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14. ABSTRACT The People's Republic of China (PRC) is growing at an alarming rate into a regional, possibly even global superpower in the Far East. At the center of this buildup is an increasingly capable Submarine force which is being cultivated and poised for a future showdown with United States naval forces. In a volatile region ripe with natural resources, sea lanes, products and alliances, this force may soon be capable of denying U.S. Navy surface units access to the South China Sea and the waters surrounding Taiwan. Anti-Submarine Warfare (ASW) is a key tenet of U.S. access to this region. At present, American ASW capabilities are significantly degraded after a shift in priorities over the past decade. At present, the U.S. would be hard pressed to counter the asymmetric PRC submarine threat in this area. This problem will only worsen with time. The United States can recover from this problem if ASW is provided necessary focus regarding training and upgrading current ASW platforms. This problem is not just a Navy problem as sea denial will impact the Joint					
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The rise of the Submarine threat in the Chinese Theater of Operations:
Capabilities and Implications

By

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A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Abstract

The People's Republic of China (PRC) is growing at an alarming rate into a regional, possibly even global superpower in the Far East. At the center of this buildup is an increasingly capable Submarine force which is being cultivated and poised for a future showdown with United States naval forces. In a volatile region ripe with natural resources, sea lanes, products and alliances, this force may soon be capable of denying U.S. Navy surface units access to the South China Sea and the waters surrounding Taiwan.

Anti-Submarine Warfare (ASW) is a key tenet of U.S. access to this region. At present, American ASW capabilities are significantly degraded after a shift in priorities over the past decade. At present, the U.S. would be hard pressed to counter the asymmetric PRC submarine threat in this area. This problem will only worsen with time.

The United States can recover from this problem if ASW is provided necessary focus regarding training and upgrading current ASW platforms. This problem is not just a Navy problem as sea denial will impact the Joint arena in the event operations in the Area of Responsibility (AOR) are required.

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The Problem

The People's Republic of China (PRC) is growing at an alarming rate into an economic and military powerhouse in the Far East. At the center of the PRC's military program is the People's Liberation Army Navy (PLA(N)) Submarine force. With the rise of the PRC's power in an already troubled region of shifting alliances, the area may be poised for a significant power shift in the near future. If this occurs, South Pacific sea lanes and key chokepoints may be threatened, putting the United States in a precarious position; not only for economic reasons, but for political interests in the region as well, with Taiwan at the forefront of US concerns.

American interests in the region may compel the US President to direct Pacific Command (PACOM) to decisively act in order to discourage mainland China from exerting coercive force against Taiwan or domination of the South China Sea. PACOM's mission is power projection and rapid dominance in the region with the possible requirement to defend Taiwan from Chinese aggression. In order to do this, PACOM must gain Sea Superiority by containing the Chinese submarine threat since, due to the geography of the region, the majority of American military effort must arrive by sea route.

Thesis

As the situation currently stands, the US would face severe difficulties in an effort to contain the Chinese submarine force. As time passes, this problem will become even more profound as China continues to arm itself and the US continues to drawdown some of its most capable forces.

Overview

This paper addresses why the PRC has initiated such a massive buildup and possible ways the PRC leadership may implement their new found capabilities with respect to China's regional political and economic goals. Also addressed is China's procurement of advanced

technologies from the West, along with highly advanced submarine and missile technology, Russian training/doctrine - to include future procurements - and domestic Chinese developments. The dwindling US airborne, surface and subsurface Anti-submarine Warfare (ASW) capabilities will be included as well.

Why This Matters

This issue is critical because PACOM uses Carrier Strike Groups (CSG), submarines, and surface ships to project power in the region, and this action is dependant upon free access to the seas surrounding Taiwan and the adjacent Chinese littoral waters. The Time Phased Force Deployment List¹ is hinged upon having unfettered access to the area. Limited or no seaborne access will severely delay and frustrate US efforts in this Theater of Operations because limited access means little or no forces in theater.

Chinese Developments

In order to understand this problem, it is important to understand the reasons behind the rise of the “Chinese Dragon”. As the United States focuses the majority of its efforts in the War on Terror in the Middle East arena and various other hot spots throughout the world, the political and military leadership on mainland China are busily preparing themselves for a more prominent position on the world stage. The PRC is accomplishing this mission by a well coordinated effort utilizing nearly every facet at its disposal, with the basis of this buildup being three specific factors.

¹ Time Phased Force Deployment List. (DOD) The Joint Operation Planning and Execution System database portion of an operation plan; it contains time-phased force data, non-unit-related cargo and personnel data, and movement data for the operation plan, including the following: a. In-place units; b. Units to be deployed to support the operation plan with a priority indicating the desired sequence for their arrival at the port of debarkation; c. Routing of forces to be deployed; d. Movement data associated with deploying forces; e. Estimates of non-unit-related cargo and personnel movements to be conducted concurrently with the deployment of forces; and f. Estimate of transportation requirements that must be fulfilled by common-user lift resources as well as those requirements that can be fulfilled by assigned or attached transportation resources. Also called TPFDD. <http://www.dtic.mil/doctrine/jel/doddict/data/t/05426.html> [15 March 2005].

The first factor is the sense of *unease* which prevails throughout the Pacific Rim due to economic, political and military power fluctuations, which result from declining Russian power and influence, the domestic policy goals of the Chinese and neighboring countries, and Western policy goals.² In short, there is a “power vacuum” and the Chinese intend to fill it. The second factor is *energy*. China’s energy needs have risen by over 50 per cent in the last 10 years, with the largest requirement being oil. With a domestic production unlikely to rise above 3.3 million barrels per day and a projected requirement for 6 million barrels per day by this year, the shortfall will have to be acquired internationally.³ Due to China’s semi-landlocked geography, it will be much more economically feasible for China to bring in the oil via seallift. This vital economic link significantly increases the importance of safeguarding these Sea Lines of Communication (SLOC). The third factor is the desire to be a *regional superpower*. China’s extensive and complex history shows a powerful nation not easily relegated to second place on the world stage, and the PRC undoubtedly feels the need to achieve regional military supremacy to assert authority over its neighbors.⁴

This Chinese need to be dominant is clearly shown by China’s refusal to budge from the ‘one-China’ position concerning Taiwan; even stating that the use of force has not been

² Massive economic fluctuations in the region, an obvious decline in Russia’s role and military capabilities, an unclear picture of the US’s commitment and uncertainty over Japan’s position all contribute to this uncertainty; it is impossible to predict, with any confidence where the next threat will come from or what form it will take. All this is in part responsible for an arms build-up throughout the area over the last decade, a development that will have jolted China’s strategic perception of its neighbors’ growing potential. There is also a growing imbalance between China’s need for a variety of material resources and its ability to provide them domestically. Mainland China supports 22 per cent of the world’s population on only seven per cent of its arable land. Soil erosion and other factors are causing an annual decline of 725 acres of arable land in China. Population will reach 1.5 billion by 2020. By then, the annual grain requirement may be in excess of production of 285 million tons. China will have to secure foodstuffs from abroad and will probably draw heavily on other sources such as the South China Sea, which is rich in fish-stocks. John Downing, “Maritime Ambition, China’s Naval Modernisation,” Jane’s Navy International, Vol. 103, No. 4, 01 (May 1998): 2-4.

³ Ibid.

⁴ Ibid.

ruled out to achieve this end.⁵ While there may exist a worldwide perception that China will not act rashly vis-à-vis Taiwan, due to the interdependence of theirs and the world's economies, several issues still merit mentioning. The most important is that this rationale assumes that the Chinese have the same values as Western powers – in essence, mirror imaging the values of the West onto the East. While this may be true to an extent, cultural differences may well play a pivotal role in this affair. This is a dangerous assumption when one refers to the determination of 'enemy' critical strengths, weaknesses, etc., in the course of applying Operational Art.

PLA(N) Submarines

Being a good student of history and having ambition, China has decided to pursue rapid modernization of her undersea forces as a way to project her power in the region. For years, China has been attempting to modernize her aging 60-plus submarine force⁶ made up mostly of older 'Ming' and 'Romeo' diesel-powered submarines with both foreign and domestic technologies.

The New Diesel Submarines

The years since the 1990's have seen radical improvement in her capabilities with the procurement of four Russian Kilo (Project-877 and Project-636) diesel submarines, two of which are the quieter 636s which some western experts have likened to being as quiet as an Improved Los Angeles (SSN-688) class nuclear-powered attack submarine (SSN) – and quieter than either a basic Russian Akula-class SSN, a British Trafalgar-class SSN, or a basic

⁵ Ibid.

⁶ Kan, Bolkcom, and O'Rourke, "China's Foreign Conventional Arms Acquisitions," Congressional Research Service Report for Congress, Washington DC: 10 (October 2000): 58.

Los Angeles-class SSN.⁷ With stealth being the submarine's best weapon, these platforms are top of the line in terms of noise reduction and capability.

China also recently contracted an additional eight Project-636 Kilos from Russia, with delivery of all eight subs occurring within the next two years.⁸ These subs are a formidable foe with a range of 400 miles at 15 knots submerged on battery power alone. This means the submarine could be anywhere within hundreds, if not thousands of square miles of open ocean from its port. The search for such a quiet contact would be daunting to say the least. A moderately trained crew could conserve power and thus extend the time submerged to as much as 14 days without having to surface to recharge the batteries.⁹ If the Air-Independent Propulsion¹⁰ technology - which is being widely produced by Swedish, German, French, and now Russian submarine manufacturers - is installed on these new Chinese Kilos, this range could be extended to up to 6,000 miles.¹¹ These submarines are able to be armed with myriad advanced weapons to include: wire-guided torpedos, wake-homing torpedos,¹² and quite possibly very soon, the Russian "Klub"/Novator 3M-54

⁷ U.S. Department of the Navy, Office of Naval Intelligence, Worldwide Submarine Challenges, 1996. Washington, 1996. (February 1996): 11.

⁸ Nikolai Novichkov, "China's Russian Kilo Buy May Put Song Submarine Future in Doubt," Jane's Defence Weekly, 12 (June 2002).

⁹ Jong Kong Sing Tao Jih Pao, Hong Kong, "Report on Functions, Armament of Russian-made 'Kilo'-Class Submarine." Text in Chinese, June 10, 2002, FBIS CPP20020610000043.

¹⁰ Eike Lehmann, "AIP Systems For Submarines Compared and Assessed", Naval Forces, Aldershot: 2004. Vol. 25, Issue 3. Air-Independent Propulsion systems allow diesel-electric submarines to recharge their batteries without having to surface to obtain atmospheric oxygen. This gives the diesel-electric submarine the ability to remain submerged for extensive periods of time closer to that maintained by nuclear-powered submarines.

¹¹ Afentstvo Voyennykh Novostey, Moscow, "Russia: Sevmachpredpriyatiye enterprise ready to construct submarines for Chinese Navy." Text in English, September 3, 2002, FBIS CEP20020903000123.

¹² Kan, Bolkcom, and O'Rourke, 63. A wake-homer is a fire-and-forget weapon which homes in on a ship's wake and follows it to impact, severely reducing the surface vessels' ability to avoid destruction.

Alfa/SS-N-27 Anti-Ship Cruise Missile (ASCM).¹³ The Klub is hailed in military circles worldwide as a very formidable weapon designed to kill the aircraft carrier. Despite dissenting opinions concerning China's successful procurement of the ASCM, a western analyst reported that the PRC began aggressively seeking to purchase this missile for use on its Kilo Project-877 and Project-636 submarines from Russian manufacturers as early as 2000,¹⁴ no doubt following the lead of the Indian Navy when it had its older Kilos retrofitted with the missile.¹⁵ It would not be illogical to assume that if the Project-877 Kilos already in service are being retrofitted with the new missile, then the newer Kilos would come equipped with it as well.

The only saving grace is that the Kilo's would require advanced Over-the-Horizon targeting information from external sources in order to fully employ such a weapon, and indications are that the Chinese C4I (Command, Control, Communications, Computers, and Intelligence) systems have yet to fully realize this capability. Healthy respect should be paid to the fact that the Kilo is also the only conventional submarine capable of launching ship-to-air missiles to attack enemy ASW aircraft.¹⁶

Either way, it's obvious that since the Chinese have realized they cannot compete force-on-force with US units, they plan to use their submarines asymmetrically against us with a high probability of success in denying the U.S. Navy use of the seas. It's the undersea version of guerrilla warfare.

¹³ "3M-54 Klub/SS-N-27 Missile," Federation of American Scientists, Military Analysis Network, Available online: <<http://fas.org/man/dod-101/sys/missile/row/club.htm>>, [18 December 2004]. The Novator Alfa carries a 450 kg warhead for 300 km at high subsonic speed followed by a sea-skimming terminal approach at supersonic speed.

¹⁴ Yihong Zhang, "China negotiates to buy advanced Russian anti-ship missile," Jane's Defence Weekly, 9 (August 2000).

¹⁵ 3M-54 Klub/SS-N-27 Missile.

¹⁶ Jong.

Training, not only fleetwide, but specifically within the submarine force, is improving. Fleet exercises are occurring at regular intervals on larger and larger scales. Command and control is improving with strides being made in the area of fiber optic use and advanced communication systems.¹⁷

Purchases of Ukrainian-made C41 Kolchuga ground-based early warning radars have been made for use in the maritime theater. Some analysts say the Kolchuga outperforms its foreign equivalents in early detection and warning of airborne threats.¹⁸ Groundbreaking attempts at conducting Joint/Coordinated operations patterned after the U.S. military have also been made with some success as well.¹⁹ There is even some word of interest in A-50E airborne early warning aircraft and photoreconnaissance satellites as well.²⁰

The New Nuclear Submarines

Action on the nuclear-powered submarine front has grown with development of a new domestically-produced second-generation Type 093 SSN nuclear-attack submarine which is purported to be similar in performance to the Russian Victor III SSN.²¹ The Type 093²² will be equipped with torpedoes, submarine-launched cruise missiles (SLCM) used for attacking surface targets, submarine-launched land attack cruise missiles (SLLACM), and

¹⁷ Zhao Shuanlai: "Navy Makes Progress in Wired Communications Construction," Beijing Renmin Jijun. Text in Chinese, August 7, 2004. FBIS CPP20041001000167.

¹⁸ Yuriy Ryabkin, "Chief of Ukraine's Kolchuga Radar Plant Discusses Innovations," Kiev Defense-Express. Text in Russian, October 5, 2004. FBIS CEP20041012000212.

¹⁹ Sun Xi'an and Wang Weili, "PLA Nanjing MR Conducted Tri-service Communications Exercise in July," Janjing Renmin Qianxian. Text in Chinese, July 15, 2004. FBIS CPP20040827000190.

²⁰ Lyle Goldstein and William Murray, "Undersea Dragons," International Security, (Spring 2004): 192.

²¹ U. S. Department of the Navy. Office of Naval Intelligence, Worldwide Submarine Challenges, 1996. Washington, 1996. (February 1996).

²² "Type 093." Available online: <<http://www.globalsecurity.org/military/world/china/type-93.htm>>, [03 December 2004]. The Type 093 submarine incorporates advanced quieting technology such as anechoic hull coating, advanced hydrodynamic hull design, and a quieter propeller – all thanks to espionage, Japanese industry, and lack of oversight on the part of western nations.

anti-submarine missiles.²³ Four to six Type 093s are projected to be in service by 2012, replacing the aging Han-class SSNs, with emphasis on the anti-carrier role.²⁴

The new Type 094 SSBN missile submarine was launched in July 2004 and is in the process of being fitted with the new JL-2 submarine launched Inter-continental Ballistic [nuclear] Missiles [ICBM]. Once operational, the new ICBMs will put a significant part of the continental US at risk of nuclear attack from well within Chinese home waters. One analyst stated that “The 094 has followed 093 developments more rapidly than assessments [expected] in the annual Pentagon reports on the PLA”. This analyst went on to say that “In the very near future, China will have a secure, second-strike nuclear attack capability that it will use to bolster its nuclear strategy of seeking to deter the United States from aiding Taiwan after a PLA attack.”²⁵

What we’re seeing here is strangely reminiscent of the German buildup of all facets of her military prior to World Wars I & II. In that case, the Allies disregarded all the warning signs associated with the German armament program with disastrous results in both wars. The Allies failed to develop effective ASW doctrine until it was almost too late as the German U-boats wreaked havoc on Allied shipping. Have we not learned our lesson? The Chinese have learned it well, not only from German U-boat success in the Atlantic, but from the Japanese High Command’s struggles with shipping losses to Allied submarines in the Pacific during WWII. If we don’t wake up soon and get back into the ASW game, the Allied

²³ “VA-111 Shkval,” *Jane’s Underwater Warfare Systems*, 29 (June 2004). Available online: <<http://www4.janes.com/K2/doc.jsp?t=Q&K2DocKey=/content1/janesdata/yb/juws/juws0479.htm>>, [10 January 2005]. The ASW missile is the Shkval, an unguided rocket-propelled torpedo enclosed within a supercavitating bubble of air at speeds up to 200 kts for 3.5 nm

²⁴ Type 093.

²⁵ Bill Gertz, “China Tests Ballistic Missile Submarine,” *Washington Times*, 3 December 2004.

fleet could in short order look much the same as the Japanese fleet did during the last years of the Second World War.

China views itself as the pre-eminent regional superpower in the Asian-Pacific Theater and has made no attempt to hide the fact that the intent of its modernization “program is to challenge other Asian and American naval forces during times of crisis or conflict in areas such as the Taiwan Strait, the South China Sea, the East China Sea,” and parts of the “Western Pacific”.²⁶ “The PLA Navy has stated that the U.S. Navy is its next probable adversary and China will use submarines to force carrier battle groups out of the East Asian littoral, with an emphasis on preemptive strikes,” related one analyst.²⁷ “There is a saying in Chinese military circles—‘sink an aircraft carrier, win the war’,” said a Hong Kong-based military expert.²⁸ These reports should send a clear message to policymakers and military leaders alike that the Chinese are not spending valuable energy, manpower and resources needlessly. The PRC fully intends to use the resulting forces in a showdown with the United States.

China also understands the political challenges faced by American politicians in the event of conflict and is counting on it. They [PRC] understand that the American public may have a low tolerance for casualties and when faced with losses at sea, the military will be forced to eliminate any submarine-based threat prior to continuing with sea-borne operations. Readers will recognize an accurate definition of the American Center of Gravity (COG) in this strategy. This ‘clearing’ process will not be immediate and may even take weeks, thus drawing out the time the country is embroiled in a foreign conflict.

²⁶ Kan, Bolkcom, and O’Rourke, 43.

²⁷ Richard E. Farrell, “Is The PLA Navy a Legitimate Threat?” United States Naval Institute Proceedings, (December 2003): 40-44.

²⁸ Glenn Schloss, “PLA Submarine Fleet Making Quiet Advances,” Hong Kong Sunday Morning Post, August 4, 2002. FBIS CPP20020805000034

A good analogy is the great Scud hunt of Desert Storm. Thousands of sorties were diverted over several weeks from the air war in Desert Storm to hunt for Scud missiles to little or no effect, except to use up valuable resources and time.²⁹ From the ASW perspective, this experience is illuminating because many air, surface and subsurface platforms will be needed to search for the multitude of Chinese submarines operating in the region, since even a single unlocated diesel submarine gives great cause for alarm and may prevent access to an area. Clearing an area the size of the South China Sea will be formidable, time-consuming problem for the assets currently available.

As if this were not sufficient, the Chinese launched yet a third type of domestically-produced submarine known as the Yuan-class, a diesel-electric attack submarine last July as well.³⁰ US authorities learned about this new type of submarine only when Chinese officials revealed its existence to the world. Western intelligence agencies had no idea of even its existence. While this is hardly reassuring, one cannot forget that production rates of domestic Song diesel submarines have not slowed either.³¹

Chinese Show of Force

To demonstrate the PLA(N)'s growing capability, a Chinese diesel submarine intentionally surfaced and revealed itself only 25 miles off the southwest coast of Japan in November 2003.³² The submarine had traveled the entire route of over a thousand nautical miles virtually undetected. In November, 2005, scarcely a year later, a Han-class SSN followed suit and penetrated Japanese waters while submerged for an extended period of

²⁹ Owen R. Cote, Jr., "The Third Battle, Innovation in the U.S. Navy's Silent Cold War Struggle with Soviet Submarines," Newport Papers, No. 16, Newport, US Naval War College, (2003): 82.

³⁰ Gertz.

³¹ Lyle Goldstein and William Murray, 169.

³² Ibid, 162-163.

time, causing Japan to mobilize its Maritime Self-Defense Force (MSDF) for only the second time in 50 years. Significant numbers of ships and aircraft were required to maintain contact on the relatively noisy submarine as it transited the lower Japanese island chain.³³ Chinese leadership apologized for the submarine's incursion, but the point was made. China is gaining the ability to proficiently go where it pleases and in turn, restrict the ability of others to do so. Of particular notice was the fact that the submarine was operating in waters which provide the most direct route to Taiwan for U.S. ships located at bases in Japan.

U.S. ASW

ASW is a platform-intensive, coordinated effort between multiple forces for an extended timeline which may stretch over a period of weeks. These operations are extremely challenging and the lessons learned are hard won. On past occasion, Western ASW forces have found it quite difficult to detect and maintain continuous contact on a single Akula SSN resulting in, as one participant put it, "The entire Navy had to deploy in order to find and maintain contact on one submarine."³⁴

We should also remember that the British Royal Navy expended virtually all of their search stores (air-deployed sonobuoy listening devices) and their entire stock of torpedoes on false targets/ghosts during the Falkland/Malvinas Conflict, during which time the single operable Argentine German Type-209 diesel-powered submarine (SS) remained unlocated in the relatively shallow waters of the east-Argentine littoral.³⁵ It's key to remember that "the German Type-209 really is the Volkswagen of the undersea world" as stated by a U.S. Navy

³³ Mark Magnier, "China Regrets Sub Incident, Japan Says; Tokyo asserts that Beijing has apologized for an intrusion by its nuclear-powered vessel," Los Angeles Times, November 17, 2004.

³⁴ Cote: 70.

³⁵ ADM Harry D. Train (Ret.), "An Analysis of the Falklands/Malvinas Islands Campaign," Naval War College Review, (Winter 1988): 40.

Vice Admiral submariner in a 2003 speech.³⁶ With these thoughts at the forefront, subject-matter experts have been pressing for some time that the atrophied ASW skills of the US Navy “can best be described as poor or weak.”³⁷ With this in mind, it’s alarming to determine that in recent years, Western diesel submarines posing as adversaries during NATO naval exercises have been able to repeatedly penetrate fleet ASW defenses and conduct simulated attacks on US aircraft carriers without being detected. This occurrence shows a large and growing gap in ASW capabilities.³⁸

Causes of Atrophied ASW Capabilities

A 1999 GAO Assessment traced this problem to a shift from the Cold War mentality of pursuing the Soviet SSBN/SSN threat; to assuming other missions, significant funding cuts, as well as the requirement for units to perform multiple missions.³⁹ This happened when the Soviet submarine threat disappeared and US units began to gravitate to other missions in order to compete for budget dollars and to survive the resulting cutbacks. The report cited for example how the S-3B Viking aircraft, which was designed as the primary carrier-based ASW aircraft, was used solely for air-refueling missions near the turn of the century, and soon will be removed completely from service shortly thereafter. This gap in capability has been ‘mitigated’ (on paper only) by annotating that land-based P-3’s will provide ASW coverage formerly performed by the S-3B.

³⁶ VADM John J. Grossenbacher, “Remarks at 2003 Naval Submarine League Symposium,” The Submarine Review, 11 (June 2003): 34.

³⁷ -----, “Remarks at 2002 NDIA Clambake,” The Submarine Review, (January 2003): 12.

³⁸ Kan, Bolkcom, and O’Rourke, 64.

³⁹ U.S. Government Accounting Office, “Evaluation of Navy’s Anti-Submarine Warfare Assessment” United States GAO Report to The Chairman and Ranking Minority Member, Subcommittee on Military Research and Development, Committee on Armed Services, House of Representatives, July 1999. Available online: <<http://www.gao.gov/archive/1999/ns99085.pdf>>, 3-4.

Numerous other articles cite shortfalls in numbers and platforms across the board. For instance, the current number of SSN attack-submarines (54) in service is scheduled to be reduced to approximately 35 boats in the near future with no reduction in tasking. One Admiral called for 70 submarines to meet requirements⁴⁰ for ASW, Strike, Intelligence-Surveillance-Reconnaissance (ISR), Intelligence Prep of the Battlespace (IPB), Information Operations (IO), etc. In the face of such drastic cuts, tasking by the Combatant Commanders for SSN support increased 130% from 2002 to 2003 alone.⁴¹

Other platforms are not immune either. The primary airborne asset is the venerable 40 year-old land-based P-3C Orion which is hampered from performing this mission by a reduction in force to roughly half of its Cold War levels, or slightly more than 200 aircraft in service today.⁴² This number is in flux due to concerns with the viability of the Fatigue-life Expended (FLE) program designed to extend the service life of the P-3C airframe. Of these remaining aircraft, alternate mission tasking in the areas of overland Strike, ISR, IPB, and Maritime Interdiction Operations (MIO) is depleting remaining aircraft life, not to mention the drain on time required to train the aircrews as well. The P-3, like most of the Navy, is almost out of the ASW business with much of its ASW corporate knowledge reaching senior leadership positions and retirement.

The surface fleet's fifty-seven Arleigh Burke destroyers (Flight I, II, IIA) is reputed to have excellent littoral warfighting capability; however, some experts have indicated that it is in fact "less effective and at greater risk (from submarine attack) in littoral areas, where it

⁴⁰ Grossenbacher, "Remarks at 2003 Naval Submarine League Symposium," 36.

⁴¹ Grossenbacher, "Remarks at 2002 NDIA Clambake," 7.

⁴² Department of Defense, Annual Report to the President and to the Congress, Washing, DC: Office of the Executive Secretary, (January, 2000). Available online: < <http://www.dod.mil/execsec/adr2000/chap5.html>>, [21 January 2005].

may encounter asymmetric threats.”⁴³ Granted, an embarked SH-60R ASW-helicopter assists in countering the Chinese submarine threat, but problems with this specific platform in many ways mirror that of the P-3, including reduction in force numbers with fewer aircraft budgeted for replacement.

Other surface assets are the four T-AGOS 19 (Small Waterplane Twin Hull – SWATH) ships which deploy a towed array of hydrophones to exploit both the Deep Sound Channel and shallow water (600 feet or less). The latest class, T-AGOS 20, uses enhanced processing and Low Frequency Active sonar to detect submarines at long distances in the shallows.⁴⁴ It is unknown if these ships are actually conducting acoustic operations at present. But it is clear that the three remaining T-AGOS (monohull) ships have been refitted for counter-drug operations⁴⁵ instead of gathering underwater acoustic data for ASW.

Sonobuoys (air-deployed listening devices) have been becoming less effective as submarine technology improves. While this may be a factor of the laws of physics, changes can still be made to adapt and improve sonobuoys for use in shallow water. Current stores of these sensors are low, with few companies willing to even continue manufacturing them due to rising costs.⁴⁶ Of note during the 1980’s, while several Soviet submarines were operating off the U.S. eastern seaboard, sonobuoys stocks were used at a great rate while aircrews

⁴³ “DDG-51 Arleigh Burke – Flight I, Flight II, Flight IIA.” Available online: <<http://www.globalsecurity.org/military/systems/ship/ddg-51.htm>>, [15 December 2004].

⁴⁴ “T-AGOS” are Auxiliary General Ocean Surveillance ships operated by the Military Sealift Command, which supports the Navy’s Surveillance Towed array Sensor System (SURTASS) operations; Navy, Atlantic Fleet and U.S. Coast Guard counter drug initiatives; and the Air Force Electronic Systems Command’s radar missile tracking system. Available online: <<http://www.globalsecurity.org/military/systems/ship/tagos-19.htm>>, [15 December 2004].

⁴⁵ Counter-Drug Operations/Ocean Surveillance Ships - T-AGOS. Available online: <<http://www.geocities.com/petmur2001/t-agos.html>>, [09 February 2005].

⁴⁶ Railey, Guy T. <Guy_T_Railey@raytheon.com> [email to Matthew Smith <matthew.smith@nwc.navy.mil>], Raytheon Corp, 10 January 2005.

maintained contact on the vessels.⁴⁷ These search stores are the lifeblood of the air ASW assets and will be needed in great quantities should the Chinese ‘tinderbox’ light off.

Chinese Objectives

Using Operational Art to address the Chinese situation, several factors can be determined. It has already been shown that Taiwan is a thorn in the side of the PRC psyche, which they [PRC] intend to either assimilate or excise - whichever becomes necessary - in the furtherance of their overall plan. How else will China, a nation of 1.3 billion people,⁴⁸ be taken seriously throughout the Pan-Pacific realm if they are unable to subjugate a relatively small ‘rebellious’ province of only 21.5 million?⁴⁹ Taiwan is not only symbolic to the rest of the world; it’s personal for the Communist-Chinese leadership and their political system. Taiwan is the example the PRC will use to send a clear message to their neighbors that they are the force to be reckoned with in the region, not the United States.

In order to accomplish this goal, the PRC’s strategic objective is to gain control of Taiwan, thus consolidating the notion of ‘one China’. While the PRC knows that the US will likely intercede on Taiwan’s behalf, they (PRC) will assume the following objectives need to be accomplished at the operational level. In order to prevent the US from deploying one or more CSGs, the PRC will attempt to deny US access to the littoral regions surrounding Taiwan with submarines and possible preemptive strikes against an aircraft carrier.

A recent press release described this scenario when, in November 2000, a Russian far-eastern based Su-27 Flanker “armed” with ASCMs conducted a successful ‘simulated’ missile attack on the USS Kitty Hawk aircraft carrier operating in the Sea of Japan. An Su-

⁴⁷ Sherry Sontag, Christopher & Annette Drew, “Blind Man’s Bluff: the untold story of America’s submarine espionage,” [New York, Public Affairs, 1998], 259.

⁴⁸ “China Population.” Available online: <<http://www.cpirc.org.cn/en/eindex.htm>>, [03 January 2005].

⁴⁹ “Taiwan Population.” Available online: <<http://www.nationbynation.com/Taiwan/Population.htm>>, [03 January 2005].

24 MR Fencer reconnaissance plane accompanied the Flanker as it penetrated the US military shipborne radar and entered within effective missile firing range of the Flanker's missiles. The Flanker conducted a simulated missile launch and rapidly departed the area while the Su-24 MR filmed the entire chaotic event aboard the aircraft carrier. Both aircraft were entirely equipped with stealth and jamming equipment.⁵⁰ It would be folly to assume the Chinese would fail to utilize this tactic in the event of conflict, since they already have most, if not all of the equipment used by the Russians in this event.

While actually sinking an aircraft carrier would be highly doubtful, simply damaging the symbol of American power may be sufficient to undermine the American public opinion ('friendly' Strategic COG) to commit troops and resources to a conflict half a world away.

Chinese strengths in the event of a conflict with the US are defined as follows: large Army (but geographically isolated on mainland); medium-size Air Force with some modern fighters, and a numerically large Navy, but with limited numbers of capable ships and submarines. Chinese weaknesses are Centralized Command & Control, aging "loud" nuclear and diesel submarines (excepting the Kilo, Type 093, Type 094, and Yuan), training deficiencies, undeveloped doctrine, poor Joint-Ops experience, etc. When looking at the critical requirements necessary for the Chinese to attain their goal of preventing American access, the PRC's Project 636 & 877 Kilo submarines are readily identified as the Chinese Operational COG in this scenario.

As previously discussed, even a single extremely-quiet Kilo submarine is sufficient to deny freedom of movement in an extremely large area to an American surface force since the numbers of platforms necessary to prosecute ASW are disproportionate to the threat. When we consider the Chinese will have twelve Kilo submarines, not even to mention the large

⁵⁰ Zhou Yi, "Aircraft Carriers Face Five Major Assassins," Beijing Junshi Wenzhai. Text in Chinese, March 1, 2002. FBIS CPP20020315000200.

number of other submarines, the large scope of the problem becomes clear. Large numbers of ASW platforms will be needed. American striking power applied directly to this Chinese operational COG will defeat the Chinese ability to deny US combat power from becoming a factor in this operation.

Counterarguments

The Chinese economy is far too interdependent with the Global Economy to risk a war with the United States. This is questionable for several reasons. The first reason is that the Chinese GNP has been steadily growing at a rate of 9%⁵¹ for the past two decades, reaching \$4.5 Trillion USD in 1999.⁵² Comparatively, the United States' GNP was 9.5 Trillion USD.⁵³ While China ranks second in the World GDP, their growth is significantly higher than that of the United States. With no signs of slowing over the next several years, the Chinese will not likely require strong interdependence from the West to keep growing. Much can be gained from investment with China's neighbors, whom China wants to influence anyway. Secondly, the Chinese mentality does not perfectly mirror the 'capitalist' mindset of the Western cultures. The PRC cannot be depended upon to make difficult decisions based upon money alone. The Asian concept of 'honor' and 'saving face' carry as much, if not more, weight in such decisions. Also, China may be willing to fight a short, limited engagement with the US, blaming initial missile strikes on US Navy surface units (aircraft carriers) on malfunctions or accidents...much like the Iraq government did in the

⁵¹ C.P. Chandrasekhar and Jayati Ghosh, "China's Growth Enigma," The Hindu Business Line, Internet Edition. Available online: <<http://www.thehindubusinessline.com/2005/02/08/stories/2005020800140900.htm>>, [09 February 2005].

⁵² "What is the economic outlook for the China stock market?" Sinomania!. Available online: <http://www.sinomania.com/CHINASTOCKS/chinese_stock_markets_outlook.htm>, [10 February 2005].

⁵³ Gross Domestic Product, "Current-dollar and "real" GDP," National Economic Accounts. Available online: <<http://www.bea.doc.gov/bea/dn/home/gdp.htm>>, [10 February 2005].

Persian Gulf strike on the USS Stark in 1987. Either way, accident or not, US prestige and reputation will have been damaged, giving the Chinese the advantage.

The US holds a technological edge over PRC forces. While this advantage may be true for the short term, what of the next few years? China is improving not only the submarine force; but their aviation and surface units as well. The most advanced Soviet jets are making their way into PRC Air Force and Navy units, and in large numbers.⁵⁴ We should not be so arrogant as to forget that “quantity has a quality all its own.” And if the US continues to drawdown its forces and fails to gain new technologies, what little advantage there may be will disappear.

Recommendations to Correct the ASW Problem

The key is to mitigate the Kilo threat through several dimensions. While a first option would destroy the Kilo’s while they are still pierside in the event of conflict, it’s highly unlikely this course of action would be entertained. Instead, a large-scale coordinated-ASW effort will be necessary to locate and destroy these units at sea. It is likely the PLA(N) will use their “loud” submarines; Ming’s, Romeo’s, Han’s, etc., to decoy ASW assets into expending their limited search and kill stores, thereby relieving pressure on the much more capable Kilo’s as they hunt for the carriers. In order to accomplish this mission, the US ASW effort will need every available asset it can muster. Since this capability is currently at a recent all-time low, changes will have to be made in the force structure and planning cells.

First, the mindset that we are currently doing enough to bring ASW back needs to be rectified. We are not doing enough. The recent fleetwide program implemented which

⁵⁴2nd Lt Morgan J. O'Brien, III, USAF, “Rising Airpower: The People's Liberation Army Air Force in the Early 21st Century,” *Air & Space Chronicles*, (24 April 2003), Air University, Maxwell AFB, AL. Available online: <<http://www.airpower.maxwell.af.mil/airchronicles/cc/obrien.html>>, [15 January 2005].

requires units to conduct an ASW exercise prior to deployment is an improvement, but more must be done.

The establishment of a Fleet ASW Command in 2004 is a step in the right direction for the U.S. Navy. This new “warfighting center of excellence for ASW” should revitalize ASW by assuming responsibility “to foster ASW operations through fleet training, assess ASW performance at all levels through fleet exercises, coordinate with the Navy Personnel Development Center and individual commands in the qualification of ASW personnel, and ensure rapid fleet insertion of advanced technologies.”⁵⁵ Combatant Commanders should ensure that all supporting commands work to comply with this new program to ensure that training and readiness is representative of actual conditions and work to improve the situation.

We need to end the notion that early-on during Fleet Battle Exercises, wargamers are calling the ‘enemy’ submarine threat neutralized by using notional air-ASW assets that are often not even present in reality. What is ‘reality’ is that the ‘enemy’ submarine is rarely found, is rarely neutralized, and frequently gets into position to obtain a high probability-of-kill firing solution on the aircraft carrier. While multi-national fleet exercises provide valuable training and interaction for non-US forces, there are of marginal value to the U.S. Navy.

We need to address the current levels of ASW platforms available within the Navy. While the American SSN attack-submarines are the best ASW platforms on the planet, they cannot do everything simultaneously, especially with a reduction in numbers. We should consider reducing the scope of the decommissioning plan which calls for a drastic reduction

⁵⁵ RADM John J. Waickwicz, “As Underwater Threat Re-emerges, Navy Renews Emphasis on ASW,” Navy League of the United States, October, 2004. Available online: <http://www.navyleague.org/sea_power/oct_04_15.php>

numbers of our SSN force. We should refrain from looking for the “silver bullet” solution to the ASW problem, be it the Virginia Class submarine or Extended Echo Ranging (EER – using underwater explosive detonations to track sound).⁵⁶ We need to remember that no matter how fast or capable the Navy’s newest, most advanced Seawolf or Virginia class submarines are, they’re only one platform and a hovering Kilo on batteries will be almost impossible to find until it attacks.

Our cruisers and destroyers need an escalation in ASW capabilities. Little has been done to improve ASW sensors and doctrine since the 1990s and this ten year lag in development has hurt the Navy. ASW upgrades should receive priority for funding, not to mention the time necessary to train and maintain operational proficiency.

We need to develop an alternate plan to deal with the drawdown in embarked helicopters (SH-60R) and provide plans to replace the aging airframes as they reach the end of their service life. Currently, replacement production rates do not even match the numbers being retired from service. The gap is getting wider. Air ASW is in trouble. The aged land-based P-3s will be stretched out until the second decade of this century waiting for its replacement, the Multi-Mission Maritime Aircraft (MMA), which has an optimistic Initial Operational Capability (IOC) of 2012.

We need to learn to operate in shallow water by training in the littoral environment, and utilizing the towed-array ships to develop ASW doctrine and tactics in this difficult environment. What ASW experience most Naval units have, has been obtained in ‘deep water’, which does not directly correlate. Sound acts differently in the littorals. We need to work with Allied navies’ diesel submarines (in shallow water) to increase proficiency for US

⁵⁶ “Extended Echo Ranging (EER).” Available online: < <http://www.fas.org/man/dod-101/sys/ship/weaps/an-ssq-110.htm>>, [10 January 2005]

units. Several P-3 crews have found working with Japanese diesel submarines in the shallows to be extremely challenging even under the best conditions.

We must provide funding to develop new technology like the Advanced Deployable System,⁵⁷ Fixed Distributed System (FDS),⁵⁸ Automated Radar Periscope Detection and Discrimination (ARPD),⁵⁹ and Low Frequency Active (LFA),⁶⁰ to work in the littorals. But at the same time, remember that no matter how advanced technology becomes, you still need a platform to get it there...numbers still count.

We should continue to develop Network Centric Warfare in order to facilitate reduced timelines from detection to destruction of enemy units, integrating aerial, surface, and subsurface unmanned vehicles into the ASW effort.

The underlying theme with the above comments is that the Navy needs to reduce the alternate tasking for its ASW units and look for ways to increase their capabilities and training in the ASW arena while bringing new units and technology online. Just as ASW is platform-intensive, so also should the training programs be. Units should become proficient at working with dissimilar platforms. At present, Coordinated-ASW is often disjointed and challenging for the majority of participants.

⁵⁷ "Advanced Deployable System (ADS)." Available online: <<http://www.fas.org/irp/program/collect/ads.htm>>, [10 January 2005]. ADS is an undersea surveillance system composed of distributed fields of sensors that can be rapidly and unobtrusively deployed in regional contingency areas to detect and track modern diesel electric and nuclear submarines, and provide the capability for tracking surface ships.

⁵⁸ "Fixed Distributed System (FDS)." Available online: <<http://www.globalsecurity.org/military/library/budget/fy1998/dot-e/navy/98fds.htm>>, [09 January 2005]. FDS is a system designed to augment the existing Sound Ocean Surveillance System (SOSUS) and be compatible with the Integrated Undersea Surveillance System, including Surveillance Towed Array Sensor System.

⁵⁹ U.S. Government Accounting Office, "Testing Needed to Prove SURTASS/LFA Effectiveness in Littoral Waters," United States GAO Report to The Honorable Patsy Mink, House of Representatives, June 2002. Available online: <<http://www.gao.gov/new.items/d02692.pdf>>, 9. Automated Radar Periscope Detection and Discrimination Technology holds promise of detecting Diesel-electric submarines' periscopes in littoral waters, for use on maritime patrol aircraft.

⁶⁰ -----, 5. Currently, the LFA has adverse effects on marine mammals, not to mention overwhelming with noise any other passive sensors which may be deployed in the area as well.

We need to take to heart the lessons learned by the British Royal Navy in the Falklands/Malvinas Conflict. The Argentines did not have to put a sophisticated naval force to sea in order to frustrate British sea operations. They (Argentine Navy) only had to be moderately proficient with an outdated diesel submarine in order to cause the British significant problems.

Conclusion

China is planning an aggressive expansion with regard to Taiwan and the South China Sea and is posturing the PLA(N) Submarine Force to asymmetrically challenge the U.S. Navy for control of the seas in this region. The only way for the Navy to mitigate this Chinese threat is to bring back ASW skills that have fallen by the wayside. Current plans to reduce the already slim force will jeopardize this capability. This was put very succinctly by VADM Grossenbacher in his remarks at a 2002 symposium “Concerns with China in the near and medium term should not distract us into reducing the number of assets, and our ASW activities, such that we become a one-ocean ASW Navy. Nor should our constant quest for, and the promise of an ASW silver bullet seduce us into forgetting that ASW is hard, force-structure-intensive, and a dynamic game of measure and countermeasure.”⁶¹

Just as the Chinese are working to improve their sea denial capability, so should we work to maintain and widen our competency in sea control. VADM Grossenbacher laid out a plan for success which requires four tenets to improve our ASW capability. They include having the correct mix and sufficient numbers of platforms and sensors available. Training is also a top priority, followed closely by disciplined data allocation and analysis.⁶²

⁶¹ Grossenbacher, “Remarks at 2002 NDIA Clambake”

⁶² Ibid, 13.

Of very important note is that experts in the field have stated that no one thing will fix the problem. A solution requires a coordinated effort in every related field and between all platforms. We must bring back ASW before it is too late. If we are truly students of history, let's not repeat the same lessons we learned in both the First and Second World Wars, where Allied shortsightedness allowed ASW doctrine and technology to stagnate. The result was a heavy price in blood and treasure extolled by the German U-boats as the Allies struggled to regain the advantage in combat. Twice was enough.

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