

A Proposed Littoral Dominant Battle Group Centered Around The Arsenal Ship

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EXECUTIVE SUMMARY

Title: A Proposed Littoral Dominant Battle Group Centered Around The Arsenal Ship

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Thesis: For the projected \$500 million investment in a demonstrator Arsenal Ship, the Navy will likely get what it is asking for, a ship designed to help the aircraft carrier battle group make the transition from a blue-water dominant team to a littoral dominant team. Just as the Navy built the aircraft carrier battle group team and doctrine to dominate the blue-water for the past 50 plus years, the Navy now needs to build the team and the doctrine that can dominate the littoral battle space of the 21st century. The Arsenal Ship concept should center around having industry build a ship that could be the centerpiece of a littoral dominant battle group.

Background: The United States Navy has shifted its strategic focus from the blue-water to the littorals; therefore, it would make sense for the Navy to develop doctrine and force structure to dominate the littorals. The Navy is in the process of building a revolutionary new class of warship--Arsenal Ship. The Arsenal Ship's operational concept is focused on a ship that will enhance the fire power of existing aircraft carriers, land attack capable combatants and submarines. In this period of austere funding and downsizing, the Navy must look not only to new technologies but to new organizations and doctrine to effectively and efficiently meet its mandated missions. There are two areas where shortfalls exist to building a littoral dominant team: 1) the Navy does not have a staff that is organized and trained to plan and execute littoral dominance operations; and 2) the Navy has critical shortfalls in naval surface fire support assets.

Recommendations: The United States Navy should build a littoral dominant battle group centered around the Arsenal Ship: a typical aircraft carrier battle group with an Arsenal Ship in the place of the aircraft carrier, and an Amphibious Group (PHIBGRU) commander leading it instead of a Carrier Group (CARGRU) or Cruiser Destroyer Group (CRUDESGRU) commander. An Arsenal Ship Battle Group, led by an experienced littoral warfare expert, would be a viable forward presence and power projection entity; furthermore, it would be an effective building block for follow-on forces if a large-scale crisis were to develop.

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A PROPOSED LITTORAL DOMINANT BATTLE GROUP CENTERED AROUND THE ARSENAL SHIP

THE ARSENAL SHIP'S IMPACT ON FUTURE NAVAL OPERATIONS

We have entered a period of uncertainty where threats are indeterminate even as changes in technology accelerate. Rapid innovation--apparent in the impact of stealth and precision weaponry in the Gulf War--appears likely to continue. Yet the Armed Forces are not apt to receive anything close to the resources enjoyed during the Cold War. With less money and greater ambiguity on the nature of opponents and wars in the future, we must innovate.¹

The United States Navy is investing scarce resources in the development of a revolutionary new class of capital ship--Arsenal Ship. The Arsenal Ship will capitalize on technological advances in ordnance, hull design and manufacturing capability, propulsion and damage control automation, and command and control systems. The Navy should capitalize on the Arsenal Ship by leveraging, through innovation, the opportunities that its myriad technological advances provide. Unfortunately, the Navy's operational concept for the Arsenal Ship states that it will be an affordable strike and naval fire support ship that will enhance the fire power of existing aircraft carriers, land attack capable combatants and submarines, in essence aircraft carrier battle groups.²

¹ Williamson Murray, "Innovation: Past and Future," *Joint Force Quarterly*, Summer 1996, p. 51.

² Department of the Navy, "Arsenal Ship Concept of Operations," 1996, p.1.

It is not a replacement for these or for land-based air. Instead, it is part of the whole-just as the Battleship was a part of the whole for nearly a century. Operating under the control and umbrella of regularly deployed Aegis combatants, arsenal ship will supply substantial firepower, early: giving unified Commanders-in-Chief (CinCs) the capability to halt or deter invasion and, if necessary, enable the build-up of coalition land-based air and ground forces to achieve favorable conflict resolution.³

During a recent hearing of a House subcommittee on military procurement, in response to a question concerning the "core need" for the Arsenal Ship, the Assistant Secretary of the Navy John Douglass said, "I don't think there is an incremental core need."⁴ Additionally, the Deputy Chief of Naval Operations Vice Admiral Donald Pilling said essentially that the Arsenal Ship was "...a "land-attack platform," intended to influence events ashore from the sea. When asked whether the Arsenal Ship could attack a specific target that could not be struck by an existing weapon system, the admiral admitted there was not."⁵ That prompted the observation that "...the Arsenal Ship seems like the ship of the future with everything. Everything except a mission."⁶

Thesis

For the projected \$500 million investment in a demonstrator Arsenal Ship, the Navy will likely get what it is asking for, a ship designed to help the aircraft carrier battle group make the transition from a blue-water dominant team to a littoral dominant team. That operational concept is strikingly similar to the operational concept espoused by the battleship sailors of the 1930s who tried to keep battleships relevant as blue-water dominant ships by neatly fitting the aircraft carrier into a supporting role of providing aerial spotters for battleship battle lines.

³ Department of the Navy, "Arsenal Ship Concept of Operations," 1996, p.1.

⁴ C.P. Cavas, "Is Arsenal Ship's Mission Adrift?," *Navy Times*, 17 March 1997, p. 30.

⁵ *Ibid.*, p. 30.

⁶ *Ibid.*, p. 30.

The Navy has shifted its strategic focus from the blue-water to the littorals. Now, it should focus its intellectual power on being innovative because resources will continue to be scarce and force structure is likely to go through additional cuts. Just as the Navy built the aircraft carrier battle group team and doctrine to dominate the blue-water for the past 50 plus years, the Navy now needs to build the team and the doctrine that can dominate the littoral battle space of the 21st century. The Arsenal Ship concept should center around having industry build a ship that could be the centerpiece of a littoral dominant battle group.

Naval Power Projection Today

The Navy currently employs two types of forward deployed entities, the Aircraft Carrier Battle Group (CVBG) and the Amphibious Ready Group (ARG). The CVBG with its composite air wing (F-14, F/A-18, S-3, E-2C, EA-6, and SH-60), surface combatant escorts (cruisers, destroyers, and frigates), direct support attack submarines, and logistics ship is clearly a blue-water dominant battle group. The ARG consists of an amphibious assault ship (LHA, LHD, or LPH), a Dock Landing Ship (LSD), an amphibious transport dock (LPD), and a Special Operations Capable Marine Expeditionary Unit (MEU(SOC)); by itself, except in the most benign battlespace, the ARG is neither a blue-water dominant group nor a littoral dominant group. The only littoral dominant group is a combination of the ARG and elements of the CVBG.

There are two clear points in the Navy's strategic vision: (1) the Navy must retain its ability to dominate the blue-water regions of the world (i.e., keep sufficient Aircraft Carriers to

accomplish that mission), and (2) the Navy must improve its ability to provide decisive crisis response in the littoral regions of the world. This thesis suggests an alternate and fiscally responsible way to improve decisive crisis response capability in the littoral battlespace. It will address the who and what of decisive operations in the littoral battlespace.

EMPLOYING A LITTORAL DOMINANT BATTLE GROUP

Background

The United States Naval Service--the Navy and Marine Corps--operates in the oceans and littoral regions of the world to “project power and influence of the nation across the seas to foreign waters and shores in both peace and war.”⁷ For most of the twentieth century, the United States Navy was mostly interested in blue-water operations. During the Cold War, the Navy’s strategic focus was on achieving global maritime dominance. Due to the demise of the Soviet Union and with it the only global fleet seen as a potential adversary, the United States Navy’s strategic focus shifted to littoral operations and power projection from the sea. That shift in strategic focus was articulated in the Department of the Navy’s publications--"From the Sea" and "Forward...From the Sea."

Currently, the Navy contributes combat power to theater commanders in the form of Aircraft Carrier Battle Groups, Amphibious Ready Groups, and Independent Deployers (e.g., Maritime Patrol Aircraft Detachments and one or more surface combatants). Those forces are trained, organized, and equipped to conduct a wide range of tactical evolutions including peacetime engagements (e.g., port visits and exercises), maritime dominance (e.g., protection and denial of sea lines of communications), and power projection from the sea (e.g., amphibious demonstrations and forced entry operation). Because forward deployed Naval forces are available to respond quickly, require minimum support, and are less constrained by potential diplomatic restrictions that could be imposed on land-based forces by their all too necessary host

⁷ Department of the Navy, Forward...From the Sea, (Washington, D.C.: Department of the Navy), 1995, p. i.

nations, naval forces enjoy far greater employment options as compared to the Army and Air Force. This means that the naval services can respond to most crisis situations quicker than other services and with a wider range of tactical options.

The congressionally mandated roles of naval forces are maintaining maritime superiority, contributing to regional security, conducting operations from the sea, seizing or defending advanced naval bases, and conducting such land operations as may be essential to the prosecution of naval campaigns.⁸ The management of those naval campaigns is the job of navy staffs. During the early days of a crisis situation the Navy has basically two staffs and their associated forces readily available to respond to the crisis: (1) the Aircraft Carrier Battle Group (CVBG) commanded by a Carrier Group Commander (CARGRU) or a Cruiser Destroyer Group Commander (CRUDESGRU) both Rear Admirals (O-7 or 8 grade officers), and (2) the Amphibious Ready Group (ARG) with its embarked Marine Expeditionary Unit (MEU) commanded by an Amphibious Squadron Commander (PHIBRON) and a MEU commander, both O-6 grade officers, respectively. If the crisis situation is too large in scope or has the potential for escalation, then those forward deployed staffs and assets become the “building blocks” for follow-on naval forces.

Building on normally deployed forces, the Navy can mass, if the situation requires, multiple Aircraft Carrier Battle Groups into Carrier Battle Forces, Amphibious Ready Groups with embarked Marine Expeditionary Units, and as needed project those naval expeditionary forces ashore using the afloat Maritime Prepositioning Force. Such massing of naval units can be

⁸ Department of the Navy, Naval Doctrine Publication 1, *Naval Warfare*, (Washington, D.C.: Department of the Navy), 1994, pp. 15-16.

complimented by the deployment of Army and Air Force units to provide a joint force capable of the full range of combat operations that may be required.⁹

Those follow-on naval forces of the littorally focused future will likely include a Marine Expeditionary Force Forward (MEF Forward), which is a Marine Air Ground Task Force (MAGTF) whose size is variable but somewhere between a MEU-sized force and an entire MEF. A MEF Forward will typically be commanded by a Marine Corps Brigadier General. It is safe to assume that if a MEF Forward sized force is dispatched overseas to respond to a crisis, then Maritime Preposition Force (MPF) ships will also be routed to that crisis area to provide sustainment for the MEF Forward. Therefore, per current doctrine, the Navy will send an Amphibious Group (PHIBGRU) commander (Rear Admiral) and staff to the area to coordinate the off-load and marrying-up of the MEF Forward and the MPF assets. Once in theater, that PHIBGRU commander and staff will most likely stay to command, as Amphibious Task Force Commander (CATF), any MEF Forward-sized amphibious operation, as was the case during the Gulf War. This is due in part to the limitations of a PHIBRON staff to effectively coordinate much more than an ARG sized Amphibious Task Force (ATF). However, there is one flaw with that practice which has to do with the organization and employment of the PHIBGRU staff.

Key Issue

A PHIBGRU staff is primarily organized for administrative functions (i.e., managing maintenance, basic training, and other non-operational functions such as personnel issues for the amphibious ships that are not on deployment or working-up for a deployment) rather than

⁹ Department of the Navy, Forward...From the Sea, (Washington, D.C.: Department of the Navy), 1995, p. 5.

tactical operations. The PHIBGRUs, 2 in the Atlantic, 3 in the Pacific, and 1 in the Western Pacific, own all the amphibious ships and the nine PHIBRONs (four each assigned to PHIBGRU 2 and 3, and the remaining one assigned to PHIBGRU 1). Three ship ARGs are assigned to a deploying PHIBRON approximately six months prior to deployment. The PHIBRON oversees the operational employment and training of the ships throughout the work-up phase and the deployment while maintenance and administration are still the responsibility of the PHIBGRU staff.

If a PHIBGRU commander is called on to conduct tactical operations (normally large-scale operations), standard procedures call for the PHIBGRU commander to subsume one of his or her PHIBRON commanders as the chief of staff for the tactical operation while PHIBGRU's billeted chief of staff and other selected members stay behind to perform the PHIBGRU's administrative functions. In contrast, nothing like that happens in the CVBG structure: CARGRU, CRUDESGRU, and even Destroyer Squadron (DESRON--the equivalent of a PHIBRON) staffs retain all administrative and tactical duties at all times. The CARGRUs, CRUDESGRUs and DESRONS have, since August 1995, permanently assigned ships. Their staffs are organized and manned to enable them to manage simultaneously and over the life-cycle of the ships both the administrative and operational employment of their assigned ships

The subsumption of a PHIBRON commander also includes subsumption of the rest of the PHIBRON staff to help perform the tactical planning and execution functions of the PHIBGRU. The subsumption of a PHIBRON builds an ad hoc amphibious staff that has a great deal of individual operational experience but lacks operational experience and cohesiveness as a tactical staff. That potentially promotes unnecessary friction within the staff. It also promotes unnecessary external friction, as the ad hoc PHIBGRU staff inter-operates with other staffs and

ships that have had little tactical experience working with and for the PHIBGRU staff. Those internal and external frictions are potentially magnified if an amphibious operation, often deemed the most complex type of military operation, is being employed.

The Navy, if truly committed to its littoral and maneuver warfare focus, must promote the understanding of the land battle from its inception well out to sea through its transition of command ashore. The littoral battlespace and maneuver warfare are far different from Alfred Thayer Mahan's massed fleet theory of seeking out and destroying the enemy's fleet to gain unimpeded use of the sea. Tomorrow's coastal defense threat (mobile, lethal, and survivable) will require the Navy to build and train forces to employ maneuver warfare from over the horizon. The Arsenal Ship, a strike and fire support platform, goes a long way towards building the required forces. What is needed are littoral warfare experts trained and experienced employing maneuver warfare.¹⁰ They must be able to understand how the Navy can best maneuver and shape the enemy while optimizing force protection and sustainability of naval forces at sea and ashore. They must also be equipped with the best command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) systems available in order to maximize their ability to operate on the increasingly fast-paced and widely dispersed battle field.

The Navy faces some challenges developing commanders and their staffs to be capable of planning and executing operational maneuver from the sea. Currently, the only navy staffs getting tactical experience in littoral warfare and ground operations in the overseas operating areas, where crises are likely to occur in the future, are the PHIBRONs: CARGRUs and

¹⁰ LaPlante, J.B., VADM, USN, "The Future of Amphibious Warfare Takes Shape." *USNI Proceedings*, May 1994, p. 88.

CRUDESGRUs have little to do with ARG operations overseas, and PHIBGRUs do not deploy nor do large-scale amphibious exercises occur frequently enough, due to their high costs, to provide them with high quality at-sea training. To borrow a phrase from the Marine Corps, the MEF or MEF Forward commander is the “warfighter.” Who is the Navy’s littoral “warfighter?” The answer is not the CVBG staff due to experience and knowledge limitations in amphibious and ground combat operations. The answer is not the PHIBRON staff due to their size limitation and lack of strike warfare experience to coordinate the Navy’s shaping assets. More than likely, the Navy will turn to the PHIBGRU commander who suffers from staff limitation foremost in readiness because of the staff’s low operating tempo and manning that is not focused on tactical littoral operations. The PHIBGRU commander also suffers in the area of C4ISR capabilities. It is not very often that a PHIBGRU commander conducts amphibious warfare exercises from the decks of a Amphibious Command Ship (LCC), a ship designed specifically to serve as the command ship for the Commander, Amphibious Task Force (CATF) and the Commander, Landing Force (CLF). LCCs have become the home of the numbered fleet commanders. LHAs and LHDs have good C4ISR capabilities but they have not received the same priority for upgrades as the navy's premier capital ship, the aircraft carrier.

Proposed Littoral Dominant Staff

To rectify the problems that plague the Navy's ability to develop littoral warfare dominance, I propose the creation of deploying PHIBGRU staffs, two per coast, organized more along the lines of the CARGRU and CRUDESGRU staffs. Furthermore, the PHIBGRUs must redistribute custody of amphibious ships and have PHIBRONs assume the permanent ownership of their ARGs, a concept recently proven in the DESRON community. That will require some minor changes to the PHIBRON's organization and manning, and a reduction in the number of PHIBRONs from nine down to eight in order to keep one staff for each deploying ARG.

The reorganization of the PHIBGRU staff bears some additional comments. The flag support (N0x personnel that work for the Chief of Staff), administration (N1), and intelligence (N2) departments are adequately structured and do not need to be changed. Specifically, the PHIBGRU's intelligence department works out of the amphibious flagship's intelligence center, therefore, the intelligence center becomes the focal point for all-source intelligence fusion through the combined efforts of the flagship, PHIBGRU, and MEU(SOC) intelligence personnel.

The operations department should have the following divisions to support execution of maneuver warfare from the sea: surface, ground, air, and submarine. Heading up the operations department should be a navy captain or a marine colonel. The surface operations division should be led by a post-commander command navy surface warfare officer with strong amphibious warfare experience. The surface operations division should be staffed with an appropriate mix of supporting personnel, such as operations, combat systems, or deck experienced officers. The air operations division should be led by a post-commander command aviator with strong air assault experience. The air operations division should be staffed with appropriate supporting personnel, such as strike warfare specialists in tomahawk and attack aircraft communities, and assault

support aviators. The ground operations division should be led by a field grade ground combat officer. The ground operations division should be staffed with an appropriate mix (infantry, artillery, or armor) of company grade or junior field grade ground combat officers as well as a marine logistician. The submarine division should be led by a post department head submarine officer. Also, the operations department requires a host of talented enlisted personnel to support the management and execution of the departments responsibilities.

The material department (N4) should be reorganized by decreasing the amount of navy engineering influence, due to the reduction in ships assigned, and emphasize more the logistics and sustainment at sea. The MAGTF forces that go ashore should look to the MEU(SOC) staff and PHIBGRU's ground and air operations divisions for logistics support. An operational planning group (N5) should be organized to support future planning. The personnel should come from the various departments and supporting or associated ships and staffs (e.g., MEU(SOC) and DESRON). The communications department (N6) should expand to take on a more robust command and control warfare posture. The training and readiness department (N8) should decrease in size, due to the reduction in ships assigned, and come under the control of the operations department or become the core of the operational planning group.

In order to achieve operational expertise in maneuver warfare and littoral operations, the PHIBGRU commander needs to work throughout the work-ups and deployment with the ARG and MEU. Therefore, the PHIBGRU's flagship should be the LHA or LHD, both very capable command and control platforms. But, what happens to the CVBG and its commander because clearly the three ship ARG is not such a significant command to warrant a flag officer and staff? It does not seem reasonable to assume that during a crisis situation the entire CVBG command could be efficiently and effectively commanded by a PHIBGRU staff embarked on an

amphibious ship: it is a matter of the very close relationship between the carrier air wing staff and the CVBG staff.

The alternative that I propose is to have the Arsenal Ship take the place of an aircraft carrier as the centerpiece of what used to be called the CVBG. But can the Navy's mission still be accomplished effectively without the aircraft carrier forward deployed? The answer to that question is yes. During every recent Mediterranean deployment, the aircraft carrier has spent at least one quarter of its deployment out of the Mediterranean theater, and sometimes as much as half of the deployment. The ships that remained in the theater accomplished, in conjunction with other joint and combined forces, all of the required theater missions. If a crisis situation had developed in the theater, the remainder of the CVBG stood ready to provide TLAM strike support and escort missions for the ARG to allow it to perform its mission. Would that strike and escort support have been enough to accomplish maritime dominance in crisis area's littoral without the aircraft carrier? Would there have been enough strike assets to have a decisive or substantial shaping effect on the enemy? Clearly that is all situational dependent. This is where the Arsenal Ship can play a key role. But, what is an Arsenal Ship, and what are its capabilities?

ARSENAL SHIP--THE CENTERPIECE OF A LITTORAL DOMINANT BATTLE GROUP

The arsenal ship concept is a direct outgrowth of the Navy's Shift in focus from the open ocean to the littoral. It is fully consistent with "Forward...from the Sea", and "Operational Maneuver from the Sea", and addresses current as well as anticipated future requirements for more decisive, responsive and varied naval support to the land battle. Through concentration of massive firepower, continuous availability and application of netted targeting and weapons assignment, the arsenal ship will increase dramatically the scope and relevance of surface strike and fire support.¹¹

BACKGROUND

The concept of a modern arsenal ship is not a new idea. Vice Admiral Joseph Metcalf III, USN (retired), the former Deputy Chief of Naval Operations for Surface Warfare first introduced the concept in his 1988 article, "Revolution at Sea Initiative." In that article he foresaw the development of a new kind of "dreadnought" based on the principle of maximizing a ship's ability to deliver ordnance on target. He surmised that the a ship would be built, a strike cruiser, to exploit vertical launch and smart missile technologies.¹²

Arsenal Ship Requirements

Theater Commander in Chiefs have identified capability requirements based on existing shortfalls within their respective theaters. These requirements include:

- Conventional Deterrence against regional aggression inimical to United States interests,

¹¹ Department of the Navy, "Arsenal Ship Concept of Operations," 1996, p. 1.

¹² VADM Joseph Metcalf III, USN (retired), "Revolution at Sea Initiative," *USNI Proceedings*, January 1988, p. 36.

- Flexible response for demonstration of power independent of diplomatic limitations'
- Credible forward firepower support to joint and coalition land forces early in a regional contingency if deterrence fails. The forward theater arsenal ship weapons load out will be robust, flexible and tailorable to Commander in Chief requirements in order to expand Commander in Chief options for use of assigned joint forces.¹³

Based on the above requirements, the United States Navy has embarked on an acquisition program to develop an arsenal ship to satisfy those requirements. Additionally, the Navy is looking to satisfy some of its long-standing warfare deficiencies and predictable future shortfalls.

LONG-STANDING DEFICIENCIES

The missions of naval surface fire support include: (1) suppression of enemy artillery, (2) interdiction of enemy reinforcing elements, (3) area neutralization and denial, (4) close support fires, and (5) protection for evacuation operations. Those missions must be performed in all weather, day and night, and from over-the-horizon.¹⁴ Since the early 1960s, the navy has seriously decreased its Naval Surface Fire Support (NSFS) capability by the decommissioning of its Battleships and Heavy Cruisers with their multiple 16 inch (406mm) and 8 inch (203mm) guns respectively. Although re-activated twice to truss up its surface fire support capability, once for the Vietnam conflict and again during the mid-1980s through the Gulf War, the Navy's Battleships were once again de-activated primarily because of their extremely high operating costs and the fact that, at the time of their de-activation, the Navy

¹³ Department of the Navy, "Arsenal Ship Concept of Operations," 1996, p. 3.

¹⁴ Jere G. Mackin, "Navy Warfighting Formula Needs Fire Support Boost," *National Defense*, May/June 1995, p. 34.

leadership had not shifted its focus from “blue-water” operations to power projection ashore from the sea.

Combine the decommissioning of Battleships and Heavy Cruisers with the post-Cold War era military drawdown, which is not yet complete, and the results are an all-time paucity of naval surface fire support in this century. In fact, the current inventory of United States Navy gun weapon systems and ammunition is inadequate to meet naval surface fire support requirements.¹⁵

PREDICTED DEFICIENCIES

A forward deployed aircraft carrier battle group has a finite number of vertical launch missile cells and large caliber naval guns. The load out of those cells and gun magazines is a question of theater requirements. Those requirements are driven by theater commanders and naval doctrine.

Vertical Launched Ordnance. Theater commanders recognize the flexibility provided by sea-based ordnance operating in international waters. They demand that a large percentage of the vertical launch missile cells available to a battle group commander are loaded with theater level weapons such as the Tomahawk Land Attack Cruise Missile.

Another potential theater level weapon carried by ships is the Theater Ballistic Missile Defense (TBMD) surface-to-air standard missile that is being developed by the Navy. It is

¹⁵ Jere G. Mackin, “Navy Warfighting Formula Needs Fire Support Boost,” *National Defense*, May/June 1995, p. 34.

reasonable to assume that theater commanders will require additional battle group vertical launch cells be reserved for TBMD missiles.

The requirement for a certain number of those two types of theater weapons reduces the number of vertical cells available to a battle group for defensive ordnance such as surface-to-air missiles and vertical launched anti-submarine rockets. Additional ordnance that will be competing for space within the vertical launch missile cells are the self-defense surface to air Evolved Sparrow Vertical Launched Missile and the naval version of the Army Tactical Artillery Missile that is compatible with the current vertical launch weapons system.

Naval Gun System. Maneuver warfare from the sea requires shaping by lethal and non-lethal fires, and robust fire support capabilities. The navy which relies on a 5 inch 54 caliber (127 mm) gun system has severely limited shaping and fire support capabilities due to the range (maximum range of 13 nautical miles) and lethality of that weapon system's ordnance. Planned improvements to the existing inventory of 5 inch naval guns will not of itself meet NSFS requirements.

Although a 62 caliber upgrade to the 5 inch 54 caliber gun and an associated Extended Range Guided Munition (ERGM) are being programmed, for every 5 inch ERGM that is put into the magazine of a surface ship, two existing rounds are removed. That is significant because shipboard gun magazines have a standard 600 round capacity; approximately 40 percent of that capacity is taken up by rounds specifically designed for air defense, surface ship engagement, training, and special purpose ground support ordnance such as white phosphorus and illumination rounds. Thus, either the multi-purpose capability of the 5 inch gun system will be sacrificed by reducing the amount or types of ordnance within its

magazine or the amount of ammunition available for NSFS missions will be reduced by 50 percent. Perhaps the accuracy of ERGM will off-set the reduction in the amount of NSFS available, and then again, less than 200 five inch ERGMs per shipboard magazine does not seem to be a lot of fire power. Conversely, the benefit of those gun systems on escort ships is the ability to re-arm them at sea.

There are other trade-offs associated with the improved range (approximately 63 nautical miles) offered by the 62 caliber and ERGM upgrades to the 5 inch gun, those include: less destructive power of ERGM due to ordnance weight restrictions that require the use of submunition technology; increased potential for fratricide based on the failure rate of submunition technology; decreased responsiveness due to rate of fire decreases associated with gun loading procedures; and extended times of flight due to a high-altitude fly-out phase of an ERGM.

SPECIFICATIONS

Arsenal ship is designed to be a “fly before buy” acquisition program. The Navy has provided industry with a Concept of Operations and a Ship Capabilities Document. Industry teams take the functions described in the ships capability document and treat them as goals when conducting trade studies against the cost threshold. The goal is to leverage commercial technology and manufacturing processes with existing Department of Defense investments to rapidly (i.e., in less than half of the time of a typical major acquisition program) produce a functional and cost effective prototype arsenal ship for operational evaluation and testing. This prototype will be capable of being converted into a fully mission capable ship.¹⁶

¹⁶ Department of the Navy, “Arsenal Ship Capabilities Document,” 1996, p. 1.

The following is a synopsis of the relevant operational concepts and specifications that the Navy is asking industry to deliver in the Arsenal Ship:

- The Arsenal Ship's launching system should have approximately 500 vertical launch cells, and room for an extended range gun system. The ship must be capable of firing the following weapons in support of the land campaign: Tomahawk Land Attack Cruise Missiles using off-ship targeting and mission planning, Standard Missiles using Cooperative Engagement Capability, and a vertical launched naval surface fire support weapon using digital call for fire technology.¹⁷
- Optimize the Arsenal Ship's survivability in the littoral environment using passive means. If survivability evaluations dictate, then provide the Arsenal Ship with limited active self defense systems to augment passive defenses.
- Make Arsenal Ship a "remote magazine" that will receive all targeting, mission planning, and command and decision functions from off-ship through Cooperative Engagement Capability or an equivalent data link. Make the remote connectivity with other navy assets reliable, rapid, and secure over both satellite and line of sight media. Make it jointly interoperable with minimum impact. Successful employment of the Arsenal Ship will rest on effective command and control systems both internal and external.
- The Arsenal Ship will be designed for 35 years of service with an overall availability rate of 95 percent. It will be capable of underway refueling and vertical stores replenishment. Underway re-arming of vertical launch cells is not required. Provide it with the ability to store 90 days consumable and maintenance stores.
- Make Arsenal Ship capable of at least 22 knots and sufficient fuel to conduct a 90 day mission at the most economical fuel consumption speed. The ship shall have precise navigation capability independent of location, weather, or visibility.

Advantages

"The **protection of forces** will often be a **friendly center of gravity** during early entry operations. Therefore, early entry forces should deploy with sufficient organic and supporting capabilities to preserve their freedom of action and protect personnel and

¹⁷ Department of the Navy, "Arsenal Ship Capabilities Document," 1996, pp. 1-2.

equipment....”¹⁸ The Arsenal Ship enhances force protection because its vertical launch cells free up cells on cruisers and destroyers to be loaded with weapons that can be used to protect friendly forces. Also, Arsenal Ship’s long-range firepower can weaken potential counterattacks against joint forces by disrupting enemy C4ISR capabilities with standoff unmanned strikes and provide substantial capabilities to suppress enemy defenses (e.g., air and coastal), damaging logistics infrastructure, and attrite some of the enemy’s long-range offensive weapons.

The Arsenal Ship’s striking power is increased as the ship moves closer to the shore where its NSFS ordnance can effect the enemy. If designed properly (signature reduction and armored), Arsenal Ship may not need to worry about anti-ship cruise missiles. The primary threats that it will face are mines, diesel-electric submarines, and manned attack aircraft.

With the exception of counter-mine warfare, the aircraft carrier airwing is a vital element of subsurface (anit-submarine) and air (anti-air) warfare. Therefore, if battle group strike can be taken over by the arsenal ship and tomahawk loaded escorts, then carrier aviation assets can focus on air superiority missions and maritime patrol. This would strengthen defense in depth around the battle group and minimize the exposure of manned aircraft to integrated enemy air defenses over the beach.

The Arsenal Ship will have substantial on-scene sustainment capabilities; much more robust than any other surface combatant. Her ordnance load should fulfill any current CINC’s strike requirements with room to meet requirement growth. The remaining cells will improve

¹⁸ Joint Chiefs of Staff, Joint Publication 3-0, *Doctrine for Joint Operations*, (Washington, D.C., Office of the Chairman), 1995, p. IV-5.

the Navy's ability to meet fire support ordnance requirements and augment air defense and TBMD missions.

“Maneuver warfare is a warfighting philosophy that seek to shatter the enemy's cohesion through a series of rapid, violent, and unexpected actions which create a turbulent and rapidly deteriorating situation with which he cannot cope.”¹⁹ Those actions must be viewed across both time and space.

From a maneuver warfare perspective, the implications of the Arsenal Ship seem very favorable: with its massive amount of unmanned, long-range precision firepower, effectively double the amount nominally available to a standard aircraft carrier battle group, critical enemy targets over a vast area can be attacked simultaneously or in a specific time sequence developed in the joint commander's campaign plan. Striking multiple critical Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) nodes in a rapid fashion will promote achieving dominant maneuver by impacting the enemy's ability to fight his forces in an organized and effective manner. The shock created by this kind of attack in theory would paralyze an enemy.

Likewise, the Arsenal Ship will enhance mobility because of the suppressive effects of naval surface fire support and the potential to decrease the criticality of getting field artillery and the logistics footprint that it requires ashore to support ground combat elements. Amphibious operations of the past were typically ushered in by massive naval gunfire and aviation dropped ordnance evolutions. Future amphibious operations, whether they are under-the-horizon linear assaults or over-the-horizon highly maneuver warfare oriented

¹⁹ Department of the Navy, Fleet Marine Force Manual 1, *Warfighting*, (Washington D.C., Headquarters United States Marine Corps), 1989, p. 59.

assaults will likely require even greater naval gunfire support, especially in the over-the-horizon type assault.

Seemingly gone are the days when a host of massive naval guns (8 to 16 inches) would “soften-up” an enemy, prepare a landing area, and provide supporting arms for ground forces until their organic artillery and its logistics footprint were established ashore.

Arsenal Ship seems to be the only effective answer for the future because the Navy is not likely to commit to re-activating the battleships or to building a large caliber gun ship and the short-term gunfire deficiency solution that the Navy is pursuing to upgrade the current fleet inventory of escort ships with a 5 inch 62 caliber gun mount is not going to provide enough firepower to solve the problem. For example: using each two-gun escort (nominally 6) of two aircraft carrier battle groups in fire support areas, a total of 12 guns and 2,700 light-weight 127mm (5 inch) rounds would be simultaneously available to provide 120 rounds per minute for twenty minutes of landing area preparation and ground forces fire support. The Arsenal Ship with one twin 155mm Vertical Gun Advanced Ship (VGAS) systems (currently under development) would provide 1,200 light-weight 155mm rounds at a firing rate of 40 rounds per minute for thirty minutes. Thus, one Arsenal Ship with only one VGAS could provide roughly half of the explosive weight at a third of the firing rate of six dual gunned surface combatants. This is very significant because when a surface combatant is engaged in NSFS operations, the ship’s capabilities in other warfare areas is seriously degraded. The development of digital NSFS command and control systems may mitigate the performance degradation in other warfare areas while a ship is engaged in NSFS.

The forward deployed Arsenal Ship will allow the vertical launch cells of battle group escorts to be loaded with more defensive weapons. That load will enable the surface

combatants to better fulfill their primary role as an escort. It will also allow the escorts more versatility to be able to go to critical maritime areas of the battle field and more effectively influence that battlespace through presence, capabilities, and ordnance. For example: theater ballistic missile defense may require an Aegis ship to be stationed away from battle group operating areas. That escort will require sufficient self-defense missiles (e.g., Standard Missiles and Antisubmarine rockets) and TBMD missiles to accomplish the mission at acceptable risk.

Limitations

The limitations of the Navy's proposed requirements are technological and doctrine related. The Arsenal Ship will not have a high volume of inexpensive ordnance available to support shaping and NSFS operations. Nor will it have a large caliber weapons system capable of delivering two million pounds of ordnance to support the close battle space like the two battleships, USS MISSOURI and USS WISCONSIN, were able to provide during the Gulf War.²⁰ It would take more than 17 VGAS systems to deliver that amount of ordnance. The navy probably will never employ 17 VGAS systems simultaneously during a crisis, however, in theory the accuracy of the ERGM round should compensate for some the tonnage differential between the 16 inch guns and the VGAS. To compensate for the difference in destructive power of the 16 inch shells and the ERGM, the navy is conducting research in advanced ordnance systems that will have improved warheads for better destructive effects as

²⁰ Gourley, Scott, "Naval Surface Fire Support in Forcible Entry Operations." *Naval Forces*, January 1995, p. 62.

well as significant ordnance speed increases (up to mach eight) to enhance target penetration.²¹

Other limitations include the extensive mission planning that is required to deliver the over-the-horizon ordnance planned for the Arsenal Ship. Current versions of Tomahawk require detailed planning for both the over-water and over-land portions of the missile's flight path.

Planning the over-land flight path is a highly complex, labor intensive, slow process that requires a significant amount of information support. That portion of the missile's flight path is primarily planned by planning experts located within the continental United States. Although an Afloat Planning System (APS) does exist; that system only gives a commander a limited ability to build, or more likely modify, a tomahawk mission to enhance strike flexibility because of the highly complex, labor and information intensive, slow mission planning process. In either circumstance, however, the new missions are not likely to be responsive enough nor developed on a large enough scale to be a significant flexible fire power capability.

With future GPS equipped versions of the Tomahawk missile, the APS should provide significant speed and flexibility in planning the over-land portion of a missile's flight path. The drawback to this capability is the potential future vulnerability of GPS to Command and Control Warfare (C2W) and interdiction.

Planning the over-water portion of the flight path is critical for a variety of reasons. The issue of airspace deconfliction must be considered because of our own air defense capabilities and friendly air assets operating between the launcher and the target. The over-water portion of

²¹ Townes, John W. III, CAPT, USN, "Navy Surface Fire Support: On Target." *Surface Warfare*, January/February 1997, p. 26.

the Tomahawk missile's flight path is also planned to safely avoid surface contacts to prevent having the missile clobber into a ship or obstacle, and to minimize potential early warning and counter-targeting by third-parties and enemy surveillance assets. Also, the over-water portion of the Tomahawks flight path is critical to ensuring that the missile gets to the beginning point of its over-land flight path on time in order to ensure that the missile achieves its designated time-on-top of the target, if specified.

Because the Arsenal Ship will not be manned to conduct any mission planning, an extra burden is placed on the mission planners onboard other ships. As already witnessed, human and technological errors in the complex world of mission planning have caused one ship to fail to meet its assigned mission (USS MONTEREY's September 1995 failure to launch assigned Tomahawk missions against targets in Bosnia).²² How much more complex is having another ship do its own jobs and also plan all of the missions for the Arsenal Ship? Combine that with the additional burden of ensuring command, control, and communications connectivity between the itself and the Arsenal Ship, and potential fragileness with the Arsenal Ship concept begins to surface. The solution to the command and control challenge of total off-ship mission planning and launch may be solvable through a high degree of redundancy in the Arsenal Ship's communications architecture, an increase in the number of communications paths that are capable of sending the required data to the Arsenal Ship, and by increasing the number of mission planners and "trigger pullers" that are able to launch the Arsenal Ship's weapons.

The theater level weapons planned for the Arsenal Ship are less time of flight critical than are the NSFS weapons. The NSFS weapons that are planned for the Arsenal Ship are assisted in

²² Stearman, William L., "The Navy's Proposed Arsenal Ship - Con." *The Retired Officer Magazine*, November 1996, p. 41.

achieving their extended ranges by a boost phase which is marked by a steep vertical ascent to high-altitude, followed by a fly-out phase in the thin upper atmosphere, ending with a GPS controlled descent phase onto the target. For targets requiring that type of flight profile, the ordnance's time of flight could be as long as five minutes. Against moving targets or time-sensitive targets, that may be unacceptable. The navy is working on developing a variety of next-generation ordnance that will have dramatic increases in speed for example: Fasthawk--a surfaced launched missile capable of a 700 mile range at mach four; and Scramshell--a hypersonic ballistic round capable of mach 5 or greater.²³

“Outstanding weapons won't be effective without the ability to accurately designate targets and ensure fires are coordinated over an extended and fast-paced battlefield.”²⁴ The Navy plans on providing responsive and accurate fires for the rear, close, and deep land battlefield through the Cooperative Engagement Capability (CEC). CEC already exists to support rear and to a large extent close area air defense including TBMD. CEC allows for the remote selection, initialization, and remote launch orders of TBMD and standard surface-to-air missiles. That capability allows an Aegis combatant that is equipped with the CEC upgrade to remotely launch and control surface-to-air missiles within the limits of its fire control director's terminal guidance range limitation.

The Advanced Tomahawk Weapons Control System (ATWCS) coupled with CEC communications data links should solve the deep battlefield strike mission planning, coordination, and command and decision functions. An Arsenal Ship's TLAM missions for

²³ Townes, John W. III, CAPT, USN, “Navy Surface Fire Support: On Target.” *Surface Warfare*, January/February 1997, p. 26.

²⁴ O. Kelly Blosser, “Naval Surface Fires and the Land Battle,” *Field Artillery*, September-October 1996, p. 44.

strategic and operational level targets will be issued to an Aegis combatant for over-water mission planning and launch control. Aegis ships with CEC and ATWCS to CEC upgrades would then remotely select, initialize, and launch TLAMs from an Arsenal Ship to execute ordered missions.

Close and deep area fire support target designation and weapons coordination is a critical requirement for all services. The Army is the lead agent for developing a joint artillery command and control system; that digital command and control system is the Advanced Field Artillery Tactical Data System (AFATDS). It is scheduled for fielding in early 1997, and has programmed upgrades to make it more interoperable with other services command and control systems. "AFATDS provides integrated, automatic support for mission planning, coordinating and controlling fire support assets...for close and deep operations."²⁵ With programmed upgrade that will link it to the Air Force's Contingency Theater Automated Planning System (CTAPS) and the Marine Corps Fire Support System (MCFSS), AFATDS has the potential to deconflict all air and ground battlefield coordination and clearance issues for supporting fires from the Arsenal Ship.²⁶

The Navy, recognizing that it must move into the digitized fire support arena, has experimented with AFATDS in a major Joint Task Force Exercise. A lot was learned from that experiment but clearly the Navy is committed to overcoming its shortfalls in this area through common operating environment systems and communication architectures to tap into AFATDS from over the horizon.

²⁵ MGEN Randall L. Rigby, "Mapping the Future: FA State of the Branch 1996," *Field Artillery*, November-December 1996, p. 4.

²⁶ MGEN Randall L. Rigby, "Mapping the Future: FA State of the Branch 1996," *Field Artillery*, November-December 1996, p. 5.

The impact that the Arsenal Ship has on the future battlefield will be largely dependent on the command and control system that is developed for it. As a remote magazine for navy weapon systems, the command and control challenges presented by the Arsenal Ship do not seem insurmountable because of the Cooperative Engagement Capability (CEC). On the other hand, if all of the strike and NSFS ordnance is called for through one or a few designated “Arsenal Control Ships,” then those control ships could very rapidly become overwhelmed trying to do their own potentially vital role while being responsible for command and control of the Arsenal Ship’s vast array of long-range lethal firepower. Furthermore, using exclusively navy ships as the command and control link from sensor to shooter would be placing a middleman in the loop which only provides another critical link that could fail.

The command and control architecture appears to rely on digital over-the-horizon connectivity. The ability to secure the use of satellite channels during a crisis may prove untenable. If acquired, the ability of those satellite links to remain functioning are also in doubt thus jeopardizing reliability. No back-up connectivity systems have been proposed yet.

The overall responsiveness of the Arsenal Ship’s ordnance to tactical calls for fire will depend largely on the ability to develop a robust information support system to perform airspace deconfliction and manage ground fire coordination and control measure in the dynamic and fast paced operational environment of the future battlespace.

In order to achieve its place among the capable warships to the United States Navy, the Arsenal Ship will have to do more than just communicate with the Navy: it will have to be accepted by the Marine Corps, Army, and Air Force. Theater CINC’s will have to demand

that their forces are capable of and trained in automated command and control of the ordnance stowed in the Arsenal Ship.

The Arsenal Ship, like all current VLS surface combatants, will not be capable of at-sea ordnance replenishment. The only way to reload it will be to take it out of the operation and send it to a suitable port. Due to the likelihood that it will be loaded with a mixture of ordnance, especially NSFS ordnance, the Arsenal Ship will probably be kept on station thereby precluding it from retiring to a port for reloading its depleted ordnance.

Airspace coordination issues resulting from tactical fires will get more complicated because the Arsenal Ship will be providing fire support to widely dispersed tactical elements. Although the steep boost and high altitude fly-out phases are less coordination intensive, the descent phase and the flatter trajectory ordnance (i.e., sea SLAM and ATACM) from a central location to dispersed targets causes significant airspace coordination versus on-target responsiveness challenges. Improvements in automated systems to coordinating airspace usage over the battle field and in the ability to get information concerning on-call fire missions into the cockpit of aircraft already over the battle field will help mitigate the potential for fratricide.

Arsenal ships may have an adverse effect on the operational mobility of naval forces due to their self-defense limitations. As described above, because of the requirement to defend the Arsenal Ship, the ability of escorts to project power and conduct needed missions elsewhere in the battlespace may be jeopardized. Conversely, maximizing the range of the Arsenal Ship's weapon systems, low-detectability, and survivability may prove sufficient to allow battle group escorts to perform other missions than direct escort for the Arsenal Ship.

Potential Operational Effects of the Arsenal Ship

Consider for a moment the potentially decisive effects that the presence of a battle group made up of an Arsenal Ship, two Cruisers, three strike destroyers, one frigate, two submarines, and the ARG, augmented by the forward stationed Arsenal Ship (three of the proposed six will be permanently operated overseas one each in the Mediterranean, Indian Ocean, and Western Pacific) could have on an adversary: the numbers of vertical launched missile cells alone would be close to 1500. It is reasonable to say that at least half of those would be armed with TLAM. How many sorties (at what sortie rate) would it take for an aircraft carrier to generate 50 percent of those 1500 potential strike cells? That kind of firepower could stand off an enemy's coast at least 500 miles and deliver wave after wave of shaping fires while follow-on forces were massing for decisive ground operations, if necessary. At the stand-off range provided by TLAMs, the battle group escorts could be very effective at force protection by combining speed, maneuver, and deception with defense in depth.

The disadvantage of relying on Arsenal Ships is that they might lead to a "use of lethal force" quandary. The presence of two Arsenal Ships, safely over the horizon at 150 miles, may not have any influence on a crisis situation. An aircraft carrier, on the other hand, operating safely over the horizon can project its power by non-lethal means: flying strike aircraft over a target without committing to firing ordnance at the enemy. To overcome that limitation, aircraft from the amphibious ships could be sent over enemy territory to demonstrate presence. The drawback to that approach is the lack of defense in depth that an aircraft carrier's air wing can provide for ships operating in the littorals. In certain circumstances, joint forces, such as United States Air Force assets (AWACS and overseas based fighters), and/or planned multi-purpose organic fixed and rotary-wing aircraft (Joint Strike Fighter and SH-60R with an airborne early

warning radar variant) could provide defense in-depth for maritime power demonstrations. The development and fielding of those organic aircraft, mentioned above, are scheduled prior to the planned completion of the six Arsenal Ships by 2007.

Dominant Maneuver Enhanced by Naval Surface Fire Support--Arsenal Ship

It must be remembered that, as long as TLAM are considered the theater CINC's weapon, the Arsenal Ship will be viewed first as a strike asset. The other significant role that the Arsenal Ship will perform is that of the Navy's premier Naval Surface Fire Support asset, with its array of weapons under development such as:

- Navy Tactical Missile System (NTACMS)--a supersonic, global positioning system guided, 150 nautical mile, submunition carrying missile. Successfully fired in its Army version from a ship. Successfully launched from a vertical launch cell located at a test sight.
- Sea SLAM--a subsonic, electro-optical guided, digital data link controlled, 75 nautical mile, liquid fueled, 500 pound warhead missile. An existing Navy weapons system requiring human-in-the-loop control usually from an airborne control platform (organic to the battle group).
- Land Attack Standard Missile--a supersonic, global positioning system guided, 100 nautical mile, fragmentary or possibly submunition armed missile. Standard Missile is a proven weapon, land attack variant is under development.
- Vertical Gun Advanced System--a twin 155 millimeter, smooth bored gun, automated magazine with 1200 or more ready service rounds. Using Extended Range Guided Munitions (ERGM) technology that incorporates global positioning system guidance and submunition technology currently under development. Technology demonstration is expected to yield a 10-15 round per minute system that delivers the 155mm round in excess of 100 nautical miles.

As the Navy produces the above systems, and fields upgrades to the Tomahawk missile system, those upgrades will make Tomahawk more of a navy asset than a CINC's weapon, the Navy will be taking a giant leap towards making Operational Maneuver From the Sea possible. But with

those possibilities come further responsibilities, like the responsibility to effectively maneuver naval assets and shape the battlefield for success in follow-on land operations, and the responsibility to provide protection fires on demand to a wide range of units dispersed throughout the battlefield. And finally, the responsibility to help the ground forces capitalize on the sustainment benefits provided by having those supporting fires based at sea rather than having to be moved ashore in the early stages of an amphibious assault. Because of those responsibilities I proposed that a PHIBGRU staff, in conjunction with the MEU(SOC) command element, take the lead in becoming the operational planning and executing experts of decisive littoral operations with the Arsenal Ship Battle Group.

RECOMMENDATIONS

The Navy, like the other services, has been struggling with force structure issues since the end of the cold war. The 1993 “Bottom Up Review” defined the Navy’s need for ten aircraft carrier battle groups to fight and win two nearly simultaneous major regional conflicts. It also validated the need to retain 12 aircraft carrier battle groups to meet the peacetime forward presence missions while still maintaining a satisfactory deployment rotation.²⁷ The Navy is standing firm on the issue of twelve aircraft carrier battle groups. The projected aircraft carrier force structure bears that out. Unfortunately, the budget reality is likely to only get more austere while the price of a nuclear powered Nimitz-class aircraft carrier does not get any cheaper (approximately six billion dollars a copy).

The serious issue that needs to be raised regarding the Arsenal Ship is the Navy’s ability to afford building another power projection ship without realizing infrastructure savings

²⁷ Scott C. Truver, “Tomorrow’s Fleet - Part I,” USNI Proceedings, July 1996, p. 55.

elsewhere, specifically in the area of strike warfare. The Arsenal Ship concept should center around having industry build a ship that could be the centerpiece of a littoral dominant battle group. The Battleships Battle Groups (BBBG) of the 1980s were an integral part of the 600 ship navy and arguably a potent power projection force. Their primary mission was again focused on the blue-water battle as a surface action group designed to meet and defeat Soviet ships on the high seas with an additional mission of conducting long-range missile strikes or power projection against land targets.²⁸ The aside benefit of the BBBG was that the Navy knew where it would go to get the fire support required for amphibious operations.

Although there were some drawbacks to BBBGs, such as a lack of organic air power, the Navy had worked out a joint and combined solution to the problem of lack of layered defenses. “Tactical Air Support for Maritime Operations” (TASMO) was the title of NATO doctrine that was worked out between the air forces and the Navy to provide airborne assets to improve layered defenses for the BBBG while it was transiting through or operating in a threat area. The scheduling and management of the aircraft tasked to fly TASMO was the responsibility of the theater CINC’s staff where the BBBG was operating.²⁹ Also, TASMO fostered better joint air defense training by forcing the Navy and the Air Force to work together.

An Arsenal Ship Battle Group’s ability to start to maneuver and shape a battlespace from over 500 miles away could cause a potential aggressor to rethink his use of force options because at those stand-off distances, only a skilled blue-water adversary could pose a serious challenge. The mere fact the United States has shifted its focus away from the blue-water

²⁸ LCDR John D. Furness, USN *The Battleship Battle Group: Reversing Anti-air Warfare from a Liability to an Asset*, (Newport, RI: Naval War College), 1988, p. 2.

²⁹ *Ibid.*, p. 11.

threat seems to justify the case that a blue-water battle group recapitalized with better littoral warfare assets (e.g., Arsenal Ship and F/A-18E/F) does not always need to be present to provide substantial power projection. If the adversary does have a significant blue-water navy and air force, then even with the combined power of the forward deployed CVBG and ARG, a theater CINC would probably be unwilling to commit to any early, aggressive naval campaign until a massed fleet could be assembled for a Mahanian style naval campaign. Adding one Arsenal Ship to the combined power of the CVBG and ARG would not likely change the theater CINC's options. Therefore, just as the traditional battle groups will be the building blocks for naval campaigns, so can a non-traditional battle group like an Arsenal Ship Battle Group be the building block for naval campaigns.

But building a littoral dominant battle group is only part of the equation: the doctrine necessary to effectively operate an Arsenal Ship Battle Group must be developed. Since the Navy will likely forward deploy at least three of its proposed six Arsenal Ships, it can be deduced that they will be predominantly loaded out with theater level weapons like the long-range Tomahawk missile and TBMD missiles. From this proposal, the remaining Arsenal Ships would deploy as the centerpiece of a forward presence battle group. So what should the deploying Arsenal Ship be loaded out with? The deploying Arsenal Ships need to address the Navy's critical shortfall in NSFS capabilities. They would clearly carry a significant number of TLAM missiles, perhaps as many as 150 to 200. The rest of the ordnance should consist of VGAS modules and a preponderance of vertical launched fire support rockets and missiles such as ATACMS. The deploying Arsenal Ship would likely need at least four VGAS systems unless vertical launched fire support rocket or missile technology realizes significant reductions in cost per round. Four VGAS systems would likely provide adequate

redundancy and sufficient number of rounds to meet short term maneuver warfare fire support requirements. It must also be recognized that the Arsenal Ship will likely be the only ship in the short term that will be able to carry the VGAS system without major structural or weight distribution modifications to active ships.

That type of ordnance load would make the deploying Arsenal Ship clearly a navy asset to control and employ in the most advantageous way. Under the control of an experienced littoral warfare group commander, the Navy and Marine Corps team would be able to take littoral warfare to new levels of effectiveness through rapid and violent application of force if needed.

CONCLUSION

In conclusion, the Navy is bringing a very powerful new strike and fire support ship to the fleet inventory. More than ever before, the Navy will have the ability and responsibility to support the land battle effectively and efficiently. Supporting the land battle and amphibious operation will require a new level of expertise by the Navy. Building that expertise will not be easy because it requires a significant amount of change from a large bureaucratic system that has been extraordinarily successful for the past 55 years. But there exists a rare opportunity to make significant changes that will not only better prepare the Navy for future littoral operations but at the same time, allow it to achieve dramatic cost saving by substituting three 50-personnel, 500 missile, less than 500 million dollar a copy, Arsenal Ships for three 5,000 personnel, 80 aircraft, 6,000 million dollar a copy, aircraft carriers.

The Navy cannot afford to pass up the potential savings made possible by the Arsenal Ship. It must work hard now to develop doctrine, force structure, and organizational changes to complement Operational Maneuver from the Sea (OMFTS). 2007 is fast approaching; it will soon be time to marry-up the Amphibious Ready Groups (ARG) with a striking battle group centered around an Arsenal Ship. The savings alone from retiring just two aircraft carriers would easily pay for the command and control modifications necessary to allow the chosen LHD(s) and LHA(s) to have basically the same capability to run a battle group as that of an aircraft carrier. That would capitalize on the Arsenal Ship's primary mission as a strike warfare asset and secondary mission as a NSFS ship. The net result would be the optimization of the striking power of the Arsenal Ship by having it employed as a maneuver and shaping asset by an on-scene amphibious warfare (littoral) experienced admiral in close coordination with an on-

scene land warfare commander (Commander of the Landing Force (CLF)) starting at ranges upwards of one thousand miles from the enemy's coast. This would also provide the theater CINCs more flexible options to respond to crises in their theaters than currently available with a traditional CVBG.

The Arsenal Ship Battle Group is a viable forward presence option. The PHIBGRU as a deploying battle group commander is a key improvement that the Navy must make if it has truly shifted its focus to the littoral battle. The best way to realize the potential of the Arsenal Ship is to take it out from under the umbrella of the aircraft carrier, just as aircraft carriers were taken out from under the umbrella of the battleship dominated Navy almost 60 years ago. The key to unlock the potential of the Arsenal Ship is to demand littoral and maneuver warfare expertise from the amphibious community.

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