

CHAPTER 1

US. NAVAL TRADITION

LEARNING OBJECTIVES

Learning objectives are stated at the beginning of each chapter. These learning objectives serve as a preview of the information you should learn in the chapter. By successfully completing the nonresident training course (NRTC), you indicate you have met the objectives and have learned the information. The learning objectives for chapter 1 are listed below.

Upon completion of this chapter, you should be able to do the following:

1. Describe the striking forces of the U.S. Navy.
 2. Describe the "TRIAD" of the strategic nuclear forces.
 3. Identify the U.S. Navy's geographic areas of concern.
 4. Identify the applications of the U.S. Navy weapons systems.
 5. Describe the types of readiness training and inspections conducted to maintain the U.S. Navy's condition of readiness.
-



U.S. Navy sea power.

INTRODUCTION TO SEA POWER

A nation can only measure the strength of its sea power by its ability to use the sea to further its national objectives. It must be able to use the sea

for this purpose despite any threat created by rivals or competitors.

The elements of sea power enable a sea dependent nation to project and maintain its political, economic, and military strengths

seaward and beyond. Some of these elements are ships, aircraft, weapons, and trained personnel. Equally important are the shore establishment, well-situated bases, commercial shipping, and international alignments. The following elements determine a nation's capacity to exercise sea power:

- The character and number of its population
- The character of its government
- The soundness of its economy
- Its industrial efficiency
- The development of its internal communications
- The quality and number of its harbors
- The extent of its coastline; and the location of its homeland, bases, and overseas territories with respect to sea communications

The ability to project sea power could be in jeopardy, and eventually lost, if any of these elements are weak or lacking.

THE NAVY'S ROLE IN THE NATIONAL SECURITY POLICY

The United States national security policy strives to preserve our freedom with our institutions and values intact. We are a global power with global interests and obligations. The Navy must be prepared to act at any time to ensure national security while limiting crises, controlling escalation, or stopping a conflict. We must be able to deal with a wide range of threats to our freedom.

If the United States is to continue to exist as we know it today, it must have a policy that recognizes its worldwide commitments. Naval forces underline America's commitments and interests everyday by their presence near friendly, neutral, and hostile shores. This presence asserts and reinforces principles of international law and freedom of the seas on a continuing basis.

Naval forces can be sent to crisis areas at low cost by comparison with other military forces. Naval forces require no access or overflight rights and can stay on station indefinitely. Naval forces leave behind no physical reminders of their

presence; however, their ability to come and go at will is a strong symbolic reminder of their presence. Since World War II, the U.S. Navy has been instrumental in handling international incidents that require the use of military force.

NAVAL MARITIME STRATEGY

The United States seeks to deter war; but when any country starts hostilities or conflict, the United States defends itself and its allies.

National military strategy rests on three basic pillars: DETERRENCE, FORWARD DEFENSE, and ALLIANCE SOLIDARITY. When deterrence fails to prevent an enemy's attack, the United States responds in one of four forms. It (1) meets force with force at the point of attack, (2) increases the intensity of the conflict, (3) alters the geographic width of the conflict, or (4) controls the duration of fighting.

Maritime superiority enables us to deny the enemy any advantage through expansion. It also allows us to take the conflict to an area where the enemy does not want to fight. The flexibility of sea power permits us to outflank a foe, causing an enemy to spread its forces around its perimeter. This tactic requires the enemy to commit a great number of personnel and materials to defend its otherwise secure flank. The enemy must defend itself against our submarines, surface ships, aircraft, missiles, mines, and amphibious and special forces. With secure sea-lanes the Navy has the ability to outlast any aggressor.

Any major conflict involves our allies, and we recognize the importance of their contributions. The Navy structures its forces, to the extent possible, to take advantage of the role allied naval forces play. Allied capabilities in mine warfare, air defense, submarine operations, and maritime patrol are important elements in maintaining maritime superiority.

Maritime superiority for the United States is a necessity. The Navy must be able in time of emergency to venture into harm's way. It must be able to control air, surface, and subsurface areas to assure access to all the oceans of the world. The Navy must ensure that access and meet its operational requirements despite the requirement for a smaller Navy. To do this, it maintains the combat readiness of its ships with the most modern technology and with the recruitment of dedicated and well-trained personnel.

STRATEGIC NUCLEAR DETERRENCE

Today, the United States' deterrent to the Soviet Union's threatening array of nuclear capabilities is a TRIAD of strategic nuclear forces. These forces consist of BALLISTIC MISSILES, INTERCONTINENTAL BALLISTIC MISSILES (ICBMs) and LONG-RANGE BOMBERS.

The unique qualities of each leg of the TRIAD combined provide a level of flexibility that cannot be attained by each alone. The TRIAD enhances our employment options and complicates enemy defensive and offensive planning. It serves as a hedge against possible violations of arms control limitations and reduces the impact of new technological advances. The U.S. Air Force, with its long-range bombers and ICBMs, and the U.S. Navy, with its sea-launched ballistic missiles, provide part of the TRIAD.

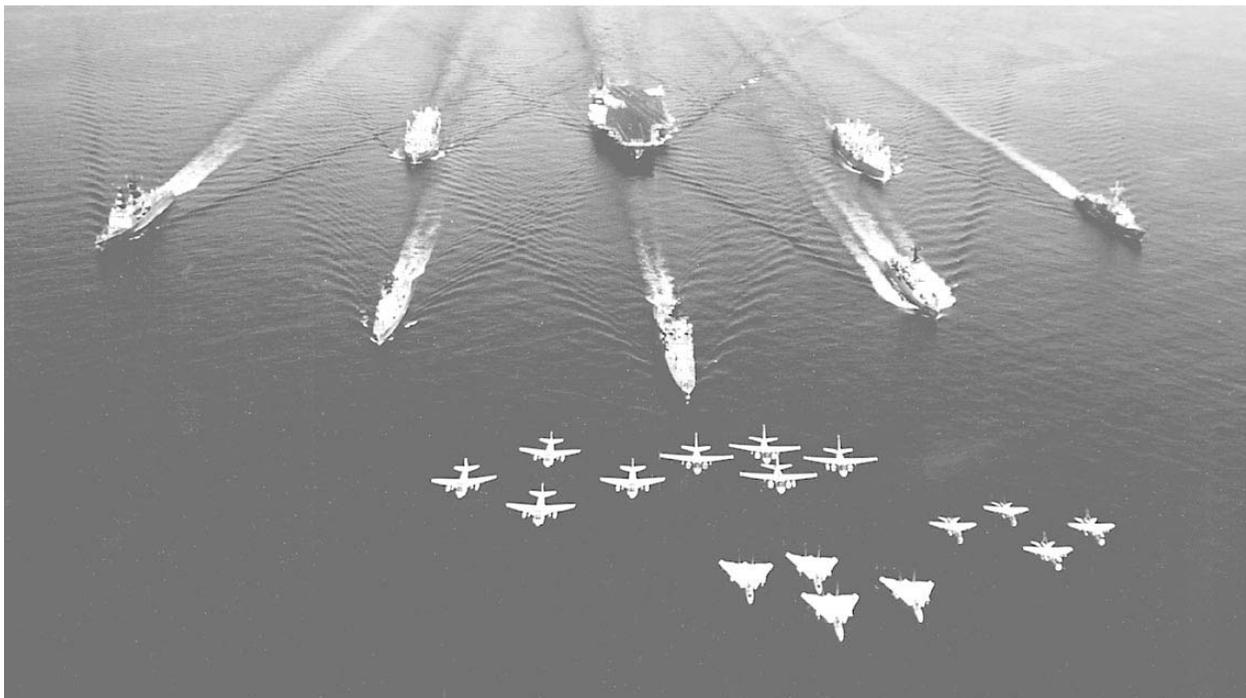
U.S. AIR FORCE ROLE

Our land-based intercontinental ballistic missiles are unsurpassed in readiness and immediate reaction capability. They can be launched quickly, and their capability to survive is very high. The Strategic Air Command's (SAC) intercontinental ballistic missile force consists of Minuteman missiles and Peacekeeper ICBMs,

which are deployed in Minuteman silos. SAC's manned bombers are the most flexible element of the TRIAD. SAC can use bombers as a manned penetration, as a cruise missile launch platform, or in support of conventional operations. It can use B-52 G/H and B-1B bombers to penetrate defenses.

U.S. NAVY ROLE

Deterrence of war has been the sole mission and basic reason for the existence of the fleet ballistic missile submarine since its inception in 1960. The submarine program is the Navy's highest priority program. As an essential cornerstone of the national security policy, this program functions as a survivable and dependable leg of the strategic deterrent TRIAD. The submarine leg of TRIAD consists of older fleet ballistic missile submarines (nuclear propulsion) (SSBNs) armed with Poseidon C-3 or Trident C-4 missiles and new Trident submarines carrying Trident C-4 missiles. Remaining at sea about 55 percent of the time, these submarines have their missiles targeted at sites in the Soviet Union and Eastern Europe. Tridents carry 24 submarine-launched ballistic missiles (SLBMs) compared with 16 in earlier submarines. The United States now has 20 Trident submarines scheduled for construction.



The carrier task group, and essential element of power projection.

The chance of a strategic nuclear attack on the United States is low. The results of such an attack would be catastrophic. The TRIAD has been developed and maintained to deter nuclear attack. Similarly, the Soviet Union has developed and is maintaining powerful strategic forces of its own. Our objective is to obtain the following conditions of essential equivalence:

1. Prevent Soviet strategic nuclear forces from becoming effective instruments of political leverage or coercion.
2. Maintain nuclear stability.
3. Offset advantages in force characteristics possessed by the Soviets by U.S. advantages in other characteristics.
4. Ensure U.S. strategic forces are not, nor are they perceived to be, inferior in performance to those of the Soviet Union.

The credibility of our TRIAD as perceived by potential opponents and allies is very important. If they perceive that our TRIAD does not exist or is weak, regardless of the facts, it will no longer serve to deter an attack.

This condition of essential equivalence should produce a mutual deterrence that is so stable it will not be upset in a crisis. The United States seeks to maintain this stability through a combination of specific, equitable, and verifiable arms control agreements.

GEOGRAPHICAL AREAS OF CONCERN IN U.S. FLEET ORGANIZATION

Four American fleets (Second, Third, Sixth, and Seventh) stand worldwide watch. Each serves the Navy's basic mission of protecting national security. The Second Fleet, commanded by Commander in Chief, Atlantic Fleet (CINCLANTFLT), operates from the world's largest naval base at Norfolk, Virginia. It patrols the western Atlantic across some of the world's most important trade routes. Ships and personnel of the Second Fleet rotate with those of the Sixth Fleet. The Commander in Chief, U.S. Naval Forces Europe (CINCUSNAVEUR), commands the Sixth Fleet, which moves in the nearly landlocked Mediterranean Sea. We could describe the Sixth Fleet as "keeper of the doors."

The Mediterranean has been an influential factor in world affairs since the dawn of history. Gibraltar, the front door of the Mediterranean,

is a vital commercial choke point. Whether it is open or closed, it affects the destiny of nations. The Mediterranean also has a side door—the Bosphorus and Dardanelles—through which Soviet ships enter. The Arab-Israeli wars in June 1967 and November 1973 produced a marked increase in the size of the Soviet Mediterranean force. From a previous high of 23 ships, Soviet naval strength rose from 35 to 40 vessels. This period was the first time in recent years the Soviets had so deliberately used their fleet to support their foreign policy. Since the war in the Middle East, a stepped-up program of Mediterranean port visits by Soviet ships seems clearly aimed at increasing Soviet influence in that area. The level of Soviet naval activity provides additional reasons for the continued presence of a strong Sixth Fleet. The Sixth Fleet is built around two attack carriers and an amphibious striking force with an embarked Marine Corps battalion landing team. Since the Soviet Union maintains a submarine force in the Mediterranean, the United States has increased the frequency of deployment of its antisubmarine groups to the Mediterranean from the Atlantic.

Across the world from the Mediterranean, the Commander in Chief, Pacific Fleet (CINCPACFLT), commands the Third and Seventh Fleets. The Third Fleet, operating off the west coast of the United States, trains the personnel and shakes down the ships that rotate to the Seventh Fleet. The Seventh Fleet operates in the western Pacific and Indian Ocean regions.

In recent years Soviet naval forces in the Pacific have grown in size and capability. With the fall of South Vietnam, the Soviets established a large naval base at Cam Ranh Bay. This base provides them with the capability to react rapidly to world events in the western Pacific.

STRIKING FORCES OF THE U.S. NAVY

A strike is an attack intended to inflict damage to, seize, or destroy an objective. A striking force is a force composed of appropriate units necessary to conduct strike, attack, or assault operations.

The mobility and versatile power of naval striking forces make them ideal instruments for enforcing national military policy. In peacetime, unsettled world conditions require the Navy's readiness to instantly apply force. The existence of a naval striking force may serve as a stabilizing influence to inhibit the outbreak of hostilities.

Our conflict with Iraq is an example of how hostilities sometimes occur in spite of attempts to settle international disputes by other means. As shown by this conflict, our carrier striking force takes prompt and decisive action to meet national objectives.

Mobility is one of the striking forces' greater assets. It increases the prospect for surprise attacks from any point bordering enemy land areas surrounded by navigable waters. Striking forces provide a wide range of weapons systems for close or long-range distances. Task forces organized primarily for striking force operations are carrier, surface, and submarine strike forces. These forces operate independently or together as needed.

AIRCRAFT CARRIER BATTLE GROUP

The aircraft carrier battle group (fig. 1-1) is a vital part of the Navy's overall ability to counter aggression successfully and to protect vital sea-lanes. Geographically, economically, politically, and culturally, the United States is overseas oriented.

Because the United States is essentially an island nation, it must have the ability to influence international affairs favorably. During conflict, the United States must be able to engage and defeat any enemy far from American shores. At the same time, it must protect the vital lines of communications.

The United States frequently deploys naval forces to areas near hostile bases and operating areas far from continental U.S. bases. These deployments place demanding requirements upon the capabilities of U.S. naval forces. These forces must be able to counter air, surface, and submarine threats simultaneously when the enemy selects more than one method of attack.

The aircraft carrier serves as the key member of a powerful and mobile naval task force. It uses antisubmarine aircraft, attack and fighter aircraft, and surface and subsurface escorts. These air, surface, and subsurface escorts provide the greatest naval power that can be assembled to counter all types of threats at sea.

The carrier battle group has the mobility to operate where it can be most effective against any forces threatening the United States' free use of the seas. It also has the sensors and weapons needed to defeat these threats. The carrier is a completely outfitted and equipped mobile air operating base for projecting power ashore. This function requires close air support and interdiction aircraft. (Interdiction is an attack on supply lines. It is an attempt to destroy railroads, bridges, electric power plants, and so forth, to cripple the support of enemy front lines with minimum effort.) These aircraft are able to defeat all modern aircraft; penetrate missile-defended targets; and conduct precision day, night, and all-weather bombing. They perform the demanding tasks of reconnaissance and surveillance.

The United States must maintain a convincing peacetime presence in trouble spots of the world



Figure 1-1.—USS America carrier task group.

to prevent conflicts that are adverse to U.S. interests. The carrier battle group can quickly respond to crises in areas where U.S. interests require a military presence. The carrier can remain offshore to show America's interest in affairs ashore. The carrier battle group and its associated naval units have the means to respond to almost any event.

Aircraft carrier battle groups contribute directly to the United States' capability to counter a major Warsaw Pact attack against the North Atlantic Treaty Organization (NATO). These mobile forces help keep major sea-lanes open against potential threats. Together with other services, they provide major offensive initiatives should a NATO/Warsaw pact war or lesser conflict occur. Carrier-based tactical aircraft can wage concentrated tactical air power in remote areas of the world where the United States does not have land bases.

SUBMARINE FORCES

Historically, the mission of a submarine has been to seek and destroy both combatant and noncombatant enemy surface ships. Now the

primary mission of the submarines is to seek and destroy enemy submarines. The advent of the nuclear-powered ballistic missile submarine added an entirely new mission—the delivery of ballistic missile attacks against assigned shore targets.

In 1955 the Chief of Naval Operations ordered the development of a weapons system capable of launching a missile from a submerged submarine. The system was to be able to hit any point on the earth's surface with a nuclear warhead—a complex engineering feat never achieved in history. The system was envisioned to have three basic components—missiles, a launching platform, and a navigation system that would continuously show the ship's position under all conditions.

The United States launched its first fleet ballistic missile (FBM) submarine, *George Washington*, SSBN-598, in June 1959. It contained 16 launching tubes equipped with Polaris A-1, 1200-nautical-mile-range missiles. The submarine conducted its first successful test on 20 July 1960 off Cape Canaveral. In November 1960, the FBM system became operational when *George Washington* deployed on its first 60-day patrol. Since then, several versions have been developed, including the Poseidon and the Trident.



Trident I C4 FBM.

The latest version, and by far the deadliest and most versatile, is the Trident C-4 undersea nuclear weapons system. Its longer-range missiles, larger submarines, and complete U.S. "home ports," have increased combat readiness and cut the operating costs of the FBM force. Trident is the name of the entire weapons system, including submarines, missiles, and base. The Trident missile can reach enemy targets from both the Atlantic and Pacific Oceans, thus making expensive overseas ports unnecessary for Trident submarines. In addition, the Trident I missile has been adapted for use with our present Poseidon submarines. This has increased the missile range to 4,000 nautical miles. All Trident submarines have exceeded their performance design specifications in speed and quietness and have successfully launched Trident (C-4) test missiles. Both the Poseidon and Trident missiles have a multiple warhead capability.

Figure 1-2 shows the Trident submarine, USS *Ohio*, SSBN 726. Trident submarines are replacing the aging fleet ballistic missile submarines built during a short period in the 1960s. They will replace Poseidon submarines by the late 1990s.

In 1980 the Navy began development of a new submarine-launched ballistic missile, the Trident II (D-5), with improved accuracy, extended range, and greater payload. Eventually all Trident submarines will be configured to carry Trident II missiles.

SURFACE ACTION GROUP (SAG)

Task force or group commanders include in their operation orders provision for SURFACE ACTION GROUPS (SAGS), which can be detached to perform certain missions. They prepare a battle plan for these forces to follow

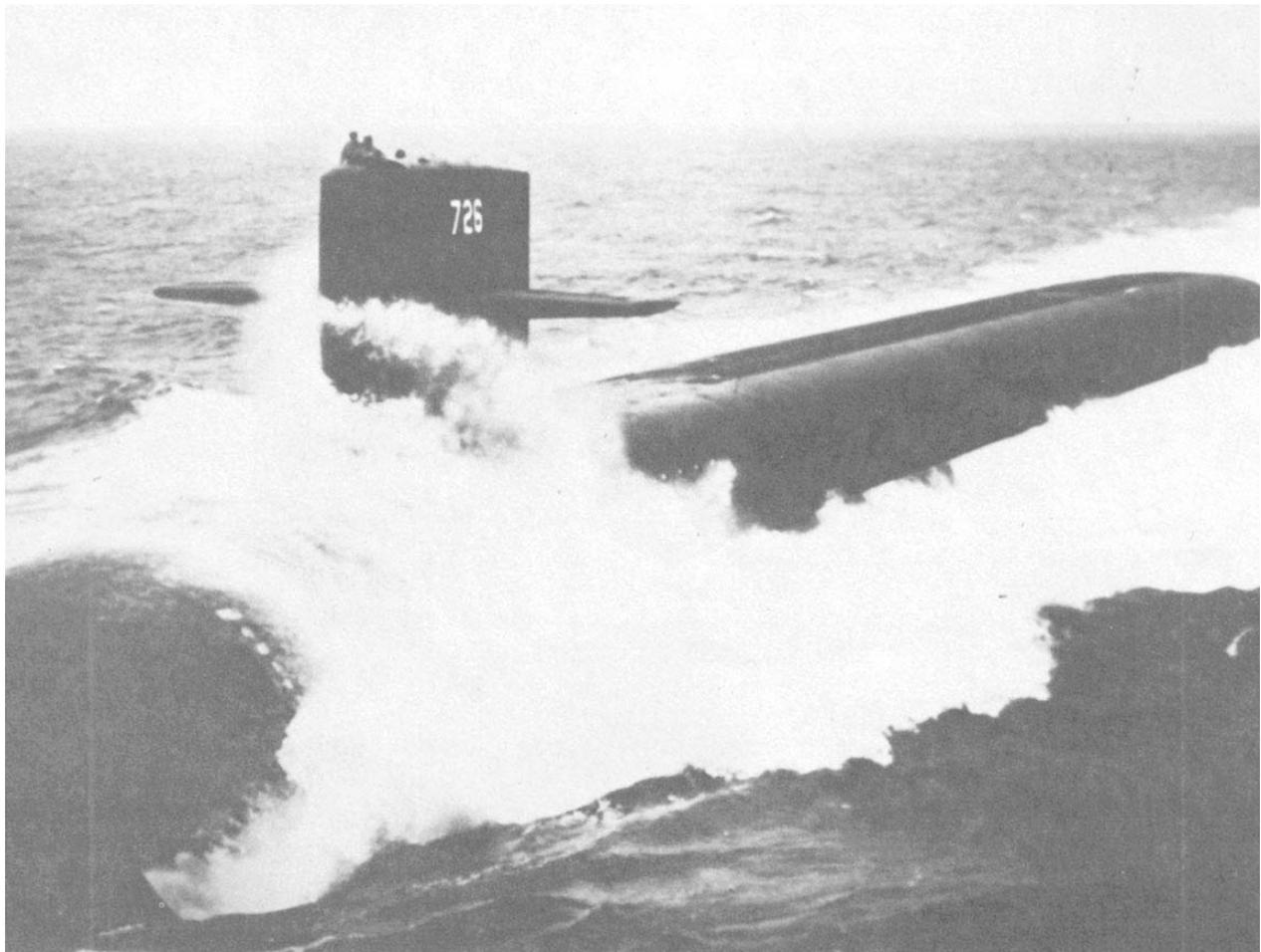


Figure 1-2.—USS Ohio (SSBN-726).



Figure 1-3.—Surface action group.

during surface action. However, they normally use such forces only as one element in a coordinated strike by both air and surface units. Commanders detach surface action groups in special situations; for example, to destroy isolated or crippled enemy surface units, to conduct shore bombardment, or for surface reconnaissance missions. Normally, though, aircraft are the principal agents for tactical reconnaissance. Air action usually takes place before a surface engagement or occurs during the engagement. An air strike before a surface engagement may surprise the enemy forces to such an extent that the surface action becomes a pursuit of disorganized enemy forces. It may also slow enemy forces so that the task force or battle group can engage enemy forces with surface-to-surface fire or missiles outside the enemy surface missile envelope. Task force or group commanders may also use aircraft for spotting gunfire and ship-launched missiles. Figure 1-3 shows a surface action group.

AMPHIBIOUS FORCES

Amphibious operations conducted to establish a landing force on a hostile shore achieves several purposes. First, they allow our forces to pursue further combat operations. Second, they allow our forces to obtain a site for an advanced naval or air base. And third, they deny the use of an area or facilities to the enemy.

AMPHIBIOUS WARFARE has special significance for every person in the Navy. It integrates nearly all types of ships, aircraft, weapons, and landing forces in a concerted military effort against a hostile shore. The ability to conduct amphibious operations effectively is a measure of a nation's competence in applying the elements of sea power and air power in a coordinated effort. A nation's competence in applying sea power and air power in a coordinated effort serves as a measure of its ability to conduct effective amphibious operations.

The usefulness of the amphibious operation stems from the mobility and flexibility of its forces; that is, the ability to concentrate balanced forces and to strike with great strength at selected points in the hostile defense system. An amphibious operation uses the element of surprise and capitalizes upon enemy weaknesses. The mere threat imposed by the existence of powerful amphibious forces may convince the enemy to spread out concentrated forces. This may result in expensive and wasteful efforts by the enemy in defending the country's coastline.

Amphibious assaults must be conducted in the face of certain additional and special difficulties. Natural forces, such as unfavorable weather, seas, and surf, represent hazards not normally encountered in land warfare. Ships encounter many logistics problems. They must load thousands of troops and large quantities of material so that they can be unloaded in the proper sequence. They then must move these troops and materials to the objective area and land them on open beaches or landing zones, which may be under enemy fire. All such problems require special attention to detailed planning.

The closest cooperation and most detailed coordination among all forces taking part in an amphibious operation are essential to success. The forces must be trained together. Each force must have a clear understanding of its mutual obligations, special capabilities, and problems.

Amphibious striking forces normally include Navy and Marine Corps forces but may include personnel from every service of the armed forces. These forces are integrated into a task organization to form a single cohesive amphibious striking force capable of executing its mission with utmost efficiency. The keynote of successful amphibious operations is the complete coordination and unity of effort among all the participating elements of land, sea, and air forces. This coordination and unity achieved successes in the conduct of amphibious operations during World War II, the Korean conflict, and the Vietnam conflict. These successes are direct results of the close relationships developed among our armed forces.

NAVAL WARFARE

NAVAL WARFARE is a conflict in which at least one of the opponents is operating from the sea with surface ships, submarines, or sea-based aircraft. Naval warfare involves three major areas: SURFACE, SUBSURFACE, and AIR. Each of these areas has its own operating characteristics, and each has its own particular strengths and limitations.

The art of naval warfare entails a nation's use of surface, submarine, and air forces in a manner that exploits the strengths and minimizes the weaknesses of each. This objective has led to surface, submarine, and air forces operating together in mutual support. Their common objective is to gain advantages over the enemy by working together to improve offensive capabilities



USS Oliver Hazard Perry (FFG-7).



USS Texas (CGN-39).

and decrease the weaknesses of each naval component. Each U.S. naval force has the full capacity in all three warfare areas to carry out the task of meeting a multidimensional threat similar to that of U.S. naval forces. U.S. naval forces also carry out fundamental tasks and supporting tasks.

The **FUNDAMENTAL WARFARE TASKS** are as follows:

- **ANTI-AIR WARFARE (AAW).** AAW is the destruction of enemy aircraft and airborne weapons, whether launched from air, surface, subsurface, or land. AAW consists of all the measures used in achieving air superiority.

- **ANTISUBMARINE WARFARE (ASW).** ASW is the destruction or neutralization of enemy submarines. The aim of ASW is to prevent the effective use of submarines by the enemy.

- **ANTISURFACE SHIP WARFARE (ASUW).** ASUW is the destruction or neutralization of enemy surface combatants and merchant ships. The aim of ASUW is to prevent the effective use of surface warships and cargo-carrying vessels by the enemy.

- **STRIKE WARFARE.** Strike warfare is the use of conventional or nuclear weapons in the destruction or neutralization of enemy targets ashore. It includes, but is not limited to, attacks on an enemy's strategic nuclear forces and building yards. It also includes attacks on operating bases from which an enemy can conduct air, surface, or subsurface operations against U.S. or allied forces.

- **AMPHIBIOUS WARFARE.** Amphibious warfare consists of attacks launched from the sea by naval forces and by landing forces embarked in ships or craft. The purpose of these attacks is to allow forces to land on an enemy shore. Amphibious warfare includes fire support of troops in contact with enemy forces using close air support or shore bombardment.

- **MINE WARFARE.** Mine warfare is the use of mines and mine countermeasures to control sea or harbor areas. It involves laying minefields and countering enemy mine warfare through the destruction or neutralization of enemy minefields.

The **SUPPORTING WARFARE TASKS** are as follows:

- **SPECIAL WARFARE.** Special warfare involves naval operations generally accepted as being nonconventional in nature and, in many cases, conducted with secrecy. Special warfare, which often accomplishes basic warfare tasks, includes special mobile operations, unconventional warfare, coastal reconnaissance, and certain technical intelligence operations.

- **OCEAN SURVEILLANCE.** Ocean surveillance is the observation of ocean areas to detect, locate, and classify selected air, surface, and subsurface targets. It also involves providing the information to users in a timely manner. A target may be hostile, neutral, or friendly. Ocean surveillance provides a current operational setting by which Navy commanders can decide whether to deploy forces.

- **INTELLIGENCE.** Intelligence is the assessment and management of information obtained via surveillance, reconnaissance, and other means. Intelligence forces use this information to produce timely warnings and to indicate the location, identification, intentions, technical capabilities, and tactics of potential enemies. Current and complete intelligence, correctly interpreted, permits military decisions to be based on accurate knowledge of the enemy's forces and capabilities.

- **THE NAVY COMMAND AND CONTROL SYSTEMS (NCCS).** NCCS provides the means to exercise the authority and direction of naval forces in the accomplishment of their mission. The NCCS coordinates its operations with the national command, control, and communications system. NCCS is under the direction of the national command authority (the President, the Secretary of Defense, and the Joint Chiefs of Staff). These systems ensure the coordination of all warfare efforts. The Army, Air Force, and naval forces of the United States and those of our allies could not fulfill their missions without effective and well-organized command, control, and communications systems.

- **ELECTRONIC WARFARE.** Electronic warfare involves electronic support for all warfare tasks. Electronic warfare ensures the effective use of the electromagnetic spectrum by friendly forces while determining, reducing, or preventing its use

by an enemy. It also assists in the detection and targeting of hostile forces while making detection and targeting of friendly forces more difficult for the enemy.

- **LOGISTICS.** Logistics is the resupply of combat consumables to combatant forces during operations. It may often be a major factor in determining the success or failure of an operation. A principal aim of naval logistics is to make the operating forces as independent as possible of overseas bases. Sealift provides most supplies needed to support U.S. naval forces and other U.S. combatant and allied forces. The U.S. maritime mobility forces consist primarily of ships of the Military Sealift Command, various ships held in reserve, and the U.S. merchant marine.

U.S. NAVY WEAPONS AND SYSTEMS

Since the Civil War, when armored, steam-propelled warships first were combat-tested, the U.S. Navy has used the latest technology in all naval warfare applications.

For more than 40 years, the U.S. Navy has developed systems and tactics to protect itself from air attacks. Since the end of World War II, several generations of antiship missiles have emerged as an air threat to the fleet. These antiship missiles can be launched from under the sea, from the surface of the sea, and from aircraft above the sea. Many can be launched several hundred miles

away. The attacks can be coordinated so that several missiles arrive almost simultaneously, and some of the missiles have a nuclear capability.

A survivable Navy in the modern world must have the latest surveillance techniques, information processing capabilities, and platforms that can effectively deliver weapons wherever needed.

AEGIS

The shipboard integrated AAW combat weapons system (Aegis) is the most capable surface-launched missile system the Navy has ever put to sea. The system was designed as a total weapons system with capabilities that range from detection to destruction of enemy targets. The system can perform search, track, and missile-guidance functions simultaneously with a track capacity of over 100 targets. It can defeat an extremely wide range of targets. It can defeat very high- to very low-altitude antiship cruise missiles and manned aircraft, flying at both supersonic and subsonic speeds. Aegis is reliable even in the most severe of environmental conditions, both natural and man-made. Aegis can operate simultaneously in all modes of warfare: anti-air, anti-submarine, and anti-surface. The system can also perform force coordination.

The surface Navy's Aegis provides area defense for the battle group. It also provides a clear air picture for more effective deployment of F-14 Tomcat and F/A-18 Hornet aircraft. It



F-14 Tomcat.



F/A-18A Hornet.

enables fighter aircraft to concentrate more on the outer air battle while Aegis cruisers and destroyers concentrate on the battle group area defense. The highly accurate Aegis weapons system reduces the use of other valuable assets. As long as our "blue-water" Navy must steam into harm's way in carrying out assigned missions, it will require a formidable anti-air warfare capability. Aegis has given AAW forces a decided

edge for the present. It also promises to give the fleet an extremely capable AAW system throughout the turn of the century. This will be done through planned upgrades to the standard missiles, the introduction of vertical launchers, and evolutionary improvements to Aegis itself.

Aegis is installed on all Ticonderoga-class cruisers (fig. 1-4). A system compatible with



Figure 1-4.—USS Ticonderoga (CC-47).

destroyers will be installed on new Arleigh Burke-class destroyers (fig. 1-5).

SURFACE-LAUNCHED MISSILES

The mission of surface-launched missiles, shown in figures 1-6 and 1-7, is to engage and intercept aircraft, antiship missiles, and surface ships. Standard-1 (SM-1) and Standard-2 (SM-2), medium-range (MR), and extended-range (ER) missiles have a cylindrical airframe. The airframe tapers into a radome, four fixed dorsal fins, and four independently movable steering control surfaces.

Standard-1 (RIM-66) is a medium-range (MR), surface-launched missile employing passive or semiactive homing. It is propelled by an integral dual-thrust rocket motor, SM-1 MR is installed on

FFG-, DDG-, CG-, and CGN-class ships equipped with Aegis and a Tartar combat system. Standard-2MR incorporates midcourse guidance, which allows programming of the missile for radar search only. The missile is redirected in midflight and then again during the terminal homing phase. SM-2 MR is installed on the DDG- and CGN-type ships and on Aegis CG-class ships.

Standard-1 (RIM-67) is an extended-range (ER), surface-launched missile employing passive/semiactive homing or midcourse command guidance. It is propelled by a detachable rocket booster and an integral sustainer rocket motor. SM-1 ER is installed on CGN-, CG-, and DDG-37-class ships equipped with Terrier combat systems. Standard-2 ER incorporates the same midcourse guidance as the MR version.

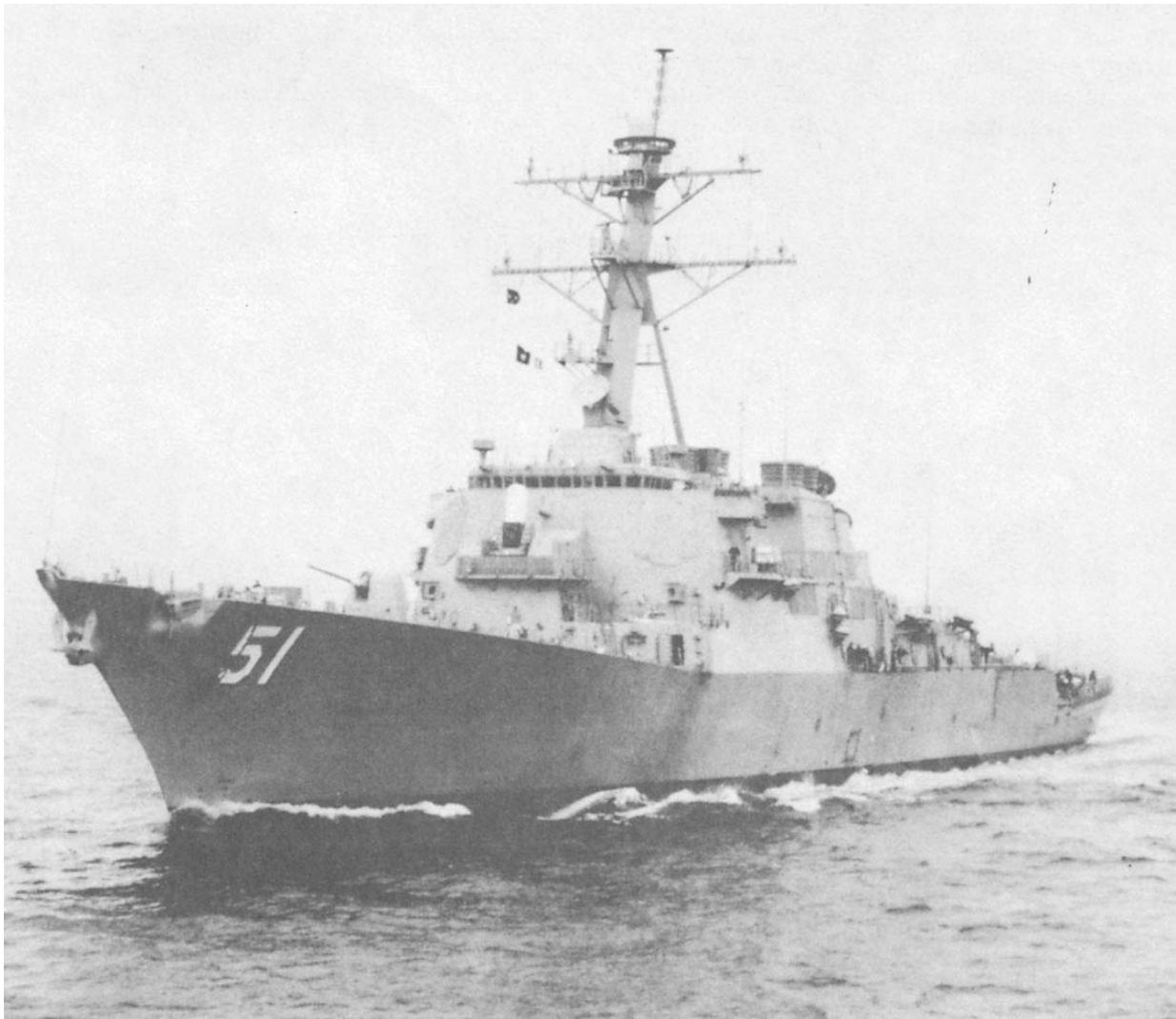


Figure 1-5.—USS Arleigh A. Burke (DDG-51).



Figure 1-6.—Rim-66 standard surface-to-air missiles.

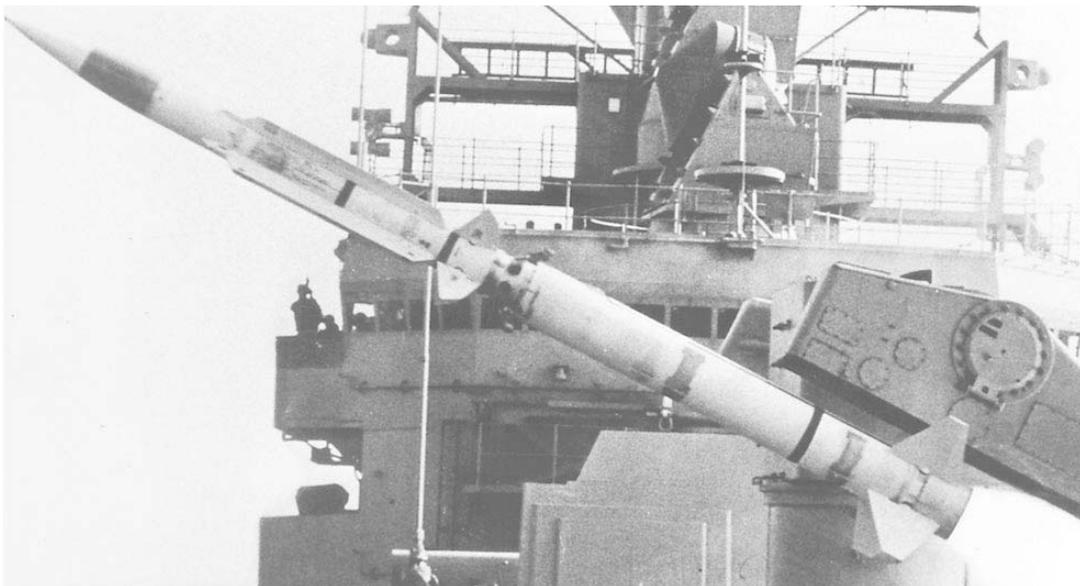


Figure 1-7.—Rim-67A extended-range standard missile.

HARPOON ANTISHIP CRUISE MISSILE

Figure 1-8 shows the HARPOON ANTISHIP CRUISE MISSILE, a medium-range, rocket-boosted, turbo-sustained cruise missile. It can be launched from surface ships, submarines, or aircraft (without the booster). It is effective against hostile surface targets such as combatants and surfaced submarines.

The Harpoon missile uses a solid-propellant to launch it from a variety of surface ship launcher configurations including Tartar rails, antisubmarine rocket (ASROC) cells, or deck-mounted canisters. When launched from submerged submarines, a sealed capsule protects the Harpoon missile in the torpedo tube. The

capsule then floats to the surface, where booster ignition occurs and the missile boosts from the capsule. Following a surface or an air launch, the Harpoon flies a programmed, low-trajectory path to the target. An onboard computer provides inflight attitude reference and midcourse guidance. Target location is provided by a self-contained active radar seeker. Terminal guidance uses the radar seeker, or passive homing, in an electronic countermeasure (ECM) environment. A 500-pound high-explosive (HE) warhead with a contact fuse accomplishes target destruction.

PHALANX CLOSE-IN WEAPONS SYSTEM

Figure 1-9 shows the PHALANX CLOSE-IN WEAPONS SYSTEM. The Phalanx is the Navy's



Figure 1-8.—RGM-84A Harpoon antiship missile.

first all-weather, automatic-controlled gun system designed to provide defense against close-in, sea-skimming cruise missiles that penetrate outer defense systems. The main technical achievement of Phalanx is its closed-loop radar spotting and tracking ability. With closed-loop spotting, the fire-control guidance system can simultaneously

locate the threat target and the projectiles of the Phalanx. It then automatically corrects the aim of the gun toward the target. The gun fires 20-mm, high-density penetrating projectiles at 3,000 rounds per minute. The self-contained system can be readily installed on any ship, from patrol boat to aircraft carrier.



Figure 1-9.—Phalanx.

PHOENIX AIR-TO-AIR MISSILE

The PHOENIX AIR-TO-AIR MISSILE, shown in figure 1-10, was introduced into the fleet with the F-14 aircraft in 1974. The missile, along with the weapons control system of the F-14, can destroy hostile air targets with conventional warheads in all weather. The system can simultaneously track 24 hostile air targets and launch six missiles against six different targets. The missile has great range and intercept capability against high-speed, high- and low-altitude maneuvering targets.

TORPEDOES

The Mk-48 torpedo, shown in figure 1-11, is a long-range, deep-depth, wire-guided, acoustic

homing torpedo. It is designed to combat fast, deep-diving nuclear submarines and high-performance surface ships. The Mk-48 can operate without wire command guidance and can use active or passive homing or both. When launched, it executes target search, acquisition, and attack procedures. If the Mk-48 misses the target, it will execute multiple reattacks. The Mk-48 is carried by all U.S. submarines, including strategic missile submarines that use it as a self-defense weapon.

The Mk-46 torpedo is designed for launching from surface combatants and fixed- and rotary-wing aircraft. It is a primary antisubmarine weapon used by Navy surface ships. The Mk-46 is an acoustic homing torpedo operating in either an active or a passive mode. If a target is not



Figure 1-10.—AIM-54A Phoenix



Figure 1-11.—Mk-48 torpedo.

acquired in the passive mode, the torpedo converts to the active mode.

TOMAHAWK CRUISE MISSILE

The Tomahawk, shown in figure 1-12, is a long-range, subsonic cruise missile. The Tomahawk can be a conventionally armed antiship version for antisurface warfare, a conventionally armed land-attack version, and a nuclear armed land-attack version.

The Tomahawk is an all-weather submarine-launched or surface combatant-launched antiship or land-attack cruise missile. After launch, a solid-

propellant rocket booster propels the missile until a small turbofan engine takes over for the cruise portion of the flight. The land-attack version of Tomahawk has an inertial and terrain-matching guidance system.

The antiship version has a modified Harpoon cruise missile guidance system. This system permits Tomahawk to be fired and to fly at low altitude in the general direction of an enemy warship to avoid radar detection. At a programmed distance, the missile begins an active radar search to seek, acquire, and hit the target ship.



Figure 1-12.—BGM-109 Tomahawk.

Tomahawk is a highly survivable weapon against predicted hostile defense systems. Radar detection is difficult because the missile has a very small cross section and flies at low altitude. Similarly, infrared detection is difficult because the turbofan engine emits a low level of heat. The antiship variant of Tomahawk uses a combined search radar and passive detection of enemy electronic radiation to detect a hostile ship at great range.

READINESS TRAINING IN THE U.S. NAVY

Readiness is defined as the ability of a force, a unit, a weapons system, or an equipment to deliver the output for which it was designed. Readiness includes the ability to deploy and employ without unacceptable delays.

To meet the sea power challenge, the U.S. Navy continually conducts readiness training. This readiness training includes refresher training, routine drills, exercises, and inspections.

REFRESHER TRAINING

REFRESHER TRAINING is designed to turn a materially ready and manned ship into a ship that is fully capable of performing its assigned mission. The Navy operates two refresher training groups, one on each coast of the United States. The Atlantic group is located at Guantanamo Bay, Cuba; the Pacific group is located at San Diego, California. Refresher training consists of inspections, exercises, drills, and battle problems. These are designed to test every capability of the ship. Refresher training normally takes about 5 weeks to complete under the watchful eye of a refresher training group. A ship must repeat all exercises failed during this period until it receives a passing grade. Upon completion of refresher training, the ship is ready for deployment.

ROUTINE DRILLS

After refresher training the ship must hold frequent drills to keep the crew in top shape. These may be of the operational, emergency, administrative, or special type. Ships base all drills on the ship's bills and the basic bills outlined in *Standard Organization and Regulations of the U.S. Navy*, OPNAVINST 3120.32B. Ships hold routine drills to ensure qualified personnel are assigned, bills are correct, and all equipment is

on hand and in working condition. Drills may seem repetitive, but this repetitiveness produces a set of automatic responses by crew members that prepares them for any event. General quarters is the most important drill held. A general quarters drill covers various bills that provide for exercise of the entire crew. It allows for damage-control, gun-crew, missile-firing, and medical-team drills all at once. Other frequently held drills are collision, man overboard, abandon ship, and rescue and assistance. Through routine drills each person in the crew will be able to perform under the most stressful conditions.

INSPECTIONS

To ensure ships and crews are prepared to meet operational commitments, higher authority holds several formal inspections. These inspections ensure the ship is safe to operate and administrative procedures are correct. They also ensure the ship is prepared to operate in wartime conditions and in battle. We will briefly cover four of the most important inspections conducted.

Operational Readiness Inspection (ORI)

One of the most important inspections ships receive is the OPERATIONAL READINESS INSPECTION (ORI). Unit commanders normally perform these inspections while the ship is underway with the crew at battle stations or with condition watches set. Type commanders place heavy emphasis on the ORI. This inspection tests the ability of the crew and ship to operate in battle under wartime conditions. The most important exercise is a lengthy and realistic battle problem with the crew at general quarters. Normally the ship will fire actual weapons during the exercise. Defense against all forms of attack will be tested along with damage-control, collision, and abandon-ship drills.

Propulsion Examination Board (PEB) Inspection

The PROPULSION EXAMINATION BOARD (PEB) INSPECTION is conducted to ensure the propulsion system is safe to operate. It also determines the adequacy of the administrative and operating procedures directly related to the propulsion plant and the capability of assigned personnel to maintain equipment and systems.

Administrative Inspection

Type commanders normally perform annual ADMINISTRATIVE INSPECTIONS. They hold these inspections to ensure ships follow correct record setup and administrative procedures. These inspections give the greatest attention to the ship's planned maintenance system (PMS).

Board of Inspection and Survey (INSURV)

Based on *Navy Regulations*, the BOARD OF INSPECTION AND SURVEY (INSURV) examines each naval ship at least once every 3 years, if practical. The inspection determines the ship's material condition; if found unfit for continued service, the ship must report to higher authority. Higher authority schedules these inspections without the knowledge of the commanding officer. However, the commanding officer may request an INSURV through official channels when needed. Other duties of the board of inspection and survey include the following:

1. Conduct acceptance trials and inspections of all ships and service craft before their acceptance for naval service.
2. Conduct acceptance trials and inspections of one or more aircraft of each type or model before final acceptance for naval service.
3. Perform such other inspections and trials of naval ships, service craft, and aircraft as directed by the Chief of Naval Operations.

EXERCISES

Our naval forces conduct various exercises with our allies throughout the year. These exercises reinforce and demonstrate the professionalism of the various navies to operate together in a sophisticated environment against a three-dimensional threat. They may be large- or small-scale exercises. Some take as long as 2 years to plan. One recent NATO exercise consisted of more than 160 ships, 250 aircraft, and approximately 7,000 ground force personnel from 10 countries. Through the various treaties and pacts the United States has entered into, we are committed to the defense of half the land areas of the world. Without sea power to keep the lines of communications open and supply our allies,

we cannot keep our commitment to these treaties. Conducting military exercises with our allies sends a signal to our adversaries that we can keep these commitments.

SUMMARY

The mission of our Navy is to be prepared to conduct prompt, sustained combat operations at sea in support of the national interests of the United States. Today's Navy must meet any type of aggression, from the most primitive to the most sophisticated.

Our basic national security objective is to preserve the United States as a free nation with its basic institutions and values intact. This objective depends upon our ability to deter aggression, to prevent coercion, and to influence international affairs from a position of recognized strength and credibility. It also depends upon our ability to fight when necessary and to terminate conflict on terms compatible with U.S. national security interests.

Fleet ballistic missile submarines (nuclear propulsion) must be capable of delivering ballistic missile attacks against assigned targets. The SSBN force, as part of the TRIAD, is a strong deterrent against nuclear attack because of its ability to retaliate with highly capable missiles.

The ability of U.S. naval forces to survive and accomplish their mission depends on their offensive powers. They must be able to destroy or neutralize hostile forces routinely present in the theater of operations or which represent a threat within that theater. They must be able to project power ashore by gunfire, missiles, carrier-based aircraft, and amphibious landings. Our forces must use each of these elements effectively to achieve and maintain sea control and to support allied forces or U.S. land-based forces ashore.

Naval warfare is a conflict in which at least one of the opponents is operating from the sea with surface ships, submarines, or sea-based aircraft. The objective of naval warfare is to exploit the strengths and minimize the weaknesses of air, subsurface, and surface forces. By combining all the elements of our naval forces, the Navy is fully capable of meeting a multidimensional threat in all three warfare areas.

Research, development, test, and evaluation programs allow the United States to field affordable and reliable weapons systems to meet any threat facing the nation today. Without these programs and the technological superiority

resulting from them, military superiority would be unachievable. To be survivable, today's Navy must have the latest and most modern platforms and systems available to deliver weapons wherever needed.

To meet any challenge, the Navy is constantly in a state of readiness training. Forces must constantly be trained during peacetime so that they will be prepared for war. Training is a major factor in the ability of a ship to carry out assigned operations. Personnel must be able to operate and maintain equipment and function continuously as a team. The best weapons and systems are useless without skilled hands and well-trained minds to operate them.

REFERENCES

Basic Military Requirements, NAVEDTRA, 12043, Naval Education and Training Program Management Support Activity, Pensacola, Fla., 1992.

SHOW A LEG

Many of our Navy's colorful expressions originated as practical means of communicating vital information. One such expression is "show a leg."

In the British Navy of King George III and earlier, many sailors' wives accompanied them on long voyages. This practice caused a multitude of problems, but some ingenious bosun solved one problem that tended to make reveille a hazardous event: that of distinguishing which bunks held males and which held females.

To avoid dragging the wrong "mates" out of the rack, the bosun asked all to "show a leg." If the leg shown was adorned with silk, the owner was allowed to continue sleeping. If the leg was hairy and tattooed, the owner was forced to "turn-to."

In today's Navy, showing a leg is a signal to the reveille petty officer that you have heard the call and are awake.



Show a leg.