January

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Photo Illustration by PH1(AW) Shane T. McCoy

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The Master Chief Petty Officer of the Navy’s Naval Heritage/Core Values Reading Guide list can be found at: www.navy.mil/palib/mcpn/readguide.html

Each of the books on this list contains sound management concepts and ideas that can be applied to your leadership role in the Navy.
Welcome to the 2006 edition of the All Hands “Owner’s and Operator’s Manual.”

Since All Hands began issuing this special edition in 1994, it has become one of the most popular and useful “quick reference” guides for our Navy. In fact, during my visits to the fleet, it is rare for me to enter a space and not see a copy laying open on a workbench or table, or meet a Sailor who hasn’t seen the latest edition.

As many of you know, one of the reasons for its popularity is that it provides the answers to many of the questions Sailors and Navy watchers ask most. You’ll find just about everything you need to know right here in these pages, from pay rates to weapons systems, ship types to shore installations. I encourage you to use it, read it and keep it close.

The most important feature of this issue is the title itself: “Owner’s and Operator’s Manual.” It speaks right to the heart of what this and every All Hands edition is truly about – you, the American Sailor.

You are the owners and operators of our Navy, the lifeblood of the world’s most powerful fleet. All our technology and machines aloft, afloat or ashore are but lifeless, empty shells without you to make them work and fight as part of the joint force. A diverse and talented team, you take the sum total of all our tremendous capabilities and wield unparalleled sea power for the nation, its allies and partners.

Make no mistake. It is our job – and our first imperative – to win the nation’s wars. It always has been and always will be. And I simply couldn’t be more proud of your performance in that regard. As I write this, thousands of you are helping take the fight to the enemy, keeping him on the defensive, disrupting his plans and fostering peace and security for millions of people the world over.

But, as we have clearly seen in the past year, sea power is just as much about providing hope as it is about protecting freedom. When the 2005 “Owner’s and Operator’s Manual” went to press, many of you were in Indonesia delivering desperately needed aid to tsunami victims in one of the greatest humanitarian undertakings in history.

And as this edition goes to press, you are at it once again, working feverishly to provide relief for those hit hard by hurricanes on our own shores, and the earthquake victims in Pakistan. It is not lost on me, or anyone else, that many of you rebuilding the shattered infrastructure of Pakistan today are the very same Sailors who lost your own homes to Hurricane Katrina last August. Yours is a service and a sacrifice hard to comprehend and yet so easy to see.

My message to all of you is this: stay ready. If past is truly prologue – and I believe it is – our Navy will be just as busy in 2006 as it was in 2005. The national and international demand for ready naval forces will not diminish. Indeed, it will likely grow. The combatant commanders know we bring to the joint effort unique and flexible expeditionary capabilities, regardless of whether that effort requires open conflict or open hands. But they also know we wouldn’t be able to deliver those capabilities without your unwavering dedication, talent, professionalism and skill.

This is, after all, your fleet – your Navy. You make it run. Thank you for serving, owning and operating it so incredibly well at this critical time in our nation’s history.
The map depicts the Unified Commands having geographic areas of responsibility. The Navy supports those regional Unified Commands with component and numbered fleets.

**U.S. NORTHERN COMMAND (USNORTHCOM)**

**U.S. Fleet Forces Command**
- **Headquarters:** Norfolk
- **Mission:** U.S. Fleet Forces Command organizes, mans, trains and equips Navy forces and provides planning support to combatant commanders; deters, detects and defends against homeland maritime threats; and articulates fleet war-fighting and readiness capabilities to the Chief of Naval Operations. CFFC strives to have an effectively prepared total Navy force, ready to win in combat; to authoritively define consistently accepted fleet readiness and war-fighting capabilities; and to provide transformational change through CONOPs and doctrine development, and agile, powerful and persistent Navy forces and operational planning from combatant commanders to the Chief of Naval Operations.

**U.S. 2nd Fleet**
- **Headquarters:** Norfolk
- **Mission:** Commander, U.S. 2nd Fleet is responsible for U.S. Navy operations and defense of U.S. interests in the North Atlantic Ocean, and is also responsible for the training/certification of East Coast Carrier Strike Groups and Expeditionary Strike Groups.
- **Area of Operations (AO):** The North Atlantic Ocean
- **Flagship:** Rotational

**U.S. PACIFIC COMMAND (USPACOM)**

**U.S. Pacific Fleet**
- **Headquarters:** Pearl Harbor
- **Mission:** Commander, U.S. Pacific Fleet (COM PACFLT), operates in support of the USPACOM Theater Security Strategy, and provides interoperable, trained and combat-ready naval forces to Commander, USPACOM and other U.S. combatant commanders, as required. In addition to these traditional Title X responsibilities, COM PACFLT has an increasing operational role as Commander, Joint Task Force 519. This mission requires COM PAC FLT to not only maintain the training and readiness of the Joint Task Force headquarters staff, but also command the joint force during times of conflict, crisis or war.

**U.S. 3rd Fleet**
- **Headquarters:** San Diego
- **Mission:** Commander, U.S. 3rd Fleet is responsible for U.S. Navy operations and defense of U.S. interests in the Pacific Ocean from the North Pole to the South Pole and from the continental West Coast to the international date line. The U.S. 3rd Fleet is responsible for the training/certification of West Coast Carrier Strike Groups and Expeditionary Strike Groups.
- **AO:** The Pacific Ocean from CONUS West Coast to the International Date Line.

**U.S. 7th Fleet**
- **Headquarters:** Yokosuka, Japan
- **Mission:** Commander, U.S. 7th Fleet’s responsibility is to defend and protect the territory, citizens, commerce, sea lanes, allies and other vital interests of the United States; deter aggression with capable, flexible and mobile U.S. naval forces, cooperating closely with other U.S. military services and the forces of allied and friendly nations; if deterrence fails, conduct prompt and sustained combat operations to terminate hostilities on terms favorable to the United States and allies. Commander, U.S. 7th Fleet wears three hats: as operational commander for all naval forces in the region; as a Joint Task Force commander in the event of natural disaster or joint mili-
tary operation; and as the Combined Naval Component Commander for the defense of the Korean peninsula; in the event of hostilities, all friendly naval forces in the theater would fall under 7th Fleet control.

AO: Fifty-two million square miles of the Pacific and Indian Oceans, from the international date line to the waters east of Africa, and from the Kuril Islands in the north to the Antarctic in the south.

Flagship: USS Blue Ridge (LCC/JCC 19)

U.S. SOUTHERN COMMAND (USOUTHCOM)

U.S. Naval Forces Southern Command

Headquarters: Mayport, Fla.

Mission: As the naval component to U.S. Southern Command, Commander, U.S. Naval Forces Southern Command (COMUSNAVSO) commands U.S. naval forces and interacts with partner nations to shape the environment within SOUTHCOM’s area of responsibility by developing and executing security cooperation initiatives and conducting counter-drug operations to promote democracy, stability and collective approaches to regional security. When required, COMUSNAVSO responds to crisis to maintain regional stability and protect U.S. national interests, and prepares to meet future hemispheric challenges.

AO: Nearly 16 million square nautical miles of ocean in the Caribbean, eastern Pacific and southern Atlantic, in addition to 30 nations, and 12 dependencies totaling 1/6 of the world’s landmass.

Flagship: USS Blue Ridge (LCC/JCC 19)

U.S. CENTRAL COMMAND (USCENTCOM)

U.S. Naval Forces Central Command/U.S. 5th Fleet/Combined Forces Maritime Component Commander

Headquarters: Manama, Bahrain

Mission: U.S. and coalition forces operating in this region conduct maritime security operations (MSO). MSO set the conditions for security and stability in the maritime environment as well as complement the counter-terrorism and security efforts of regional nations. MSO deny international terrorists use of the maritime environment as a venue for attack or to transport personnel, weapons or other material.

Coalition MSO complements the security efforts of regional nations who work toward a common goal against a common enemy – an enemy of peace, an enemy of stability, an enemy of prosperity.

AO: Covering approximately 7.5 million square miles, the area of operations includes the Arabian Gulf, Red Sea, Gulf of Oman and parts of the Indian Ocean. This expanse, comprised of 27 countries, includes three critical chokepoints at the Strait of Hormuz, the Suez Canal and the Strait of Bab al Mandeb at the southern tip of Yemen.

Flagship: USS Mount Whitney (LCC/JCC 20)

U.S. EUROPEAN COMMAND (USEUCOM)

U.S. Naval Forces Europe (COMUSNAVEUR)/U.S. 6th Fleet

Headquarters: With its headquarters in Naples, Italy, COMUSNAVEUR directs all its naval operations through Commander, U.S. 6th Fleet.

Mission: To be persuasive in peace, decisive in war and preeminent in any conflict. To achieve this, CNE/C6F conducts joint and combined operations in support of unified and allied commanders. To operate, exercise and sustain combat-ready maritime forces to defeat those enemies who would do harm to the United States or its allies. To conduct theater naval security cooperation to promote coalition building and foster regional security in support of U.S. national interests.

AO: More than 21 million square miles including 91 countries and territories. This territory extends from the Cape of Norway through the waters of the Baltic and Mediterranean Seas, most of Europe, parts of the Middle East to the Cape of Good Hope in South Africa.

Flagship: USS Mount Whitney (LCC/JCC 20)
UNITED STATES

California
- Naval Air Weapons Station (NAWS) China Lake
- Naval Air Facility (NAF) El Centro
- Naval Air Station (NAS) Lemoore
- Naval Base (NB) Coronado
- NB Ventura County
- NB Point Loma
- Naval Station (NS) San Diego
- Naval Post Graduate School Monterey
- Naval Weapons Station (NWS) Seal Beach
- NSA Corona

Connecticut
- Naval Submarine Base (SUBASE) New London

District of Columbia
- Washington Navy Yard

Florida
- NAS Jacksonville
- NAF Key West
- NAS Whiting Field
- NAS Pensacola
- NS Mayport
- NSA Panama City
- NSA Orlando

Georgia
- NAS Atlanta
- Naval Supply Corps School Athens
- SUBASE Kings Bay

Hawaii
- Naval Computer and Telecommunications Area Master Station, Eastern Pacific, Wahiawa
- NS Barking Sands
- NS Pearl Harbor
- Pearl Harbor Naval Shipyard
- Pacific Missile Range Facility, Kauai

Illinois
- NS Great Lakes

Indiana
- NSA Crane

Louisiana
- NAS Joint Reserve Base New Orleans
- NSA New Orleans

Maine
- NAS Brunswick

Maryland
- NAF Washington
- NAS Patuxent River
- NS Annapolis
- U.S. Naval Academy
- NSA Indian Head
- Naval Surface Warfare Center (NSWC) Carderock
- Naval Support Facility (NSF) Thurmont

Mississippi
- Construction Battalion Center (CBC) Gulfport
- NAS Meridian
- NS Pascagoula

Nevada
- NAS Fallon

New Hampshire
- Portsmouth Naval Shipyard

New Jersey
- Naval Air Engineering Station (NAES), Lakehurst
- NWS Earle

New York
- Naval Support Unit (NSU) Saratoga Springs

Pennsylvania
- NAS Joint Reserve Base Willow Grove
- NSA Mechanicsburg
- NSWC Philadelphia

Rhode Island
- NS Newport

South Carolina
- NWS Charleston

Tennessee
- NSA Mid-South
Texas
NAS Corpus Christi
NAS Joint Reserve Base Fort Worth
NAS Kingsville
NS Ingleside

Virginia
Naval Amphibious Base (NAB)
Little Creek
NAS Oceana
NS Norfolk
NAS Norfolk
NSA Dahlgren
NWS Yorktown
NS Wallops Island
Norfolk Naval Shipyard

Washington
NAS Whidbey Island
NB Kitsap
NS Everett
Naval Undersea Warfare Center (NUWC) Keyport
Naval Magazine Indian Island
Puget Sound Naval Shipyard and Intermediate Maintenance Facility

West Virginia
Naval Security Group, Activity (NSGA)
Sugar Grove

WORLDWIDE

Bahamas
NUWC Bahamas (Andros Island)

Bahrain
NSA Bahrain

Cuba
NS Guantnamo Bay

Diego Garcia
NSF British Indian Ocean Territories

Greece
NSA Souda Bay

Guam
Naval Forces Marianas Support Activity

Iceland
NAS Keflavik

Italy
NAS Sigonella
NSA Gaeta
NSA La Maddalena
NSA Naples

Japan
NAF Atsugi
NAF Misawa
Commander Fleet Activities (CFA)
Okinawa
CFA Sasebo
CFA Yokosuka

Korea
CFA Chinhae

Singapore
Naval Regional Contracting Center, Singapore

Spain
NS Rota

United Kingdom
NAF Mildenhall
Naval Activities London
Joint Military Facility (JMF) St. Mawgans

▼ Broadway Pier, San Diego
Enlisted Sailors wear their job specialty in plain sight. Rating badges, worn on the left sleeve, consist of an eagle (called a crow); chevrons indicating the wearer’s rate; and a specialty mark indicating rating. While some of these ratings have historical significance (such as the boatswain’s mate), others show the evolution of naval technology in modern times, such as the GS (gas turbine system technician).
CRUISERS

Modern U.S. Navy guided-missile cruisers perform primarily in a battle force role. These ships are multi-mission, anti-air warfare (AAW), anti-submarine warfare (ASW), long-range strike and anti-surface warfare (ASUW) surface combatants capable of supporting carrier and expeditionary strike groups (ESG), amphibious forces, or of operating independently and as flagships of surface action groups.

Ticonderoga-class

Power Plant: Four General Electric LM 2500 gas turbine engines; Two shafts, 80,000 shaft horsepower total.
Length: 567 feet
Beam: 55 feet
Displacement: 9,600 tons full load
Speed: 30 plus knots (34.5+ mph)
Aircraft: Two SH-60 Sea Hawk (LAMPS III)
Crew: 364 (24 officers, 340 enlisted)
Armament: MK 26 missile launcher (CG 51); Standard Missile (MR) or MK-41 vertical launching system (CG 52 through CG 73); Standard Missile (MR); Vertical Launch ASROC (VLA) Missile; Tomahawk Cruise Missile; Six MK-46 torpedoes (from two triple mounts); Two MK-45 5-inch/54 caliber lightweight guns; Two Phalanx CIWS.

Ships:
USS Thomas S. Gates (CG 51)
USS Bunker Hill (CG 52)
USS Mobile Bay (CG 53)
USS Antietam (CG 54)
USS Leyte Gulf (CG 55)
USS San Jacinto (CG 56)
USS Lake Champlain (CG 57)
USS Philippine Sea (CG 58)
USS Princeton (CG 59)
USS Normandy (CG 60)
USS Monterey (CG 61)
USS Chancellorsville (CG 62)
USS Cowpens (CG 63)
USS Gettysburg (CG 64)
USS Chosin (CG 65)
USS Hue City (CG 66)
USS Shiloh (CG 67)
USS Anzio (CG 68)
USS Vicksburg (CG 69)
USS Lake Erie (CG 70)
USS Cape St. George (CG 71)
USS Vella Gulf (CG 72)
USS Port Royal (CG 73)

AMPHIBIOUS ASSAULT

Operating as part of the modern U.S. Navy, amphibious assault ships are called upon to perform as primary landing ships for assault operations of Marine expeditionary units. These ships use Air Cushion Landing Craft (LCAC), conventional landing craft and helicopters to move Marine assault forces ashore. In a secondary role, using AV-8B Harrier aircraft and anti-submarine warfare helicopters, these ships perform sea control and limited power projection missions.

Tarawa-class

Power Plant: Two boilers, two geared steam turbines, two shafts, 70,000 total shaft horsepower
Length: 820 feet
Beam: 106 feet
Displacement: 39,400 tons full load
Speed: 24 knots (27.6 mph)
Aircraft, depending on mission: 12 CH-46 Sea Knight helicopters; four CH-53E Sea Stallion helicopters; six AV-8B Harrier attack aircraft; three UH-1N Huey helicopters; four AH-1W Super Cobra helicopters
Crew: 964 (82 officers, 882 enlisted)
Marine detachment: 1,900 plus
Armament: Two RAM launchers; two Phalanx 20 mm CIWS mount; three .50 cal. machine guns; four 25 mm M K-38 machine guns

Ships:
USS Tarawa (LHA 1)
USS Saipan (LHA 2)
USS Belleau Wood (LHA 3)
USS Nassau (LHA 4)
USS Peleliu (LHA 5)
**Wasp-class**

Power Plant: Two boilers, two geared steam turbines, two shafts, 70,000 shaft horsepower; LHD 8-two gas turbines, 70,000 shaft horsepower, two auxiliary propulsion motors (5,000 hp each)

Length: 844 feet
Beam: 106 feet
Displacement: LHD 5 1-4: 40,650 tons full load; LHD 5 5-7: 40,358 tons full load; LHD 8: 41,772 tons full load

Speed: 20+ knots (23.5+ mph)
Aircraft, depending on mission:
- 12 CH-46 Sea Knight helicopters;
- Four CH-53E Sea Stallion helicopters;
- Six AV-8B Harrier attack aircraft;
- Three UH-1N Huey helicopters;
- Four AH-1W Super Cobra helicopters

Crew: 1,108 (104 officers, 1,004 enlisted)
Marine detachment: 1,894
Armament: Two RAM launchers; two NATO Sea Sparrow launchers; three 20mm Phalanx CIWS mounts (two on LHD 5-7); four .50 cal. machine guns; four 25mm M K 38 machine guns (LHD 5-7 have three 25mm M K-38 machine guns)

Ships:
- USS Wasp (LHD 1)
- USS Essex (LHD 2)
- USS Kearsarge (LHD 3)
- USS Boxer (LHD 4)
- USS Bataan (LHD 5)
- USS Bonhomme Richard (LHD 6)
- USS Iwo Jima (LHD 7)
- Makin Island (LHD 8)*

**DESTROYERS**

Destroyers and guided-missile destroyers operate in support of carrier and expeditionary strike groups, surface action groups, amphibious groups and replenishment groups. Destroyers primarily perform anti-submarine warfare duty while guided-missile destroyers are multi-mission (anti-air warfare (AAW), anti-submarine warfare (ASW) and anti-surface warfare (ASUW)) surface combatants.

**Arleigh Burke-class**

Power Plant: Four General Electric LM 2500-30 gas turbines; two shafts, 100,000 total shaft horsepower, SPY-1 Radar and Combat System Integrator

Length: Flights I and II (DDG 51-78): 505 feet; Flight IIA (DDG 79-98): 509 feet
Beam: 59 feet
Displacement: DDG 51 through 71: 8,315 tons full load; DDG 72 through 78: 8,400 tons full load; DDG 79 and on: 9,200 tons full load
Speed: In excess of 30 knots (34.5 mph)
Aircraft: Hangar on later units. LAMPS III electronics installed on landing deck for coordinated DDG 51/helo ASW operations
Crew: 323 (23 officers, 300 enlisted)
Armament: Standard missile; Harpoon; Vertical Launch ASROC (VLA) missiles; Tomahawk; six MK-46 torpedoes (from two triple tube mounts); one 5-inch/54 caliber MK-45 lightweight gun; two 20mm Phalanx CIWS

Ships:
- USS Arleigh Burke (DDG 51)
- USS Barry (DDG 52)
- USS John Paul Jones (DDG 53)
- USS Curtis Wilbur (DDG 54)
- USS Stout (DDG 55)
- USS John S. McCain (DDG 56)
- USS Mitscher (DDG 57)
- USS Laboon (DDG 58)
- USS Russell (DDG 59)
- USS Paul Hamilton (DDG 60)
- USS Ramage (DDG 61)
- USS Fitzgerald (DDG 62)
- USS Stethem (DDG 63)
- USS Carney (DDG 64)
- USS Benfold (DDG 65)
- USS Gonzalez (DDG 66)
- USS Cole (DDG 67)
- USS The Sullivans (DDG 68)
- USS Milius (DDG 69)
- USS Hopper (DDG 70)
- USS Ross (DDG 71)
- USS Mahan (DDG 72)
- USS Decatur (DDG 73)
- USS McFaul (DDG 74)
- USS Donald Cook (DDG 75)
- USS Higgins (DDG 76)
- USS O’Kane (DDG 77)
- USS Porter (DDG 78)

* Under Construction
** Navy Reserve Force
FRIGATES

Frigates fulfill a protection of shipping (POS) mission as anti-submarine warfare (ASW) combatants for amphibious expeditionary forces, underway replenishment groups and merchant convoys.

Oliver Hazard Perry-class

- **Power Plant:** Two General Electric LM 2500 gas turbine engines; 1 shaft, 41,000 shaft horsepower total.
- **Length:** 445 feet; 453 feet with LAMPS III modification.
- **Beam:** 45 feet
- **Displacement:** 4,100 tons full load
- **Speed:** 29+ knots (33.4+ mph)
- **Aircraft:** Two SH-60 (LAMPS III) in FFG 8, 28, 29, 32, 33, 36-61; One SH-2 (Lamps M K-I) in FFG 30, 31.
- **Crew:** 215 (17 officers, 198 enlisted)
- **Armament:** Harpoon (from Standard Missile Launcher); six M K-46 torpedoes (from two triple mounts); one 3-inch/62 caliber M K-75 rapid fire gun; one Phalanx CIWS.

Ships:

USS McInerney (FFG 8)
USS Boone (FFG 28)**
USS Stephen W. Groves (FFG 29)**
USS John L. Hall (FFG 32)**
USS Jarrett (FFG 33)
USS Underwood (FFG 36)
USS Crommelin (FFG 37)
USS Curts (FFG 38)**
USS Doyle (FFG 39)**
USS Halyburton (FFG 40)
USS McClosky (FFG 41)
USS Klakring (FFG 42)**
USS Thach (FFG 43)
USS DeWert (FFG 45)
USS Rentz (FFG 46)
USS Nicholas (FFG 47)
USS Vandegrift (FFG 48)
USS Robert G. Bradley (FFG 49)
USS Taylor (FFG 50)
USS Gary (FFG 51)
USS Carr (FFG 52)
USS Hawes (FFG 53)
USS Ford (FFG 54)
USS Elrod (FFG 55)
USS Simpson (FFG 56)
USS Reuben James (FFG 57)
USS Samuel B. Roberts (FFG 58)
USS Kauffman (FFG 59)
USS Rodney M. Davis (FFG 60)
USS Ingraham (FFG 61)
AMPHIBIOUS TRANSPORT DOCK

Amphibious transports are used to transport and land Marines, their equipment and supplies by embarked air cushion or conventional landing craft or amphibious vehicles, augmented by helicopters or vertical take off and landing aircraft in amphibious assault, special operations, or expeditionary warfare missions.

**Austin-class**

- **Power plant:** Two boilers, two steam turbines, two shafts, 24,000 shaft horsepower
- **Length:** 570 feet
- **Beam:** 84 feet
- **Displacement:** Approximately 17,000 tons (full load)
- **Speed:** 21 knots (24.2 mph)

- **Aircraft:** Up to six CH-46 Sea Knight helicopters
- **Crew:** 420 (24 officers, 396 enlisted)
- **Marine detachment:** 900
- **Armament:** Two 25mm M K 38 guns; two Phalanx CIWS; and eight .50-caliber machine guns.

- **Ships:**
  - USS Austin (LPD 4)
  - USS Ogden (LPD 5)
  - USS Cleveland (LPD 7)
  - USS Dubuque (LPD 8)
  - USS Denver (LPD 9)
  - USS Juneau (LPD 10)
  - USS Shreveport (LPD 12)
  - USS Nashville (LPD 13)
  - USS Trenton (LPD 14)
  - USS Ponce (LPD 15)

**San Antonio-class**

- **Power plant:** Four sequentially turbocharged marine Colt-Pielstick diesels, two shafts, 41,600 shaft horsepower
- **Length:** 684 feet

- **Beam:** 105 feet
- **Displacement:** Approximately 24,900 tons (full load)
- **Speed:** In excess of 22 knots (24.2 mph, 38.7 kph)

- **Aircraft:** Launch or land two CH-53E Super Stallion helicopters or up to four CH-46 Sea Knight helicopters, MV-22 Osprey tilt rotor aircraft, AH-1 or UH-1—l helicopters

- **Armament:** Two Bushmaster II 30mm Close in Guns, fore and aft; two Rolling Airframe Missile launchers, fore and aft.

- **Landing Craft/Assault Vehicles:** Two LCACs or one LCU; and 14 Advanced Amphibious Assault Vehicles.

- **Crew:** 361 (28 officers, 333 enlisted)
- **Embarked Landing Force:** 699 (66 officers, 633 enlisted); surge capacity to 800

Ships:

- USS San Antonio (LPD 17)
- New Orleans (LPD 18)*
- Mesa Verde (LPD 19)*
- Green Bay (LPD 20)*
- New York (LPD 21)*
- San Diego (LPD 22)*
- Anchorage (LPD 23)*
- Arlington (LPD 24)*
- Somerset (LPD 25)*

* Under Construction
** Navy Reserve Force
AMPHIBIOUS DOCK LANDING
Dock Landing Ships support amphibious operations including landings via Air Cushion Landing Craft (LCAC), conventional landing craft and helicopters, onto hostile shores.

Whidbey Island-class
Power Plant: Four Colt Industries, 16 Cylinder diesels, two shafts, 33,000 shaft horsepower
Length: 609 feet
Beam: 84 feet
Displacement: 15,939 tons (full load)
Speed: 20+ knots (23.5+ mph)
Landing Craft: Four Air Cushion Landing Craft
Crew: 413 (22 officers, 391 enlisted)
Marine Detachment: 402 plus 102 surge
Armament: two 25mm MK-38 Machine Guns; two 20mm Phalanx CIWS mounts and six .50 cal. machine guns
Ships:
USS Whidbey Island (LSD 41)
USS Germantown (LSD 42)
USS Fort McHenry (LSD 43)
USS Gunston Hall (LSD 44)
USS Comstock (LSD 45)
USS Tortuga (LSD 46)
USS Rushmore (LSD 47)
USS Ashland (LSD 48)

Harpers Ferry-class
Power Plant: Four Colt Industries, 16 cylinder diesels, two shafts, 33,000 shaft horsepower
Length: 609 feet
Beam: 84 feet
Displacement: 16,708 tons (full load)
Speed: 20+ knots (23.5+ mph)
Landing Craft: Two Air Cushion Landing Craft
Crew: 419 (22 officers, 397 enlisted)
Marine detachment: 402 plus 102 surge
Armament: two 25mm M K-38 Machine Guns; two 20mm Phalanx CIWS mounts and six .50 cal. machine guns
Ships:
USS Harpers Ferry (LSD 49)
USS Carter Hall (LSD 50)
USS Oak Hill (LSD 51)
USS Pearl Harbor (LSD 52)

AMPHIBIOUS COMMAND
Amphibious Command ships provide command and control for fleet commanders. Commissioned in 1970, these are the only ships to be designed initially for an amphibious command ship role. Earlier amphibious command ships lacked sufficient speed to keep up with a 20-knot amphibious force. Subsequently, both ships became fleet flagships. USS Blue Ridge became the 7th Fleet command ship in 1979, and USS Mount Whitney became the 2nd Fleet command ship in 1981. USS Coronado (AGF 11) is the flagship for Commander 3rd Fleet. Mount Whitney and Coronado were transferred to Military Sealift Fleet Services Command, but are still in commission.

Blue Ridge-class
Power Plant: Two boilers, one geared turbine, one shaft; 22,000 horsepower
Length overall: 634 feet
Beam extreme: 108 feet
Displacement: 18,874 tons (full load)
**Speed:** 23 knots (26.5 mph)

**Aircraft:** All helicopters except the CH-53 Sea Stallion can be carried

**Crew:** 842 (52 officers, 790 enlisted)

**Ships:**
- USS Blue Ridge (LCC 19)
- USS Mount Whitney (LCC/JCC 20)

**Coronado-class**
- **Power Plant:** Two boilers, geared turbines, two shafts, 24,000 shaft horsepower
- **Length:** 570 feet
- **Beam:** 100 feet
- **Displacement:** 16,912 tons
- **Speed:** 21 knots

**Aircraft:** two light helicopters

**Crew:** 516 ships company + 120 flag staff

**Armament:** two Phalanx close-in-weapons system, two 12.7mm MGs

**Ships:**
- USS Coronado (AGF 11)

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**MINE WARFARE**

Avenger-class ships are designed as mine hunter-killers capable of finding, classifying and destroying moored and bottom mines. The last three MCM ships were purchased in 1990, bringing the total to 14 fully-deployable, oceangoing Avenger-class ships. These ships use sonar and video systems, cable cutters and a mine detonating device that can be released and detonated by remote control. They are also capable of conventional sweeping measures. Osprey-class (MHC 51) are also designed as mine hunter-killers. MHC 51 has a 15-day endurance and depends on a support ship- or shore-based facilities for re-supply.

**Avenger-class**
- **Power Plant:** Four diesels (600 horsepower each), two shafts with controllable pitch propellers
- **Length:** 224 feet
- **Beam:** 39 feet
- **Displacement:** 1,312 tons (full load)
- **Speed:** 14 knots
- **Crew:** 84 (8 officers, 76 enlisted)
- **Armament:** Mine neutralization system, two .50 caliber machine guns

**Ships:**
- USS Avenger (MCM 1)**
- USS Defender (MCM 2)**
- USS Sentry (MCM 3)**
- USS Champion (MCM 4)**
- USS Guardian (MCM 5)
- USS Devastator (MCM 6)
- USS Patriot (MCM 7)
- USS Scout (MCM 8)
- USS Pioneer (MCM 9)
- USS Warrior (MCM 10)
- USS Gladiator (MCM 11)**
- USS Ardent (MCM 12)
- USS Dextrous (MCM 13)
- USS Chief (MCM 14)

**Osprey-class**
- **Power Plant:** Two diesels (800 hp each); two VoithSchneider (cycloidal) propulsion systems
- **Length:** 188 feet
- **Beam:** 36 feet
- **Displacement:** 893 ton (full load)
- **Speed:** 10 knots
- **Crew:** 51 (5 officers, 46 enlisted)
- **Armament:** Two .50 caliber machine guns, Nine Neutralization Systems and other mine countermeasures systems

**Ships:**
- USS Osprey (MHC 51)**
- USS Heron (MHC 52)**
- USS Pelican (MHC 53)**
- USS Robin (MHC 54)**
- USS Oriole (MHC 55)**
- USS Kingfisher (MHC 56)**
- USS Cormorant (MHC 57)**
- USS Black Hawk (MHC 58)**
- USS Falcon (MHC 59)**
- USS Cardinal (MHC 60)
- USS Raven (MHC 61)
- USS Shrike (MHC 62)**

* Under Construction
** Navy Reserve Force

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**Photo by PH1 Robert R. McRill**

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**USS Ardent (MCM 12)**

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**Photo by Phil Nuttall & Mel Hill**

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**Owner’s and Operators’ Manual**
COASTAL PATROL SHIPS (PC)

The primary mission of these ships is coastal patrol and interdiction surveillance, an important aspect of littoral operations outlined in the Navy's strategy, SeaPower 21. The Cyclone-class PCs are particularly suited for the maritime homeland security mission and have been employed jointly with the U.S. Coast Guard to help protect our nation's coastline, ports and waterways from terrorist attack. These ships provide the U.S. Navy with a fast, reliable platform that can respond to emergent requirements in a shallow water environment. The lead ship of the class, Cyclone (PC 1), was decommissioned and turned over to the U.S. Coast Guard in 2000 and five more were turned over to the Coast Guard in 2004.

Cyclone-class (Patrol Coastal)

- **Propulsion**: Four Paxman diesels; four shafts; 3,350 shaft horsepower.
- **Length**: 170 feet
- **Beam**: 25 feet
- **Displacement**: 331 tons (full load)
- **Speed**: 35 knots (40 mph)
- **Crew**: 28 (Four officers, 24 enlisted)

- **Armament**: One MK 96 and one MK 38 25mm machine guns; Five .50 caliber machine guns; two M K 19 40mm automatic grenade launchers; Two M-60 machine guns.

- **Ships**:
  - USS Hurricane (PC 3)
  - USS Typhoon (PC 5)
  - USS Sirocco (PC 6)
  - USS Squall (PC 7)
  - USS Chinook (PC 9)
  - USS Firebolt (PC 10)
  - USS Whirlwind (PC 11)
  - USS Thunderbolt (PC 12)

LITTORAL COMBAT SHIP (LCS)

LCS is a fast craft designed to operate in hostile near-shore environments. Two different designs are being built for Flight Zero, a monohull and a trimaran. Both have reconfigurable payloads for interchangeable mission packages that focus on anti-submarine, mine and surface warfare. Lockheed Martin has begun construction on the first ship, LCS 1 Freedom, with ship delivery scheduled for FY07. General Dynamics will begin construction next year with delivery scheduled for FY08.
AUXILIARY SHIPS

The fast combat support ship (AOE) is the Navy’s largest combat logistics ship. The AOE has the speed and armament to keep up with the carrier strike groups. It rapidly replenishes Navy task forces and can carry more than 177,000 barrels of oil; 2,150 tons of ammunition; 500 tons of dry stores; and 250 tons of refrigerated stores. It receives petroleum products, ammunition and stores from shuttle ships and redistributes these items simultaneously to carrier strike group ships. This reduces the vulnerability of serviced ships by reducing alongside time. Congress appropriated the funds for the lead ship of the AOE 6 (Supply class) in 1987. Supply and Rainier (AOE 7) were transferred to Military Sealift Command and placed back in service as a “United States Naval Ship.” All are now MSC.

RESCUE & SALVAGE

Rescue and salvage ships render assistance to disabled ships, provide towing, salvage, diving, firefighting and heavy lift capabilities. They can debeam stranded vessels, heavy lift capability from ocean depths, towing of other vessels, and manned diving operations. For rescue missions, these ships are equipped with fire monitors forward and amidships which can deliver either firefighting foam or sea water. The salvage holds of these ships are outfitted with portable equipment to provide assistance to other vessels in dewatering, patching, supply of electrical power and other essential service required to return a disabled ship to an operating condition.

SUBMARINE TENDERS

Submarine tenders furnish maintenance and logistic support for nuclear-powered attack submarines and are the largest of the active auxiliaries. Their crews are made up mostly of technicians and repair personnel.

Emory S. Land-class

Power Plant: Two boilers, geared turbines, one shaft, 20,000 shaft horsepower
Length: 644 feet
Beam: 85 feet
Displacement: Approximately 23,493 tons (full load)
Speed: 20 knots (23 mph)
Aircraft: None
Crew: 1,363 (97 officers, 1,266 enlisted)
Armament: Two 40mm guns, and four 20mm guns

Ships:
USS Emory S. Land (AS 39)
USS Frank Cable (AS 40)

OTHER SHIPS IN COMMISSION

USS Constitution
USS Pueblo (AGER 2)
Self Defense Test Ship (EDDG 31)
(Source: Navy Fact File)

OWNER’S and OPERATOR’S manual
MSC Ships

NAVAL FLEET AUXILIARY FORCE (NFAF)

Ammunition Ships T-AE
- USNS Kilauea (T-AE 26)
- USNS Flint (T-AE 32)
- USNS Shasta (T-AE 33)
- USNS Mount Baker (T-AE 34)
- USNS Kiska (T-AE 35)

Combat Stores Ships T-AFS
- USNS Niagara Falls (T-AFS 3)
- USNS Concord (T-AFS 5)
- USNS San Jose (T-AFS 7)
- USNS Spica (T-AFS 9)
- USNS Saturn (T-AFS 10)

Fast Combat Support Ships T-AOE
- USNS Supply (T-AOE 6)
- USNS Rainer (T-AOE 7)
- USNS Arctic (T-AOE 8)
- USNS Bridge (T-AOE 10)

Hospital Ships T-AH
- USNS Mercy (T-AH 19)
- USNS Comfort (T-AH 20)

Advanced Auxiliary Dry Cargo/Ammunition Ships T-AKE
- USNS Lewis and Clark (T-AKE 1)
- USNS Sacagawea (T-AKE 2)

Underway Replenishment Oilers T-AO
- USNS Henry J. Kaiser (T-AO 187)
- USNS Joshua Humphreys (T-AO 188)
- USNS John Lenthal (T-AO 189)
- USNS Walter S. Diehl (T-AO 193)
- USNS John Ericson (T-AO 194)
- USNS Leroy Grumman (T-AO 195)
- USNS Kanawha (T-AO 196)
- USNS Pecos (T-AO 197)
- USNS Big Horn (T-AO 198)
- USNS Tippecanoe (T-AO 199)
- USNS Guadalupe (T-AO 200)
- USNS Patuxent (T-AO 201)
- USNS Yukon (T-AO 202)
- USNS Laramie (T-AO 203)
- USNS Rappahannock (T-AO 204)

Oceanographic Survey Ships T-AGS
- USNS John McDonnell (T-AGS 51)
- USNS Pathfinder (T-AGS 60)
- USNS Sumner (T-AGS 61)
- USNS Bowditch (T-AGS 62)
- USNS Henson (T-AGS 63)
- USNS Bruce C. Heezen (T-AGS 64)
- USNS Mary Sears (T-AGS 65)

Special Mission Chartered Ships
- SSV C-Commando
- MV Cory Chouest
- MV Dolores Chouest
- MV Kellie Chouest
- MV Carolyn Chouest

High Speed Vessels (HSV)
- HSV Swift (HSV 2)

PREPOSITIONING PROGRAM/MARITIME PREPOSITIONING PROGRAM

Container Ships T-AK
- MV Capt. Steven L. Bennett (T-AK 4296)
- MV Maj. Bernard F. Fisher (T-AK 4396)
- MV A1C William A. Pitsenbarger (T-AK 4638)
- MV Maj. Bernard F. Fisher (T-AK 4396)
- MV LTC John U.D. Page (T-AK 4496)
- MV SSG Edward A. Carter, Jr. (T-AK 4544)
Maritime Prepositioning Ships T-AK
MV Cpl. Louis J. Hauge Jr. (T-AK 3000)
MV PFC William B. Baugh (T-AK 3001)
MV PFC James Anderson, Jr. (T-AK 3002)
MV1st Lt. Alex Bonnyman (T-AK 3003)
MV Pvt. Franklin J. Phillips (T-AK 3004)
MV Sgt. Matej Kocak (T-AK 3005)
MV PFC Eugene A. Obregon (T-AK 3006)
MV Maj. Stephen W. Pless (T-AK 3007)
MV 2nd Lt. John P. Bobo (T-AK 3008)
MV PFC Dewayne T. Williams (T-AK 3009)
MV 1st Lt. Baldomero Lopez (T-AK 3010)
MV 1st Lt. Jack Lummus (T-AK 3011)
MV Sgt. William R. Button (T-AK 3012)
USNS 1st Lt. Harry L. Martin (T-AK 3015)
USNS Gunnery Sgt. Fred W. Stockham (T-AK 3017)
USNS Lance Cpl. Roy M. Wheat (T-AK 3016)

Transport Tankers T-AOT
SS Chesapeake (T-AOT 5084)
SS Petersburg (T-AOT 9101)

Aviation Logistics Ships T-AVB
SS Wright (T-AVB 3)
SS Curtiss (T-AVB 4)

Large, Medium-speed Roll-on/Roll-off Ships T-AKR
USNS Watson (T-AKR 310)
USNS Sisler (T-AKR 311)
USNS Dahl (T-AKR 312)
USNS Red Cloud (T-AKR 313)
USNS Charlton (T-AKR 314)
USNS Watkins (T-AKR 315)
USNS Pomeroy (T-AKR 316)
USNS Soderman (T-AKR 317)

High-Speed Vessel (HSV)
MV WestPac Express (HSV 4676)

SEALIFT FORCE
Fast Sealift Ships T-AKR
USNS Algol (T-AKR 287)
USNS Bellatrix (T-AKR 288)
USNS Denebola (T-AKR 289)
USNS Pollux (T-AKR 290)
USNS Altair (T-AKR 291)
USNS Regulus (T-AKR 292)
USNS Capella (T-AKR 293)
USNS Antares (T-AKR 294)

Large, Medium-speed Roll-on/Roll-off Ships T-AKR
USNS Gordon (T-AKR 296)
USNS Gilliland (T-AKR 298)
USNS Shughart (T-AKR 295)
USNS Yano (T-AKR 297)
USNS Bob Hope (T-AKR 300)
USNS Fisher (T-AKR 301)
USNS Seay (T-AKR 302)
USNS Mendonca (T-AKR 303)
USNS Pililaau (T-AKR 304)
USNS Brittin (T-AKR 305)
USNS Benavidez (T-AKR 306)

Transport Tankers T-AOT
USNS Paul Buck (T-AOT 1122)
USNS Samuel L. Cobb (T-AOT 1123)
USNS Richard G. Matthisen (T-AOT 1124)
USNS Lawrence H. Gianella (T-AOT 1125)
MV Montauk

Long-term Chartered Container Ships
MV Baffin Strait

Ice-strengthened Container Ships
MV American Tern
The mission of the 1st Naval Construction Division/Naval Construction Forces Command is to organize, train, operate and maintain the naval construction force, to command and control naval construction regiments and Seabee readiness groups, and to develop, coordinate and implement policy and requirements to man, equip and train Seabees. Navy Seabees deploy around the world to provide construction support for U.S. forces as well as humanitarian assistance.

### Naval Construction Regiments (NCR)

Naval construction regiments exercise administrative and operational control of two or more naval mobile construction battalions or other naval construction force units operating in a specific geographic area or operating in support of a specific military operation.

**Active**
- 22NCR, Gulfport, Miss.
- 30NCR, Pearl Harbor

**Reserve**
- 3NCR, Marietta, Ga.
- 1NCR, Port Hueneme, Calif.
- 7NCR, Newport, R.I.
- 9NCR, Fort Worth

### Seabee Readiness Groups (SRG)

The mission of the Seabee Readiness Groups is to exercise tactical control of homeported naval construction battalions, provide military and technical training for active and Reserve units and ensure maximum effectiveness and operational readiness of naval construction force units.

**Active**
- 20th 20SRG, Gulfport, Miss.
- 31st 31SRG, Port Hueneme, Calif.

### Naval Mobile Construction Battalions (NMCB)

Naval Mobile Construction Battalions (NMCB) provide responsive military construction support to Navy, Marine Corps and other forces in military operations, construct base facilities and conduct defensive operations. In addition to standard wood, steel, masonry and concrete construction, NMCBs also perform specialized construction such as water well drilling and battle damage repair. They are able to work and defend themselves at construction sites outside of their base camp and convoy through unsecured areas. In times of emergency or disaster, NMCBs conduct disaster assistance and recovery operations.

**Active**
- NMCB 1, Gulfport, Miss.
- NMCB 5, Port Hueneme, Calif.
- NMCB 7, Gulfport, Miss.
- NMCB 3, Port Hueneme, Calif.
- NMCB 74, Gulfport, Miss.
- NMCB 4, Port Hueneme, Calif.
- NMCB 133, Gulfport, Miss.
- NMCB 40, Port Hueneme, Calif.
Reserve
NMCB 14, Jacksonville, Fla.
NMCB 15, Belton, Mo.
NMCB 21, Lakehurst, N.J.
NMCB 17, Fort Carson, Colo.
NMCB 23, Fort Belvoir, Va.
NMCB 18, Fort Lewis, Wash.
NMCB 24, Huntsville, Ala.
NMCB 22, Fort Worth, Texas
NMCB 26, Mt. Clemens, Mich.
NMCB 25, Fort McCoy, Wis.
NMCB 27, Brunswick, Maine
NMCB 28, Shreveport, La.

Active
UCT 1, Norfolk
UCT 2, Port Hueneme, Calif.

UNDERWATER CONSTRUCTION TEAMS (UCT)
Underwater construction teams provide construction, inspection and repair of ocean facilities such as wharves, piers, underwater pipelines, moorings, boat ramps, etc. They are capable of diving to 190 feet using scuba or surface supplied air to perform work underwater.

CONSTRUCTION BATTALION MAINTENANCE UNITS (CBMU)
Construction battalion maintenance units provide maintenance and construction support to military bases on both coasts through numerous detachments that deploy to construct and maintain base camps and fleet hospitals.

Active
CBMU 202, Norfolk
CBMU 303, San Diego

NAVAL CONSTRUCTION FORCE SUPPORT UNIT (NCFSU)
The naval construction force support unit provides augment construction; engineering and logistics; and specialized equipment support for a naval construction regiment and other units.

Reserve
NCFSU 2, Port Hueneme, Calif.

NAVAL AMPHIBIOUS CONSTRUCTION BATTALIONS (ACB)
Organized under Commander, Naval Surface Forces, the primary mission of the amphibious construction battalion is to provide ship to shore transportation of fuel, materials and equipment in support of amphibious ready groups, Marine expeditionary forces and brigade-sized operations, and maritime pre-positioned force (MPF) operations. Transport of equipment and materials is accomplished primarily by means of barge ferry operations. ACBs construct elevated and floating causeway piers; install ship-to-shore fueling systems; erect 1,300-person camps; and provide camp support, perimeter defense and construction support.

Active
ACB 2, Norfolk
ACB 1, Coronado, Calif.

CM2 Albert B. Johnson spends countless hours working with his 70-ton, link-belt crane. Johnson received a Purple Heart when he was injured by a vehicle-borne improvised explosive device (VBIED) while helping Marines build barricades on a road north of Baghdad, Iraq.
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**Enlisted Members**

- **E-9**: 0.00
- **E-8**: 0.00
- **E-7**: 2,288.70, 2,498.10, 2,593.80, 2,698.30, 2,782.70
- **E-6**: 1,797.70, 1,978.00, 2,174.00, 2,367.00, 2,560.00
- **E-5**: 1,414.40, 1,593.30, 1,782.50, 1,971.30, 2,160.20
- **E-4**: 1,678.30, 1,867.40, 1,956.00, 2,044.90, 2,133.40
- **E-3**: 1,901.80, 2,091.70, 2,281.60, 2,471.30, 2,660.80
- **E-2**: 1,437.40, 1,437.40, 1,437.40, 1,437.40, 1,437.40, 1,437.40
- **E-1**: 1,273.50, 1,273.50, 1,273.50, 1,273.50, 1,273.50, 1,273.50, 1,273.50, 1,273.50, 1,273.50, 1,273.50, 1,273.50, 1,273.50, 1,273.50, 1,273.50

**Warrant Officers**

- **W-5**: 3,328.80, 3,581.00, 3,684.00, 3,785.00, 3,886.00
- **W-4**: 3,039.90, 3,166.80, 3,296.40, 3,425.90, 3,554.50, 3,683.00
- **W-3**: 2,673.90, 2,826.60, 2,960.40, 3,093.70, 3,227.00, 3,360.30
- **W-2**: 2,361.30, 2,554.50, 2,683.80, 2,817.70, 2,950.70, 3,083.70

**Commissioned Officers**

- **O-10**: 0.00
- **O-9**: 0.00
- **O-8**: 8,271.00, 8,541.90, 8,721.60, 8,896.10, 9,371.00, 9,458.10, 9,814.20, 9,916.30, 10,222.80, 10,666.20
- **O-7**: 6,872.70, 7,191.90, 7,399.80, 7,457.80, 7,669.80, 7,879.50, 8,122.50, 8,364.90, 8,607.90, 9,371.00, 10,015.80
- **O-6**: 5,094.40, 5,296.20, 5,694.20, 5,985.90, 6,224.20, 6,776.60, 6,776.60, 6,633.30, 7,265.40, 7,634.40, 8,004.00, 8,182.30, 8,427.60
- **O-5**: 4,246.50, 4,283.20, 4,515.00, 4,577.10, 4,839.50, 5,397.40, 5,779.20, 5,978.70, 6,236.10, 6,690.60, 6,818.10, 7,093.80, 7,514.40, 7,924.40, 8,324.40
- **O-4**: 3,369.90, 3,471.00, 3,592.90, 3,654.00, 3,685.10, 4,127.00, 4,582.20, 4,755.80, 4,945.40, 5,566.30, 6,117.60, 6,617.60, 6,117.60, 6,117.60
- **O-3**: 3,114.60, 3,249.90, 3,497.90, 4,055.00, 4,528.90, 4,975.80, 5,115.90, 5,520.70, 5,720.70, 5,920.70, 6,120.70, 6,320.70, 6,620.70, 6,920.70
- **O-2**: 2,783.10, 3,170.10, 3,651.00, 3,784.00, 3,852.00, 3,852.00, 3,852.00, 3,852.00, 3,852.00, 3,852.00, 3,852.00, 3,852.00, 3,852.00
- **O-1**: 2,416.20, 2,546.60, 3,036.90, 3,039.60, 3,039.60, 3,039.60, 3,039.60, 3,039.60, 3,039.60, 3,039.60, 3,039.60

**Commissioned Officers (With more than 4 years of active service as an Enlisted Member or Warrant Officer)**

- **O-3E**: 0.00
- **O-2E**: 0.00
- **O-1E**: 0.00

The following display represents the correct order of precedence for medals and/or ribbons most likely to be worn today on the Navy uniform. Additional information on the proper display, placement or additional devices is found in SECNAVINST 1650.1G and the U.S. Navy Uniform Regulations (NAVPERS 15565I).
Devices

GOLD STAR
Denotes subsequent awards of the same Navy decoration

SILVER STAR
Worn in lieu of five gold stars

BRONZE STAR
Represents participation in campaigns or operations, multiple qualification or an additional award to any of the various ribbons on which it is authorized. Also worn to denote first award of the single-mission Air Medal after Nov. 22, 1989.

SILVER SERVICE STAR
Worn in lieu of five bronze stars

BRONZE OAK LEAF CLUSTER
Represents second and subsequent entitlements of awards

SILVER OAK LEAF CLUSTER
Worn for the 6th, 11th, or in lieu of five bronze oak leaf clusters

WINTERED OVER
For wintering over on Antarctic continent – a clasp for Antarctic Service Medal; a suspension ribbon and a disc for the service ribbon; bronze for the first winter; gold for the second winter; and silver for the third

“V” DEVICE
Authorized for acts or service involving direct participation in combat operations

HOURGLASS
Issued for each succeeding award of the Armed Forces Reserve Medal

EUROPE AND ASIA CLASPS
Worn on the suspension ribbon of the Navy Occupation Service Medal

FLEET MARINE FORCE COMBAT OPERATIONS INSIGNIA
For Navy personnel attached to Fleet Marine Force units participating in combat operations

SILVER “E”
Denotes Expert Marksman qualification

BATTLE “E” DEVICE

BRONZE “S”
Denotes Sharpshooter Marksman qualification

“M” DEVICE
Denotes Naval Reserve mobilization in support of certain operations

STRIKE/FLIGHT DEVICE
Bronze Arabic numeral denotes the total number of strike/flight awards of the Air Medal earned subsequent to April 9, 1962

“3/16” PALM
Worn on the Republic of Vietnam Gallantry Cross Unit Citation and Republic of Vietnam Civil Actions Unit Citation ribbons

“E” DEVICE
Denotes four or more Battle “E” Awards

KUWAIT LIBERATION CLUSTER

REPUBLIC OF VIETNAM CAMPAIGN CLASP
U.S. Armed Forces Ranks

**Air Force Officer Ranks**
- General of the Air Force
- Major General
- Lieutenant General
- Colonel
- Captain

**Army Officer Ranks**
- General of the Army
- Major General
- Lieutenant General
- Colonel
- Captain

**Marine Corps Officer Ranks**
- Fleet Admiral
- Vice Admiral
- Rear Admiral
- Commander
- Captain

**Navy & Coast Guard Officer Ranks**
- Fleet Admiral
- Vice Admiral
- Rear Admiral
- Rear Admiral (Lower Half)
- Captain

**Sergeant Major, Command Sergeant Major**

**Master Chief Petty Officer, Fleet/Force/Command Master Chief Petty Officer**

**Sergeant Major, Master Gunnery Sergeant**

**Master Chief Petty Officer, First Sergeant, Master Sergeant**

**Master Sergeant, First Sergeant, Master Sergeant**

**Sergeant First Class, Staff Sergeant, Staff Sergeant**

**Technical Sergeant, Staff Sergeant, Staff Sergeant**

**General of the Air Force /Army (Reserved for Wartime)**

**Fleet Admiral (Reserved for Wartime)**

**Admiral / Commandant of the Coast Guard**

**Lieutenant General**

**Vice Admiral**

**Major General**

**Rear Admiral**

**Rear Admiral (Lower Half)**

**Brigadier General**

**Colonel**

**Captain**

**Sergeant Major, Command Sergeant Major**

**Master Chief Petty Officer, Master Chief Petty Officer**

**Master Chief Petty Officer, First Sergeant, Master Sergeant**

**Master Sergeant, First Sergeant, Master Sergeant**

**Sergeant First Class, Staff Sergeant, Staff Sergeant**

**Technical Sergeant, Staff Sergeant, Staff Sergeant**

**General of the Air Force /Army (Reserved for Wartime)**

**Fleet Admiral (Reserved for Wartime)**

**Admiral / Commandant of the Coast Guard**

**Lieutenant General**

**Vice Admiral**

**Major General**

**Rear Admiral**

**Rear Admiral (Lower Half)**

**Brigadier General**

**Colonel**

**Captain**
Reserve Map

Navy Reserve Force
ATTACK SUBMARINES

Attack submarines are designed to seek and destroy enemy submarines and surface ships. A number of Third World countries are acquiring modern, state-of-the-art, non-nuclear submarines. Countering this threat is the primary mission of U.S. nuclear-powered attack submarines. Other missions range from intelligence collection and special forces delivery to anti-ship and strike warfare. The Seawolf-class submarine is designed to be exceptionally quiet, fast and well-armed, with advanced sensors. It is a multi-mission vessel, capable of deploying to forward ocean areas to search out and destroy enemy submarines and surface ships and to fire missiles in support of other forces.

Los Angeles-class

Power Plant: One nuclear reactor, one shaft
Length: 360 feet
Beam: 33 feet
Displacement: Approx. 6,900 tons submerged
Speed: 20+ knots (23+ miles per hour, 36.8 +kph)
Crew: 134 (13 officers, 121 enlisted)
Armament: Tomahawk missiles, VLS tubes (SSN 719 and later), MK-48 torpedoes, four torpedo tubes
Ships:
USS Los Angeles (SSN 688)
USS Philadelphia (SSN 690)
USS M emphis (SSN 691)
USS Bremerton (SSN 698)
USS Jacksonville (SSN 699)
USS Dallas (SSN 700)
USS La Jolla (SSN 701)
USS City of Corpus Christi (SSN 705)
USS Albuquerque (SSN 706)
USS M inneapolis-St. Paul (SSN 708)
USS Hyman G. Rickover (SSN 709)
USS Augusta (SSN 710)
USS San Francisco (SSN 711)
USS H ouston (SSN 713)
USS Norfolk (SSN 714)
USS Buffalo (SSN 715)
USS Salt Lake City (SSN 716)
USS Olympia (SSN 717)
USS Honolulu (SSN 718)
USS Providence (SSN 719)
USS Pittsburgh (SSN 720)
USS Chicago (SSN 721)
USS Key West (SSN 722)
USS Oklahoma City (SSN 723)
USS Louis ville (SSN 724)
USS Helena (SSN 725)
USS Newport News (SSN 750)
USS San Juan (SSN 751)
USS Pasadena (SSN 752)
USS Albany (SSN 753)
USS Topeka (SSN 754)
USS M iami (SSN 755)
USS Scranton (SSN 756)
USS Alexandria (SSN 757)
USS Asheville (SSN 758)
USS Jefferson City (SSN 759)
USS Annapolis (SSN 760)
USS Springfield (SSN 761)
USS Colum bus (SSN 762)
USS Santa Fe (SSN 763)
USS B oise (SSN 764)
USS M onpelier (SSN 765)
USS Charlotte (SSN 766)
USS Hampton (SSN 767)
USS Hartford (SSN 768)
USS Toledo (SSN 769)
USS Tucson (SSN 770)
USS Columbia (SSN 771)
USS Greeneville (SSN 772)
USS Cheyenne (SSN 773)

Seawolf-class

Power Plant: One nuclear reactor, one shaft
Length: 353 feet
Draft: 35 feet
Beam: 40 feet
Displacement: 8,060 tons surfaced; 9,150 tons submerged
Speed: 25+ knots (28+ mph)
Crew: 134 (13 officers; 121 enlisted)
Ships:
USS Seawolf (SSN 21)
USS Connecticut (SSN 22)
USS Jimmy Carter (SSN 23)

Virginia-class

Power Plant: One nuclear reactor, one shaft
Length: 377 feet
Beam: 34 feet
Displacement: Approx. 7,800 tons
Speed: 25+ knots (28+ miles per hour, 46.3+ kph)
Crew: 134 officers and enlisted
Armament: Tomahawk missiles, VLS tubes, MK-48 torpedoes, four torpedo tubes, advanced mobile mines, and unmanned underwater vehicles.
Ships:
USS Virginia (SSN 774)
Texas (SSN 775)*
Hawaii (SSN 776)*
North Carolina (SSN 777)*
BALLISTIC MISSILE SUBMARINES

Strategic deterrence has been the sole mission of the fleet ballistic missile submarine (SSBN) since its inception in 1960. The SSBN provides the nation's most survivable and enduring nuclear strike capability. The Ohio-class submarine replaced aging fleet ballistic missile submarines built in the 1960s and is far more capable.

Ohio-class/Trident ballistic missile submarines provide the sea-based “leg” of the triad of U.S. strategic deterrent forces. The first four Ohio-class submarines are converting to guided missile submarines (SSGN) with an additional capability to transport and support Navy special operations forces.

Ohio-class

- **Power Plant:** One nuclear reactor, one shaft
- **Length:** 560 feet
- **Beam:** 42 feet
- **Displacement:** 16,764 tons surfaced; 18,750 tons submerged
- **Speed:** 20+ knots (23+ mph)
- **Crew:** 155 (15 Officers, 140 Enlisted)
- **Armament:** 24 tubes for Trident II, D-5 Intercontinental Ballistic Missiles, MK-48 torpedoes, four torpedo tubes.
- **Ships:**
  - USS Henry M. Jackson (SSBN 730)
  - USS Alabama (SSBN 731)
  - USS Alaska (SSBN 732)
  - USS Nevada (SSBN 733)
  - USS Tennessee (SSBN 734)
  - USS Pennsylvania (SSBN 735)
  - USS West Virginia (SSBN 736)
  - USS Kentucky (SSBN 737)
  - USS Maryland (SSBN 738)
  - USS Nebraska (SSBN 739)
  - USS Rhode Island (SSBN 740)
  - USS Maine (SSBN 741)
  - USS Wyoming (SSBN 742)
  - USS Louisiana (SSBN 743)

Ships undergoing conversion to SSGN:

- USS Ohio (SSGN 726)
- USS Michigan (SSGN 727)
- USS Florida (SSGN 728)
- USS Georgia (SSGN 729)

DEEP SUBMERGENCE RESCUE VEHICLES

Deep Submergence Rescue Vehicles (DSRV) perform rescue operations on submerged, disabled submarines of the U.S. Navy or foreign navies. DSRVs can embark up to 24 personnel for transfer to another vessel. The DSRV also has an arm to clear hatches on a disabled submarine and a combined gripper and cable cutter. The gripper is able to lift 1,000 pounds.

- **Power Plant:** Electric motors, silver/zinc batteries, one shaft, 15 shaft horsepower, four thrusters, 7.5 horsepower.
- **Length:** 49 feet
- **Beam:** 8 feet
- **Displacement:** 38 tons
- **Speed:** 4 knots
- **Maximum Depth:** 5,000 feet
- **Sonar:** Search and navigation
- **Crew:** Two pilots, two rescue personnel and the capacity for 24 passengers
- **Ships:**
  - DSRV Mystic
  - DSRV Avalon

SUBMERSIBLE RESEARCH VEHICLES

NR 1, a nuclear-powered ocean engineering and research submarine, is the first deep submergence vessel using nuclear power. NR 1’s missions have included search, object recovery, geological survey, oceanographic research, and installation and maintenance of underwater equipment. NR 1 is generally towed to and from remote mission locations by an accompanying surface tender, which is also capable of conducting research in conjunction with the submarine.

- **Power Plant:** One nuclear reactor, one turbo-alternator; Two external motors, two propellers, Four ducted thrusters (two horizontal, two vertical)
- **Length:** 150 feet
- **Displacement:** 400 tons
- **Diameter:** 12 feet
- **Maximum Operating Depth:** 2,375 feet
- **Crew:** 7 (2 officer, 3 enlisted, 2 scientists)
- **Armament:** None
- **Ships:**
  - NR-1 (Nuclear)

* Under Construction
RESEARCH SUBMARINE
USS Dolphin (AGSS 555) is the Navy’s only operational diesel-electric, deep-diving research and development submarine. The submarine has since amassed an impressive record of scientific and military accomplishments, and now serves as a unit of the U.S. Naval Submarine Force, U.S. Pacific Fleet, under Commander, Submarine Development Squadron 5.

Features: Because she was designed as a test platform, USS Dolphin can be modified both internally and externally to allow installation of up to 12 tons of special research and test equipment. The submarine has internal and external mounting points, multiple electronic hull connectors, and up to 10 equipment racks for project use.

General Characteristics
Power Plant: Diesel/Electric; Two GM 12-cylinder, 425 HP engines
Length: 165 feet
Displacement: 950 tons full load
Diameter: 18 feet
Operating Depth: 3,000 feet
Crew: 51+ (5 officer, 46 enlisted, and up to 5 scientists)
Armament: None
Ships: USS Dolphin (AGSS 555)

LARGE SCALE VEHICLE 2 (LSV 2)
LSV 2 Cutthroat, the world’s largest unmanned autonomous submarine, offers the capability to conduct a wide variety of studies dramatically improving the acoustic and operational performance of future submarines. Cutthroat, a 205-ton, large scale submarine test vehicle, is used to affordably explore and test emerging technologies and to conduct physics-based experiments. Specific emphasis will be on stealth, hydrodynamics, hydro-acoustics and propulsion designs to permit technology insertion into current and future submarines.

General Characteristics
Propulsion: Electric drive (3,000 shaft horsepower (shp) plant coupled with electric motor controller, expandable to 6,000 shp with additional motor controlled modules)
Length: 111 feet
Diameter: 10 feet
Weight: 205 tons
Armament: None
Crew: None
Ships: Cutthroat (LSV 2)
The aircraft carrier continues to be the centerpiece of the forces necessary for forward presence. Whenever there has been a crisis, the first question has been: “Where are the carriers?” Carriers support and operate aircraft that engage in attacks on airborne, afloat, and ashore targets that threaten free use of the sea; and engage in sustained operations in support of other forces.

Aircraft carriers are deployed worldwide in support of U.S. interests and commitments. They can respond to global crises in ways ranging from peacetime presence to full-scale war. Together with their onboard air wings, the carriers have vital roles across the full spectrum of conflict.

Nimitz-class

- Length, overall: 1,092 feet
- Flight Deck Width: 252 feet
- Beam: 134 feet
- Displacement: Approx. 97,000 tons
- Aircraft: 85
- Speed: 30+ knots (34.5 miles per hour)
- Crew: 3,200; Air Wing: 2,480

Armament: Two or three (depending on modification) NATO Sea Sparrow launchers, 20mm Phalanx CIWS mounts. (three on Nimitz and Dwight D. Eisenhower and four on Carl Vinson and later ships of the class.)

Carriers

- USS Nimitz (CVN 68)
- USS Dwight D. Eisenhower (CVN 69)
- USS Carl Vinson (CVN 70)
- USS Theodore Roosevelt (CVN 71)
- USS Abraham Lincoln (CVN 72)
- USS George Washington (CVN 73)
- USS John C. Stennis (CVN 74)
- USS Harry S. Truman (CVN 75)
- USS Ronald Reagan (CVN 76)
- George H.W. Bush (CVN 77)*

Enterprise-class

- Length, overall: 1,101 feet 2 inches
- Flight Deck Width: 252 feet
- Beam: 133 feet
- Displacement: 89,600 tons
- Speed: 30+ knots (34.5 mph)
- Aircraft: 85
- Crew: 3,350, Air Wing: 2,480

Armament: Two Sea Sparrow missile launchers, three 20mm Phalanx CIWS mounts

Carriers

- USS Enterprise (CVN 65)

Kitty Hawk-class

- Length, overall: 1,062.5 feet
- Flight Deck Width: 252 feet
- Beam: 130 feet
- Displacement: Approx. 80,800 tons
- Speed: 30+ knots (34.5 mph)
- Aircraft: 85
- Crew: 3,150, Air Wing: 2,480

Armament: Sea Sparrow launchers, three 20mm Phalanx CIWS mounts

Carriers

- USS Kitty Hawk (CV 63)

* Under Construction

Source: U.S. Navy Fact File

Photo by PH2 Josh Kinter
CARRIER BASED

**F/A-18E/F Super Hornet**

The F/A-18E/F will provide the carrier strike group with a strike fighter that has significant growth potential and increased range, endurance and ordnance-carrying capabilities. It will eventually replace the F-14 on carrier decks.

- **Wingspan:** 44 ft., 8.5 in.
- **Length:** 60 ft., 1.25 in.
- **Height:** 16 ft.
- **Weight:** 66,000 lbs. maximum takeoff
- **Speed:** Mach 1.8+
- **Ceiling:** 50,000 ft.
- **Range:** 462 nm
- **Armament:**
  - 20mm M K-61 Vulcan cannon; Sidewinder, Sparrow and AMRAAM air-to-air missiles; Maverick, Harpoon, Shrike, HARM, SLAM-ER and Joint Direct Attack Munition (JDAM); Walleye and other bombs and rockets.
- **Crew:** 1(E) or 2(F), depending on model

**SQUADRONS**

- VFA-11 Red Rippers
- VFA-14 Tophatters
- VFA-31 Tomcatters
- VFA-32 Swordsmen
- VFA-41 Black Aces
- VFA-102 Diamondbacks
- VFA-103 Jolly Rogers
- VFA-143 Pukiing Dogs

**F/A-18 Hornet**

The F/A-18 is an all-weather, attack aircraft that can also be used as a fighter. In its fighter mode, the F/A-18 is used primarily as an escort and for fleet air defense. In its attack mode, it is used for force projection, interdiction and close-air support.

- **Wingspan:** 37.5 ft.
- **Length:** 56 ft.
- **Height:** 15 ft., 3.5 in.
- **Speed:** Mach 1.8+
- **Range:** 290 nm
- **Armament:**
  - 20mm M K-61 Vulcan cannon; Sparrow III and Sidewinder air-to-air missiles; laser-guided and general purpose bombs; Harpoon and HARM
- **Crew:** 1(A,C) or 2(B,D), depending on model

**SQUADRONS**

- Blue Angels
- VFA-2 Bounty Hunters
- VFA-15 Valions
- VFA-22 Fighting Redcocks
- VFA-25 Fist of the Fleet
- VFA-27 Royal Maces
- VFA-34 Blue Blasters
- VFA-37 Bulls
- VFA-81 Sunliners
- VFA-82 Marauders
- VFA-83 Rampagers
- VFA-86 Sidewinders
- VFA-87 Golden Warriors
- VFA-94 Mighty Shrikes
- VFA-97 Warhawks
- VFA-105 Gunslingers
- VFA-106 Gladiators
- VFA-111 Stingers
- VFA-115 Eagles
- VFA-122 Flying Eagles
- VFA-125 Rough Raiders
- VFA-131 Wildcats
- VFA-136 Blue Diamonds
- VFA-137 Kestrels
- VFA-146 Blue Diamonds
- VFA-147 Argonauts
- VFA-151 Fighting Vigilantes
- VFA-154 Black Knights
- VFA-192 Golden Dragons
- VFA-195 Dambusters
- VFA-201(USNR) Hunters
- VFA-204(USNR) River Rattlers
- VFC-12(USNR) Fighting Omars
**F-14 Tomcat**
The F-14 is a supersonic, twin-engine, variable sweep-wing fighter designed to attack and destroy enemy aircraft at night and in all weather conditions. The F-14 can track up to 24 targets simultaneously with its advanced weapons control system and engage any of them with one of its six Phoenix missiles while continuing to scan the airspace. The F-14 Tomcat is being phased out and replaced by the F/A-18E/F Super Hornet.

- **Wingspan:** 64 ft., 1.5 in.
- **Length:** 62 ft., 8 in.
- **Height:** 16 ft.
- **Weight:** 74,349 lbs. maximum takeoff
- **Speed:** Mach 1.88
- **Ceiling:** 50,000 ft.
- **Range:** 1,600 nm (with external fuel)
- **Armament:** 20mm M K-61 Vulcan cannon; Sparrow, Sidewinder and Phoenix air-to-air missiles; laser-guided and general purpose bombs
- **Crew:** 2 (one pilot, one radar intercept officer)

**SQUADRONS**
- VF-213 Black Lions
- VF-31 Tomcatters

**EA-6B Prowler**
The EA-6B, a twin-engine, mid-wing aircraft designed for carrier and advanced base operations, is used to provide an umbrella of protection for strike aircraft by jamming enemy radar, electronic data links and communications. The EA-6B is a fully integrated electronic warfare system, combining long-range, all-weather capabilities with advanced electronic countermeasures.

- **Wingspan:** 53 ft.
- **Length:** 59 ft., 10 in.
- **Height:** 16 ft., 3 in.
- **Weight:** 65,000 lbs. maximum takeoff
- **Speed:** 622 mph
- **Ceiling:** 41,200 ft.
- **Range:** 955 nm
- **Armament:** HARM
- **Crew:** 4 (one pilot, three electronic warfare officers)

**SQUADRONS**
- VAQ-128 Fighting Phoenix
- VAQ-129 Vikings
- VAQ-130 Zappers
- VAQ-131 Lancers
- VAQ-132 Scorpions
- VAQ-133 Wizards
- VAQ-134 Garudas
- VAQ-135 Black Ravens
- VAQ-136 Gauntlets
- VAQ-137 Rooks
- VAQ-138 Yellowjackets
- VAQ-139 Cougars
- VAQ-140 Patriots
- VAQ-141 Shadowhawks
- VAQ-142 Gray Wolves
- VAQ-209(US NR) Star Warriors

**S-3B Viking**
The S-3B, a jet aircraft used for anti-submarine and anti-surface warfare, is extremely versatile and can be equipped for tanking, mining and limited electronic surveillance.

- **Wingspan:** 68 ft., 8 in.
- **Length:** 53 ft., 4 in.
- **Height:** 22 ft., 9 in.
- **Weight:** 52,539 lbs. maximum design gross weight
- **Speed:** 518 mph
- **Ceiling:** more than 35,000 ft.
- **Range:** more than 2,000 nm (combat)
- **Armament:** torpedoes, bombs, Harpoon and Maverick
- **Crew:** 4 (one pilot, two flight officers and one sensor operator)

**SQUADRONS**
- VS-22 Checkmates
- VS-24 Scouts
- VS-29 Dragonfires
- VS-31 Top Cats
- VS-32 Maulers
- VS-33 Screwbirds
- VS-35 Blue Wolves
- VS-38 Red Griffins
- VS-41 Shamrocks
E-2C Hawkeye

The E-2C is the Navy’s all-weather, carrier-based tactical warning and control system aircraft. It provides airborne early warning and command and control functions for the battle group. Additional missions include: surface surveillance coordination, strike and interceptor control, search and rescue guidance and communications relay.

- **Wingspan:** 80 ft., 7 in.
- **Length:** 57 ft., 8.75 in.
- **Height:** 18 ft., 3.75 in.
- **Weight:** 53,288 lbs. maximum takeoff
- **Speed:** 389 mph
- **Ceiling:** 37,000 ft.
- **Range:** 1,541 nm (ferry range)
- **Crew:** 5 (two pilots, three mission systems operators)

SQUADRONS

- VAW-77 (USNR) Night Wolves
- VAW-112 Golden Hawks
- VAW-113 Black Eagles
- VAW-115 Liberty Bells
- VAW-116 Sun Kings
- VAW-117 Wallbangers

C-2A Greyhound

The C-2A is the principal aircraft used for COD (carrier on-board delivery) of personnel and materiel. It can deliver a payload of up to 10,000 lbs.

- **Wingspan:** 80.5 ft.
- **Length:** 57 ft., 10 in.
- **Height:** 15 ft., 10.5 in.
- **Weight:** 57,000 lbs. maximum takeoff
- **Speed:** 310 mph
- **Ceiling:** 33,500 ft.
- **Range:** more than 1,040 nm (with freight)
- **Crew:** 3 (one pilot, one co-pilot, one flight engineer)

SQUADRONS

- VRC-30 Providers
- VRC-40 Rawhides

SHORE-BASED

E-6B Mercury

The E-6B Mercury aircraft provides a survivable communications link between national decision makers and the country’s arsenal of strategic nuclear weapons. The E-6B enables the President of the United States and the Secretary of Defense to directly contact submarines, bombers and missile silos protecting our national security through deterrence.

- **Wingspan:** 148 feet, 2 inches
- **Length:** 152 feet, 11 inches
- **Height:** 42 feet 5 inches
- **Weight:** 341,000 lbs. maximum take-off
- **Speed:** 523 mph
- **Ceiling:** 42,000 feet
- **Range:** more than 5,500 nm
- **Crew:** 23

SQUADRONS

- VQ-3 Ironman
- VQ-4 Shadows
- VQ-7 Roughnecks
**P-3C Orion/EP-3E Orion (Aries II)**

The P-3, a land-based, long-range patrol aircraft, has been in the Navy since the 1960s. Both versions provide multi-mission intelligence, surveillance, reconnaissance and combat capability to theater commanders worldwide.

- **Wingspan:** 99 ft., 8 in.
- **Length:** 116 ft., 10 in.
- **Height:** 33 ft., 8.5 in.
- **Weight:** 146,000 lbs. maximum permissible
- **Speed:** 473 mph
- **Ceiling:** 28,300 ft.
- **Range:** 1,346 nm with three hours on station
- **Armament:** Harpoon and Maverick; torpedoes; mines
- **Crew:** 10 (three pilots, three flight officers/engineers, three sensor operators, one in-flight technician)

**VP-26 Tridents**  
**VP-30 Pro’s Nest**  
**VP-40 Fighting Marlins**  
**VP-45 Pelicans**  
**VP-46 Grey Knights**  
**VP-47 Golden Swordsmen**  
**VP-62(USNR) Broad Arrows**  
**VP-64(USNR) The Condors**  
**VP-65(USNR) Tridents**  
**VP-66(USNR) The Liberty Bells**  
**VP-69(USNR) Totems**  
**VP-92(USNR) Minutemen**  
**VP-94(USNR) Crawfishers**  
**VQ-1 World Watchers**  
**VQ-2 Sandeman**  
**VPU-1 Old Buzzards**  
**VPU-2 Wizards**

**C-130 Hercules**

The C-130 is probably the most versatile tactical transport aircraft ever built. Its uses have been almost limitless: transport, electronic surveillance, search and rescue, space-capsule recovery, helicopter refueling, gunship and special cargo delivery.

- **Wingspan:** 132 ft., 7 in.
- **Length:** 97 ft., 9 in.
- **Height:** 38 ft., 10 in.
- **Weight:** 175,000 lbs. maximum takeoff
- **Speed:** 400 mph maximum

**SQUADRONS**

**VP-1 Screaming Eagles**  
**VP-4 Skinny Dragons**  
**VP-5 Mad Foxes**  
**VP-8 Tigers**  
**VP-9 Golden Eagles**  
**VP-10 Red Lancers**  
**VP-16 War Eagles**  
**VR-53 (USNR) Capital Express**  
**VR-54 (USNR) Revelers**  
**VR-55 (USNR) Minutemen**  
**VR-62 (USNR) Nor’easters**
C-9B/DC-9 Skytrain II
The C-9B is used for fleet logistics support and military sealift.

- **Wingspan:** 93 ft., 5 in.
- **Length:** 119 ft., 3.5 in.
- **Height:** 27.5 ft.
- **Weight:** 121,000 lbs. maximum takeoff
- **Speed:** 575 mph
- **Range:** 2,185 nm
- **Crew:** 5 (one pilot, one co-pilot, one crew chief, two attendants and 90 passengers)

SQUADRONS
- VR-46(USNR) Eagles
- VR-52(USNR) The Taskmasters
- VR-56(USNR) Globemasters
- VR-57(USNR) Conquistadores
- VR-58(USNR) Sunseekers
- VR-61(USNR) Islanders

C-40A Clipper
The C-40A Clipper provides critical logistics support to the Navy. Its flight deck features a flight management computer system with an integrated GPS.

- **Wingspan:** 112 feet 12 inches
- **Length:** 110 feet 4 inches
- **Height:** 41 feet 2 inches
- **Weight:** 12,500 lbs. maximum takeoff weight
- **Speed:** 298 mph maximum
- **Ceiling:** more than 35,000 ft.
- **Range:** 1,965 nm
- **Crew:** pilot only (or crew of two side by side)

C-12 Huron
The UC-12B/F/M Huron is a utility transport, equipped with high floatation landing gear and tip tanks. The UC-12F and UC-12M models also have hydraulically retractable landing gear.

- **Wingspan:** 54 ft., 6 in.
- **Length:** 43 ft., 9 in.
- **Height:** 15 ft.
- **Weight:** 12,500 lbs. maximum takeoff
- **Speed:** 298 mph maximum
- **Ceiling:** more than 35,000 ft.
- **Range:** 1,965 nm
- **Crew:** 5 (one pilot, one co-pilot, one crew chief, two attendants and 90 passengers)

T-6A Texan II
The T-6A Texan II is a tandem-seat, turboprop trainer whose mission is to train Navy and Marine Corps pilots and Naval Flight Officers.

- **Wingspan:** 33.4 feet
- **Length:** 33.3 feet
- **Height:** 10.8 feet
- **Weight:** 6,500 lbs. maximum takeoff weight
- **Speed:** 270 knots
- **Range:** 850 nm (max)
- **Ceiling:** 31,000 feet
- **Crew:** Two (instructor pilot, student pilot)
The T-34C is used to provide primary flight training for student pilots. As a secondary mission, approximately 10 percent of the aircraft provide pilot proficiency and other aircraft support services to Commander, Naval Air Force, U.S. Atlantic Fleet; Commander, Naval Air Force, U.S. Pacific Fleet; and Naval Air Systems Command’s “satellite sites” operated throughout the continental United States. The T-34C was procured as a commercial-derivative aircraft certified under an FAA Type Certificate. The T-34C was derived from the civilian Beechcraft Bonanza. Throughout its life, the aircraft has been operated and commercially supported by the Navy using FAA processes, procedures and certifications.

- **Wingspan:** 33 feet, 5 inches
- **Length:** 28 feet, 8 inches
- **Height:** 9 ft., 11 in.
- **Weight:** 4,425 Lb.
- **Speed:** 322 mph
- **Ceiling:** 25,000 ft.
- **Range:** Approx. 600 nm
- **Crew:** Two (instructor pilot, student pilot)

**SQUADRONS**

- VT-2 Doer Birds
- VT-3 Red Knights
- VT-4 Mighty Warbucks
- VT-6 Shooters
- VT-10 Wildcats
- VT-27 Boomers
- VT-28 Rangers

**T-45A Goshawk**

The T-45A Goshawk, a carrier-capable trainer aircraft, is replacing the T-2C Buckeye and TA-4J Skyhawk as the Navy’s strike trainer. The Navy has 187 T-45s in service.

- **Wingspan:** 30 ft., 9.75 in.
- **Length:** 39 ft., 4 in.
- **Height:** 14 ft.
- **Weight:** 14,081 lbs. maximum takeoff
- **Speed:** 625 mph
- **Range:** 826 nm
- **Ceiling:** 40,000 ft.
- **Crew:** 2 (one instructor, one student)

**SQUADRONS**

- VT-7 Eagles
- VT-21 Redhawks
- VT-22 Golden Eagles

**T-2 Buckeye**

The T-2 is a two-seat trainer used to school pilots and flight officers in basic and intermediate strike training.

- **Wingspan:** 38 ft., 1.5 in.
- **Length:** 38 ft., 3.5 in.
- **Height:** 14 ft., 9.5 in.
- **Weight:** 13,179 lbs. maximum takeoff
- **Speed:** 522 mph
- **Range:** 909 nm
- **Ceiling:** 40,400 ft.
- **Crew:** 2 (one instructor, one student)

**SQUADRONS**

- VT-9 Tigers
- VT-86 Sabre Hawks
**T-44A Pegasus**
The T-44A is used to train Navy and Air Force pilots to fly multi-engine, turbo-prop aircraft such as the P-3 and the C-130.
- **Wingspan:** 45 ft., 10.75 in.
- **Length:** 39 ft., 9.5 in.
- **Height:** 15 ft., 1.75 in.
- **Weight:** 10,950 lbs. maximum takeoff
- **Speed:** 267 mph
- **Range:** 960 nm
- **Ceiling:** 31,000 ft.
- **Crew:** 2 (one instructor, one student)

**SQUADRON**
VT-31 Wise Owls
VT-35 Stingrays

**T-39N/G Sabreliner**
The seven T-39N Sabreliners in service are used to train naval flight officers in radar navigation and airborne radar-intercept procedures. These aircraft replaced the Cesna T-47A during the early 1990s; the T-47As had replaced earlier T-39Ds in the training role. One T-39D rapid-response airlift Sabreliner remained in service as of mid-1998. The eight T-39Gs are used for student non-radar training.
- **Wingspan:** 44 ft., 5.25 in.
- **Length:** 48 ft., 4 in.
- **Height:** 16 ft.
- **Weight:** 20,000 lbs. maximum takeoff
- **Speed:** Mach .8
- **Range:** 1,777 nm
- **Ceiling:** 27,000 ft.
- **Crew:** 2 (one instructor, one student)

**RQ-2A Pioneer Unmanned Aerial Vehicle (UAV)**
The Pioneer UAV system performs a wide variety of reconnaissance, surveillance, target acquisition and battle damage assessment missions. The UAV’s low radar cross section, low infrared signature and remote control versatility provides a degree of cover for the aircraft. Pioneer provides the tactical commander with real-time images of the battlefield or target. Since first deployed as a land-based system in 1986, Pioneer is currently configured for operations on five LPD class ships with a sixth ship under modifications.

- **Wingspan:** 16.9 ft
- **Length:** 14.0 ft
- **Weight:** Max design gross take-off: 416 pounds
- **Speed:** 110 knots (109.37 mph).
- **Ceiling:** 15,000 feet
- **Range:** 100+ nm

**SH/HH-60 Seahawk**
The Seahawk is a twin-engine helicopter used for anti-submarine warfare, search and rescue, drug interdiction, anti-ship warfare, cargo lift and special operations. The SH-60B is an airborne platform based aboard cruisers, destroyers and frigates, that deploys sonobuoys and torpedoes in an anti-submarine role while extending the range of the ship’s radar capabilities. The SH-60F is carrier based. The HH-60A is designed to accomplish today’s combat search and rescue mission as well as other replenishment and utility functions.
- **Length:** 40 ft., 11 in. (rotors and tail pylon folded)
- **Height:** 17 ft.
- **Weight:** 21,884 lbs. maximum takeoff
- **Speed:** 169 mph
- **Range:** 380 nm
- **Crew:** 3-4

**SQUADRONS**
HS-2 Golden Falcons
HS-3 Tridents
HS-4 Black Knights
HS-5 Nightdippers
HS-6 Indians
HS-7 Dusty Dogs
HS-8 Eight-ballers
HS-10 War Hawks
HS-11 Dragonslayers
HS-14 Chargers
HS-15 Red Lions
HS-75 (USNR) Emerald Knights
HCS-4 (USNR) Red Wolves

▲ RQ-2B Pioneer Unmanned Aerial Vehicle (UAV)
HCS-5 (USNR) Firehawks
HSL-37 Easy Riders
HSL-40 Airwolves
HSL-41 Seahawks
HSL-42 Proud Warriors
HSL-43 Battle Cats
HSL-44 Swamp Fox
HSL-45 Wolfpack
HSL-46 Grandmasters
HSL-47 Saberhawks
HSL-48 Vipers
HSL-49 Scorpions
HSL-51 Warlords
HSL-60(USNR) Jaguars

MH-60 Knighthawk

MH-60 Knighthawk is a twin-engine helicopter used for logistics support, vertical replenishment, search and rescue, naval special warfare support and future missions to include organic airborne mine countermeasures and combat search and rescue.

SQUADRONS

HC-3 Pack-Rats
HSC-25 Island Knights
HSC-26 Chargers
HSC-28 Dragon Whales
HSC-21 Blackjacks

MH-60 Knighthawk

MH-60 Knighthawk is a twin-engine helicopter used for logistics support, vertical replenishment, search and rescue, naval special warfare support and future missions to include organic airborne mine countermeasures and combat search and rescue.

SQUADRONS

HC-3 Pack-Rats
HSC-25 Island Knights
HSC-26 Chargers
HSC-28 Dragon Whales
HSC-21 Blackjacks

MK-46/50 torpedoes, 7.62mm machine guns
Crew: 3-4

H-3 Sea King

The first version of this workhorse anti-submarine warfare helicopter was flown more than 38 years ago. The H-3's versatility was emphasized during Operation Desert Shield/Desert Storm when 36 Sea Kings, flying from carriers, logged more than 5,000 hours conducting combat SAR, special operations, maritime interdiction operations, logistics support and mine hunting. The

SQUADRONS

HC-2 Fleet Angels
HSC-21 Blackjacks
HC-85(USNR) Golden Gators
HS-75(USNR) Emerald Knights
**TH-57 Sea Ranger**

The TH-57 Sea Ranger is used to train several hundred student naval aviators with 45 TH-57Bs (for primary visual flight rules training) and 71 TH-57Cs (for advanced instrument flight rules training) in two helicopter training squadrons at NAS Whiting Field, Milton, Fla. Two TH-57Cs configured for RDT&E are used for photo, chase and utility missions at the Naval Air Warfare Center Aircraft Division at Patuxent River, Md.

- **Length:** 39 ft.
- **Height:** 10 ft.
- **Weight:** 3,200 lbs. maximum takeoff
- **Speed:** 138 mph
- **Ceiling:** 20,000 ft., pressure altitude
- **Range:** 368 nm
- **Crew:** 5 (one pilot, four student pilots)

**SQUADRONS**

- HT-8 Eightballers
- HT-18 Vigilant Eagles

**MH-53E Sea Dragon**

The MH-53E, a mine-countermeasures derivative of the CH-53E Super Stallion, is heavier and has a greater fuel capacity than the Super Stallion. Capable of transporting up to 55 troops, the MH-53E can carry a 16-ton payload 50 nautical miles, or a 10-ton payload 500 nautical miles. In its primary mission of airborne mine countermeasures, the MH-53E is capable of towing a variety of mine-countermeasures systems.

- **Length:** 99 ft. (rotors turning)
- **Height:** 29 ft., 5 in. (tail rotor turning)
- **Weight:** 73,500 lbs. maximum takeoff
- **Speed:** 196 mph
- **Ceiling:** 18,500 ft.
- **Range:** 1,120 nm
- **Crew:** 3 to 8 (two pilots, 1 to 6 crewmen)

**SQUADRONS**

- HC-4 Black Stallions
- HM-14(USNR) Vanguard
- HM-15(USNR) Blackhawks

**SPECIAL SQUADRONS**

- VC-6 Firebees
- VX-1 Pioneers
- VX-9 Vampires
- TACRON-11 Dirigimi
- TACRON-12 Talons
- TACRON-21 Blackjacks
- TACRON-22 Skylords
NAVAL SPECIAL WARFARE CENTER, CORONADO, CALIF.

Naval Small Craft Instruction and Technical Training School (NAVSCIATTS), Stennis, Miss.

NAVAL PARACHUTE TEAM, “LEAP FROGS,” CORONADO, CALIF.

NAVY PARACHUTE TEAM, “LEAP FROGS,” CORONADO, CALIF.

NAVAL SPECIAL WARFARE COMMAND (RESERVE FORCE)
Commander, Naval Special Warfare Operational Support Group (OSG), Coronado, Calif.

Operational Support Team (OST) 1, Coronado, Calif.
OST 2, Little Creek, Va.
Plus 59 Operational Support Units based on capabilities and location.

Source: Naval Special Warfare Command (Active-duty Force as of Jan. 1, 2006)
STRATEGIC STRIKE

Trident II (D-5)

Larger and with longer range than the Trident I, the Trident II was first tested aboard a submarine in March 1989 and deployed in 1990.

Dimensions: 83 x 528 in.
Weight: 130,000 lbs.
Warhead: Designed to carry 12 W76/MK 4 or eight W88/MK 5
Propulsion: Solid-fuel rocket
Range: 4,000 nm.

GENERAL-PURPOSE BOMBS

The MK-80 series general-purpose bomb family was created in the late 1940s and has been the standard air-launched bomb for the services ever since. The general-purpose bomb family is designed to provide blast and fragmentation effects and is used extensively in a number of configurations including laser-guided bombs (LGBs), joint direct attack munitions (JDAM) and air-delivered mining applications. The unguided versions of the general-purpose bomb can also be delivered in freefall or retarded modes depending upon mission requirements.

There were four basic versions of these bombs in inventory for many years:
• 250 pound MK-81,
• 500 pound MK-82/BLU 111
• 1,000 pound MK-83/BLU 110 and
• 2,000 pound MK-84/BLU 117.

Production of the 250-pound general-purpose bomb has been discontinued and it is no longer carried in the active inventory. The remaining versions of the M K-80 series bombs are being converted from the MK designation to the bomb-loaded unit (BLU) designation during new production. The Navy’s M K-80 series bombs remaining in inventory are filled with H-6 high explosive; the newer BLU series bombs incorporate a PBXN-109 explosive that provides less sensitive characteristics and is considered safer to handle and stow.

Laser-Guided Bomb (LGB) Kits

Laser-guided bomb kits were developed to enhance the terminal accuracy of air-launched, general-purpose bombs and entered the fleet’s inventory in 1968. An LGB kit consists of a Computer Control Group and Air Foil Group. The kit is normally attached to a general-purpose bomb to form an LGB.

Joint Direct Attack Munition (JDAM)

Joint direct attack munitions kits were jointly developed with the U.S. Air Force to provide increased accuracy for air-launched bombs. The JDAM kit consists of a tail kit and mid-body strakes attached to a general purpose or penetrator bomb body. Guidance and control is provided by global positioning system aided inertial navigation system.

Dimensions: (JDAM and warhead) GBU-31 (v) 2/B: 152.7 inches (387.9 centimeters); GBU-31 (v) 3/B: 148.6 inches (377.4 centimeters); GBU-32 (v) 2/B: 119.5 inches (303.5 centimeters)
Weight: (JDAM and warhead) GBU-31 (v) 2/B: 2,036 pounds (925.4 kilograms); GBU-31 (v) 3/B: 2,115 pounds (961.4 kilograms); GBU-32 (v) 2/B: 1,013 pounds (460.5 kilograms)
Wing Span: GBU-31: 25 inches (63.5 centimeters); GBU-32: 19.6 ins. (49.8 centimeters)
Range: Up to 15 miles (24 kilometers)
Joint Stand-off Weapon (JSOW)

The joint standoff weapon is an air-launched “drop-and-forget” weapon that is capable of approximately 40 nautical mile stand-off ranges. JSOW provides the fleet with a strike interdiction capability against soft targets such as fixed and relocatable air defense elements, parked aircraft command and control facilities, light combat vehicles, industrial elements and enemy troops. Currently, two variants of JSOW are planned: AGM-154A, that uses general-purpose submunitions and JSOW C that employs a unitary type warhead.

Dimensions: 160 inches (4.1 meters); box shaped diameter 13 inches (33.02 cm) on a side; 106 inches (2.69 meters) wingspan

Weight: From 1,065 pounds (483 kilograms) to 1,500 pounds (681 kilograms)

Range: Low altitude launch - 15 nautical miles (27.78 kilometers), High altitude launch - 65 nautical miles (120.38 kilometers)

Warhead(s): BLU-97 - Combined effects bomblets, BLU-108 - Sensor fused weapon, Broach multi-stage warhead

HARM (High-Speed Anti-Radar Missile)

HARM is the standard anti-radar missile in the U.S. inventory. It’s used as both a strike-protection and anti-ship weapon. First deployed aboard USS Kitty Hawk (CV 63) in January 1984. First used in combat in April 1986 during raids on Libya.

Dimensions: 10 m x 13 ft. 7 in. x 44 in. wingspan

Weight: 798 lbs.

Warhead: 146 lbs.

Range: Depends on launch speed/altitude

Propulsion: Dual-thrust rocket motor (Mach 2+)

HARPOON/SLAM-ER

The Harpoon and Stand-Off Land Attack Missile - Expanded Response (SLAM-ER) missiles are derivatives from the original Harpoon, which was conceived in 1965.

Harpoon

Air, surface-launched, anti-ship, all-weather cruise missile. Originally designed as an air-to-surface missile for the P-3 Orion, the Harpoon, which entered service in 1977, can now be carried by virtually all naval platforms.

Dimensions: 12.6 ft. long-air launched; 15.2 ft. long-surface launched.

Weight: 1,160 lbs. (air launch), 1,459 lbs. (ASROC launcher), 1,520 lbs. (SAM launcher), 1,523 lbs. (capsule/canister launch)

Speed: High subsonic speeds

Warhead: 488.5 lbs. HE (blast; semi-armor piercing)

Propulsion: Turboject (cruise) w/solid-fuel booster for ship launch

Range: 75 nm.

Stand-Off Land Attack Missile-Expanded Response (SLAM-ER)

SLAM-ER is an upgrade to the SLAM and is currently in production. SLAM-ER has a greater range (150+ miles), a titanium warhead for increased penetration and software improvements which allow the pilot to retarget the impact point during the terminal phase of attack. It is also the first land-attack missile equipped with automatic target acquisition for precision targeting.

Maverick

The Maverick is a short-range, air-to-surface, tactical missile. The version used by the Navy carries a warhead designed to penetrate large, hard targets. First deployed in August 1972.

Dimensions: 8.2 ft. long; 12 in. diameter; 2.4 ft. wing span

Weight: 635 lbs.

Warhead: 300 lbs.

Propulsion: Two-stage, solid-fuel rocket motor

Speed: Supersonic

Range: Approx. 14 nm.
Tomahawk Cruise Missile

An all-weather, ship- or submarine-launched, cruise missile. Tomahawks have proven to be highly survivable weapons due to their low radar detectability and terrain/wave-skimming flight. First deployed in 1986.

**Dimensions:** 18.3 ft. long (20.6 ft. with booster); 20.4 in. diameter; 8.9 ft. wingspan  
**Weight:** 2,650 lbs. (3,200 lbs. with booster)  
**Warhead:** 1,000 lbs. (conventional) or conventional submunitions dispenser with combined-effect bomblets  
**Propulsion:** Turbojet (cruise); solid-fuel booster (launch)  
**Speed:** Subsonic  
**Range:** 870 nm. (land attack/conventional warhead)

Penguin Anti-ship Missile

The Norwegian-designed and built Penguin anti-ship missile is carried aboard Lamps III helicopters. First deployed in 1993.

**Dimensions:** 10 ft long; 11.2 in. diameter; 39 in. wingspan  
**Weight:** 847 lbs.

SURFACE-TO-AIR MISSILES

Rolling Airframe Missile (RAM)

Developed jointly with the Federal Republic of Germany, RAM provides ships with a low-cost, self-defense system against anti-ship missiles.

**Dimensions:** 9.25 ft. long; 5 in. diameter; 1.5 ft. wingspan  
**Weight:** 162 lbs.  
**Warhead:** 25 lbs.  
**Propulsion:** Solid-fuel rocket  
**Range:** 5 nm.  
**Speed:** Supersonic

STANDARD MISSILE-2 (SM-2)

Designed as a surface-to-air and surface-to-surface missile, the Standard missile is currently employed in two variations: SM-2 MR (medium range) and SM-2 ER (Extended Range).

The first Standard missile entered the fleet in 1970. The SM-2 ER arrived in 1981.

**SM-1/SM-2 MR**

**Dimensions:** 14.7 ft. long; 13.5 in. diameter; 3.6 ft. wingspan  
**Weight:** 1,380 lbs.  
**Warhead:** Proximity fuse/high-explosive  
**Propulsion:** Dual thrust/solid-fuel rocket  
**Range:** 40 to 90 nm.

**SM-2 ER**

**Dimensions:** 26.2 ft long; 13.5 in. diameter; 5.2 ft. wingspan  
**Weight:** 2,980 lbs.  
**Warhead:** Proximity fuse/high-explosive  
**Propulsion:** Two-stage/solid-fuel rocket; sustainer motor and booster motor  
**Range:** 65 to 100 nm.

ANTI-AIR WARFARE (AAW)  

**AIRCRAFT GUNS**

M61A1

This 20mm Gatling gun, which also forms the basis for the Phalanx Close-In Weapons System (see “Anti-aircraft Warfare” section), is mounted aboard the F/A-18 Hornet and F-14 Tomcat.

**Caliber:** 20mm//62  
**Muzzle Velocity:** 3,400 ft./sec.  
**Rate of Fire:** 4,000 or 6,000 rounds/min.  
**Weight:** 841 lbs. total (gun, feed system, ammunition)
AIR-TO-AIR MISSILES

Advanced, Medium-Range, Air-to-Air Missile (AMRAAM)

An all-weather, all-environment, radar guided missile developed as a follow-on to the Sparrow missile series. AMRAAM is smaller, faster, lighter and has improved capabilities against very low-altitude and high-altitude targets in an electronic countermeasure environment. Its active radar, in conjunction with an inertial reference unit and microcomputer system makes the missile less dependent on the aircraft fire control system enabling the pilot to aim and fire several missiles at multiple targets. The AMRAAM is a result of a joint U.S. Navy and U.S. Air Force development effort and is in service with numerous NATO and Allied countries. The AMRAAM was deployed in September 1991 and is carried on the F/A-18 Hornet.

Dimensions: 12 ft. (long); 7 in. diameter; 21 in. wingspan
Weight: 335 lbs.
Propulsion: High performance, solid fuel rocket motor
Warhead: Blast fragmentation; high explosive
Speed: Supersonic

AIM-54 Phoenix Missile

The Phoenix missile is the Navy’s only long-range, air-to-air missile. The missile is designed for use in all-weather and heavy jamming environments. The improved Phoenix, the AIM-54C, can better counter projected threats from tactical aircraft and cruise missiles.

Dimensions: 13 ft. long; 15 in. diameter; 36 in. wingspan
Weight: 1,024 pounds
Propulsion: Solid propellant rocket motor
Warhead: 135 lb., proximity fuse, high explosive
Range: In excess of 100 nm.
Speed: In excess of 3,000 mph

Sparrow

A highly-maneuverable, all-weather, beyond-visual-range, semi-active radar homing air-to-air missile used by the United States, NATO and other allied forces. A shipboard version, the Sea Sparrow, provides U.S. Navy and NATO ships with an effective, anti-air weapon. First deployed in 1958, numerous models and upgrades have occurred to the Sparrow missile family. Current air-to-air versions are carried on the F-14 and F/A-18 aircraft.

Dimensions: 12 ft. long; 8 in. diameter; 3.4 ft. wingspan
Weight: 500 lbs.
Warhead: 88 lbs. annular blast fragmentation
Propulsion: Solid-fuel rocket motor
Speed: Supersonic

Sidewinder

The Sidewinder is a short-range, infrared, within visual range air-to-air missiles used by the United States, NATO and other allied nations. The missile has been through a number of modernizations and the current fleet weapon is the AIM-9M. The missile is an all-aspect, heat-seeking missile with improved capabilities against countermeasures. A major modification to the AIM-9M Sidewinder is the AIM-9X.

The AIM-9X is a joint U.S. Navy and U.S. Air Force program that upgrades the missile with a staring focal plane array in the seeker, and extremely agile airframe and state-of-the-art signal processors resulting in enhanced target acquisition, missile kinematics and improved infrared counter-countermeasure capabilities. The missile’s high off boresight capability can be coupled to a helmet-mounted cueing system that will revolutionize the way that air-to-air missiles are employed. The Sidewinder is currently deployed on the F-14, F/A-18, AV-8 and AH-1 aircraft.

Dimensions: 9.6 ft. long; 5 in. diameter; 2.1 ft. wingspan
Weight: 190 lbs.
Propulsion: High performance, solid-fuel rocket motor
Warhead: 20.8 blast fragmentation
Speed: Supersonic
SHIPBOARD GUNS

**MK-45 – 5-inch/54-caliber lightweight gun**
This 54-caliber, lightweight gun provides surface combatants accurate naval gunfire against fast, highly-maneuverable, surface targets, air threats and shore batteries during amphibious operations.
- **Caliber:** 5 inch/54 inch
- **Shell Weight:** 70 lbs.
- **Firing Rate:** 20 rounds per minute
- **Muzzle Velocity:** 2,650 ft./sec
- **Range:** 13 nm.
- **Magazine Capacity:** 475 to 500 rounds
- **Weight:** 47,820 lbs.

**MK-38 – 25 mm machine gun system**
The Navy version of the Army Bushmaster, or “Chain Gun.” This single-barrel, air-cooled, heavy machine gun meets the needs of ships throughout the fleet, especially those operating in the Arabian Gulf.
- **Caliber:** 25mm/87
- **Round Weight:** 1.1 lbs.
- **Muzzle Velocity:** 1,100 m/sec
- **Range:** 2,700 yds.
- **Type of Fire:** Single shot; 175 rounds/min. in automatic

**MK-75 – 76mm/62 caliber 3-inch gun**
Best suited for use aboard smaller combat vessels, the MK-75 features rapid fire capability with low manning requirements. The gun was approved for fleet use in 1975 and was first deployed aboard USS Oliver Hazard Perry (FFG 7) in 1978.
- **Caliber:** 3-inch/62
- **Firing Rate:** 85 rounds/min.
- **Muzzle Velocity:** 925 m/sec
- **Range:** 10 nm.
- **Weight:** 7.35 tons

**Phalanx Close-In Weapons System (CIWS)**
The Phalanx CIWS combines a 20mm Gatling gun with search and tracking radar to provide surface ships with terminal defense against anti-ship missiles. The system underwent operational tests and evaluation on board USS Bigelow (DD 942) in 1977 and went into production in 1978 with the first systems installed aboard USS Coral Sea (CV 43) in 1980. The original versions used rounds made from depleted uranium that have since been replaced by tungsten rounds.
- **Caliber:** 20mm/53
- **Firing Rate:** 1,000-3,000 rounds/min.
- **Muzzle Velocity:** 3,650 ft./sec
- **Range:** 6,000 yds.

**60mm Mortar**
Often combined with the M-60 machine gun, the 60mm mortar is used aboard patrol boats (PBs).
- **Caliber:** 60mm
- **Firing Rate:** 10 rounds/min. (trigger mode); 18 rounds/min. (drop mode)
- **Muzzle Velocity:** 500 ft./sec
- **Range:** 1,850 to 2,000 yds.
ANTI-SUBMARINE WARFARE (ASW) TORPEDOES

MK-46
   The MK 46 MOD 5A(S) torpedo achieved its initial operational capability and was introduced into the fleet in 1979. It can be launched from fixed and rotary wing aircraft and surface combatants VLA and torpedo tubes. Full-up MK 46 torpedoes are no longer being produced. In 1987, a major upgrade program enhanced the performance of the MK 46 MOD 5A(S) in shallow water.
   A service life extension program was initiated in 1992 to extend the life of the MK 46 MOD 5A(S), convert it to the MK 46 MOD 5A(SW), and to provide additional shallow water and bottom avoidance modes. The MK 46 MOD 5A(SW) was introduced to the Fleet in 1996.
   **Dimensions:** 8.5 ft. long, 12.75 in. diameter
   **Weight:** 512 lb.
   **Range:** More than 8,000 yds.
   **Speed:** 45 Knots
   **Propulsion:** Two-speed, reciprocation external combustion
   **Warhead:** 96 lbs. of PBXN-103
   **Depth:** Greater than 1,200 ft.

MK-48
   The MK-48 Torpedo is a long-range, high-speed, deep-depth, wire-guided acoustic homing weapon designed to combat slow diesel submarines, fast, deep diving nuclear submarines and high-performance surface ships and can be carried aboard all Navy submarines. Developed by the Applied Research Laboratory, Pennsylvania State University, and Westinghouse Electric Corporation, Baltimore, the MK-48 and its subsequent variants have been in service with the Navy since 1972.
   In 1975 an operational requirement was issued by the CNO to develop modifications to the MK-48 to keep pace with threat advancements. This development effort was accelerated to neutralize the former Soviet Alpha threat and resulted in the MK-48 MOD 4 that achieved Initial Operational Capability in 1980.
   Additional efforts resulted in development of the digital advanced capability (ADCAP) MK-48 MOD 5 that is carried by Los Angeles and Seawolf-class attack submarines and some Ohio-class ballistic missile submarines. The MK-48 MOD 5 became operational in 1988 and was approved for production a year later.
   Although full-up torpedoes have not been produced since 1994, modifications (ADCAP MODS) produced by Northrup Grumman and Raytheon Systems Corporation have enhanced its countermeasure rejection capability, increased its guidance and control processing and memory and improved its shallow water capabilities. This newest variant is designated the MK-48 MOD 6.
   **Dimensions:** 19 feet long, 21 in. diameter
   **Weight:** 3,434 lbs. (MK-48) 3,695 lbs. (MK-48 ADCAP)
   **Range:** Greater than 8 nm.
   **Speed:** Greater than 28 Knots
   **Propulsion:** Positive displacement
   **Piston-type engine with OTTO fuel II**
   **Warhead:** Not given
   **Depth:** Not given

MK-50
   The MK-50 torpedo began low-rate initial production in 1987. The MK-50 can be launched from all ASW aircraft and from torpedo tubes aboard surface combatants. It is an advanced lightweight digital torpedo designed for use against faster, deeper-diving and more sophisticated submarines.
   The stored chemical energy propulsion system develops full power at all depths and is capable of multi-speed operations required by the tactical situation. Although full-up torpedoes have not been produced since 1993, the Block I software upgrade program has enhanced the MK-50’s shallow water and countermeasure capability. Also a new longer-lasting, safer and cheaper stored chemical energy propulsion system is currently being introduced.
**Weapons**

**Dimensions:** 9.3 ft. long, 12.75 in. diameter  
**Weight:** 750 lbs.  
**Range:** In excess of 14,000 yds.  
**Speed:** Multiple speeds with a top speed in excess of 40 knots  
**Propulsion:** Close-cycle Stored Chemical Energy Propulsion System  
**Warhead:** Approximately 100 lbs. high explosive shaped charge  
**Depth:** 3,600 ft.

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**MINES**

**MK-67 Submarine Launched Mobile Mine (SLMM)**  
Based on the MK 37 torpedo, the SLMM is a submarine-deployed mine used for covert mining in hostile environments. The MK-67 began active service in 1987.  
**Type:** Submarine-laid bottom mine.  
**Dimensions:** 13.4 ft. long; 19 in. diameter  
**Detection System:** Magnetic/seismic target detection devices (TDDs)  
**Depth Range:** Shallow water  
**Weight:** 1,735 pounds  
**Explosives:** 515 pounds of high explosive

**MK-65 Quickstrike**  
The Quickstrike is a family of shallow-water, aircraft-laid mine used primarily against surface ships. The MK-65 mine is a thin-walled mine casing. MK-62 and MK-63 mines are converted, general-purpose bombs. All were approved for service use in the early 1980s.  
**Type:** Aircraft-laid bottom mine.  
**Dimensions:** MK-65 mine is 10.7 ft. long; 21 in. diameter (29 in. across fins; MK-62 and MK-63 mines vary in length depending on flight gear used  
**Detection System:** Magnetic/seismic or magnetic/seismic/pressure target detection devices (TDDs) are used on various models.  
**Depth Range:** Shallow water  
**Weight:** M K-62, M K-63 and M K-65 are 500, 1,000 and 2,000 pound class respectively  
**Explosives:** Various loads

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**MK-50 Torpedo**

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Photo by PH1 Brien Aho
MK-6a Captor

The Captor is the Navy’s primary, anti-submarine weapon. This deep-water mine is designed to be laid by aircraft or submarines and is anchored to the ocean floor. Its acoustic detection system is designed to seek hostile submarines, while ignoring surface craft and friendly submarine acoustic signatures. Upon detection of a hostile submarine, the Captor launches an MK-46 Mod 4 torpedo. First fleet use in 1979.

**Type:** Aircraft, ship or submarine-laid, magnetically-moored mine.

**Dimensions:** Aircraft/Ship laid: 12 ft. long/21 in. diameter; Submarine laid: 11 ft. long/21 in. diameter

**Detection System:** Reliable acoustic path (RAP) sound propagation.

**Depth Range:** Up to 3,000 ft.

**Weight:** Air/Ship laid: 2,370 pounds; submarine laid: 2,056 pounds

**Explosives:** 96 pounds of PBXN 103 high explosive MK-46 torpedo.

MK-56

The MK-56 mine is primarily an ASW mine (the oldest still in use). It reached initial operating capability in 1962.

**Type:** Aircraft-laid, moored mine

**Dimensions:** 9.5 ft. long (without fairing); 23 in. diameter

**Detection System:** Total field magnetometer.

**Depth Range:** Intermediate water

**Weight:** 2,000-pound class

**Explosives:** 360 pounds of high explosive

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