Journal of Military and Strategic Studies

VOLUME 14, ISSUE 3, 2012

Strategic Developments In The Western Pacific: Anti-Access/Area Denial And The Airsea Battle Concept[1]

Kyle D. Christensen[2]

Introduction

This article offers an initial review and assessment of the US 2010 Quadrennial Defense Review's direction to the US Air Force and Navy to develop an AirSea Battle (ASB) concept for defeating adversaries equipped with sophisticated anti-access and area denial (A2/AD) capabilities. The ASB directs US forces to maintain the capabilities necessary to deter and defeat aggression by any potential adversary, and project power in areas where its access and freedom of action is challenged. In short, the ASB seeks to

[1] The author would like to thank Dr. Elizabeth Speed and Dr. Donald Neill for their valuable and insightful comments on an earlier draft of this article. Their comments and suggestions helped to refocus the argument and improved the final product. Their contributions are greatly appreciated.

[2] *The opinions and conclusions contained in this article are the author's own and do not reflect the views of the Department of National Defence (DND), the Canadian Forces, or the Government of Canada.*

ISSN : 1488-559X

use "Networked, Integrated Attack-in-Depth" to disrupt, destroy, and defeat adversary capabilities.[3]

It contends that the development of A2/AD systems, particularly by China in the Western Pacific, could become an operational challenge to the freedom of action of US forces in the region. While much of this assessment and discussion focuses on US strategic interests and requirements, the ASB concept itself is not intended to be a US-only concept. As such, this article assumes a scenario where there is a loose coalition of Asian states actively engaged in operations to re-establish freedom of action in the Western Pacific in the event that deterrence fails.[4] Although there are a number of roles and missions that coalition partners may play in re-establishing this freedom of action, this article highlights the importance of anti-submarine warfare (ASW) operations; advocates for greater underwater warfare superiority research; and calls for the creation of a Centre for Advanced Underwater Warfare Excellence (CAUWWE).[5]

The article begins by conducting a brief background discussion of the Asia-Pacific as an emerging geostrategic region. It then assesses the strategic context of China's A2/AD strategy. China's A2/AD strategy is aimed at eliminating US military involvement in the Western Pacific, and if not, making its involvement increasingly risky and costly. The article then goes on to describe in greater detail the ASB concept as a response to A2/AD strategies. Finally, the article assesses the ASB concept's utility from a coalition perspective, and the central importance of ASW operations to the success of the ASB.

[3] Remarks by General Norton A. Schwartz, Chief of Staff of the Air Force, and Admiral Jonathan W. Greenert, Chief of Naval Operations as found in J.R. Forbes, "America's Pacific Air-Sea Battle Vision," *The Diplomat*, March 08, 2012, http://the-diplomat.com/2012/03/08/americas-pacific-air-sea-battle-vision (Accessed: June 2, 2012).

[4] As the Center for Strategic and Budgetary Assessments (CSBA) notes, "if the stakes in a confrontation were sufficiently high to trigger a Sino-US conflict, they would be high for US allies as well." J. Tol, M. Gunzingerm, A.F. Krepinevich, and J. Thomas, *AirSea Battle: A Point-of-Departure Operational Concept* (Washington D.C.: Center for Strategic and Budgetary Assessments, 2010), p. 51.

[5] As will be noted in a subsequent section, the focus on ASW operations and underwater superiority is not an either/or proposition. It is not meant to be conducted at the expense of other mission areas or to take away from the important task of countering China's increasingly formidable military forces in other areas.

Background

As the second decade of the 21st century begins, it is clear that the Asia-Pacific region is the key geostrategic centre of global affairs. By almost any unit of measure – commercial maritime shipping, sea travel, energy and raw resource flows, port and infrastructure development, shipbuilding, port calls, and maritime growth and competition – the Asia-Pacific region is the geostrategic centre of global economic activity.[6]

The notion that the Asia-Pacific region is becoming the geostrategic centre of global economic and military activity is reflected in recent polling trends. The findings of the German Marshall Fund of the United States, *Transatlantic Trends 2011*, reveals that 51 percent of Americans consider Asian countries such as China, Japan, or South Korea more important to their national interests than countries in Europe.[7] This is a notable reversal of US attitudes from 2004, when 54 percent of Americans then viewed European countries as more important to their vital interests than Asian countries. Nevertheless, 63 percent of Americans still viewed China as more of an economic threat than an economic opportunity, and 47 percent viewed China as a distinct threat.[8]

To be sure, the economic and geostrategic growth of the Asia-Pacific has in large part been led by China. China's economic growth has underwritten its financial ability to acquire increasingly formidable military capabilities. This has enabled Beijing to increase its maritime awareness in its offshore areas, and pursue a much more assertive stance in the Western Pacific. In recent years, China and the United States have regularly tested each other's resolve in places such as the Yellow Sea, the East China Sea, and the South China Sea. Incidents have ranged from a People's Liberation Army

[6] By 2005, East Asian ports were handling nearly half of the world's container trade throughput, and three of the largest ports in the world in terms of calls – Singapore, Shanghai, and Hong Kong – are all located in the Western Pacific. Intra-Asian container trade is also the second largest container trade in the world, trailing only trans-Pacific trade, and trans-Pacific trade is three and a half times greater than trans-Atlantic trade. See J. Boutilier, "Ships, SLOCs, and Security at Sea," in *Canadians and Asia-Pacific Security*, Vimy Paper 2008, ed. B. MacDonald (Ottawa: The Conference of Defence Associations Institute, 2008), pp. 57-70.

[7] German Marshall Fund of the United States, *Transatlantic Trends 2011*, Key Findings (Stockholm: Swedish Ministry for Foreign Affairs, 2011), p. 13.

[8] Ibid., pp. 14-15.

(PLA) Navy fighter colliding with a US Navy EP-3 *Orion* electronic intelligence aircraft in 2001, to the PLA Navy's harassment of the USNS *Impeccable*, a surveillance ship, in the South China Sea in 2009.

On March 26, 2010, however a North Korean *Yeono*-class midget submarine allegedly torpedoed the *Cheonan*, a Republic of Korea Navy *Pohang*-class corvette in waters near North Korea.[9] This incident touched off an exchange of diplomatic and naval activity between Washington and Beijing. The former criticized Beijing for failing to take a harder line on Pyongyang with regards to the *Cheonan* incident, and announced joint maritime military exercises with South Korea in the Yellow Sea, in the same area the *Cheonan* was torpedoed.[10] The latter condemned the military exercises, conducted military maneuvers of its own in the East China Sea/Yellow Sea as a show of force, and signaled its displeasure that the US was contemplating deploying an aircraft carrier into the Yellow Sea as part of its military exercises with South Korea.[11]

What was most notable about the exchange between Washington and Beijing was China's willingness to challenge US freedom of action in the Western Pacific. In

[9] While there was speculation immediately following the incident that the *Cheonan* was sunk by a North Korean torpedo, an international investigation conducted by experts from Australia, Sweden, South Korea, the United Kingdom, and the US later confirmed that the *Cheonan* had indeed been sunk by a North Korean torpedo. On July 9, 2010, the United Nations Security Council issued a Presidential Statement condemning the attack, but did not specifically indentify the attacker. BBC News, "South Korean Navy Ship Sinks Near Sea Border with North," *BBC News*, March 26, 2010, http://news.bbc.co.uk/2/hi/asia-pacific/8589507.stm (Accessed: July 15, 2010).; and United Nations Security Council, "Security Council Condemns Attack on Republic of Korea Naval Ship 'Choenan', Stresses Need to Prevent Further Attacks, Other Hostilities in Region," *SC/9975* (New York: Department of Public Information, News and Media Division, July 9, 2010), http://www.un.org/News/Press/docs/2010/sc9975.doc.htm (Accessed: July 15, 2010).

[10] A. Pessin, "US, South Korean Navies Will Exercise in Yellow Sea Despite Chinese Objections," *VOA News.com*, July 14, 2010, http://www1.voanews.com/english/news/US-South-Korean-Navies-Will-Exercise-in-Yellow-Sea-Despite-Chinese-Objections-98453279.html (Accessed: July 21, 2010).; and P. Simpson, "China Rebuffs Western Criticism Over North Korea," *VOA News.com*, June 29, 2010, http://www1.voanews.com/english/news/China-rebuffs-Western-criticism-over-North-Korea-97387584.html (Accessed: July 21, 2010).

[11] The US eventually decided to deploy the USS *George Washington* to the Sea of Japan rather than the Yellow Sea. P.J. Brown, "China Flexes its Naval Muscle," *Asia Times Online*, July 9, 2010, http://www.atimes.com/atimes/China/LG09Ad03.html (Accessed: July 21, 2010).; and K. Minemura, "China's Saber-Rattling Naval Exercises Designed to Deter US," *Asahi.com*, July 5, 2010, http://www.asahi.com/english/TKY201007040233.html (Accessed: July 21, 2010).

effect, what was initially a display of resolve between Washington and Seoul vis-à-vis Pyongyang, ultimately turned into a diplomatic row between Beijing and Washington.

Traditionally, Beijing's ability to oppose the US in the Western Pacific has been limited to diplomatic protests and harassing individual naval assets, such as the USNS *Impeccable*, in places such as the East and South China Seas. However, China's continued military modernization has effectively focused on controlling access to these regions. Beijing's ability to increasingly challenge and oppose US operations in the Western Pacific has prompted the US Department of Defense to develop a new joint ASB concept aimed at deterring, and ultimately defeating adversaries equipped with sophisticated A2/AD capabilities.[12] This effectively puts on notice any state developing, pursuing, or fielding A2/AD capabilities that the US will not allow its freedom of action and power projection capabilities to be challenged.

Strategic Context of China's A2/AD Strategy

During the Cold War, and for much of the post-Cold War era, US military supremacy has largely been unchallenged. As Peter Dutton points out in a recent US Naval War College publication, for the last 60 years, the Pacific has been "an American lake."[13] It has provided the United States strategic room to manoeuvre during the Korean conflict, during the Vietnam War, during the Cold War, and more recently during the conflicts in Iraq and Afghanistan. However, recent trends suggest that the US's dominant military position is beginning to be challenged, if not directly, then asymmetrically. This is featured most prominently in the Western Pacific by China's military build-up. China is attempting to assemble the technologies and capabilities necessary to challenge the US Navy's freedom of action in the Western Pacific, thereby

[12] This article will use the same definitions of anti-access (A2) and area-denial (AD) as those used by A.F. Krepinevich in *Why AirSea Battle?* As such, A2 is defined as preventing US forces from operating from fixed land bases in a theatre of operations. Area-denial is defined as preventing the freedom of action of maritime forces within a theatre of operations. See A.F. Krepinevich, *Why AirSea Battle?* (Washington D.C.: Center for Strategic and Budgetary Assessments, 2010), pp. 8-11.

[13] P. Dutton, ed., *Military Activities in the EEZ: A U.S.-China Dialogue on Security and International Law in the Maritime Commons*, Number 7 (Newport, Rhode Island: U.S. Naval War College, China Maritime Studies Institute, 2010), p. 1.

challenging the United States' credibility and preeminent political position in the region.[14] This potential for a shift in the military balance of power in the Western Pacific has significant consequences for regional security, and China's rise is particularly noteworthy in this event.

First, since the introduction of UNCLOS, Beijing has spent a significant amount of time attempting to justify its case for increased maritime jurisdiction and control of its offshore maritime zones. China's remarkable economic performance over the past two decades, however, has underwritten its ability to initiate and sustain a large and increasingly sophisticated military build-up to support these claims.[15] Second, China's decision to initiate large annual increases in military spending, which has continued through to the present, appears to have been taken in response to US involvement in the 1995-96 Taiwan Strait crisis. At that time, China fired several "warning" missiles across the Taiwan Strait and conducted live-fire amphibious exercises along the Chinese coast opposite the island between July 1995 and March 1996 in the run up to the Taiwanese presidential election. In March 1996, the US responded with the announced deployment of two aircraft carrier battle groups to waters near Taiwan in a show of force.

In 1996, there was little China could do about America's military involvement in these circumstances. Forced to recognize the inadequacy of the PLA in this scenario, Beijing began to develop the necessary capabilities to make the US' involvement in future encounters increasingly risky and, in some cases and contexts, prohibitively costly.

Initially, this meant procuring and/or developing weapon systems such as submarines, aircraft, and missiles that would be capable of threatening or disrupting US aircraft carrier battle group operations. The PLA Navy's primary mission in such a scenario would be that of "sea denial" through "active offshore defense."[16] Beijing has since developed this concept into a much wider anti-access and area denial strategy.

---

[14] Ibid.

[15] For a more complete discussion of China's use and interpretation of international law, see P. Dutton, *Scouting, Signaling, and Gatekeeping: Chinese Naval Operations in Japanese Waters and the International Law Implications*, Number 2 (Newport, Rhode Island: U.S. Naval War College, China Maritime Studies Institute, 2010), p. 26.

[16] See Office of Naval Intelligence, *China's Navy 2007* (Washington D.C.: Office of Naval Intelligence, 2007), pp. 23-26.

As several Department of Defense Annual Reports to Congress on *The Military Power of the People's Republic of China* have noted, China has made significant progress in its economic growth and development.[17] These economic achievements have enabled China to embark on a comprehensive transformation of its military in both quantitative as well as qualitative terms.[18] This has enabled China to procure or develop systems that would give it the capability to attack, at ever increasing ranges, military forces that might deploy or operate in areas considered vital to its national interests.

Many of the capabilities that China is acquiring, however, appear to be purposefully developed, built, bought, and deployed to attack US aircraft carriers and other warships at increasingly greater standoff distances. According to the Center for Strategic and Budgetary Assessments (CSBA), China's A2/AD strategy appears aimed at eliminating US military involvement, its freedom of action, and its power projection capabilities in all domains, including "space, cyberspace, at sea and in the air."[19] If the leadership in Beijing used these capabilities to retake Taiwan by force, or forcibly exclude the United States military from the region, the US would either have to pay a very high, perhaps prohibitive price to reverse this situation, or accepting Beijing's *fait accompli*.

It also appears Beijing is not interested in altering its efforts at developing anti-access and area denial systems that would extend its sea denial capabilities out to at least the second island chain (see Figure 1).[20] The first island chain demarcates an area of China's vital national interests, and where the PLA Navy would aim to assert effective sea control. The second island chain delineates an area where the Navy would exercise a certain degree of sea denial. Together, these lines encompass a maritime area

[17] See Department of Defense, *Military and Security Developments Involving the People's Republic of China 2010*, Annual Report to Congress (Washington D.C.: Office of the Secretary of Defense, 2010), I and 29.; Department of Defense, *The Military Power of the People's Republic of China 2009*, Annual Report to Congress (Washington D.C.: Office of the Secretary of Defense, 2009), I.; and Department of Defense, *The Military Power of the People's Republic of China 2008*, Annual Report to Congress (Washington D.C.: Office of the Secretary of Defense, 2008), I.

[18] Tol et al., *AirSea Battle*, p. 14.

[19] Ibid., p. 3.

[20] The first island chain runs through Japanese territory to Taiwan, the Philippines, to Malaysia (Borneo) and Indonesia. The second island chain runs from Japan, through the Bonin Islands, the Mariana Islands, Guam, Palau and the Caroline Islands, to Indonesia.

out to approximately 3,300 kilometers (2,050 miles) and include most of East Asia's major sea lines of communication (SLOCs).[21]

Figure 1: First and Second Island Chains[22]

[21] Jane's Information Group, "Navy: China and Northeast Asia," *Jane's Sentinel Security Assessment*, http://sentinel.janes.com/public/sentinel/index.shtml (Accessed: July 14, 2008); and Office of Naval Intelligence, *China's Navy 2007*, p. 26.

[22] Map from Department of Defense, *Military and Security Developments Involving the People's Republic of China 2010*, op. cit., p. 23.

According to the CSBA, if current trends continue, the PLA will likely be able to field an increasingly robust system of A2/AD capabilities within the Western Pacific within the decade.[23] Such a development could eventually alter the balance of military power in the Western Pacific if it impairs the United States' ability to project power in the region. As described in *AirSea Battle*, if there is a perceived inability on the part of Washington to meet its defence obligations, it could call into question its credibility in the region.[24] If this perceived lack of credibility and/or response on the part of the US encourages Chinese aggression, it could leave states in the region vulnerable to coercion.

To be sure, Asia-Pacific countries will modernize their militaries with an eye to protecting their interests vis-à-vis China's developing military capabilities. However, in the absence of US involvement, it is unlikely that any one state, or any group of states, could effectively balance China's growing military capabilities effectively. Given the above-mentioned considerations, the United States has to maintain its freedom of action and ability to project military power in the region, or be prepared to regain this ability should deterrence fail.[25]

Development of the ASB Operational Concept

In the late summer of 2011, US Secretary of Defense Leon Panetta signed the ASB operational concept into effect. Shortly thereafter, he stood up the AirSea Battle Office at the Pentagon to help implement its core tenets of defeating adversaries equipped with sophisticated A2/AD capabilities. However, concerns about A2/AD type threats are not new to the US military. In the early 1990s, the Pentagon's Office of Net Assessment began exploring similar concepts within the context of the revolution in military affairs, and how developing military and technological trends might impact the US military's ability to carry out its missions globally. However, it was not until the post-2000 timeframe that the concepts of anti-access and area denial began to be more fully developed.

[23] Tol et al., *AirSea Battle*, p. 14.
[24] Ibid., p. 14.
[25] Ibid., p. xi.

In 2004, under former Secretary of Defense Donald H. Rumsfeld, a requirement to review the force posture of US military was identified.[26] This review process became known as the Global Posture Review. The Global Posture Review did not specifically identify anti-access or area denial threats, but it did aim to respond to shifts in the global strategic landscape, and better prepare for current and emerging global priorities and threat perceptions.[27] As a result, the Asia-Pacific region figured prominently in the Department's repositioning of forces. Plans called for, amongst other things, the Navy to eventually station 60 percent of its nuclear-powered attack submarines in the Pacific; add two guided missile submarines to the Pacific Fleet; add a sixth aircraft carrier to the US Pacific Fleet; replace the USS *Kitty Hawk* with the nuclear-powered USS *George Washington*; and expand and harden base facilities on Guam.

By late 2009, a new concept was being devised to respond to the identification of anti-access and area denial strategies as an operational challenge to US forces. In September 2009, the US Air Force Chief of Staff, General Norton A. Schwartz, and the US Navy's Chief of Naval Operations, Admiral Gary Roughead, signed a classified memorandum to begin development of a new operational concept that would become known as AirSea Battle.[28] The concept would be aimed at A2/AD strategies generally, and China's A2/AD strategy in the Western Pacific specifically.

In February 2010, the Quadrennial Defense Review further identified "deterring and defeating aggression in anti-access environments" as one of six key mission areas for the US military.[29] It directed the Department of Defense to rebalance its policy, doctrine, and capabilities toward countering this threat, and directed the Air Force and Navy to continue development of a new joint air-sea battle concept for defeating

[26] See Department of Defense, *Global Posture*, http://www.defense.gov/home/features/global_posture/gp20040924pm1.html (Accessed: July 21, 2010).; and Department of Defense, *Quadrennial Defense Review* (Washington D.C.: Office of the Secretary of Defense, Department of Defense, 2001), p. 25.

[27] For a detailed discussion of the GPR, see M. O'Hanlon, *Unfinished Business: U.S. Overseas Military Presence in the 21st Century*, The Future of the U.S. Military Series (Washington D.C.: Center for a New American Security, 2008).

[28] Krepinevich, *Why AirSea Battle?* op. cit., p. 1.

[29] Department of Defense, *Quadrennial Defense Review* (Washington D.C.: Office of the Secretary of Defense, Department of Defense, 2010), p. 2.

adversaries across a range of military operations, "including adversaries equipped with sophisticated anti-access and area denial capabilities."[30]

In May 2010, the Center for Strategic and Budgetary Assessments released two reports, *Why AirSea Battle?* and *AirSea Battle: A Point-of-Departure Operational Concept*, outlining in greater detail the ASB concept. One of the central conclusions of *AirSea Battle* was that unless significant changes occur in the Western Pacific, the cost incurred by US forces to operate in the region could increase sharply in the coming decades – perhaps to prohibitive levels.[31]

Therefore, more than anything else, the ASB concept is about maintaining Washington's legitimacy and credibility in the Western Pacific. While it would be inaccurate to suggest China's military modernization has gone unchecked by the United States – the Global Posture Review and resulting realignment of forces to the Pacific are evidence of that – it is to acknowledge that Washington's response has been reactionary and lacking in strategic direction.[32]

Consequently, the CSBA remarks that the ASB concept should be viewed as an "offsetting strategy" aimed at setting the conditions that would stabilize a shifting military balance in the Western Pacific.[33] The ASB affirms America's commitment to the Western Pacific, its interest in maintaining a presence and influence in the region, and at preserving a stable balance of power in the region. This requires acknowledging China's economic and military gains, but also balancing the central components of its A2/AD strategy by demonstrating convincingly that the US can defeat China in the Western Pacific if necessary.

Just as the US military's AirLand Battle – a concept developed by the Army and Air Force in the late 1970s – was a response to the Soviet Union's growing conventional military superiority in Europe, it was employed to great effect by coalition and

[30] Ibid., p. 32.
[31] Tol et al., *AirSea Battle*, p. 31.
[32] Some regional actors, such as Australia, have already begun to respond to the growing military imbalance in the Western Pacific by planning military upgrades and spending increases of their own. Commonwealth of Australia, Defending Australia in the Asia-Pacific Century: Force 2030, *Defence White Paper 2009* (Canberra, Australia: Department of Defence, 2009).
[33] Tol et al., *AirSea Battle*, p. 9.

multinational forces in the 1991 Gulf War.[34] Thus, it is reasonable to assume that the US and its potential partners will face similar A2/AD challenges in other regions. However, the ASB is designed to counter the most demanding and challenging A2/AD environment, and according to the CSBA, that environment is in the Western Pacific against PLA forces.

As Secretary of Defense Robert M. Gates remarked in a speech in Maryland in May 2010, ASB "has the potential to do for America's military deterrent power at the beginning of the 21st century what AirLand Battle did near the end of the 20th."[35] For instance, the AirLand Battle concept was a stimulus in the development of a new generation of weapons, sensors, platforms, and tactics used to counter the Soviet Union's growing military threat. Similar new weapons, sensors, tactics, concepts, and strategies may also be required to offset China's growing military capabilities in the Western Pacific.[36] And just as the AirLand Battle concept changed the way defensive problems in Europe were addressed, the ASB concept provides a similar lens through which to view security challenges in the Western Pacific, and a strategic rationale for sustaining a stable military balance in the region.

Coalition Operations: Countering the PLA Navy's Submarine Threat

For coalition operations, two important factors inform the ASB concept. First, the ASB is not a United States-only concept.[37] The CSBA argues that while the US is bound by treaty obligation to defend allies such as Japan and South Korea, a loose coalition of "friends" and "partners" may also play important roles in sustaining a stable military

[34] For a full description of the US' AirLand Battle concept, see Department of the Army, *Operations*, FM 100-5 (Washington D.C.: Department of the Army, Headquarters, 1993).
[35] Department of Defense, Office of the Secretary of Defense, *Navy League Sea-Air-Space Exposition*, Remarks delivered by Secretary of Defense Robert M. Gates, Gaylord Convention Center, National Harbor, Maryland, Monday, May 3, 2010, http://www.defense.gov/speeches/speech.aspx?speechid=1460 (Accessed: September 15, 2010).
[36] To be sure, the similarities between the AirSea Battle and AirLand Battle are obvious. However, for every point of comparison between the two, there are significant dissimilarities as well. Not the least of which includes: the AirLand Battle was theatre specific; was designed to work within the NATO alliance context (which does not exist in the Asia-Pacific region); and was fundamentally underpinned by the use of nuclear weapons (something the AirSea Battle precludes).
[37] Tol et al., *AirSea Battle*, p. xi.

balance in the Western Pacific.[38] Within this scenario, the ASB considers Japan's participation vitally important, but notes other potential coalition partners may include Australia, the Philippines, Singapore, Vietnam, and even India.[39] Aside from that, additional coalition partners are not listed specifically, but would likely consist of Asian countries because they have vital interests in the region.

Second, as per the CSBA, the ASB identifies five operational "competitions" between US military capabilities and PLA A2/AD capabilities. These competitions are considered the most important to success or failure in the Western Pacific. These include:

- Battle network versus counter-battle network;
- Missile attack versus missile defense;
- Air superiority versus air defense;
- Sea (and undersea) control versus sea (and undersea) denial; and
- Force sustainment versus counter-force sustainment.[40]

By assessing and understanding these competitions, it is possible to assess how the US military might sustain or regain adequate freedom of action in the Western Pacific. From the perspective of this article, the competition identified as most important to coalition operations is "Sea (and undersea) control versus sea (and undersea) denial" (i.e., ASW/underwater operations). The focus on ASW operations and underwater superiority is not meant to be conducted at the expense of the other four mission areas, nor is it meant to take away from the important task of countering China's increasingly formidable surface fleet, air forces, and missile forces.

However, one of the challenges in maintaining a stable military balance in the Western Pacific is countering China's increasingly capable underwater warfare capabilities, the most recognized of which are the PLA's submarines.[41] The PLA's

[38] The US identifies several Major Non-NATO Allies (MNNAs) in the Pacific, including Australia, Japan, New Zealand, the Philippines, South Korea, and Thailand. Ibid., p. 13.
[39] Ibid., p. 79.
[40] Ibid., p. 32.
[41] For instance, the Chinese A2/AD strategy also includes the use of underwater mines. Estimates of the PLA Navy's mine arsenal range from 50,000 to 100,000 individual weapons, but because they are easy to produce in large quantities and easy to conceal, this number may be significantly higher. While a full analysis of the PLA Navy's mine capabilities is beyond the scope of this article, a full discussion of this topic can be found at A.S. Erickson., L.J. Goldstein., and W.S. Murray, *Chinese Mine Warfare: A PLA Navy's*

development of a variety of capabilities that would deny surface fleets access to large parts of the Western Pacific requires a focus on ASW operations and the advancement of underwater superiority research. This is because the PLA Navy's continued submarine modernization efforts are an area where China could seriously threaten a coalition's interests and freedom of action in the Western Pacific.

China is currently producing new nuclear attack submarines (SSNs) known as the Type-093 *Shang*-class. The Type-093 will have enhanced quieting and sensors, and will be equipped with underwater-launched cruise missiles, including the indigenous YJ-82 anti-ship cruise missiles (ASCM).[42] Some reports have suggested the *Shang*-class may be outfitted with land-attack cruise missiles (LACM), but this cannot be confirmed.[43] The Type-093 SSN is estimated to have performance characteristics similar to the Russian Victor-III nuclear attack submarine first produced in the 1970s, which is comparable to a US *Los Angeles*-class attack submarine.[44] The first-of-class submarine was launched in 2002 and commissioned in 2006. A second boat was launched in 2003, and possibly commissioned in 2007. Some sources claim that a third hull is under construction, and that there may be plans to produce as many as 6~8 boats.[45]

The PLA Navy has also completed the acquisition of 12 *Kilo*-class diesel-electric submarines (SSKs) (four Type-877 and eight Type-636), which provide technological improvements in the areas of sonar design and quieting, and have far more advanced torpedoes than those previously available to China. Moreover, the eight very quiet Type-636 *Kilos* are armed with the supersonic 3M-54E *Klub* (SS-N-27B *Sizzler*) anti-ship

'Assassin's Mace' Capability, China Maritime Study No. 3 (Newport, Rhode Island: U.S. Naval War College, China Maritime Studies Institute, 2009).

[42] The concern with the Type-093 is that it may also be equipped with the Russian-made VA-111 *Shkval* torpedo. The *Shkval* is a supercavitating torpedo that reportedly travels so fast – 200 knots, or five to six times the speed of a normal torpedo – that no current defence can stop it. Russia reportedly sold 40 *Shkval-E* conventionally armed torpedoes to China in 1998. The tactical effectiveness of a non-nuclear armed *Shkval* torpedo is debatable. B. Gertz, "U.S. Secrets Aboard Latest Chinese Sub," *Washington Times*, December 6, 1999, http://www.taiwandc.org/washt9908.htm (Accessed: March 12, 2007).

[43] SinoDefence.com, "Type 093 (*Shang* Class) Nuclear-Powered Attack Submarine," *Naval Forces*, April 4, 2009, http://www.sinodefence.com/navy/sub/type093shang.asp (Accessed: September 10, 2010).

[44] A.H. Cordesman and M. Kleiber, *Chinese Military Modernization: Force Development and Strategic Capabilities*, Significant Issues Series (Washington D.C.: Center for Strategic and International Studies, 2007), p. 140.

[45] SinoDefence.com, "Type 093 (*Shang* Class) Nuclear-Powered Attack Submarine."

missile.[46] The *Sizzler* is designed to strike high-value surface warships by defeating the US Aegis anti-air warfare system and aircraft carrier battle group defences.

Since 2000, 12 indigenously-designed Type-039 *Song*-class SSKs have also entered service, and series production of the follow-on Type-041 *Yuan*-class – perhaps incorporating air-independent propulsion technology – has commenced. Both submarine classes are fitted with the indigenously built YJ-82 ASCM. China has plans to produce up to nine more Type-039 submarines.[47]

In recent years, the PLA Navy has even started to deploy its improving submarine capability further from China's coast, undertaking survey, reconnaissance, and operational deployments much closer to US and Japanese naval forces than ever before. In 2004, for instance, a Chinese *Han*-class submarine reportedly cruised to Guam and circumnavigated the island.[48] It then deliberately violated Japan's sovereignty on its return voyage when it surfaced in Japanese territorial waters.

Then, on October 26, 2006, a Chinese Type-039 submarine tracked a US aircraft carrier battle group undetected in the Western Pacific. The USS *Kitty Hawk* and other warships were conducting a routine deployment in waters near Okinawa when the Chinese submarine surfaced approximately eight kilometers (five miles) – within firing range of its wake-homing torpedoes and ASCMs – from the aircraft carrier before being detected.[49]

The concern with these types of incidents is that submarines of the type involved carry weapons capable of striking ships from a distance of more than 40 kilometers (25 miles).[50] As such, the Chinese Navy is equipping itself with a deadly combination of increasingly quiet and capable submarines armed with advanced torpedoes and underwater-launched cruise missiles, and an increasing ability to operate at ever-

---

[46] R. O'Rourke, *China Naval Modernization: Implications for U.S. Navy Capabilities – Background and Issues for Congress*, RL33153 (Washington D.C.: Congressional Research Service, 2010), p. 15.
[47] Gertz, "U.S. Secrets Aboard Latest Chinese Sub."
[48] Dutton, *Scouting, Signaling, and Gatekeeping*, pp. 1-8; and B.D. Cole, "Beijing's Strategy of Sea Denial," *China Brief*. 6, no. 23 (2006), p. 3.
[49] B. Gertz, "China Sub Stalked U.S. Fleet," *Washington Times*, November 13, 2006, http://washingtontimes.com/national/20061113-121539-3317r.htm (Accessed: December 19, 2006).
[50] See Cordesman and Kleiber, *Chinese Military Modernization*, pp. 131-133.

greater distances from its shores. The potential for submarines to be operating as far out as the second island chain means that US and potential coalition forces would have to be at a much higher state of alert much earlier when responding to events in the Western Pacific.

More importantly, the CSBA concludes that if these development trends continue, PLA submarines armed with advanced torpedoes and ASCMs could be patrolling throughout the Western Pacific within the decade.[51] In the event of conflict, the presence of these submarines could substantially lengthen operational timelines and/or transit distances for US forces, and could deny significant underwater areas to the US and its partners. As a result, this would necessitate a substantial diversion of resources to ASW/underwater operations.

Anti-Submarine Warfare and SLOC/Logistics Support

From the perspective of a strategic force planner, PLA Navy submarines remain a threat so long as they remain undetected. In a conflict scenario, undetected submarines could be expected to conduct anti-surface warfare operations; target high-value surface warships; conduct selective attacks against US forces and land targets located in Japan and the Western Pacific; complement PLA ballistic missile strikes; assist with battle damage assessments; and interdict and attack SLOCs, supply lines, and logistics networks. To contend with this threat *AirSea Battle* places a high priority on conducting a systematic ASW campaign.[52] This would be aimed at neutralizing and/or destroying Chinese submarines on patrol, and denying those in port access to open water.

The ASB envisages an ASW campaign that exploits PLA Navy submarine weaknesses.[53] For instance, PLA Navy diesel-electric submarines have relatively limited time on station, usually measured in weeks. Their time on station is further constrained by their slow transit speeds, small payloads, and in many cases, lengthy transit times to their patrol areas. Their relatively short on-station time require them to return frequently to base for rearming and refuelling.

[51] Tol et al., *AirSea Battle*, op. cit., p. 18.
[52] Ibid., p. 43.
[53] Ibid., p. 42-44.

Since diesel-electric submarines represent the largest proportion of PLA submarines, and considering their previously-mentioned limitations, PLA Navy submarines would be the most vulnerable to attack as they crossed ASW barriers (see Figure 2) in the Western Pacific and as they entered and left their bases. Thus, the ASB ASW campaign emphasizes "ambushing" PLA Navy submarines at these most vulnerable points.[54]

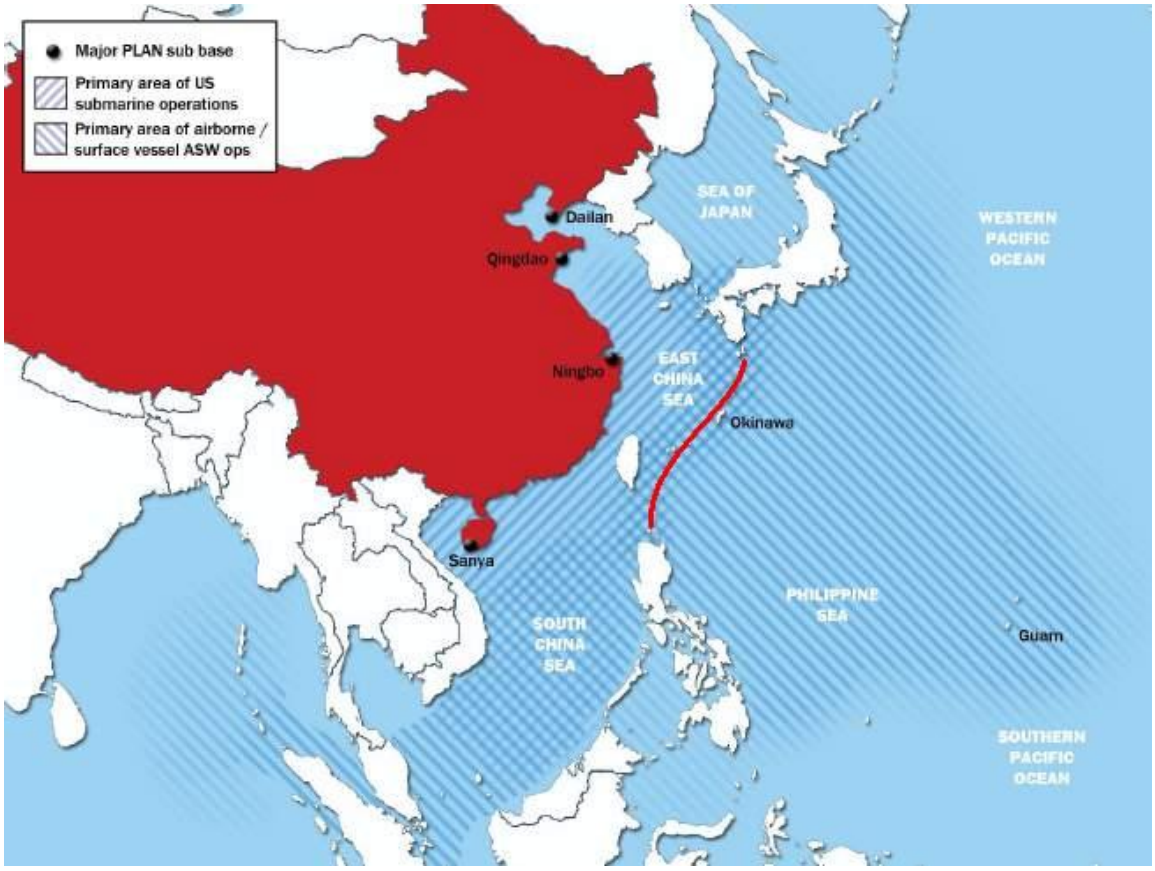

Figure 2: Ryukyus ASW Barrier[55]

[54] Ibid., p. 73.
[55] Map from Ibid., p. 72.

While the development of unmanned underwater vehicles could aid in some of these tasks, the vast ocean area requiring ASW coverage would require considerable resources, and an effective ASW campaign would likely take many months. Consequently, in the early stages of a conflict, coalition naval forces could assist in this effort by conducting comprehensive sweeping of vital SLOCs; conducting ASW missions in non-forward areas; conducting maritime interdiction operations (MIO) as part of a wider blockade campaign; supporting and protecting surface forces, high-value targets and cargos; and protecting friendly merchant ships.

By freeing up limited high-value US assets – such as nuclear attack submarines; long-range maritime patrol aircraft; intelligence, surveillance, and reconnaissance assets; and long-range strategic strike aircraft – a more focused effort can be made at eliminating the PLA Navy submarines that threaten strategic SLOCs and naval operations. In other words, there is an intrinsic link between ASW operations in the ASB plan and ensuring that vital SLOCs and logistics networks remain open and secure. The CSBA, in particular, goes to great lengths to highlight the importance of protecting supply lines to Japan during hostilities with China.[56]

In any conflict involving China, it would be highly likely that the PLA Navy would push out east and northward from the Western Pacific to engage US forces as early as possible and as far away from the Chinese mainland as possible so as to cut off SLOCs and trade routes between northeast Asia and North America.[57] The assumption in this scenario is that China would target US forces in or operating from Japan, or Japan directly, in order to achieve a "knock-out blow" before US reinforcements could arrive.[58] This would be aimed at forcing Japan to submit as quickly as possible and to achieve a quick victory.[59]

As a result, the CSBA considers it a priority to defend Japan and protect the supply lines that link Japan to the rest of the Pacific.[60] In effect, the ASB concept

[56] Ibid., pp. 13-14.
[57] Office of Naval Intelligence, *China's Navy 2007*, op. cit., pp. 25-26.
[58] Tol et al., *AirSea Battle*, p. 29.
[59] To be sure, there are other scenarios wherein China may decide to attack US forces in the Pacific while leaving those in Japan untouched. The aim would be to avoid provoking a wider conflict and to try and split the US-Japan alliance.
[60] In fact, the CSBA states: "The defense of Japan remains a strategic and operational imperative of the first order." Ibid., p. 30.

considers Japan's involvement almost essential to its success, noting that, "Were China to succeed in keeping Japan neutral, the need for the US to expend resources in its defense would correspondingly disappear."[61] It would, therefore, be prudent in light of Canada's geostrategic position vis-à-vis Alaska and the continental US, South Korea, Taiwan and Japan, and the SLOCs that follow these routes, to be engaged in the active protection of these supply lines.

In addition to shifting Japanese SLOCs further north – away from the reach of most PLA threat systems – ongoing operations from outside the Western Pacific could include initiating convoy escort and other SLOC protection measures. Coalition assets could also assist in wider sea denial and blockade activities, MIO, and sanction enforcement. If it was determined that PLA submarines were armed with LACMs, ASW efforts aimed at protecting rear areas and other land targets in the Western Pacific would increase in importance. Accordingly, ASW operations near the approaches to forward basing areas would also increase in importance, particularly to assure their safety and resupply.

In later stages of a conflict, coalition forces could continue to protect SLOCs, protect targets on land, assist in wider sea denial and blockade activities, conduct MIO and sanction enforcement, and conduct convoy escort missions. However, as US forces were able to seize and sustain the initiative in the air, sea, space, and cyber domains, and create more freedom of action to project power, coalition forces could then become more involved in direct ASW operations in the Western Pacific. Specifically, naval forces could support ASW operations along the Ryukyus Barrier.

Underwater Superiority/ Centre for Advanced Underwater Warfare Excellence (CAUWWE)

The ASB requires significant resources in order to conduct an effective ASW campaign. Paradoxically, (except for its submarine fleet) US skills and assets in this area have been in decline at the precise moment the ASW environment is becoming more challenging and more complex. This is due in part to an atrophying of ASW capabilities since the end of the Cold War.[62] Further complicating this picture is the proliferation of

[61] Ibid., p. 37, n. 55.

[62] For instance, after the October 26, 2006 surfacing of a Chinese Type-039 submarine near the USS *Kitty Hawk*, the US Navy acknowledged that ASW defenses for aircraft carrier battle groups would be

increasingly sophisticated, stealthier, quieter, and more capable submarines in the Western Pacific.[63] Finally, the noisy littoral waters of the Western Pacific also make ASW operations increasingly difficult. Given the very low signatures of modern diesel-electric submarines, many of which the PLA Navy has or is expected to have in significant numbers, it cannot be assumed that an open ocean ASW campaign would be prompt or successful.

To be sure, ASW efforts would likely be successful at providing protection against PLA Navy submarines in localized areas, such as within range of naval formations operating in the open ocean or along defensive barriers established offshore high-value targets. However, it would be far more difficult to assure the detection of all PLA Navy submarines, and the safety of high-value assets along the full length of SLOCs and logistics networks, particularly as they reached areas covered by China's A2/AD threat systems within the first island chain.

In an attempt to overcome these challenges, the ASW campaign in the Pacific requires an assessment of tactical capabilities as well as operational/doctrinal thinking. In other words, there is an established need, at the maritime operational level of combat, to invest in doctrinal thinking to develop the underwater equivalent of "air superiority." In much the same way that honing air combat maneuvering (ACM) skills facilitates achieving air superiority for the Air Force, honing ASW skills should facilitate achieving "underwater superiority" for the Navy. As such, acquiring and advancing ASW skills marks the beginning of a lengthy process aimed at countering and defeating the PLA Navy's A2/AD submarine threat.

This concept moves beyond conducting tactical ASW operations as part of a sea control or sea denial mission, by placing ASW operations within a larger warfighting maritime strategy. The US Navy and coalition partners would use the ASW campaign to achieve underwater superiority as part of an overall ASB doctrine. Achieving and maintaining underwater superiority then becomes the foundation from which a larger

reviewed. See B. Gertz, "Defense on Subs to Be Reviewed," *Washington Times*, November 14, 2006, http://www.washtimes.com/national/20061114-123345-3750r.htm (Accessed: November 14, 2006).

[63] For a more thorough discussion on the proliferation of submarines and advanced submarine technologies in the Asia-Pacific region, see A. Davies, "Up Periscope: The Expansion of Submarine Capabilities in the Asia-Pacific Region." *RUSI Journal*, 152, no. 5 (2007), pp. 64-69.; and A. Davies, "The Enemy Below: Anti-Submarine Warfare in the ADF," *Special Report*, Issue 2 (Australian Strategic Policy Institute, 2007).

ASB concept could take place. The interdiction and destruction of PLA Navy submarines is aimed at returning the initiative to US forces. Once that initiative is returned, US aircraft carriers and other vital assets can then move to secure other strategic objectives.

In order to facilitate the achievement of this objective, an ASW "Top Gun" school for advanced underwater warfare excellence is required. During and following the Vietnam War, for example, the US Air Force and Navy embarked upon a process of reacquiring ACM skills. At the tactical level, the result was the development of Top Gun and other Aggressor squadrons that would teach ACM skills to pilots using dissimilar tactics and equipment. At an operational level, what followed was the intellectual development of the AirLand Battle concept.

Within the context of the ASB concept, and the preceding assessment of China's advancing submarine capabilities, a Top Gun ASW Centre for Advanced Underwater Warfare Excellence (CAUWWE) is needed. The CAUWWE would be a centre of excellence in underwater warfare doctrine, tactics, training, thinking, research and development, platform and weapons development, and current/anticipated world threats.

The CAUWWE would encourage "thinking outside the box," and experiment with new and advanced ASW ideas. The school would be geared toward already experienced personnel in order to teach, further develop, and refine ASW concepts using dissimilar tactics, training, and equipment. In order to disseminate the development and advancement of ASW tactics, techniques, and underwater warfare concepts – and similar to the methodology used at Top Gun – personnel selected to attend the CAUWWE would return to their home units to relay what they had learned – in essence becoming instructors themselves.

Partners from around the Pacific – from Australia, Japan, New Zealand, Singapore, South Korea, the US, and Canada – could be networked together in a virtual real-time simulation environment. In this environment advanced concepts would be tested and evaluated. Aggressor "red teams" would study the operations, tactics, and doctrine of adversaries, and then challenge ASW students using these dissimilar tactics and equipment.

As the CSBA notes, the ultimate objective of the ASB's ASW campaign is to turn the waters inside the first island chain into a "No Man's Sea."[64] Thus, expertise gained at the CAUWWE would be crucial at overcoming key operational challenges when acquiring freedom of action in the Western Pacific by eliminating the PLA Navy's submarine threat to the region. Eliminating the PLA Navy's submarine threat also reduces its ASCM capability, which when sufficiently degraded would increase the US and coalition forces' freedom of action in the Western Pacific.

Conclusion

China's remarkable economic performance over the past two decades has underwritten its ability to acquire and sustain a large and increasingly sophisticated military build-up. While Beijing asserts its recent economic and military resurgence is not a threat to anyone, the PLA's ongoing military build-up does not show any sign of abating. The PLA will continue to modernize itself with advanced weapons and continue with a military doctrine that views the US as its greatest potential adversary.

At a minimum, China seems to be developing a system of layered defences that radiate outward from its coast, where stronger belts of sea control are located closer to the mainland. It is procuring and/or producing the weapon systems necessary to implement an anti-access and area denial strategy in the Western Pacific, and is beginning to utilize those systems.

China also has an expansive definition of its maritime rights and interests in the Western Pacific. In recent years, the PLA Navy has begun deploying its capabilities in a more dynamic and robust manner in order to establish an increasing level of maritime assertiveness in the Western Pacific. Therefore, understanding China's response during the *Cheonan* incident, and in other situations, is important from a strategic planning perspective. On the one hand, Beijing may have newfound confidence with its modernizing military, and is "sending a message" to Washington to not get involved in Western Pacific affairs.

[64] Tol et al., *AirSea Battle*, op. cit., p. 68.

On the other hand, China may be in a moment of strategic vulnerability. It may be at a point in its military modernization where more numerous but less advanced weapon systems are being phased out and more advanced but less numerous systems are being phased in. As a result, it can be expected that until the current cycle of military modernization is complete, the PLA Navy will present itself as more capable than it really is.

In either case, the level of the PLA's involvement in the Western Pacific can be expected to increase as Beijing seeks to maintain greater control over its vital interests in the region. The PLA Navy will increasingly push out into the Pacific, and when it does, it will encounter the US Navy intent on protecting America's vital and historic interests in the region. Not only that, but the US will be guided by a warfighting concept that seeks to counter the type of A2/AD strategy being implemented by Beijing.

The Western Pacific is also a dynamic region that includes a number of actors with competing interests. Consequently, the stability and security of the region has the potential to change at a moments notice. The sinking of the *Cheonan* is a good example of how quickly the strategic picture can shift from relatively benign to unpredictable.

The significance of these developments is that neither the United States nor China is in a weak position in the Western Pacific. Both states have the capacity to act, and both have the ability to defend their interests if necessary. This strategic situation makes certain that friction exists between the two, and this has significant implications for Western Pacific countries if it is allowed to progress unchecked. Therefore, the ASB concept is an attempt at maintaining a stable military balance in the Western Pacific. To be sure, the ASB concept is not without its limitations; however, it does provide a lens through which to view the security challenges of the Western Pacific. The concept aims at preserving Washington's freedom of action in the Western Pacific, and if necessary, re-establishing its freedom of action in the event that deterrence fails. Deterrence is maintained by demonstrating convincingly to Western Pacific nations that US forces can defeat China's A2/AD strategy.

While the ASB concept is aimed at addressing a wide variety of A2/AD challenges in several domains – including space, cyberspace, at sea, and in the air – the complex and dynamic underwater/ASW environment in the Western Pacific requires

special attention. Therefore, this article has stressed the priority and importance of ASW operations, the idea of "underwater superiority," and developing a Top Gun CAUWWE. The focus on ASW operations is not meant to be conducted at the expense of other important mission areas or military threats. It is aimed at returning the initiative to US forces in the event that deterrence in the Western Pacific fails. Once this initiative is returned, other vital assets can then move to maintain the initiative, secure other strategic objectives, and stabilize the military balance in the region.