

NAVAL WAR COLLEGE
Newport, R.I.

EMPLOYMENT OF FAST ATTACK SUBMARINES BY THE
OPERATIONAL COMMANDER

by

Gordon C. Williams
Lieutenant Commander, United States Navy

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

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

Signature: *G. Williams*

13 February 1997

Chet Helms
CAPT Chet Helms, United States Navy

DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

19980709 059

REPORT DOCUMENTATION PAGE

1. Report Security Classification: UNCLASSIFIED			
2. Security Classification Authority:			
3. Declassification/Downgrading Schedule:			
4. Distribution/Availability of Report: DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.			
5. Name of Performing Organization: JOINT MILITARY OPERATIONS DEPARTMENT			
6. Office Symbol: C		7. Address: NAVAL WAR COLLEGE 686 CUSHING ROAD NEWPORT, RI 02841-1207	
8. Title (Include Security Classification): Employment of Fast Attack Submarines by the Operational Commander (Unclassified)			
9. Personal Authors: Gordon C. Williams, LCDR, USN			
10. Type of Report: FINAL		11. Date of Report: 13 February 1998	
12. Page Count: 26			
13. Supplementary Notation: A paper submitted to the Faculty of the NWC in partial satisfaction of the requirements of the JMO Department. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.			
14. Ten key words that relate to your paper: Submarine, Stealth, Endurance, Mobility, Flexibility, Intelligence, Maneuver, Fires, Protection, C2.			
15. Abstract: For operational commanders, the use of military force today requires flexibility, efficiency, and careful risk management among joint forces. In light of these requirements, this paper examines the influence of the fast attack nuclear submarine (SSN) and the Joint Force Commander's (JFC) employment of SSNs as an operational-level asset. The history of submarine warfare provides many lessons regarding submarine employment. Although the JFC can use submarines to accomplish or support a broad scope of missions, optimum employment requires analysis of the characteristics, capabilities, and expertise of submarines. The intrinsic and enduring characteristics of the SSN are stealth, mobility, endurance, and flexibility. The SSN also possesses diverse capabilities that allow it to perform a number of missions in support of the operational commander. These include theater ISR, support of ground components and operations ashore, and attacks on sea-based threats and objectives. Matching the submarine's characteristics with these capabilities yields several employment principles. For the JFC, SSNs are flexible assets that are best employed operationally deep where autonomous, survivable, or enabling forces are required. As an operational asset, the SSN contributes directly to several of the JFC's operational functions. First, submarines are important to the JFC because of their role in operational intelligence. Because of their stealth and forward positions, SSNs are able to conduct ISR directed at the enemy's operational weaknesses and centers of gravity. Second, the SSN's mobility and endurance enable it to execute operational maneuver. Third, through their USW, SUW and MIW capabilities, SSNs provide superb operational protection of naval forces. Finally, the SSN's extensive operational reach and autonomy make it particularly effective at conducting operational fires. Effective employment of SSNs will help the JFC achieve leverage and freedom of action in the theater. Therefore, operational design of a major operation or campaign should exploit the SSN's capabilities and expertise. The JFC must control SSNs as operational assets because of their ability to directly influence the operational level of war.			
16. Distribution / Availability of Abstract:	Unclassified X	Same As Rpt	DTIC Users
17. Abstract Security Classification: UNCLASSIFIED			
18. Name of Responsible Individual: CHAIRMAN, JOINT MILITARY OPERATIONS DEPARTMENT			
19. Telephone: 841-6461		20. Office Symbol: C	

Abstract

For operational commanders, the use of military force today requires flexibility, efficiency, and careful risk management among joint forces. In light of these requirements, this paper examines the capabilities of the fast attack nuclear submarine (SSN) and the Joint Force Commander's (JFC) employment of SSNs as an operational-level asset.

The history of submarine warfare provides many lessons regarding submarine employment. Although the JFC can use submarines to accomplish or support a broad scope of missions, optimum employment requires analysis of the characteristics, capabilities, and expertise of submarines. The intrinsic and enduring characteristics of the SSN are stealth, mobility, endurance, and flexibility. The SSN also possesses diverse capabilities that allow it to perform a number of missions in support of the operational commander. These include theater ISR, support of ground components and operations ashore, and attacks on sea-based threats and objectives. Matching the submarine's characteristics with these capabilities yields several employment principles. For the JFC, SSNs are flexible assets that are best employed operationally deep where autonomous, survivable, or enabling forces are required.

As an operational asset, the SSN contributes directly to several of the JFC's operational functions. First, submarines are important to the JFC because of their role in operational intelligence. Because of their stealth and forward positions, SSNs are able to conduct ISR directed at the enemy's strategic and operational weaknesses and centers of gravity. Second, the SSN's mobility and endurance enable it to execute operational maneuver. Third, through their USW, SUW and MIW capabilities, SSNs provide superb operational protection of naval forces. Finally, the SSN's extensive operational reach and autonomy make it particularly effective at conducting operational fires.

Effective employment of SSNs will help the JFC achieve leverage and freedom of action in the theater. Therefore, the operational design of a major operation or campaign should exploit the SSN's capabilities and expertise. Finally, because of their unique ability to directly influence the operational level of war, the JFC must control and employ SSNs as operational assets.

TABLE OF CONTENTS

SUBJECT	PAGE
Introduction	1
Historical Perspective and Lessons	2
World War I	2
World War II	3
Cold War	3
Post Cold War	4
Submarine Characteristics, Capabilities and Expertise	5
Characteristics - Stealth, Mobility, Endurance, Flexibility	5
Capabilities	7
Employment Principles	9
Operational Contributions and Employment - Functions	10
Intelligence	11
Maneuver	11
Protection	12
Fires	13
Logistics	14
Command and Control	15
Conclusion - Operational Factors	16
Recommendations	17

Introduction

As the world's greatest military power, the United States must be ready to use its military forces in activities ranging from peace keeping, to deterrence, to regional conflicts and wars. For operational commanders -- geographic or theater Commanders in Chief (CINC) and Joint Task Force Commanders (JTTF) -- the use of military force in these operations poses many extraordinary challenges. They face uncertain risks, broadening responsibilities, and dwindling resources. Additionally, Joint Force Commanders (JFCs) may have to operate at extreme distances, for long periods, facing widely divergent threats. Finally, force commanders must be able to conduct such operations with fewer assets and lower tolerance for loss or failure. To deal with these challenges, military plans and operations will require flexibility, efficiency, and careful risk management among joint forces. This paper will focus on the influence of the fast attack nuclear submarine (SSN) in light of these requirements. Specifically, it will examine the CINC and JTF Commander's employment of SSNs as an operational-level asset.

Spanning the political and military conflicts of this century, the contributions of the United States' submarine force have been both numerous and diverse. The success of the submarine force in modern warfare is inextricably tied to the uniqueness of the platform. Study of submarine history and the capabilities of today's SSN reveals the enabling, inherent strengths of the submarine: its stealth and survivability, its capability for operationally deep, autonomous operations, and its mission flexibility. Nevertheless, the submarine is by no means a panacea. Not only do SSNs possess limitations, they also share several capabilities with other equally capable platforms. Therefore, it is necessary for the JFC to evaluate objectively the SSN's role in support of the Joint Task Force (JTF).

Although the JFC can use submarines to accomplish or support a broad scope of missions,

optimum employment exploits the SSN's unique strengths and capabilities -- at the right place and right phase of the conflict. Submarines are low-risk, flexible assets that are well-suited for independent, preparatory operations in forward areas. Consequently, the JFC should employ submarines in missions that penetrate the enemy's depth and attack his critical strengths and weaknesses. Although submarines may support tactical, operational, and strategic levels of conflict, the CINC should control these assets because of their unique ability to influence the operational level of war directly.

Historical Perspective and Lessons

"Those who must plan for future regional conflicts should recognize the historical role of the submarine as a force multiplier." VADM Roger Bacon¹

A review of submarine employment through history provides valuable insight into the capabilities of the submarine. When they are used to attack the enemy's critical vulnerabilities, submarines are an extremely potent and efficient force. Consider the following facts:

- Although Germany never had more than 10 submarines at sea in World War I, Britain constructed more than 3000 UnderSea Warfare (USW) craft to defeat the U-boat threat.²
- In World War II, the Allies out spent the Germans by more than 15:1 in order to win the Battle of the Atlantic.³
- For the United States' Pacific theater, submarines -- with only 2% of naval personnel -- sank 1,300 Japanese civilian and military vessels, including 4.8 million tons of merchant shipping (over half of all Japanese tonnage lost in the war).⁴

The First World War witnessed the arrival of submarine warfare as part of a theater or campaign plan. Despite their technological infancy, submarines in World War I were highly effective in three distinct roles: attrition of surface combatants, interdiction of commercial shipping, and coastal defense.⁵ To the surprise of many, the German submarine campaign of 1914-1918 demonstrated the

impact of submarine warfare on the course of an entire war. Naval strategists and commanders thus forever established the submarine's influence in modern war.

As the submarine's size, range and endurance grew, so did its ability to reach, penetrate, and destroy enemy forces and territory. As a result, emphasis on enemy attrition and interdiction eclipsed the submarine's role in coastal defense. During World War II, U.S. and German submarines achieved great notoriety and acclaim for their interdiction of enemy commerce.

Although they failed to adequately support and execute their strategy, the Germans nearly achieved their strategic goal of severing Britain's sea lines of communication (SLOCs).⁶ As its first priority, the United States' submarine force attacked the Japanese SLOCs in an effort to isolate Japan economically and force government capitulation. As the war progressed, the American submarine force's role in support of the Pacific Theater campaigns also expanded. Submarine missions grew to include reconnaissance (which involved intelligence collection and area sanitization/scouting), covert insertion/extraction of personnel, mining, and fleet engagements (enemy attrition).⁷ The CINCs consistently used submarines to operate in the most forward areas -- beyond the areas controlled by American forces -- in order to penetrate enemy forces and influence their critical operations. The result: "The American submarine campaign in the Pacific . . . succeeded beyond anyone's early expectations, and is credited as being one of the principal causes of Japan's failure."⁸

Following the Second World War, submarines experienced a revolution in design and capability. The advent of nuclear propulsion and advanced sensors (acoustic and electronic) enhanced the submarine's traditional missions of deep interdiction, reconnaissance, special operations, and enemy attrition. However, these advances -- coupled with the perceived Soviet threat -- also precipitated additional missions for the submarine: strategic deterrence (for submarines carrying ballistic nuclear missiles) and USW. During this era, the SSN became the

premier USW platform, "... with its particular strength being its ability to engage the Soviet Navy's ... [strategic ballistic missile submarine force] in its heavily defended 'bastions'."⁹ Additionally, SSNs concentrated on forward-area USW against the Soviet Union's SSNs and guided missile submarines (SSGN) which threatened U.S. fleets and strategic SLOCs. Because of the strategic and operational implications of the threat, the submarine force's missions during the Cold War remained highly specialized under control of the CINCs and NCA.

Following the Cold War, the CINCs' and NCA's strategic requirements for the SSN diminished. Consequently, opportunities for diverse, tactical missions grew, and the submarine force began to reevaluate its capabilities and priorities. Renewed emphasis on the versatility of the submarine led many to rediscover and advocate a broad range of missions for the SSN. A closer look at the best missions for today's SSN will be undertaken later. For now, it is sufficient to highlight the trends in submarine employment in recent years. First, the SSN remains uniquely equipped to conduct USW against diesel and nuclear submarines. However, American SSNs today are spending even more time conducting or training to conduct many of the submarine missions executed regularly before the Cold War. Second, there is greater emphasis placed on SSNs conducting operations in direct support of the carrier battle group (CVBG). While the CINCs and NCA still direct many of the submarines' missions, control of the SSN at all other times is usually exercised at the tactical level -- i.e., the CVBG commander or one of his subordinate warfare commanders. Far from doctrine, most of these trends are indicative of the Navy's search for the optimum roles for its submarine force.

For the JFC, the history of submarine warfare thus provides many useful lessons regarding submarine employment. As one study concluded, "Historically, the submarine has proved a flexible and adaptable platform, performing a wide variety of roles as warfare and technology have changed."¹⁰ Yet many options and questions exist regarding how to best employ this highly capable

platform. The key to success for the CINC and CJTF rests not merely with identifying capabilities, but also with matching the mission to the enduring strengths of the SSN.

Submarine Characteristics, Capabilities, and Expertise

Optimum employment of submarines starts with analysis of the characteristics, capabilities, and expertise of the modern SSN. Characteristics are those qualities of the SSN that are inherent, unchanging and distinguishing. Capabilities are those tasks or missions that the submarine is able to execute with proficiency. Finally, the submarine force's expertise, or forte, is derived by merging the characteristics and capabilities of the SSN. Understanding the forte of the SSN will consequently help to establish employment principles and roles that reflect the strengths of the submarine.

Characteristics.

SSNs possess a number of intrinsic and lasting characteristics. They are stealth, mobility, endurance, and flexibility.^{11, 12} It is the synergy of these powerfully enabling characteristics that distinguishes the submarine as a unique platform.

Stealth. "Stealth is the most basic and important characteristic of the submarine. It derives from the fundamental nature of the submarine that it can submerge below the surface of the ocean and become virtually invisible from threat sensors."¹³ As long as the extraordinarily quiet SSN remains submerged, it remains virtually invisible to all but the most skilled USW forces. Stealth then creates additional advantages for the submarine. The derivative advantages of submarine stealth are covertness, survivability, freedom of movement, and initiative.¹⁴

Covertness is the ability to conduct an operation without being detected. This is an extremely important advantage in missions such as Intelligence/Surveillance/Reconnaissance (ISR), and Special Operations Forces (SOF) insertion/extraction. **Survivability**, also achieved through

stealth, means the SSN is able to operate in hostile environments at little or no risk and without any support or protection. In addition to ISR and SOF operations, survivability is crucial to Strike Warfare (STW) and offensive Mine Warfare (MIW) operations. Freedom of movement is being able to deploy and achieve positional advantage in any region or theater -- including areas denied to other friendly forces. This is particularly advantageous when enemy force disposition would otherwise thwart the achievement of a mission or objectives. Finally, the JFC retains the initiative because of the adversary's uncertainty about the presence (in number or location) of opposing SSNs. Because of the submarine's stealth, the JFC can achieve surprise or at least initiate when and where operations commence. In short, stealth enables submarines "... not only to survive in circumstances where other systems would be destroyed, but also to exploit the tactical leverage provided by secrecy, surprise, and the uncertainty of foes."¹⁵

Mobility. Mobility is the ability to shift forces and dispositions in response to changing conditions and situations. More specifically, operational mobility is "... the quality or capability that permits military forces to move from place to place within a theater or area of operations while retaining the ability to fulfill their primary mission."¹⁶ Movement of forces does not in itself constitute mobility if it cannot be achieved responsively or securely. Geographic and physical hindrances, as well as obstacles imposed by the enemy (countermobility) further inhibit one's mobility. However, the SSN -- with its high submerged speed and stealth -- is able to achieve unfettered, rapid movement (mobility) within its area of operations. VADM Frere (RN) highlighted the advantage of such mobility by stating, "... the ability of the SSN to range freely and at speed within her designated area adds a multiplying factor in the mind of a potential opponent."¹⁷

Endurance. The SSN possesses uncommon endurance because of its nuclear propulsion plant. By eliminating the limitations of conventionally powered warships, the SSN is able to operate at sea without support for extended periods. U.S. submarines usually carry supplies for 90 days and

routinely remain on station, alone and submerged, for periods of 60 days or more. Capable of carrying supplies for 120 days, the SSN's endurance is truly extraordinary. VADM Frere outlined the importance of this characteristic as well: "The endurance and self sustainability of the nuclear submarine are limited only by the size of her larders. This capacity for endurance allows more flexible and economic use of assets and assists in ensuring continuity of patrols."¹⁸

Flexibility. Submarines possess a diverse and versatile suite of weapons and sensors, allowing them to conduct numerous missions as directed by the CINC or CJTF. It is equipped and trained to function as a multi-mission platform. This provides flexibility in two ways. First, it means the SSN can respond or shift to different tasking as conditions or objectives change. Second, it enables the SSN to support joint operations across the spectrum or phases of conflict. For example, the SSN can be on-station covertly conducting ISR or SOF operations during the early stages of a crisis (and during the hostilities phases as well). If the situation is resolved, the CINC can withdraw the SSN without provocation. On the other hand, by revealing its presence, the JFC can use the SSN to provide deterrence or a coercive force. If the crisis deteriorates into hostilities, the SSN can also engage virtually any seaborne threat as well as numerous objectives ashore. "Whether independently or in consort with other forces, the SSN can provide the Joint Task Force Commander with maximum flexibility in accomplishing assigned missions."¹⁹

Capabilities.

In addition to the SSN's unique characteristics, the JFC also must understand the capabilities of his submarines. As pointed out earlier, the SSN is capable of executing a variety of missions proficiently. One mission that the SSN performs very well, regardless of the nature of the conflict, is ISR. Able to collect signals intelligence (SIGINT), acoustic intelligence (ACINT), imagery, and photo intelligence (PHOTINT), submarines regularly and quite effectively monitor

and collect intelligence against targets at sea and ashore.

... SSNs are ideally suited to undertake covert surveillance and intelligence-gathering operations on potentially hostile military forces, their state of readiness, operating areas and routine, and possible intentions. ... With the benefit of stealth, a state or people's activities can be monitored without their being aware they are under observation. Otherwise they might modify their behavior, particularly if they are covertly developing a military capability, preparing a military action, or carrying out some other illicit activity. The communications that take place at sea and ashore can be an invaluable source of information, particularly if the subject is unaware of the surveillance.²⁰

As outlined, the submarine performing ISR brings a unique and extremely valuable capability to the supported commander.

The SSN is also capable of supporting ground components and operations ashore. One of the earliest demonstrations of this concept was a Marine Corps raid launched from submarines against the Gilbert Islands in 1942.²¹ Today, SSNs routinely operate in the littoral regions and train for SOF insertions and extractions. The SSN is also able to project power ashore through the use of Tomahawk Land Attack Missiles (TLAM). U.S. submarines can carry more than 20 TLAMs, with newer SSNs capable of carrying well over 30. Used in concert with other TLAM shooters, SSNs provide the JFC with overwhelming striking power against appropriate targets ashore. More important, submarines provide a precision strike capability from a platform that is virtually invulnerable to detection or counterattack. In all of these ways, the JFC can use the SSN's sensors, weapons, and delivery capabilities to influence precursor operations ashore.

Finally, the SSN can perform numerous missions focused on the sea-based threats and objectives of the JTF. For a vast majority of nations (those with access to the sea), the resources and trade necessary to support their economies are almost entirely dependent upon seaborne transport. Under hostile conditions, SSNs can interdict shipping and enforce blockades or sanctions with virtual impunity. Similarly, submarines can conduct offensive or defensive Surface Warfare (SUW) operations (attacks) against enemy warships with very low risk to themselves. It should be noted,

however, that effective attrition of enemy commerce or naval forces requires intelligence systems that provide timely locating information to supporting SSNs in the theater. Looking beneath the waves, the SSN's superb USW capability is well known. Unfortunately, the SSN's target (another submarine) is equally stealthy, and therefore, may take a long time to locate and neutralize.

Consequently, the JFC must allow sufficient space and time -- ideally as a precursor operation -- in order to succeed. Lastly, submarines possess an important MIW capability. Because of the risk involved, submarines are particularly useful for offensive mining to isolate or restrict a port or sea lane controlled by the enemy.

Employment Principles.

Knowing the characteristics and capabilities of the SSN, the JFC is thus able to determine the submarine's optimum employment, or "forte", in his campaign or major operation. What follows are several employment principles derived from the SSN's forte.

First, submarines are ideal for missions that require independent operations, deep in the adversary's space. Combining its mobility and endurance, the submarine provides tremendous operational reach to the JFC. Additionally, the SSN's stealth and sustainability give it great capacity for survival in an unsupported and hostile environment. Consequently, the CINC or JTF Commander should consider the SSN for conducting deterrence, presence operations, or interdiction of the enemy's space or forces when other friendly forces are unable.

Second, SSNs are well-suited for enabling operations. Taking advantage of a submarine's forward position and survivability, JFCs can conduct ISR, TLAM strikes, offensive MIW, or area sanitization (e.g., against a diesel submarine threat) in order to facilitate future theater operations by other friendly forces. When the rest of the force arrives, the JFC should move the SSN to another area requiring "battle space preparation" (unless the naval task force requires force protection by the

SSN). Precursor operations such as these, referred to as "first in, first out," are an extremely effective use of SSNs.²²

Third, hostile littoral regions and other high-threat environments are ideal for SSN operations. In a conflict, the littoral regions present a serious risk to U.S. forces because of the asymmetrical, high-technology threat posed by many smaller, coastal countries.

In the case of littoral warfare, the art of risk management starts with intelligent employment of SSNs. . . . If U.S. capital ships do not fall victim to diesel submarines or mines, they may well succumb to precision-guided missile launches from enemy land, air, or sea launchers. The SSN is uniquely suited to preclude this possibility while remaining impervious to enemy attack.²³

In assessing the risk in any operation, the JFC should understand and exploit the SSN's survivability where it is both advantageous and feasible.

The last employment principle for SSNs is the exploitation of surprise and covertness. For example, SOF operations may require a submarine for insertion and extraction because of the risk of detection and importance of surprise in a particular mission. Similarly, some surveillance missions -- depending on the target and level of conflict -- may demand covertness more than others. Therefore, the JFC should determine which operations, if any, require covertness and then exploit the SSN's inherent stealth where possible.

Operational Contributions and Employment

Although many roles for SSNs emerge from analyzing their capabilities and strengths, how do these roles contribute to the operational plans and requirements of the CINC or JTF Commander? At the operational level, the commander oversees several activities essential for preparing and executing military actions. Specifically, the JFC must synchronize the following operational-level functions: Command and Control (C2), Intelligence, Maneuver, Fires, Logistics, and Protection.²⁴ As an operational asset, the SSN is able to contribute directly to several of the JFC's operational functions.

First, submarines are a valuable asset to the JFC because of their role in operational intelligence. By virtue of their stealth and position deep in enemy spaces, SSNs are able to conduct ISR directed at the enemy's strategic and operational weaknesses and centers of gravity. Monitoring enemy force movement, collecting SIGINT, and providing other means of I&W are SSN intelligence capabilities of great concern and value to the CINC or CJTF. What makes these intelligence activities operational, vice tactical or strategic?

Among other things, operational intelligence should be used to protect one's own center of gravity, unmask the enemy's deception, and protect one's own plans and intentions from enemy interception. It should also provide adequate indications and warning (I&W) of any hostile action by a potential opponent.²⁵ (underlining added)

Unlike any other platform, the SSN can be in a position to provide continuous surveillance of the adversary's most protected and important operations. An SSN conducting ISR can provide crucial maritime operational intelligence to ensure protection of the operational COG, such as a CVBG or Amphibious Readiness Group (ARG). Submarines performing covert surveillance and reconnaissance can also discover deceptive maneuvers and activities attempted by the adversary. Finally, the JFC can use SSNs to routinely monitor and collect intelligence throughout the theater or area of interest in times of peace. Although operational intelligence involves a system of intelligence activities, the JTF commander should see SSNs as valuable assets in achieving his operational intelligence objectives.

Second, the SSN's mobility and endurance, coupled with its mission capabilities, enable it to execute operational maneuver. Operational maneuver refers to those movements that place own forces in a position of advantage in order to achieve the strategic or operational objectives of a campaign or major operation. The key element in operational maneuver is the operational effect or position achieved, and is not limited therefore to only large-scale deployments or movements.²⁶ Deploying a SSN to an operational or strategic decisive point, such as an international strait or sea

lane, to control friendly and enemy force movements is a good example of how to carry out operational maneuver with a submarine.

Operational maneuver also includes the extension of forces into the adversary's operational depth. A superb example of this was the deployment of British SSNs to the Falklands in 1982. The submarines' arrival 18 days before the British task force demonstrated the extraordinary mobility and maneuver capabilities of the SSN. That movement successfully penetrated the Argentines' depth and achieved positional advantage. By disclosing the submarines' presence, the British then established a coercive force to neutralize the adversary's maritime forces. Thus, the JFC who exploits the SSN's mobility and endurance can design submarine maneuver to achieve operational objectives.

Operational protection is also a function that the SSN can support. Operational protection consists of those JFC activities establishing protective measures which influence or pertain to the entire theater. Another definition is "... series of actions and measures to provide direct protection of one's own operational center of gravity and reduce the effect of the enemy's action at the operational level."²⁷ Submarines have demonstrated the capability of providing disproportionate influence -- leverage -- over opposing naval forces. Yet, force protection by submarines, such as USW and SUW, is often only thought of in terms of tactical, force-oriented objectives. Nevertheless, the CINC or CJTF can use many submarine missions to achieve operational level protection. For example, if the adversary poses a significant naval threat to one's own operational center of gravity, then submarines can conduct USW, SUW, and MIW to easily attack the enemy's operational strength. Neutralization of enemy naval forces by a submarine can thus achieve a key operational protection objective. The JFC also relies on I&W to evaluate and anticipate the threat to his forces. I&W performed by covert SSNs (as part of operational intelligence) therefore also contributes to operational protection of friendly forces ashore and at sea.

Again, the Falklands War provides a good example. When the British SSNs attacked and sank the A.R.A. Belgrano, "... the Argentine Navy was coerced into believing it lacked the equipment, confidence, and perhaps the competence to meet the SSN threat."²⁸ By denying the Argentine Navy the capacity to conduct operational maneuver or threaten British operational forces, the SSNs successfully protected the British COG. Aside from sinking Argentine warships, British SSNs also contributed to operational protection through their intelligence efforts. The British Task Force Commander used the submarines to monitor activities and provide I&W within the 200nm Total Exclusion Zone (TEZ) surrounding the islands. Further, it was HMS Conqueror, shadowing and reporting on the Belgrano task group, which enabled the British task force commander and War Cabinet to monitor, and ultimately eliminate, the Argentine naval threat. While SSNs cannot always provide unilateral operational protection, this example illustrates the extraordinary protection an SSN can provide to the JFC's operational maritime forces.

Operational fires are designed to accomplish operational-level objectives. Intended to support a major operation or campaign, JFCs usually conduct operational fires as a preparatory or enabling activity.²⁹ Some examples of what operational fires accomplish are:

- Facilitate friendly operational maneuver by creating and exploiting enemy "gaps"
- Prevent or disrupt the enemy's operational maneuver
- Interdict uncommitted enemy forces and logistic sustainment resources
- Destroy or neutralize critical operational-level functions and facilities³⁰

With its extensive operational reach and autonomy, the SSN is particularly effective at conducting operational fires. The SSN carrying TLAMs is well equipped to conduct fires against critical C2 nodes, C4I facilities, intelligence systems, air defense networks, and other key operational targets. Since TLAM strikes are planned and authorized at or above the operational (CINC) level, the JFC

necessarily will be involved in directing the employment of the strike-capable SSN. Long before the advent of TLAMs, however, submarines also conducted (and still do conduct) operational fires designed to facilitate or deny operational maneuver at sea. For example, their historical capacity for attrition of naval forces can be crucial to facilitating movement of friendly, operational forces. Similarly, SSN attrition of enemy naval forces denies the adversary the ability to conduct operational maneuver. In either case, preparatory attacks by SSNs against naval operational forces can be classified as operational fires because of the operational objectives achieved.

As discussed earlier, the British SSNs' achievements in the Falklands War prevented the adversary's operational maneuver while also enabling their own freedom to conduct operational maneuver. In doing so, their submarines conducted highly effective operational fires during the phase of conflict when naval forces were the operational COGs. Submarines have also been highly effective at conducting operational fires through the interdiction of enemy reinforcements and logistics. As was done in World War II by American submarines, interdiction of seaborne lift and logistics ultimately curtails the enemy's freedom of movement, disrupts the enemy's actions, and hastens the enemy's arrival at the culminating point.³¹ Whether directing TLAM strikes or interdicting maritime forces, the JFC can use the SSN in a myriad of ways to conduct operational fires ashore or at sea. Additionally, as with any operational function, the JFC must control and direct those assets which directly support or achieve the operational objectives.

Operational logistics are concerned with establishing a self-sufficient theater such that the major operation(s) or campaign(s) does not reach a premature, resource-driven culminating point. However, even when a mature, sufficient theater does not exist, the JFC still possesses a sustainable operational asset in the SSN. Because of the SSN's endurance and sustainability, the JFC can conduct missions without any developed operational logistics in the theater. Although the SSN does not directly influence or support operational logistics, it does give the JFC greater

freedom to initiate operational-level missions immediately -- regardless of theater logistics status.

Operational C2 is "... the means [or process] by which the commander synchronizes joint force activities in time, space, and purpose."³² This is one area where the SSN does not enhance the JFC's capabilities, and that is why it is addressed here. While SSNs possess robust C4I capabilities, submerged operations often restrict their ability to receive timely information and direction. Consequently, the employment of SSNs at the operational level requires greatly decentralized execution. This limitation further argues for SSN employment in forward-area, autonomous operations. As SSNs operate closer, in space and time, to other friendly forces, the JFC must pay greater attention to the Command, Control and Communications (C3) arrangements between the submarines, the JTF staff, and other supported commanders. Additionally, submarines operating close to friendly forces require careful waterspace management (identification and rules of engagement requirements) in order to prevent blue-on-blue engagements. The JFC must understand and deal with these C2 challenges in order to employ SSNs effectively as operational assets.

Certainly, not all campaigns will allow widespread or unilateral use of the SSN against the enemy's operational or strategic COGs. Nevertheless, the employment of submarines in World War II and the Falklands War illustrates clearly the SSN's utility to the CINC or CJTF in accomplishing operational-level objectives. The British lessons learned from the Falklands provide a good summary of the SSN's influence on the strategic and operational functions:

Our nuclear-powered submarines (SSN) played a crucial role. After the sinking of the General Belgrano the Argentine surface fleet effectively took no further part in the Campaign. The SSNs were flexible and powerful instruments throughout the crisis, posing ubiquitous threat which the Argentines could neither measure nor oppose. Their speed and independence of support meant that they were the first assets to arrive in the South Atlantic, enabling us to declare the maritime exclusion early. They also provided valuable intelligence to our forces in the total exclusion zone.³³

The SSN is a multi-mission platform uniquely capable of a large number of roles that influence the JFC's operational functions across the spectrum of time and conflict. Therefore, in crafting the

operational design of a major operation or campaign, the CINC or CJTF should exploit the SSN's capabilities and control it as an operational asset.

Conclusion

What benefits or conclusions can the CINC or JTF Commander gain by studying the roles and strengths of submarines? The foregoing discussions illustrated how the CINC can use SSNs to achieve leverage and freedom of action. Effective employment of SSNs to influence operational functions and objectives will help the CINC or CJTF balance the factors of time, space and force in the theater.

Because of its mobility and endurance, the SSN is an extremely valuable instrument in controlling time. "When combined with the movement of one's own forces and the speed of executing actions, time can significantly increase the freedom of action of the operational commander. It is critically important to act as quickly as possible and not allow any delay or detour without sufficient reason."³⁴ Even when the adversary gains the initial advantage or when diplomacy or logistics restrain operations, the JFC does not have to cease all operational activities. The SSN can rapidly respond to any crisis without waiting for logistics, theater preparation, or force protection. The endurance of the SSN also contributes to the JFC's control over time. When the SSN deploys to a theater, the JFC's concerns about the duration of the mission are alleviated. Regardless of the status of the campaign, the SSN's participation is virtually unlimited – remaining on station until relieved by another submarine. Whether conducting passive ISR or interdicting enemy forces and commerce, the SSN is able to provide immediate, sustainable force in most crises.

The SSN's mobility and endurance combine to provide unprecedented operational reach. This provides a tremendous advantage to the JFC who wants to control the space in a campaign. Regardless of the maturity or security of a theater, the SSN is able to penetrate and influence the space of most imagined conflicts. Therefore, the CINC or CJTF can use SSNs to operate forward of

friendly forces and in the enemy's depth. With submarines, the JFC can facilitate friendly naval maneuver or deny enemy maneuver through sea control. Likewise, the JFC can monitor and enforce (ROE permitting) maritime neutral or exclusion zones using SSNs. All of these roles contribute significantly to shaping and commanding the space in a campaign or major operation.

Because of its flexibility and stealth, the SSN is a highly efficient and effective force in a joint operation. Although the existence of force is relatively fixed for the operational commander, the ability to apply force -- involving maneuver, protection, and fires -- requires careful planning and direction by the JFC. The SSN's survivability often makes it a more viable force for the commander. "... SSNs are uniquely suited tools for the risk manager to apply in minimizing the likelihood of those 'war breaker' events that have the potential to force the United States out of action."³⁵ In planning a campaign, the JFC should, therefore, consider the SSN a low-risk, yet effective force. Additionally, submarines are capable of exerting leverage over enemy operational centers of gravity through a variety of roles ranging from ISR, to attrition, to fires. Consequently, the submarine is also a highly efficient and essential asset to the Joint Force Commander.

Recommendations

This paper has established what submarines have done and continue to do for CINCs and JTF Commanders in real-world campaigns and major operations. Today, employment of military force is inherently joint and includes many levels of conflict. What needs to be done to ensure submarine employment is effective and supportive of the nation's needs across the spectrum of conflict? First, JFC staffs must understand the unique strengths and capabilities of the SSN. They must be trained to employ submarines in a manner that exploits the SSN's expertise in the operational design of their campaign or major operation. Similarly, the submarine force must train its members so that they understand their role in the planning and execution of military activities at all levels of conflict -- not just tactical. Greater awareness of how to apply their capabilities and

achieve operational objectives that shape the theater or campaign will ensure submariners provide good recommendations and prepare properly for possible missions. Second, the Navy must ensure that necessary systems and procedures are in place to ensure the JFC can integrate and control SSNs in the JTF. This includes weapons for projecting power at sea and ashore as well as C4ISR equipment vital to information operations and C2 functions within the JTF.

Finally, the Navy must reevaluate the C2 relationships between the CINC/CJTF and deployed submarines. Currently, the CINC controls deployed submarines through the Type Commander (SUBPAC or SUBLANT) or a deployed CVBG commander. The effort to capitalize on the capabilities of the SSN, however, has emphasized even greater integration with CVBGs -- a tactical-level force. Unfortunately, most deployed CVBGs never incur any tactical objectives requiring SSN support. Realistically, the SSN -- advertised as a force multiplier -- is reduced to an USW training asset and is generally under-utilized.³⁶ Instead, the CINC should retain control of the deployed SSNs as operational assets. Rather than compartmentalizing deployed SSNs as either CINC/national tasking units or CVBG units, the CINC should direct the employment of submarines and assign missions and C2 relationships based on his priorities and operational requirements. "The real value of the submarine force is realized only when the CINC views SSNs as an operational asset, with substantial tactical capability, and employs them accordingly."³⁷

A sincere desire to demonstrate and train for the diverse capabilities of the modern submarine runs the risk of making submarines less effective when employed in an actual crisis. Although the SSN is an extremely versatile platform, it is not a tactical "jack of all trades." History shows that submarines are most effectively employed by the JFC as an operational asset to help shape the theater. The Navy should start practicing that today so that Joint Force Commanders and the submarine force are trained and proficient when the time comes for real-world engagement.

Endnotes

¹ Vice Admiral Roger F. Bacon, USN, "Submarine Warfare It's A-Changing," U.S. Naval Institute Proceedings, June 1992, 52.

² Robert P. Haffa, Jr. and James H. Patton, Jr., "Analogues of Stealth: Submarines and Aircraft," Comparative Strategy, Jul/Sep 1991, 10:260.

³ LCDR Michael Poirier, USN, "Sea Control and Regional Warfare," U.S. Naval Institute Proceedings, July 1993, 64.

⁴ Merrick Carey and Loren Thompson, "Submarines and the Future of Sea Power," Strategic Review, Fall 1996, 20.

⁵ Carey and Thompson, 18.

⁶ Ibid, 20.

⁷ CAPT Paul J. Ryan, USN, "Attack Submarines Should Lead Battle Groups," U.S. Naval Institute Proceedings, February 1993, 87.

⁸ Haffa and Patton, "Analogues of Stealth," 261.

⁹ James H. Patton, "The Synergy of Stealth," U.S. Naval Institute Proceedings, July 1995, 26.

¹⁰ Center for Strategic and International Studies, Attack Submarine in the Post-Cold War Era (Washington: 1993), 4.

¹¹ United States Department of the Navy. Assistant Chief of Naval Operations Undersea Warfare. Submarine Roles in the 1990's and Beyond (Washington: 1992), 4-6.

¹² Vice Admiral Toby Frere, RN, "Submarine Warfare," RUSI Journal, April 1993, 48-49.

¹³ United States Department of the Navy, Submarine Roles in the 1990's and Beyond, 4.

¹⁴ Ibid, 4-5.

¹⁵ Carey and Thompson, 23.

¹⁶ Milan Vego, "Glossary of Operational Terms," Unpublished JMO paper, NWC 4091A, U.S. Naval War College, (Newport RI: August 1997), 8.

¹⁷ Frere, 48.

¹⁸ Ibid, 49.

¹⁹ Rear Admiral Dennis A. Jones, USN, "U.S. Navy Submarine Force: Where Are We And Where Are We Going," The Submarine Review, April 1995, 16.

²⁰ Center for Strategic and International Studies, 4, 6.

²¹ Dan van der Vat, Stealth at Sea (New York: Houghton Mifflin Company 1995), 250-251.

²² CDR Kevin Peppe, USN, "SSN's: Supporting the Battle Group," U.S. Naval Institute Proceedings, May 1997, 42.

²³ CDR Kevin Peppe, USN, "Submarines in the Littorals," U.S. Naval Institute Proceedings, July 1993, 48.

²⁴ CAPT Chet Helms, USN, "Operational Functions," Unpublished JMO paper, NWC 4103A (U.S. Naval War College, Newport RI: nd), 1.

²⁵ Ibid, 10.

²⁶ Ibid, 12.

²⁷ Ibid, 20.

²⁸ Brent Alan Ditzler, Naval Diplomacy Beneath the Waves (Thesis Report, Monterey, CA: Naval Post Graduate School, 1989), 68.

²⁹ Helms, "Operational Functions," 12.

³⁰ Ibid, 13.

³¹ Ibid.

³² Ibid, 2.

³³ Ditzler, 66.

³⁴ CAPT Chet Helms, USN, "Operational Factors," Unpublished JMO paper, NWC 4092A, (U.S. Naval War College, Newport RI: nd), 8.

³⁵ Peppe, "Submarines in the Littorals," 48.

³⁶ CAPT James M. Willy, USN, Flexible Employment of Fast Attack Submarines, Unpublished JMO paper, (U.S. Naval War College, Newport RI: November 1997), 4.

³⁷ Ibid.

BIBLIOGRAPHY

Adams, David. "We are Not Invincible." U.S. Naval Institute Proceedings, May 1997, 35-39.

Bacon, VADM. Roger F. "Submarine Warfare It's A-Changing." U.S. Naval Institute Proceedings, June 1992, 52-54.

Beadnell, Nick. "A Submariner's Perspective on Operational Effectiveness and Resource Constraints." The RUSI Journal, June 1995, 27-32.

Caldwell, Jr., Nathaniel. "Are We Short Charging ASW." Armed Forces Journal International, July 1996, 24-25.

Carey, Merrick and Loren Thompson. "Submarines and the Future of Sea Power." Strategic Review, Fall 1996, 17-27.

Center for Strategic and International Studies. Attack Submarine in the Post-Cold War Era. Washington: 1993.

Department of Defense, Joint Publication 3-0, Doctrine For Joint Operations. Washington: 1995.

Ditzler, Brent Alan. Naval Diplomacy Beneath the Waves. Thesis Report, Monterey, CA: Naval Post Graduate School, 1989.

Douglas, John H. "Undersea Dominance-Don't Leave Home Without It." SeaTechnology, November 1996, 10-14.

Dulas, Mike. "The Battlegroup Commander's Most Unused Asset: The Submarine." The Submarine Review, October 1995, 98-103.

Frere, VADM Toby. "Submarine Warfare." RUSI Journal, April 1993, 46-52.

Gerry, Donald D. "America's Nuclear Attack Submarines in the Future." The Submarine Review, April 1997, 106-117.

Giaquinto, Joseph N., Lawrence L. McDonald, and Patrick J. Madden. "The Quick Strike Submarine." U.S. Naval Institute Proceedings, June 1995, 39-44.

Haffa, Jr., Robert P. and James H. Patton, Jr. "The Survivability Business: A National Defense Growth Industry." Strategic Review, Winter 1997, 7-14.

_____. "Analogues of Stealth: Submarines and Aircraft." Comparative Strategy, Jul/Sep 1991, 10:257-271.

Helms, Chet. "Operational Factors." Unpublished JMO paper, NWC 4092A, U.S. Naval War College, Newport RI: nd.

_____. "Operational Functions." Unpublished JMO paper, NWC 4103A, U.S. Naval War College, Newport RI: nd.

Hervey, John B. Submarines. New York: MacMillan, 1994.

Hezlet, VADM Sir Arthur. The Submarine and Sea Power. New York: Stein and Day, 1967.

Holland, RAdm., W. J. "Diesel Boats Again?" U.S. Naval Institute Proceedings, June 1996, 13.

Howes, Brian T. Determining the Future of the U.S. Submarine Force. Thesis Report, Monterey, CA: Naval Post Graduate School, 1992.

Hurdle, Daniel J. "Sea Control and Submarines in the 21st Century." The Submarine Review, October 1995, 18-23.

Jones, RADM. Dennis A. "U.S. Navy Submarine Force Where Are We And Where Are We Going." The Submarine Review, April 1995, 15-22.

Leidig, Charles J. "Joint Vision 2010: A Submariner's Guide." The Submarine Review, July 1997, 104-111.

Linder, Bruce. "ASW as Practiced in Birnam Wood." U.S. Naval Institute Proceedings, May 1996, 62-66.

Moore, John Evelyn and Richard Compton-Hall. Submarine Warfare, Today and Tomorrow. Bethesda, MD: Adler and Adler, 1987

Murdock, Paul. "SSNs Aren't Enough." U.S. Naval Institute Proceedings, February 1996, 46-51.

Patton, James H. "Nuclear Attack Submarines." Jane's International Defense Review, Special Report 3 (8/1995).

_____. "The Synergy of Stealth." U.S. Naval Institute Proceedings, July 1995, 26--31.

Peppe, Kevin. "Submarines in the Littorals." U.S. Naval Institute Proceedings, July 1993, 46-48.

- _____. "Rethinking Tomorrow's Attack Submarine Force." The Submarine Review, January 1995, 51-62.
- _____. "SSN's: Supporting the Battle Group." U.S. Naval Institute Proceedings, May 1997, 40-43.
- Poirier, Michael. "Sea Control and Regional Warfare." U.S. Naval Institute Proceedings, July 1993, 63-65.
- Pritchett, William C. "SSN Have Role in Low Intensity Conflicts." U.S. Naval Institute Proceedings, July 1996, 71-72.
- Roos, John. "Future of US Attack Sub Fleet," Armed Forces Journal International, May 1993, 30-31.
- Ryan, Paul J. "Attack Submarines Should Lead Battle Groups." U.S. Naval Institute Proceedings, February 1993, 86-88.
- Shwei, CAPT Hei, PLA(N). "Dragons and Centipedes at Sea." U.S. Naval Institute Proceedings, November 1995, 65-68.
- United States Department of the Navy. Assistant Chief of Naval Operations Undersea Warfare. Submarine Roles in the 1990's and Beyond. Washington: 1992.
- United States Navy. Office of the Chief of Naval Operations. Submarine Operational History of World War II. Washington: 1947.
- van der Vat, Dan. Stealth at Sea. New York: Houghton Mifflin Company, 1995.
- Vego, Milan. "Glossary of Operational Terms." Unpublished JMO paper, NWC 4091A, U.S. Naval War College, Newport RI: August 1997.
- Willy, James M. Flexible Employment of Fast Attack Submarines, Unpublished JMO paper, U.S. Naval War College, Newport RI: November 1997.