts, including fishing trawlers and merchantmen from the so-called 'neutral' nations—Spain, Portugal, and Switzerland. No French naval vessels were seen. On one occasion the Captain maneuvered the submarine to run parallel with periscope exposed, 300 yards abeam of a slow-moving Spanish freighter suspected of hauling war supplies for Germany. Taking turns at the periscopes, GUNN EL crewmen shed no tears, watching the Spanish sailors donning life jackets in a state of panic." (Joe Vasey)

One evening while the sub was submerging near the Canary Islands, the forward engine room personnel reported they were unable to completely close the main air-induction flapper valve; water was coming in. The Captain called for a volunteer to go topside after surfacing to check the problem. Chief Motor Machinist Mate Harry Kaczurre recalled that evening vividly: "Since it was my engine-room responsibility he did not need a volunteer. Machinist Mate Walter Farmer and I would go topside and do what was necessary. We took a bucket of tools in case it was necessary to remove the soft patch and infra-red flashlights. Knowing that the sub might have to dive while we were topside, we tied life-lines to our bodies and the other ends to part of the conning tower but were prepared to cut loose quickly if necessary. We had our life jackets on and knew we would be picked up when the sub was surfaced and all was clear."

"Thank God this was not necessary. We were successful in removing a long piece of driftwood which caused the problem. On the way down the hatch to the control room, I presented it to the Captain as a memento. He rewarded each of us with a shot of medicinal brandy; we both looked frozen from the cold night. Walter Farmer gave me his. He did not drink spirits." November 11, 1942 2148 (Z): Sighted green flare bearing 032'(T) and increased speed to 18 knots. Never able to pick up anything. Each previous experience (2-3), I went down on the initial bearing but decided this time to put the flare on the bow.

"Several more flares were seen over the next ten days, most at night; distances were extremely difficult to estimate. They resembled a Fourth of July pyrotechnic, exploding without warning a few hundred feet over the water, with the green flares spiraling downward for 20-30 seconds, obviously suspended under mini-parachutes. Since no aircraft were detected during any of the incidents, the flares were believed to be U- bont contact or rendezvous signals, with the American sub as the quarry—not a very comforting thought for any of us. Additional lookouts were detailed to GUNNEL's bridge watch while we were on the surface, and the sub made emergency dives on several occasions, attempting to get bearings and ranges via sonar. But sonars were not precise in those days and ranges were limited." (Joe Vasey)

November 13, 1942 1800 (Z): Received from COMSUBRON-50:-1219Z/13 RELEASED FROM DUTY

"GUNNEL was temporarily assigned to the operational control of the Royal British Navy and directed to proceed to a base at Greenock (Roseneath), Scotland, on a route as directed by Flag Officer Submarines (FOSM). These orders were a disappointment to the crew, who had been hoping the sub could stop off at Casablanca for liberty and then proceed to Australia, where the hunting was known to be good." (Mel Dry)

1900: Proceeding on surface as routed by F.O.S.

November 16, 1942, 0738 (Z): Proceeding on prescribed route to Base. Sighted submarine (apparently German) bearing 062' (T) about six miles on parallel course 284' (T). Submerged immediately and came to course 062" (T). Submarine apparently sighted us about the same time for he submerged at 0740. Continued toward him on course 062', rigged for silent running. Nothing was seen or heard.

1035: Gave up and surfaced. Main engine gear train carried away on No. 1 main engine.

"The engine casualty became apparent when an unusual noise was heard in the after part of No. I engine. It was immediately secured by the engine room watch. The control room crew was alerted to the seriousness of the problem when Chief Motor Machinist Mate E. W. Murphy passed through their station on his way to see the Captain. It was clear from Murphy's grim expression and lack of his usual banter that whatever he was holding in his hands, cupped together in front of him, represented some major casualty in the engine room. It would soon be learned that Murphy was carrying pulverized metal from the gear train to No.1 main engine." (Ed Leidholdt)

Subsequent examination revealed the entire main gear train had carried away. Gear teeth on each gear, inspected visually, were found to be sheared off and otherwise distorted......Identical casualties occurred in the other three main engines on November 19.......November 20......and November 25.......(Captain's Patrol Report)³

At the time of the casualty to the last engine, the sub was in an extremely hostile environment one thousand miles from the Scotland base. Bill Stamper later commented, "I believe the skipper of another submarine named his engines after four of the Apostles. Our HORs were in Lucifer's class."

"In spite of the exhaustive efforts of GUNNEL's highly skilled motor macs, it was impossible to revive the engines. The boat now depended for all its electrical power on the auxiliary engine, affectionately known as the dinky and the Cannonball and normally used solely for auxiliary power (lighting, air conditioning, etc.). Re-rigged by the engineers for propulsion, it was capable of only 4 to 5 knots on the surface—and 2.5 knots submerged. Under this puny source of power, GUNNEL limped toward England, often submerged by day and on the surface during darkness, through a U-boat infested area just West of Spain and off the Bay of Biscay." (Ed Leidholdt).

"Meanwhile, it was necessary to break radio silence and report the submarine's predicament to FOSM and US naval authorities. GUNNEL was directed to proceed to the Falmouth naval base on the southern coast of England, and the British offered to send an escort or even a tug to tow the sub. Both offers were promptly and unequivocally declined by Captain McCain as he chomped down hard on his cigar," (Joe Vasey).

"In order to preserve precious battery power for emergencies (dives and submerged operations when enemy forces were suspected or encountered), lighting and the use of fans were cut to a minimum, meals were reduced to the simplest of fare, and personnel were charged with monitoring their individual consumption of fresh water. If the Cannon ball failed, GUNNEL would be dead in the water, without lights, refrigeration or other electrically powered essentials. One of the motor macs tried to inject some levity into the situation by placing a statue of Buddha on a pedestal in front of the dinky and requiring all who passed to bow respectfully." (Ed Leidholdt)

Harry Kaczur remembers one occasion when it almost failed to live up to the high expectations of the crew. He and other engineers were trying to get some rest after their exhausting and heart wrenching attempts to get a few more hours of operation out of the main engines. "Someone shook me and said, 'Get up, Chief, we have troubles.' My answer was that if the Free French were bombing us, I wanted to go down with my boots and saddle [clothes] on. It was Motor Machinist Mate Al Kottenstette from the after engine room, who said the problem this time was with the auxiliary engine."

"The Captain called and asked if repairs were feasible. I reported I had a spare cylinder head and felt that was the extent of the damage. When we dove, the cylinder head was replaced and the engine successfully tested for several hours. We were lucky that no further damage occurred to the engine, bearings, seals, etc."

November 18, 1942, 1116 (Z): Proceeding to Base on prescribed route. Sighted object on horizon bearing 208° (T), distance about 5 miles. Submerged. Object, later identified as US submarine, on parallel course passed 2,000 yards on ninety track, straight bow shot a big disappointment.

November 19, 1942, 1640: Sighted ship bearing 159' (T). 1658: Identified as Anti-Submarine screen of expected convoy north bound.

"Shortly we detected through the high periscope the masts of several other ships coming over the horizon; at first they looked like match sticks. Allied convoys were known to pass occasionally through this area, monitored and under routing and operational control of the Admiralty. GUNNEL also held intelligence reports of small German convoys to and from Southern Africa and beyond about once a month. The Captain licked his chops at the prospect that German ships might soon be in the cross-hairs of his attack scope. It seemed inconceivable that the Admiralty would route an allied convoy through our vicinity without letting us know. Captain McCain ordered battle stations and all torpedo tubes readied for firing."

"But caution was the better part of valor, and frequent observations were made through the attack scope endeavoring to identify
the nationality of the three anti-submarine escorts as they drew
closer. The communications officer, Ed Kneisel, frantically
searched the ship recognition manuals carried by all allied warships
and could find nothing that even faintly resembled the three escorts,
nor was there anything helpful in the manual covering German,
Italian, and French warships. The British liaison officer on board
GUNNEL for this patrol was called to the scope and flatly declared,
"We have nothing even remotely resembling these ships in the
Royal Navy." Our Exec, Mel Dry, looked through the scope, and
hastily examined the manuals, as did I after the Captain pulled me
away from the Torpedo Data Computer(TDC) to observe the
escorts. (Joe Vasey)

"By this time the three ASW ships had detected GUNNEL, and the pinging of their ASDICs (active sonars) was resonating sharply off the sub's hull. This was at 3,000 yards or less as they zeroed in on us; the convoy had already made a 90-degree turn away. Chomping on his unlit cigar, the Captain announced: 'If those b s drop depth charges we are going to give it to them.'

Fortunately, before the moment of truth was reached, the Captain spotted the British ensign flying on the closest escort as it changed course radically causing its flag to stand out stiffly in the wind. We found out later that these ships had fixed sonar, necessitating sharp zig-zags to keep zeroing in on GUNNEL. We were lucky." (Joe Vasey)

1708: Fired red smoke bomb, trained stern tubes on nearest corvette and awaited results.

"The small bomb attached to a rocket fired via the underwater signal tube arched high in the air before unleashing a mini-parachute suspending the bomb beneath with red smoke trailing as it descended. This was a common submarine emergency signal in allied navies. The lead corvette immediately responded via Morse code over the sonar, ordering the submarine to surface, pointed away from the ships. GUNNEL promptly complied and on broaching was in the center of a triangle with the guns of all three warships pointed at us.

"The senior in command aboard H.M.S. Londonderry shouted via a loud hailer (electric megaphone), 'Good thing you fired that red smoke, old chap—we were about to blast you out of the water.' Without further ado, GUNNEL resumed its prescribed routing. Days later on reaching port, we discovered that the US had recently transferred three large Coast Guard cutters to the Royal Navy—not yet noted in the recognition manuals, at least up to the time we departed New London." (Joe Vasey)

At this point the GUNNEL had been fired upon at least 2 times by friendly forces and apparently the captain was not going to take any chances.

1725: Surfaced and proceeded on prescribed route. No. 3 main engine out of commission, casualty same as reported for No. 1 main engine.

November 20, 1942, 1600(Z): No. 2 main engine out of commission, same casualty as previously reported. Auxiliary engine becoming more important as cruise progresses.

November 21, 1942; Proceeding on prescribed route, submerging by day. Discovered broken tooth on drive gear of No. 4 main engine. Auxiliary engine now veritable favorite of whole ship's force. It subsequently took us into port at five knots charging the batteries and air banks faithfully each night. In separate correspondence I have adequately expressed my feelings.

"As the submarine drew nearer to the English coast ,the unidentified green flares were still seen occasionally, usually at night, causing increased concern in view of our vulnerability. Early one morning GUNNEL picked up on radar—allied submarine's one advantage over the U-boats at that time—the presence of another vessel in the vicinity. Lookouts then made out the contours of a submarine in the distance. It could not be positively determined through the haze whether the craft was British or German, but its failure to send a recognition signal raised the strong possibility that it was a Nazi U-boat. Both submarines continued uninterrupted on their courses in opposite directions." (Ed Leidholdt)

"In compliance with directions from FOSM, GUNNEL surfaced shortly before first light November 26 at a designated position 20 miles from Falmouth, England, to rendezvous with a British naval ship that would escort us to port and through the circle of nets, booms, and minefields surrounding the harbor. A vessel was promptly detected via radar, 2-3 two miles away, headed toward us. It was still quite dark and misty when the lookouts identified a surface ship closing fast. Captain McCain ordered the signalman to send the allied recognition signal via blinker tube, and it was repeated a few times with no reply. He ordered the torpedo tubes readied for firing; we were already at battle stations. Finally, after what seemed an interminable wait, a message was received via large searchlight, not blinker tube as we expected: 'Is that you old chap-welcome to jolly old England.' Our escort turned out to be a converted Norwegian ocean-going fishing trawler with a Norwegian skipper, who was just as jolly as his greeting. He soon closed within hailing distance, and his offer to tow the sub was quickly declined by our Captain. Then he invited our skipper to join him for a hearty breakfast and spot of gin. This attractive offer was also declined. However, Bill Stamper recalls that he did send over via motor dory a huge baked salmon which was enjoyed by everyone." (Joe Vasey)

November 26, 1942, 0930 (A): Secured at dock in Falmouth, England, awaiting Squadron Engineer. Decided to proceed to Roseneath on auxiliary engine. For the record, this was Thanksgiving Day. After such a nerve-wracking voyage the crew had much to be thankful for.

"It was with enormous relief to all aboard that GUNNEL arrived safely on Thanksgiving Day in Falmouth Harbor, with its backdrop of verdant slopes on which sheep were grazing. However the security at the harbor entrance and the large number of barrage balloons⁶ being flown around the port left no doubt that this, too, was a war zone." (Ed Leidholdt)

Bill Stamper remembers the grim evidence of German air raids on the port—several ships with masts and superstructure sticking out of the water.

"GUNNEL tied up to a pier used by the Royal Navy to berth its famous motor torpedo boats which operated against enemy forces in the English Channel and the Bay of Biscay." (Ed Leidholdt)

Many townspeople as well as British naval personnel were on hand to greet the sub. Harry Kaczur recalls the scene when he came to the bridge: "Captain McCain turned to me and remarked, 'Look at all those skinny children on the dock. Isn't that awful? What can we do about it?' I suggested we make cookies and hot chocolate and have the children aboard to tour the boat and feed them. He thought this a tremendous idea and called Chief of the Boat James Doggle Renner and Ships Cook I/C Dan Morris (?) to the bridge and directed they put the show on the road immediately. This brought great happiness to the kids, as well as smiling faces and 'God bless the Yanks' from the people on the dock."

The townspeople graciously welcomed the crew to Falmouth with an invitation to a dance that evening. They showed their appreciation of the American sacrifices in the war in every conceivable way. Harry Kaczurre recalls that as our submariners walked along the narrow sidewalks, the English would step aside into the street and chant, 'God Bless the Yanks.' Severe food shortages existed throughout the U.K., but this didn't stop them from inviting our sailors into their homes to share their meager daily food rations, a typical dinner being a small boiled potato, a morsel of mutton, and occasionally a vegetable.

December 3, 1942, 0815 (A): Underway for Roseneath at five knots, escorted by HMS CAPE OF PORTLAND.

"The Captain had declined the British offer of a tow to Roseneath; however, allied submarines were required to be under escort in transiting the Irish Sea. This was a very busy waterway and nervous skippers of merchant ships did not look kindly on submarines.

"The transit was uneventful as GUNNEL followed 1,500 yards in the wake of the Cape of Portland, except for the need to avoid the drifting mines that were routinely dropped in shipping channels by German planes almost every night. They were four feet in diameter, black spheres with horns protruding as in the movies. Gunners Mate 1/c Urban 'J' Walker and his team eagerly demonstrated their expertise as riflemen and exploded several, no doubt saving more than one ship from an unpleasant encounter." (Joe Vasey)

December 7, 1942: Arrived at base.

The base was Roseneath on the Firth of Clyde River. GUNNEL moored alongside the submarine tender USS BEAVER, the depot ship for the boats of Submarine Squadron 50. All hands looked forward to mail, and to liberty in Glasgow, but there wasn't much rest for the engineers who worked around the clock for several days installing new pinion gears for the main engines which had been sent from the States.

AFTER ENGINE REPAIRS AT ROSENEATH



Two subs from SUBRON 30 tied up at Roseneath. USS BEAVER (AS 2) is in the background.



Memorial at Rasenessh, Scotland overlooking the former Navy Base. Dedicated September 2000.

Photos from the book "United States Navy Base Two: Americans At Roseneath 1941-45" by Dennis Royal ENGINE REPAIRS AT ROSENEATH, THEN AN EVENTFUL TRIP TO NEW LONDON January 10-22, 1943

"At Roseneath, GUNNEL tied up to a pier at a facility used by the British Navy for ship repairs and was assigned the use of a nearby shed for the shop work required to repair the main engines. Four new gear-train assemblies had been flown across the Atlantic and delivered to the pier. Under the able supervision of the Chief Engineer Lieut. Ben Strauss and senior Chief 'Spud' Murphy, the engineers worked around the clock for the next two weeks. All hands in the engineering department worked together unstintingly to expedite the repairs, including the auxiliary gang led by Chief Machinist Mate Bryan W. Powell." (Ed Leidholdt)

Ed Kaczur recalled some of the heartbreaks and problems the engineers had to overcome: "I asked our submarine tender moored nearby, USS BEAVER, to magnuflux (X-ray) all gears and the results were not surprising. All main engine gears had minute cracks, were rejected and sent back to the manufacturer. While awaiting the next set of gears, lockers and other equipment were removed from their moorings in the engine rooms to make room to rig chain falls needed to lift the heavy equipment.

"This was normally a shipyard or tender job, but our crew was determined to do it and we did. Finally, with new gears installed, all engines were tested for many hours with frequent stops and inspections. All went well and Lieut. Strauss reported ready for sea to the Captain."

"Liberty in Glasgow had become a favorite pastime for those not working on the engines, and several romances were in full bloom. The most romantic and enduring of all began when our gallant Exec, Mel Dry, pulled rank on one of GUNNEL's officers during a cotillion in Glasgow, cutting-in with a brilliant flanking maneuver to dance with his beautiful partner. Kitty and Mel were married soon after the war."

"After rest and recreation for the engineers—some even made a rail trip to London—GUNNEL departed Roseneath on 10 January. Captain McCain was proud of his crew's performance and had requested permission from command authorities to conduct a patrol in the Bay of Biscay enroute to New London, to give the crew the opportunity to do what all submariners are trained to do: sink ships. The request was denied. By this time the flood of reports of HOR casualties from other skippers finally convinced authorities in the U.S. that the root of the problem was faulty engines, not faulty operating procedures as some bureaucrats had originally insinuated. Now, the Bureau of Ships of the Navy Department was eager to get GUNNEL into a US shipyard and diagnose the problem." (Joe Vasey)

After transiting the Irish Sea, the excitement soon resumed as recalled by Ed Leidholdt: "During a memorable crash dive to escape a sudden night strafing attack by a low flying German aircraft while on the surface charging batteries, the upper hatch of the conning tower jammed in a partially open position. Watch standers later reported they could hear the whistling of the machine gun bullets as they scrambled down the bridge hatch."

"Awakened by the diving alarm and sensing an emergency from the steep down angle and loud voices, I literally flew into the control room from the forward battery compartment to be of assistance. It was a scene I will never forget. Two men were on the ladder struggling in vain to close the lower hatch, but the torrent of water was already too much for them to even see the hatch wheel or its lanyard. Drenched from the incoming sea-water, the Captain was giving orders to use the maximum 3200# air pressure to blow forward trim and all ballast tanks for an emergency surfacing. The fact that German aircraft might still be around was irrelevant at that point; fortunately they had departed when we did surface."

"Spotting the wooden handle of the hatch lanyard dangling on the edge of the water-fall, I jumped on the off-side of the ladder, grabbed the handle and immediately felt two sets of arms around my waist. Together we heaved and were able to tilt the hatch cover from its vertical position when the incoming water slammed it shut." (Joe Vasey)

"With the rush of high pressure air blowing water from the ballast tanks, the boat seemed to shudder and shake as if undecided whether to sink or rise, reaching a depth of 50 to 60 feet before she started up. Hitting the surface, the boat promptly heeled over some 20 degrees from the weight of the flooded conning tower. It had been flooded within a foot or two of the top before the bridge hatch cover could be seated and dogged securely. The men• in the conning tower survived by crouching atop the navigation plotting desk and breathing from an overhead air pocket."

"When control room personnel had seen the green light on the 'Xmas Tree' panel indicating closure of the upper hatch, the conning tower drain was opened and air pressure used to blow water into the partially flooded pump room just below the control room. The safety of the men in the conning tower was the immediate concern; we were relieved to find out they were alive and well." (Ed Leidholdt)

"The pump room had four feet of water. Fireman 3/c Robert W. McGowan, on watch there at the time, later told Bill Stamper that he was actually swimming to stay afloat.

For the next few days, fire-control men, radar tech's and electricians worked around the clock disassembling equipment and flushing everything with fresh water—they were the real heroes of this transit. The Torpedo Data Computer was mechanical in those days, and it was completely disassembled, with parts and blue prints lying around the conning tower deck. It is nothing short of remarkable that this complex equipment was reassembled and operated perfectly—a tribute to the professionalism of EM1/C Allan Braun and his techs." (Ed Leidholdt, Joe Vasey)

"Throughout the crossing, GUNNEL encountered severe North

Atlantic storms. In two storms, dangerous rogue waves washed completely over the bridge threatening the safety of the OOD, quartermaster, and two lookouts on duty there and partially flooding the conning tower and control room." (Ed Leidholdt)

"The situation below decks was uncomfortable, and hazardous at times," as noted by Bill Stamper: "I bunked in the forward torpedo room and it seemed that when we broke through one big wave we would burrow under the next. GUNNEL would moan as if in pain and we could feel the yaw and pitch. She would twist not unlike a brone trying to throw an unwanted rider."

"A few days before we arrived in New London, the seas took a turn for the worst and from my bunk in the torpedo room I heard a thump and mean. Quartermaster 1/C Hunt had been thrown to the deck. The only way to get out of that particular bunk, high above the others, was head first. He landed on the back of his head and neck and was injured severely." (Bill Stamper).

"The patient was carried on a canvas stretcher through the compartments to the tiny sick bay in a corner of the after battery room where he received 'TLC' from Pharmacist Mate 1/C Herman C. Williams until he could be transferred to a hospital. 'Doc' Williams already had his hands full tending to minor injuries, seasickness and several cases bordering on malnutrition, including an officer who appeared to have yellow jaundice. Vitamin and mineral deficiencies were problems in the Submarine Force until more sophisticated techniques for provisioning were developed." (Joe Vasey)

January 22, 1943 arrived New London .

Note: As of this writing, we have been unable to locate a copy of the Commanding Officer's official report on the passage from Roseneath to New London. The comments above are the recollections of shipmates. During a speech to the annual Submarine Birthday Ball attendees at the Royal Hawaiian Hotel in Honolulu in 1972, Admiral McCain, then serving as Commander-in-Chief, U.S. Pacific Command (CINCPAC), related the story of the strafing attack by German aircraft and the ensuing flooding incident.

ENDNOTES

 Herring proceeded to a position 15 miles south of Casablanca. Three other American submarines were assigned to other areas off the coast for important missions in support of Torch. The main show was at Fedala-Casablanca. By this time German naval headquarters had alerted U-boats to the lucrative targets in the area; within three days six American ships were torpedoed off Fedala.

 Five other subs in the squadron with the same diesels — Hamilton, Owen, Renschelear(HOR) — had similar casualties, due to faulty engine design. All

eventually re-engined in American shipyards.

 Large balloons tethered to the ground and hundreds of feet in the air, surrounded military bases, cities and industrial areas of the U.K., forcing German planes to fly high—exposed to anti-aircraft barrages.

Epilogue

As stated in a letter from the Commander Submarine Squadron 50 to the Commander US Naval Forces Europe:

"The GUNNEL's first war patrol covered a passage from the United States to Base TWO, United Kingdom, during which she was assigned to a special mission as part of Task Force Thirty-Four (34). Developments were such that no targets were presented. However the officers and crew of the USS GUNNEL can be justly proud of the part they played as a reconnaissance and beacon submarine in the successful execution of an extremely difficult landing of a large expeditionary force on a strange and poorly charted coast. The effect of this effort on the progress of our war effort cannot be overestimated."

Main Engine Loss Statistics

No. 1 M.E. November 16 after 444.3 hours of operation

No. 3 M.E. November 19 after 526.5 hours of operation

No. 2 M.E. November 20 after 480.9 hours of operation

No. 4 M.E. November 25 after 527.8 hours of operation

Patrol Statistics

Miles steamed = 7,501 Fuel Oil expended= 69,110 Patrol Length = 49 Days

AWARD OF SUBMARINE COMBAT INSIGNIA IS AUTHORIZED FOR THIS PATROL

The following picture of the crew was taken on Midway Island
January 11, 1944.



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STORY OF USS FLIER 2^{NB} PATROL AND ITS SURVIVORS PART I OF III PARTS

by Mr. Alvin E. Jacobson

This account of several submariners' heroic efforts to survive the sinking of FLIER in the Japanese-held Philippines came to THE SUBMARINE REVIEW through the courtesy of Captain Herb Mandell, a WW II submariner and author of Submarine Captain and Command at Sea. This account was self-published in 1997 by Mr. Jacobson, who had been a Junior Officer in FLIER, and was revised by him in 2002. Some draft copies had been circulated several years ago and it is possible that the article has been published or excerpted in other venues. Captain Mandell has arranged with Mr. Jacobson for permission to publish his story in these pages. It is with gratitude that the RE-VIEW can give wide distribution to this important piece of the World War II submarine story.

Mr. Jacobson included several addenda with his story and two regarding the mining of waters in which FLIER was lost are republished here with Part I.

August 4, 1944, USS FLIER (250) left Fremantle, Australia to start its second patrol. The officers and crew were, with a few exceptions, the same as were on the first patrol. The officers were Commander J. C. Crowley, Captain; Lieutenant J. W. Liddell, Executive Officer; Lieutenant Paul Knappe, Engineering Officer, Lieutenant Edward Casey, Gunnery and Torpedo Officer; Lieutenant JG Bill Reynolds, Communication Officer; Ensign Herbert (Teddy) Baehr, Assistant Engineering Officer; Ensign Herb Monor, Communications Officer; Ensign Philip Mayer, Under Instruction, and myself with Commissary, Assistant Gunnery and Torpedo and Assistant Navigator.

After a night training period, we left Fremantle and late the next afternoon put in at Exmouth Gulf to refuel. We stayed there that night, leaving early the next morning. On our way out of the Gulf, we had target practice on a ship that had run aground several years before. This ship has the distinction of being shot at by more submarines than any other ship in the world. Every sub that passed it would fire at it.

We headed for Lombock Strait, which was our passage through the Indonesian chain of islands. When we were about twelve hours from Lombock Strait, we had an engine explosion, which we at first thought would force us to turn around and go back. However, Herb, the assistant engineering officer, said he thought he could and did fix everything.

Our passage through Lombock was the usual kind. This is where we were chased by two sub chasers but with our radar we were able to out-maneuver both of them.

We passed up through Makassar Strait, the Celebes Sea and the Sibutu Passage into the Sulu Sea. We would stay on the surface at night and during the day until a plane would drive us down.

On Sunday, August 13, we received a dispatch saying there was a Jap convoy going down the West Coast of Palawan. This meant that to catch it we would have to make the passage through Balabac Strait. Our assigned area was off the coast of French Indo China with the special assignment of trying to get four supply submarines that were operating out of Saigon and supplying Jap outposts. So, rather than going north of Palawan through Mindoro Strait, we started through the Balabac strait to try and intercept the convoy. The route through Balabac Strait was given in an annex to the operation order.

At 2045 I relieved Ensign "Teddy" Bear as Junior Officer of the Deck and he relieved me at plot in the control room. My station was on the after-eigarette deck. Lt. Ed Casey was the officer of the Deck. At 2130 the Captain called battle stations for the conning tower and also had Lt. Bill Reynolds and Ensign Phil Mayer come on the bridge as additional officer lookouts. Thus, we had four officers, four lookouts and the Captain on the bridge.

About 2150, radar reported Camiran Island 7,800 yards, bearing 174 true. At about 2200 with Camiran Island bearing 190T and 6,700 yards, I was admiring the mountainous silhouettes on three sides of us, when suddenly a terrific gush of air came out of the conning tower hatch. Bill Reynolds was blown back to me and complained of a side ache.

I thought, at the time, that it was only an air bank that had let

loose, so I told him to lie down; but before he had a chance, the boat started to go under. As I was talking to Bill, I remember seeing Phil dive over the side.

As we went under, I was sucked down about 15 to 20 feet. My first impulse was to struggle to the surface, because I could picture the screws coming by me. Upon reaching the surface, it dawned on me that I was shipwrecked. After looking around I had it impressed upon me that it was serious because I could not see any land or stars in any direction. The water was warm with about one-foot waves. There was an oil slick on the surface which made opening the eyes or mouth unpleasant. It wasn't long before I heard some shouting; so I swam towards the noise and found the rest of the group.

At this time, remembering my lifesaving instructions about taking off your clothes in such an emergency, I did, all except for my trunks and t-shirt. This I later found out to be a very grave mistake. Before discarding my pants, I took out my knife. However, I had no way of carrying it, and soon lost it. I kept the binoculars I had while standing my watch. They were on a strap around my neck and almost floated, so they did not bother me much.

When I joined the group, the main topics of discussion were; what had happened, where we were, and how to get the rest of the fellows together. It wasn't long before we were all in one group. As far as I can figure and know, there were fifteen people who got off the sub and started the swim.

The Chief of the watch was the only man who was able to get out from below the conning tower and he was in such bad shape that he was not able to stay affoat for any length of time. A quartermaster was not able to get out of the conning tower.

To give you an idea of the extent of the power of the explosion, Jim Liddell, who at the time was standing in the conning tower hatch talking to the Captain, had his shirt taken off by the gush of air and it lifted him up to the bridge. He weighed over two hundred pounds. The Captain said he was blown aft to the cigarette deck and before he could get back to sound the collision alarm, the boat went under. The men at the T.D.C. and sonar can only remember pulling for all they were worth on the periscopes to get in the gush of air from the control room, and the next thing they were out of the ship and in the water. Several of the people coming out of the conning tower were caught in the guardrail of the signal bridge.

After the group was assembled, the question naturally arose as to what to do next. Jim, being the navigator, told us that there was land around us on three sides, the distances varying from fourteen to thirty miles. He said we could possibly try to swim to Camiron Island, which was only about two miles away, but it was so small that the chance of missing it was too great. However, it made little difference if we tried to plan where to swim, because there were no stars and we could not see any land, therefore, we had no means for direction. About three or four times during the night, we saw flashes of lightening, which showed up a mountain peak that was about thirty miles away. We knew we didn't want to swim in that direction. A few minutes after the lightening you completely lost your sense of direction again. Also, a couples of times you could see a group of stars which Jim said were the false cross. I'll never forget swimming the side stroke and looking back at them.

We decided that we would try to keep swimming at least in some direction, because we would probably be a little better off that way than if we just stayed where we were. It was finally decided that we would, as nearly as possible, keep the waves slapping us on the left cheek. This, however was a problem, because you rolled up and down with the waves. During the night, we tried to keep together in a group as much as possible. I do not know what type of course we swam, and I will not say we swam a straight course either, because I remember crossing the oil streak at least three times. The only things that came up from the boat, other than the oil, were pieces of cork about the size of a baseball. These few pieces were of no value because no one had a way to use them.

After about two hours of swimming, Chief Pope called over to Jim and asked how far he thought we would have to swim. Jim, trying to be encouraging, said: "About nine miles." Pope then said: "To hell with this," and stopped swimming. This is the same man that when FLIER ran aground at Midway and the waves were breaking over the deck, they tied a line to him and he crawled out to the bow to fasten a tow line.

Jim was troubled several times with a cramp in his leg; but, by taking the muscle and pinching it as hard as we could, it seemed to go away. This is an extremely painful procedure but it must have worked.

I had a second chance to get a knife when I helped Ed Casey take his pants off and I got his knife out of his pocket. However, I also lost it, because there was not a way to carry it.

We all agreed upon the policy that it would have to be every man for himself. This was because the distance to swim was unknown and it would be unfair to anyone to ask assistance of them. This policy was willingly agreed upon by everyone, and to my knowledge was carried out by everyone. To give an example of how this was carried out, the explosion blinded Ed Casey so that he could not see the rest of us. At the same time, he, for some reason could not swim on his stomach. This made it hard for him to keep up with the group. He would often start swimming off to one side and we would have to call him back; once he went quite a way off and I went over to help him back. When I reached him and told him to rest a minute and I would push him back, he refused and said; "remember that we agreed that every man was for himself," thus he would not let me help him. As we were swimming back, he would joke about the parties we had previously planned to have when we got back to Perth, Australia. It was not more than ten minutes later that we saw no more of Ed Casey.

This, to me, was one of the greatest signs of courage that any man could show. I remember when Paul Knappe, swam to one side and never came back to the group. I didn't realize why he swam away until he didn't return. This type of courage was also demonstrated by all seven fellows who were lost while swimming, because, to my knowledge, none of them in any way asked for help. When they figured that their time had come, and they could swim no more, they simply swam to one side without saying anything.

About 0300 the moon rose to help us hold a direction to an unknown destination. It was not until daylight, approximately 0500, that we were able to see any kind of land. At daylight, we picked out what we thought to be the closest island and agreed to swim to it at each person's own pace. I stayed with Howell and Baumgart. Russo immediately swam ahead and was the first to hit the beach.

During the afternoon, about 1300, a Jap patrol plane passed over us, but the pilot did not change his course, so we felt he had not seen anything.

About two miles off the beach, we saw what we thought might

possibly be a native boat, but, after trying to signal it, we decided it would be better to avoid it, and swim straight for our island. As we approached it, we found that it was only a floating palm tree; but we were thankful to find even that and climbed up on it to look around for the other fellows. We saw the Captain and Jim and waved to them to come over and join us. The Captain said he was just about ready to give up when he saw us but then decided to try to reach us. Later we saw Tremaine and hollered at him and he hollered and waved back at us but avoided us. This we couldn't figure out until later when he told us he didn't hear us and thought we were native fisherman. But if they weren't friendly enough to pick him up he wasn't going to chance coming to them. So, the five of us hung on to the palm tree the rest of the way in.

As we approached the island, we began to imagine seeing houses, etc., but, as we came closer, we could see that there was only one beach of about seventy-five yards that we would be able to lay down upon. Therefore, we headed for that. We were able to touch bottom about a block from the beach.

At 1530 in the afternoon, by the captain's and my watch, we sat down on the good earth, which made about seventeen hours of swimming. This island was Byan Island, we did not know about it then, but I have checked the charts since coming home.

The strange thing I found about the swim was that I had to fight with myself to keep from going to sleep. Also, I found that the breaststroke was my best stroke. I could not use one stroke very long, because I would tire too much that way, so I used three different strokes, mainly the side stroke, back stroke, and breast stroke. I do not remember thinking about anything special except I do remember repeating the 23rd Psalm, which surprised me.

Also, I believe as a result of my experience anybody who can swim for a couple of hours should be able to swim for a good deal longer if they do not give up or get panicky.

All the fellows who went down did so in the first two or three hours, with the exception of one, who became panicky just before sunrise, and that was the last we saw of him.

We all stopped at the sandy beach, and Jim walked around the end of the island, to see if he could find any of the others fellows. He found Tremaine there. Russo had swum ahead and was waiting for us at the beach. He arrived ten minutes before we did. Thus, there were seven of us together at that time. They were: Commander J. D. Crowley, our Captain; Lieutenant J. W. Liddell, Executive Officer; Ensign A. E. Jacobson, Jr.; Chief Gibson Howell, CRT; D. P. Tremaine, FCR and; J. D. Russo, QM 3rd; and E. Baumgart, MOMM3C.

While walking toward the sandy beach, we found one drifted coconut that sounded as though it might be good, so, after making a poor excuse for a lean-to, we opened the coconut and got about two tablespoons of coconut milk and a piece of coconut about an inch and half square each for supper. However, none of us could hold it down and we lost it right away. We then layed down and tried to get some sleep.

After trying to build a lean-to and open the coconut with our hands, we realized how much we were going to miss a knife of some kind. I would like to make a recommendation to all wartime sailors—to always carry with them a large jack knife which has one 3" blade on one side and a marlin spike on the other. This knife should then be carried in a sheath, which fits on to a belt, so that the clothes can be taken off and you can carry the knife on the belt around your waits or that has a loop that will fit around your neck.

We huddled together as we slept trying to keep a little warmer, We didn't think it was wise to try to build a fire, because it might attract attention from the Japanese city, which we knew to be on another island. However, tired as we were, little sleep was gained, because of the sunburn we had, which gave us a fever. Every time we moved to try to get into a more comfortable position, the sand would rub against the sunburn and it would be mighty uncomfortable. I spent most of the night lying and wishing, more than anything, that daylight would come so that I could get warm and stop shaking.

We rose at sunrise and decided we had better look around the island for some food and water. By this time, we had made enough of a search of our end of the island to know that there was no water which we could drink around there. Jim and the Captain were to go around one way to the other side while Baumgard and I were to go around the other way. Howell, Tremaine and Russo were to stay and try to improve the lean-to and also watch the spot where the boat had gone down. Howell had wrenched his knee while leaving the boat, which made walking difficult.

The island was about three miles long and two blocks wide. It was made up of coral and was probably about fifteen feet high at its highest point. There were large trees, some one hundred feet high.

Walking, we found out now, was going to be one of our major problems, because all of us had made the mistake of discarding our shoes and the coral was very sharp and cut our feet. This discomfort of walking barefoot could have been avoided had we used our heads. If we had tied our shoes together and hung them around our necks, it would not have bothered our swimming too much, and we could have then kept them. That is the way I carried the binoculars and I had no trouble with them.

I walked down our side of the island and found plenty of coconuts, but they were all spoiled and rotted to the extent that they were not edible. We could not tell that they were spoiled until we opened them. I assure you that it was very discouraging to open an inviting looking coconut with your bare hands and then find nothing in it.

About 1630 we ran across Wesley Miller, MOMM 3/c. He swam to the other end of the island and had spent the night down there. He told us that there was nothing on that end of the island; so we turned around and started back, getting back to camp at about 1800. The Captain and Jim were there also and reported the same kind of luck as we had. Therefore, we turned in that night with nothing to eat and it was definitely agreed that we could not stay on this island.

REUNIONS

USS CAPITAINE SS-336

Oct 15-17, 2007

Loc: Airzona Charley's Boulder in Las Vegas POC: Gary LaRonge, Phone 775-751-9435

E-mail: saltacer552@juno.com

USS JAMES MONROE SSBN-622 Oct 15-18, 2007

Loc: Ramada Inn & Conference Center Branson, MO Reunion web site: http://www.jamesmonrocreunion.org

POC: Jim Bayliss, Phone: 314-428-6355 E-mail: 622reunion07@sbcglobal.net

USS TUNNYSS/SSG/APSS-282 Oct 17-21, 2007

Loc: Holiday Inn/Bayside San Diego, CA POC: Lee Ashcraft, Phone: 508-699-0931

Web Site: http://home.comcast.net/-leeash.index.tm

ROBALO STORY (or what could have happened to the FLIER Survivors)

On July 2, 1944, 49 days before USS FLIER was sunk, the U.S. submarine ROBALO SS273 was going to the Balabac Straits heading West using the Lumbucan Channel which passes on the southern side of Comiran Island. This is known because native fishermen since the war have reported seeing a submarine resting on the bottom. Admiral Christie's order gave them permission to use Balabac Straits even knowing it had been mined. Their orders stated to stay in deep water.

At 1940 (7:40 p.m.) July 2, 1944 while ROBALO was running on the surface, it hit a mine. The explosion was so great and the submarine sank so fast, no one in the conning tower or below got off. Thus, 73 men went down and were lost with the submarine. There were ten men topside, on the deck and lookout stations. All ten men were seen in the water. They had no life preserver equipment.

Three of the men disappeared right away. LCDR Mainish Kimmel, the captain, with the rest drifted toward Comiran Island. About midnight he became separated from Ens. Tucker due to darkness. About 0900 Laughton saw Captain Kimmel. He was exhausted and could only float on his back. About an hour later Kimmel disappeared. PO s/C Poston and PO 3/C Martin were the first survivors to reach Comiran Island. They landed approximately 1100 July 3, 1944, after 15 hours in the water and a distance of approximately 10 miles. Ens. Tucker landed approximately 1300 or 17 hours and PO 1/C Laughlin approximately 1400 or 18 hours in the water. They waited three hours to see if any more would come ashore before checking out the island.

They were able to collect some rainwater in shells but found no good coconuts or food. They build a raft and on July 6 about 1100, 3 days after arriving, they left Comiran Island for the large island Balabac, about 10 miles away. They could plainly see the island both day and night. They reached Balabac Island about 0900 on July 7, in the vicinity of Maluguing Log River and a coconut grove. Two local natives reported them to the Japanese Naval Garrision Unit in Balabac City and they were captured about 0900 on July 8.

On July 10th they were transported from Balabac Island to the prison camp at Puerto Princesa on Palawan Island a distance of approximately 175 miles for questioning by the Kempei Tai. It was during the transportation that the Guerilla outpost at Cape Baliluyan on the southern tip on Palawan Island heard about the survivors and sent word to Bugsuk and other islands to keep a lookout. That is why the guerillas were there to rescue us.

While the survivors of ROBALO were captives of the Kemp Tai in Puerto Princesa, they were beaten and tortured to get submarine information.

On August 19, 1944, the four submarine prisoners, Ens. Samuel Tucker, PO 1/C Floyd Laughlin, PO 2/C Mason Poston, PO 3/C Wallace Martin were transferred to the Japanese freighter Takao Maru and signed for by its captain Aida Sakutaro. They were to be transferred to Manila.

There are no known records if the Takao Maru made it to Manila or transferred the prisoners to any other organizations. There is a record of a public execution held in Manila in August or September 1944 during which four submariners were executed. None of the four returned after the war.

Even if they were not transferred to Manila they would not have survived. When the American bombers appeared in the sky over the Kemp Tai prison camp in December 1944, the Japanese forced the prisoners into a pit, poured gasoline over the prisoners and ignited the pit and its contents. When the American forces liberated the island in February 1945, the charred bodies of 140 prisoners were found under three long mounds. These bodies were recovered and 123 were re-buried on February 14, 1953, in a mass grave at Jefferson Barracks National Cemetery, St. Louis, Missouri.

Yes, that is what could have happened to the FLIER survivors if we had swam the 1½ miles to Comiran Island but some unknown power had led us in a different direction.

BALABAC STRAITS

Admiral Christie gave operating orders to use the Balabac Straits knowing they were mined. The Balabac Straits were first mined December 6, 1941 and by the mine layer IJN Tsugaru in March 1943. U.S. code breakers had given Admiral Christie at least four intercepted messages regarding the minefields, containing

specific details, which waters in the straits were mined or were likely to be mined. Since the Japanese mined the straits in March of 1943 and the loss of FLIER and ROBALO, the straits have been used over 40 times, in fact, Captain Kimmel in ROBALO had made a passage, westbound in April of 1944, and again on July 3, 1944, going eastbound.

ROBALO was sunk going east on July 26, 1944. Both ROBALO and FLIER had detailed instructions on how to make the passage. It is believed that the U.S. did not realize that the Japanese, 600 Type 93 Model 1, Deep Sea Contact Mine, could be laid in the depth of the water of the main channel.

After Admiral Christie received the information on FLIER and ROBALO, he declared Balabac Straits off limits and routed his subs into the south China Sea by the way of Karmatz Straits southwest of Borneo. Because there were survivors from FLIER, there was an official investigation of FLIER and the use of Balabac Straits. Admiral Christie got a clean bill of health, as they found no fault with him.

I found it very interesting that the Japanese mine layer IJN Tsugaru, that laid the mines that probably sank FLIER and ROBALO, was sunk by the submarine DARTER on June 29, 1944, off Mortin Island in the Molucca Sea, 720 miles from Balabac Straits. Hence the minelayer was already sunk by the time her mines sank FLIER and ROBALO.

If you are interested, Mr. David McGee of Bridgewater, New Jersey, has received an estimate of the cost to salvage FLIER, \$370,000 - \$475,000 depending upon how fast it could be located.

The native fishermen have located the submarine FLIER sitting on the bottom in approximately 60 fathoms (360 feet). This is too deep to inspect the submarine without very special equipment. For approximately \$90,000, you could hire a salvage ship with side scan sonar and take some pictures. I would like some pictures of the forward and after torpedo room hatches to see if they are open. If not open, we would know no one was alive after the explosion and tried to escape.

THE WILD WEST & THE OCEAN DEPTHS

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

o some families have a date with destiny? The following is the tale of two related men, separated by several generations, yet each was killed by hazards indicative of their time and exceptional place.

Part 1 - Henry McCarty was born on New York City's east side November 23, 1859. His father soon died, and his mother Catherine migrated with Henry and his brother to Indiana in 1865. There, Catherine met (and eventually married) Bill Antrim. The family moved on to Wichita, Kansas, then to Santa Fe and, finally, Silver City, New Mexico by 1873, where Catherine died of tuberculosis the following year. Henry McCarty/Antrim was just 14 years of age.

In Silver City, Kid Antrim, as he was then called, was arrested for alleged theft but escaped jail and began wandering the desert southwest and northern Mexico. In Arizona, he took up horse rustling, and on August 1877 he got into an argument in a dance hall. The confrontation moved to the street where, being no match for the much larger man, he grabbed the man's gun and shot him in the stomach. The man died the next day, and Kid Antrim was arrested by the Justice of the Peace. He was tried before a jury which stated that the crime "was criminal and unjustifiable, and that Henry Antrim, alias the Kid, is guilty thereof." He was put in the jail, but he escaped after just a short time and headed for New Mexico.

In January 1878, he found employment with the young English rancher John Tunstall, who together with his partners John Chisum and Alexander McSween, was embroiled in a bloody Lincoln County Range War. This war was actually a struggle between the two rival groups of businessmen and ranchers.

When Tunstall was murdered February 18, 1878, the Kid, now known as Billy the Kid, vowed vengeance on every man who participated in that cruel, wanton murder. He joined a force that became known as the Regulators, led by Tunstall's foreman Dick Brewer, who vowed vengeance and loyalty to partner McSween. Henry The Kid Antrim now became known as Billy The Kid. The war became one of kill or be killed.

The Regulators embarked on a killing spree of those suspected of involvement in the assassination. Billy then hatched and carried out an ambush plot for the leader of Tunstall's murders, Lincoln County Sheriff William Brady. On April 1, Billy and the Regulators murdered Sheriff Brady and his deputy George Hindman as they strolled through the town of Lincoln.

The Lincoln County War came to a bloody end during the fiveday Battle of Lincoln in mid-July 1878. Billy had returned to Lincoln and, while in the McSween home, was surrounded by the local Law. After Billy had been in the McSween house for three days, Sheriff Peppin sent a note to the Fort Stanton Army Post. Two squadrons of buffalo soldiers were sent to assist the Sheriff. When they arrived at the McSween house, the Sheriff sent one of them around to the back of the house to set it on fire. There were 11 men and three women in the house. By dusk all three women were out of the house. Three men attempted to leave, but were shot down in the doorway. Mr. McSween tried to leave, but was shot as well. Six more men tried to leave, but were also shot. Billy was the last to leave. He ran out of the front door with a pistol in each hand. By the time he had escaped, he had killed the man who shot McSween and wounded two others.

Billy soon formed another gang and took up cattle rustling throughout the county again. Governor Lew Wallace (author of <u>Ben Hur</u>) offered a \$500 reward to anyone who would capture William Bonney, alias *The Kid*, and deliver him to any sheriff in New Mexico.

Then entered another key individual in this story of the Wild West. Patrick Floyd Garrett was born in Chambers County, Alabama, in June 5, 1850, one of seven children, the son of John Lumpkin and Elizabeth Ann Jarvis Garrett. A tall, thin and angular man with prominent cheek bones, Pat Garrett left his Louisiana home at age 19 and moved to western Texas. As cattle rustling was rampant at that time, he worked both as a cowboy and cattle gunman for the LS Ranch. He then became a buffalo hunter, however he soon got into an argument with a fellow hunter over

some hides. The altercation escalated to gun play and when the other man drew on Garrett, Pat shot him dead. By 1878 he had settled in Fort Sumner, New Mexico, after the slaughter of buffalo became unprofitable. There he married his first wife, Juanita Gutierrez, but she died before the end of the year. On January 18, 1880, he married his first wife's sister, Apolinaria Gutierrez, and over the following years the couple had nine children. In November 1880 Pat Garrett had been elected Sheriff of Lincoln County, vowing to bring the current reign of lawlessness to an end. He was a good Sheriff at the time New Mexico needed such a man.

In December 1880, Sheriff Pat Garrett and his posse trapped Billy the Kid and his companions in a one-room rock house at Stinking Springs, near Fort Sumner. After a three-day siege, the gang was captured on December 23, 1880, and Sheriff Garrett took the shackled prisoners by buckboard to the town of Las Vegas.

On April 8, 1881, Billy went on trial before Judge Warren H. Bristol in Mesilla, N.M. He was facing two charges - 1) the murder of an officer on an Indian reservation, 2) the murder of Sheriff Brady. He was found guilty on both charges and the judge ordered that the prisoner be delivered to the custody of Lincoln County Sheriff Pat Garrett and that on Friday, May 13, 1881, William Bonny, alias the Kid, alias William Antrim, "be hanged by the neck until his body be dead."

The Kid was taken to Lincoln where he was chained to the floor of a second-floor room in a vacant store. Once the prisoner was secured, Sheriff Garrett dismissed the posse men except for Bob Ollinger and Jim Bell, who were assigned as guards until the hanging. However, on April 28, while Sheriff Pat Garrett was out of town, The Kid escaped. He had been playing cards with guard Jim Bell through the bars of his cell. While Bell was guarding the prisoner, Bob Ollinger, was having lunch in the saloon across the street. Billy obtained a gun from a hidden place and shot Bell. Ollinger heard the gunshots from across the street and ran outside to see what had happened. Billy had gone downstairs to the office and grabbed a shotgun. When Ollinger ran out into the street, Billy was in an upstairs window. He aimed at Ollinger and shouted, "Hello, Bob!" When Ollinger looked up, Billy shot him. Billy then ran into the street, stole a horse, and rode out of town.

With this major turn of events, Sheriff Pat Garrett was intent on

bringing Billy the Kid to justice. During the next two and a half months the Sheriff scoured the countryside searching for the Kid. Finally, on July 14, 1881, Sheriff Pat Garrett and Deputies Poe and McKinney rode to Fort Sumner, N.M. Garrett and Billy had a mutual friend, Pete Maxwell, who lived there. Garrett wanted to ask Maxwell if the Kid had been around lately. The men reached Maxwell's bouse at around 11:00 p.m. Garrett went inside to talk to Maxwell, and the deputies waited outside on the porch. Around midnight a small man came out of one of Maxwell's outbuildings. He asked Poe and McKinney who they were, but they wouldn't tell him. They didn't recognize him, and he went inside to ask Maxwell who the men were. He stepped into the bedroom where Garrett was sitting on the bed. Billy assumed the man in the dark was Maxwell and asked him who the men outside were. Garrett, recognizing the voice, drew his revolver and Billy asked who he was. Garrett shot into the dark, jumped aside, and shot again. One of the shots hit Billy in the heart, killing him. Although he didn't live to celebrate his 22nd birthday, Billy the Kid remains one of the notorious legends of the American West, and Pat Garrett was the sheriff who brought him down.

In April 1891, Pat Garrett (no longer Sheriff) moved his family to Uvalde, Texas, southwest of San Antonio. There he settled down to a more relaxed life and devoted his energies to his dreams of irrigation. Also, in July 1896, he became a United States deputy marshal. He needed the extra money and the government needed his services in the area. However, eventually failing in his irrigation efforts, he sold his Uvalde property to John Nance Garner¹ in 1900 and moved back to Las Cruces, near the town of Roswell, New Mexico. He made trails to the gold and turquoise mines in the Jicarilla Mountains, he followed the trails of Albert Fountain, trying to solve his mysterious disappearance. On December 16, 1901, President Roosevelt nominated Pat Garrett collector of customs at El Paso and sent his name to the United States Senate for confirmation. Confirmation came on December 20.2

In 1908, Pat Garrett engaged in a potential land deal, however the terms were never agreeable to either party. In fact, hard feelings resulted and Garrett became a target of revenge. While riding a buckboard on the trail from Organ to Las Cruces, Sheriff Garrett was murdered by a six-shooter in the hands of a disgruntled acquaintance. He is buried in the Masonic cemetery in Las Cruces. Pat Garrett left his mark on New Mexico in many ways; one of significance - his daughter Elizabeth wrote O Fair New Mexico, the state song.

Part 2 - I learned of the story of Pat Garrett and Billy The Kid shortly after I reported to New London for the fourth nuclear power school in mid-1957. A classmate was Pat M. Garner, who conveyed to me that he was a direct descendant of the famous Sheriff Pat Garrett³ of Billy the Kid fame. Thus the ancestry of Pat Garner was soon a topic of discussion.

Born in Memphis, Tennessee, on 26 September 1931, Pat Mehaffy Garner was the son of Samuel Camp and Sarah Lucille (Mehaffy) Garner. Pat graduated from Vanderbilt in 1953, received his gold dolphins while on SPIKEFISH and then served on SKATE where he participated in three Arctic trips under the polar ice cap. He also was nominated by the New London Junior Chamber of Commerce as one of the ten most outstanding men in the Nation.

After completing nuclear power school in New London, the class reported for prototype training at the National Reactor Training Station in Idaho. After completing that training in mid-1958, Pat and I parted our ways. It was not until 1963 that we met again. I had reported to the Portsmouth Naval Shipyard to join the pre-commissioning crew of JACK as the Executive Officer. Pat Garner recently had reported as executive officer of the sister ship USS THRESHER. THRESHER was the best of the newest. The ship was the first of a new class of submarine, designed for optimum performance of sonar and weapons systems, was able to dive deeper and run quieter than any other submarine at that time.

I had been in the commissioning crew of our fourth nuclear submarine USS SWORDFISH (SSN 579), a submarine of much different characteristics, so when THRESHER was about to conduct her next sea trial, I decided that I should try to go along in order to learn as much as possible about the operational aspects. Pat was agreeable to have me ride during the trial, but wanted to get the concurrence of the CO, John W. (Wes) Harvey. Pat suggested that I have dinner with him and Wes at the Shipyard's BOQ that evening, where the subject could be discussed. I joined Pat and Wes

and after an enjoyable meal Wes advised that approval for me to ride was dependent on the total number of riders, and that I should come down to the ship the next morning.

At about 0700 on April 9, 1963, I boarded THRESHER and met Pat in his stateroom. He said that the CO was in the pre-sail conference in the wardroom, discussing last-minute details, and that we should go in and determine my status as a potential rider. After a brief discussion, Wes concluded that he had too many riders and that he was not able to let me join them for the sea trial. Disappointed by the missed opportunity, I went topside and waited to watch the ship get underway. As THRESHER sailed down the Pisquataqua River I returned to our office on the second floor of building 174.

There were only three members of the crew of the pre-commissioning unit: the CO, Lou Urbanczyk; the Engineer, Al Tony; and myself. The three of us were working late that evening when one of the shipyard workers came over to our area to tell us that he had heard on the radio that there was a problem with THRESHER. The three of us joined him around the radio, listening to the news broadcasts as the various stations interrupted their programming to provide updated information.

The rest of the story is well known by most submariners. The entire crew was lost at sea as a result of flooding, compounded by loss of propulsion, inadequate procedures and an inability of the emergency blow system to function as intended. My good friend, and relative of Sheriff Pat Garrett was lost at sea as a result of the inability of engineering design/construction and human factor enhancements to keep abreast of the technological advances instigated by the Cold War.

In the following days we were asked to activate the emergency blow system on THRESHER's sister ship JACK while we were tied up alongside the dock. We placed the two switches in the blow position and within seconds the flow of high pressure air ceased. The piping/valve system froze solid as a result of the fine strainers that had been installed in the lines to preclude foreign particles from impacting the *Marotta* valves. This decision to install strainers to ensure valve operation served just the opposite. It prevented the system from operating.⁵ Epilog - Though separated by almost 60 years, these two distinguished, and related, individuals met an untimely death under most unusual circumstances. Both lost their lives as a result of the hazards they faced in following their chosen path in life.

ENDNOTES

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- 4. Opinion I., Board of Inquiry report.
- 5. Findings of Fact 138-9, Board of Inquiry report.

REUNIONS

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Loc: Red Lion Hanalei (Hotel circle) San Diego, CA Phone: 1-800-700-3328 Poc: Richard (Ski) Jarenski 7832 No. Sombrero Park Drive, Tucson, AZ 85743

Phone: 520-744-0869, Cell: 520-850-1436,

E-mail: Rjarenski@aol.com

REMEMBERING: THE SOUND SURVEILLANCE SYSTEM (SOSUS)* Part I of II Parts

by Mr. John Merrill

Mr. Merrill is a frequent contributor to THE
SUBMARINE REVIEW and is a published author of several
books on the history of undersea technology. He is a retired
engineer with lengthy experience at the New London Lab
of the Naval Undersea Warfare Center. He currently lives
in Waterford, CT.

Introduction

SOSUS, initially an experimental and growing concept to provide long-range detection capability using the underwater propagation of low-frequency sound, began in 1950. SOSUS, the classified name, was established in 1952. The system became an exemplary Cold War tool. SOSUS arrays, along with nuclear submarines optimized for ASW and long-range maritime patrol craft, became the dominant tools in the U.S. Navy ASW posture in the mid and late 1950s. It was strategic early warning.

Because SOSUS monitoring stations were fixed and shorebased, they were resistant to destruction, foul weather, and ambient self-generated noise. A SOSUS station consists of hydrophones mounted on the floor of the ocean and connected by cable to processing equipment ashore. The unprocessed data including ocean sounds and those of submarines are sent to processing centers for determination of whether they are a positive submarine contact. Appropriate action is then taken. Building and operating the early facilities, eventually almost on a global scale, with 1950 technology provided a significant challenge.

^{*} An aim of this paper is to bring some of the history of SOSUS that has been covered by various naval historians and others to an additional audience.

The system was still growing and improving during the late 1970s. After 41 years of service, in 1991 the system mission was declassified. The international setting for these SOSUS years included the Korean War, Cuban Missile crisis, Vietnam War, and the ever-present Cold War,

SOSUS was developed, implemented, and operated under conditions of utmost secrecy. During its operation, there was continual and increasing pressure from a determined, highly competitive, and on occasion effective Cold War enemy. Furthermore, the ultimate global reach and scale of the system required unceasing effort to accommodate the shifting international scene. Complex challenges were omnipresent. System performance was improved with better technology.

The system's objective is to identify the general area where a submarine might be operating, filter out most man-made sounds and identify the acoustical wave from the submarine's engines and propellers. With this data, the bearing, depth, and distance to the source of the sound may be determined and identification of the source is possible. In addition to monitoring ocean noise, ships, submarines, noise from planes flying over the ocean and falling rain were identified. An oceanographer's comment about SOSUS in 1996 is appropriate, "It's unique. It's the only way to keep track of what goes on in the ocean."

It is interesting to note that the oceanographic research and observations made in 1937 by Maurice Ewing in conducting seismic studies at the Woods Hole Oceanographic Institute (WHOI) provided the basis for the initial SOSUS installation in 1952. SOSUS

technology consisted of hydrophones on long underwater cables laid along the shore leading to the continental shelf.

Considering advances in Antisubmarine Warfare (ASW), a 1980 remark is apt "...in both the Atlantic and the Pacific, SOSUS is capable of fixing the position on an enemy submarine within a radius of 50 nautical miles or less." A later comment in 1986, made by a Massachusetts Institute of Technology assessment of a SOSUS satellite-linked capability "...at its best it can pinpoint the location of older (and therefore noisier) Soviet subs to within ten miles of their actual position from a distance of ten thousand miles, and that a twenty-five mile fix from several thousand miles is

feasible in most cases."4

Examining the SOSUS system, it is important to consider the major challenges met eventually to have a system of twenty stations operating in three oceans. Further, there was responsibility for disseminating the collected data on a time-urgent basis to a number of addressees. Incorporating technological improvements and upgrading presented significant demands on the system providers and operators. Managing a fleet of seagoing cable-laying ships was another large and significant undertaking that was a part of the system.

By 1994, \$16 billion had been invested for the system's construction, implementation, and operation. "At its peak, in the late 1980s, the monitoring system cost more than \$300 million a year to maintain and was staffed by 2,400 officers and technicians." With remission from Cold War demands in 1989, the system continues as a new tool for scientists seeking new knowledge and understanding of the ocean bottoms and their characteristics. New applications for the system include gaining knowledge relevant to global warming as well as the general environmental science of the world's oceans.

Simply referring to SOSUS in a historical context as an important Cold War participant does not do justice to the vastness and global aspects of the system in its implementation and integration into the Navy's needs. Time, cost, technology improvements and personnel considerations, including military and industry participation were as enormous as its Atlantic and Pacific Ocean coverage. The high security classification of the system always provided further demands on all concerned.

Initial interest in this surveillance concept stemmed from the improvements occurring in the Soviet submarines by their post World War II (WWII) acquisition of German submarine expertise. These Soviet submarine improvements necessitated countermeasures. Sound surveillance became an excellent countermeasure. As the Cold War progressed, Soviet submarines became quieter and the bar for surveillance was raised. With regard to the Cold War, the United States and Soviet submarines operated on a war footing in a time of peace. The role of SOSUS was a key element in countering the enemy submarines.

Similarly, the technical origins of the concept are of interest in

viewing the logic of how and why SOSUS evolved. The significant way in which the system grew and improved should not be overlooked when reviewing the history.

Of the many participants in the evolution of SOSUS, it is essential that particular consideration be given to Navy Captain Charles Paul Kelly's important role, as Project Engineer from the earliest days of the system implementation until 1973.

A 1968 accounting of the number of Soviet submarines by Jane's Defensive Ships in 1968 lists 55 nuclear and 325 conventionally powered. About this time, there was awareness of Soviet submarines with depth capability of 1000 feet or greater and speed of 40 knots underwater. An operational SOSUS was well suited to detecting and locating the growing and improving Soviet submarines as a threat to the United States as they extended their operating areas It has been noted that "in the new age of nuclear propulsion both the United States and the Soviet Union had studded the ocean bottom with networks of sensors and hydrophones in a technological race to render the oceans transparent, to "bug" the seaways and gain advantage in the silent war."

Before 1950: A Sound Pipeline

On October 17, 1937, geophysics professor Maurice Ewing from Lehigh University joined Columbus Iselin, then Physical Oceanographer at Woods Hole, aboard the Woods Hole Oceanographic Institute ATLANTIS for a test cruise. Ewing conducted seismic refraction experiments to determine the thickness and makeup of sediments at the ocean bottom at depths of three miles in the North Atlantic.

Underwater explosives (10-pound TNT blocks) were used as sound source, and it was noted that a chain of echoes were generated by repeated reflections between the ocean bottom and the sea surface especially at the lower frequencies and traveled long distance underwater with limited loss. Further, if hydrophones were carefully located in this deep sound channel, the signals could be detected. Important implementation of this channel identification followed but not immediately.

During World War II in 1942, Maurice Ewing with J. L. Worzel at WHOI resumed work on deep sound channel signal propagation proposed by Ewing in 1937. Ewing theorized that low-frequency waves, which are less vulnerable than those of higher frequencies to scattering and absorption, should be able to travel great distances if the sound source is placed correctly. In analyzing the results of this test, they discovered a kind of sound pipeline, which they called he Sound Fixing and Ranging (SOFAR) channel, also known as the deep sound channel.

An additional test was conducted in the spring of 1944 aboard the research vessel R/V SALUDA operating in the vicinity of Eleuthera in the Bahamas. A deep-receiving hydrophone was hung from R/V SALUDA. A Navy ship dropped 4-pound explosive charges set to explode at 4000 feet in the ocean at distances up to 900 miles from R/V SALUDA's hydrophone. The Navy ship's operations were limited to this distance. Receivers located in Dakar on the west coast of Africa easily detected the underwater explosions at a range of the order of 2000 miles. Ewing and Worzel heard, for the first time, the characteristic sound of a SOFAR transmission, consisting of a series of pulses building up to its climax.

In 1943, an application of Ewing's deep sound channel involved setting up coastal hydrophones to listen for the sound bursts from small explosives set off by pilots downed at sea while floating on life rafts to provide bearings for their location and retrieval. At that time, having a small TNT charge in conjunction with high-test aviation gasoline was deemed dangerous. In 1947, SOFAR was developed further and Pacific listening stations were established.

Concurrently, Ewing tried to get the Navy to use the deep sound channel to locate and summon help for a submarine under enemy attack. This was not pursued due to difficult coding problems.* Later, Ewing's deep-water channel discovery provided a basis for the mid-century Sound Surveillance System (SOSUS).

Peace in 1945 did not end the Navy's requirements for further information about the seas. Shortly after several years of an uneasy peace, international politics and technological innovations applicable to ships, submarines, aircraft, and weapons collectively brought additional high priority ocean-related Navy needs.

Encouragement to continue advancing ASW tactics and systems was stimulated when the details of German submarine developments became known near the end of the war. In the early postwar period, two Type XXI submarines became available to American,

British, and Soviet navies. Increased underwater submarine speed (17 knots for up to 30 minutes), and the snorkel provided new challenges with oceanographic implications. Interest in submarine operating depths of 1000 feet also became a consideration. These technology advances strongly influenced submarine design and affirmed the importance of ASW.9

The new Office of Naval Research (ONR) established in August 1946 and the National Science Foundation (NSF) created in 1950 by an Act of Congress provided an environment for the support of science in the United States. At first, ONR was the principal supporter of fundamental research by U.S. scientists. Success of federally-sponsored research was partly due to government-university-industry relationships brought about by ONR.

Ewing, by then a professor at Columbia University, found support in 1946 at ONR to continue research on the deep sound channel in Bermuda. The research site was called the Navy SOFAR Station. The initial installation consisted of a hydrophone on the bottom at 800 fathoms and connected to the shore by a submarine cable.

Committee on Undersea Warfare (CUW)

In November 1945, Gaylord P. Harnwell, director of the California University War Research Laboratory of ASW and prosubmarine research at San Diego, wrote a letter to Admiral Harold Bowen, then head of the Navy Office of Research and Invention, soon to be head of the Office of Naval Research (ONR). Harnwell called for an undersea warfare committee to "maintain Naval liaison, determine membership, organize and conduct symposia, issue bulletins and summaries of proceedings." 19

Support for Antisubmarine Warfare (ASW) research came in January 1946. Admiral Chester A. Nimitz, Chief of Naval Operations, reported to Secretary of the Navy James Forrestal that advances in submarine design and operating capability necessitated improvements in submarine detection and location systems.

A September 1946 proposal to Admiral Bowen, now head of ONR, recommended establishing a permanent Committee on Undersea Warfare (CUW). The new committee, established October 23, 1946, reported directly to the executive board of the

National Research Council (NRC), the active arm of the National Academy of Sciences (NAS). The NAS established the CUW and provided the committee with a broad pro-and anti-submarine mandate. The committee's charter allowed direct access with the executive board of the NRC, ONR, and Navy bureaus. 11

The environment during these years focused on the antisubmarine problem from the viewpoint of the German Type XXI submarine performance and snorkel mentioned above. Soviet submarine buildup using advanced German submarine technology was a continuing threat.

ATTENTION TO DEEP CHANNEL PROPAGATION 1949 Submarine Development Groups 1, 2

An important Navy response to the threat occurred in January 1949, when the Chief of Naval Operations (CNO) directed that "Fleet Commanders assign one division in each fleet to the sole task of solving the problem of using submarines to detect and destroy enemy submarines. All other operations of any nature even type training, ASW services or fleet tactics shall be subordinated to this mission. To this end, two Submarine Development Groups were established: Group 1 in San Diego and Group 2 in New London at the Submarine Base. Investigation of the propagation characteristics of low frequencies was an early assignment. Group 2 at New London was tasked with "solving the problem of using submarines to detect and destroy enemy submarines." Gradually Group 2's activities and mission expanded, and in the late 1970s it became Submarine Development Squadron Twelve.

With their assigned submarines, the Development Groups immediately initiated efforts to learn more about passive detection of submarines and submarine acoustic signatures. Further attention to deep channel propagation came from Naval Research Laboratory SOFAR tests off Point Sur, California. Using SOFAR hydrophones, submarine detection ranges of 10-15 nautical miles were reported. The above-mentioned Bermuda SOFAR installation provided additional information regarding passive detection. The experience from these SOFAR sites provided knowledge for hardware associated with shore-based detection of sounds in the ocean. 14,15,18

In May 1949, at the request of Submarine Development Group 2 in New London, the work at the Bermuda SOFAR station included making acoustic signatures of fleet type submarines and snorkel-equipped submarines. Enemy submarine acoustic signatures would play an increasing important role in the evolving surveillance system. Submarine detection ranges were made from about two miles to 100 miles.¹⁷ There was additional interest in SOFAR related to determining missile impact locations.

1950 Undersea Surveillance Support

Additional encouragement to pursue new antisubmarine research and development directions came from an April 1950 report (commissioned in 1949), Studies of Undersea Warfare by Deputy Chief of Naval Operations (CNO) Rear Admiral F. S. Low and referred to as the Low Report. A 1984 comment by Willem Hackman in Seek and Strike noted the Low Report as bringing attention to priorities for future research and development with awareness of the forthcoming nuclear submarine and long-range torpedoes.¹⁸

Further incentive to consider use of Ewing's sound channel at low frequencies (30 -150 Hz) resulted from the CUW Fifth Undersea Symposium held in Washington on 15 and 16 May. Frederick Hunt, director of the Harvard Underwater Sound Laboratory during WWII, presented a paper favoring the use of the sound channel for long-range signal detection. The period from the start of the Korean War June 1950 to the armistice July 27, 1953 provided additional attention to defense issues and planning.

Project Hartwell

All the above undersea warfare activities brought about a wideranging study in 1950 at MIT by the CUW. The participants included well-known scientists and engineers from Bell Laboratories, California Institute of Technology, Carnegie Institution, Harvard, MIT, Marine Physical Laboratory, and the Scripps Oceanographic Institution. The comprehensive study called, Project Hartwell, addressed long-range defense against submarines.

For three months ending August 31, 1950, the group studied wide-ranging Navy problems related to the various aspects of overseas transport in a possibly unfriendly environment. This period also saw an expanding Korean War and with its requirements. The September 1950 Project Hartwell report suggested and recommended an extensive number of important measures to be pursued. It was intended that most of the Hartwell recommendations with adequate support could begin to be in service in two years. Significant effort by the Hartwell group was directed at protecting shipping against submarines and mines. Regarding undersea surveillance, the Hartwell report findings included an immediate start of research to exploit the potential of low-frequency bottomed hydrophone arrays with multiple sites for triangulation to detect, identify, and track distant enemy submarines.

The Hartwell participants understood that there were unknown factors related to undersea surveillance and recommended an annual \$10 million to develop an effective, long-range acoustic detection sensor system using bottomed hydrophone arrays. What would become a two-ocean surveillance system was gradually implemented. Commitment to what became SOSUS assured the Navy's continuing, strong, and growing interest in oceanography. This system concept, because of its method of operation and locations, proffered resistance to destruction, foul weather, and ambient self-generated noise features not available at the time to other surveillance technologies.

American Telephone and Telephone Company (AT&T)

During 1949, the Navy's ASW priorities regarding the enemy submarine threat were brought to the attention of industry. Dr. Mervin Kelly, then president of the Bell Telephone Laboratories of AT&T, met with CNO to discuss antisubmarine warfare. In October 1950 after the completion of Project Hartwell and its approval of quickly initiating steps to develop adequate ocean surveillance, Dr. Kelly offered the services of Bell Laboratories to the CNO.

In late December 1950, as a result of Dr. Kelly's offer, ONR contracted with Western Electric, the engineering and manufacturing part of AT&T. The \$1 million research and development contract, sponsored by ONR and Bureau of Ships (Buships), was to develop an undersea surveillance system based on long-range low sound propagation.

The overall effort evolved into several areas including: system design, engineering, deployment, shore station construction, hydrophone cable laying and the oceanographic research needed to understand long-range sound transmission in the sea. Caesar was the unclassified designation for the installation and production efforts. The research and development work by AT&T was designated Jezebel.

Commitment to undersea surveillance made it mandatory to broadly investigate propagation of sound in the sea and find answers to bathymetric questions such as depth and ocean contours. This part of the system development, called *Michael*, was under the purview of Columbia University Hudson Laboratories, Woods Hole Oceanographic Institute, Scripps Oceanographic Institute (SOI), and the Navy Hydrographic Office.

LOFAR (Low Frequency Analyzer and Recorder)

This device coming from the AT&T Bell Laboratory (BTL) became an important system component early in the surveillance program with the first unit delivered in May 1951. AT&T adapted its recently-invented sound spectrograph, a tool for analyzing speech sounds, to analyze low-frequency underwater signals in near-real time. The output of LOFAR showed on paper readout the frequency of the signals picked up by the bottomed hydrophone arrays. Through the years that the system was in use, appropriate new technologies were invoked and provided significant system performance enhancement. As more SOSUS stations were placed in operation, a vast number of LOFAR analyzer/recorders were needed to accommodate the increasing number of hydrophones. Comments regarding the personnel needed to operate these stations and their unique abilities and equipment will be addressed later. Additional appreciation for the effectiveness of the LOFAR equipment was recognized as it was introduced to the Navy's longrange maritime patrol aircraft (VP) and submarine communities.30

First Test: Sandy Hook, New Jersey

This consisted of a series of experimental trials by the installation of undersea listening arrays off Sandy Hook, NJ. The experiment consisted of a cable and a few hydrophones installed in shallow water with the cable terminated in a building owned by the U. S. Army. Even with the high ambient noise due to the proximity to New York Harbor, range tests demonstrated the feasibility of surveillance and submarine detection.

Captain Joseph P. Kelly, USN

In May 1951 with the ongoing Korean War Lieutenant Kelly, a WWII naval officer and member of the Naval Reserve, was recalled and reported for duty in Washington. His prior experience included working at Westinghouse in Pittsburgh as an electrical engineer on large turbine generators and cable transmission systems from 1937 to 1942, when he was commissioned as an Ensign. His WWII experience included assignment as Maintenance Officer for magnetic loops and harbor defense mine fields in Panama. At the end of WWII, he continued his work at Westinghouse.

In December 1951, he was interviewed by Rear Admiral Homer N. Wallen, Chief of the Bureau of Ships, who asked him, "What do you know about Jezebel?" His response was "What's that?" the Admiral replied, "Welcome Aboard: you're the new Project Officer." This was the beginning of Joseph's Kelly's twenty-one year association with Oceanographic surveillance.²¹

As SOSUS project manager, his diligent and unceasing efforts for more than two decades brought the nearly-global system to full operational status. Ultimately, system locations included the Atlantic and Gulf coast of the United States under the Caesar project. This was followed by surveillance covering the United States Pacific shelf from Vancouver to Baja California. Two arrays covered Soviet submarine Atlantic entry from northern Europe. Access for Soviet submarines from eastern Siberia was monitored with arrays from the southeastern tip of Japan, eastward parallel to the Kuriles and northeastern to the Aleutian Islands.²²

Test Site: Eleuthera, Bahamas

Lieutenant Kelly, as Buships Code 849 assigned to oversee the high priority project Jezebel, obtained permission from the British government to make a surveillance installation on the island of Eleuthera in the Bahamas. With assistance from a British cable layer, underwater cable and six hydrophones were installed, three in 40 feet of water, two at 960 feet, and one at 1000 feet and in addition, the first deep-water array with a 40 hydrophone linear array (1000 feet long at 240 fathoms). The long array maximized the signal gain at the low frequencies of interest. Narrow band signal analysis maximized processing gain. With the shore-based equipment in place, the system was operational by January 1952.

A Decisive Test

On April 29, 1952, scientists from Bell Laboratories demonstrated their LOFAR passive detection system to a group of flag officers at Eleuthera. A U.S. snorkel- equipped submarine acting as a target maneuvered offshore and was given instructions to change course, speed, and depth. Final instructions required the submarine to open range and make a box maneuver every 25 miles to provide checkpoints. Positive detections of the submarine were achieved and paper output from the LOFAR (Lofargrams) convinced those present that the detections were real. In Washington steps were taken to make Project Caesar happen. In 1952, Joseph Kelly was appointed Lieutenant Commander.

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THE EARLY LIFE OF THE U.S.S. ALBACORE

by Captain James V. Ferrero, USNR(Ret)

Captain Ferrero was a plank owner onboard USS ALBACORE (AGSS 569), As part of an ongoing Friends of Albacore history project, Jim was asked to relate some of his experiences during ALBACORE's initial testing period.

n December of 1953, five officers and 32 enlisted personnel were aboard the ALBACORE. Their mission was: to accept the ship from its builder; to conduct acceptance testing including builders trials, technical evaluation (TECHEVAL) for the Bureau of Ships (BuShips); evaluate the vehicle's operational worthiness (OPEVAL) to meet its mission as a test vehicle for BuShips/ David Taylor Model Basin (DTMB) and as a target platform for Operational Test & Evaluation Force (OPTEVFOR). The officers were: LCDR Kenny Gummerson, LT Ted Davis, LT Stan Hecker, LT Tom Cuddy and LT Jim Ferrero. This group had been carefully selected based upon their past submarine operational and engineering backgrounds. Other key players during this early period were Admiral Swede Momsen (BuShips), CDR Harry Jackson (Portsmouth Naval Shipyard - PNS - Design Superintendent), CDR Chuck Spoerer (Ship Superintendent) and Captain Slade Cutter (Submarine Force Atlantic Force Material Officer).

I consider myself to be one of the luckiest officers to have been assigned to man, sail and evaluate the first true submarine ever to have been designed and built by the U.S. Navy since HOLLAND was delivered on 18 April 1900. It was an engineer's dream to have a test laboratory to prove out an untested design. I have been asked to recapture some of the interesting events which took place during the first two years of ALBACORE's life. Since many of the events I am going to relate occurred some 55 years ago, my memory may not be totally correct as to the exact details or time frame, so bear with me if someone from that era remembers something different.

I am going to relate this information in three separate time periods: Completion of Construction and Acceptance Testing, December 1953 - 8 April 1954; Shake Down Cruise, April 1954 - July 1954; and Operational Testing (DTMB, BuShips & OPTEVFOR), July 1954 - December 1955.

CONSTRUCTION AND ACCEPTANCE TESTING

Prior to going to sea, the ship's crew had to sign off on all yard testing. One of the more interesting tests was that of our battery circuit breakers. This involved hooking up the two batteries with very heavy cables via the passageway and then causing a dead fault in the system to see if the breakers operated to spec. When the fault was inserted, it caused the connecting cables to jump several feet into the air and caught one of our electricians in the crotch as he was observing the test, Ouch!

When inspecting the paint job, we discovered that large sheets of the paint would peel off the pressure hull under the superstructure. We rejected the job and the yard (Shop 17) would have to remove the superstructure and repaint. In order to make the yard repaint, we had a big review involving the shipyard commander and Sublant's Force Material Officer.

When inspecting the main ballast tanks, we found only one small flood port per tank versus the 6-8 holes per tank on fleet boats. We found out that this was not a design deficiency but part of the design to reduce drag. I later wondered if THRESHER was configured in the same way with her blow system and only one small opening per tank to blow out the water.

After our ashore testing, sea trials were conducted until 8 April 1954. Sometimes enroute to our operating area, we would exchange coffee for lobsters with friendly fishermen. During our first surface testing involving full power runs for an extended period, we found that the new design wanted to dive. As we increased speed, the bow started to dig in and water started to climb up the sail. I asked the design superintendent, who was on the bridge, what was going to happen. He said he did not know and that we should rig for collision until the water stopped rising. Eventually it stopped about four feet from the top of the sail. Of interest during this test was that the surface speed was about 1/3 of that later achieved submerged.

Submerged testing—our first dive and then our dive to designed test depth. The first dive with some 50 yard workers aboard was very uneventful. We returned to the yard and incorporated much instrumentation for the second dive. A series of internal X-configured strain gages were installed throughout the ship to measure hull compression as we increased depth. The gages were

hooked up to instrumentation so we could see results in real time. Since we were the first submarine to use HY-80 steel for the pressure hull, many land tests had already been conducted by PNS to determine our crush depth. Our test depth was set at 1/3 of crush depth. During this test (the dive to test depth), which took several hours, the steel did not relieve as predicted. We sat at one depth for hours and finally the Skipper said "Let's Go" and down we went. Finally, the steel did relieve at 2/3rds test depth and everyone was happy except our ShipSup who had gone to the head during our wait period. When we increased depth, the hull compressed but the head structure did not. He could not get out for several hours since the door was stuck!

During this testing period, we started to understand potential long-term problems. For one, our GM 16-338 pancake engines were no match for our old GM diesels we learned to love on the fleet boats. We had a GM representative aboard plus many yard workers during early testing to keep those babies humming at 80% power. During this period, we were competing for spare parts with the 563 boats which had the same engines. Also of concern was the shaft seal which required constant attention. I imagine the seals became a problem when the counter rotating propellers were installed on ALBACORE and JACK. Another recurring problem was the unique 3000 psi hydraulic control system. Several times it would malfunction and we would find ourselves with full dive on the stern planes at max speed. The cause was found to be phenolic seats in the control valves flaking or breaking. A redesign solved the problem.

The last of Navy trials were made for the Board of Inspection and Survey (INSURV). As a result of all acceptance testing, we had many open squawks as we entered our shake down cruise. Most of them were resolved during the next year of operation and a few were not.

SHAKE DOWN CRUISE

On a personal note, prior to departing for New London, my wife had dinner with me one duty night. At the time, she was 8 7/8 months pregnant with our first child. We had great difficulty getting her aboard via the forward hatch. Upon departing, she almost got stuck and for a while we thought the child would be born aboard. Within a few days, my first daughter was born in the hospital wing of the Naval prison in Portsmouth.

Our first port of call was New London where we docked at State Pier. This was the first ship handling experience with a single screw sub and no tug. The skipper brought her in hot and backed down full for a great landing. All of us later learned how to handle landings – great fun! While in port, we had MANY visitors from other subs and staffs.

During our transit to Key West, we all started to learn the many capabilities inherent in a pure submersible. We did daily ops out of Key West and visited Havana, Cuba for several days. All hands had a GREAT TIME. To this day, I still don't know how we got out of port safely.

While in port at Key West, we were involved in engine repairs and spare parts acquisition. We left port with about 1 and 2/3 engines. Somewhere off Cape Hatteras, we only had one engine in use which we ran at 80% power. As it started to fail, the skipper called for a tow. We used the engine to fully charge the battery until the engine failed completely. About 1 and ½ days later, we were taken under tow by an ASR. Later, we were passed over to another ASR. Upon reaching the entrance to the Cape Cod Canal, we east off the tow and completed the trip on battery power. The transit through the canal was in almost 100% fog.

OPERATIONAL TESTING

The next several weeks were spent in getting parts for our Power Plant and putting extensive instrumentation aboard for our next 12 months of testing. One of the interesting pieces of instrumentation was the installation of external rakes with pitot tubes to measure boundary layer flow. These rakes stuck out throughout the length of the boat and made it look like an angry porcupine.

The following series of tests can be grouped into these categories: Stability, control, and drag determination. Sometimes we had interesting failures which were unrelated to the tests.

Our first speed run was 13-15 October 1954 off Province Town (P-Town). At that time, we achieved what was thought to be the highest submarine speed ever achieved by a U.S. sub. The speed record was later captured by a Russian Alfa class sub in 1977 at 44+ knots. Interestingly, our power plant only delivered 7500 SHP while the Alfa had some 40,000 SHP, a single screw and a small boat. The U.S. design was efficient.

While in the yard later, the entire hull was sanded in order to reduce drag. We added about 2+ knots. We predicted that the new Silver Zinc (AgZn) battery and stern configuration would add an additional 3-5 knots. In early 1955, Collier's Magazine published an article entitled I Rode The World's Fastest Submarine.

To determine the effects of the prop on flow fields, we went through two separate submerged towed events: one with the prop on and one with the prop off. The first test was relatively easy in that we only had to compensate for the weight of the tow cable. The prop off test was more fun due to the weight loss aft and the tow cable effects. Upon diving, we took a sharp dive angle before regaining control. These data were also used to determine the flow field and its interaction with the prop.

During one of our many high-speed tests, our forward rescue buoy carried away and its cable took a few turns around the prop. We eventually cleared the cable, released it with a marker buoy and operated for a while without a rescue buoy.

To check out the electrical breaker systems and equipment mounts, we were depth charged from a safe distance. More fun.

We had two very serious casualties where we almost lost the boat. One occurred during our inherent stability tests. For reference, fleet boats were totally unstable vehicles. Any time you started a down angle, the boat continued to increase the angle in that direction unless corrective force was applied even when the planes were returned to zero. Our tests were to determine if the boat would return to a zero bubble given a high speed down angle and then placing all control surfaces on zero. The tests were initially started at 2/3 speed, with moderate angles and then increased to 25 knots and larger angles. The test started at about 275 feet and went up and down like a sine wave. During one of the up, going over the hill and then down cycles, the prop came out of the water when we started down and unloaded the electrical system. This caused an explosion in the cubicle and opened many circuits. At 25 knots and a 45-degree down angle, you clear 100 feet every four seconds. We thanked the designers for our crush depth reserve.

The other incident involved how much weight the hull could support at various angles and speeds. During a test involving adding many tons of water into the forward trim tank, we lost all power and started down with an ever increasing down angle. Once again, we gave thanks to our design safety factor. In coping with these accidental problems, the big rudder was also used to slow the boat down. The speed would be cut in half when full rudder was used, but it also caused a snap roll. The dorsal rudder proved to be very ineffective during these events.

The above memorable events are at the top of my memory recall.

Now as to important visitors. We hosted and gave rides to many VIPs. In the fall of 1954, I was given the task to pick up Rickover one bright and early cold day in Boston. During the trip north, he questioned me about many technical details about the boat and its engineering systems. Once aboard, he changed into a set of coveralls and we started a prolonged and detailed tour. Later that day, after we moored, I took him back to Boston.

Early in 1955, we hosted Rickover, COMSUBLANT and COMSUBPAC all at the same time for an at-sea demo. During the trip, this group was discussing the shipbuilding program for the next fiscal year. As a young, innocent, non-political line officer, I was awed on how the political game was played and contract awards were made.

In the fall of 1955, we were ordered to Key West. As it turned out, the British Navy was interested in the new U.S. design and in maybe getting some attack boats like the B girls (Barbel class). The CNO, Admiral Burke, invited the First Sea Lord of the British Navy (Admiral Mountbatten) and hosted him for a ride aboard ALBACORE for a demo. After that visit, we limped back to PNS on our pancake ENGINES going 80/90 and started a stand down period for the new stern section.

My life has certainly been blessed by three major happenings. The experience aboard an experimental submarine with a group of wonderful people; later, as an employee of Hughes Aircraft Company, 1 was the plank owner and Program Manager for the AWG-9 weapon system and Phoenix missile for the F-IIIB aircraft which eventually became the F-14 fighter. My last adventure was with stealth ships. Now in retirement, I call myself

a cold war military/industrial retiree.

Steve Cuff, the ALBACORE ShipSup from 1954-1956, provided the following comments on Jim's recollections.

An interesting but small detail Jim didn't mention was that on the first attempt at underwater towing in August 1955, it was found that the cable which had been wound with the data-link wires internal had a hydrodynamic effect and flew through the water making an angle at the bow receiver where strain gages were mounted. The result of that discovery was a new braided cable that towed in a predictable catenary and we got good data from that point on.

The Submarine Rescue Ship TRINGA, ASR-16, did the towing and I was aboard TRINGA during the test. The aft towing winch on TRINGA was supposed to keep tension on the cable constant automatically. It didn't, so they had to station someone at the controls.

Not having much to do during my two day stay aboard TRINGA and being a bit bored, I asked the Chief for the instruction manual and wiring diagram for the winch. He said it hadn't worked since launching a few years ago so they always operated it manually, but he got the requested documents. I removed the cover plates and checked out all the wiring. I found a couple of errors which I had them fix and, lo and behold, their expensive automatic winch worked just like it was supposed to. I guess that's what young EDOs are supposed to be able to do. They were duly impressed.

There was another explosion and fire during an ALBACORE trial run off the Isle of Shoals. John Kassabian, from the design group, and I were aboard. This event was not planned. It was the week before a group of new flag officers were supposed to ride. ALBACORE was submerged at high speed, doing the sine waves Jim mentioned, in a downward attitude when there was an explosion in the forward battery and the lights went out. The boat started filling with smoke from the ensuing fire and we lost propulsion.

Jon Boyes, who was Skipper at the time, was amongst the coolest guys I've ever seen operate in a crisis. He first got the boat leveled off, then took damage reports from the Chief of the Boat and when the fire was out, brought the boat to periscope depth, looked around 360 degrees to make sure no one was operating in

the area, then surfaced.

We ended up powerless and had to be towed back to Portsmouth. During that time, I was on the radio to the yard arranging for around the clock shifts over the weekend to repair the damage. The main motor had a burned out winding. The motor got rewound in place and all the fire damage was repaired in time to take the new Admirals out the following week.

This was, without a doubt, my most exciting event aboard ALBACORE except for slipping as I tried to jump from the hull to the stern planes and almost falling into the dry dock at 0100 one misty night while trying to get the ship ready for undocking - but that's another story.

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UNRESTRICTED SUBMARINE WARFARE STRATEGY; THE GERMAN DILEMMA

by CDR Robert Mehal, USN National Defense University Class of 2007

"The views expressed in this article are those of the author and do not reflect the official policy or position of the National Defense University, the Department of Defense, or the U.S. Government."

"Even if a submarine should work by a miracle, it will never be used. No Country in this World would ever use such a vicious and petty form of warfare!"

- William Henderson, British

"War is cruelty. There's no use trying to reform it; the crueler it is the sooner it will be over."

- William Tecumseh Sherman

In 1864 the Confederate submersible H.L. HUNLEY used an improvised spar torpedo to sink USS HOUSATONIC in Charleston Harbor, and the birth of undersea warfare began. However it was somewhat of a premature birth, i.e., we don't see further use in war time until the beginning of WWI. As the 'Great War' began to cast its dark clouds over the world, a new and unproven technology was on the doorstep of Kaiser Wilhelm II and the Imperial German Navy. In this paper I will outline and detail the events and circumstances that would place the German leadership in an unenviable position of developing and implementing a strategy that would forever determine their fate. Indeed, could German leadership possibly make a rational decision regarding the implementation of unrestricted submarine warfare during WWI?

When Germany entered WWI in August of 1914, it had in service 28 (Unterseeboote) U-boats. The first boat U1 had completed its initial sea trials only seven years earlier in 1907, and the next three subsequent boats were not of sufficient design to contribute to any war fighting capability; however, all four of the initial class were utilized during the war as training platforms. Therefore, units U5 through U28 would comprise Germany's starting lineup as the war began.

Throughout the period 1914-1918, multiple boats were in various stages of construction and the German industrial base and shippards would continue to produce U-boats during the entirety of the war. Various design improvements were continually being incorporated and along with construction of larger overseas boats, which were more capable longer range vessels, the fleet was also being joined by smaller UB class boats intended to perform coastal defense missions and UC class boats which were specifically designed for mine laying missions.

The Germans had mastered the submarine construction process with the ability to prefabricate sections and then simply assemble the sections. According to V.E. Terrant, "a total of 178 U-boats were destroyed during the war (of which nineteen were lost by accidental causes) the Germans were still in possession of 171 U-boats at the time of the armistice, with a further 149 in various stages of construction." It is obvious that the production of U-boats was clearly not a factor in the way they were used throughout the war.

Looking at it in hindsight, it certainly would have been devastating to Great Britain, if production leading up to the war had been increased. However, that would have required a predeveloped strategy for use of such a weapon and in reality, as Tarrant writes, "at this time the German Naval Staff (Admiralstab) had little faith in the capabilities of their Unterseeboote and small understanding of their formidable latent potentialities. Indeed, the initial strategic role they perceived for the undersea arm was purely defensive."

Two days after Great Britain declared war (4 August 1914) ten German U-boats got underway on what would be the first German U-boat war patrol. Their primary mission was intelligence, surveillance, and reconnaissance (ISR) and secondarily to engage the enemy if sighted. Of the initial ten boats, one had to return to port with mechanical problems as the remaining nine moved north. Somewhat dismayed, they approached what was believed to be the British blockade line, but to this point had yet to sight the British

battle fleet. It was two days into their patrol, before a single British ship was sighted. Upon sighting of the British warships U15 attempted to engage the British battleship Monarch with a torpedo, only to have it miss its target. However, this effort resulted in alerting the British of the eminent danger. The advantage of surprise was now lost as night fell. The next morning bad luck would have U15 idling on the surface as her crew attempted to make mechanical repairs. Unfortunately for her, she was sighted by the British light cruiser Birmingham, who proceeded to ram and sever the U-boat into two halves, sending the boat and her crew to the bottom.

As the U-boats returned to Germany three days later, only seven of the original nine returned. It was believed that in addition to the loss of U15, the unlucky U13 had struck a mine and was lost at sea. Terrant summarizes, "The results of this pioneer operation did very little to vindicate the value of the *Unterseeboote* in the eyes of the *Admiralstab*. They had failed to damage, let alone sink a single enemy warship, yet had lost two of their number in the attempt."

However, success was less than a month away. On September 5, 1914, U21 made history by sinking the first warship with a fired torpedo. This event was quickly topped on September 22, when U9 launched an attack and sank three British cruisers in under an hour, with an estimated loss of over 1,100 men. This significant event captured the immediate attention and concern of the British Admiralty. R.H. Gibson and Maurice Prendergast point out, "As a result of this triple sinking, the 7th Cruiser Squadron was abolished; a mine field was laid on October 2, about fifty miles north of Ostend,.... by the end of the year some 2000 British mines had been planted."

An even more important development occurred in November, as the Grand Fleet port of Scapa was infiltrated by a German U-boat. This event coupled with numerous false sightings of periscopes sent the British fleet scrambling north to Scotland for weeks at a time. The enormous significance of this development was summarized by Gibson and Prendergast:

It meant that a few submarines had forced the most powerful battle-fleet in history to abandon its base and retreat to a second base, and then to a third, each being progressively more remote and from the main theater of naval hostilities – the North Sea. . . . In a word, the bottom of the whole strategical situation was knocked out for a time by the German U-boats... Well was it for us that the Germans failed to seize the enormous opportunity lying within her reach."

Germany's initial strategy regarding the use of the submarine was indicative of the fact that they did not clearly understand the shear power and potential of the implement of war they possessed. However, following this first phase of submarine operations, no one could doubt the lethality of the German U-boat. "The Germans had found in their hands a weapon wherewith they could strike at their enemy with a freedom denied to their surface ships"

Here before Imperial Germany was possibly the Holy Grail; the ultimate answer to their problem of how to end the blockade of Germany and bring the war to a close. Or, ironically was it merely a tin cup that would eventually lead to the ultimate downfall of Germany.

Germany was faced with the age old conflict of military versus statesman by the onset of this new technology and its potential use. Great debate concerning the strategy and method of use in regards to Germany's submarines had been occurring continuously since the beginning of the war. Lines between the military and state had been drawn early and would continue to hamper a decision in regards to a definitive German submarine strategy. There was a very distinct difference of opinion over the manner in which the submarine arm should be utilized.

Kaiser Wilhelm II had made his position known concerning the matter—at least initially. His position at the being of the war indicated that he clearly had reservations about the way in which the submarine arm would be prosecuted. His fear like many others in Germany's diplomatic circles was that a declaration of unrestricted submarine warfare would certainly draw the United States into the conflict and only strengthen the position of the allies—leading to almost a certain defeat of Germany.

In addition to the Kaiser, The Imperial Chancellor, Bethmann Hollweg, who was undoubtedly the greatest opponent of using unrestricted submarine warfare and was very temperate on the use of the submarine arm in any fashion, would prove to be the proverbial long pole in the tent, throughout the entire debate, leading up to his eventual resignation. Hollweg was also supported in his views by Foreign Secretary von Jagow, who like the Kaiser and Chancellor believed such a strategy was too risky and would certainly antagonize the United States and other neutral countries to the point of entering the war.

The military figures of Imperial Germany were not exactly all in concert with their opinions at this time. There seemed to be disagreement over exactly how and in what manner (the ways and means) this new weapon should be utilized. However, as a collective group, they could agree that there was a sense that the Uboat would indeed play a key role. As John Terraine points out:

The German Admirals were discontented; they had the sense of holding a war-winning weapon in their hands, but not being allowed to use it properly. Yet the word itself required careful interpretation; the actual weapon was double-edged. On the one hand, the submarine enjoyed the priceless asset of invisibility, making it more difficult to counter than any naval craft previously built. On the other hand, there were certain things it could not do, or could not do in a traditional manner of naval warfare.

He is referring here to the German Prize rules which we will explore more closely later.

From the naval perspective, clearly Korvettenkapitan Herman Bauer, flag officer of the U-boat flotillas was the staunchest advocate and "the first to realize the deadly potential of using his boats in an all-out attack on British seaborne trade, with the object of starving the British Isles into submission."

A report of this strategy was submitted to the Chief of the German Naval Staff, Admiral von Pohl. As Tarrant points out, "Pohl vetoed the suggestion on the grounds that such a radical method of warfare would be a crude violation of international maritime law with regard to the method of destroying enemy merchant ships, to which Article 112 of German Naval Prize Regulations conformed." Again, we will explore the concept of German Prize Regulations and international law later.

Admiral von Pohl would later go on to change his opinion in this matter, based on actions being taken at the time by the British, and eventually become one of the leading advocates of a blockade of Britain.

A simple two-fold strategy was developed as a first step. First, place pressure upon Britain with a (submarine) blockade cutting off needed imports, and thereby through diplomatic negotiations, force the British to lift their own blockade against Germany. Second, by establishing this blockade zone, neutral shipping would be less likely to enter it in fear of being sunk and in turn decrease the risk of inadvertent attacks by German U-boats. Although this was not unrestricted submarine warfare, it was thought to be an effective way of challenging Britain without antagonizing the neutral states, most importantly the United States.

According to Gibson and Prendergast:

As a consequence of the decision to embark on the trade war, the late Admiral von Tirpitz, the Naval Secretary of State, gave an interview to an American Journalist, von Wiegand, hinting that a vigorous campaign against shipping by submarine might be started in the near future. By this balloon d'essai an attempt was made to ascertain American opinion on such a form of warfare. At the same time, the Wiegand interview gave to Germany's adversaries a warning of coming events.¹⁰

Certainly this can be viewed as an effective public affairs strategy even by today's standards. Its motives were to rally public opinion at home for the war effort, intimidate potential adversaries, and influence the public opinion of your enemy.

It is important to point out that these events are occurring in the early months of 1915, leading up to the first official proclamation that the territorial waters of the British Isles would be treated as a war zone. On February 4 1915, with approval from the Kaiser the following announcement was published:

 The waters around Great Britain and Ireland, including the whole of the English Channel, are herewith declared to be in the War Zone. From February 18 onward, every merchant-ship met with in this War Zone will be destroyed, nor will it always be possible to obviate the danger with which passengers and crew are thereby threatened. 2. Neutral ships, too, will run a risk in the War Zone, for in view of the misuse of neutral flags by the British Government on January 31, and owing to the hazards of Naval Warfare, it may not always be possible to prevent the attacks meant for hostile ships from being directed against neutral ships."11

It would be 15 months before the Admiral Holtzendorff Memorandum advocating unrestricted submarine warfare based on two key factors would be accepted. The first was the continued arming of merchant ships and the binding limitations of prize rules, making U-boats extremely vulnerable. The second was based on the reported crop failure of 1916, which indicated a golden opportunity to deny needed food staples to the British public. If indeed the total effects of all out unrestricted submarine warfare could be levied prior to the 1917 harvest and provided the British would seek peace before the United States could fully mobilize, then Germany would achieve victory. Admiral Holtzendoff indicated that this could be accomplished within five months or prior to August 1, 1917.

It is important at this point to discuss the issue of *Prize rules*, in particular Article 112 of the German Naval Prize Regulations. According to Tarrant, "a U-boat would have to surface, stop the intended victim, either by signal or a warning shot with its deck gun, send a boarding-party to the vessel to establish whether it belonged to a belligerent or neutral country, and, if it were of the enemy marine, make adequate provisions for the safety of the crew and passengers before sinking the vessel, either by gunfire, torpedo, or, as in the case of Glitra scuttling."

I believe it safe to say that anyone could postulate why this practice would be extremely dangerous and not very well adhered to by U-boat Captains. Obviously this restriction was written from a historical perspective long before submarines had developed into a weapon of war. Add to this already dangerous situation, the fact that the British were now employing decoy techniques taking the form of merchant vessels equipped with hidden guns and one can begin to understand the obstacle facing U-boats and their commanders. These decoy vessels would become known as the British Q-ships. These Q-ships, heavily armed with hidden guns, were tasked with luring submarines in close, as prescribed in the prize

rules and when the U-boats would surface, in accordance with those rules, they certainly would be attacked and sunk by the heavily armed Q-ships. In essence bringing your boat into its most vulnerable position was clearly a non-starter for U-boat Captains and created a no win situation for U-boats.

Two other factors working to undermine the use of German Uboats as a legitimate weapon of war; first was the current practice of utilizing liners and in some suspected cases even hospital ships as troop transports and secondly it had been alleged that the British were in the practice of using neutral colors on their ships to avoid prosecution and attack from the German U-boat flotillas. These events led German leaders to issue as Gibson and Prendergast detail the following memorandum to submarine commanders:

The first consideration is the safety of the U-boat. Rising to the surface to examine a ship must be avoided for the boat's safety, because, apart from the danger of a possible surprise attack by enemy ships, there is no guarantee that one is not dealing with an enemy ship even if she bears the distinguishing marks of a neutral. The fact that a steamer flies a neutral flag is no guarantee that it is actually a neutral vessel. Its destruction will therefore be justifiable unless other attendant circumstances indicate its neutrality. 13

Therefore even as strides were being made within the German hierarchy to formalize a strategy for effective use of the submarine arm, world perception of that use left it far short of meeting the basic criteria of Jus in bello (conduct in war).

The final decisive point for the United States breaking diplomatic ties and eventually declaring war with Germany would come with the German declaration of unrestricted submarine warfare. To this point, tensions had existed between the two sovereign states, but there was still open dialog on the diplomatic level and even trade was being conducted between the two nations. For Germany, a half-hearted attempt at offering conditions for peace in December 1917, which it could be argued was nothing more than a diplomatic precursor to the following declaration of unrestricted warfare, the die was cast.

For their part, the Americans had truly remained neutral. They even went as far as on occasions cautioning the British about their method of blockade of Germany and the fact that their policy of including food stuffs as a classification of contraband, thereby making such cargo open to seizure, was border line. America's view of this practice was that Britain was in essence starving Germany and in so doing was directly impacting the German non-combatant populous. A practice that would not easily pass the jus in bello criteria in itself. In a sense Britain was doing exactly what they were accusing the German military of doing—conducting a war on non-combatants.

As President Wilson took his war message to Congress he outlined the conduct of Germany and its unrestricted warfare as a motivating factor for America's cessation of diplomatic relations and war declaration. President Wilson would state:

On the 3rd of February last I officially laid before you the extraordinary announcement of the Imperial German Government, that on and after the I" day of February it was its purpose to put aside all restraints of law or of humanity and use its submarines to sink every vessel that sought to approach either the ports of Great Britain and Ireland or the western coasts of Europe or any of the ports controlled by the enemies of Germany within the Mediterranean. That had seemed to be the object of the German submarine warfare earlier in the war, but since April of last year the Imperial Government had somewhat restrained the commanders of its undersea craft, in conformity with its promise, then given to us, that passenger boats should not be sunk, and that due to warning would be given to all other vessels which its submarines might seek to destroy, when no resistance was offered or escape attempted, and care taken that their crews were given at least a fair chance to save their lives in their open boats. The precautions taken were meager and haphazard enough. as was proved in distressing instance after instance in the progress of the cruel and unmanly business, but a certain degree of restraint was observed. The new policy has swept every restriction aside."

In conclusion, "German submarines up until November 11, 1918 had accounted for the sinking of 2,677 British merchant and fishing vessels, equaling a gross tonnage of 6,692,642 tons and causing loss of life to some 12,821 souls." These statistics are only reflective of British losses during this period.

Clearly the juxtaposition for Germany was between utilizing a weapon that could potentially bring the war to an end and with it peace; or utilizing a weapon in a manner that would render it totally destructive in nature, would very likely bring other neutral nations including the United States into the war as an ally to Great Britain and leave Germany with the disdain from the entire world community.

The internal debate surrounding this very issue conducted by the military and political leadership in Germany, ebbed and flowed over a four year period, and only further demonstrated that this decision was one that had extremely significant consequences. These consequences would eventually seal Germany's fate and forever shape the history of the world. Clearly throughout the period 1914 to 1917, it was a topic that continued to elude a definitive strategy. When a final decision was actually made, it was most likely too late to effectively influence the outcome of the war. Likewise, it had given the Allies an opportunity to develop a counter strategy.

In my opinion, Charles Townsend summed it up very succinctly in his introduction to The Oxford History of Modern War:

The entire war making capacity of societies became a legitimate military target. Hence the British imposed a naval blockade of Germany—a traditional British mode of operation, but now more crushing than ever in the past through a mixture of geographical accident and technical development. Within a year Germany was visibly beginning to starve to death, and in the last winter of the war nearly three-quarters of a million Germans were to die of hunger. Germany's response was catastrophic, Possessing a wholly new technology in the form of the submarine, Germany could not exploit it without breaking international law (a law which as John Hattendorf shows had been substantially defined by Britain). The decision to declare unrestricted submarine warfare which brought the USA into the war, was not taken without long

deliberation. In rational term, it was probably an impossible decision to make, because statistical calculations on which it had to be based were more or less hypothetical. But, in the end, the prevailing argument was visceral rather than rational. Germany gambled not just to avoid defeat, but to win a decisive victory which would enable it to dictate the terms of peace. 16

For Germany, the issue of deciding on a strategy of unrestricted submarine warfare must be placed in proper context. One needs to ask what the ultimate ends were for German leadership at the time. Was it to end the blockade of Germany? Or, was it to bring the war to a close—on ones terms? In either event, it would be difficult to argue that whatever ways and means are available should be used. However, that decision should be decisive and not one that is hampered by apprehension and self-imposed limitations. Certainly, it can be said that rules and/or laws are only effective if they are followed by all parties concerned. It could also be reasonably argued that although from a diplomatic standpoint unrestricted submarine warfare as a strategy was not officially sanctioned until 1917, from a tactical standpoint it was occurring long before.

Possession of a new unproven weapon, as would again be witnessed in WWII—with the atomic bomb, undoubtedly leaves leadership with an ethical dilemma that can not be easily or necessarily rationally decided. If we follow a Darwinian way of thinking in war, then the rules certainly become less important and victory and survival become the bottom line. In the future, we can only pray that world leaders will have the wherewithal and common sense to use new weapons and technology in a responsible manner.

Author's Note: It is very ironic that the unrestricted submarine warfare that brought the U.S. into WWI, would become a key strategy for the U.S. in the Pacific during WWII. Thank you to Dr. Bernard Finel for his guidance and advice during the preparation of this paper.

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US SUBMARINE READY STATUS - 7 DEC 1941, COMPLIMENTS OF VISIONARIES

by Mr. Don Messner

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hat was the real ready status of the U.S. Submarine Force on 7 Dec 1941? Asked that question, a good guess would be an unequivocal retort in the negative—too few and too many obsolete boats would probably be the most common responses. That's how I would have answered a few years back, but since then I have come to realize there were some very positive things happening to the submarine ready status which would mitigate my response today.

For a look as to what was evolving in the way of submarine technology prior to the onset of WWII, I chose the Washington Naval Treaty of 1922 as the starting point. This treaty essentially was an arms limitation document between the United States, the British Commonwealth, Japan France and Italy. Its stated purpose included the wording "desiring to contribute to the maintenance of the general peace, and to reduce the burdens of competition in armament," was drafted and ratified in an effort to curtail the naval arms race which was underway. The U.S., Britain and Japan all were engaged in major shipbuilding programs focusing primarily on battleships and battlecruisers.

The treaty established limits for each of the five participating countries on total tonnage for capital ships, and aircraft carriers. Capital ships were defined as a vessels of war whose displacement exceeds 10,000 tons, and carriers were ball-parked in the not to exceed 27,000 ton category. No other class of ship was specifically targeted or even mentioned. The treaty defined specific capital ships which were to be retained, e.g., 18 battleships for the U.S., specific rules for scrapping other vessels, replacement procedures and expected lifetimes of current inventory (mostly battleships) and to maintain the status quo on certain fortifications and naval bases. The treaty was silent with regard to submarines in all the afore mentioned categories, and was to remain in force until 31 Decem-

ber 1936. It was subsequently modified by the Treaty of London of 1930, and this time Submarine Forces were included. But before reviewing the Treaty of London and its effect on our Submarine Force, a review of the submarine status prior to 1930 helps set the base line.

R boats and S boats formed the bulk of the Submarine Force into the 1930s. Previous classes are not considered here as none saw combat service in WWII, however some O boats were retained for use as training platforms. The R boats were all commissioned prior to 1920. There were two classes of R boats, R1 and R21. All 7 of the R-21 class were decommissioned in the mid twenties, but not scrapped. The remaining 20 R boats were in the active fleet in 1930. R boats were considered coastal boats because they didn't have the range/endurance to transit the ocean and remain on station for any meaningful duration. Some R hoat specifications which will be used for comparison purposes include: surface displacement, 500 - 575 tons; length, approximately 180 feet; test depth, 200 feet; four 21" torpedo tubes forward with 4 reloads. Three shipbuilders built all the R boats. Fore River and Union Iron Works used an EB (Electric Boat) design and Lake used a Lake design. The R boat procurement history is summarized in Table 1.

Authorized.	Class	Hull Numbers	(But Nime)	Commissioned	Shiphuikler
FY 1912	30	SS-78 to SS-91	(81 to R14)	1915 - 1919	Fore Rear Stephulding Co. Quincy, MA. Union Inve Works San Francisco, CA. Lake Torpedo Best Co. Bridgeport, CT.
	311	85-92 to 35-97	(R15 to R20)	1918	
	R21	\$5-90 to \$5-104	(R21 to R27)	1910	

Table 1 - Procurement History, R Boats

The R boat evolved into the S boat whose specifications were developed during WWI with the objective of having a submarine with longer range/endurance than the coastal R boats. What evolved was the S boat design with a surface displacement of 800 to 900 tons, length of approximately 225 feet, test depth of 200 feet and 4 torpedo tubes forward with 8 reloads. When all was said and done, however, the S boat was still considered a coastal boat. Six shipbuilders participated in building 51 S boats, all of which were commissioned by 1925. Of these, two were lost and three were

decommissioned prior to 1930 leaving the fleet with 46 S boats going into 1930. The first three S boats utilized three competing designs. Fore River used an EB design, Lake used a Lake design and Portsmouth used a Navy design. Subsequently Lake and Portsmouth used the Navy design and all the other builders used the EB design. Table 2 summarizes the procurement history of the S boats.

Autho- riant	Clas	Hull Numbers (Doet Name)	Committee	Shelvikler
FY 1917	51 82 53	\$5-105 (\$1) \$5-106 (\$2) \$5-107 (\$3)	1920 1920 1919	Fore River Shipbuilding Co. Lake Torpedo Host Co. Puriscouth Nery Ship Yard Kittery, ME
FY rits	133 133 133 131 131 131 131 131	\$5-100 to \$5-118 (\$4 to \$13) \$5-119 to \$5-121 (\$14 to \$17) \$5-123 to \$5-129 (\$18 to \$5-123 to \$5-129 (\$28 to \$24) \$5-130 to \$5-134 (\$26 to \$29) \$5-135 to \$5-138 (\$30 to \$31) \$5-139 to \$5-141 (\$34 to \$34) \$5-142 to \$5-143 (\$37 to \$35-144 to \$5-144 (\$37 to \$41)	(919-1923) 1920 - 1921 1922 - 1924 1923 1923 - 1924 1923 - 1923 1923 1923 1923 - 1924	Portemouth NSY Lake Tempedo Best Co. Berkielnen Steel Co. Quitery MA Fore River Shipbuikling Co. Berkielnen Steel Co. Quincy MA Union Iron Warks Berkielnen Steel Co. San Francisco Union Iron Warks Berkielnen Steel Co. San Francisco
PY 1919	31 548	\$5-133 to \$5-198 (\$42 to \$47) \$5-199 to \$5-182 (\$48 to \$51)	1924 - 1925 1921 - 1922	Rethinen-Steel Co. Quarcy MA Lake Torpede Bost Co.

Table 2 - Procurement History - S Boats

World War I and the Washington Naval Treaty of 1922 had a profound effect on the design of the next class of submarines, the V class. The treaty, as mentioned above, focused mainly on battleships, battlecruisers and aircraft carriers. But with the reduction/elimination of battlecruisers, the Navy foresaw a need for a replacement to cover the mission of forward tactical scouting. The answer was a long range fleet submarine with greater range/endurance than the S boats, i.e., ocean crossing capability. To accomplish this mission, the V boats were conceived.

Although there were only 9 V boats, they were divided into 5 uniquely different classes. The first was the V1 class, better known as BARRACUDA, BASS and BONITA, SS-163 through 165

respectively. They were all Portsmouth built boats (boats is a term used interchangeably with submarine, a long established tradition) commissioned by 1926, and had the following characteristics: surface displacement, 2000 tons; length 340 feet; test depth 200 feet; 4 x 2 torpedo tube arrangement with 6 reloads; partial double riveted hull and a range of 10,000 nm (nautical miles) utilizing the MBTs (Main Ballast Tanks) for fuel.

The next class was a one of a kind, the V4 class better known as ARGONAUT (SS-166), another Portsmouth boat which joined the fleet in 1928. ARGONAUT was specifically built as a mine layer and had the following characteristics: surface displacement, 2700 tons; length 380 feet; test depth 300 feet; 4 torpedo tubes forward with 12 reloads (4 external) and 2 mine tubes aft with 60 total mines; double riveted hull and a range of 18,000 nm utilizing the MBTs for fuel.

The third class, V5, joined the fleet in 1930, the year of the Treaty of London, and consisted of the NARWHAL (SS-167) built by Portsmouth and NAUTILUS (SS-168) built by Mare Island. Their characteristics included: surface displacement 2700 tons; length 370 feet; test depth 300 feet; 4 x 2 torpedo tube arrangement with 38 to 40 torpedoes (some stored externally); double riveted hull and a range of 25,000 nm with the MBTs used for fuel.

Table 3 summarizes the procurement history of the V class boats.

Authorized	-	Hull Numbers	(Bost Name)	Committee	Shiphultier
PY (92)	VI VI VI	\$5-163 \$5-164 \$3-165	VI (Barracada) V2 (Basc) V3 (Bosta)	1924 1925 1926	Portunenski NSV Portunenski NSV Portunenski NSV
FY 1923	V4	55-166	VI (Argonaut)	1928	Portamouch NSY
FY 1926	V3 V3	\$5-167 \$5-166	VS (Norwhal) VS (Namilus)	1930	Ponsmooth NSY Mere Island NSY, Valleje, CA
FY 1939	17	55-161	VT (Dolphin)	1952	Personneli NSY
FY 1932	VE VE	\$\$-170 \$\$-171	V8 (Cschelot) V9 (Custolide)	1933 1954	Portureuch NSY Electric Boat Co. Greton, CT

Table 3 - Procurement History - V Boats

Table 4 summarizes the status of the US Submarine Force in 1930 the year the Treaty of London was ratified.

Commissioned / Active		Decommissioned / Obsolete		New Construction	
Class R1	20	Class H	8	Class V7 I	
51	31	K		A SALE DE SALES AND A SALES AN	
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548	1	N	-3		
VI	3	01	9 *	* 9 Ols and I Oll sal-	
V4	1	011	6 *	vaged for training dur-	
V5	2	R21	7	ing WWII	
		T	3		
Total	72	Total	45	Total 1	

Table 4 - Status of U.S. Submarine Force - 1930

Now, back to the Treaty of London of 1930. The treaty basically extended the terms of the Washington Naval Treaty with regard to battleships and aircraft carriers with the provision that no new capital ships would be laid down until 1937. It established a new 10:10:7 tonnage ratio between the U.S./Great Britain/Japan for destroyers and cruisers while granting parity in submarines for all three countries.

Specifically, with regard to submarine provisions, it established the following:

- · set maximum surface displacement on new builds at 2000 tons
- allowed retention or construction of 3 submarines not to exceed 2800 tons (aimed at the Argonaut, Narwhal and Nautilus)
- allowed retention of existing submarines not exceeding 2000 tons (limit was set high enough to allow retention of V1 class, Bass, Bonita and Barracuda)
- · set maximum limit of deck guns at 5.1 inch caliber
- set replacement age of submarines at 13 years
- · continued rules for disposal/scrapping of vessels
- allowed retention of a number of submarines for targets, experimental and training purposes
- set maximum tonnage of submarine fleet by 1936 at 52,700 tons
- restated international law rules concerning submarine warfare and merchant/passenger ships

Now the Treaty of London, once it was ratified, forced the U.S. Submarine Force to address two major issues. The first was the establishment of a building/replacement program for aging submarines, e.g., the R boats and S boats, and the second was to initiate a scrapping program with which to bring total submarine fleet tonnage in compliance with the 52,700 tons limit. Drawing attention to Table 4 and the Commissioned/Active column, a rough calculation shows the fleet to already be at approximately 66,000 tons with the aging R boats and early S boats reaching replacement age.

To comply with the arms limitation requirement, the U.S. embarked immediately on a program to scrap the decommissioned/obsolete submarines listed in Table 4. A total of 38 submarines were earmarked for scrapping. The T class, R21 class and all but one of the O11 class were scrapped in 1930. The N class, K class and some H class were scrapped in 1931, and finally in 1933 the balance of the H class and all of the L class were scrapped. The O1 boats and the last O11 boat were identified as trainers and were not part of the tonnage limitation.

With regard to a building/replacement program, Congress was not swift to step up to the plate. No new construction was authorized in FY 1931 with only one currently on the ways (V7 - Dolphin). In 1932, the final V class boats, CHACALOT and CUTTLEFISH, were authorized. These hit the water in 1933 and 1934 respectively. Finally in 1934, a limited fiscal year building program was initiated authorizing funding for a maximum of six new builds a year. Most naval architects and decision makers agreed that the V boats were too big and cumbersome to be considered for the desired Fleet Boat design, but that was not even an arguable point as the treaty disallowed construction of any vessel over 2000 tons. So beginning in FY 34, the baseline design for what was to become known as the Fleet Boat was that of the Porpoise Class, SS-172.

From 1930 to the time the Treaty of London expired on 31 Dec. 1936, the U.S. had added the last three V boats, two Porpoise class, two Shark class and two Perch class for an additional tonnage of almost 12,000 tons. While these submarines were joining the fleet, eight S boats and one R boat were scrapped amounting to almost 8,000 tons. It appears the U.S. never got close to the 52,700 ton limit set by the treaty, or perhaps they used some creative book keeping to show otherwise.

Table 5 summarizes the evolution of the Fleet Boat from the Porpoise class to the Gato class. Keep in mind that the authorization year established by Congress was one year prior to the fiscal year. This is important when looking at FY 41. Congress authorized 73 Gato Boats for FY 41. The authorization actually happened in 1940 after France capitulated with the Nazis in June of that year. Congress finally got the wake up call thanks mainly to Congressman Carl M. Vinson who gave funding legislation a kick start in 1934 with the passage of the Vinson-Trammell Act and followed it with the Naval Expansion Act of 1938 allowing additional tonnage over and above the Treaty of London limits. This was followed by two significant building expansion programs in 1940 with the passage of the Naval Expansion Acts of June and July of that year. Vinson became known as Father of the two ocean Navy as a result of his efforts to bring the Navy up to a first rate force. (Now we know why a Nimitz class carrier was named USS CARL M. VINSON, CVN-70-in honor of a true visionary).

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Table 5 - Procurement & Evolution History of WWII Fleet Boat

A glance at the extreme right column in Table 5 reveals a positive trend as a result of abiding by the conditions of the London Naval Treaty. The austere building program and its associated funding set forth in FY 1934 forced the Submarine Force to make the best of the hand they were dealt. It forced them to plan ahead and this resulted in planned upgrades and improvements every year with the benefit of not committing large financial expenditures to any one class until proven fleet worthy. A similar analogy occurred in the evolution of the nuclear submarine design during the fifties and sixties, i.e., the early classes were limited in the number of each class with known improvements incorporated in each subsequent class.

By 7 December 1941, the submarine inventory, in addition to the R, S and V boats mentioned above in Table 4, stood at 10 boats of the Porpoise/Shark/Perch class, 16 of the Salmon/Sargo/Seadragon class, 12 of the Tambor/Gar class, two of the Marlin class (coastal/training/experimental boats) and one Gato class boat, Drum (SS-228) built by Portsmouth Navy Yard. The status as of 7 December is summarized in Table 6 below. Before the year was out, three more Gato class boats joined the fleet; an EB boat - Gato (SS-212), a Portsmouth boat - Flying Fish (SS-229), and a Mare Island boat, Silversides (SS-236). 33 more Gato class boats would join the inventory in 1942 with Manitowoc delivering her first one, Peto (SS-265). The O boats listed were used as training boats and are included in the table for completeness.

Commissioned / Attive	Hull Numbers or Names	Quantity
Class OI	02 thru 04, 06 thru 08 & 010	7
RI	R1, R2,R4 thru R7 & R9 thru R20	18
51	51, 518, 520 thru 524 & 526 thru 547	29
53	\$11 thru \$17	7
548	S48	- 3
-VI	\$5-163, 164 & 163	3
V4	SS-166	1
V5	SS-167 & 168	2.
V7	55-169	1
V8	SS-170 & 171	2

		Total tonningo approx. 123,000 tons	Total 112
	Gato	SS-228 (USS Drum)	- 1
	Gar	SS-206 shru 211	
	Martin	SS-204 & 205	2
	Tambor	SS-198 thru 203	- 6
	Seadragon	SS-194 thru 197	- 4
	Sorgo	SS-188 thru 193	6
	Salmon	SS-182 thru 187	- 6
	Perch	SS-176 thru 181	6.
	Shark	SS-174 & 175	2
Class	Porpoise	55-172 & 173	2

Table 6 - Status of U.S. Submarine Force - 07 Dec. 1941

Back to the original question, "What was the real ready status of the US Submarine Force on Pearl Harbor Day, 7 December 1941?" To fully answer that question, one last aspect of the Submarine Force status needs to be examined, and that is, how and where were the 112 active duty submarines deployed?

Table 7 shows this deployment.

The Atlantic Fleet submarines, mainly obsolete O, R and S boats, were based out of New London and Key West with a few at Bermuda. The new construction boats, SS-207, 208, 210 & 228, were still attached to Portsmouth NSY and all destined for the Pacific. This left the Atlantic Fleet with only two new construction boats, MACKEREL (SS-204) and MARLIN (SS-205), both special purpose vessels. This dramatically and clearly indicated from where the expected threat to the U.S. was expected to emerge, i.e., the Pacific-which could only translate as Japan. In spite of the imminent threat of war with Germany, and top priority already given the Atlantic theater when and if that happened, naval and political strategists demonstrated by their action that submarine warfare in the Atlantic would be defensive, i.e., destroyers with ash cans and hedgehogs and ASW aircraft with search lights and bombs. Thus the offensive war utilizing the Fleet Boat would be in the Pacific.

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Table 7 - Deployment of U.S. Submarine Fleet on 7 December 1941

Now looking at the Pacific and Asiatic Fleet deployment in Table 7, the five boats at Mare Island were there for overhaul, two from San Diego and three from Pearl. The main fleet had left San Diego in May of 1940 and by Presidential decree in July 1941 was to remain in Pearl Harbor. This left San Diego with only a few old S boats suitable for coastal patrol. All the newly constructed submarines were earmarked for Pearl Harbor or the Philippines, again, surely indicating where the expected need would be.

In light of the political climate and Japan's aggressive territorial acquisitions in China and showing overtures toward French Indo China, CNO Admiral Harold R. Stark in October 1939 reinforced the Asiatic Fleet in the Philippines. He assigned seven Porpoise/Shark/Perch class boats to Cavite/Manila to augment the S boats currently there but depleting the sub fleet at San Diego and Pearl in the process. A year later in November 1940, Stark assigned four Seadragon class boats at the request of Admiral Thomas C. Hart, Commander Asiatic Fleet, again to the detriment of the fleet at Pearl Harbor. Finally in October 1941, Stark directed two Pearl Harbor divisions to be transferred to the Philippines. These divisions consisted of the six Salmon and six Sargo class boats recently added to the fleet. This brought the Asiatic submarine fleet up to six S boats and twenty-three new fleet boats for a total of 29-more than twice that of Pearl Harbor on that fateful day. As the CNO reported directly to the Secretary of Navy, Frank Knox, it clearly demonstrated the leaders of our country, both political and military, perceived Japan would most likely make her aggressive moves in Southeast Asia, not against Pearl Harbor.

With regard to Pearl Harbor, the total of submarines at Pearl shown in Table 7 may be a little deceiving. In addition to the 13 shown in the table, three Pearl boats were at Mare Island for overhaul, two were in transit from Panama via San Diego, and four were still at Portsmouth undergoing post commissioning shakedown cruises. This brings Pearl's compliment up to twenty-two. The sub base at Pearl must have felt like they were the supply depot for the Asiatic Fleet, and from a parochial point of view, they were not happy about that role. But, be as it may, that was the situation of the Submarine Force on 7 December 1941.

Finally, in response to the question, "What was the real ready status of the U.S. Submarine Force on 7 December 1941?", I think most would agree that we were not prepared in that we had insufficient quantities of modern fleet boats to cover all theaters, but what many don't realize was that the modern submarines we did have in the fleet were positioned where the threat was highest, i.e., Southeast Asia. Finally, the frosting on the cake was we were prepared with the best possible design - that of the Gato class boat and the good news was that the Gato design was in the pipeline and being produced by four shipyards. In spite of the restrictions imposed by the Treaty of London, someone in the Navy, Carl Vinson and other visionaries, had their head screwed on right and had the foresight to take advantage of the conditions of the treaty to develop the best possible design of the day - bar none. Bravo Zulu.

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www.shipscribe.com

COST

St. Marys Submarine Museum - Submarines of the U.S. Navy

Appendix I: Correlation of Submarine Class, Hull Number & Name

Class	Bull Number	Name		
16	\$5-38 day \$5-30 A: \$5-347 day \$5- 152	H1 Ons H3 & H4 day HT		
K	SS-32 thru SS-39	El tinotil		
u u	55-40 time 55-43 & 55-49 data 55-51 55-44 time 55-46 & 55-40	L1 day L4 & L9 day L11 L3 day L7 & L8		
м	\$5-53 thru \$5-59	NI des N7		
01 011	\$5-62 stars \$5-71 \$5-72 stars \$5-71	OI thru OID OII thru OIB		
R1 R21	55-78 step 55-97 55-98 step 55-864	R1 Nov R20 R21 Nov R27		
\$1 \$5-105, \$5-121 thru \$5-146 & \$5-153 \$2 thru \$3-108 \$3 \$5-106 \$48 \$5-107 A \$5109 thru \$3-122 \$3-139 thru \$5-163		\$1, \$18 thru \$41 & \$42 thru \$47 \$2 \$3 & \$4 thru \$17 \$48 thru \$31		
T	55-52, 55-60 & 55-61	T), 12 & 13		
VI V4 V5 V7 V8	55-163 thru SS-165 55-166 55-167 A 55-168 55-169 55-179 & 55-171	Bernecide, Base & Bonite Argonaus Nurvitad & Nautilius Dolphin Cachelor & Cottlefiels		
Popole	55-172 A SS-173	Pospoise & Pile		
Stark	55-174.4 55-175	She'à & Tarpon		
Penh.	SS-176 shea SS-181	Perch, Pickerci, Permi, Planger, Pullick & Pempana		
Saleson	55-182 thru 55-187	Salmon, Soni, Skipjack, Snapper, Stogrey & Snappen		
Serge	SS-188 thru SS-193	Sargo, Seury, Spearfish, Sculpin, Salifish & SwendSub		
Stalingen	55-194 skrsy \$5-197	Sendragon, Scaliers, Scanners & Scannell'		
Tamber	SS-199 dwy 35-203	Tandon, Tautog, Threshet, Trison, Trout & Tura		
Martin	\$5-364 & \$5-305	Mackenel & Marke		
Ger	55-266 thru 55-211	Gar, Grampus, Greyback, Grayling, Gernadur - Guidgeon		
Geo	\$5-212, \$5-226, \$5-229 & \$5-214	Cista, Drum, Flying Fish & Silversides		

Appendix II: 33 Gato Class Submarines Commissioned in 1942

Shipbuilder	Hull Number	Name
Electric Base Ca	58-213 thre 55-221 58-213 thre 59-216	Genealing, Geosper, Growler, Granica, Guerdilab, Albacore, Amberjack, Bark & Blackfish, Guenel, Gurnerd, Haddo, Hake, Hanler & Hoc
Persaneuth NSY	SS-230 thre SS-235 SS-275 thre SS-282	Finback, Haddock, Halibut, Herring, Kingfish & Shed, Kunner, Sew fish, Scamp, Scorpion, Snook, Sterlberd, Sunfish & Tump
Mare Island NSY	\$5-237 shre \$5-239 \$5-281 and \$5-282	Trigger, Wahoo & Whole Suefish & Tunny
Manisower Shipperd	65-265	Peter

THE SUBMARINE REVIEW

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

Articles for this publication will be accepted on any subject closely related to submarine matters. Their length should be a maximum of about 2500 words. The League prepares REVIEW copy for publication using Word Perfect. If possible to do so, accompanying a submission with a 3.5° diskette is of significant assistance in that process. 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. 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.

Comments on articles and brief discussion items are welcomed to make THE SUBMARINE REVIEW a dynamic reflection of the League's interest in submarines.

Articles should be submitted to the Editor, SUBMARINE REVIEW, P.O. Box 1146, Annandale, VA 22003.

SUBMARINE NEWS FROM AROUND THE WORLD

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From the March 2007 Issue

INDIA - Second Submarine Line Opened for Competition

In early March 2007, AMI sources indicated that the Indian Navy (IN) would open its second submarine line to International Tender. What was believed to have been a sure bet for the Russian Amur 950, now appears that the second line will be an open bid due to the new 2006 Defense Procurement Procedures (DPP). The new DPP states that all future equipment purchases will be through a multi-bid mode unless there are exceptional circumstances preventing such a bid.

The first submarine line in India consists of the six Scorpene submarines ordered from France in October 2006, which was approved before the new rules were implemented. In regards to the second submarine line, the Russians have been pushing the Amur 950 design with ten VLS missile cells for the past several years and it appeared that Russia, partnered with Larsen and Turbo Ltd, would ultimately win the contract for the second line of submarines to be built in India. However, it now appears that the new DPP will force the new submarine program to an open competition with major builders contending for the program. Although there is currently no firm time line on the second submarine line, more than likely it will follow the usual flow for new naval programs including the release of a Request for Information (RfI), followed by the Request for Proposals (RfP), then short-listing, final selection, price negotiations and lastly the final order. Since India has just begun its Scorpene program, an Rfl will not be released until around 2008 or 2009. An RfP will probably follow several years later with a construction contract for the first unit around 2012.

Russia's Amur 950 design will surely be joined by other foreign bidders including Navantia with the S 80, HDW with the Type 214, Armaris with the Scorpene/Marlin and Fincantieri with its Type 212 or one of its own indigenous designs. It is also known that the foreign supplier will have to perform a 30% offset requirement just to get a foot in the door.

VENEZUELA

Growing Submarine Force?

In early March 2007, AMI received information that the Venezuelan Navy - Armada de Venezuela (ADV) announced its intention to spend US\$3B for nine conventional submarines which would propel them to the forefront of fleet submarine size in Latin America. The ADV would use the submarines to protect its interests in its exclusive economic zones (EEZ), of which Venezuela views a large portion of the Caribbean Sea as falling under its zone. Additionally, sources indicate this could be in preparation for what is called an asymmetrical conflict with the US. Venezuelan ambassador to Washington, Bernardo Alvarez stated that Venezuela was "contemplating the need to defend itself against the world's lone superpower, a nation with vastly greater military resources." He also added, "We have simply been trying to upgrade our military equipment and maintain our defense while preserving balance in the hemisphere.

The ADV had originally planned to modernize the Submarine Force with the procurement of up to four new submarines. This was clearly spelled out in the Naval Medium Term Plan of 2005 (10-year plan). The plan calls for two new submarines completed in the near term (around 2010) to supplement the two Sabalo class currently in service, and two at a later date to replace the existing Sabalos. This is the first time that Venezuela indicated a desire to have a 9-unit Submarine Force.

There is no doubt that the ADV is looking to replace its current force and expand it to around four units. However, it will be extremely difficult for the sea service to expand and operate a 9-unit force without a massive influx of submarine-trained personnel and the facilities to support such a force. AMI believes that the most recent information is attributed to Venezuela's recent ballicose behavior towards the US rather than any serious intention to operate a 9-unit Submarine Force.

Regardless of the numbers actually built, the ADV will still need to address its submarine requirements in the near term. The new submarines would likely be in the 1750 ton range and the ADV is currently considering bids including Germany with the Type 209/214. The French/Spanish Scorpene and the Russian Kilo/Amur. Venezuela already has US\$3.4B worth of contracts with Russia involving assault rifles, fighter aircraft and helicopters with the future hopes of purchasing Russian built air-defense systems such as the Tor-M1. Given their recent business relations, Russia seems the likely lead candidate. Germany and France/Spain may be apprehensive to negotiate a submarine deal with Venezuela for concerns of political pressure from the US.

UNITED KINGDOM

Thumbs Up on Nuclear Deterrent Vote

On 14 March 2007, the members of the UK Parliament voted to endorse the UK Ministry of Defense (MoD) white paper entitled The Future of the United Kingdom's Nuclear Deterrent. This white paper, issued in December 2006, made clear that the MoD intends to maintain Britain's nuclear deterrent beyond 2020. The endorsement to renew the UK's nuclear deterrent is a positive step forward, not only the defense of the United Kingdom, but also for the shipbuilding industry within the UK. The endorsement also shows the UK's global commitment to maintain a nuclear deterrent capability.

The nuclear deterrent capability equates to a new SSBN that will replace the Vanguard class ballistic missile submarines currently in service. However, the white paper states that the MoD will investigate to see if the requirement can be satisfied with a fleet of only three total submarines, vice four. A decision on the final number of submarines to be procured will be made when more information is available on the detailed design.

Current estimates place the cost of the procurement of four new submarines, along with the associated equipment and infrastructure, at around US\$29.4B. The majority of the funding for the new submarines is expected to fall between 2012 through 2027. Of note, it is expected that in service support costs between 2020 and 2050 will remain relatively equal to those of the submarines currently in service today.

The first of the Vanguard submarines will begin decommissioning around 2022 followed by a second unit in 2024. It is estimated that it will take approximately 17 years from the initiation of detailed concepts work until the first operational unit is in service. With those estimates in mind, the MoD will begin initiating detailed concept work on the replacement submarines beginning in 2007. The MoD will likely place a contract for detail design work between 2012 and 2014. The first unit to replace the Vanguard SSBNs should be in service by 2024.

As previously mentioned in the <u>Defence Industrial Strategy</u> (DIS), published in December 2005, the MoD has been urging industry within the UK to consolidate. Only through industrial consolidation does the MoD believe that a new replacement submarine can be delivered on time and at an acceptable cost.

SINGAPORE

Submarine Rescue Ship Program Underway

On 14 March 2007, Singapore Technologies Engineering Ltd (ST Engineering) announced its marine arm; Singapore Technologies Marine Ltd (ST Marine) was awarded a US \$400M contract to provide a ship and submarine rescue system as well as maintenance services to the Republic of Singapore Navy (RSN). The contract will be shared between ST Marine and James Fisher Defence Limited (JFD) of the UK. ST Marine and JFD will set up a joint venture company for the sole purpose of fulfilling this contract.

The contract encompasses two elements. The first is to build and design a fully integrated ship and submarine rescue system and the second is to operate and maintain the system over the next 20 years.

The ship and submarine rescue system includes a Submarine Support and Rescue Vessel (SSRV) and a Submarine Rescue Vehicle (SRV). The SSRV is capable of transporting the SRV and its handling equipment anywhere in the region where its services are required. The design of the complete SSRV system is already underway and construction is expected to start in late 2007. The 20-year services contract will begin when the SSRV and SRV have been integrated into a complete submarine rescue system. AMI believes the SSRV will be constructed in Singapore by ST Marine and the SRV will be built in the UK by JFD.

It should be noted that with the acquisition of this SSRV system, the RSN will have the only submarine rescue capability in the region and could be called upon by neighboring nations who may have need for the SSRv services.

INDIA

Russian Akula Class Submarines Leased to India

In early February 2007, India and Russia agreed on a five-year deal for the lease of two Russian Akula II class nuclear-powered attack submarines (SSNs) to the Indian Navy (IN). In the making since 2004, the US\$350M deal calls for payments of US\$70M annually covering the five-year period of the lease.

The first unit, probably the NERPA (K 152), will be delivered to the Visakhapatnam Naval Base in 2007. The second unit (undetermined hull) will probably be delivered in 2008. Sources also indicate that an undisclosed number of Klub sea-skimming cruise missiles were part of the package.

India has been planning for the lease of nuclear-powered submarines from Russia since 2004 as an interim measure until the indigenous-built nuclear-powered attack/guided missile attack (SSN/SSGN) submarines (Advanced Technology Vessel- ATV) start entering service. Continuing delays in the ATV Program (with the first unit likely commissioning around the 2012-2013 timeframe) forced the IN into leasing Russian nuclear-powered submarines in order to maintain a professional group of nuclear trained personnel for the ATV.

The delays in the ATV program and the corresponding loss of nuclear-submarine expertise acquired with the lease of the Charlie I SSGN from Russia (1988-1991) forced the sea service to utilize the Akula as an interim measure for training and operations. Initially, the IN had a core of 150 trained personnel that were with the Charlie I Program and transferred to the ATV Program. However, this was more than fifteen years ago and many of these personnel are beginning to retire from the sea service.

RUSSIA

Procurement Budget Increases 20% in 2007

In early February 2007, sources indicated that the Russian defense budget would increase to US \$34B in 2007, a rise of 23% over 2006 levels. The defense budget will now account for 16% of Russia's total federal expenditures for the year and 2.63% of the

nations Gross Domestic Product (GDP). The procurement portion of the budget will grow to around 20% of the total budget or US\$6.8B.

The recent increases in the Russian defense budget can be attributed to the performance of the economy, which continues to grow at around 6.7% annually and is expected to continue for the foreseeable future. The defense budget increases are sorely needed as the Russian Armed Forces have had a difficult time at best in modernizing its force.

In regards to the Russian Navy, it continues to modernize at a very slow pace commissioning only one Akula class and one Saint Petersburg class submarine as well as several patrol boats over the past decade, a far cry from the former Soviet days. Other programs such as the Borey class SSBN, Yasen class SSN, Steregushchly class frigates and Skorpion class fast attack craft (FAC) continue to languish due to a lack of procurement funding.

Although on the outside the budget increase seems significant, the relative state of the Russian Armed Forces and in particular the Russian Navy, the increases will do very little in regards to modernizing the force. Unfortunately for the Russian sea service, it will have to continue operating its current fleet with replacement units being far and few.

DID YOU KNOW?

South Africa - On 14 March 2007, the second Type 209 (S 102) submarine SAS CHARLOTTE MAXEKE was commissioned in to the South African Navy.

Greece - On 26 February 2007, the second Greek Type 214 submarine was launched at Hellenic Shipyards in Greece.

Malaysia - On 14 March 2007, the fore and aft sections of the first Royal Malaysian Navy Scorpene submarine were joined at a ceremony in Cherbourg, France.

FROM THE APRIL 2007 ISSUE

IRAN

New Indigenous Submarine Enters Service

In mid-April 2007, the Iranian Navy (IN) announced that the

first of a new class of submarine had successfully surpassed over 700 hours of operational testing and was commissioned into the Iranian fleet.

The new submarine is approximately 21.9 meters (72ft) in length, displaces around 100 tons and is manned by a crew of four. Although relatively small, the submarine is multi-purpose and is able to perform attack missions as well as a support vessel for special forces. Two bow tubes and its small size suggest that the submarine will probably have a weapons load-out of only two total weapons; either torpedoes, SHKVAL rockets or anti-ship missiles (ASMs).

Supporting special forces missions, the submarine is probably able to lock-out swimmers through the sail with the special forces support package being contained outside of the hull in a cylinder forward of the sail. Following launch in 2006, the submarine participated in the Great Prophet exercise in 2006 although it is not known what role it played as no torpedoes were fired from any Iranian submarine during the exercise.

The small size makes it an ideal weapon for use in the shallow and restricted waters of the Straits of Hormuz as well as in the Arabian Gulf. It is likely that the IN will build up to 5 additional units fo the class now that sea trials have proven successful.

The new submarine is the second indigenous design unveiled by Iran in the past year. Assuming that Iran proceeds forward with both classes, the Iranian Navy could have a force of up to 12 minisubmarines in service over the next few years.

DID YOU KNOW?

Russia

On 15 April 2007, the first Borey class nuclear-powered ballistic missile submarine (SSBN), RS YURI DOLGORUKY, was launched from the Sevmash shipyard in Russia.

FROM THE MAY 2007 ISSUE

INDIA - 4th Kilo Submarine Completes Upgrade

On 10 May 2007, the fourth Indian kilo class submarine to be upgraded by Russia, INS SINDHUVIJAY, was handed over to the Indian Navy (IN). The upgrade on the 2,300 ton submarine was conducted at the Zvyozdochka Nuclear Submarine Repair Yard in Severodvinsk.

Specifics on the modernization include the installation of the Indian made USHUS sonar suite and CCS-MK integrated communications system (ICS). In addition, hull maintenance was performed as well as replacement of the submarines batteries. The most substantial improvement in terms of capabilities was the upgrade of the combat systems including the ability to fire the Klub-S cruise missile.

The five remaining units of the Kilo class still requiring the mid-life modernization program will also receive the Klub-S giving the IN a substantial increase in its anti-surface warfare capability. Of note, when the final unit of the Kilo class was delivered in 2000 (INS SINDHUSHASTRA), it was already equipped with the Klub-S. Assuming the modernization for each unit occurs at mid-life, the remaining units should all receive their upgrades by the end of 2020, or earlier should funds become available sooner.

One question must be asked considering missile developments in India; why go with the Klub-S vice the indigenously produced BrahMos?

Historical and performance information on the Klub-S is as follows:

The 3M54, Alfa (Klub) anti-ship missile is derived from the S-10 Granat or SS-21, which is similar in concept to the US Tomahawk (in its strategic land-attack version). The system in its entirety (including the missile and fire control system) is nicknamed the Klub (also rendered Club). The 3M14E is the export version of the non-nuclear SS-21, using satellite (GLONASS) navigation and a barometric altimeter as guidance for the missile.

Klub was first shown at Abu Dhabi in 1993. It has a range of 200 kilometers (112.4 miles) at subsonic speed (220-240m/sec). When within 20 kilometers (12.4 miles) of the expected target position, it fires its warhead towards the target at supersonic speed (about 700m/sec, about 1380kts) to penetrate defenses at an altitude of 5-7 meters (16-22 feet). The warhead weight is 200 kilograms (440 pounds). The terminal stage may make evasive maneuvers as it approaches the target. An anti-ship weapon based on the non-nuclear version of the basic Granat has been offered for

export as the 3M54E1.

Klub, as the complete system, embraces at least four different missiles: Klub-N for surface ships and Klub-S for submarines, within each of which are both the 3M54E cruise missile and the 91RE1 anti-submarine missile. The use of a single system name for both missiles suggests that they use common interfaces to a single fire control system, and even that both may be launched from the same tube or tubes—presumably both standard torpedo tubes and vertical launchers for surface ships. The fire control systems are, respectively, 3R14N-11356 (for the Project 11356 improved Krivak class frigate) and 3R-14PE; the surface ship launcher is 3S14NE (due to confusion between Cyrillic and Roman letters, the R in the fire control system may be a P).

India became the first export customers for Klub, for both Kilo class submarines and for the new Talwar class frigates (modificed Krivak, Project 1135.6, with vertical launchers). The submarine system was installed on board the Kilo class submarine INS SINDHUVIR during her St. Petersburg refit completed in April 1999, and is on board the new Kilo class submarine INS SINDHUSHASTRA, completed in 2000. Reportedly the modified Krivaks are to be armed with the supersonic 3M54E. Each will be armed with sixteen missiles. According to the Indians, Alfa was chosen in preference to Yakhont and Moskit. Deliveries of 3M54E to India began in September 2000. The final test launch (two successes) occurred in the Baltic, with Indian naval officers present, in June 2000. The vertically-launched surface ship version was tested on board the new Russian-built Indian frigates in 2001, before they left the Baltic for India.

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LIBYA

Talks with Russia-Debt Relief for Acquisitions

In mid-May 2007, AMI International learned that a Libyan military delegation was in Moscow to discuss the purchase of up to US\$2.2B worth of Russian weaponry, platforms, systems and training. These discussions were based on the objective to forgive the Soviet Union debt to Libya that is reportedly between US1.72B and US\$4.4B.

In particular, should an agreement be reached, Libya will replace its two aging Foxtrot class submarines with two units of the Russian Kilo (Project 636) class. The new submarines are included in a larger Russian/Libyan defense package that includes S-300 and TOR-M1 surface-to-air missile (SAM) systems, SU-30MK2 and MIG-29SMT fighter aircraft, as well as modernization programs for the smaller fast attack craft (FAC) force. The entire arms package is valued at an estimated US\$2.2B. Negotiations between Russia and Libya accelerated in 2006 following the completion of a US\$7.5B Russian arms deal with Libya's neighbor, Algeria.

It is expected that the overall arms accord will be approved when President Putin visits Tripoli in late 2007 as Libya attempts to keep pace with the modernization efforts of neighboring Algeria. Assuming that the arms accord is in place by the close of the year, details for the final design and construction of the submarines could be complete by late 2008 or early 2009 with delivery in 2012 for both units. Libya, now emerging from fifteen years of international economic and arms embargoes, is again moving forward with the modernization of its entire armed forces. It is estimated that Libya will continue to procure defense systems from its traditional suppliers such as Russia, France and Italy when at all possible. Russia, being the historical submarine supplier for the Libyan Navy, appears set to close the submarine deal.

If an agreement on the debt relief is reached, this program will move forward sometime after the Russian President Putin's visit later in 2007.

FINLAND/SWEDEN

Considering the North Atlantic Treaty Organization

In mid-May 2007, AMI received information concerning the possibility of Finland and Sweden joining the North Atlantic Treaty Organization (NATO) alliance. Although just beginning to experiment with the idea of full NATO membership, both nations did announce their intention to join the NATO Response Force (NRF) on 15 April.

Sweden and Finland will join the NRF within the next 12 months. Although joining the NRF does not equate to NATO membership, it does represent a move away from the traditional stance on complete neutrality and one step closer toward military alignment. Both states already have troops under NATO command in Kosovo and Afghanistan and have undertaken military developments over the past decade with NATO compatibility in mind.

For both nations, the idea of joining NATO is seen as the next logical step as both nations are already members of the European Union (EU), and the only remaining Nordic states that are not members of NATO.

Historically, Finland and Sweden have long resisted any formal defense ties. Finland since its independence from the Russian Empire in 1917, has historically attempted to remain neutral due to fears of a Russian (then Soviet) response to such an endeavor. Sweden, on the other hand, has remained free of all foreign alliances due to its own self-reliance in the defense arena. However, since the demise of the Soviet Union, the Nordic states regional and geopolitical landscape has altered drastically with little or no major threat now emanating from the East.

It appears that both nations seem to be more willing to join NATO in order to be part of a regional alliance rather than as a measure against a specific perceived threat. The idea of Finland or Sweden joining the alliance must be considered a huge foreign policy shift and it will most assuredly be debated within both countries for the next several years. Only time will tell if NATO becomes a reality for these Nordic states.

UNITED KINGDOM DML Sold to Babcock

On 10 May 2007, Kellog, Brown and Root (KBR) announced that KBR along with fellow shareholders agreed to sell Devonport Management Limited (DML) to Babcock International Group for US\$693.7M. The deal is expected to close in 60 days following approval by Babcock's shareholders. DML, through its Devonport Royal Dockyard, is the primary yard performing refueling and related maintenance for the Royal Navy's (RN) nuclear submarine fleet.

KBR divested itself from DML since the company is not core to KBR's strategy of engineering, construction and service offerings to industrial, government and military customers. With the purchase of DML, Babcock is now the primary repair and support group for the RN's Submarine Force as it also runs the Rosyth and Faslane submarines bases.

Even with the submarine repair and support business in decline, Babcock realized that DML was an attractive investment as DML had already begun to diversify its business lines by purchasing non-submarine activities such as warship support, private yacht design and construction and other heavy equipment maintenance.

The transaction has also been very well received by the British Government and the Ministry of Defense (MoD) as the naval shipbuilding industry continues to consolidate and rationalize itself as envisioned under the latest Defense Industrial Strategy (DIS) of 2005.

VARIOUS DID YOU KNOW?

SINGAPORE-On 07 May 2007, the first Formidable class frigate, RSS FORMIDABLE (hull #68), was commissioned into

the Republic of Singapore Navy (RSN) at the Changi Naval Base in Singapore.

SOUTH AFRICA—On 26 April 2007, the second South African Type 209/1400 submarine arrived in the port of Simons Town, South Africa. The SAS CHARLOTTE MAXEKE was built at ThyssenKrupp's Norseewerke yard in Emden, Germany and will be commissioned later in the year. The third unit of the class, SAS QUEEN MODJADJI began sea trials in the Baltic Sea.

UNITED KINGDOM—On 08 June 2007, the first Astute class submarine, HMS ASTUTE, will be launched from the BAE Systems shipyard Barrow-in-Furness. ASTUTE will be delivered to the Royal Navy (RN) in August 2008 with commissioning scheduled for January 2009.

INDIA—On 23 May 2007, the first Indian Navy Scorpene class submarine (Project 75) began construction at the Mazagon Dockyard in Mumbai, India.■

ETERNAL PATROL

CAPT A. B. Anderson, USN (Ret)
CPO(SS) Vincent G. Clifford, USN (Ret)
CAPT Warren R. Cobean, Jr., USN (Ret)
RADM Hayden B. Crawford, USNR (Ret)
RADM Eugene B. Fluckey, USN (Ret)
QMC(SS) David Frank, USNR (Ret)
Mr. Donald Horst
Mr. Donald V. Kane
LCDR Herman W. S. Kreis, USN (Ret)
Mr. Thomas M. Wong

THE SUBMARINE COMMUNITY

PCU NORTH CAROLINA CHRISTENING VICE ADMIRAL JOHN J. DONNELLY, U.S. NAVY COMMANDER, SUBMARINE FORCE PRINCIPLE SPEAKERS REMARKS 21 APRIL 2007

Admiral Donald, thank you.

Ladies and Gentlemen, Platform Guests, Northrop Grumman Newport News and General Dynamics Electric Boat Employees, North Carolina and Virginia Congressional Delegations and members of the Submarine Force Family, it's a wonderful day and it is my pleasure to address you this morning.

I too would like to give a special welcome from the Submarine Force to PCU NORTH CAROLINA's Sponsor Mrs. Linda Bowman, her daughter Christy and daughter-in-law Kerry and of course Admiral Skip Bowman. Linda, the Crew of NORTH CAROLINA is truly fortunate to have you as their sponsor.

Commander Davis and the Crew of NORTH CAROLINA, it is truly an honor to be with you today celebrating this key milestone in bringing a new warship closer to joining our Submarine Force. You, along with your Northrop Grumman Newport News/General Dynamics Electric Boat ship building partners have worked tirelessly over the past 3 years towards delivering this ship... a ship designed to serve the Navy and the nation and dominate the undersea environment.

While you have been busy building this fourth magnificent ship of the Virginia class, your shipmates on other submarines have been serving around the world, underwater, un-detected, in places others can't go. Never fear, your turn to deploy will come soon enough. Soon this remarkable submarine will join the fleet and help our Navy ensure the prosperity and security of our Nation.

USS NORTH CAROLINA will be powerful, graceful and quiet.

At her top speed she will make less noise than most of our submarines do at 5 knots. Her firepower, stealth and agility are tailored perfectly to meet the maritime challenges of the future. She will serve the United States Navy as a powerful force for deter-

rence and peace around the world to ensure freedom of the seas.

Our Submarine Force is built upon a strong legacy of selecting and training the best people, building and maintaining the best ships, and equipping those ships with the latest technology and most advanced equipment.

NORTH CAROLINA, along with the entire Virginia-class of submarines, will provide a huge leap forward in capabilities to accomplish new missions—in this new century.

This Christening Ceremony truly brings into focus my three top priorities as the Submarine Force Commander.

- First, operational excellence. Our focus must be on the basics.
 Our standards are necessarily high and expectations are equally high. As the Northrop Grumman and the PCU NORTH CAROLINA Team continue the task of preparing this ship and crew for commissioned service, I challenge them to meet those high expectations.
- Second is the professional development of our Submarine Force personnel. Every member of our force, active duty, reservist and civilian together with their family members is vital to our success. Nowhere is this more evident than in the hand picked crew and highly skilled shipbuilders standing before you. Each and every one of them is contributing to the success we are celebrating here today.
- Finally, we must maintain our primacy by continuing to modernize our submarine fleet. What better example than this, the newest submarine in the world today. Soon she will deliver the stealth, persistence and multi-mission capabilities that are in such high demand by our Combatant Commanders.

As you can see, all three of these priorities are evident here today not only in the Crew of North Carolina but in the great Shipbuilding team lead by Mr. Mike Petters and Mr. John Casey.

Our people are the cornerstone of our Force. Standing before you today ladies and gentlemen, are talented, motivated Sailors that have chosen to serve their nation preparing this ship for service. The state of North Carolina has been a rich source of talented people for the Submarine Force. Six of the crewmembers from this ship hail from North Carolina. In fact, three of the Submarine Admirals here today (ADM Bowman, ADM Donald and RADM Mauney) have very strong ties to North Carolina.

And the crew of this ship has already formed strong and lasting ties with their namesake state. Since assuming command in November of last year, Commander Davis and members of his crew have toured the state giving briefs to Submarine Veterans, Junior Reserve Officer Training Corps units, the Veterans of Foreign Wars, and each of the state Navy Reserve Officer Training Corps units. Crew members have performed community service including visits to the Children hospital, working with Habitat for Humanity, and volunteering at a local shelter in Durham.

Commander Davis has even served as the Grand Marshall for the Azalea Parade down in Wilmington and I'm told the crew has befriended Miss Chelsea Cooley, the 2005 Miss North Carolina and winner of the Miss America title. As you can see, these Sailors are remarkable men!

Today's Submariners make up a small portion of our Navyapproximately 7% of our personnel operating about 24% of our combat ships and they are out front around the globe every day providing for our national security.

Our submarines are in constant high demand. Our men and ships go to sea to train, hone their skills and then deploy to all corners of the globe. We are busy—on any given day more than 60% of our attack submarines are underway, and 10 are deployed forward.

In 2006, we deployed 31 of our 52 nuclear powered attack submarines throughout the world on lengthy operational deployments. These submarines worked in forward areas, many fully integrated with Carrier Strike Groups, others as part of naval or joint task forces, fulfilling Combatant Commander, Fleet and national tasking.

Our submarines will continue to be in demand, utilizing stealth, endurance, and mobility. Day-in and day-out, they will be enhancing maritime security, gathering vital intelligence information, and shaping the environment to avert the next conflict, yet they stand ready to engage quickly and decisively, if necessary.

Commander Davis, as NORTH CAROLINA's Commanding Officer; in your hands are placed the ultimate responsibility, authority and accountability. There is no position in our Navy that requires more trust or deserves more respect. I expect a great deal of you and your team. Lead them well. The entire Submarine Force eagerly awaits the day when USS NORTH CAROLINA will assume the watch.

To the crew of PCU NORTH CAROLINA, to the ship's Sponsor, Mrs. Linda Bowman and to the Ship Builder Partnership of Northrop Grumman Newport News and General Dynamics Electric Boat, on behalf of the entire Submarine Force, thank you.

THE UNSUNG HEROES OF THE SUBMARINE SERVICE

by Mr. Leonard D. Stefanelli

Mr. Stefanelli qualified in Submarines in USS CATFISH SS-339. He is a Life Member of the United States Submarine Veterans Inc.

American Heroes during World War II, but due to the fact I was only seven years old in 1941, I was clearly not eligible. I nonetheless did serve during the period of the Cold War and did in fact participate in some photo reconnaissance of the Siberian Coast line and other intelligence gathering, that we, the enlisted men were not privy to. A bit dangerous yes, but not to be compared to World War II.

Over the years, I have met many members of the USSVWWII and was somewhat envious that I was not eligible to join, because I did not serve on the boats during World War II. Clearly these men who served in the capacity are very special people. Simply put, these men are the true American Heroes of World War II and clearly deserve their place in history.

However, those of us who have served on the boats, nonetheless belong to a special brotherhood and some far thinking gentlemen who served on the boats after World War II formed the second generation of Submariners by organizing the United States Submarine Veterans Inc. (USSVI).

Even though the two organizations maintain separate identities, they do in fact share a common interest and pride of their special military service and share in many events, such as the National Convention being held in Reno.

One of the most rewarding experiences in belonging to the USSVI, is the wonderful opportunity to renew friendships and meet so many fine gentlemen from all over the United States, and especially on the West Coast, that heretofore would not have been possible without the USSVI.

Being a member I have conducted several visits for bases, other than our Mare Island Base, to tour and enjoy a visit to USS PAMPANITO, SS383, now a working/floating Museum Boat based at Fisherman's Wharf. Hopefully, most of the submarine community knows that PAMPANITO has been restored to fighting trim by inactive submariners, dedicated to maintain her so that present and future generations will always be aware of what the submariners sacrifice now, and especially those that served during World War II.

Thanks to the efforts of ever so many volunteers, a casual visit will immediately show that the PAMPANITO today, although 60 years old, has virtually every system in the boat operational.

Three of the four main engines are operational, as is the auxiliary, heads flush, water is circulated, hydraulic systems function, and the mess room/galley is operational as well. That is the point of this article; to bring forth an extremely important facet of the Submarine Service which I believe has been over looked by most in their service career.

It was one of these visits from seven members of the Seattle Base of USSVI and one Member from the USSVWWII that I met. Commander Robert (Robbie) Robertson, plank owner of USS TIRANTE, SS-420. He clearly exemplifies what a USSVWWII is, and made me recognize one of the great contributors to the submarine spirit.

Commander Robbie, and USSVI Members Patrick Householder; Cliff Nutter, Charlie Ryan, Charles Quimby, George Debo, Phil Ward and Doug Abramson flew down from Seattle to provide specialized maintenance and repair work on PAMPANITO.

As part of this special visit, this relief crew slept and worked on board PAMPANITO, but took their meals on shore. I helped to facilitate that part because I am a third generation San Franciscan and made sure that they had the best meals available while serving the Submarine Service.

In addition, I thought it might be a special treat to invite a few of my friends to share a meal with the Relief Crew from Seattle on board PAMPANITO in the Crews Mess. By doing so, I thought it would bring back some fond memories for us older submariners and provide a unique experience for the eight civilians by exposing them to a bit of a submariner's life.

Being Italian, I planned sort of a special menu. Cocktails, (non military venue), shrimp cocktails, appetizers, ravioli's with home made gravy, specially seasoned fried pork shops, tossed green salad, with special dressing, garlic bread, dessert, wine and after dinner brandy.

To save time, I prepared the entire meal on shore. Made the gravy, seasoned the pork shops, prepared the salad and dressing, made the garlic bread, prepared the shrimp cocktails etc. at the Local Eagles Club and brought the entire prepared ingredients on board.

Once the food was ready to go, and with the help of my friend Nick Celona, we brought the prepared ingredients to PAMPANITO to cook and serve the 16 gentlemen of the relief crew and guests. The only task left was to fry the pork chops, boil the water for the ravioli's, heat the gravy and brown the garlic bread and serve the food family style in the crews mess as tradition dictated on the boats.

Well, I found that this assumed-simple chore of completing and serving this one meal for only 16 people was not easy and substantially more difficult than I had imagined, even though the vast majority of the food was already prepared on shore.

To make a long story short, the meal proved to be excellent and rewarding for all present; however, after 50 years and up until that moment, I never realized the extraordinary planning and work that a submarine mess crew needed to feed three meals a day for a crew of 80 men.

My exceptionally short experience in preparing this one meal, to feed only 16 people, caused me to realize what an unbelievable and magnificent job the full time Cooks and Mess Cooks provided the Submarine Navy over the past 100 years, especially those on War Patrol.

It is common knowledge that Submarine Sailors enjoyed the best food in the Navy and you would never get me to argue to the contrary. However, during my time served, I never truly appreciated what it took to prepare and serve a meal on a submarine, especially a fleet boat, until that night as I prepared dinner.

I served on USS CATFISH 50 years ago and never really appreciated, let alone respected, the significant contributions these men made to allow a submarine to function as a magnificent and deadly Man of War. It was nothing short of a miracle.

I am sure that my lack of comprehension and/or appreciation of the contributions of the Cooks and Mess Cooks is representative of many of the submariners who also overlooked and did not really appreciate them.

Through circumstance, in my small way, I walked in the Mess Cook's moccasins and now after almost 50 years, I realize and respect their exceptional, extraordinary and ever so necessary service to the submarine crews, especially those who served in World War II under war time conditions.

By way of this article I wish to respectfully offer, to all crew members who have served in this capacity, on behalf of my self and I would like to believe, all the crews you served in the past, present and those in the future, to salute each of you, for a "Job Well Done".

On behalf of all the Submariners, I will offer the traditional "THANK YOU!" and trust that you will all know the depth and sincerity of their meaning.

The evening was rounded off with some brandy and an bour or so of listening to Commander Robbie recall his days as an enlisted man and plank owner of USS TIRANTE, SS 420, under the command of George L. Street. That extraordinary crew and their heroic contributions made victory for the United States possible.

REUNIONS

USS TINOSA SS-283/SSN-606

Aug 3-6, 2007

Peabody, MA POC: Jim Hanson, 108 River St., Middleton, MA 01949

Phone: 978-777-1444 Email: dontmatta@comcast.net

USS WILLIAM H. BATESSSN-680

Aug 11-12, 2007

Amsterdam, MO

LOC: Terry Stanley's farm. Address and directions to follow.

Send you contact info to: billyb ssn@yahoo.com

USS TIRU SS-416

Aug 16-19, 2007

Norfolk, VA

POC: Chuck Coker, 2705 Country Club Dr., Suffolk, VA 23435

USS PIPER SS-409

Aug 17-19, 2007

The Third Triennial Reunion-of-the-Crews and Lobster Clambake Groton, CT POC: Frank Whitty, E-mail: whitty409@aol.com Piper Web Site: http://webpages.charter.net/usspiper/index.html

DOLPHIN SCHOLARSHIP

DOLPHIN SCHOLARSHIP FOUNDATION SELECTION PROCEDURES

by Mrs. Mimi Donnelly President, Dolphin Scholarship Foundation

The most exciting part of my job as President of Dolphin Scholarship Foundation is the annual selection of the Scholars. As that day approached, I can honestly say that I was both excited and nervous at the same time. Those of us on the selection committee realize how much these scholarships mean to the applicants and their parents so each of us involved took our responsibility very seriously. The selection committee had a lot of work to do and we were committed to take as much time as necessary to give every applicant proper consideration.

The selection criteria for Dolphin Scholars is directed by the charter which established the Dolphin Scholarship Foundation in 1961. Applications are reviewed by a selection committee, giving equal consideration in three areas: 1) academic proficiency, 2) financial need and 3) commitment and excellence in school and community activities. These judgments are based solely on the information provided by the student in the completed application, the school transcript, letters of recommendation, and a brief essay by the student regarding career objectives. The number of new Scholars selected each year is based on attrition from graduating seniors, students requesting temporary leaves of absence, or other extenuating circumstances.

The Selection Committee is comprised of the DSF President, a Submarine spouse, a Submarine officer, a Submarine senior enlisted member, and two educators, one high school level and one college level.

The selection of Dolphin Scholars is as fair and blind as possible. When the applications were arriving in the office prior to the April deadline, the Staff asked me not to come to the office where I could possibly be exposed to any of the applications accidentally. They worked very hard to protect the integrity of the process. Applications from high school seniors and those from

students already in college are reviewed and ranked separately. Prior to review by the Selection Committee, information identifying students and their sponsors is masked on the applications. Each application is reviewed independently by each committee member and assigned points in each of the three criteria. This too is a blind process so the committee members aren't influenced by each other's grading. The three criteria of academic proficiency, financial need, and commitment and excellence in school and community activities are weighted equally. The applicants with the highest point totals are selected as the new Dolphin Scholars. Finally, letters of acceptance or regret are sent to each applicant.

ACADEMIC PROFICIENCY. Finalists are determined by an academic ranking generated by a computer program. High school applicants are ranked according to a score derived from a student's highest SAT or ACT scores and high school class rank (or percentile standing), as documented by the high school counselor or in the transcript. College students' scores are derived from a student's college GPA, the number of college terms completed, and a comparative ranking of the college attended. In addition, each member of the Selection Committee reviews the finalists' transcripts and bases his/her score on such factors as final grades, strength of schedule (i.e., honors, advanced placement courses), and academic program (i.e., International Baccalaureate program).

FINANCIAL NEED. Financial need is based on the information presented in the application. Need is considered with regard to income, family size, number of family members who will be in college at the same time, area cost of living, cost of selected college, and family financial resources and financial obligations presented by the sponsor.

COMMITMENT AND EXCELLENCE IN SCHOOL AND COMMUNITY ACTIVITIES. Non-academic performance is based on information in the application regarding extra-curricular school and community activities and leadership, three letters of recommendation (at least one providing non-academic insight on the applicant,) and the student's required essay.

While we feel the process is fair and balanced, it is reviewed every year for possible improvement. This fall, DSF will award 137 undergraduate scholarships of \$3,250 each, including 102 scholarships renewed for the 2007-2008 school year, for an annual total of \$445,250. Each scholarship is potentially renewable for up to four years of undergraduate study. This would not be possible without the strong support and generosity of the submarine community past and present. Thank you all so much.

The 35 new Dolphin Scholars included 27 high school seniors and eight college students, 16 male and 19 female. Twenty-two of the submarine sponsors were from the enlisted community and thirteen were officers. Congratulations to the new 2007 Dolphin Scholars!

The Dolphin Scholarship Foundation (DSF) is proud to announce the selection of 35 outstanding high school and college students as the 2007 Dolphin Scholars.

STUDENT	SPONSOR	Righ School Attended (Scholar's Hometown/State)
Stephen D. Artman	David T. Artmac FT1(SS) (E-6) (Ret.)	Kiski Area High School (Vandergrift, PA)
Natalie R. Barnett	Noel W. Barnett EMC(SS) (E-7) (Ret.)	Peru High School (Schwier Falls, NY)
Katic L. Bell	Hugh C. Bell NDCM (E-9)	Camden County High School (St. Maryz, GA)
Kevin P. Bloomfield	Patrick M. Bloomfield CAPT (1120) (Ret.)	Bishop Ireten High School (Alexandria, VA)
Caroline E. Bodgan	David S. Bogden CDR (1120) (Ret.)	Thomas Jefferson High School (McLeux, VA)
Brajamin A. Cooper	Johnny W. Cooper MMC(SS) (E-7) (Ret.)	Wayne County High School (Monticello, KT)
Lauren E. Dougheny	John R. Daugherty CAPT (1120)	Frank W. Cox High School (Virginia Brack, VA)
Sarah T. Dawson	Poter M. Dawson CDR (1120)	Klahoway Secondary School (Seaheck, W.A.)
Bernard R. L. Diaz	Amonio S. Diaz EMC(SW/AW) (E-7)	Central Kitsup High School (Bromerion, WA)

STUBENT	SPONSOR	HIGH SCHOOL ATTENDED (Scholer's Homeswen State)
Travis M. Dudley	Kevin W. Dudley STS1(SS) (E-6) (Res.)	Denbigh High School (Newport News, FA)
Alexander S. Florez	Abraham C. Florez ISC(SS) (E-7) (Disch/Ret.)	Homeschooled (Uncarrille, CT)
Morgan L. Gillispie	Kevin D. Gillisple HMCS(SS) (E-8)	Granby High School (Norfolk, FA)
Joshua M. Holland	Kenneth L. Holland LCDR (6400)	Nile C. Kinnick High School (Yokoroka, Japan)
Christopher P. Leader	Daniel E. Leader CDR (1120) (Ret.)	Falmouth High School (East Falmouth, MA)
Hannah J. Lipps	Jeffery T. Lipps CWO) (7481)	Camden County High School (Woodbine, GA)
Andrew P. Malinowski	Stephen M. Malinowski ET1(SS) (E-6) (Disch.)	Camden County High School (Woodbine, GA)
Erin H. Mussey	Kenneth D. Massey EM1(SS) (E-6) (Disch)	Chester County High School (Jackson, TN)
Shawa C. Murray	Christopher J. Murray FT1(SS) (E-6) (Ret.)	Granby High School (Narfalk, FA)
Jourdana M. Passaro	Anron R. Bsade MM1(SS) (E-6)	Camden County High School (St. Maryx, GA)
Andrew R. Pugsley	Richard D. Pugsley MMCM(SS) (E-9) (Ret.)	Bishop Sullivan Catholic H.S. (Virginia Beach, VA)
Jessica D. Sperry	Christopher J. Sperry EMC5(55) (E-8) (Ret.)	Deshigh High School (Newport News, VA)
Gregory E. Stabler	William I. Stabler MT1(SS) (E-6) (Ret.)	Summerville High School (Summerville, SC)
Andres M. Tarrell	Alvin E. Tarrell LCDR (1120) (Ret.)	VJ & Angela Skott Casholic H.S. (Papillion, NE)
Joedan E. Taylor	Bradley D. Taylor CDR (1125) (Disch.)	Berlin High School (Berlin, CT)
Brent M. Wadzita	George M. Wadzita CAPT (1120) (Ret.)	Fluyd E. Kellum High School (Virginia Beach, VA)
Cassandra L. Wall	Wayne C. Wall LCDR (1120)	Camden County High School (Kingsland, GA)
Christina M. Wojtanik	Kenneth A. Wojtanik MM1(55) (E-6) (Ret.)	West Seneca East Senior High School (Checkmeags, NY)

The following undergraduate college students were selected as 2007 Dolphin Scholars:

STUDENT	SPONSOR	COLLEGE ATTENDED (Scholar's Hometown/State)
Andrew C. Caldwell	Gordon R., Caldwell MMCS(SS) (E-8) (Dec.)	North Caroline State University (Hot Springs, NC)
Samenths G. Grandy	Boyd W. Grandy ICC(SS) (E-7) (Disch.)	State Univ. Of New York, Albany (Oswego: NT)
Ruchel L. King	Bob A. King LCDR (1120) (Ret.)	Kansas State University (Leavenworth, KS)
Shanna A. Lockwood	Shawn M. Lockwood ETC(SS) (E-7) (Ret.)	Southern Union State Comm. College (Wadley, AL)
Cody T. Miller	Bruce H. Miller CW03 (7401) (Ret.)	University of Idaho (Idaho Falls, ID)
Drew D. Murray	Derek D. Murray EMCM(SS) (E-9)	Eckerd College (Groton, CT)
Elizabeth K. Smith	Robert L. Smith MMCS(SS) (E-8) (Ret.)	University of Washington (Chehalis, #'4)
Chalana N. Williams	Jerome T. Williams SKC(SS) (E-7) (Ret.)	Christopher Newpors University (Chesapeake, P.4)

REUNIONS

Bathyscaph Trieste

Sept 5-8, 2007

San Diego, CA

POC: Stan Reinhold, 8318 N 97th Ave., Peoria, AZ 85345

Phone: 623-36-6547 E-Mail: sreinhold@cox.net Web Site: http://www.bathyscaphtrieste.com

USS BREMERTON SSN-698

Sept. 1-14, 2007

Covington, KY

POC: Robert Polanowski, 5996 County Road 16,

Belfast, NY 14711

Phone: 585-365-2316 E-mail: skica130@aol.com

USS COD SS-224

Sept 13-16, 2007

Cleveland, OH Loc: Crowne Plaza Cleveland City Center

POC: Jack Kurrus Phone: 860-442-0055

E-mail: jackurrus@sbcglobal.net

DOLPHIN SCHOLARSHIP FOUNDATION ANNUAL GOLF TOURNAMENT

olphin Scholarship Foundation will host its 2007 Annual Golf Tournament on Friday, October 5, 2007, at Kiln Creek Golf Club and Resort, Newport News, Virginia (www.kilncreekgolf.com). Last year's inaugural tournament netted over \$10,000 for Dolphin Scholarships.

This year's Title Sponsors are L-3 Unidyne and Northrop Grumman Newport News. Other corporate sponsors to date include Lockheed Martin Undersea Systems, BAE Systems Norfolk Ship Repair, Dresser-Rand and Linda Daniel/Nancy Chandler Associates. Other special sponsorships available include Sponsor a Sailor, providing paid registration for an enlisted Submariner to play, Hole Sponsor and Beverage Cart Sponsor.

The tournament is open to players from both military and civilian communities. For \$75, players get 18 holes of golf, continental breakfast, box lunch and supper. All proceeds benefit the Dolphin Scholarship Foundation, which offers undergraduate college scholarships to children of eligible members of the U.S. Navy's Submarine Force. Vice Admiral Jay Donnelly, Commander Submarine Forces, and his wife Mimi, DSF President, are both scheduled to play.

Dolphin Scholarship Foundation began in 1961 with one grant of \$350, and has grown over the past 46 years to become one of the largest scholarship programs in the military community. The scholarship is available to children of members or former members of the U.S. Navy who served in, or in direct support of, the Submarine Force. This fall, DSF will award 137 undergraduate scholarships of \$3,250 each, for an annual total of \$445,250.

For more information about the golf tournament, including player registration and sponsor opportunities, visit the DSF website, www.dolphinscholarship.org, or contact Randi Klein, Executive Director, at (757) 671-3200 ext. 114.

THE ST. MARYS SUBMARINE MUSEUM WHERE THE LEGACY LIVES ON

by Ms. Sheila M. McNeill Commissioning President St. Mary Submarine Museum Past National President Navy League of the United States

The St. Marys Submarine Museum located in St. Marys, Georgia celebrated its 10th anniversary last year. For those readers not already familiar with our museum, here are a few interesting facts for you. The Museum is:

- · The fifth largest submarine museum in the U.S.
- · The largest in the southeastern United States
- Located in historic St. Marys, just 10 miles east of I-95—
 close to the Kings Bay Submarine Base—The recipient
 of the 2007 Commander-In Chief's Award for Installation Excellence.
- Houses over 20,000 artifacts, photos and written history items and the display include a working type 8 periscope
- And is host to the annual WWII Subvets Memorial Service held at Kings Bay Sub Base each year.

In a very trying period for the military generally and submarines in particular, this museum serves a particular need and does it very well. That is—educating the public about this vital segment of our military. The Silent Service needs this voice more than ever before. And there is that fascination with submarines that exists for most of us.

Additionally the Submarine Force needs the visibility that is not generally available to the public. A very few people are privileged to visit submarine bases and our submarine museums are the alternative source for supplying submarine history as well as needed data for the media when required. We have the largest collection of printed copies of WWII patrol report outside of the Naval Archives. Our Jack Schiff Research Library has been used by CNN, National Geographic and many other media outlets, historians, authors and individuals. Major shipboard components from submarines on display include the Type 8 periscope, ship

control panel, ballast control panel, torpedo tube breach door, watertight door and several other shipboard items. In 2003 we were bequeathed the Ben Bastura Submarine Library and Museum. An Army veteran, Ben started in the 1950s collecting WWII submarine history and artifacts. We are very proud of this collection.

The St. Marys Submarine Museum contains a vast treasure of submarine history that links the past with the present. Members of the Naval Submarine League know how important it is for the visual thrills of actually seeing these splendid artifacts of their service in the continuing effort to educate the public on the many contributions to our national defense. And I believe it immensely helps the well being of our Submarine Force.

Our museum's over 1,700 WWII patrol reports, as well as the many artifacts; photos; boat histories; books; etc. make our museum a primary research source. Since our opening, well over 100,000 people have visited this museum. While many have had previous experience regarding submarines, the majority of visitors have not. Our museum, along with the others in the U.S. has provided a widening acquaintance with the submarine service. In a recent week at the museum our visitors log included visitors from Poland, China, Canada, and Germany as well as from a dozen different states. What a mission in education this shows! In this little town in southeast Georgia, we are ensuring that our story is known by people around the globe.

It is a bit difficult to believe that this fine museum was conceived; built; and supported almost entirely by the residents of the small towns of St. Marys, Kingsland, and Woodbine. But we must not forget those submariners at Kings Bay and around the world who answered our call and made the big difference in our opening. I called on many of my submarine friends—you know who you are. Thank you. And Jack Schiff our museum angel has been our constant contributor and who truly has kept the doors open.

I told those who volunteered their time and energy and who contributed to the building fund for the museum that they would have reason to be very proud of what they were doing. I believe that is true today. Our museum has become a major part of downtown St. Marys. Visitors enjoy the laid back southern hospitality they find when visiting this historic area and our unique museum.

With the increasing costs associated with operations we have been hard-pressed to do the preservation work required to properly display the many artifacts donated to our museum with the funds we have had. To continue to do this we need help from subvets, individuals and corporations across the country.

If the readers of this article believe in the preservation of our submarine history and the need to educate the public on the importance of our submarine service—we ask you to think about our museum!! Any help would be appreciated. To correspond with us:

The St. Marys Submarine Museum 102 St. Marys Street W St. Marys, Georgia 31558

Our email is <u>submus@tds.net</u> or you may contact me direct at smeneill04@aol.com.

Finally, if you intend to be one of the many thousands visiting Florida each year, look for the St. Marys exit 3 on 1-95 just north of the Florida-Georgia line and go east for approximately 10 miles. We are in the building with the periscope sticking out of our roof? This stop will be the highlight of your trip and we look forward to seeing you.

REUNIONS

USS STONEWALL JACKSON SSBN634 Sept 19-23, 2007 Silverdale, WA POC: Rich Winn E-mail: Cdick1@nwi.net

USS SARGO SS-188/SSN-583

Sept 26-30, 2007

South Lake Tahoe, CA

POC: Mike Hacking 5728 Tortuga Road,

San Diego, CA 92124-1214

Phone: 858-495-0562 e-mail:mrhacking@san.rr.com

Website: http://www.ssn583.com

USS REQUIN SS/SSR-481

Sept 27-29, 2007

Loc: Holiday Inn-Greentree Pittsburg, PA

POC: Jim Louden, 2800 Division Street, Burlington, IA 52601

Phone 319-752-4165 E-mail: jplouden@interl.net

DISCUSSION

SETTING THE RECORD STRAIGHT A CRITICAL REVIEW OF FALL FROM GLORY

by RADM Tom Brooks, USN(Ret) and CAPT Bill Manthorpe, USN(Ret)

The authors were participants in the 009J, Team Charlie and wargaming events described herein. They retired as the Director of Naval Intelligence and the Deputy Director of Naval Intelligence, respectively.

Gregory Vistica has written a book entitled Fall From Glory (Simon & Schuster, New York, 1995, 448 pages, \$27.50) which makes some serious accusations against the US Navy, Naval Intelligence, and our senior uniformed leadership during the 1980s. The purpose of this article is to set the record straight—particularly with regard to the role of the DNI and ONI in the restructuring of US Naval strategy and war plans which took place during this period.

The late 1970s and early 1980s were heady times for Naval Intelligence. Several sensitive sources became available which provided us, for the first time, with highly accurate insights gleaned from the highest levels of the Soviet regime. The information derived from these sources confirmed analyses of unclassified Soviet doctrinal writings that had been going on within ONI, at the Center for Naval Analysis, and at DNI-sponsored symposia for several years. It provided us with reliable second source confirmation and an indisputable understanding of Soviet naval doctrine, their development of naval strategy, and their plans for weapons and tactical development. It also provided us with valuable insights into the readiness of the Soviet Navy and how the Soviets perceived our Navy would fight a war. We maintained this access until, one by one, the sources were compromised by various traitors inside the US government. The single best source of tactical intelligence paid with his life when Aldrich Ames betrayed him, along with the host of others he betrayed.

But while it lasted, the insights gained from these sources allowed the US Navy, led by Naval Intelligence, to totally reassess how the Soviets would fight a war, where their strengths and vulnerabilities were, and how their perceptions and prejudices caused them to view us. This enabled Naval Intelligence to stimulate and participate not only in a complete rewrite of US naval strategy and the war plans which governed how the US would fight a war with the Soviet Union, but also to plan and conduct meaningful perception management. The unclassified exposition and documentation of these efforts became known as "The Maritime Strategy".

The detailed story of the sources, how we exploited them, and how the Navy utilized the resultant intelligence could be cited as a textbook example of how intelligence should work. It was one of the great intelligence successes of the Cold War!

The effort was not easy to imitate or sustain. The intelligence that we were presenting to the leadership of the Navy was not what they expected or necessarily wanted to hear. First of all, what we were telling them about the strategy and planned operations of the Soviet Navy were completely antithetical to the way US and other Western admirals believed that any Navy would operate. Thus, ADM Train's observation, cited by Gregory Vistica in his book Fall From Glory, that Soviet naval strategy appeared to be written by field marshals.

Secondly, the new intelligence would force the US Navy to change their strategy and plans and affect much of their planned force structure and training. Thus, initially, many found it hard to believe and were reluctant to accept the intelligence. To the great credit of the senior uniformed leadership of the Navy, and due to the open-minded leadership of the Vice Chief of Naval Operations, ADM Bill Small, and the DNI, RADM Shap Shapiro, followed by RADM John Butts, the new intelligence was not ignored but was presented, challenged, debated and ultimately accepted as valid. Once the strategists, operators and weapons systems began their work to change the direction of the US Navy, the so-called green door was wide open to them, and they were able to wargame their plans against red teams playing at the highest levels of classification and to base their development and procurement decisions on the best technical data available.

Gregory Vistica, currently a Newsweek reporter, alludes to these events in his book Fall From Glory. Sadly, he does not get the story straight. In his rush to tar the entire Navy with the brush of ineptitude, intellectual dishonesty and institutional corruption, he is too busy fabricating intelligence failures (they usually help sell books) to pick up on what was probably the biggest story—how good intelligence, well-analyzed and well-applied by teams of Intelligence Officers and Line Officers working together, enabled the US Navy to devise a strategy and a set of war plans which would have helped ensure victory, should we have had to fight a war with the USSR.

Bernard Baruch once observed, "Every man is entitled to his opinion. But no man is entitled to be wrong in his facts." This dictum should apply, in particular, to journalists. Vistica mixes fact with fabrication, history with self-serving and mean-spirited gossip, half truth with personal prejudice. All to provide sensationalism to a book which, handled in a more accurate and objective fashion, would have had a worthwhile story to tell.

The result of Vistica's efforts is an indictment of the US Navy as an institution, and its senior uniformed leadership (The Admirals) as little more than a self-serving cabal, bent more on preserving personal perquisites and covering up problems than protecting the nation. Naval officers are depicted as inept, cowboys, or as drunken, lewd, sex-crazed adolescents who make a ritual of assaulting women—beginning, it would seem, at the Naval Academy.

But the central villain of the book is John Lehman. To Vistica, he is the personification of evil, and anything that he did for the Navy is characterized as somehow being driven by personal ambition or self-aggrandizement. All who were associated, or even forced by circumstances to serve with him, are cast on the same dungheap. Sadly, the list includes some of the best officers and leaders we produced during that era. Some of these officers are depicted as little more than stooges of Lehman; many suffered from the tremendous stress of serving under a Secretary of the Navy whom they thoroughly disliked and disagreed with but who, nevertheless, was their lawful superior. Many of the senior uniformed leaders worked hard at modifying or changing Secretary Lehman's views. But when he gave specific direction or orders, as

was often the case, they were obliged to carry them out.

And Naval Intelligence, for all its contributions, is vilified as well. Vistica properly portrays RADM Bill Cockell as one of the brightest officers in the Navy and one who possessed a unique expertise in Soviet affairs. It was Cockell, while serving as EA to CNO Tom Hayward, who was instrumental in causing the CNO to focus on the new sources of intelligence that his DNI, RADM Shap Shapiro, was bringing him. As a result, special teams were put together to analyze the intelligence and its implications. Shap Shapiro brought Rich Haver to the Pentagon from his job as Technical Director of NFOIO to head 009J (not Team Charlie as reported by Vistica) and lead the analysis effort. In those days, ONI was known as Op-009, and 009J reported directly to the DNI. Team Charlie came later and was initially headed by Dr. Alf Andreassen, who was Technical Director for VADM Kin McKee, the Director of Naval Warfare. Team Charlie was normally populated by Line Officers and studied the implications of the intelligence 009J produced. Seldom has the Navy had the benefit of the analytic talent of a Rich Haver and the intellectual capacity of an Alf Andreassen focused on the same problem at the same time.

The senior leadership Board of Directors for the effort was the Advanced Technology Panel, established by the CNO, and comprised of senior Flag Officers under the inspired leadership of VCNO Bill Small and his successors. It was the team of the VCNO and CNO Jim Watkins who successfully got the effort off the ground and encouraged what today would be called out of the box thinking. The ATP was supported by the ATP Working Group, led by RADMs Bobby Bell and Roger Bacon, and comprised of a number of very bright commanders and captains, including CAPT Linton Brooks, who provided much of the intellectual energy. The Strategic Studies Group at Newport participated actively in deriving strategy and wargaming the results.

Other key players in the process were DNIs Shap Shapiro and John Butts; VADM Kin McKee, who recognized the importance of this new intelligence from the very beginning; and then-CAPT Bill Studeman, who was EA to the VCNO and active at the very heart of the effort. There were many others, some of whom are mentioned by Vistica, but usually with great inaccuracy.

Quite apart from the tenure of John Lehman, the 1980s were a true golden age of naval strategic thinking, and Naval Intelligence was at the center of the effort. The creation of The Maritime Strategy and the planning to implement that strategy with the Navy that Lehman was dictating deserve a book in themselves. Fortunately, the ATP files have been saved, organized and summarized for the benefit of current Flag Officers who would like to reinvigorate naval strategic planning. When their contents can be declassified and opened to historians, a truly fascinating book will result.

Not only did Vistica mis-portray the elements of the story, he also chose to vilify some of the players who were, in fact, the true heroes. He singles out Shap Shapiro for allegedly deliberately misleading Congress by painting the Soviet Navy as a threat, which the newly-expert Vistica clearly believes it never was. In his own words. "Almost every senior Admiral and Intelligence officer knew the truth about the capabilities of the Soviet Navy and did their best to bury it." Patent nonsense written by someone with no personal knowledge, involvement or expertise who, if he did not invent the notion out of whole cloth, was badly misled by his sources. He claims that his work was reviewed by "several Naval Intelligence officers who must remain anonymous." Whoever these officers were, they clearly were not aware of the facts. If I were one of them, I would surely hope my anonymity held up!

What Naval Intelligence did discover and convince the Admirals was that, given its strategy, plans, force levels and general readiness, the Soviet Navy was not focused on interdicting the sea lines of communications to the Central Front in Europe. It was that long-assumed threat that had led to the weakening of US naval superiority, especially by those in the Carter administration who were using it as a justification to build low-end frigates and VP aircraft. Rather, the new intelligence demonstrated that the Soviet Navy was, indeed, a strategic nuclear ballistic missile threat (and a growing one at that) to the United States and a potential threat to our own strategic forces. Furthermore, it was a threat to the implementation of the "Sea Strike" or Sea Plan 2000" carrierforward strategy and a growing competitor for peacetime and crisis influence in the Third World. Recall that the Soviet shipbuilding program of the time included not only the destroyer and small class

ships which might readily be perceived as defensive, but also aircraft carriers (including a nuclear powered carrier), Kirov Class nuclear powered guided missile heavy cruisers, new-generation submarines of every class, and an overall rate of ship construction which far outstripped ours. It was these threats that the US Navy had to take into account when developing a new strategy and war plans.

While Vistica besmirched his own professional reputation by stooping to half-informed character assassination to flesh-out his book, it is sad that institutions like ONI and fine officers like Shap Shapiro, Chuck Larson, Frank Kelso and others should be portrayed as dishonest and self-serving. Those of us who were involved in the events and have served under these men know who the true heroes were. Someday the full story will be declassified and the public will recognize that the true "fall from glory" lies with one who publishes damning articles about events he only dimly perceives and maligns dedicated, honorable people whose actions he could not possibly understand.

REUNIONS

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Syracuse, NY 13207-2713 Phone: 315-469-3825

USS LAPON SS-260/SSN-661

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POC: Stan Pollard, 2447 Tiffin Ave., #176, Findlay, OH 45840

Phone 910-352-2572

USS ANGLER SS-240

Sept 30-Oct 3, 2007

Loc: Springmaid Beach Resort, Myrtle Beach, SC Phone: 843-315-7100 POC: bdkremer@comeast.net

BOOK REVIEWS

SUBMARINE STORIES Recollections from the Diesel Boats by Paul Stillwell

Naval Institute Press, Annapolis MD, 2007 ISBN-13:978-1-59114-841-8

295 pages, \$36.95 (Members' price \$25.87) Reviewed by Captain James C. Hay, USN (Ret.)

E always seem truer and funnier. Paul Stillwell has put together the best collection of submarine sea stories I have ever seen. What makes this collection even better is that a lot of the stories are about young fire-eaters and hell-raisers who later were the leaders of the Submarine Force. It's all about spirit, living every moment to the fullest and doing your very best at whatever the circumstances of the day arrayed against you. This book should be on every submarine officer's library shelf.

There are several tones of the book and one of them is set forth by the first of the Stories, about Slade Cutter and his first boat, POMPANO with LCDR Lew Parks as skipper. There is plenty of individuality, determination, innovation and uniqueness demonstrated in the relationship between Parks and his Junior Officers. For one thing, the skipper refused to recommend Cutter and two other officers for Qualification because he did not want to lose the ones he had trained hard as war became more imminent. He was finally forced into it by his DivCom and then all three Qualified in Submarines, and for Command, in the same day. That high powered training gave us one of the best wartime submarine commanders in Slade Cutter, Cutter was always larger than life and was all sea-going naval officer. This short snap shot of him as a submarine JO gives an excellent introduction to one of the legends of the Submarine Force.

From that leading piece one can easily see the major tone highlighted in these <u>Submarine Stories</u> is about the type of people who built the Submarine Force. The folks about whom these tales are told were all hard chargers who could get the job done and have fun doing it. There are lots of heros here with four Medal of Honor awardees and a number of Navy Cross holders. There is also one great Story about an S Boat in which Admiral Rickover was a Lieutenant and Executive Officer. He is the hero of that one because he would stand up for the crew and the JOs when the skipper, himself a brilliant guy, got to be a bit too much. There are three Stories by Vice Admiral Dennis Wilkinson; one as a Reserve Officer at Submarine School, one about the grounding of DARTER and one as Exec of CUSK, the first cruise missile-firing submarine.

The Table of Contents at the beginning of the book lists 58 Stories and after the initial one about Slade Cutter they run roughly in chronological order from before WW I to putting the last diesel boat, DOLPHIN, out of commission in 2006. That sets the second major tone of the book; it is a very good outline of the history of the Submarine Force in the days before SSNs, SSBNs and SSGNs could do the heavy lifting in the world of undersea warfare. There is one Story about an L-Boat in World War I British waters that was credited with the sinking of a U-Boat. There is a lot about running the S-Boats and building the Fleet Boats as well as fighting the Japanese. There are a couple of Stories about peacetime submarine sinkings and the subsequent salvage efforts. Building the shore facilities during the first war and the twenties also make for interesting comparisons with later-day remembrance.

Probably the more important tone to be found in these <u>Submarine Stories</u> comes through very clearly through that which is amusingly human and professionally interesting. There is a wealth of *Lessons to be Learned* in these stories. That should not be a surprise to the old hands among us since we were raised in submarines listening to sea stories which illustrated, the narrator always hoped, some point in current practicality which should be heeded. Perhaps it would be useful to have a group of senior submarine pre-command LCDRs submit their gleanings about *Lessons to be Learned* from this collection of sea stories.

In my opinion, as one who has savored sea stories for a long time, this is a book which all submariners-of whatever generationwill enjoy in the reading and in the discussion of it with friends.

MY DECISION TO LIVE Nader Elguindi Hudson House, 2006 \$13.95, 155 pages ISBN 978-1-58776-857-6

Reviewed by RADM C. H. (Chip) Griffiths, Jr., USN (Ret)

It was my great pleasure to review Nader Elguindi's exciting new book, My Decision To Live. On first glance it describes how a junior officer overcame dramatic medical challenges to Qualify in Submarines. But on a deeper level, I could recognize Nader's inherent abilities to excel and contribute to goals bigger than him in our world.

The book is formatted to cycle back and forth in time and culminates in addressing his life to date. It starts with his horrible motorcycle accident and initial medical challenges, then spends about a third of the pages focusing on his life up to that point. Much of the book then shifts to his medical challenges and Navy career, culminating in qualification with a prosthetic leg. Finally, he highlights creating from scratch his successful career running a business.

It takes very little creativity to recognize Nader's key beliefs regarding life's leadership needs

- Courage to endure and achieve goals despite huge obstacles
- Fortitude to create and succeed in a new career if required to change
- 3. Wonderful human engagement and leadership
- 4. Permanently improve family arrangements
- Advise all who read or listen to him to make the best choices life can provide, then live them to the fullest
- He will donate all proceeds from this book to assist our Wounded Warriors at Walter Reed Army Medical Center

I would like to add two personal views to this review. First, I believe Nader has displayed the general attitude of our modern armed forces. Most of them will not be thrust into such gutwrenching and traumatic situations in their operational careers. But if they were so chosen, Nader's approach would generally also apply to theirs. We have a wonderful force of volunteers, and they generally stand ready to succeed against any challenges.

Finally, where Nader additionally succeeds is in his continuing efforts to encourage others who are facing military medical challenges to seek positive conclusions like he did. God Bless this wonderful American

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