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THE NUCLEAR ARMS RACE AT SEA

WILLIAM M. ARKIN

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CONTENTS

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I. INTRODUCTION

In 1984, the United States government voted against a United Nations' resolution to conduct an expert study of the naval arms race. The reason, the Reagan Administration stated, was that a naval arms race "did not and does not exist." The evidence seems to suggest otherwise.

An arms race at sea does exist. In recent years, this arms race has accelerated. What is more, current naval practices and strategies threaten international peace in a way that land-based military activity does not. This is because the oceans are borderless. Naval operations always carry with them the potential for direct confrontation, misunderstandings, accidents, incidents, and crises. Given the fact that the naval forces of the nuclear powers are routinely nuclear-armed, any naval confrontation could introduce the risk of escalation to nuclear war. And conditions are being created that increase the likelihood that a nuclear war will begin at sea.

Some one-third to one-quarter of the world's nuclear arsenals are naval nuclear weapons; over 15,000 nuclear warheads are earmarked for naval use. The five nuclear powers possess more than 8,800 submarine-launched ballistic missile warheads, "strategic" nuclear weapons targeted on adversary homelands. These five nations also have about 6,600 non-strategic naval nuclear weapons, weapons which are either intended to attack land targets or are reserved for ocean combat to destroy ships, submarines, and aircraft.

In the past decade, the two superpowers have added over 2,500 nuclear warheads to their naval arsenals, deploying new ballistic missiles, cruise missiles, torpedoes, and bombs. During the decade, the Soviet Navy introduced four ballistic missile submarine classes and four types of new ballistic missiles, five attack submarine classes and five types of torpedoes, and one cruise missile submarine class with two types of sea-launched cruise missiles. The United States introduced one new attack submarine and ballistic missile submarine class, and one new ballistic missile and two sea-launched cruise missile types.[1]

The expansion and modernization of superpower nuclear arsenals is part of a general naval build-up. The Reagan Administration commenced a program to attain "maritime superiority" a part of which was the expansion of naval combat forces to 600 ships by 1989.[2] In 1985 alone, the U.S. Navy commissioned 19 new warships and converted five others.[3] During this same period, the Soviet Navy continued its naval modernization, adding to its firepower and "blue water" capabilities.

But it is not just the capabilities of naval forces that have changed. New naval strategies and practices have been adopted. While away from homeports, naval forces are being kept at a virtual wartime operating tempo. "From the Baltic to the Caribbean to the South China Sea," says John Lehman, former Secretary of the U.S. Navy, "our ships and men pass within yards of Soviet naval forces every day."[4] With a new aggressiveness, superpower navies and their major allies have been conducting larger and larger scale naval operations and maneuvers. These naval operations are becoming more and more offensively oriented. Ships, submarines, and surveillance aircraft regularly operate in dangerous proximity to each other; they practice mobilizations without warning, shadow each other, and perform mock attacks.

In armed conflicts, moreover, naval forces are employed as the first resort—against Libya, in Lebanon, in Grenada, in the Falklands/Malvinas, and in the Persian Gulf. During these confrontations, a whole series of other "real world" events have been occurring involving the nuclear navies, and these events have received scant attention.

• In November 1981, a Soviet Whiskey class attack submarine was stranded inside Swedish territorial and restricted waters and the Swedish government later stated that it believed the submarine was carrying nuclear weapons.[5] Norway, Japan, and Indonesia and other countries have experienced similar intrusions, and mysterious submarines of both superpowers have been reportedly

involved in numerous covert operations that have included violations of territorial waters.

• In September 1982, the U.S. Navy held its first multiple aircraft carrier battle group operation in the North Pacific (around the western Aleutians) since the Second World War.[6] The exercise, conducted 500 miles from the Soviet coast,[7] provoked simulated cruise missile attacks upon U.S. aircraft carriers by Soviet naval Backfire bombers for the first time.[8]

• During 1982–1983, the U.S. Navy held successive operations with two or three aircraft carrier battle groups in the Norwegian Sea, held large scale surface exercises in the Sea of Japan (the first such operations in 13 years), and operated attack submarines in the Sea of Okhotsk (the first time ever).[9]

• In early 1984, the Soviet Navy conducted its largest naval exercises ever in the Atlantic Ocean. More than 200 naval combatants were deployed in the Barents, Norwegian, and North Seas. Naval and Air Force Backfire bombers and other medium and heavy bombers, as well as about 70 Soviet submarines, joined the exercise.[10]

• In June 1984, the United States deployed its first long-range, nuclear-armed, Tomahawk sea-launched cruise missiles.

• In November–December 1984, the United States conducted its largest peacetime fleet exercise—FleetEx 85—held since the Second World War.[11] The exercise included the participation of five aircraft carrier battle groups. During the exercise, two aircraft carriers in the Sea of Japan closed to within 50 miles of the Soviet city of Vladivostok.

• In April 1985, the Soviet Union conducted a large exercise in the Pacific, "the most extreme and realistic ever conducted by the Soviet Navy in the Pacific."[12]

• In July 1985, the Soviet Navy held an unusually long and active naval exercise in the Atlantic Ocean, mobilizing 38 surface warships and 40 submarines, and including over 200 aircraft sorties from land bases, the largest number involved in operations since 1975.

• During August–September 1985, NATO held its largest ever maritime exercise, Ocean Safari 85.[13] Some 19 Soviet ships and submarines and almost 100 Soviet aircraft sorties operated in response to the force's presence in north Atlantic waters and the Norwegian Sea.[14]

• In August 1985, the Soviet Navy conducted their first amphibious landing in the Pacific since 1978, as part of an exercise with 21 ships and submarines around the Kurile Islands.

• In August 1986, the Soviet Navy conducted what U.S. Navy officials called a "sea projection force" exercise in the Pacific involving two aircraft carriers, 14–18 ships and 16–20 submarines.

• In September 1986, two U.S. aircraft carrier groups and the battleship group of the USS New Jersey conducted the largest naval operations ever in the Sea of Japan. The nuclear-capable New Jersey and four other warships then entered the Sea of Okhotsk and transited through the Kurile Islands into the Pacific Ocean.

• In January 1987, the U.S. Marines conducted their first amphibious landing on Shemya Island in the Aleutians since the Second World War, and their first ever amphibious landing in the Aleutians during wintertime.

The modernization and expansion of naval nuclear arsenals; improvements in naval capabilities; new ships, submarines and aircraft; and provocative and offensively oriented naval maneuvers must be understood in the context of certain features of naval nuclear weapons which increase the likelihood of their use. There is a widespread belief among naval planners that naval nuclear weapons are somehow different than land-based nuclear weapons, and that the use of nuclear weapons at sea might be limited to the seas. In addition, a decision to use naval nuclear weapons would be made on a unilateral basis and not as a result of an alliance decision,

as is the case with virtually all other non-strategic nuclear forces.

The nuclear arms race at sea is not just a problem between the superpowers. It is a global problem. Former Navy Secretary John Lehman told a Congressional committee in 1983 that, "unlike land warfare, should deterrence break down between the navies of the United States and the Soviet Union, it will be instantaneously a global naval conflict."[15] Former U.S. Chief of Naval Operations Admiral James Watkins points out that a global war "would be any war we become involved in with the Soviets, since they are engaged globally and their naval force exists globally."[16]

The global span of the arms race is not a new phenomenon. What is new is the recognition that through alliances, treaties, agreements, bases and support, joint exercises, even port calls, scores of countries are intimately involved in a naval nuclearized competition between the superpowers. More and more countries are being integrated into the naval strategies of the superpowers. In the words of one U.S. naval officer, "Throughout all phases of the [maritime] strategy, close cooperation with allied navies . . . is mandatory. Naval operations in the Baltic and Black Seas, for example, would be almost entirely allied responsibilities."[17] According to John Lehman, "in any given area, all of our planning assumes a matrix of very efficient, good navies, like the Royal Navy or the Japanese Maritime Self Defense Force, in which our battle groups are designed to operate."[18]

The globalization of the superpower naval arms race is to some degree unavoidable, given the mobility and flexibility of naval forces and their worldwide presence. But as the naval arms race accelerates and more questions are raised about the stability of current naval practices and strategies, the involvement of neutral, non-aligned, and independent states in even routine acts of cooperation becomes more controversial. It cannot be ignored by allied and non-aligned governments when the same ships visiting their waters and ports are involved in hostilities or politically sensitive activities. On one worldwide deployment starting in October 1985, for instance, the U.S. aircraft carrier USS Coral Sea participated in several major NATO exercises; conducted bilateral maneuvers with the French, Italian, and Tunisian navies; took part in a French-sponsored exercise with British, Spanish, and Italian forces; called at numerous ports in the Mediterranean—and then took part in the bombing of Libya in April 1986.[19] Clearly the juxtaposition of such a lawless and unpopular operation serves to increase the sensitivity of naval cooperation.

Since the naval arms race has serious implications not just for U.S.–Soviet relations, or local and regional security, but for international security as well, a growing number of states have begun to address the international dimensions of naval nuclear weapons and nuclear propulsion, as well as naval operations and practices. Some of these actions have received enormous attention—such as in New Zealand's enforcement of its non-nuclear policy to include visits by naval vessels—but others have not. The extent of worldwide activity to try and restrict naval nuclear operations is little appreciated. Many of the states which prohibit visits by nuclear-armed and -powered warships are small and seemingly inconsequential, such as Albania, Iceland, or the Soloman Islands. But other countries are beginning to challenge the central premises of superpower naval freedoms. More than half of the members of NATO now have policies restricting the deployment of nuclear weapons on their soil and some include aspects of naval nuclear transits and deployments as well. And there are ongoing political debates and controversy in numerous other countries relating to both visits by nuclear ships and involvement in naval nuclear affairs: in Brazil,[20] China,[21] Egypt,[22] Japan, North Korea,[23] and Sweden, to name a few.

Nonetheless, no thought is seriously being given by the nuclear powers to controls on naval operations or armaments. There is no naval arms control. Of all the categories and types of naval nuclear weapons either currently deployed or un-

der development, only strategic submarine-launched ballistic missiles have been covered by arms control agreements (SALT I and II, now effectively abandoned by the two sides). No non-strategic nuclear weapons are or have ever been the subject of naval arms control discussions, nor are any negotiations anticipated. After years of intense diplomatic activity, the world still lacks a fully recognized and active international law of the seas.

The past two decades have included certain developments and technological advances in the naval arms race which re-open the question of whether there should be naval arms control. One has been the growth of Soviet naval power: where the United States was once a lone actor in terms of global deployments and on the high seas, there now exists the real potential for confrontation, and if not, at least endless and meaningless technological competition. Second has been the U.S. response: a 600-ship Navy and a newly articulated Maritime Strategy only provide temporary relief in this latest round of the naval arms race. Further growth in Soviet, U.S. and non-superpower naval capabilities only serve to ensure that the high seas will be more likely to be the arena for confrontation.

The emergence of the Soviet Navy, and the burgeoning international movement against nuclear weapons at sea has resulted in focusing attention on a branch of the military which is traditionally more separate and independent. Navies, because of their autonomous nature, are more invisible and so far have not been subjected to the same public political scrutiny which has been focused on land-based military forces. The United Nations has taken up the issue of the naval arms race, and it will undoubtedly be the subject of the next round of negotiations at the Conference on Disarmament in Europe and at the United Nations Disarmament Commission. A new South Pacific Nuclear Free Zone Treaty has gone into effect, partly due to French nuclear testing and partly due to anxiety about the spread of superpower naval competition into the southern hemisphere. A Southeast Asian Zone seems probable in the near future.

The first two parts of this report describe briefly the state of nuclear armaments and naval technology, as well as future nuclear programs, the increasing globalization of the naval arms race and new allied involvements in the provocative Maritime Strategy.[24] The next part details some of the dangers of the naval arms race, and the escalation potential inherent in particular features of current naval operations and strategy: naval forces are regularly employed for political signaling and military confrontations, crisis and wartime naval strategies are particularly destabilizing. Finally, some observations are made about the prospects and need for denuclearization and confidence building measures in the nuclear navies.

II. Nuclear Armaments and Naval Technology

The United States, Soviet Union, the United Kingdom, France, and China possess over 15,000 nuclear weapons in their naval forces. Some 8,800 of these are "strategic" weapons, that is, they can be fired at intercontinental ranges to strike enemy homelands, and about 6,600 are non-strategic, shorter range weapons intended for regional ("theater") conflicts, or weapons reserved for ocean combat. All of the strategic naval nuclear weapons are aboard ballistic missile submarines; the non-strategic weapons are deployed on submarines and surface warships, or are delivered by land- and sea-based aircraft.

The United States has the largest arsenal of naval nuclear weapons, with 9,347, some 60 percent of the total naval nuclear weapons of the five nuclear powers, and approximately 37 percent of the U.S. nuclear stockpile. The U.S. arsenal includes 5,632 warheads in the strategic submarine force and 3,715 non-strategic warheads. A total of 278 U.S. Navy ships and submarines are capable of firing nuclear weapons as of October 1987. This includes all of the aircraft carriers, battleships, cruisers and destroyers, and some of the frigates and attack submarines. Non-strategic naval nuclear weapons include Tomahawk sea-launched cruise missiles, ASROC and SUBROC anti-submarine rockets, Terrier surface-to-air missiles, B-57 nuclear depth bombs, and B-43 and B-61 gravity bombs.

The Soviet Navy has about 5,400 naval nuclear warheads, some 36 percent of the total sea-based stock. This includes 2,902 warheads in the strategic submarine force and 2,526 warheads in the non-strategic force. Nonetheless, a larger number of Soviet naval vessels are nuclear-capable than in the U.S. Navy: a total of 624 Soviet Navy warships and submarines are capable of firing nuclear warheads.[25] The vessels include virtually all of the aircraft carriers, cruisers, destroyers and submarines of the Soviet Navy and some of the frigates and patrol combatants. The most common Soviet naval nuclear weapons are sea- and air-launched cruise missiles (of nine different types) and nuclear torpedoes. Virtually every nuclear-capable vessel is considered able to deliver a nuclear torpedo.

The other three declared nuclear powers have smaller but still substantial nuclear arsenals at sea. The United Kingdom has four strategic submarines armed with a total of 64 nuclear warheads, and three aircraft carriers and 23 destroyers and frigates armed with 190 nuclear strike bombs and anti-submarine depth bombs. French naval nuclear capabilities consist of six strategic submarines and two aircraft carriers. The strategic submarine force can deliver 256 nuclear warheads and the carrier-based aircraft are thought to be armed with about 36 nuclear bombs. Chinese naval nuclear capabilities now consist of two operational and one test strategic submarine and approximately 130 land-based naval bombers.[26]

Strategic Nuclear Forces at Sea

The five nuclear powers possess 8,878 nuclear weapons in their submarine-launched ballistic missile forces. These nuclear weapons are deployed on a total of 123 operational ballistic missile submarines (36 U.S., 75 Soviet, 6 French, 4 British, and 2 Chinese).[27] Of all three types of strategic nuclear forces—land-based intercontinental missiles, bombers, and submarine-launched ballistic missiles—the submarine force is currently the most dynamic; there has been an increase of more than 2,000 nuclear warheads in the strategic submarine force since 1980. And deployments are ongoing. All five nuclear powers are currently modernizing their strategic submarine forces, and have a newer and more capable generation of submarine-launched ballistic missiles under development.

The United States operates 36 nuclear-powered ballistic missile submarines, equipped with 5,632 nuclear warheads on 640 missiles. This means that approximately 46 percent of the U.S. strategic arsenal is deployed on the naval force. Current strategic missiles include the Poseidon C3 (each of which carry 10 warheads) and the Trident I C4 (each of which carry eight). Currently 16 submarines carry the Poseidon and 20 carry the Trident I. All U.S. submarine-launched bal-

listic missiles have multiple independently targetable warheads.

The Soviet Union maintains the largest fleet of ballistic missile submarines, composed of 62 nuclear-powered boats.[28] These submarines can deliver 2,902 nuclear warheads. There are eleven different submarine classes and seven different missile types currently deployed. Four of the missile types have multiple warheads.

The United Kingdom operates four strategic submarines, each equipped with 16 Polaris A3TK missiles. Over the last decade, the missiles have been modernized with new reentry systems and warheads, a process which has increased their accuracy and targeting flexibility. France currently operates six strategic submarines, equipped with 96 missiles and 256 nuclear warheads. Five of the submarines are of the Redoubtable class and one is of the newer Inflexible class (which began operations in April 1985). In 1984, France deployed a new six-warhead submarine-launched missile—the M4—which will replace the single warhead missiles. Finally, China has embarked on the development of a strategic submarine force and has launched two Xia class submarines since 1981; some four to six are thought to be under construction. Each submarine carries 12 missiles with a single nuclear warhead.

A new aspect of strategic nuclear weapons at sea is the support of maritime operations using strategic bombers. Both the United States and the Soviet Union have recently undertaken programs to use portions of their strategic bomber force for sea-based missions. The U.S. program actually began in 1971, when the U.S. Navy and Air Force agreed to cooperate in ways to improve Air Force support of maritime operations.[29] But it was not until September 1982, when the Air Force and the Navy signed a new agreement that real interaction began in earnest.[30] According to the secret Fiscal Year 1984 "Defense Guidance" of the Secretary of Defense, "planning for this role should include both nuclear and conventional weapons."[31] Increased cooperation and integration has been practiced, such as in "Fleet Ex 83," where 10 Air Force B-52 strategic bombers and other planes supported three U.S. Navy aircraft carrier battle groups operating in the Aleutian Islands area.[32] Today, the Air Force supports the Maritime Strategy by substantially increasing B-52 land attack and anti-ship operations and planning.[33]

The Soviet Union is following the U.S. lead through greater integration of its strategic bomber force into maritime operations as well, particularly in the Pacific region. Admiral Ronald J. Hays, Commander of the U.S. Pacific Command, stated in December 1986 that Soviet "Bear G and Bear H [strategic bomber] aircraft now fly simulated strategic strike and maritime attack missions against U.S. targets as a matter of routine."[34] According to a report by the Office of U.S. Naval Intelligence this year, "Bear G bombers, a Strategic Aviation asset, now routinely operate over water, and have participated in major anti-carrier warfare exercises."[35]

The modernization of Bear bombers in the Soviet Air Force, in fact, has been specifically to increase their maritime capability. The new G variant allows the Bear bomber to carry three dual capable supersonic AS-4 air-to-surface cruise missiles—the same anti-ship cruise missiles carried by the Backfire bomber assigned to Soviet Naval Aviation—rather than "the single nuclear only AS-3 [large strategic land attack missile] previously carried."[36] According to Admiral Hays, "The Soviets have placed all of the newly modified Bear G long range maritime strike aircraft in the Pacific. . . . The new production Bear H [with AS-15 long-range air-launched cruise missiles] operating out of Dolon in [the] Central USSR, routinely operates in the Pacific theater on intercontinental simulated strike missions against U.S. targets."[37]

Non-Strategic Nuclear Forces

The five nuclear powers possess about 6,600 non-strategic sea- and land-based nuclear weapons in their naval forces.[38] These weapons have two main military missions, either striking land targets, or ocean combat. They include a wide vari-

ety of weapon types: sea-launched cruise missiles, aircraft delivered bombs, air-launched cruise missiles, anti-submarine rockets and missiles, nuclear depth bombs, torpedoes, surface-to-air missiles, naval artillery and coastal missiles.

The U.S. Navy has the greatest number of non-strategic naval nuclear weapons, but the Soviet Union has the greatest variety (some 45 different systems). U.S. naval nuclear weapons are more standardized than in the Soviet Navy and different types exist in larger numbers. Over 80 percent of Soviet Navy major combat ships and submarines are nuclear-capable, the most predominant weapons are anti-ship cruise missiles and torpedoes. Some 80 percent of U.S. Navy combat ships are nuclear-capable, and the most numerous nuclear weapons are aircraft bombs and anti-submarine weapons. The other nuclear powers have naval aircraft or helicopters that can deliver nuclear weapons, but do not possess any nuclear torpedoes or non-strategic naval missiles on their surface ships.

By far the most numerous delivery platform for non-strategic naval weapons are attack aircraft and helicopters—both sea- and land-based—rather than ships or submarines. In both the U.S. and Soviet navies, aircraft equipped with nuclear bombs or air-to-surface missiles are the main offensive weapons. There are about 2,000 nuclear warheads deployed for delivery by naval aircraft of the five nuclear powers.

Nuclear-capable naval aircraft serve two primary roles, offensive strikes on land targets or ships, or anti-submarine warfare. The U.S. Navy and Marine Corps have about 1,100 nuclear-capable attack aircraft of five different types, and some 700 anti-submarine aircraft and helicopters. Most of the attack aircraft are sea-based (operating from 14 large deck aircraft carriers) and most of the anti-submarine warfare aircraft are land-based. Soviet Naval Aviation is composed of 445 nuclear-capable attack aircraft, mostly land-based, and about 400 anti-submarine aircraft and helicopters. France and the United Kingdom also operate nuclear-capable naval aircraft, both aircraft carrier and land-based, and it is possible that China arms its naval bomber force with nuclear weapons as well.

In nuclear delivery roles, U.S. and British naval attack aircraft would be armed exclusively with nuclear bombs. Soviet naval attack bombers, on the other hand, are armed either with nuclear bombs or nuclear-capable air-to-surface missiles. The French Air Force also deployed an air-to-surface nuclear missile (the ASMP) in May 1986, and the missile will arm naval Super Etendard aircraft on aircraft carriers in 1988, replacing older nuclear gravity bombs.

In addition to naval aircraft, the Soviet Union and the United States deploy nuclear-armed sea-launched cruise missiles which are capable of offensive attacks. Soviet sea-launched cruise missiles, deployed on submarines and surface ships, are mostly intended for anti-ship missions. Some of the 62 Soviet cruise missile submarines with longer range missiles could launch attacks on coastal targets if they were able to move within range. The large Soviet submarine fleet is the main striking arm in the open ocean, and it is assumed that practically all Soviet submarines regularly carry nuclear weapons.

Up until recently, deployed sea-launched cruise missiles were not capable of being fired more than a few hundred kilometers. But in June 1984, the U.S. Navy introduced the first nuclear-armed long-range, land attack, sea-launched cruise missile, and the Soviet Navy is poised to follow suit. At the end of 1986, 13 U.S. Navy surface ships [destroyers and battleships] and 21 attack submarines were reported to be "nuclear certified" to carry the nuclear Tomahawk.[39] The U.S. Navy plans to build a total of 3,994 Tomahawk sea-launched cruise missiles in a number of varieties, 758 of which will be nuclear variants which will be eventually deployed on 198 ships and submarines.

Almost half of all the non-strategic naval nuclear weapons in existence in the world are for anti-submarine warfare missions. The United States, Soviet Union and the United Kingdom possess just over 3,000 anti-submarine missiles

and rockets, torpedoes and depth bombs with nuclear warheads. A wide variety of ships, submarines, maritime patrol aircraft, and helicopters can deliver anti-submarine nuclear warheads.

The most common anti-submarine nuclear weapon of the three countries is the air delivered nuclear depth bomb. The U.S. Navy operates 698 nuclear-capable anti-submarine patrol aircraft and helicopters capable of delivering B-57 nuclear depth bombs, the Soviets operate some 400 aircraft and helicopters, and the United Kingdom operates some 167. The Soviets recently introduced a shipborne anti-submarine helicopter, the Helix A, which can be carried by "all new major combatants" and deliver nuclear depth bombs.[40] The U.S. Navy is about to receive a new carrier based anti-submarine helicopter, the SH-60F, which will replace the nuclear-capable SH-3 currently deployed.

The United States operates two types of anti-submarine nuclear rockets, one ship-based and the other submarine-based. According to the U.S. Joint Chiefs of Staff, "the Soviets maintain an inventory of nuclear-armed torpedoes as well as ASW [anti-submarine warfare] depth bombs."[41] The Defense Department's *Soviet Military Power* report states that "the newest versions of both entered service in the early 1980s."[42] The Soviet Navy also possesses two anti-submarine nuclear rockets: the SS-N-15 nuclear depth bomb, introduced in 1973, with a maximum range of 37 kilometers (similar to the U.S. submarine-launched SUBROC missile), and the dual capable SS-N-16 anti-submarine warfare missile, introduced in 1979–1981, with a maximum range of 120 kilometers.

The United States and the Soviet Union deploy some 600 nuclear-armed surface-to-air weapons on surface ships. Secretary of Defense Caspar Weinberger has stated that U.S. nuclear anti-air weapons are meant to counter Soviet anti-ship cruise missiles on Soviet bombers.[43] The Soviet Union also has some 152mm nuclear artillery projectiles which can be fired from a class of old cruisers, and the Soviets have nuclear-capable coastal defense missiles, which may have anti-ship missions (some of these SSC-1 missiles were recently deployed on the island of Etorofu in the Kurile chain north of Japan).

Future Naval Nuclear Forces

The pace of Soviet naval nuclear developments has exceeded that of the United States in recent years, both in strategic and non-strategic forces. During the 1980s, the Soviet Navy received two new classes of strategic submarines, the Typhoon and the Delta IV, with two new multiple warhead missiles, the SS-N-20 and the SS-N-23. During this time the United States continued to deploy Trident (Ohio class) submarines with multiple warhead Trident I missiles. France also deployed its first multiple warhead missile, the M4, on the new Inflexible class of submarine. The strategic submarine deployments have added nuclear warheads of greater accuracy, and submarines of greater reliability and quietness, but their most significant feature is longer range missiles that allow targets to be struck while the submarines are operating in home waters.

In the future, the most significant development will be an even greater increase in accuracy which will come with the deployment of the next generation of submarine-launched ballistic missiles. Greater accuracy will allow the submarine force to destroy even the hardest land targets, a capability previously reserved for land-based missile and bomber attacks. The United States will introduce its first Trident II D5 submarine-launched missile in December 1989. When deployed, the weapon will be the most accurate submarine-launched weapon in any arsenal.[44] Its high yield warhead will more than quadruple the explosive yield of the current Trident I equipped force. Eventually, at least 20 Ohio class submarines will carry 24 of the eight warheads, highly accurate missiles.[45] The Soviets are known to have a new class of ballistic missile submarines under development as well as a modified SS-N-20 submarine-launched missile which will replace current SS-N-20s on Typhoon class submarines in the 1990s.

New British and French strategic submarines and more accurate and lethal multiple warhead missiles are also under development. In 1986 the keel of a new class of British strategic submarine was laid. This new Vanguard class will become operational in about 1995 and will carry the Trident II missile. The deployment of the multiple warhead missile on four submarines will eventually increase the size of the U.K.'s strategic arsenal from 64 to some 500 nuclear warheads. With a high yield warhead, the Trident II will also provide the United Kingdom with the ability to destroy hardened targets for the first time.

France is planning to deploy another new generation ballistic missile submarine in 1994, the seventh submarine in its fleet. This new generation submarine will be armed by the end of the 1990s with the M5 missile, which will be capable of delivering 8–12 nuclear warheads. The end result will be more than an eight-fold increase in the number of nuclear warheads in its strategic submarine force.

The pace of developments in the non-strategic force is as great as the strategic force. In 1979, the Soviets introduced a new nuclear anti-submarine missile on its submarines (the SS-N-16), and in the early 1980s introduced two new nuclear-capable sea-launched cruise missiles (the SS-N-19 and SS-N-22), a new nuclear torpedo and a nuclear depth bomb. The SS-NX-21 subsonic sea-launched cruise missile (similar to the U.S. Tomahawk and with a range of 3,000 kilometers) is expected to be deployed during 1988 and the SS-NX-24 large supersonic sea-launched cruise missile (fired from modified former Yankee class ballistic missile submarines), which will become operational sometime in 1988–1989. A ground-launched coastal defense missile, the SS-CX-4, is also under development.

Although the Soviet Navy will continue to rely on land-based aviation for many years to come, they have now launched the first of a new class of large (65,000 tons) aircraft carriers (in early December 1985), and appear to be preparing for aircraft carrier operations in the future that will include conventional take-off attack and fighter aircraft. It is expected that the aircraft carrier will begin sea trials in 1989 and become operational in the mid 1990s.

The United States has at least three different nuclear weapons under development for naval use: an anti-submarine missile (Sea Lance), slated to replace the nuclear-armed SUBROC missile in the 1990s; a surface-to-air missile (Standard 2 Nuclear), slated to replace the Terrier Missile and ready to enter production in 1988–1989; and a nuclear strike/depth bomb, slated to replace the B-57 nuclear depth bomb and to enter production in the 1990s.[46] New nuclear-capable ship classes under construction or development include the Burke class (DDG-51) guided missile destroyer, which will begin operations in 1989 and will be capable of delivering the Tomahawk sea-launched cruise missile and the ASROC anti-submarine nuclear depth bomb; the Wasp class (LHD-1) amphibious assault ship, which will begin operations in 1989 and will be an aircraft carrier platform for the U.S. Marine Corps nuclear-capable Harrier II (AV-8B) short take-off and landing aircraft; and the Seawolf class (SSN-21) attack submarine, which is scheduled to become operational in 1994, and will deliver the Tomahawk and the Sea Lance anti-submarine missile. Three new nuclear-capable naval aircraft/helicopters are also under development: the SH-60F Seahawk, scheduled to begin replacing the SH-3D/H anti-submarine warfare helicopters starting in 1989; the Advanced Tactical Aircraft (ATA), envisioned as a replacement for the A-6 and A-7 attack aircraft in the mid-1990s; and the SV-22 Osprey, which will replace the S-3 Viking carrier-based maritime patrol plane in about 1996.

III. GLOBALIZATION OF THE NAVAL ARMS RACE

The traditional wisdom is that geography shapes naval operations.[47] The United States is an island nation with large numbers of protected ports on two ice-free coasts and direct access to the Atlantic and Pacific Oceans. It is a maritime power, the only liability being that it is remote from its allies, and would require sea transit across the Atlantic and Pacific Oceans to resupply and support its own military forces deployed in Europe and northeast Asia.

The Soviet Union, on the other hand, is a land power, restrained by remote ports, virtually all lacking direct access to the high seas. Ice impedes almost every Soviet coastal city in winter, except for bases in the Black Sea, the Baltic Sea and the Barents Sea along the north Kola coast. And even when weather is favorable, Soviet naval forces in all four fleets (Northern [Atlantic Ocean], Baltic, Black Sea, and Pacific) have to funnel through natural "choke points" (narrow straits) to reach open waters. Only Petropavlovsk on the Bering Sea has open access to ocean waters. If there is any Soviet geographic military advantage it is that its military forces are all deployed contiguous to the Soviet land mass. Only recently has the Soviet military established an important combat base overseas (in Vietnam). In naval terms, such a base might be the focal point of a military confrontation and could require maritime logistics support, changing Soviet naval priorities.

Geographic choke points represent only minor obstacles to commerce and naval movement in peacetime, but would become major naval battlegrounds during a crisis or conflict. U.S. and allied naval strategy is, in fact, shaped largely to take advantage of these choke points during a war and stress "forward" operations during peacetime and a crisis to do so. Western naval forces would attempt to close transit through the choke points to Soviet naval ships and submarines, and would attempt to do so early in a confrontation. The main naval battles would then focus on control of the ocean areas and land bases which dominate the narrow straits.

A strategy for control of the choke points near the Soviet Union, however, introduces other geographic realities. Since such a "forward" strategy would occur close to the Soviet land mass, the Soviet Navy would be able to bring to bear more than just its forces at sea. A major component of its anti-ship capabilities would then be land-based naval and strategic bombers armed with air-launched cruise missiles. Western operations, of course, would also seek to use land bases for support of forward operations (in countries such as Norway, Japan, or Turkey). The result would be a high intensity military confrontation involving sea- and land-based forces, taking place in numerous geographic areas simultaneously, with a high degree of active and passive allied involvement.

Allied Integration in U.S. Naval Strategy

Peacetime naval operations provide unique opportunities for interaction between countries, particularly when it comes to routine port calls by naval vessels and joint military exercises and maneuvers. In 1986, for instance, U.S. Naval ships visited over 300 ports in 107 countries.[48] According to Admiral James Watkins, "Port visits . . . gain access to countries where other U.S. forces are excluded, providing crucial opportunities to improve bilateral relations, such as recent visits to Madagascar and the Comoros Islands in the Indian Ocean."[49] In 1986, the Navy and the Marine Corps conducted 90 major exercises, involving 33 countries.[50] During the previous year, it conducted 86 major exercises, involving 55 countries.[51]

One of the most significant new aspects of the global naval arms race is closer integration of allied navies in direct support for U.S. forward naval strategy. All allied naval forces, according to the U.S. Navy, are now included in U.S. war planning.[52] "Everything we do in the Maritime Strategy not only pulls our sister services in with us in support of maritime operations, and we in support of their land operations," Admiral Watkins testified in 1985, "but we also have our allies with us."[53] According to John Lehman, in

the last few years ". . . we have made extensive progress in multi-lateral and bi-lateral agreements with allied navies and air forces."[54]

The most extensive integration has occurred in the North Atlantic Treaty Organization (NATO). Although commonly thought of as a military alliance concerned exclusively with central European defense, two of the three major NATO commands are maritime commands. In recent years, autonomous naval operations in northern Atlantic waters and the Mediterranean Sea have eclipsed the military and political importance of the "central front." In 1985, the NATO Defense Planning Committee approved a plan to implement a general upgrading of conventional forces in Europe, called the Conventional Defense Initiative Program. The Ministers agreed that special attention would be directed toward nine mission areas; three of them were naval: anti-submarine warfare, sea-based anti-air warfare, and mine countermeasures. The U.S. Navy has implemented its own program for cooperating with NATO, called the Naval Defense Initiative, established in 1986.[55]

The wartime NATO strategy for a coordinated response at sea was revised in 1982 and is called "The Concept of Maritime Operations" (ConMarOps). The strategy was approved by the three major NATO commands (Europe, the Atlantic, and the English Channel), and addresses how allied maritime forces will be used in crisis and conflict.[56] According to former U.S. Second Fleet Commander Admiral Lloyd Mustin, "The first thing that I did [when I became Commander] was to look at how much in sync the NATO ConMarOps and the U.S. Maritime Strategy were, and the answer was, they were entirely in sync . . . The NATO concept of operations . . . has four maritime objectives in the northern region. The first of these is to contain and destroy the Soviet Northern Fleet, and that's apparent. The second objective is to deny the Soviets the use of the Norwegian air fields in the north. The third objective is to assist in the defense of north Norway against air and land attacks. And the fourth objective is to deny the Soviets the ability to make an amphibious assault on North Norway."[57] In the words of the current NATO Atlantic Commander, Admiral Lee Baggett, "In a NATO war, sixty percent of the destroyers and frigates, nearly one-third of my nuclear attack submarines and maritime patrol aircraft, all of the general purpose submarines and the only two ASW [anti-submarine warfare] carriers will be provided by the Allies."[58]

In addition to NATO, the degree of naval integration in the Pacific, particularly between the United States and Japan, is significantly expanding as well.[59] Much of this integration and cooperation is influenced by the technologies used in modern naval operations, particularly communications and surveillance technology. Special networks need to be established in peacetime to link allied systems together and to avoid mutual interference. Admiral Watkins described the U.S. integration of allies in submarine and anti-submarine operations: "Because of our sophisticated systems, we can act as the water manager for the allies in submarine operations and we do that. We know where each of our submarines is located. We control them to avoid mutual interference. We have communications links established. We have intelligence exchanges established. We know what their contingency plans are for wartime. They know ours."[60] Another example is that the U.S. Navy conducts liaison with "some 40 nations every year to ensure that we are well coordinated with their mine-clearing and offensive mine-laying operations."[61]

The Atlantic Ocean

Since the Atlantic Ocean is the link between the United States and its European military allies and deployments, control of the Atlantic Ocean is considered by most military analysts to be the West's highest naval concern. During a conflict, however, the traditional "sea-lines of communications" defense mission—protecting commerce and military reinforcements transiting the Atlantic from North America and the Middle East to Europe—has become a lower priority in recent

years than forward operations against the Soviet Union.

Geographically, the Atlantic is split into two main naval regions: the area south of the Greenland-Iceland-Faeroes-U.K. gap (GIUK gap, or the Greenland-Iceland-Norway gap, as it is called by current naval planners), and the area north of the gap, particularly the Norwegian Sea. Soviet naval forces operating in peacetime south of Iceland are outnumbered ten to one, and there is no reason to believe, given Soviet military strategy and NATO capabilities, that these odds would ever disintegrate during a war.

But rather than maintaining the Greenland-U.K. gap as the focal point of a barrier defense against Soviet naval encroachment and protecting sea lines in that way, allied maritime strategy now calls for operations further north to actively pursue Soviet forces even it their mission isn't offensive operations south of the GIUK gap. Admiral Baggett, NATO Commander in the Atlantic, testified before Congress in April 1987 that "it is imperative that the sea war in the Atlantic be fought as far forward as possible, to allow us to capitalize on the geographic constraints faced by the Soviets, and, at the same time, defend the Northern Flank of NATO . . ."[62] ". . . Norway is in an exposed position on the Northern Flank," John Lehman explained in 1985. "We know that Soviet war plans include the invasion of Norway. Now we could, as some have suggested before this subcommittee say, no, that is too hard, the Soviets will shoot at us if we try to defend Norway.' But we think that only people comforted inside the Beltway could seriously espouse a doctrine that provides a sanctuary and safe haven for the Soviets, and writes off an entire geographic area. . . ."[63] "The fact is that the northern flank is one of the more ill-defended areas of the Soviet Union," John Lehman went on to state to justify forward operations. "As a point in fact, there are weaknesses and vulnerabilities there. There are many areas that are more threatening to operate in than the northern flank area. Indeed, the naval forces are certain to be the least vulnerable military capability that NATO has."[64]

The Soviet Northern Atlantic Fleet also happens to contain the largest number of strategic submarines and nuclear-capable ships in the Soviet Navy. Based around the Kola peninsula (to the east of northern Norway), the Fleet can gain access to the open Atlantic only through the Norwegian Sea. But there is no reason to believe that it would be a high priority of Soviet wartime strategy to move its naval forces to the south through this area. Rather, the primary mission of the Northern Fleet would be protection of Soviet strategic submarines and the Soviet homeland. Anti-submarine operations and anti-ship aviation support would be the critical elements of such a strategy.

To some degree, the adoption of the forward maritime strategy and the new interest of NATO's northern "defense" is the result of the introduction of long-range ballistic missiles (starting with the SS-N-8) on Delta class submarines, a new capability which changed the nature of Soviet strategic submarine deployments. Before Delta deployment, Yankee class strategic submarines with shorter range SS-N-6 missiles had to transit south of the GIUK gap to be within range of U.S. targets. Since that time, Delta submarines have mainly patrolled in far-northern and arctic waters, beyond the reach of U.S. and NATO anti-submarine operations, in so-called "submarine bastions" protected by Soviet naval forces and aviation.

Operations to establish domination of the North Atlantic would primarily depend on neutralization of Soviet attack submarines and long-range bomber aircraft operating from land bases. As many as four U.S. aircraft carriers would operate in the region; Britain would contribute at most two ASW carriers to operations in the north Atlantic as part of the NATO Strike Fleet Atlantic, and would operate its nuclear-powered attack submarines in unison with the U.S. Navy. Other NATO nations, however, would largely concentrate on naval missions around the GIUK gap and coastal areas.

The changing deployment patterns of the Soviet strategic submarine forces and the north-

ern movement of NATO maritime strategy has focused new interest on naval operations in the Arctic. The polar ice cap covers almost 10 percent of this area and although it is practically impassable by surface ships, the Arctic Ocean is increasingly being used for strategic submarine operations, including regular Soviet strategic submarine patrols and attack submarine operations. In terms of submarine operations, the Arctic is now the fastest growing ocean area for new research plans and exercises. The current Chief of Naval Operations reported earlier this year that U.S. "submarines are routinely deployed into Arctic waters where they might be expected to carry out wartime campaigns and battle plans in support of the Maritime Strategy."[65] In the words of John Lehman, ". . . we had better damn well be able to operate up there effectively, to win up there, and to be equipped to win up there. But you can't do that unless you train to do it and understand it, have the clothing and the de-icing equipment and the software in your computers that can operate in the high latitudes."[66]

In fact, numerous programs are underway to improve the ability of attack submarines to operate in the Arctic. The Soviet Navy has introduced a number of submarines with features that improve their capacity to operate in Arctic waters. The U.S. Navy is designing a new attack submarine (the SSN-21 class) which will have specific Arctic operating features.

The Mediterranean Sea

The Mediterranean Sea is one of the main focal points of ongoing peacetime naval activity, and has been the venue for the use of naval forces on numerous occasions in recent years. NATO and Soviet forces in the region are oriented heavily towards seapower, and the level of military air, ocean surveillance, and anti-submarine activity is very high. Soviet naval forces from the Black Sea and Northern Fleets have operated in the Sea since 1964. The United States has deployed naval forces permanently in the Mediterranean Sea since 1947. The Soviet Mediterranean Squadron normally consists of 11–16 surface warships and 10–13 cruise missile and attack submarines.[67] There are commonly 15–20 U.S. warships, 2–3 strategic submarines,[68] and as many as eight attack submarines operating at any time. One or two nuclear-armed U.S. aircraft carrier battle groups are normally present,[69] and large anti-submarine warfare forces are dispersed throughout the sea and adjacent land bases. In addition, France operates one or two nuclear-capable aircraft carriers (with Super Etendard strike planes) in the western Mediterranean and Britain keeps one or two frigates or destroyers with Lynx or Wasp nuclear-capable anti-submarine helicopters assigned to the Gibraltar "guardship." The naval forces of over 20 other nations are also present in the Sea.

The high level of naval activity and the lack of maneuvering room in the Mediterranean Sea has significantly influenced peacetime naval practices there. Superpower and allied navies have continuous contact with each other whenever they are present in the area. Soviet surface ships and cruise missile submarines conduct "tattletale" operations against U.S. forces, shadowing them routinely. U.S. and NATO surveillance aircraft regularly overfly Soviet forces.

The Pacific Ocean

In the Pacific, unlike the Atlantic, the homelands of the superpowers intersect directly. Unlike Europe, there are no multilateral alliances similar to NATO. And until recently, only the U.S. military had a network of foreign bases on the Asian mainland, and only the U.S. Navy operated throughout the region. When it came to the Soviet Union, the U.S. military was without competition, unchallenged, and unthreatened. It is for these and other reasons that the U.S. Navy has always had a preference for the Pacific Ocean over the Atlantic and Europe.[70]

During the Reagan Administration, the Pacific maritime preference has resulted in an even more aggressive outlook and strategy than in the Atlantic. Large scale and highly provocative mili-

tary maneuvers have been conducted in far northern Pacific waters by the U.S. Navy at greater frequency than any other region. In four consecutive exercises since 1982, the participating force has been progressively increased to where each new exercise has become the largest fleet maneuvers held in the Pacific since the end of the Second World War. The latest record, set during Fleet Ex 85, was coordinated maneuvers by five aircraft carrier battle groups.[71]

The maritime strategy in the Pacific is specifically intended to take advantage of Soviet military weaknesses in the region. The Soviet Far East is remote and largely cut-off from the center of Soviet military, economic and political power. Soviet ground forces are tied down and outnumbered by Chinese forces. The Soviet Navy is outgunned and outclassed by the U.S. Navy and its allies. Consequently, the Soviet Pacific Fleet has undergone a steady modernization. New offensive nuclear weapons, such as the SS-20 and the Backfire bomber, have been introduced. A new base structure is slowly being built up, in the Kuriles on Sakhalin Island and in Vietnam. And Soviet naval operations have begun to challenge the U.S. monopoly. The Soviet Pacific Fleet has more than doubled its operating days out of home waters since 1975.[72] The Soviet Union, according to an April 1987 statement by Admiral Hays, Commander-in-Chief of the Pacific Command, "recently conducted the first ever combined operation with the North Koreans."[73] According to the U.S. Navy, "The Soviets now have the capability to attack Mid-Pacific islands, the Aleutian Chain, as well as a large part of mainland Alaska."[74]

As the Soviets have increased their capabilities, they have grown more confident of their ability to defend home waters. In the words of Admiral Watkins, "they believe very strongly that the Bering Sea in the Northwest Pacific is their sea or that the Sea of Okhotsk is theirs."[75] This has not stopped the United States from pursuing the forward Maritime Strategy in these north Pacific waters with a vengeance. In 1983, the U.S. Navy began attack submarine and surveillance aircraft patrols in the Sea of Okhotsk. In August 1986, in what Pacific Fleet Commander Admiral James A. Lyons, Jr. called "a major shift" in U.S. military operations, the Navy began regular aircraft carrier deployments in the Bering Sea and waters off Alaska.[76] "Alaska is now a fundamental part of our naval strategy," Secretary of the Navy John Lehman stated in a 1986 speech in Anchorage, Alaska.[77]

Allied integration into the Maritime Strategy in the Pacific is not as great as in the Atlantic; U.S. allies such as Australia and the Philippines provide base support but largely remain unintegrated into U.S. war plans. The exception is Japan, which is playing an increasingly important role in supporting U.S. offensive maritime operations. The United States makes virtual unilateral use of its military bases in Japan. The Japanese government provides some $2 billion per year in logistics support to the U.S. military.[78] Communications, intelligence collection, early warning, and air defense networks of the United States and Japan are increasingly integrated. Increased Japanese military spending is also largely oriented towards naval operations. Rimpac, an annual multilateral naval exercise in the northern Pacific has included the largest ever participation by Japan in recent years, and Rimpac 86 included the first participation ever by Japanese submarines.

The north Pacific and the area around Japan are not the only areas experiencing increased naval activity. Since the Soviet Union established what has become a permanent naval base in Vietnam, the South China Sea has become a new focal point of military contention between the superpowers. As part of the Maritime Strategy, the U.S. Navy has assigned a battleship surface action group which would move into the South China Sea during a crisis.[79] And U.S. and Soviet peacetime military operations have significantly increased. The Soviet Navy carried out its first ever anti-carrier exercise in the South China Sea in February 1986. The exercise was probably related to an aircraft carrier exercise conducted by the USS Midway in the area just prior to that time. In July 1986, the United States and Australia also conducted a South China Sea exercise

involving the battleship group of the USS New Jersey and eight Australian ships.

The Indian Ocean

In response to a border conflict between the Yemens in February 1979, the United States began deployment of what has become a regularly stationed carrier battle group in the Indian Ocean. Following the overthrow of the Shah of Iran and the Soviet invasion of Afghanistan, the deployment was raised to two aircraft carriers.[80] With recent events in the Persian Gulf, the operations have reached a wartime tempo, with as many as 30 U.S. Navy combat ships in the area. The Soviet invasion, the fall of the Shah of Iran and the disintegration of U.S.-Iranian relations, and the Iran-Iraq war have all contributed to increased naval activity and competition in the region. This is in spite of the fact that the Indian Ocean was peaceful enough less than a decade ago to evoke regional Zone of Peace proposals and negotiations between the United States and the Soviet Union.

A new feature of the naval arms race in the Indian Ocean is aggressive competition for basing support and military cooperation. The United States has established bases in Oman, Kenya and Somalia, all in the last five years, as well as continued to build up Diego Garcia. The U.S. Navy conducted its first ever port visit to Bangladesh in January 1985, and to the Comoros Islands in March 1985. In 1984, a U.S. naval warship made its first visit to an Indian port in 13 years.[81] According to Admiral Hays, "We have begun to open a more meaningful dialogue with India as evidenced by the visit in October [1986] of the Secretary of Defense, Secretary of the Air Force Aldridge's visit in November, and congressional visits in mid-December."[82] But U.S. naval cooperation with Pakistan is the most significant new development. U.S. ships are regularly calling at and receiving provisions at Karachi. U.S. and Pakistani air and naval forces are conducting regular cooperative military maneuvers. And in March 1986, the United States sent its largest naval force ever to visit Pakistan, including the nuclear-powered aircraft carrier the USS Enterprise (CVN-65).

Naval operations in the region, however, are anything but hospitable. In 1986, Iraq increased the scope and intensity of its attack on Iranian economic targets. Iran, in turn, increased anti-ship attacks against neutral shipping and stopped and searched merchant ships in the lower Gulf, seizing cargo bound for Kuwait. This resulted in the first boarding of a U.S. merchant ship in the Persian Gulf. In October 1986, Iran for the first time fired surface-to-surface missiles at merchant ships during the night in the lower Gulf. Iran also conducted other surface-to-surface missile attacks in January 1987,[83] and Iraq struck the U.S. Navy frigate USS Stark. Now, U.S., Soviet, British, French and other allied warships are patrolling the region.

The Soviet Union has also experienced its share of problems with naval operations in the volatile region. Soviet shipping has been the object of attacks in the Persian Gulf. But the Soviets have also experienced attacks against its facilities outside the Gulf. Until May 1984, the Soviets flew Il-38 May maritime patrol aircraft out of the Johannes IV airfield in Ethiopia. But when a May aircraft on deployment was lost to rebel attack, they shifted their Indian Ocean operations to Aden, and ceased operations in Ethiopia altogether.[84]

Conventional Naval Forces and the Naval Arms Race

"The international setting is complicated by the proliferation of modern, high-technology weaponry in the Third World," says former U.S. Chief of Naval Operations Admiral James Watkins. "Naval forces must be prepared to encounter high technology, combined-arms threats in virtually every ocean of the world."[85] The current Chief of Naval Operations, Admiral Trost, testified before the U.S. Congress earlier this year that "Our forward deployed forces now must operate in a world in which 50 countries and medium powers possess

anti-ship cruise missiles, 24 have diesel attack submarines, and 99 operate jet tactical aircraft."[86] According to Congressional testimony by former Director of Naval Intelligence Admiral John Butts,

> Twenty years ago, modern naval weapons were concentrated in the arsenals of NATO and the Warsaw Pact. Only a few regional powers, such as Egypt, China and India, possessed anti-ship cruise missiles or operated relatively large submarine fleets. Today, the situation is radically different. Wide export of technologically sophisticated ASCMs [anti-ship cruise missiles] . . . has given more than 40 Third World nations a modern, anti-ship strike capability. Moreover, export of these missile systems has been complemented by sales of highly capable air and surface launch platforms and surveillance and targeting systems. . . . Similarly, worldwide sales of Soviet, Chinese, French, German, Dutch and British submarines have further added to the naval capability of some 20 Third World nations.[87]

Since the sinking of the Israeli destroyer Eilat on 21 October 1967 by Styx missiles from an an Egyptian patrol boat, the vulnerability of large surface combatants to conventional weapons has become another feature of the global naval arms race. Today, the proliferation of such modern weapons is increasing. Besides the superpowers, 60 countries possess sea-launched cruise missiles. The French Exocet anti-ship missile is owned by 18 countries,[88] the Israeli Gabriel by eight countries,[89] the Italian Otomat by five countries,[90] and the U.S. Harpoon by six countries.[91] The United States, Soviet Union, France, Italy, the United Kingdom, China, Japan, Norway, Sweden, West Germany, South Africa, Taiwan, and Israel all produce their own sea-launched cruise missiles.[92]

The unrestrained trade in arms is one of the main contributors to the globalization of the naval arms race. Time and again, naval confrontations are now pitting opponents against their own weapons or the weapons of their allies. British ships faced French missiles in the Falklands/Malvinas.[93] In 1985, the largest ship in the Libyan Navy, a British-built frigate, returned to the operational inventory from Italy after an extended overhaul and conversion to carry Italian-made Otomat anti-ship missile.[94] Other Libyan vessels have been refit in Spain. French built Libyan Navy Combattante II class missile patrol boats were sunk by the United States in March 1986.

Now, the search for more capable systems on the part of recipients has spread to the point where a handful of countries are seeking to acquire nuclear-powered attack submarines. Interest in nuclear propulsion has been expressed by Argentina, Brazil, Canada, India, and Japan. Argentina reportedly has nuclear-powered submarines under construction.

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Virtually no region of the world is exempt from integration into the base and support infrastructures of the superpower alliances, from naval maneuvers and exercises, the proliferation of naval capabilities, or the adoption of more aggressive and dangerous naval strategies. Each region of the world is experiencing some aspect of the accelerating naval arms race. And in those areas where the naval arms race has been relatively benign, such as in Africa, the superpowers have been slowly upgrading their activity or revising their military plans to integrate them into wartime operations as well.[95]

IV. Dangers of the Naval Arms Race and Naval Operations and Strategy

The naval arms race has already played its part in undermining relations between the superpowers during peacetime. In crises, naval strategies and practices as they are currently followed could further influence the likelihood of escalation into a conflict, or the likelihood of a conventional war escalating into a nuclear war. The routine presence of nuclear weapons in the oceans and their complete integration into the naval formations of the United States and the Soviet Union increases the likelihood that nuclear weapons could be employed in the course of a high intensity conventional war.

It is difficult to conceive of a rational decision-making process that would result in political authorization to use nuclear weapons at sea, and risk the unknown consequences. Nonetheless, it is possible to construct convincing scenarios for purposeful escalation to the use of force during a superpower crisis. And any direct confrontation inherently increases the risk of the possible introduction of nuclear weapons.

The dangers involved in the naval arms race are unique—naval forces are regularly employed for political signaling and military confrontation, crisis and wartime naval strategies are particularly destabilizing, and naval nuclear weapons are thought of differently from land-based nuclear weapons.

Dangers of Peacetime Naval Practices

In the last few years, there has been a steady increase in both the pace and size of peacetime naval operations and exercises conducted by the nuclear powers and their allies. "Although technically we are at peace," Admiral Watkins stated in 1985, "our operating tempo is about 20 percent higher than during the Vietnam War."[96] The U.S. Navy, John Lehman testified before Congress, is "spending more time at sea than it had even averaged in the Second World War."[97] "Unlike any other service the Navy runs eyeball to eyeball with the Soviets daily," says Watkins, "either in the air, on the surface or under the water."[98] At the same time, the nuclear powers have demonstrated their willingness to make use of naval force—in Libya, Lebanon, the Falklands/Malvinas, Grenada, and the Persian Gulf.

In writing about the dangers of increasing the intensity of maritime operations, John Mearsheimer, Professor at the University of Chicago, observed: "if the side with the provocative strategy is intent on aggression; war is inevitable anyway. It is a major problem however, if there is no intention to attack, but the strategy, because it appears offensive to the adversary, creates a perception of aggressive intentions."[99] To the observer, this dilemma seems to sum up naval operations in recent years: on the one hand increasing maritime military preparedness and readiness, and on the other hand using naval forces in high risk political and military operations (such as against Libya) during peacetime or to spearhead a more belligerent approach to the adversary superpower.

In peacetime, the nuclear navies confront each other to a much greater degree and much more regularly than is commonly assumed or understood. In January 1986, when U.S. ships were mobilized north of Libya to challenge Libya's claim over the Gulf of Sirte (Sidra), "the Soviet Mediterranean Squadron flagship remained in Tripoli and probably relayed locating data on Sixth Fleet units to the Libyans from Soviet ships monitoring our operations." During the March 1986 U.S. exercises leading up to the bombing of Libya, "A Soviet ship remained in port in Tripoli in order to relay information to the Libyans and other Soviet ships shadowing each U.S. carrier."[100] According to U.S. Navy Intelligence, "throughout 1986 we saw a small but notable increase in Soviet naval air deployments to Libya and Syria. The Soviets deployed Il-38/May maritime patrol aircraft to Libya six times for an average stay of 37 days."[101]

U.S. "freedom of navigation" maneuvers are also held against the Soviet Union and are occasions for superpower confrontations. Take the seemingly accepted U.S. freedom of navigation maneuvers in the Baltic and Black Seas, for instance. For no explainable reason, the size and

scope of these routine exercises has been increasing. In September–October 1985, NATO conducted its largest ever exercise in the Baltic, including participation by the Tomahawk equipped battleship USS Iowa and ships of the British and West German navies.[102] The United States held three "Black Sea Ops" during 1986, an unprecedented number. In March 1986, the U.S. ships (a cruiser and a destroyer) sailed to within six nautical miles of the Crimean coast. While the Soviet Union protested the incursion inside its territorial waters, the White House stated that the vessels were merely testing the "right of innocent passage."

The Black and Baltic Sea maneuvers resulted in diplomatic protests but larger scale naval exercises in the Atlantic and the Pacific Oceans have resulted in direct military responses. During Ocean Safari 85, the largest NATO naval exercise ever held (August-September 1985), some 19 Soviet ships and submarines and 96 Soviet aircraft sorties operated in response to the force's presence in the Norwegian Sea.[103] During Teamwork 84, which took place in the northern Atlantic, and included a Marine Corps amphibious landing in Norway—"almost on the border with the Soviet Union"[104]—according to the U.S. Navy, "the exercise was accompanied by a sizeable Soviet submarine response. . . ."[105] During Northern Wedding 82 in the Norwegian Sea, 102 Soviet aircraft, including Badger and Bear bombers, flew sorties against U.S. naval forces.[106] During 1983 and 1984, John Lehman stated, "not only did we have two incidents of Soviet nuclear attack submarines actually hitting or inadvertently fouling our surface combatants, but we have now seen a developing pattern of regular deployments of nuclear attack submarines close off our principal naval ports."[107] Now, according to Lehman, "'Victor'-class nuclear attack submarines are routinely found lurking near many of our principal naval ports."[108] "[T]heir submarines now are deployed regularly among all of our exercises and astride all of our sea lanes."[109] "[O]ur most valuable strategic asset, our 10 Trident submarines, are unprotected at Bangor, WA [Washington]. They [Soviet attack submarines] are right by the Straits of Juan de Fuca, outside which there is a permanently deployed attack submarine presence nearly all the time."[110]

During the Pacific Fleet Ex 85 operations of U.S. aircraft carriers within 50 miles of the Soviet coast in December 1985, the Soviets responded with over 100 fighter, bomber and reconnaissance overflights, as well as by alerting surface vessels in port. In response to the build-up of U.S. and Japanese forces, Soviet bombers have on a number of occasions flown attack profile missions into Japanese airspace.[111] In September 1986, when the United States sent its most heavily armed naval force ever to operate in the Sea of Japan and the Sea of Okhotsk, including two aircraft carriers and the battleship USS New Jersey, *Izvestiya* called the operations a "blatant military provocation."[112] In December 1986, when two U.S. aircraft carriers returned to the area, they were greeted with at least 100 Soviet aircraft overflights.[113]

Given the U.S. Navy's attitude towards Soviet responses to exercises, one would almost think that they were intentionally trying to goad the Soviets through their maneuvers. Vice Admiral James A. Lyons, Deputy Chief of Naval Operations for Plans, Policy and Operations testified before the Senate Armed Services Committee in 1985 that "We can always count on the fact that when we do these exercises, there are going to be Soviets intermingled. Quite frankly, as a fleet commander, I used to welcome their participation for two reasons. First, the services that they provided were free, we didn't have to pay for them. Second, we had a message to send, and the message was—if we operate with obvious proficiency in front of them then in effect we have improved the deterrence equation without firing a shot."[114] As Admiral Watkins testified in 1984, "the Soviets actually act as our target forces, our orange forces, as we call them. They provide very effective exercise services to our forces because we can really see what we are up against."[115]

No doubt the navies of the United States and the Soviet Union learn a great deal from their

war games. But if a real confrontation arose, or one or the other of the nuclear navies experienced a miscue or made a miscalculation about the intentions of the other side, the result could be disastrous. On 21 March 1984, while on what was described as "routine" night maneuvers as part of the annual Team Spirit exercise, a Soviet nuclear-powered Victor class attack submarine collided with the U.S. aircraft carrier USS Kitty Hawk 150 miles east of the Korean peninsula. The Kitty Hawk sustained a ruptured fuel tank and the submarine was so damaged that it had to be towed back to base. Just a few weeks after this incident (on April 2), the Soviet aircraft carrier Minsk fired eight signal flares at the U.S. Navy frigate USS Harold E. Holt, when the latter ship disregarded a request from the Minsk to stand clear and passed within 300 meters of the ship.[116] According to former Secretary John Lehman, about 40 "potentially dangerous incidents" took place during 1982 between the U.S. and Soviet Navies.[117] There is no evidence to suggest that this rate has since declined.

As long as the navies of the superpowers and their allies are in close proximity to each other (such as they are routinely in the Mediterranean Sea, or as they become during military training exercises), their deployments could have the effect of accelerating decision making relating to the use of force during crisis or war. Large scale operations in the north Atlantic or Pacific during the outbreak of a crisis could require Soviet forces to concentrate on neutralizing aircraft carriers and anti-submarine warfare forces in order to safeguard their strategic submarine holding areas in the Barents Sea and the Arctic, or the Sea of Okhotsk and the Bering Sea. The early establishment of a submarine barrier in the Norwegian Sea or the north Pacific south of Kamchatka would probably be the highest Soviet priority, with air attacks on surface naval forces and land bases a secondary mission. The question is how quickly these operations (or movements and preparations for such operations) would get underway, and how the crisis response strategy of the United States and Soviet Union would contribute to increasing the intensity and seriousness of such a crisis.

Crisis Instability and Maritime Strategies

The strategy for response by western naval forces to crises raises a number of questions about the ability of political leaders to maintain control over the course of events. Of course, if a confrontation were so severe that the intention of the belligerents was to go to war, the management of the crisis itself would be somewhat of a moot point. But management of any crisis and confrontation in the nuclear age is a central concern. The ability to manage a crisis is closely related to the ability to maintain control of a war once it begins, where nuclear escalation then presents an increased possibility.

"Phase I" of the Maritime Strategy of the U.S. Navy is called the "deterrence" or "transition to war" phase.[118] That deterrence and transition to war are seen as synonymous is cause for concern. A key question, however, is how long a period of time is involved in the "transition" to war, when does it occur, and how are decisions made to undertake military actions during this crucial transition (crisis) period.

According to Admiral Watkins, former Chief of Naval Operations, "The initial phase of the Maritime Strategy would be triggered by recognition that a specific international situation has the potential to grow to a global superpower confrontation."[119] "[S]hould war come," Watkins wrote in January 1986, "there will be only a brief time for mobilization."[120] How much this kind of statement is merely promotional and how much is a part of the actual crisis response plans is revealed in other statements by senior naval officials.

Vice Admiral Nils R. Thunman, Deputy Chief of Naval Operations for Submarine Warfare, testified before Congress in 1985 that "the Maritime Strategy calls for the majority of our nuclear attack submarines or SSNs, as we call them, to go forward **immediately at the beginning of any hostilities with the Soviets** to sink his fleet,

bottle up his massive submarine force, and now with the advent of the Tomahawk cruise missile, to attack his land bases."[121] "During the deterrence or transition to war phase," Admiral Thunman told another Committee, "we will see forward global movement of our Navy, and our SSN's role in that movement is to go deep into the sea control areas of the Soviet Union. . . ."[122] Still, it is ambiguous whether the intention is to move only after the Soviets have initiated hostilities, that is when war has broken out, or in anticipation of hostilities.

The head of Navy contingency plans, Admiral James Lyons, described Atlantic crisis operations as follows: ". . . [O]ur ability to protect the reinforcement and resupply of the NATO alliance in a major conflict depends heavily on control of the Norwegian Sea. The key to victory in a future battle of the Atlantic may be the **prompt attainment of superiority** in the Norwegian Sea by NATO."[123] According to testimony of Admiral Hays, commander of U.S. Pacific forces, the strategy in the Pacific is the same: "By posturing forward early during **the pre-conflict period**, both deterrence and tactical positioning for combat are well served."[124] In Watkins' words, "In the northwest Pacific our feeling is that **at the very front end of conflict**, if we are swift enough on our feet, we would move rapidly into an attack on Alekseyevka [a Backfire bomber base in the far east of the Soviet Union], and we think we could get away with it, because we know what the Soviet real capability is."[125]

With "speed and decisiveness essential"[126] in order to implement the first phase of the Maritime Strategy, the mobilization and dispersion of attack and ballistic missile submarines has taken on new dimensions. Both the United States and the Soviet Union now plan to quickly disperse their submarine forces, and have begun regular practices of these maneuvers. "At the brink of war," according to Watkins, ". . . They [the Soviets] will flush their navy and move them out of port."[127] "We have watched them surge their SSBN's [strategic submarines] and SSN's [attack submarines] many times . . . Within a matter of 24 to 48 hours, they can surge their SSN's out of port and the SSBN's as well."[128]

The first U.S. practices of surge mobilizations began in 1984. "You may not see it," Watkins told a Congressional Committee in March 1984, "but in time you will see surge deployments of SSNs [attack submarines] worldwide. We are getting into it again. We just surged out of one port. This month we will surge out of two ports, Hawaii and San Diego. Later on in the year we are going to surge in all ports, and that would be something that we will discuss with the . . . President, to see if we need to alert the Soviet Union that we are doing that, because we have not done it for about 30 years."[129] In the large scale surge exercise which took place in early 1985, the U.S. Atlantic Fleet put 44 attack submarines to sea fully loaded with weapons after 24 hours notice.[130] "As a matter of routine," Vice Admiral Bruce DeMars, Deputy Chief of Naval Operations for Submarine Warfare, told Congress in 1986, "we conduct short notice loadouts and sorties from all SSN [attack submarine] homeports."[131]

If the fast moving crisis movement projected by the superpower navies does not contribute to escalation of a conflict, the objectives of the Maritime Strategy once ships and submarines are underway and positioned for battle will certainly have that result. Three of the objectives of the Maritime Strategy as articulated during the Reagan Administration—the destruction of Soviet strategic nuclear submarines, the destruction of Soviet homeland bases and the invasion of the Soviet Union, and the creation of intentional confusion about U.S. objectives through electronic warfare and deception—all seem to create conditions which could precipitate the use of nuclear weapons.

In the most authoritative description of the Maritime Strategy yet made public, Admiral Watkins, then Chief of Naval Operations, wrote in January 1986 that "As the battle groups move forward, we will wage an aggressive campaign against all Soviet submarines, including ballistic missile submarines."[132] Testifying before Con-

gress a year earlier, Watkins hinted at the mission of destroying Soviet strategic forces when he stated that "our Maritime Strategy . . . says there is an opportunity to provide the President with a non-nuclear option to put at risk their nuclear force."[133]

The U.S. Navy appears to have three justifications for such a risky strategy—first, that it is Soviet strategy to seek to destroy western nuclear forces during a conflict, and so it should be U.S. strategy as well; second, that it would be impossible to distinguish between types of submarines in a war, and that therefore, strategic submarines would be destroyed anyway; and third, that destroying strategic nuclear capabilities at sea ("shifting the nuclear balance") will influence Soviet decisions about conventional war and calculations about resorting to the use of nuclear weapons. Each of the three justifications, however, do not stand up to scrutiny.

Testifying before Congress in 1986, Watkins stated,

> Our SSN strategy, just as is the Soviet SSN counterstrategy, is to move SSN forces forward to get in the middle of what they think is our SSBN patrol area. The Soviets do this every day and it's in their literature. They don't have any qualms about putting their SSNs out to kill our SSBNs, so we must also keep that option open. Because we have ASW [anti-submarine warfare] superiority over the Soviets, it is vital for our deterrent posture to demonstrate that their secure reserve force is at risk. They think it is at risk. The Soviets expect to lose a percentage of their SSBNs in the early days of conflict where release of nuclear missiles has never been authorized.[134]

"[T]he Soviets place a high priority on changing the nuclear balance, or as they term it, the nuclear correlation of forces, during conventional operations," Watkins explained in his report on the Maritime Strategy in January 1986,

> a critical Soviet Navy role in a future conflict would be to protect the Soviet homeland and their ballistic missile submarines, which provide the Soviets with their ultimate strategic reserve. Consistent with its overall stress on the nuclear balance, Soviet doctrine gives high priority to locating and destroying Western sea-based nuclear assets, including aircraft carriers, ballistic missile submarines, and Tomahawk-equipped platforms. The Soviets would particularly like to be able to destroy our ballistic missile submarines, but lack the antisubmarine warfare capability to implement such a mission.[135]

The greatest fallacy in the argument that destroying strategic submarines is Soviet policy and therefore needs to be U.S. policy is in a close examination of the differences in U.S. and Soviet capabilities and strategies. The fundamental difference is that overall Soviet naval doctrine is to protect Soviet offensive sea-based forces and the Soviet land mass, not to engage in forward operations to seek out and destroy western strategic assets. Furthermore, one of the reasons why the Soviets could not implement such a strategy is that U.S. ballistic missile submarines are much more active than their Soviet counterparts (70 percent at sea compared to some 15 percent), are more survivable at sea, and cover a larger area in their routine patrols. In addition, the Soviets do not have anywhere near the global surveillance and anti-submarine warfare network that would be needed to find and destroy underway U.S. submarines, whereas the United States does have such a capability against Soviet submarines. To some degree the Soviet practice of keeping its submarines closer to home works against it if the United States has a strategy of intentionally trying to seek out and destroy those assets that nuclear strategists previously credited as being an invulnerable (and therefore positive) second strike force. A U.S. strategy to destroy Soviet strategic submarines would be facilitated by the fact that Soviet strategic submarines are largely restricted to waters close to the Soviet land mass, and therefore would be proportionately easier to find over U.S. submarines on the high seas.

A second justification for the strategy of seeking out and destroying Soviet strategic submarines is that they would be destroyed anyway in the course of a war. John Lehman states that strategic submarines "are not considered to be

distinguishable when they are at sea, particularly during a war at sea."[136] According to Admiral Lee Baggett, former Chief of Naval Warfare in the Pentagon, and currently Atlantic Commander, "I don't believe you could make a distinction in a combat environment—even pre-hostilities—with certainty to distinguish between SSBNs [strategic submarines] and attack submarines. It is going to get worse in the future with the quieting trends that I depicted, regardless of our capabilities. I think you would not be able, with any certainty, to make that distinction."[137]

Since the advent of longer range nuclear missiles, the Soviet Navy has been operating its top of the line strategic submarines closer to home waters and in the Arctic, not in the open waters of the Atlantic and Pacific Oceans. In order for the U.S. Navy to find itself in a position of being in an area where attack submarines and strategic submarines would be intermingled would be if it chose to go there (such as into Arctic waters or into the Sea of Okhotsk). In that case attack submarines would probably only be present as escorts to protect strategic submarines, not as hunter-killers looking for NATO shipping. In the words of John Mearsheimer, "Soviet SSBNs [strategic submarines] . . . are not essential targets in an operation concerned with sea control [and protection of the sea lines] and, in all likelihood, many of them would not be in harm's way."[138]

A third argument used to justify the strategy of destroying Soviet strategic nuclear capabilities at sea ("shifting the nuclear balance") is that doing so would influence Soviet decisions about conventional war and discourage calculations about resorting to the use of nuclear weapons. A part of this theory is that it would deny the Soviet Union a strategic nuclear reserve force with which it could exercise bargaining leverage against the United States and the West after a full-scale nuclear war.

This argument fails on all accounts. While a central part of Soviet doctrine is the "correlation of forces," in the midst of what would be a full scale conventional war, it seems ridiculous to believe that the Soviet Union would (or could) bring such hostilities to a halt because a force which only represents some 25 percent of its overall strategic nuclear capabilities was slowly being attrited. If anything, the intensity of Soviet fighting and the contemplation of the use of nuclear weapons would be a more likely response. Secondly, while it is true that the Soviet Union, like the United States, has a strategic nuclear reserve force, it is absurd to think that the Soviets would rationally calculate that some 8,000 Soviet land-based and airborne strategic nuclear weapons could be exploded on U.S. and western targets (and that some 10,000 western nuclear weapons would be exploded on Soviet targets), and that a nuclear reserve force would then become a determinant of the future.

The fact is that the far northern offensive submarine operations postulated in the Maritime Strategy as a means of destroying Soviet non-strategic naval forces and taking the initiative by going on the offensive against the Soviet Navy presents Navy planners with the possibility of destroying strategic submarines as a bonus. As such, the Navy has tried to describe such an operation as a virtue. Nonetheless, it is a risky operation which cannot achieve its objectives and should not be further pursued. Its only result could be in contributing to nuclear escalation by sending false signals to the Soviet Union during a crisis that a disarming first strike was being prepared.

A second feature of the Maritime Strategy which presents the same danger in terms of the possibilities for escalation is attacks on homeland bases in the Soviet Union. "We must defeat Soviet maritime strength in all its dimensions, **including base support**," wrote Admiral Watkins,

> The strike power of carrier battle forces can also be augmented with conventional land-attack Tomahawks launched from submarines or surface ships. All of these would be brought to bear as the unified commanders direct. The strategy does not envision automatic attacks on any specific targets, but the main threats to our fleet during this phase [Phase II of the Maritime Strategy] are the 'Backfires' and

other missile-carrying aircraft of Soviet Naval Aviation. The United States cannot allow our adversary to assume he will be able to attack the fleet with impunity, from inviolable sanctuaries.[139]

Present U.S. policy as reported in the 1984 Defense Guidance of the Secretary of Defense, is that "a nuclear war beginning with Soviet nuclear attacks at sea will not necessarily remain limited to the sea."[140] As explained by John Lehman, "the objective of this policy is to tell the Soviets that the bases from which an attack on U.S. naval forces might be initiated may not necessarily be sanctuaries. Given the importance of the oceans to this island nation it would be unwise to adopt any policy which would by default allow the Soviets to believe they could neutralize the U.S. fleet through the use of nuclear weapons and not risk attacks on the bases which initiated and/or supported those attacks."[141] Former U.S. Assistant Secretary of Defense Richard Perle, in an answer to a question for the record in Congressional hearings during 1983 stated that: "land-based air [power], especially the Soviet Naval Aviation Backfire, is an important element of the Soviet naval nuclear threat to our Navy. Agreeing to confine a nuclear war to the sea would in essence allow the Soviets to operate nuclear strikes against our naval forces from a sanctuary of land based airfields. . . ."[142]

While all of these explanations of U.S. doctrine are given in the context of nuclear strategy and justify strikes on Soviet homeland bases during a nuclear war, the Maritime Strategy introduces such strikes in response to conventional attacks as well. According to Admiral W. N. Small, former Vice Chief of Naval Operations, "Among the many elements of our coherent Maritime Strategy is the option to attack the enemy's bases. At bases located in his homeland we would find vulnerable nodes of supply for the enemy's ships; important command, control and communications facilities and headquarters; repair depots; and perhaps most important, his ships and aircraft in a concentrated, vulnerable configuration."[142] "As the Soviet fleet is eliminated," Captain Linton Brooks, one of the architects of the Maritime Strategy wrote in 1986, "both carrier strike aircraft (which the Soviets view as a significant theater threat) and nuclear Tomahawk missiles will be in a position to threaten the Soviet homeland."[144]

The threats to the Soviet homeland would not only be in the form of long-range missile or aircraft attacks. Marine amphibious assaults on the Soviet Union (an invasion) are a part of the Maritime Strategy as well. According to General P. X. Kelley, former Commandant of the Marine Corps, "Massed naval task groups will undertake attacks on Soviet forces and their supporting infrastructure in Eastern Europe and the Soviet homeland. Naval offensives into the Kola Peninsula and Northwest Pacific regions could attack key Soviet military targets, thus helping to induce a measure of fear, uncertainty, and paralysis into the Soviet warfighting machine."[145] "Massed amphibious task forces, together with supporting battleship surface action groups, will now undertake landings to retake conquered territory and to seize key objectives in the Soviet rear. Operating as a component of the naval campaign, MAGTFs [marine air ground task forces] could land on the North Cape, the eastern Baltic or the Black Sea coasts, in the Kuriles, or on Sakhalin Island—thereby adding a crucial measure of leverage to the successful conduct of the maritime campaign."[146]

A maritime strategy which incorporates the objective of destroying strategic nuclear forces at sea with attacks on Soviet homeland bases and plans for an amphibious invasion, begins to look more like an attempt to destroy the Soviet Union and to win an unconditional war. This is especially so when you consider that the so-called "non-strategic" nuclear forces of the Navy are acknowledged to be integrated into strategic nuclear targeting plans and could be used as a component of a disarming and crippling strike on Soviet nuclear forces. According to the official Navy manual of nuclear warfare operations, "The carrier role has remained flexible; employing its embarked air wing, the carrier is capable of

launching strikes in both strategic and tactical warfare situations."[147] U.S. strategic nuclear forces still include carrier-based aircraft, even though aircraft carriers were removed from formal commitment to the strategic nuclear war plan (the "SIOP") in the 1970s.[148]

There is a lack of clarity about the actual objectives of components of the Maritime Strategy in terms of controlling a conflict or attempting to terminate hostilities at the lowest level of damage should a war break out. Yet another element of the strategy is itself intentional confusion, that is, naval operations which would be specifically mounted in such a way as to deceive and confuse the Soviet leadership. During "Phase 2" of the Maritime Strategy, the U.S. Navy would seek to "confuse, deceive, and disrupt Soviet command and control,"[149] jam radars, destroy reconnaissance platforms, and control its own electronic emissions.[150] "Counter-command, control and communications by NATO can further degrade Soviet surveillance and targeting efforts," Admiral Baggett, current Atlantic Commander, testified earlier this year.[151] The tactical objective of such operations would be to "deny the Soviets a targeting capability through platform destruction, jamming, dispersal and emission control."[152]

The denial of Soviet surveillance and targeting would be integral to getting aircraft carriers and surface ships close enough to the Soviet Union to mount strikes on the Soviet homeland. According to Vice Admiral Robert L. Walters, former Deputy Chief of Naval Operations for Surface Warfare: "Our offensive maritime strategy will require Battle Groups [of aircraft carriers] to be able to close potentially hostile shores. Tactical cover and deception will be effective during transit but will require both active and passive radar as the force comes within range of enemy aircraft."[153]

One of the first such deception operations to practice this component of the Maritime Strategy was held during Northern Wedding 82 in the Norwegian Sea, when according to Admiral Watkins "We had the [cruiser] South Carolina up here [indicating] in [Emcon] emission control for some time, and no Soviets picked it up, and we know that."[154] Similarly the aircraft carrier USS Ranger was operated in the Pacific close to the Soviet mainland in May 1986 during Rimpac 86 under an electronic protective screen avoiding Soviet detection, and the aircraft carrier USS Carl Vinson operated for nine days in the Bering Sea without being detected by the Soviets in August 1986.

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There is considerable debate as to whether the new maritime strategy of the West is intended merely as a means to geographically restrict the Soviet Navy and thus deplete Soviet attack submarine forces that could otherwise interdict "sea lines" and attack western strategic submarines; or whether it is intended to move U.S. operations further north so that attack submarines might destroy Soviet strategic nuclear capabilities, strike the Soviet homeland, and destroy the Soviet state.

To have such a strategy with such unclear war termination objectives is a mistake. Even to have such a strategy in peacetime is destabilizing. This is especially so since the more aggressive exercises and operations close to the Soviet Union are practicing features of the new Maritime Strategy which are escalatory and destabilizing:

- the increased integration of land-based strategic aircraft, space platforms, and new communications and surveillance capabilities in support of offensive maritime operations,

- the ability to conduct complex attacks on Soviet land and sea-based forces (including strategic submarines at sea), as well as attacks on Soviet homeland targets during a conventional war,

- the ability to alert homeported forces earlier and more efficiently during a crisis to increase their survivability, including surge deployments of attack and ballistic missile submarines, and the ability to mobilize large integrated forces close to Soviet "sea denial" zones and protected waters during a conflict, and

• the integration and use of more aggressive electronic warfare and deception operations as a force multiplier.

If it were not the case that there were some 60,000 nuclear warheads in the world, and that 15,000 of them were integrated into the naval forces, such a strategy might indeed appear to serve the purpose of maintaining "deterrence," and if war broke out, to fight and win a conventional conflict. But naval nuclear weapons do exist and are integrated into naval forces. Furthermore, the attitude of nuclear strategists and Navy officials seems to indicate that they view nuclear weapons at sea as different from nuclear weapons on land. Some of these attitudes could contribute to decisions to attempt the "limited" use of naval nuclear weapons.

Nuclear Weapons at Sea are Thought of Differently

The probability of a nuclear war starting at sea and of a decision by political authorities to use naval nuclear weapons is increased by virtue of three modes of thinking about them. First, there is a belief that nuclear war at sea would be a limited war and that it would be less damaging than a war on land. Second, there is a widespread view that nuclear weapons might be needed to carry out certain operations to augment conventional weapons. Third, there is a belief that naval nuclear weapons should be exempted from the physical controls over their use that exists for other nuclear weapons.

In his book *Thinking About National Security*, former Secretary of Defense Harold Brown stated that "The idea of a U.S.–Soviet war confined to the seas is intellectually appealing, especially because the United States has advantages over the Soviet Union in naval forces."[155] The Atlantic Council Working Group on Securing the Seas asserted in their 1979 report that "Nuclear weapons may be employed in a war at sea without being used in any simultaneous land combat."[156] The report further stated that, "It can be argued that the restricted use of nuclear weapons at sea carries neither the degree of moral stigma nor the threat of further escalation that applies to their use against land targets."[157] This sentiment was echoed in a 1982 U.S. Congressional Budget Office study which stated that the "use of nuclear weapons at sea would involve minimal collateral damage; it would, therefore, be a clear-cut tactical use exclusively against military forces."[158]

More recently, commentators have distinguished between the implications of a nuclear war at sea and that on land as a means to justify the Maritime Strategy. According to the official U.S. Navy doctrine on nuclear operations, ". . . in a limited war at sea resulting from attempts to hinder or sever lines of communication, both parties to the conflict might be reluctant to extend the war to the land or use nuclear weapons **except at sea**."[159] In describing the new Navy's nuclear-armed surface-to-air missile, Admiral Lee Baggett, then Director of Naval Warfare, told Congress, "We are talking not about a large yield weapon for the SM-2(N) [Standard Missile-2 (Nuclear)]. We are talking about a Standard Missile nuclear capability [deleted] [with an enhanced radiation warhead]. In either case, the kill mechanism would be against Soviet nuclear weapon [deleted] [and not against land targets]."[160] And according to Admiral Watkins, "Some argue that . . . [destroying Soviet strategic submarines] will lead to immediate escalation, but **escalation solely as a result of actions at sea** seems improbable."[161] Even John Mearsheimer, a critic of the Maritime Strategy, falls into the trap of describing the use of nuclear weapons at sea as being different from use on land. Part of his criticism of the Maritime Strategy is that "limited nuclear attacks" could be mounted by the Soviet Union and that the targets "could include American aircraft carrier battle groups, which are vulnerable, and **could be attacked without wide collateral damage**."[162]

Beliefs about whether the use of naval nuclear weapons would remain limited, and therefore, whether "collateral damage" occurred as a result of eventual escalation (not to mention the fact that naval bases on land would undoubtedly become targets of attack during a "limited" naval

nuclear war), will undoubtedly influence decisions to use nuclear weapons in the first place. Compounding the temptation to use nuclear weapons is what appears to be an implicit assumption that nuclear weapons at sea have *military* roles which exist as augmentations of conventional weapons. This is a sort of "first use" at sea strategy; that is, that deliberate escalation to the use of nuclear weapons would occur if conventional weapons were not successful in destroying prospective targets during a conventional war.

According to Secretary of Defense Caspar Weinberger, "In addition to deterring Soviet first use of similar nuclear weapons at sea, U.S. nuclear anti-air and anti-submarine weapons provide unique capabilities that serve **as a backup for** our conventional systems."[163] "Naval modernization programs emphasize the development of weapons and tactics that allow our forces—once hostilities have been initiated—**to strike first**, from extended ranges."[164]

That Weinberger would see nuclear weapons at sea as a backup for conventional weapons is not surprising since that is how the U.S. Navy often describes them. "One of the major contributions of nuclear weapons to the science of warfare is in the realm of ASW [anti-submarine warfare]," the official U.S. Navy doctrine publication states. "Modern high-performance submarines pose an increasingly difficult target to attack successfully. Nuclear ASW weapons, with their **greatly increased kill radius**, provide an effective means to cope with the threat."[165] According to the former submarine chief of the Navy, Admiral Nils Thunman, "Our intelligence offices tell us that Soviet targets are getting harder, and are not suitable for conventional attack. We develop nuclear weapons only where there is no satisfactory conventional capability."[166]

According to a 1982 U.S. Congressional Budget Office study, "Certainly **the temptation** [for the Soviet Union to use nuclear weapons against a U.S. aircraft carrier] would be great, given the difficulty of defeating a battle group with conventional weapons."[167] Even Senator Sam Nunn, Chairman of the Armed Services Committee, in criticizing forward operations of U.S. aircraft carriers said in Committee hearings that "If the Soviets ever were going to use tactical nuclear weapons, it seems to me that [an aircraft carrier] is such a target that they could not avoid it."[168] "I think the very tactics you are describing will lower the nuclear threshold and make it much more likely that the nuclear threshold will be crossed, because you will have such a huge, lucrative target. It will pose such a treat to them that I think it will be almost irresistible."[169]

If political leaders still decide not to authorize the use of nuclear weapons at sea, in spite of the temptations and the belief that a nuclear war at sea could remain limited, they are faced with an additional problem of not having physical control over the arming of naval nuclear weapons. Unlike other nuclear weapons, U.S. nuclear weapons, both on strategic submarines and aboard non-strategic ships and submarines, are not provided with electromechanical locks which require codes to be provided by higher authority in order to open them. The controls over the use of naval nuclear weapons are by virtue of internal training and indoctrination. As far as can be surmised, the justification for such an exception for naval nuclear weapons is based upon the view that if communications links are severed between political authorities and naval ships and submarines at sea, the flexibility of the naval commander should not be hindered by locks on his nuclear weapons which he does not have the physical ability to remove. Despite some public attention focused on this issue, particularly as it relates to strategic submarines and ability of the submarine officers to decide to use nuclear weapons by themselves, the Navy has remained firm in its rejection of controls, and states that its procedures and indoctrination serve the equivalent purpose to actual locks.

Additionally, in recent years, the advent of a strategic nuclear reserve force—mostly constituting naval forces, and including newly introduced Tomahawk sea-launched cruise missiles—has hardened the Navy's position rejecting external controls. According to official doctrine,

> Since naval forces at sea will be the most likely military forces to survive general nuclear exchange, they will be highly important as command and control centers and as the primary residual organized combat elements capable of conducting the war during the period when other U.S. military forces are being reconstituted. They will conduct sea, air, and amphibious operations against the enemy's residual military capabilities following the nuclear exchange, using remaining nuclear and/or conventional weapons, and assist in forcing a conclusion of hostilities advantageous to the United States.[170]

The Navy's view is that even if the U.S. political leaders are killed in "a general nuclear exchange," they want to have the ability to use nuclear weapons autonomously, or in response to orders given by military commanders who might survive a war where political leaders were killed. The conclusion has to be, unfortunately, that the U.S. Navy wants to preserve its ability to fire nuclear weapons on its own authority. Given the inherent command and control problems of shore to submarine communications, and assuming that transmitters on land would be targets in a general nuclear war, the use of strategic naval nuclear reserves forces or Tomahawk missiles for protracted warfighting would be left to local commanders in any case. Retargeting instructions and orders to fire wouldn't be coming from anywhere.

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If the temptation to use nuclear weapons existed during a naval battle because of a belief that nuclear weapons could accomplish what conventional weapons could not, a political decision to use them would be compounded by the belief that, unlike land combat, the use of nuclear weapons at sea would create little collateral damage, and that a nuclear war at sea could be limited. This is the kind of wishful thinking that permeates current naval strategy and precipitates the development of provocative and destabilizing operations and plans.

In the face of all the risks, the Navy seems to think that the Maritime Strategy can be implemented anyhow, and that escalation and the use of nuclear weapons just wouldn't occur. In the words of Admiral Watkins, "we are not talking about ships that can be taken out with nuclear weapons in some kind of barrage attack. All the studies have shown this thinking to be unsound. The last administration used to talk about them being taken out with nuclear weaponry. It cannot be done, even statistically."[171] Proponents of the Maritime Strategy are fond of citing a Rand Corporation study of Soviet policy for use of nuclear weapons at sea that found "no literature evidence to support the view that release authority for tactical nuclear weapons is a Navy matter nor that a tactical nuclear war at sea alone would be initiated by the Soviets. The decision to initiate tactical nuclear war at sea appears neither a Navy decision nor one that will hinge on Navy matters."[172] This may be true, but the West's maritime strategy is not limited to naval objectives alone, and therefore, any war at sea would intrinsically involve broader consideration about war objectives and land operations.

All of the factors which might threaten the outbreak of war at sea and contribute to the way that war was fought—a global infrastructure and global operations, the widespread presence of nuclear weapons, provocative peacetime operations, destabilizing crisis responses and wartime strategies, and distorted views about naval nuclear weapons—must be integrated to understand the full implications of the current nuclear arms race at sea. With all the attention focused on arms control, crisis stability and crisis management, and accidental and inadvertent nuclear war, perspectives about the role of naval forces in western defense, their peacetime naval operations and the provocative naval strategies that they operate under should not proceed without complete revision.

V. Denuclearization and Confidence Building Measures

The naval arms race is an area ripe for arms control. Controls were placed on ballistic missile submarines and their weapons in the SALT Treaties, but this was only because strategic nuclear forces happened to be based at sea. They have had no effect on the burgeoning non-strategic naval arms race. The agreements did not forestall the 2,000 warhead increase in strategic submarine forces since 1979, or the move towards counterforce capabilities at sea. The United States and the Soviet Union did conclude an agreement on preventing incidents at sea during the detente era. The agreement, unfortunately, has had little influence over curtailing provocative naval maneuvers.

Today, there are no constraints on naval nuclear weapons or operations, no restrictions on the carriage of nuclear weapons or the operations of nuclear propulsion reactors, no prohibited zones for surveillance, steaming or exercises, no outlawed maneuvers or harassment techniques, no geographic restraints, and no proscribed strategies or doctrines.

Any controls on naval armaments or operations have been rejected by the U.S. government. And there seems to have been little serious thought given to the subject. In response to a Freedom of Information Act request for any studies on the control of non-strategic naval nuclear forces, the Navy responded this year that "inquiry of the Office of the Chief of Naval Operations has failed to disclose any studies responsive to your request."[173] But it is not just "technical arms control"—limits on the numbers and types of nuclear weapons—which is rejected. The U.S. Navy (and the other nuclear powers) have a strong aversion to any prohibitions on naval operations. In fact, they have made the "right" to conduct operations on the high seas and in territorial waters a prerequisite for their support for any kind of confidence building measures (even on land) or for the existence of nuclear free zones covering ocean areas.

Arms control agreements are of two types. First, those which seek to check an opponent's capabilities or create political advantage (traditional bilateral technical agreements); and second, those which seek to improve the international climate, reduce the dangers of conflict or remove the possibilities of crisis instability and escalation. When it comes to the nuclear arms race at sea, the second type of arms control measures are of primary importance, since the routine operations of the naval powers threaten peace and order on a regular basis.

Why is naval arms control needed? There is, as this report has demonstrated, a naval arms race. All five nuclear powers have naval nuclear weapons—between one-quarter and one-third of all the nuclear weapons in the world are in the possession of the navies. France and the United Kingdom base the majority of their nuclear arsenals at sea. The U.S. and Soviet navies are expanding and acquiring significant new naval capabilities from counterforce strategic missiles to real time global navigation, surveillance, and communications networks. The United States is deploying new aircraft carriers, a new generation of carrier fighter aircraft, and new surface combatants with greater offensive and defensive power. The Soviet Union has recently deployed a new generation of attack submarines and is completing its first large aircraft carrier. The United States has deployed, and the Soviet Union is about to deploy long-range, highly accurate, land attack sea-launched cruise missiles.

New maritime capabilities have been combined with an unprecedented naval operating tempo on the part of the U.S. and Soviet navies during peacetime. The high operating tempo is accompanied by a new global aggressiveness in naval maneuvers. The United States is operating major surface warships and attack submarines in waters close to the Soviet Union for the first time. The superpowers have significantly increased their presence in the unregulated Arctic.

Soviet naval strategy, for its part, is largely defensive, but this has not stopped the Soviets from conducting their own operations which mirror many of the new U.S. practices. Soviet submarines are being deployed in Arctic waters with greater frequency, they are found lurking off of

the coasts of the United States, the United Kingdom and other western allies, and have been caught or suspected inside the territorial waters of numerous countries. The Soviets have a virtually identical wartime strategic mission to that of the United States of seeking to destroy strategic submarines of the west. The Soviets also regularly conduct exercises which practice surges of attack and ballistic missile submarines out of home ports.[174]

Unilateralism and Autonomy of the Naval Establishment

By nature, naval forces are more independent of other military services, and by tradition naval officers have a wider global frame of reference and greater autonomy. Ironically, a more pluralistic world scene, with increasing involvement of independent and non-aligned countries, greater dissent in international politics, and a growing aversion to nuclear weapons, contributes to a view in the Navy that sea-based forces are growing in importance. This in turn heightens the sensitivity towards any controls on the freedom of naval forces to operate.

If anything, rather than trying to accommodate new international concerns and attempts to constrain the naval arms race, the U.S. Navy is arguing more strongly than ever that it is an ideal agent for unilateralism. In 1976, Secretary of Defense Donald H. Rumsfeld warned Congress that "Uncertainties concerning our future access to allied bases may cause us to place increasing reliance on sea-based forces in many contingencies."[175] Today, according to the Chief of Naval Operations, Admiral Trost, the Navy "operates in international waters, where no government's permission to base and fly aircraft is required and whence U.S. ships, in a perfectly legal way, can signal menace to any potential troublemaker."[176] A top Navy legal officer explained the situation as follows: "Since naval forces operate in an international medium—the high seas—they can be moved into an area without the necessity of obtaining overflight or diplomatic clearance."[177]

The Navy also believes that it has an advantage in its ability to conduct sensitive naval operations without the constraints of land-based politics. Referring to the new nuclear-armed Tomahawk sea-launched cruise missile, Admiral Lee Baggett, then Director of Naval Warfare, and now Atlantic Fleet commander, wrote in May 1984 that "These mobile nuclear weapons are not based on Allied or neutral territory. Our Tomahawk equipped ships can be advanced or withdrawn without inciting hostile demonstrations. . . ."[178] Naval supporters also point out that during the Vietnam War, over 400 aircraft were lost and over 4,000 were damaged from ground attack on U.S. Air Force bases, while not one sea-based aircraft or aircraft carrier was lost. In a world where land bases are increasingly constrained politically, aircraft carriers are the obvious solution, they conclude.[179] Navy spokesmen point out that if U.S. bases in Spain, Greece or the Philippines were restricted, aircraft carriers would be the only way of providing a military presence in certain areas. But one has to wonder what security interests are served when alliance governments increasingly restrict land bases, overflights, and even port calls, and naval forces are used to circumvent the concerns of local countries for regional security or demilitarization.

Despite the globalization of the naval arms race, and the greater degree of alliance integration, allied governments wield very little influence over the nature of maritime strategy. In fact, their integration serves mostly to free up U.S. military forces from basic defensive operations (around the Greenland-U.K. gap or in the western Pacific) so that they can engage in more aggressive forward operations against the Soviet Navy and the Soviet mainland. The allies, in effect, provide a form of protective support on the flanks and in the rear. These forces contribute to a forward strategy concentrating on the north by conducting operations further to the south. According to John Lehman, the U.S. Navy counts on the Royal Navy, for instance, "to supply 70 percent of the ready NATO forces **for protection**

of shipping in the eastern Atlantic and English Channel."[180] Allied diesel submarines are used "in concert with our war plans for specific missions. They cover certain parts of the ocean that are close to their homeports and **free up our submarines to do the more demanding missions** in the forward areas."[181] Rear support for the aggressive operations of the Maritime Strategy in the Pacific is provided by Japan as well. The extension of Japan's ability and willingness to conduct operations to defend sea lines of communications out to 1,000 miles from the Japanese mainland is a capability and role which is essentially identical to the role of non-U.S. NATO allies who provide rear support for forward operations in the Atlantic.

Operating without the direct interference of foreign governments, and used to an environment which is out of the eye of the media and public, the U.S. Navy is naturally more secretive than the other military services. This is particularly so when it comes to naval nuclear weapons. One of the better known secrecy policies of the U.S. government is that of "neither confirming nor denying" the presence of nuclear weapons on naval vessels. The policy has already led to a break in defense relations with a close U.S. ally. Whether the Navy's strong arms tactics against New Zealand will be ultimately successful in "deterring" other governments from pursuing similar policies is still unclear. Numerous other close allies of the United States are strengthening their non-nuclear policies and challenging the U.S. Navy's secrecy. Iceland, for instance, both a NATO member and host to U.S. Navy bases, has made its anti-nuclear prohibitions comprehensive. Foreign Minister Geir Hallgrimmson in response to a question in the Althing says that "as Iceland excludes nuclear arms generally from its sovereign area, it is a natural conclusion that nuclear-armed ships are barred from entering ports or even sailing in the country's territorial waters."[182]

If Iceland is an example of where U.S. pressure seems to have had no influence over changing the government's position, China, on the other hand, seems to have given in on its strict prohibitions on foreign nuclear forces and ships in its territory. A proposal for a U.S. naval ship visit to China had broken down in May 1985 over the issue of the presence of nuclear weapons aboard U.S. ships. Yet in October 1986, during the visit of Secretary of Defense Caspar Weinberger to China, the United States and China worked out some sort of agreement which would allow the U.S. Navy to visit Chinese ports while not violating the neither confirm nor deny policy.[183] Just what the agreement was, whether it was a compromise on the U.S. side or the Chinese side, and why a similar compromise could not be worked out with New Zealand, is unclear. Nonetheless, in November 1986, three U.S. Navy ships, a cruiser, destroyer and a frigate, visited Qingdao, China, the first such visit since 1949.

In October 1985, Sweden took the matter of the neither confirm nor deny policy up at the United Nations General Assembly in connection with proposals on naval arms control. The Swedish Disarmament Ambassador stated that the neither confirm nor deny policy "creates legitimate concern in many, countries, especially when warships of nuclear powers in accordance with international law make use of their right to innocent passage through these countries' territorial waters or call at their harbours. The policy neither to confirm nor to deny does not build confidence between states. Quite the opposite. It is in fact a confidence-blocking practice that should be abandoned."[184]

The U.S. Navy's policy of strict secrecy assumes that the interests of secrecy vis a vis nuclear weapons is more important than the aspirations of allied governments and people. The policy constantly creates friction with numerous foreign governments (e.g., Denmark, Japan, New Zealand, the South Pacific nations, Iceland, Spain). The confrontations are sure to grow in the future and will continue to erode goodwill towards the United States throughout the world, and will ultimately undermine U.S. security interests.

Since a navy is only an extension of a government, it should not be an autonomous entity

able to influence international relations by itself. Yet one of the fundamental U.S. national security objectives, according to Secretary of Defense Weinberger is to "ensure U.S. access to critical resources, markets, the oceans, and space."[185] This is interpreted as requiring that the Navy enforces its "inherent right" to navigate in territorial waters through the conduct of highly provocative operations (e.g., the Gulf of Sirte (Sidra) operations which resulted in hostilities against Libya or operations in the Black Sea where on 13 March 1986, the U.S. Navy sent two warships within six miles of the Soviet coast south of Crimea).[186] It is no longer in Western defense interests for the United States to just recant a pat excuse that the Navy is merely exercising its right of "innocent passage." There are certainly adequate international forums for resolving conflicts which arise when states attempt to aggrandize greater amounts of territorial waters. Pursuing unilateral military solutions either further undermines the rule of law, or threatens the outbreak of conflict.

Arms Control and Law of the Sea

Navies pursue unilateralist policies and reject controls on their operations and weaponry partly because little connection is made between arms control and the emerging international law of the sea. In the nuclear era, there have been only a few examples of naval arms control agreements: The bilateral U.S.–Soviet limitations on ballistic missiles submarines and missiles in SALT I (1972) and SALT II (1979), and the Incidents at Sea agreement (1972).[187] In addition, there are five multilateral agreements which affect the seas:

- The 1959 Antarctic Treaty, which provides for the demilitarization of "the area south of 60 degrees South Latitude, including all ice shelves."
- The 1963 Partial Test Ban Treaty, which prohibits the carrying out by any Party nuclear weapons explosions in or beyond the atmosphere or under water, including territorial waters or high seas.
- The 1967 Treaty of Tlatelolco, which established a Latin American nuclear-weapon free zone, including a large portion of the Atlantic and Pacific Oceans and the Caribbean.[188]
- The 1971 Sea-Bed Treaty, which prohibits the emplacing of any nuclear weapons or weapons of mass destruction on the sea-bed and the ocean floor beyond the outer limit of a certain sea-bed zone.
- The 1985 Treaty of Rarotonga, which established a South Pacific nuclear-free zone from the border of the Latin American zone in the east to the west coast of Australia and from the Antarctic area in the south to roughly the equator in the north.

The primary thrust of all these agreements has been against nuclear weapons and not naval arms or activities as such. In addition, every one of the multilateral agreements specifically excludes restrictions on naval operations. The reason is that customary international law of the seas confers the right of "innocent passage" on naval vessels in territorial waters and the high seas, a "right" which the navies would have to forego in order to achieve arms control restrictions.

Before declaring this seeming loophole in the international law of the seas a total impediment to arms control, however, it should be pointed out that while the nuclear navies do not largely recognize or follow the conventions and treaties which make up the body of law restricting naval affairs, they could form the basis for naval arms control if the will existed to look at broader security concerns and create a counter to naval autonomy.

As far back as the 1958 Geneva Convention of the High Seas, the freedom of navigation and overflight required that such rights be exercised "with reasonable regard to the interests of other states in their exercise of the freedom of the high seas."[189] The December 1982 United Nations Convention on the Law of the Sea (UNCLOS) includes the right of innocent passage for ships in the territorial seas and of transit passage in international straits. Innocent passage, according to paragraph 1, article 19 of the Convention,

is defined as passage which is not "prejudicial to the peace, good order or security of the coastal state." In addition, article 23 of the UNCLOS provides that:

> Foreign nuclear-powered ships and ships carrying nuclear or other inherently dangerous or noxious substances shall, when exercising the right of innocent passage through the territorial sea, carry documents and observe special precautionary measures established for such ships by international agreements.

This provision regarding innocent passage of nuclear-powered ships and those carrying radioactive and other inherently dangerous or noxious substances seems to also apply to ships carrying nuclear weapons. Thus the existence of weapons on board vessels, including nuclear weapons, could be said to violate the Conventions if: one, they impede the fishing or shipping activities of other states; or two, they create marine pollution resulting from radioactive or hazardous substances.[190]

In the aftermath of the nuclear accident at Chernobyl and with the explosion of an SS-N-6 ballistic missile aboard a Soviet Yankee I class nuclear-powered strategic submarine on 3 October 1986 in the Atlantic Ocean, an argument can increasingly be made that naval nuclear operations threaten commerce and the environment and thus violate the Conventions relating to innocent and transit passage.

The U.S. Navy currently operates 177 nuclear reactors in 149 vessels, including ballistic missile submarines, attack submarines, aircraft carriers, cruisers, and a single deep research vessel.[191] The Soviet Union operates another 200 reactors in its strategic, cruise missile, and attack submarines. Britain, France and China operate some 40 reactors on their submarines. The Soviet record for operations with nuclear propulsion is well-known and scandalous. According to Admiral John Butts, former Director of Naval Intelligence, "Since the early 1950s, the Soviet submarine force has experienced numerous, serious submarine casualties—sinkings, propulsion failures, fires and navigational accidents."[192] According to Admiral Watkins, "In the last ten years, they have had over 200 submarine accidents, some of which have been very serious."[193] Whether the United States or the other nuclear powers have similar records is still a matter of speculation.

The possibility of an accident aboard a nuclear-powered vessel is not the only concern. Nuclear reactors are now routinely involved in hostilities where the possibility of their destruction exists. In the Falklands/Malvinas War, the United Kingdom operated numerous nuclear-powered attack submarines. U.S. nuclear-powered attack submarines were present in hostilities in Libya and Grenada as well. The routine presence of nuclear weapons aboard naval vessels is also a danger. According to many press reports, the British also deployed nuclear weapons to the South Atlantic. Two British ships which were sunk—the Sheffield and Coventry—were reported to be carrying nuclear depth bombs. The British government position, however, is "to refuse to confirm or deny rumours about the carriage of nuclear weapons on any of our ships or aircraft."[194]

Without an invitation from a coastal state, the presence of naval vessels in the territorial waters of another state is limited to innocent passage. The presence must conform to international law governing innocent passage, in that it must be *passage* ("navigation through the territorial sea for the purpose either of traversing that sea without entering territorial waters, or of proceeding to internal waters, or of making for the high seas from internal waters"), and it must be *innocent* ("innocent so long as it is not prejudicial to the peace, good order or security of the coastal state").[195] Article 39 of the UNCLOS requires, in addition, that ships and aircraft exercising the right of transit passage "refrain from any threat or use of force against the sovereignty, territorial integrity or political independence of States bordering straits. . . ."[196]

These various restrictions could form the basis for international constraints on potentially dangerous naval operations and on the presence

of nuclear propulsion and weapons. Yet these principles have been used by the naval powers to reaffirm a presumed right to conduct unlimited military operations at sea. Thus the Antarctic Treaty, for instance, in Article VI, does not restrict naval operations on the high seas within its demilitarized zone. The new Rarotonga Treaty, in Article 2, does not limit any existing "freedom of the seas."

Perhaps the best example of the way control of naval arms and operations has been avoided is in the way transit is handled in the South American nuclear free zone, the Treaty of Tlatelolco.[197] The United States and France, in pledging to respect the status of the Treaty by acceding to Protocol II filed reservations to the extension of arms control measures into high seas areas referring to "recognized international law." On 7 February 1967, the Preparatory Commission for the Denuclearization of Latin America placed on record the reason why any mention of the transit of nuclear weapons through the zone was omitted:

> The Commission deems it unnecessary to include the term 'transit' in Article 1, concerning 'Obligations,' for the following reasons:
>
> 1. If the carrier is one of the Contracting Parties, transport is covered by the prohibitions expressedly laid down in the remaining provisions of article 1 and there is no need to mention it expressly, since the article prohibits 'any form of possession of any nuclear weapon, directly or indirectly, by the Parties themselves, by anyone on their behalf or in any other way.'
>
> 2. If the carrier is a State not a Party to the Treaty, transport is identical with 'transit' which, in the absence of any provision in the Treaty, must be understood to be governed by the principles and rules of international law; according to these principles and rules it is for the territorial State, in the free exercise of its sovereignty, to grant or deny permission for such transit in each individual case, upon application by the State interested in effecting the transit, unless some other arrangement has been reached in a treaty between the states.

Prospects for Naval Arms Control

Naval autonomy and unilateralism, and the refusal to accept any legal constraints on naval operations are two prime contributants to the current naval arms race. The result has been uncontrolled modernization of naval forces, increasing nuclearization of the oceans, and provocative and potentially destabilizing operations and strategies. One additional problem is that these conditions have also created an environment which encourages the increased movement of nuclear weapons to sea.

First, sea-based nuclear weapons are seen by some as a way to avoid the political controversy and constraints on the operations and use of land-based nuclear weapon. Soon after it became clear that Pershing II and ground-launched cruise missiles might be removed from Europe as part of an arms control agreement, many defense analysts were arguing to shift the nuclear arsenal to sea.[198]

Second, sea-based nuclear weapons are developed to affect land warfare (sea-launched cruise missiles and aircraft carriers) but are not allowed to become the subject of alliance controls or consultation. The Carter Administration, for instance, discouraged critics of the NATO 1979 modernization decision from viewing the Tomahawk sea-launched cruise missile as an alternative to land-based Euromissiles. At the time of the December 1979 NATO modernization decision, according to former Defense Department official Walter B. Slocombe, "[W]e were concerned that if we . . . pushed ahead [with Tomahawk deployment], European critics would say, Why don't we do SLCMs instead of the agreed deployment?' "[199] Finally, the pursuit of strategic defenses by both sides may create an incentive for sea-based systems to be pursued more aggressively in the future because their mobility and stealth would facilitate circumvention of defenses designed to shoot down ballistic missiles.

According to one naval observer, "the relative lack of interest in naval forces with regard to arms control is hardly due to lack of appreciation

for their importance but rather the fact that the legal regime at sea was not until recently defined in a clear way."[200] But the legal and international environment is changing. Soon after signing the UNCLOS, the United Nations General Assembly undertook an expert study on the naval arms race. Naval arms control is now an increasingly interesting issue within multilateral disarmament bodies. In addition, since 1980 the Soviet Union has made consistent public proposals for naval restraints. At the U.N. Second Special Session on Disarmament in 1982, the Soviet Union made a number of recommendations dealing with naval limitations, including "removal of missile submarines from extensive areas of combat patrol, and confinement of their cruises within agreed limits," limitation of new submarine missiles, renunciation of deployment of sea-based long-range cruise missiles, and regional measures in the Mediterranean and the Persian Gulf.[201] Foreign Minister Andrei A. Gromyko wrote to the U.N. Secretary General in April 1984 saying that the Soviet Union was ready for multilateral talks on naval disarmament.[202] In his Vladivostok speech in July 1986 and during the Soviet-Indian summit in November 1986, Gorbachev stated the Soviet Union's readiness to conduct negotiations on confidence building measures in the Pacific and Indian Oceans. Proposals were put forward on notification of transfers and maneuvers of naval forces.[203] On the Pacific, Gorbachev proposed ". . . to start talks on the reduction of the activity of naval forces in the Pacific," emphasizing nuclear-armed ships. The response from the United States and its nuclear allies has been consistently negative. Whether the Soviets are serious or not is unknown. The West's reluctance even to take the issue seriously at this point is a major impediment to progress.

The first step in naval arms control should be control of the peacetime operations of the nuclear navies and the routine carriage of nuclear weapons on naval vessels. One might suppose that given the level of secrecy in the Navy, and the inherent difficulty of identifying nuclear capabilities in naval vessels, that the U.S. Navy would play to the hilt the "verification" impediments to naval arms control. Quite the contrary. "The United States remains ready to discuss with the Soviet Union the subject of sea-launched cruise missiles beginning with the issue of effective verification procedures for possible limitations," Admiral Baggett wrote to Congress in May 1984, a month prior to the deployment of the missile.[204] "[W]e do not see any more problem with cruise missiles as compared to ballistic missiles, in determining if they are nuclear-capable, than with dual capable aircraft," John Lehman stated before Congress in 1985.[205] "To verify numbers of missiles," Lehman went on to say, "you are going to have to agree to some kind of intrusive, on-site inspection for all of our ships, negotiated on a reciprocal basis, as part of any arms control agreement. . . . We in the Navy are perfectly prepared to accept intrusive, on-site inspections on a reciprocal basis with the Soviets."[206] Verification is not used as a contrived excuse (as it often is in other areas) for the lack of naval arms control. The policy of not accepting any restrictions on naval operations is so unwavering that it isn't necessary.

Still, the priority for international security must be to eliminate those weapons, practices, and operations which may be provocative and destabilizing, and which contribute to the unintentional outbreak of conflict or the escalation of a crisis. This arms control process would necessitate a finer understanding of the relationship between maritime strategies and confidence building between the superpowers. How does a maritime strategy, which merely encourages the Soviet Union to increase its military capabilities and intensify its defense efforts, lead to better conditions for the United States and allied security in the long run? What U.S. or western security interests will be served when the Soviet Union develops a large-deck aircraft carrier capability, or an arsenal of long-range sea-launched cruise missiles? And how will U.S. relations with allies and potential friends in the Third World be enhanced with a policy of ignoring their concerns about the nuclear arms race?

There is certainly no lack of potential controls which could be looked at to pursue either national arms control interests or multilateral interests in reducing the risks of confrontation:

- Regulation of dangerous maneuvers and restraints on different forms of harassment at sea.
- Special codes of conduct for submarines, other submerged activities, and anti-submarine warfare forces.
- Banning of the deployment of certain naval nuclear weapons (such as long-range sea-launched cruise missiles or nuclear-capable attack aircraft on aircraft carriers).
- Prohibitions of carrying nuclear weapons onboard naval vessels except onboard specifically recognized units.
- Restrictions on the freedom of navigation of ships and submarines carrying nuclear weapons and nuclear materials.
- Pre-notification of military exercises in sea areas.
- Restrictions on navigating naval forces in areas remote from home ports or close to coasts of other states.
- Restrictions on access to certain regions for certain types of units.
- Strengthening nuclear free zones, such as giving full effect to the Antarctic Treaty by including the seas within its area of application.
- Prohibitions on the establishment of new military bases.
- Preservation of the difficulty in converting conventional weapons to nuclear weapons through the use of new technologies such as "insertable nuclear components."

Some form of naval "arms control" is needed. But what can or should be controlled? Nuclear weapons? Support systems? In the end, it may be an illusion to control either weapons or support systems without restricting military operations and eliminating the destabilizing features of the Maritime Strategy itself.

Controlling non-strategic naval nuclear weaponry is certainly one option. The superpower navies have some 6,600 non-strategic naval nuclear weapons of a bewildering variety: sea-and land-based bombs and depth bombs, torpedoes, anti-submarine rockets, surface-to-air missiles, and air- and sea-launched cruise missiles. Yet there is no history of arms control with these weapons and little if any thought is being given to how limits could be achieved. More important, numerical controls on seaborne nuclear weapons would not impinge upon highly mobile naval *strategies* which, although made more dangerous in the presence of nuclear weapons, are themselves potentially destabilizing.

A second option is controlling the "nuclear infrastructure," that is, those systems such as communications and command facilities, surveillance and warning structures, and logistic support networks. The infrastructure directly supports maritime operations in the North Pacific and is increasingly important for the success of certain military operations. Since the infrastructure plays an increasingly important role in the regional military strategies of both the United States and the Soviet Union, controlling it may have some impact on the development or implementation of provocative or destabilizing strategies. Controlling certain military capabilities (such as communications and support facilities, electronic warfare and anti-submarine warfare systems, etc.) could increase regional security during peacetime, avoid crisis instability, and restrict certain aggressive military strategies.

VI. Conclusion

In the 1980s, the arms race at sea has received some of the attention previously reserved for the arms race on land. The attention is appropriate since it is at sea that the arms race is particularly provocative and destabilizing. Just as in the early part of the Reagan Administration when loose talk of winning a nuclear war and strategic superiority alarmed the public, so the degree of naval belligerence has begun to have its effect. Consequently, there has been a concerted effort on the part of western naval spokesmen to downplay the controversial aspects of the Maritime Strategy. Naval maneuvers and provocative operations seemed to have also reached their peak in 1984–1985 and have since declined. A new Secretary of the U.S Navy and a new Chief of Naval Operations have been more circumspect in their discussions of the Maritime Strategy, and the general mood in the U.S. Congress is towards budgetary restraints which will threaten the maintenance of a 600-ship Navy once it is established.

U.S. Naval Intelligence also reports a slowdown in Soviet naval construction starting in 1984.[207] In addition, according to the Office of Naval Intelligence: ". . . Soviet naval operations worldwide declined significantly in 1986 compared to the operational tempo during 1983–1985 . . . The Soviet Navy conducted its major exercises in waters close to the Soviet mainland—also a departure from exercises of recent years, which have demonstrated the Navy's growing capabilities to expand its combat operating areas in the Atlantic and Pacific."[208] The Soviets have significantly reduced their naval operations in the Indian Ocean in the last two years as well.

Whether these developments spell the end of a belligerent era in the naval arms race or a merely temporary fallback is not known. Still, for all the attention focused on the Maritime Strategy in the media and the academic press, none of the components of the strategy have been changed in actual war plans. U.S. policy still includes:

- More aggressive operations close to the Soviet Union in peacetime,
- Increased use of land-based aircraft and facilities in support of offensive maritime operations,[209]
- Crisis surge deployments of attack and ballistic missile submarines from home ports, with short-notice practice sorties during peacetime exercises,
- Plans for early movement of forces during the "pre-conflict" period, including deployment of nuclear-powered attack submarines deep in the "sea control areas" and "home waters" of the Soviet Union,
- More aggressive electronic warfare operations intended to "confuse, deceive, and disrupt" Soviet military decision makers, including large scale deception operations by U.S. naval forces during peacetime exercises,
- Wartime strategies to strike naval bases inside the Soviet Union (particularly in the northern Atlantic and Pacific) as part of a conventional naval offensive,
- A declaratory strategy to intentionally destroy Soviet strategic nuclear ballistic missile submarines as part of a conventional naval operation and to provide war termination leverage, and
- Plans for the "first use" of nuclear weapons at sea, prior to the Soviet use of nuclear weapons.

The biggest danger is that such activity and contingency plans continue on in secret, with an appreciation of the many dangers only to emerge in some future crisis or confrontation, when controlling what will then be routine will be too late.

Figure 1 **Nuclear Weapons at Sea (1987)**

	U.S.	*Soviet*	*U.K.*	*France*	*China*	*Total*
Strategic Missile Warheads	5632	2902	64	256	24	8878
Non-strategic Warheads						
Cruise missiles	125	788	0	0	0	913
Aircraft bombs	1530	0	50	36	130	1746
Anti-submarine weapons	1760	1278	140	0	0	3178
Anti-air weapons	300	260	0	0	0	560
Naval artillery	0	100	0	0	0	100
Coastal missiles	0	100	0	0	0	100
Subtotal	3715	2526	190	36	130	6597
Total	9347	5428	254	292	154	15475

Figure 2 Nuclear-Capable Ships, Submarines and Aircraft (1987)

	U.S.	*USSR*	*U.K.*	*France*	*China*	*Total*
Submarines						
Ballistic missile	36	74	4	6	2	122
Cruise missile	0	62	0	0	0	62
Attack	51	202	0	0	0	253
Subtotal	87	338	4	6	2	437
Surface Ships						
Aircraft carriers	19*	5	3	2	0	29
Battleships	3	0	0	0	0	3
Cruisers	36	39	0	0	0	75
Destroyers	68	68	12	0	0	148
Frigates	65	118	11	0	0	194
Patrol combatants	0	56	0	0	0	56
Subtotal	191	286	26	2	0	505
Total ships	278	624	30	8	2	942
Aircraft						
Attack aircraft	1117	445	48	67	130	1807
Anti-submarine	698	400	167	0	0	1265
Subtotal	1815	845	215	67	130	3072
Total nuclear delivery systems	2093	1469	245	75	132	4014

Includes ships and submarines which are used for testing but are not thought to deliver nuclear weapons.

*Includes 14 aircaft carriers and five amphibious assault ships (LHAs) with helicopters and vertical take-off aircraft.

Figure 3 The Naval Arms Race

Number of Countries With	*1950*	*1960*	*1970*	*1980*	*1990*
Navy	45	59	82	121	128
Submarines	20	29	34	42	47
Nuclear-powered submarines	0	2	4	5	5
Aircraft Carriers (including V/STOL ships)	8	10	12	13	14
Ocean-going surface warships	26	41	44	45	45
Nuclear-powered surface ships	0	1	1	2	3
Amphibious forces	14	26	44	68	80
Anti-ship guided missiles	0	1	10	50	69
Surface warships with anti-submarine helicopters	0	1	4	21	39

Source: *Jane's Fighting Ships* (New York: McGraw Hill), various years: 1949–1950, 1959–1960, 1969–1970, 1979–1980, 1985–1986.

NOTES

1. U.S. Congress, House Armed Services Committee, FY 1987 Seapower and Strategic and Critical Materials Subcommittee, Hearings p. 96 (hereafter referred to as HASC, FY 1987 . . .).

2. The U.S. Navy had 555 commissioned combat ships on January 1, 1987, up from a force level of 479 in 1980. The peak in ship deliveries will occur in 1989 when 32 ships are delivered. The next year 17 ships will be delivered, and in 1991, 30 will be delivered. Then, according to the current shipbuilding plan, the number of ships to be delivered will decline, 22 in 1992, 14 in 1993, 7 in 1994, 9 in 1995, and 3 in 1996. The Reagan Administration maintained growth towards the 600-ship Navy in its early years by canceling plans to retire DDG-2 and DDG-37 class destroyers, and FF-1027 and FF-1040 class frigates early. They also reactivated the Iowa class battleships and canceled the plans to retire the carriers Midway and Coral Sea, and extended the service life of one TAK cargo ship and five ASR submarine rescue ships into the mid-nineties; see Statement of Vice Admiral William H. Rowden, U.S. Navy, Commander, Naval Sea Systems Command before the Seapower Subcommittee of the House Armed Services Committee on Shipbuilding and Conversion, 5 March 1987, p. 6.

3. HASC, FY 1987 Seapower and Strategic and Critical Materials Subcommittee, p. 17. This included two Trident submarines, three Los Angeles class attack submarines, two Ticonderoga class guided missile cruisers, five Oliver Hazard Perry frigates and the lead ship of the Landing Ship Dock (LSD-41) class, USS Whidbey Island. The aircraft carrier USS Forrestal (CV-59) completed its service life extension during the year.

4. John F. Lehman, "The 600–Ship Navy," *Proceedings*, January 1986 (Special Supplement), p. 32 (hereafter referred to as John F. Lehman, op. cit., . . .).

5. Sweden, Ministry of Defence, "Countering the Submarine Threat: Submarine Violations and Swedish Security Policy," Report by the Submarine Defence Commission, 1983.

6. In March-April 1983, the U.S. Navy would operate three aircraft carriers in the North Pacific near the Aleutians Islands during "Fleet Ex 83," an even larger exercise.

7. U.S. Congress, House Appropriations Committee, Department of Defense Appropriations for FY 1984, Part 2, Hearings, p. 454 (hereafter referred to as HAC, FY 1984 DOD, Part 2 . . .).

8. U.S. Congress, Senate Armed Services Committee, FY 1984 Department of Defense, Part 2, p. 1008 (hereafter referred to as SASC, FY 1984 DOD, Part 2 . . .); Statement of Rear Admiral John L. Butts, U.S. Navy, Director of Naval Intelligence, before the Subcommittee on Seapower and Force Projection of the Senate Armed Services Committee on the Naval Threat, March 1983.

9. HASC, FY 1984 DOD, Part 3, pp. 111–112.

10. HAC, FY 1986 DOD, Part 2, p. 648.

11. *Ibid.*, p. 293.

12. "The Soviet Navy in 1985," *Proceedings*, May 1986.

13. HAC, FY 1987 DOD, Part 1, p. 293; and Statement of Vice Admiral James A. Lyons, Jr., Deputy Chief of Naval Operations for Plans, Policy and Operations before the Seapower and Force Projection Subcommittee of the Senate Armed Services Committee on The U.S. Navy's Global Commitments, 28 February 1985, p. 18.

14. John F. Lehman, op. cit., p. 36.

15. SASC, FY 1983 DOD, Part 2, p. 1059.

16. SASC, FY 1985 DOD, Part 8, p. 3854.

17. Linton F. Brooks, "Naval Power and National Security: The Case for the Maritime Strategy," *International Security*, Fall 1986, p. 66 (hereafter cited as Linton F. Brooks, op. cit., . . .).

18. SASC, FY 1985 DOD, Part 8, p. 3862.

19. Report to Congress by Admiral C. A. H. Trost, U.S. Navy, Chief of Naval Operations, on the Posture and Fiscal Year 1988–1989 Budget of the United States Navy, p. 37.

20. In October 1985, Brazil refused permission for the U.S. Navy submarine USS Shark (SSN-591) to dock at the port of Santos.

21. Although China states that it does not allow nuclear-armed ships to visit its ports, two British warships visited from July 11–15 without confirming or denying the presence of nuclear weapons.

22. Egypt theoretically restricts the passage of nuclear powered and armed vessels through the Suez Canal as a danger to navigation, but in spite of this policy allowed the nuclear powered and armed aircraft carrier USS Enterprise (CVN-65) to transit from the Indian Ocean to the Mediterranean Sea in April 1986.

23. On 23 June 1986, the North Korean government announced that it would refrain from the testing, production, stockpiling, and introduction of nuclear weapons on its soil and would not permit any foreign military bases, including nuclear bases, established on its territory, nor the passage of foreign nuclear weapons through its land, airspace and territorial waters.

24. The report does not attempt to reproduce information about naval nuclear weapons which are treated in more detail elsewhere. See, e.g., Desmond Ball, "Nuclear War at Sea," *International Security*, Winter 1985–86, pp. 3–31; Volumes I and IV (U.S. and Soviet Nuclear Forces) of the *Nuclear Weapons Databook* (Cambridge, Massachusetts: Ballinger, forthcoming); the annual yearbook of the Stockholm International Peace Research Institute (SIPRI), *World Armaments and Disarmament* (London: University of Oxford Press); and William M. Arkin and Joshua Handler, "Nuclear Warships and Naval Nuclear Weapons: A Complete Inventory," (Neptune Papers #2, forthcoming).

25. Department of Defense, *Soviet Military Power*, 1987, p. 43; see also JCS, *United States Military Posture FY 1988*, p. 49.

26. If each airplane is supplied with a single nuclear bomb, there are a total of 154 Chinese naval nuclear weapons.

27. This does not include three Soviet and one Chinese test submarines which are not thought to be nuclear armed.

28. The Soviet Union has 16 total diesel powered ballistic missile submarines. These include 13 operational submarines and three test submarines. None of the diesel submarines are considered strategic systems—the operational boats deliver 1,400 nautical mile range SS-N-5 missiles and are confined to regional strike roles from their bases in the Baltic Sea and Sea of Japan.

29. See list of Air Force and Navy agreements signed since then in SASC, FY 1984 DOD, Part 4, p. 724.

30. The agreement is called the "Memorandum of Agreement on Joint USN/USAF Efforts to Enhance USAF Contribution to Maritime Operations;" see SASC, FY 1984 DOD, Part 4, pp. 693–697.

31. William M. Arkin, "Arsenals move north," *Bulletin of the Atomic Scientists*, March 1984, pp. 5–6.

32. SASC, FY 1984 DOD, Part 4, p. 696.

33. *Ibid.*, pp. 724–725; SAC, FY 1985 DOD, Part 1, p. 362.

34. Adm. Ronald J. Hays, "Soviet Pacific-based Strike Forces," *Signal*, December 1986, p. 39.

35. Department of the Navy, "Current Naval Intelligence Issues by the Office of Naval Intelligence," March 1987, p. 8 (hereafter cited as "Current Naval Intelligence Issues . . .", op. cit., . . .).

36. *Ibid.*

37. Statement of Admiral Ronald J. Hays, USN, Commander in Chief, U.S. Pacific Command before the Senate Armed Services Committee on U.S. Military Strategy, 27 January 1987, p. 12; see also Statement of Admiral Ronald J. Hays, USN, Commander in Chief, U.S. Pacific Command, before the House Appropriations Defense Subcommittee on FY 88–89 Defense Budget, 21 April 1987, p. 18.

38. These weapons are sometimes called "tactical" nuclear forces or "theater" nuclear forces. The U.S. Navy refers to their non-strategic nuclear weapons as "sea control nuclear forces."

39. HAC, FY 1986 DOD, Part 2, p. 914; see also Statement of Rear Admiral Larry E. Blose, U.S. Navy, Director, Cruise Missiles Project before the Procurement and Military Nuclear Systems Subcommittee of the House Armed Services Committee on Tomahawk weapon system, 12 March 1987, pp. 1, 8.

40. "Current Naval Intelligence Issues," p. 8.

41. JCS, *United States Military Posture FY 1988*, p. 49.

42. Department of Defense, *Soviet Military Power*, 1987, p. 43.

43. DOD, FY 1987 *Annual Report*, p. 228.

44. JCS, *United States Military Posture FY 1988*, p. 37.

45. Although 20 Trident II submarines are commonly referred to, there is no formal commitment to stopping construction of Ohio-class submarines at that point. In fiscal year 1993, the 20th submarine will be requested, and a decision would then have to be made. According to the Department of Defense, the decision would depend on the status of arms control negotiations and other military concerns at that time; Department of Defense, FY 1988 *Annual Report*, p. 168.

46. The Sea Lance will be initially deployed with a conventional torpedo only, although the integration of a nuclear warhead is still a U.S. Navy requirement and a decision will be made on development of a nuclear variant in 1990. Since 1980, the U.S. Navy has been stymied in its plans for non-strategic nuclear modernization; see, e.g., David Morrison, "The Navy's Vanishing Nuclear Arsenal," *National Journal*, 13 September 1986, pp. 2184–2185.

47. A more complete discussion of the oceans and the use they play in military strategy is contained in William M. Arkin and Richard W. Fieldhouse, *Nuclear Battlefields: Global Links in the Arms Race* (Cambridge, MA: Ballinger, 1985); and William M. Arkin, et. al., "Ocean Space and Nuclear Weapons: The Geo-Strategic Environment," in R.B. Byers, ed., *The Denuclearization of the Oceans* (London & Sydney: Croom Helm, 1986).

48. Report to Congress by Admiral C. A. H. Trost, U.S. Navy, Chief of Naval Operations, on the Posture and Fiscal Year 1988–1989 Budget of the United States Navy, p. 41. In 1984 and 1985, U.S. Navy ships visited some 346 ports in 110 countries; U.S. Congress, House Armed Services Committee, The 600–Ship Navy and the Maritime Strategy, Hearings, June 24, September 5, 6, and 10, 1985, p. 18 (hereafter referred to as HASC, The 600–Ship Navy, op. cit., . . .); see also Statement of Vice Admiral James A. Lyons, Jr., Deputy Chief of Naval Operations for Plans, Policy and Operations, in SASC, FY 1986 DOD, Part 6, p. 4418.

49. HAC, FY 1987 DOD, Part 1, p. 337.

50. Department of Defense, FY 1988 *Annual Report*, p. 169.

51. HASC, FY 1987 Research, Development, Test, and Evaluation, p. 346; Secretary Weinberger in his *Annual Report to the Congress Fiscal Year 1987* (p. 177), reports that "In 1985, the Navy conducted 110 major exercises, involving 41 allied countries."

52. HASC, The 600–Ship Navy, op. cit., p. 279.

53. HASC, The 600–Ship Navy, op. cit., p. 36.

54. HAC, FY 1986 DOD, Part 2, p. 643.

55. Statement of Melvyn R. Paisley, Assistant Secretary of the Navy (Research, Engineering and Systems), on the FY 1988/FY 1989 Navy Research, Development, Test and Evaluation Budget, p. 13.

56. The plan followed a joint Maritime Force Requirements Study conducted by the three commands; HAC, FY 1987 DOD, Part 4, p. 432.

57. Transcript of talk by Admiral Henry Mustin, Commander Second Fleet, US Naval Institute, "The Maritime Strategy," 29 May 1986, pp. 20–21.

58. Statement of Admiral Lee Baggett, Jr, USN, Commander in Chief, U.S. Atlantic Command before the House Appropriations Committee Subcommittee on Defense on Military Strategy in the Atlantic, 6 April 1987, p. 4.

59. According to a U.S. Navy Admiral, "The Japanese have purchased eight E-2C's for use by the Japan Air Self-Defense Force (ASDF). Four aircraft have been delivered and four will be delivered during the next year. Most combined U.S./Japanese exercises, particularly those in the Sea of Japan, employ the USS Midway Battle Group as the primary participant. The E-2C will be introduced into the Midway air wing during fiscal year 1985. This parallel introduction of the E-2C is seen by CINCPACFLT as a key to greater integration of USN/JASDF capabilities and signficant improvement in USN/JASDF interoperability"; SASC, FY 1985 DOD, Part 8, p. 4406.

60. *Ibid.*, p. 3869.

61. HASC, The 600–Ship Navy, op. cit., p. 50.

62. Statement of Admiral Lee Baggett, Jr, USN, Commander in Chief, U.S. Atlantic Command before the House Appropriations Committee Subcommittee on Defense on Military Strategy in the Atlantic, 6 April 1987, p. 1.

63. HASC, The 600–Ship Navy, op. cit., p. 298.

64. *Ibid.*

65. Report to Congress by Admiral C. A. H. Trost, U.S. Navy, Chief of Naval Operations, on the Posture and Fiscal Year 1988–1989 Budget of the United States Navy, p. 40.

66. "Individual Human Beings—and the Responsibilities of Leadership: A Valedictory Interview with Navy Secretary John F. Lehman, Jr.," *Seapower*, April 1987.

67. Because the Soviet Union has no naval bases in Mediterranean countries, its ships spend most of their time at sea anchorages: near the Spanish island of Alboran; near the Greek island of Kithira; in the Gulf of Sollum; and in the Gulf of Hamamet, between Tunisia and Sicily.

68. Since 1963, one or two Poseidon (and previously Polaris) missile carrying submarines committed to NATO have been stationed in the Mediterranean Sea.

69. In 1980, the United States modified the NATO commitment to permit one of the two aircraft carrier battle groups present in the Mediterranean Sea to deploy to the Indian Ocean. Instead, the United States began to operate one carrier battle group in the Mediterranean Sea for the full year, and raised the level to two for about four out of twelve months; Statement of Vice Admiral James A. Lyons, Jr., Deputy Chief of Naval Operations for Plans, Policy and Operations before the Seapower and Force Projection Subcommittee of the Senate Armed Services Committee on The U.S. Navy's Global Commitments, 28 February 1985, p. 8.

70. See John J. Mearsheimer, "A Strategic Misstep: The Maritime Strategy and Deterrence in Europe," *International Security*, Fall 1986, footnote 75, p. 33 (hereafter referred to as John J. Mearsheimer, op. cit., . . .).

71. SASC, FY 1986 DOD, Part 8, p. 4412.

72. HAC, FY 1987 DOD, Part 1, p. 332.

73. Statement of Admiral Ronald J. Hays, USN, Commander in Chief, U.S. Pacific Command, before the House Appropriations Defense Subcommittee on FY 88–89 Defense Budget, 21 April 1987, p. 19. The Soviet Navy made its first port call to North Korea with a major naval combatant in late summer 1985.

74. HAC, FY 1988 DOD, Part 2, p. 270.

75. HASC, The 600–Ship Navy, op. cit., p. 29.

76. Tom Burgess, "Icy Island of Adak seen as Navy's key North Pacific outpost," *San Diego Union*, 8 February 1987, p. 8.

77. Glenn F. Bunting, "Navy Warms Up to Idea of Presence in Cold Bering Sea," *Los Angeles Times*, 31 August 1986, p. 3.

78. Statement of Rear Admiral Hugh L. Webster, USN, Director of Logistics and Security Assistance, U.S. Pacific Command before the Readiness, Sustainability and Support Subcommittee of the Senate Armed Services Committee on Readiness and Sustainability, p. 16.

79. HASC, The 600–Ship Navy, op. cit., p. 39.

80. Both in response to a reduction in Soviet operations, and in response to the implementation of a program of "flexible operations," in May 1982, the Navy reduced the steady state Indian Ocean presence to one carrier battle group. The U.S. Navy again revised its aircraft carrier presence in the Indian Ocean in October 1986 from one aircraft carrier year round to an aircraft carrier in the region seven months out of ten.

81. HAC, FY 1986 DOD, Part 2, p. 652.

82. Statement of Admiral Ronald J. Hays, USN, Commander in Chief, U.S. Pacific Command before the Senate Armed Services Committee on U.S. Military Strategy, 27 January 1987, p. 3.

83. "Current Naval Intelligence Issues . . .", op. cit., p. 13.

84. *Ibid.*, p. 12.

85. Admiral James D. Watkins, "The Maritime Strategy," *Proceedings*, January 1986 (Special Supplement), p. 6 (hereafter referred to as Admiral James D. Watkins, op. cit., . . .).

86. Report to Congress by Admiral C. A. H. Trost, U.S. Navy, Chief of Naval Operations, on the Posture and Fiscal Year 1988–1989 Budget of the United States Navy, pp. 22–23; see also "Current Naval Intelligence Issues . . .", op. cit., p. 14.

87. SASC, FY 1986 DOD, Part 8, p. 4370.

88. The MM-38 (range 42 kilometers) is operated by Argentina, Brazil, Brunei, Chile, Colombia, Ecuador, Indonesia, Morocco, Oman, Pakistan, Peru, and South Korea. The MM-40 (range 63 kilometers) is operated by Argentina, Bahrain, Ecuador, Kuwait, Morocco, Oman, Qatar, Tunisia, and the United Arab Emirates. The AM-39 air-launched version (range 42 kilometers) is operated by Argentina, Iraq, Pakistan, and Peru; SASC, FY 1986 DOD, Part 8, p. 4359.

89. The Gabriel missile (range 21–36 kilometers) is operated by Argentina, Chile, Ecuador, Israel, Kenya, Singapore, Taiwan, and Thailand; SASC, FY 1986 DOD, Part 8, p. 4359.

90. The Otomat MK-1 missile (range 60 kilometers) is operated by Egypt, Libya, and Venezuela. The Mk-2 missile (range 180 kilometers) is operated by Egypt, Libya, Peru, Saudi Arabia, and Venezuela; SASC, FY 1986 DOD, Part 8, p. 4359.

91. The Harpoon (range 110 kilometers) is operated by Australia, Egypt, Iran, Israel, Saudi Arabia, and South Korea; SASC, FY 1986 DOD, Part 8, p. 4359.

92. United States Arms Control and Disarmament Agency, FY 1984 Arms Control Impact Statements, p. 155.

93. More recently, West Germany has been building TR 1700 submarines for the Argentine Navy. When the first submarines were delivered in 1984 and 1986, they were shadowed by British navy units on their voyage to Argentina.

94. "Current Naval Intelligence Issues . . .", op. cit., p. 15.

95. The southern edge of the NATO ocean area of responsibility has traditionally been the Tropic of Cancer. But the U.S. and NATO focus has been moving further south, ostensibly to counter Soviet naval deployments around Africa. Since 1970, Soviet ships have been calling regularly at West African ports, and Soviet ships and reconnaissance aircraft have operated from Guinea and Angola. According to testimony by Admiral Harry D. Train, former Commander of the U.S. Atlantic Fleet, "it is entirely possible that over the course of the next 10 years, we will see the establishment in the South Atlantic of a fifth Soviet Fleet;" SASC, FY 1983, Part 5, pp. 3060–3079.

96. HAC, FY 1986 DOD, Part 2, p. 710; see also Admiral James D. Watkins, op. cit., p. 5; CNO Admiral Thomas Hayward testified in 1981 that the Navy's operating tempo was 15 percent higher than during the Vietnam War, HAC, FY 1982 DOD, Part 1, pp. 537–538.

97. HAC, FY 1986 DOD, Part 2, p. 649.

98. SASC, FY 1985 DOD, Part 8, p. 3881.

99. John J. Mearsheimer, op. cit., p. 7.

100. "Current Naval Intelligence Issues . . .", op. cit., p. 11.

101. *Ibid.*

102. Towards the end of the NATO exercises, the Swedish intelligence ship Orion was rammed by a Soviet minesweeper near Gotland Island in the Baltic Sea.

103. John F. Lehman, op. cit., p. 36.

104. SASC, FY 1985 DOD, Part 8, p. 3886.

105. Statement of Vice Admiral James A. Lyons, Jr., Deputy Chief of Naval Operations for Plans, Policy and Operations before the Seapower and Force Projection Subcommittee of the Senate Armed Services Committee on The U.S. Navy's Global Commitments, 28 February 1985, p. 18; HAC, FY 1986 DOD, Part 2, p. 931.

106. SASC, FY 1985 DOD, Part 8, pp. 3885–3886.

107. *Ibid.*

108. HAC, FY 1987 DOD, Part 1, p. 284; see also HASC, The 600-Ship Navy, op. cit., p. 277.

109. HAC, FY 1986 DOD, Part 2, p. 648.

110. SASC, FY 1987 DOD, Part 3, p. 1204.

111. Department of Defense, *Soviet Military Power*, 1987, p. 137.

112. "The Soviet View," *Proceedings*, December 1986, p. 118.

113. *The New York Times*, 19 December 1986; *Navy Times*, 21 January 1987.

114. SASC, FY 1986 DOD, Part 8, p. 4417.

115. SASC, FY 1985 DOD, Part 8, p. 3881.

116. *The Washington Post*, 8 June 1984.

117. U.S. Department of Defense, "News Briefing by Secretary of the Navy John Lehman at the Pentagon, Friday, June 10, 1983."

118. The first phase is called both by different official commentators; see SASC, FY 1985 DOD, Part 8, p. 3862; Linton F. Brooks, op. cit., p. 65; Admiral James D. Watkins, op. cit., p. 4.

119. Admiral James D. Watkins, op. cit., p. 9.

120. *Ibid.*, p. 5.

121. SASC, FY 1986 DOD, Part 6, p. 4493 (emphasis added); see also Thunman in SASC, FY 1985 DOD, Part 8, p. 4164.

122. HASC, The 600-Ship Navy, op. cit., p. 137.

123. Statement of Vice Admiral James A. Lyons, Jr., Deputy Chief of Naval Operations for Plans, Policy and Operations before the Seapower and Force Projection Subcommittee of the Senate Armed Services Committee on The U.S. Navy's Global Commitments, 28 February 1985, p. 9 (emphasis added).

124. Statement of Admiral Ronald J. Hays, USN, Commander in Chief, U.S. Pacific Command, before the House Appropriations Defense Subcommittee on FY 88–89 Defense Budget, 21 April 1987, p. 6 (emphasis added); see also Statement of Rear Admiral Hugh L. Webster, USN, Director of Logistics and Security Assistance, U.S. Pacific Command before the Readiness, Sustainability and Support Subcommittee of the Senate Armed Services Committee on Readiness and Sustainability, p. 5; see also HASC, FY 1987 DOD Seapower and Strategic and Critical Materials Subcommittee, p. 274.

125. SASC, FY 1985 DOD, Part 8, p. 3887 (emphasis added).

126. HASC, The 600-Ship Navy, op. cit., p. 38.

127. *Ibid.*, p. 28.

128. HAC, FY 1986 DOD, Part 2, p. 927.

129. SASC, FY 1985 DOD, Part 8, p. 3888.

130. HAC, FY 1986 DOD, Part 2, p. 927.

131. HASC, FY 1987 Seapower and Strategic and Critical Materials Subcommittee, p. 99.

132. Admiral James D. Watkins, op. cit., p. 11.

133. SASC, FY 1985 DOD, Part 8, p. 3893.

134. HAC, FY 1987 DOD, Part 1, p. 501.

135. Admiral James D. Watkins, op. cit., p. 7.

136. HAC, FY 1987 DOD, Part 1, p. 549.

137. SASC, FY 1986 DOD, Part 8, p. 4399.

138. John J. Mearsheimer, op. cit., p. 16.

139. Admiral James D. Watkins, op. cit., p. 12.

140. As quoted in *The Washington Post*, 25 May 1982.

141. SASC, FY 1984 DOD, Part 2, p. 1134.

142. SASC, FY 1984 DOD, Part 3, p. 2463.

143. HASC, FY 1984 DOD, Part 4, p. 37.

144. Linton F. Brooks, op. cit., p. 73.

145. General P. X. Kelley, Commandant of the Marine Corps, and Major Hugh K. O'Donnell, U.S. Marine Corps, "The Amphibious Warfare Strategy," *Proceedings*, January 1986 (Special Supplement), p. 26.

146. *Ibid.* Evidently Secretary of the Navy John Lehman didn't get the word, as he told the Senate Armed Services Committee that "I haven't seen any war plans that puts the Marines ashore in Russia;" SASC, FY 1985 DOD, Part 8, p. 3873.

147. Department of the Navy, *Nuclear Warfare Operations (U) NWP 28 (Rev. D)*, November 1980, p. 1–3; partially declassified and released under the Freedom of Information Act (hereafter referred to as *Nuclear Warfare Operations*, op. cit., . . .).

148. *Ibid.*

149. Admiral James D. Watkins, op. cit., p. 12.

150. HASC, The 600–Ship Navy, op. cit., p. 49.

151. Admiral James D. Watkins, op. cit., p. 12.

152. Statement of Admiral Lee Baggett, Jr., USN, Commander in Chief, U.S. Atlantic Command before the House Appropriations Committee Subcommittee on Defense on Military Strategy in the Atlantic, 6 April 1987, p. 2.

153. SASC, FY 1985 DOD, Part 8, p. 4389.

154. *Ibid.*, p. 3885.

155. Harold Brown, *Thinking About National Security: Defense and Foreign Policy in a Dangerous World* (Boulder, CO: Westview Press, 1983), p. 172.

156. Paul H. Nitze, Leonard Sullivan, Jr., and the Atlantic Council Working Group on Securing the Seas, *Securing the Seas: The Soviet Naval Challenge and Western Alliance Options* (Boulder, CO: Westview Press, 1979), p. 354.

157. *Ibid.*, p. 13.

158. U.S. Congressional Budget Office, "Building a 600–Ship Navy: Costs, Timing, and Alternative Approaches," March 1982, p. xii (hereafter referred to as CBO, "Building a 600–Ship Navy: . . . , op. cit., . . .).

159. *Nuclear Warfare Operations*, op. cit., p. 1–2 (emphasis added).

160. SASC, FY 1986 DOD, Part 8, p. 4378.

161. Admiral James D. Watkins, op. cit., p. 14.

162. John J. Mearsheimer, op. cit., p. 51–52 (emphasis added).

163. DOD, FY 1987 *Annual Report*, p. 228.

164. DOD, FY 1988 *Annual Report*, p. 169.

165. *Nuclear Warfare Operations*, op. cit., p. 1–3.

166. SASC, FY 1985 DOD, Part 8, p. 4403.

167. CBO, "Building a 600–Ship Navy: . . . , op. cit., p. xii, 17 (emphasis added).

168. SASC, FY 1985 DOD, Part 8, p. 3872.

169. *Ibid.*

170. *Nuclear Warfare Operations*, op. cit., p. 1–2.

171. SASC, FY 1985 DOD, Part 8, p. 3879.

172. Quoted in Linton F. Brooks, op. cit., p. 79.

173. Letter, Office of the Judge Advocate General, Department of the Navy, to Joshua Handler, Institute for Policy Studies, 14 January 1987.

174. HASC, The 600–Ship Navy, op. cit., p. 28; HAC, FY 1986 DOD, Part 2, p. 927.

175. Department of Defense, FY 1977 *Annual Report to Congress*, p. 121.

176. Carlisle A.H. Trost, "Higher, Faster, Farther, Deeper: The U.S. Navy in the 21st Century," *Seapower*, April 1987, p. 7; see also Admiral James D. Watkins, op. cit., p. 44.

177. Commander Dennis R. Neutze, JACG, USN, "Bluejacket Diplomacy: A Juridical Examination of the use of Naval Forces in Support of United States Foreign Policy," *The JAG Journal* [U.S. Navy], Summer 1982, p. 85.

178. Department of the Navy, Director, Naval Warfare, "Colloquy in Opposition: Proposed Amendment on Sea-Launched Cruise Missiles," 22 May 1984; released under the Freedom of Information Act, 27 February 1987.

179. See, e.g., James D. Hessman, "An Option of Strength," *Seapower*, June 1987, pp. 20–22.

180. HASC, The 600–Ship Navy, op. cit., p. 88 (emphasis added).

181. HASC, FY 1987 Seapower and Strategic and Critical Materials Subcommittee, p. 116 (emphasis added).

182. *Arms Control Reporter*, 1985, p. 404.B.38; Keesing's Contemporary Archives, Vol. 32, February 1986.

183. On 29 April 1986, Prime Minister David Lange of New Zealand stated that he hoped New Zealand and Britain could resolve their impasse on visits by Royal Navy vessels along the lines of what he thought was a compromise British-Chinese agreement which had been worked out and would allow ship visits. He stated that the Chinese agreement "is a policy which is going to work because of the goodwill of those who allow it to work. You will observe that the U.K. has acknowledged the Chinese non-nuclear policy;" *Arms Control Reporter*, 1986; p. 456.B.37. The Thatcher government later denied any implicit agreement with China.

184. United Nations Document A/C.1/40/PV.4, 15 October 1985, p. 11.

185. Department of Defense, FY 1988 *Annual Report*, p. 42.

186. Another operation in the Black Sea was also held in November 1984.

187. The United Kingdom and the Soviet Union concluded a similar agreement on Incidents at Sea on 15 July 1986.

188. The Tlatelolco Treaty was signed in 1967 and has entered into force for 23 Caribbean, Central American, and South American states. Protocol II (the guarantee protocol) is in force for all nuclear weapon states.

189. Geneva Convention on the High Seas, 29 April 1958, Article 2.

190. Monica Pinto and Rear Admiral Fernando A. Milia, Argentine Navy, "Argentine Council on International Relations Study on the Naval Arms Race," Buenos Aires (mimeo), 1984, p. 15.

191. This is as of April 1986; HAC, FY 1987 DOD, Part 4, p. 449.

192. HAC, FY 1987 DOD, Part 4, p. 438; see also SASC, FY 1986 DOD, Part 8, p. 4359.

193. HAC, FY 1986 DOD, Part 2, p. 928.

194. U.K., House of Commons, *Hansard*, 18 October 1982, p. 46.

195. Commander Dennis R. Neutze, JACG, USN, op. cit., p. 146.

196. *Ibid.*, pp. 154–155.

197. This discussion is taken from Monica Pinto and Rear Admiral Fernando A. Milia, Argentine Navy, pp. 18–20.

198. See, e.g., Christoph Bertram, "Trade Europe's Land Missiles for Seaborne," *Los Angeles Times*, 11 May 1987.

199. Quoted in Michael R. Gordon, "Deployment of Tomahawk Cruise Missiles Stirs Arms Control Controversy," *National Journal*, 26 May 1984.

200. Jan Prawitz, "Naval Arms and Naval Arms Control," Paper presented to the *International Conference on Conflict Resolution and Peace Studies*, Suva, Fiji, December 30, 1985 to January 5, 1986.

201. United Nations Document A/S-12/AC.1/11, 17 June 1982.

202. "Soviets seek naval arms talks," *The Baltimore Sun*, 15 April 1984.

203. USSR Academy of Sciences, Institute of World Economy and International Relations, *Disarmament and Security: 1986 Yearbook, Volume II* (Moscow: Novosti Press Agency Publishing House, 1987), pp. 61–62.

204. Department of the Navy, Director, Naval Warfare, "Colloquy in Opposition: Proposed Amendment on Sea-Launched Cruise Missiles," 22 May 1984; released under the Freedom of Information Act, 27 February 1987.

205. HAC, FY 1986 DOD, Part 2, p. 914.

206. *Ibid.*, p. 915. A year earlier Lehman answered a question for the record before the Senate Armed Services Committee as follows: "A ban on the deployment of nuclear sea-launched cruise missiles raises significant verification issues. Although the U.S. has been willing to discuss such verification issues, the USSR has consistently refused to acknowledge these problems. In view of evidence of Soviet non-compliance on many existing arms control provisions, acceptable verification provisions to preclude circumvention, must be the foundation of any arms control provision dealing with cruise missiles;" SASC, FY 1985 DOD, Part 2, p. 952.

207. Statement of Rear Admiral John L. Butts, U.S. Navy, Director of Naval Intelligence before the SASC, FY 1986 DOD, Part 8, p. 4361. The Soviets launched about 48 surface units compared to about 60 in 1983.

208. "Current Naval Intelligence Issues . . .", op. cit., p. 4.

209. This includes U.S. B-52 and Soviet Bear G long-range bombers.

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