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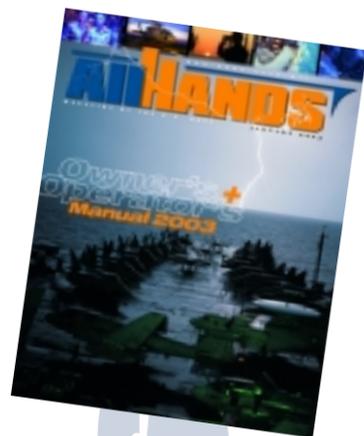
AIH HANDS

MAGAZINE OF THE U.S. NAVY

JANUARY 2003

Owner's + Operator's Manual 2003





[Number 1028]

AllHANDS

January 2003
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January

[On the Front Cover]

The 2003 Owner's & Operator's Manual brings you updated information about our Navy.

Photo by PH2 Aaron Ansarov

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February's *All Hands* offers an in-depth look at LCACs and their mission, and we also talk to an amateur boxer whose career is on the rise.

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The Navy's "can do" spirit is found around the world. Check out how they are organized.

42 Weapons

The Navy uses a wide variety of modern weapons and weapon systems. Today's Sailors are using cutting-edge technology to put ordnance on target.

Owner's + Operator's Manual 2003

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Year in Review



Nov '01
A deep sea diver from Mobile Diving and Salvage Unit (MDSU) 1 works his way around *Ehime Maru*. U.S. Navy divers have recovered eight of the nine missing crewmen and more than 2,000 personal items from the ship that sits approximately 115 feet below the surface.
Photo by PHC Andrew McKaskle



Oct '01
A flight deck handler guides an F/A-18 *Hornet* into position for launch on the flight deck of *USS Theodore Roosevelt* (CVN 71).
Photo by PHC Johnny Bivera



Dec '01
A search and rescue (SAR) swimmer assigned to Helicopter Combat Support Squadron (HC) 4 is hoisted back aboard an HH-60H *Sea Hawk* helicopter while practicing SAR jumps.
Photo by PH1 Jim Hampshire



Dec '01
ABF3 Chris Ambrose closes a valve in the JP-5 fuel console pump room aboard *USS John C. Stennis* (CVN 74).
Photo by PH3 Joshua Word



Dec '01
On Christmas Day U.S. Marines of the 26th Marine Expeditionary Unit (Special Operations Capable) move out to the front lines to defend and maintain perimeter security at a forward operating base in Kandahar, Afghanistan.
Photo by PHC Johnny Bivera

Year in Review



AN Jason Correa of Crash and Salvage stands by in full fire-fighting gear, ready for action on the flight deck of **USS Theodore Roosevelt (CVN 71)**. The nuclear powered aircraft carrier is supporting **Operation Enduring Freedom**.

Photo by PH3 Angela Virnig



Crew members on USS Greenville (SSN 772) wait for **USS Lake Champlain's (CG 57)** Rigid Hull Inflatable Boat to maneuver into position so they can offload supplies and personnel.

Photo by PH1AW SW1 Greg Messier

A Standard missile leaves a trail of smoke off **USS Vandegrift's (FFG 48)** starboard side, on its intercept course with an incoming "hostile" drone. Nine U.S. Navy ships took part in **Missile Exercise (MISSILEX) 02-1**, an anti-ship missile defense training evolution, and part of the **Commander Task Force (CTF) 75** Multi-Sail battle group interoperability exercise.

Photo by IS1 Matthew Ruble



Secretary of Defense

Donald H. Rumsfeld (center) waves to the Navy Seabees who are working to expand the facilities at "Camp X-Ray" in Guantanamo Bay, Cuba. Rumsfeld is in Guantanamo to inspect camp conditions and meet with the guards, medical officers and other support personnel responsible for the confinement and care of 158 Taliban and al Qaeda detainees.

U.S. Navy Photo



AB1 Ruben Guererro and **AB3 Matt Porter** direct an **F-14 A Tomcat** onto the aircraft catapult for launch from **USS John C. Stennis (CVN 74)**.

Photo by PH3 Jayme Pastorik

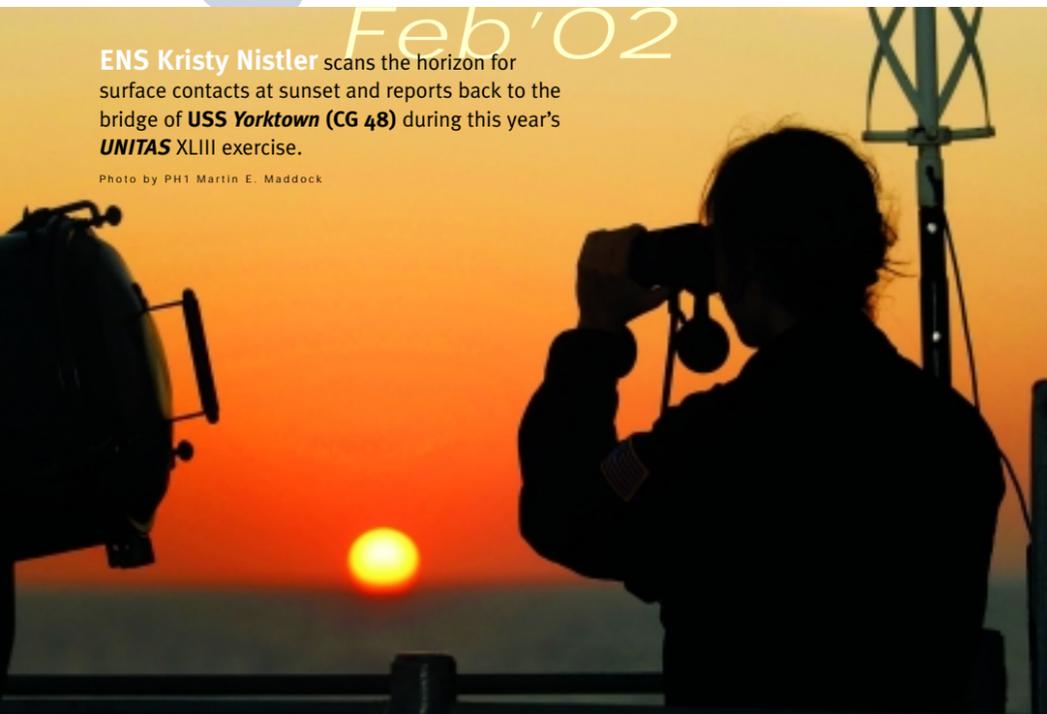


Feb '02

MU3 Germiah Reyes and the rest of the "Shore Leave" band entertain spectators in Salt Lake City's Olympic Park during the 2002 Winter Olympic Games.

Photo by JO1 Preston Keres

Year in Review



Feb '02
ENS Kristy Nistler scans the horizon for surface contacts at sunset and reports back to the bridge of **USS Yorktown (CG 48)** during this year's **UNITAS XLIII** exercise.

Photo by PH1 Martin E. Maddock



Feb '02
Reconstruction of the Pentagon continues nearly around-the-clock as construction crews pour cement for floors and walls to replace those damaged in the Sept. 11, 2001, terrorist attack.

Photo By Grant Greenwall



Apr '02
The Naval Air Station Oceana team, comprised of AM1 Aaron Needham, AZAN Jamison Lambeth and AT3 Kriten Bauman, took first place overall while pulling a 53,000 lb. **F-14 Tomcat** 132 feet across **USS Harry S. Truman's (CVN 75)** flight deck during the "Navy Fitness Challenge."

Photo by ENS John Gay

Mar '02
U.S. Navy SEALs train members of the Republic of the Philippines' Naval Special Warfare Unit on Fast Rope Infiltration and Exfiltration System (FRIES) concepts. FRIES is a method of dropping off and picking up special operations groups from a variety of field environments.

Photo by PH2 Andrew Meyers

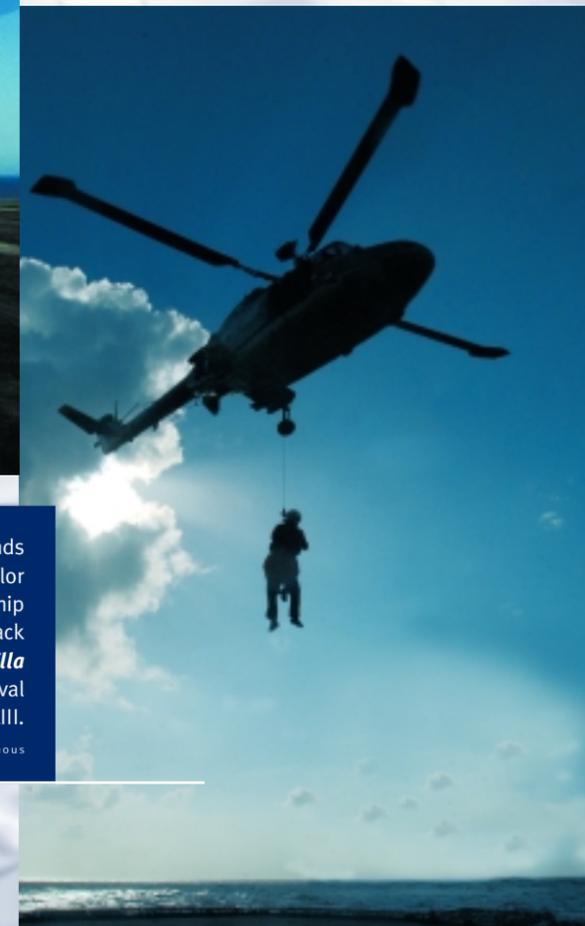


Mar '02
Ordnancemen assigned to **USS Theodore Roosevelt (CVN 71)** gather their remaining ordnance together for delivery to **USS John F. Kennedy (CV 67)** during their turnover in the Red Sea.

Photo by PHC Eric Clement

Mar '02
A Lynx helicopter from the Royal Netherlands Navy, hoists an aircrewman and a U.S. Navy Sailor off the flight deck of Colombian naval ship **ARC Almirante Padilla (CM 51)** for transfer back to **USS Yorktown (CG 48)**. **Almirante Padilla** is one of the many South American naval units participating in **UNITAS XLIII**.

Photo by PH3 Antoine Themistocleous



Year in Review



As seen from the cockpit of the lead aircraft, two F/A-18C **Hornets**, assigned to **Strike Fighter Squadron (VFA) 131** conduct combat missions over Afghanistan.

U.S. Navy Photo

Apr '02

MA2 **Sean Phelps** searches for simulated hostile targets during a SWARM exercise on **USS George Washington's (CVN 73)** flight deck. SWARM exercises simulate counter-measures during multiple small boat attacks.

Photo by PH3 Heather Hess

Jun '02

Construction workers carefully maneuver the last piece of debris removed from "Ground Zero." The event marked the removal of the last remaining piece of the World Trade Center, Column No. 1001B of Two World Trade Center.

Photo by PH2 Bob Houlihan

May '02



Marines assigned to **Battalion Landing Team (BLT), 3rd Battalion, 5th Marine Regiment**, the ground combat element of the **31st Marine Expeditionary Unit (MEU) Special Operations Capable (SOC)** conduct a live fire and maneuver exercise during **Exercise Cobra Gold 2002**.

Photo by Marine Sgt. Stephen D'Alessio

May '02



Pop Star Jessica Simpson sings a song while on **USS Harry S. Truman (CVN 75)** during the taping of the television special, "Rockin' for the USA - A National Salute to the U.S. Military."

Photo by PH3 Justin Bang

May '02



GM2 **Shermel Howard** cleans the barrel of the MK-45, a 5-inch, .54 caliber gun system on board **USS Hopper (DDG 70)**.

Photo by PHC Johnny Wilson

Aug '02

HTCM Scott Heineman prepares to enter the water for a dive on the sunken Civil War ironclad, **Monitor**. Heineman, a Navy master diver, took part in the efforts to salvage and recover the turret of the submerged vessel that rests 240 feet below the surface of the Atlantic.

Photo by PH1 Chadwick Vann

Jul '02



Demographics

Navy Active-Duty Personnel by Rank/Grade (September 2002)

E-9	3,232
E-8	7,111
E-7	24,478
E-6	54,181
E-5	75,069
E-4	65,597
E-3	54,396
E-2	26,417
E-1	15,515
TOTAL Enlisted	325,996
O-10	8
O-9	30
O-8	72
O-7	109
O-6	3,500
O-5	7,122
O-4	10,521
O-3	16,792
O-2	7,350
O-1	7,583
W-4	349
W-3	389
W-2	955
TOTAL Officers	54,780
TOTAL Cadets/Midshipmen	4,275
GRAND TOTAL	385,051

Source: Washington Headquarters Services, Directorate for Information Operations and Reports, www.dior.whs.mil/mm/military

Deployments

Deployed Personnel	46,105
Deployed Hardware	
Ships Underway (52% away from homeport)	161
On Deployment (37% of total)	115
Submarines	
Underway (40% away from homeport)	21
On Deployment (19% of total)	10

Source: www.chinfo.navy.mil/navpalib/news/.www/status.html



Active-Duty Navy by Regional Area (December 31, 2001)

United States & Territories	321,776
Foreign Countries	
Europe	12,158
Former Soviet Union	5
East Asia and Pacific	18,283
North Africa, Near East & South Asia	15,141
Sub-Saharan Africa	7
Western Hemisphere	12,546
TOTAL Foreign Countries	58,140
TOTAL Worldwide	379,916
Ashore	239,895
Afloat	140,021

Source: www.defenselink.mil/pubs/almanac/almanac/people/serve.html

Navy Family Members by Regional Area (December 31, 2000)

Foreign Countries	
Europe	8,099
Former Soviet Union	4
East Asia and Pacific	12,551
North Africa, Near East & South Asia	455
Sub-Saharan Africa	8
Western Hemisphere	440
TOTAL Foreign Countries	21,560
TOTAL Undistributed	3
United States & Territories	523,185
TOTAL Family Members Worldwide	544,745

Source: Washington Headquarters Services, Directorate for Information Operations and Reports Worldwide Manpower Distribution by Geographical Area, Dec. 31, 2000

Numbers from Operation Enduring Freedom Cruise 2002

USS *Theodore Roosevelt* (CVN 71) returned home March 27, 2002, from its six-month deployment in support of **Operation Enduring Freedom**. Listed below are some of the statistics *Theodore Roosevelt* compiled during this historic deployment:

Navigation:
Distance traveled 60,000 nm
E-mails 5 million

Postal Service Division:
Mail handled 815,605 lbs.
Stamp sales \$19,157
Metered postage sales (packages) \$103,246
USPS Money Order sales . . . \$533,573

Food Consumed:
Galley meals fed crew 2,668,860
Bacon 22,324 lbs.
Fresh eggs 56,271 doz.
Frozen eggs 51,441 lbs.
Milk 52,116 gal.
Coffee 10,490 lbs.
Flour 108,266 lbs.
Sugar 21,217 lbs.
Butter 23,914 lbs.
Bottled catsup 44,075 bottles
Chicken 86,359 lbs.
Steak 111,017 lbs.
Shrimp 16,678 lbs.
Hot dogs 55,522 lbs.
Hamburger, 5 oz. 78,022 lbs.
French Fries 121,166 lbs.
Cheese, American 15,805 lbs.
Cheese, shredded 23,578 lbs.
Ice cream 2,250 gal.
TOTAL Food Cost **\$6,150,234**

Aviation:
Catapults/traps 10,700
Flight Deck
Aircraft Moves 47,000
Hangar Bay Aircraft Moves 4,500
Elevator Runs 3,000
Underway Replenishments 28
Fuel Pumped (gal.) 41.5 million
Flight hours 32,425
Sorties flown 10,938
Sortie Completion Rate 99% combat

Vertical Replenishments:
37 Evolutions encompassing day and night helicopter operations

Engineering:
Water distilled 70,000,000 gal.

Ships Store:
Collected from Ship's Store operation \$3,980,000
Ship's Store
Merchandise sales \$2,689,454
Soda machine sales \$526,715
Snack sales \$166,415
Phone card sales \$514,580
Amusement arcade use \$31,151
Concessionaire sales \$45,000

Disbursing Division "The Bank":
Checks cashed \$2.6 + mil.
Pay accounts maintained . . . 4,890 (\$6.2 million/mo.)
ATM accounts (split pay) maintained 2,590 (\$527,073/mo.)
Paid out to shipboard ATM accounts \$3,064,003
Collected from the General Mess \$790,827.19
U.S. Treasury
Checks issued \$11,322,277.85
Travel claims processed 1,069 (\$817,412.94)
TOTAL Payroll **\$31,022,851.94**



USS Theodore Roosevelt (CVN 71)
U.S. Navy photo

MCPON Reading List

The following books comprise the Master Chief Petty Officer of the Navy's Naval Heritage/Core Values Reading Guide as revised in August 2002. This list is updated periodically as part of the Chief Petty Officer Initiation Season. The books are available through the Navy Exchange or the Uniform Center toll-free ordering system.

The Leadership, Management and Personal Growth Reading Guide was updated in July 2002. This reading list is intended as a guide for all enlisted Navy leaders. Each of the books on this list contains sound management concepts and ideas, many of which can be applied to your leadership role in the Navy. Keep in mind that these books are written by civilians, for the civilian workplace, so not everything will directly apply.

"A" List: Required Reading

A Most Fortunate Ship: Narrative History of Old Ironsides by Tyrone G. Martin

A Sailor's Log: Recollections of Forty Years of Naval Life by Robley D. Evans

A Voice From the Main Deck: Being a Record of the Thirty Years' Adventures of Samuel Leech by Samuel Leech

Battleship Sailor by Theodore C. Mason, Edward L. Beach Jr.

Brave Ship, Brave Men by Arnold S. Lott

Crossing the Line: A Bluejacket's World War II Odyssey by Alvin Kernan

Descent Into Darkness by Edward C. Raymer

Devotion to Duty: A Biography of Admiral Clifton A.F. Sprague by John F. Wukovits, Thomas B. Buell

Divided Waters: The Naval History of the Civil War by Ivan Musicant

Every Other Day: Letters from the Pacific by George B. Lucas

Good Night Officially: The Pacific War Letters of a Destroyer Sailor by James O. Raines, William M. McBride (editor)

In Harm's Way: The Sinking of the USS Indianapolis and the Extraordinary Story of Its Survivors by Doug Stanton (new for 2002)

In Love and War: The Story of a Family's Sacrifice During the Vietnam Years (Revised and Updated) by Jim and Sybil Stockdale

Iwo by Richard Wheeler

Life in Mr. Lincoln's Navy by Dennis J. Ringle

Naked Warriors: The Story of the U.S. Navy Frogmen by Frances Douglas Fane & Don Moore

Nimitz by E.B. Potter

Quiet Heroes: Navy Nurses of the Korean War 1950-1953 by Frances Omori

Raiders from the Sea: The Story of the Special Boat Service in World War II by John Lodwick

Raiders of the Deep by Lowell Thomas, Gary E. Weit (photographer)

Shield and Sword: The United States Navy and the Persian Gulf War by Edward J. Marolda and Robert J. Schneller Jr.

Ship's Doctor by Terrence Riley

Submarine Diary: The Silent Stalking of Japan by Corwin Mendenhall, I.J. Galantin

The Battle of Cape Esperance: Encounter at Guadalcanal by Charles O. Cook

The Fast Carriers: The Forging of an Air Navy by Clark G. Reynolds

The Fighting Liberty Ships: A Memoir by A.A. Hoehling

The Golden Thirteen: Recollections of the First Black Naval Officers by Paul Stillwell

The Last Patrol by Harry Holmes

Thunder Below: The USS Barb Revolutionizes Submarine Warfare in World War II by Eugene B. Fluckey

Tin Can Sailor: Life Aboard the USS Sterett, 1939-1945 by C. Raymond Calhoun

We Will Stand By You: Serving in the Pawnee, 1942-1945 by Theodore C. Mason

What a Way to Spend a War: Navy Nurse POWs in the Philippines by Dorothy Still Danner

"B" List: Reference

A Quest for Glory: A Biography of Rear Admiral John A. Dahlgren by Robert J. Schneller Jr.

Admiral John H. Towers: The Struggle for Naval Air Supremacy by Clark G. Reynolds

Air Raid: Pearl Harbor!: Recollections of a Day of Infamy by Paul Stillwell

All at Sea: Coming of Age In World War II by Louis R. Harlan

American Naval History: An Illustrated Chronology of the U.S. Navy and Marine Corps, 1775-Present by Jack Sweetman

Assault from the Sea: The Amphibious Landing at Inchon by Curtis A. Utz

At Dawn We Slept: The Untold Story of Pearl Harbor by Gordon W. Prange

Authors at Sea: Modern American Writers Remember Their Naval Service by Robert Shenk

Book of Navy Songs by The Trident Society

Clash of the Titans: World War II at Sea by Walter J. Boyne

Cordon of Steel: The U.S. Navy and the Cuban Missile Crisis by Curtis A. Utz

Crossed Currents: Navy Women from World War I to Tailhook by Jean Ebbert, Marie-Beth Hall

E-Boat Alert: Defending the Normandy Invasion Fleet by James Foster Tent

Great American Naval Battles by Jack Sweetman

Heroes in Dungarees: The Story of the American Merchant Marines in World War II by John Bunker

History of the U.S. Navy, Vol. 1, 1775-1941 by Robert W. Love Jr.

History of U.S. Naval Operations in World War II, Vol. I to XV by Samuel Eliot Morison

Honor Bound: American Prisoners of War in Southeast Asia, 1961-1973 by Stuart I. Rochester, Frederick T. Wiley

Kinkaid of the Seventh Fleet: A Biography of Admiral Thomas C. Kinkaid, U.S. Navy by Gerald E. Wheeler

Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time by Dava Sobel

Magnificent Mitscher by Theodore Taylor, Jeffrey G. Barlow

Miracle at Midway by Gordon W. Prange

Okinawa: The Last Battle of World War II by Robert Leckie

One Hundred Years of Sea Power: The U.S. Navy, 1890-1990 by George W. Baer

Prisoners of the Japanese by Gavan Daws

PT 105 by Dick Keresey

Quiet Warrior: A Biography of Admiral Raymond A. Spruance by Thomas B. Buell

Revolt of the Admirals: The Fight for Naval Aviation 1945-1950 by Jeffrey Barlow, Dean C. Allard

Rocks & Shoals: Naval Discipline in the Age of Fighting Sail by James E. Valle

Run Silent, Run Deep by Edward L. Beach Jr.

Sea Power: A Naval History by E.B. Potter (editor)

Submarine Admiral: From Battlewagons to Ballistic Missiles by I. J. Galantin

Submarine Commander: A Story of World War II and Korea by Paul R. Schratz

The First Team: Pacific Naval Air Combat from Pearl Harbor to Midway by John B. Lundstrom

The First Team and the Guadalcanal Campaign: Naval Fighter Combat from August to November 1942 by John B. Lundstrom

This People's Navy: The Making of American Sea Power by Kenneth J. Hagan

The Two Ocean War: A Short History of the United States Navy in the Second World War by Samuel Eliot Morison

The Unsinkable Fleet: The Politics of U.S. Navy Expansion in World War II by Joel R. Davidson

U-Boat Commander: A Periscope View of the Battle of the Atlantic by Peter Cremer, Fritz Brustat (naval photographer)

Unsung Sailors: The Naval Armed Guard in World War II by Justin F. Gleichauf

War at Sea: A Naval History of World War II by Nathan Miller

War Beneath the Sea: Submarine Conflict During World War II by Peter Padfield

We Pulled Together and Won! Personal Memories of the World War II Era by Reminisce Books

Leadership, Management and Personal Growth

Built to Last: Successful Habits of Visionary Companies by James Collins and Jerry Porras

Changing the Game: Organizational Transformations of the First, Second, and Third by Eric G. Flamholtz, Yvonne Randle and Howard Schultz

Decision Traps: Ten Barriers to Brilliant Decision-Making and How to Overcome Them by J. Edward Russo

Deep Change: Discovering the Leader Within by Robert E. Quinn

Futurize Your Enterprise: Business Strategy in the Age of the E-customer by David Siegel

Imaginization: New Mindsets for Seeing, Organizing and Managing by Gareth Morgan

In Athena's Camp: Preparing for Conflict in the Information Age by John Arquilla, et al.

Leadership and Self-deception: Getting Out of the Box by Arbinger Institute

Leadership is an Art by Max DePree

Leadership Without Easy Answers by Ronald Heifetz

Leading Change by John P. Kotter

Managing at the Speed of Change by Daryl R. Conner

The Cluetrain Manifesto: The End of Business as Usual by Doc Searls, Christopher Locke, Rick Levine

The Digital Economy: Promise and Peril in the Age of Networked Intelligence by Don Tapscott

The Digital Estate: Strategies for Competing, Surviving and Thriving in an International World by Chuck L. Martin Jr.

The Human Side of Intranets: Content, Style, and Politics by Jerry W. Koehler, et al.

The Leadership Engine: Building Leaders at Every Level by Noel M. Tichy and Eli B. Cohen

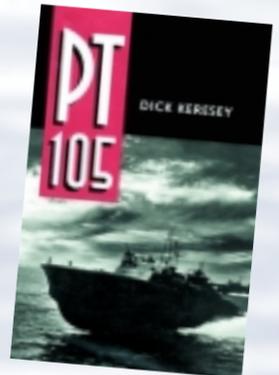
The Lexus and the Olive Tree: Understanding Globalization by Thomas L. Friedman

The Other 90%: How to Unlock Your Vast Untapped Potential for Leadership and Life by Robert K. Cooper

The Power of Alignment: How Great Companies Stay Centered and Accomplish Things by George Labovitz and Victor Rosansky

Who Moved My Cheese? An Amazing Way to Deal With Change in Your Work and in Your Life by Spencer Johnson, Kenneth Blanchard

Sources: www.chinfo.navy.mil/navpalib/mcpn/readguide.html, Sept. 10, 2002



Warfare Pins & Badges

Warfare Pins & Badges



Enlisted Ratings



AB
Aviation Boatswain's Mate
ABE – Equipment
ABF – Fuel
ABH – Handling



AC
Air Traffic Controller



AD
Aviation Machinist's Mate



AE
Aviation Electrician's Mate



AG
Aerographer's Mate



IS
Intelligence Specialist



IT
Information Systems Technician



JO
Journalist



LI
Lithographer



LN
Legalman



AK
Aviation Storekeeper



AM
Aviation Structural Mechanic
AME – Equipment



AO
Aviation Ordnanceman



AS
Aviation Support Equipment Technician



AT
Aviation Electronics Technician



MA
Master-at-Arms



MM
Machinist's Mate



MN
Mineman



MR
Machinery Repairman



MS
Mess Management Specialist



AW
Aviation Warfare Systems Operator



AZ
Aviation Maintenance Administrationman



BM
Boatswain's Mate



BU
Builder



CE
Construction Electrician



MT
Missile Technician



MU
Musician



NC
Navy Counselor



OS
Operations Specialist



PC
Postal Clerk



CM
Construction Mechanic



CT
Cryptologic Technician
CTA – Administration
CTI – Interpretive
CTM – Maintenance
CTO – Communications
CTR – Collection
CTT – Technical



DC
Damage Controlman



DK
Disbursing Clerk



DM
Illustrator/Draftsman



PH
Photographer's Mate



PN
Personnelman



PR
Aircrew Survival Equipmentman



QM
Quartermaster



RP
Religious Program Specialist



DT
Dental Technician



EA
Engineering Aide



EM
Electrician's Mate



EN
Engineman



SH
Ship's Serviceman



SK
Storekeeper



SM
Signalman



ST
Sonar Technician
STG – Surface
STS – Submarine



SW
Steelworker



EO
Equipment Operator



ET
Electronics Technician



EW
Electronics Warfare Technician



FC
Fire Controlman



FT
Fire Control Technician



TM
Torpedoman's Mate



UT
Utilitiesman



YN
Yeoman



GM
Gunner's Mate



GS
Gas Turbine System Technician
GSE – Electrical
GSM – Mechanical



HM
Hospital Corpsman



HT
Hull Maintenance Technician



IC
Interior Communications Electrician



AN
Airman



FN
Fireman



SN
Seaman

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 Boatswain’s Mate), others show the evolution of naval technology in modern times, such as the GS (Gas Turbine System Technicians). Source: www.staynavy.navy.mil

Aircraft Carriers

Aircraft Carriers



USS Nimitz (CVN 68)

U.S. Navy photo

Nimitz-class

- 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)
- PCU Ronald Reagan (CVN 76)*
- George H. W. Bush (CVN 77)



USS Harry S. Truman (CVN 75)

Photo by PH3 Danny Ewing Jr.



USS Abraham Lincoln (CVN 72)

Photo by PH2 Virginia Schaefer

Enterprise-class

- USS Enterprise (CVN 65)

Kitty Hawk-class

- USS Kitty Hawk (CV 63)
- USS Constellation (CV 64)

John F. Kennedy-class

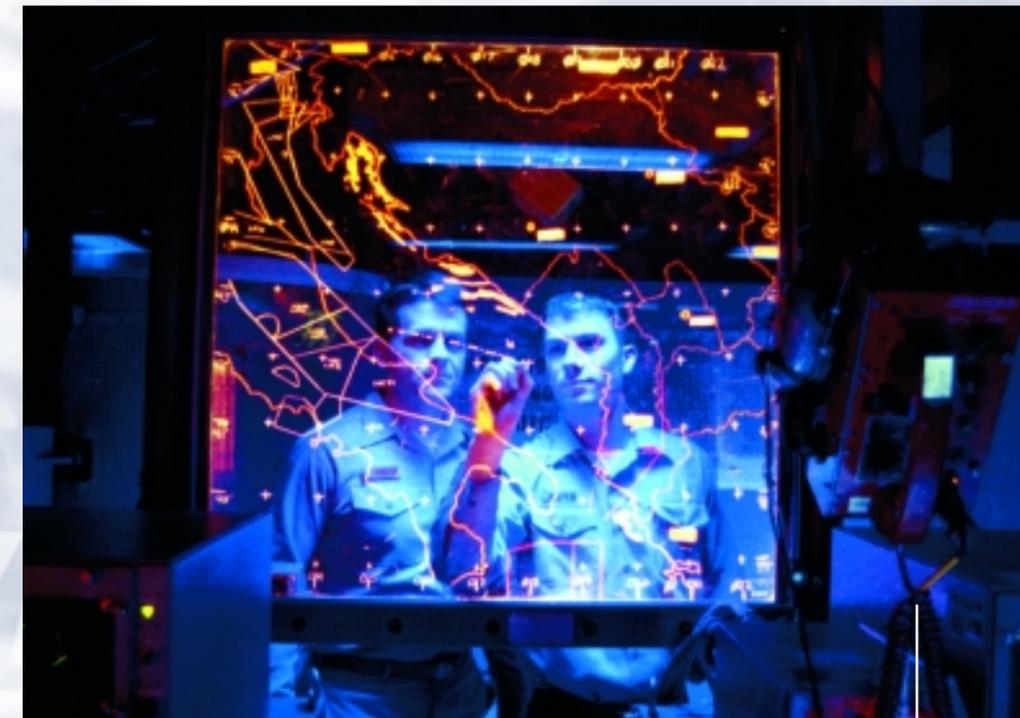
- USS John F. Kennedy (CV 67)

Source: U.S. Naval Ship Battle Forces Report (dtd. Oct. 1, 2002)



USS Kitty Hawk (CV 63) and Royal Navy support tanker HMS Brambleleaf (A 81)

Photo by PHCS Mahlon Miller



* Under Construction

USS Theodore Roosevelt (CVN 71)

Photo by PH3 William Vandermate

Submarines



ATTACK SUBMARINES

Los Angeles-class

- USS *Los Angeles* (SSN 688)
- USS *Philadelphia* (SSN 690)
- USS *Memphis* (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 *Portsmouth* (SSN 707)
- USS *Minneapolis-St. Paul* (SSN 708)
- USS *Hyman G. Rickover* (SSN 709)
- USS *Augusta* (SSN 710)
- USS *San Francisco* (SSN 711)
- USS *Houston* (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 *Louisville* (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 *Miami* (SSN 755)
- USS *Scranton* (SSN 756)
- USS *Alexandria* (SSN 757)
- USS *Asheville* (SSN 758)

USS *Salt Lake City* (SSN 716)

U.S. Navy photo

- USS *Jefferson City* (SSN 759)
- USS *Annapolis* (SSN 760)
- USS *Springfield* (SSN 761)
- USS *Columbus* (SSN 762)
- USS *Santa Fe* (SSN 763)
- USS *Boise* (SSN 764)
- USS *Montpelier* (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 *Greenville* (SSN 772)
- USS *Cheyenne* (SSN 773)

Seawolf-class

- USS *Seawolf* (SSN 21)
- USS *Connecticut* (SSN 22)
- PCU *Jimmy Carter* (SSN 23)*



USS *Michigan* (SSBN 727)

Photo by Brian Nokell



USS *Boise* (SSN 764)

Photo by PH1 Jim Hampshire



USS *La Jolla* (SSN 701) with the deep submergence rescue vehicle *Mystic* (DSRV 1) attached.

Photo by JO3 Wes Eplen

Virginia-class

- PCU *Virginia* (SSN 774)*
- PCU *Texas* (SSN 775)*
- PCU *Hawaii* SSN 776
- PCU *North Carolina* SSN 777

Sturgeon-class

- USS *Parche* (SSN 683)

BALLISTIC MISSILE SUBMARINES

Ohio-class

- USS *Ohio* (SSBN 726)
- USS *Michigan* (SSBN 727)
- USS *Florida* (SSBN 728)

- USS *Georgia* (SSBN 729)
- 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)

DEEP SUBMERGENCE RESCUE VEHICLES

- DSRV *Mystic*
- DSRV *Avalon*

SUBMERSIBLE RESEARCH VEHICLES

- Submarine NR-1 (Nuclear)
- USS *Dolphin* (AGSS 555)

* Under Construction

Source: U.S. Naval Ship Battle Forces Report (dtd. Oct. 1, 2002)

Effective January 1, 2003

YEARS OF SERVICE

Pay Grade	< 2	2	3	4	6	8	10	12	14	16	18	20	22	24	26
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Enlisted Members

E-9*	0	0	0	0	0	0	3564.30	3645.00	3747.00	3867.00	3987.30	4180.80	4344.30	4506.30	4757.40
E-8	0	0	0	0	0	2975.40	3061.20	3141.30	3237.60	3342.00	3530.10	3625.50	3787.50	3877.50	4099.20
E-7	2068.50	2257.80	2343.90	2428.20	2516.40	2667.90	2753.40	2838.30	2990.40	3066.30	3138.60	3182.70	3331.50	3427.80	3671.40
E-6	1770.60	1947.60	2033.70	2117.10	2204.10	2400.90	2477.40	2562.30	2636.70	2663.10	2709.60	2709.60	2709.60	2709.60	2709.60
E-5	1625.40	1733.70	1817.40	1903.50	2037.00	2151.90	2236.80	2283.30	2283.30	2283.30	2283.30	2283.30	2283.30	2283.30	2283.30
E-4	1502.70	1579.80	1665.30	1749.30	1824.00	1824.00	1824.00	1824.00	1824.00	1824.00	1824.00	1824.00	1824.00	1824.00	1824.00
E-3	1356.90	1442.10	1528.80	1528.80	1528.80	1528.80	1528.80	1528.80	1528.80	1528.80	1528.80	1528.80	1528.80	1528.80	1528.80
E-2	1290.00	1290.00	1290.00	1290.00	1290.00	1290.00	1290.00	1290.00	1290.00	1290.00	1290.00	1290.00	1290.00	1290.00	1290.00
E-1	1150.80	1150.80	1150.80	1150.80	1150.80	1150.80	1150.80	1150.80	1150.80	1150.80	1150.80	1150.80	1150.80	1150.80	1150.80
E-1	1064.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Warrant Officer

W-5	0	0	0	0	0	0	0	0	0	0	0	5169.30	5346.60	5524.50	5703.30
W-4	3008.10	3236.10	3329.10	3420.60	3578.10	3733.50	3891.00	4044.60	4203.60	4356.40	4512.00	4664.40	4822.50	4978.20	5137.50
W-3	2747.10	2862.00	2979.30	3017.70	3141.00	3281.70	3467.40	3580.50	3771.90	3915.60	4058.40	4201.50	4266.30	4407.00	4548.00
W-2	2416.50	2554.50	2675.10	2763.00	2838.30	2993.10	3148.50	3264.00	3376.50	3453.90	3579.90	3705.90	3831.00	3957.30	3957.30
W-1	2133.90	2308.50	2425.50	2501.10	2662.50	2782.20	2888.40	3006.90	3085.20	3203.40	3320.70	3409.50	3409.50	3409.50	3409.50

Commissioned Officers With More Than Four (4) Years Active-duty Service as an Enlisted Member or Warrant Officer

O-3E	0	0	0	3883.50	4069.50	4273.50	4405.80	4623.30	4808.30	4911.00	5054.40	5054.40	5054.40	5054.40	5054.40
O-2E	0	0	0	3410.70	3481.20	3591.90	3778.80	3923.40	4031.10	4031.10	4031.10	4031.10	4031.10	4031.10	4031.10
O-1E	0	0	0	2746.80	2933.70	3042.00	3152.70	3261.60	3410.70	3410.70	3410.70	3410.70	3410.70	3410.70	3410.70

Commissioned Officers **

O-10***	0	0	0	0	0	0	0	0	0	0	0	12077.70	12137.10	12389.40	12829.20
O-9	0	0	0	0	0	0	0	0	0	0	0	10563.60	10715.70	10935.60	11319.60
O-8	7474.50	7719.30	7881.60	7927.20	8129.40	8468.70	8547.30	8868.90	8961.30	9238.20	9639.00	10008.90	10255.80	10255.80	10255.80
O-7	6210.90	6499.20	6633.00	6739.20	6930.90	7120.80	7340.40	7559.40	7779.00	8468.70	9051.30	9051.30	9051.30	9051.30	9096.90
O-6	4603.20	5057.10	5388.90	5388.90	5409.60	5641.20	5672.10	5672.10	5994.60	6564.30	6898.80	7233.30	7423.50	7616.10	7989.90
O-5	3837.60	4323.00	4622.40	4678.50	4864.80	4977.00	5222.70	5403.00	5635.50	5991.90	6161.70	6329.10	6519.60	6519.60	6519.60
O-4	3311.10	3832.80	4088.70	4145.70	4383.00	4637.70	4954.50	5201.40	5372.70	5471.10	5528.40	5528.40	5528.40	5528.40	5528.40
O-3	2911.20	3300.30	3582.20	3883.50	4089.50	4273.50	4405.80	4623.30	4736.10	4736.10	4736.10	4736.10	4736.10	4736.10	4736.10
O-2	2515.20	2864.70	3299.40	3410.70	3481.20	3481.20	3481.20	3481.20	3481.20	3481.20	3481.20	3481.20	3481.20	3481.20	3481.20
O-1	2183.70	2272.50	2746.80	2746.80	2746.80	2746.80	2746.80	2746.80	2746.80	2746.80	2746.80	2746.80	2746.80	2746.80	2746.80

* While serving as Master Chief Petty Officer of the Navy or Coast Guard, Sergeant Major of the Army or Marine Corps, or Chief Master Sergeant of the Air Force, basic pay for this grade is \$5,732.70, regardless of the cumulative years of service as computed under Section 205, Title 37, U.S. Code.

** Basic pay for O-7 to O-10 is limited to the rate of basic pay for Level III of the Executive Schedule. Basic Pay for O-6 and below is limited to Level V of the Executive Schedule.

*** While serving as Chairman or Vice Chairman of the Joint Chiefs of Staff, Chief of Naval Operations, Chief of Staff of the Army or Air Force or as Commandant of the Marine Corps or Coast Guard, basic pay for this grade is \$14,155.50, regardless of the cumulative years of service as computed under Section 205, Title 37, U.S. Code.

U.S. Armed Forces Ranks

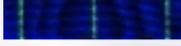
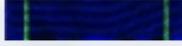
	Air Force	Army	Marine Corps	Navy & Coast Guard
E-9	 Chief Master Sergeant of the Air Force Chief Master Sergeant, First Sergeant, Command Chief Master Sergeant	 Sergeant Major of the Army Sergeant Major, Command Sergeant Major	 Sergeant Major of the Marine Corps Sergeant Major, Master Gunnery Sergeant	 Master Chief Petty Officer of the Navy / Coast Guard Master Chief Petty Officer, Fleet/Force/Command Master Chief Petty Officer
E-8	 Senior Master Sergeant, First Sergeant	 Master Sergeant, First Sergeant	 First Sergeant, Master Sergeant	 Senior Chief Petty Officer
E-7	 Master Sergeant, First Sergeant	 Sergeant First Class	 Gunnery Sergeant	 Chief Petty Officer
E-6	 Technical Sergeant	 Staff Sergeant	 Staff Sergeant	 Petty Officer First Class
E-5	 Staff Sergeant	 Sergeant	 Sergeant	 Petty Officer Second Class
E-4	 Senior Airman	 Corporal Specialist	 Corporal	 Petty Officer Third Class
E-3	 Airman First Class	 Private First Class	 Lance Corporal	 Seaman
E-2	 Airman	 Private	 Private First Class	 Seaman Apprentice
E-1	 Airman Basic	 Private	 Private	 Seaman Recruit

	Officers						
	<i>Devices shown are the same for all services.</i>						
O-10	<table border="0"> <tr> <td>Air Force • Army • Marines Officer Ranks</td> <td>Navy • Coast Guard Officer Ranks</td> </tr> <tr> <td> General of the Air Force / Army (Reserved for Wartime)</td> <td> Fleet Admiral (Reserved for Wartime)</td> </tr> <tr> <td> General</td> <td> Admiral / Commandant of the Coast Guard</td> </tr> </table>	Air Force • Army • Marines Officer Ranks	Navy • Coast Guard Officer Ranks	 General of the Air Force / Army (Reserved for Wartime)	 Fleet Admiral (Reserved for Wartime)	 General	 Admiral / Commandant of the Coast Guard
Air Force • Army • Marines Officer Ranks	Navy • Coast Guard Officer Ranks						
 General of the Air Force / Army (Reserved for Wartime)	 Fleet Admiral (Reserved for Wartime)						
 General	 Admiral / Commandant of the Coast Guard						
O-9	<table border="0"> <tr> <td> Lieutenant General</td> <td> Vice Admiral</td> </tr> </table>	 Lieutenant General	 Vice Admiral				
 Lieutenant General	 Vice Admiral						
O-8	<table border="0"> <tr> <td> Major General</td> <td> Rear Admiral (Upper Half)</td> </tr> </table>	 Major General	 Rear Admiral (Upper Half)				
 Major General	 Rear Admiral (Upper Half)						
O-7	<table border="0"> <tr> <td> Brigadier General</td> <td> Rear Admiral (Lower Half)</td> </tr> </table>	 Brigadier General	 Rear Admiral (Lower Half)				
 Brigadier General	 Rear Admiral (Lower Half)						
O-6	<table border="0"> <tr> <td> Colonel</td> <td> Captain</td> </tr> </table>	 Colonel	 Captain				
 Colonel	 Captain						
O-5	<table border="0"> <tr> <td> Lieutenant Colonel</td> <td> Commander</td> </tr> </table>	 Lieutenant Colonel	 Commander				
 Lieutenant Colonel	 Commander						
O-4	<table border="0"> <tr> <td> Major</td> <td> Lieutenant Commander</td> </tr> </table>	 Major	 Lieutenant Commander				
 Major	 Lieutenant Commander						
O-3	<table border="0"> <tr> <td> Captain</td> <td> Lieutenant</td> </tr> </table>	 Captain	 Lieutenant				
 Captain	 Lieutenant						
O-2	<table border="0"> <tr> <td> First Lieutenant</td> <td> Lieutenant Junior Grade</td> </tr> </table>	 First Lieutenant	 Lieutenant Junior Grade				
 First Lieutenant	 Lieutenant Junior Grade						
O-1	<table border="0"> <tr> <td> Second Lieutenant</td> <td> Ensign</td> </tr> </table>	 Second Lieutenant	 Ensign				
 Second Lieutenant	 Ensign						

	Air Force	Army	Marine Corps	Navy & Coast Guard
Warrant Officers	No Warrant	 Warrant Officer 1	 Warrant Officer 1	 Warrant Officer 1 (Coast Guard only)
No Warrant	No Warrant	 Chief Warrant Officer 2	 Chief Warrant Officer 2	 Chief Warrant Officer 2
No Warrant	No Warrant	 Chief Warrant Officer 3	 Chief Warrant Officer 3	 Chief Warrant Officer 3
No Warrant	No Warrant	 Chief Warrant Officer 4	 Chief Warrant Officer 4	 Chief Warrant Officer 4
No Warrant	No Warrant	 Chief Warrant Officer 5	 Chief Warrant Officer 5	 Navy Chief Warrant Officer 5

Order of Precedence

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 1650.1F and the U.S. Navy Uniform Regulations (NAVPERS 1566.5G).

						
Medal of Honor	Navy Cross	Defense Distinguished Service Medal	Distinguished Service Medal	Silver Star	Defense Superior Service Medal	Legion of Merit
						
Distinguished Flying Cross	Navy/Marine Corps Medal	Bronze Star	Purple Heart	Defense Meritorious Service Medal	Meritorious Service Medal	Air Medal
						
Joint Service Commendation Medal	Navy/Marine Corps Commendation Medal	Joint Service Achievement Medal	Navy/Marine Corps Achievement Medal	Combat Action Ribbon	Presidential Unit Citation	Joint Meritorious Unit Award
						
Navy Unit Commendation	Meritorious Unit Commendation	Battle "E" Ribbon	POW Medal	Good Conduct Medal	Naval Reserve Meritorious Service Medal	Fleet Marine Force Ribbon
						
Navy Expeditionary Medal	National Defense Service Medal	Korean Service Medal	Antarctic Service Medal	Armed Forces Expeditionary Medal	Vietnam Service Medal	Southwest Asia Service Medal
						
Kosovo Campaign Medal	Armed Forces Service Medal	Humanitarian Service Medal	Military Outstanding Volunteer Service Medal	Sea Service Deployment Ribbon	Navy Arctic Service Ribbon	Naval Reserve Sea Service Ribbon
						
Navy/Marine Corps Overseas Service Ribbon	Navy Recruiting Service Ribbon	Armed Forces Reserve Medal	Naval Reserve Medal	Philippine Presidential Unit Citation	Republic of Korea Presidential Unit Citation	Republic of Vietnam Presidential Unit Citation
						
Republic of Vietnam Gallantry Cross Unit Citation	Republic of Vietnam Civil Actions Unit Citation	United Nations Service Medal	United Nations Medal	NATO Medal	Multinational Force and Observers Medal	Inter American Defense Board Medal
						
Republic of Vietnam Campaign Medal	Kuwait Liberation Medal (Kingdom of Saudi Arabia)	Kuwait Liberation (Kuwait)	Rifle Marksmanship Medal	Pistol Marksmanship Medal		

Source: www.bupers.navy.mil

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	HOURLASS 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

CRUISERS

Ticonderoga-class

- USS *Ticonderoga* (CG 47)
- USS *Yorktown* (CG 48)
- USS *Vincennes* (CG 49)
- USS *Valley Forge* (CG 50)
- 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

Tarawa-class

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

Wasp-class

- 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)



USS Mahan (DDG 72)
Photo by PHAN Jason R. Zalasky

DESTROYERS

Spruance-class

- USS *Spruance* (DD 963)
- USS *Paul F. Foster* (DD 964)
- USS *Kinkaid* (DD 965)
- USS *Elliot* (DD 967)
- USS *Arthur W. Radford* (DD 968)
- USS *Oldendorf* (DD 972)
- USS *O'Brien* (DD 975)
- USS *Briscoe* (DD 977)
- USS *Stump* (DD 978)
- USS *Cushing* (DD 985)
- USS *O'Bannon* (DD 987)
- USS *Thorn* (DD 988)
- USS *Deyo* (DD 989)
- USS *Fife* (DD 991)
- USS *Fletcher* (DD 992)
- USS *Hayler* (DD 997)

Arleigh Burke-class

- 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)
- USS *Oscar Austin* (DDG 79)
- USS *Roosevelt* (DDG 80)
- USS *Winston S. Churchill* (DDG 81)
- USS *Lassen* (DDG 82)
- USS *Howard* (DDG 83)
- USS *Bulkeley* (DDG 84)
- USS *McCampbell* (DDG 85)
- USS *Shoup* (DDG 86)
- USS *Mason* (DDG 87)*
- USS *Preble* (DDG 88)
- PCU *Mustin* (DDG 89)*
- PCU *Chafee* (DDG 90)*
- PCU *Pinckney* (DDG 91)*
- PCU *Momson* (DDG 92)*
- Chung-Hoon* (DDG 93)*
- Nitze* (DDG 94)*
- James E. Williams* (DDG 95)*
- Bainbridge* (DDG 96)
- (DDG 97) (unnamed)
- (DDG 101) (unnamed)



USS Sentry (MCM 3)
Photo by PHC Johnny Bivora

FRIGATES

Oliver Hazard Perry-class

- USS *McInerney* (FFG 8)
- USS *George Philip* (FFG 12)**
- USS *Sides* (FFG 14)**
- USS *Estocin* (FFG 15)**
- 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 *Curtis* (FFG 38)**
- USS *Doyle* (FFG 39)**
- USS *Halyburton* (FFG 40)
- USS *McClusky* (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

Austin-class

- USS *Austin* (LPD 4)
- USS *Ogden* (LPD 5)
- USS *Duluth* (LPD 6)
- 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

- San Antonio* (LPD 17)*
- New Orleans* (LPD 18)*
- Mesa Verde* (LPD 19)*
- Green Bay* (LPD 20)*
- New York* (LPD 21)*

AMPHIBIOUS COMMAND

Blue Ridge-class

- USS *Blue Ridge* (LCC 19)
- USS *Mount Whitney* (LCC 20)

LaSalle & Coronado-class

- USS *LaSalle* (AGF 3)
- USS *Coronado* (AGF 11)

AMPHIBIOUS DOCK LANDING

Anchorage-class

- USS *Anchorage* (LSD 36)
- USS *Portland* (LSD 37)
- USS *Mount Vernon* (LSD 39)

Whidbey Island-class

- 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

- USS *Harpers Ferry* (LSD 49)
- USS *Carter Hall* (LSD 50)
- USS *Oak Hill* (LSD 51)
- USS *Pearl Harbor* (LSD 52)

* Under Construction
** Naval Reserve Force, Active



USS Wasp (LHD 1) and USNS Supply (T-AOE 6)
Photo by PHAN Teresa Ellison



MINE WARFARE

Avenger-class

- 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

- 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)**

PATROL BOATS

Cyclone-class

- USS Tempest (PC 2)
- USS Hurricane (PC 3)
- USS Monsoon (PC 4)
- USS Typhoon (PC 5)
- USS Sirocco (PC 6)
- USS Squall (PC 7)
- USS Zephyr (PC 8)
- USS Chinook (PC 9)
- USS Firebolt (PC 10)
- USS Whirlwind (PC 11)
- USS Thunderbolt (PC 12)
- USS Shamal (PC 13)
- USS Tornado (PC 14)

AUXILIARY SHIPS

Sacramento-class

- (Fast Combat Support Ship)
- USS Sacramento (AOE 1)
 - USS Camden (AOE 2)
 - USS Seattle (AOE 3)
 - USS Detroit (AOE 4)

Supply-class

- USS Rainier (AOE 7)
- USS Bridge (AOE 10)

Safeguard-class

- (Salvage Ships)
- USS Safeguard (ARS 50)
 - USS Grasp (ARS 51)
 - USS Salvor (ARS 52)
 - USS Grapple (ARS 53)

Emory S. Land-class

- (Submarine Tenders)
- USS Emory S. Land (AS 39)
 - USS Frank Cable (AS 40)

Other Ships in Commission

- Constitution
- USS Pueblo (AGER 2)
- Self Defense Test Ship (EDDG 31)

Source: U.S. Naval Ship Battle Forces Report
(dtd. Oct. 1, 2002)

USS Reuben James (FFG 57) leading Pakistan navy ships PNS Shah Jahan (D 164) and PNS Tippu Sultan (D 185)

Photo by PH2 Aaron Ansarov

Military Sealift Command Ships

MISC

NAVAL FLEET AUXILIARY FORCE

T-AFS (Combat Stores Ships)

- USNS Niagara Falls (T-AFS 3)
- USNS Concord (T-AFS 5)
- USNS San Jose (T-AFS 7)
- USNS Sirius (T-AFS 8)
- USNS Spica (T-AFS 9)
- USNS Saturn (T-AFS 10)

T-AE (Ammunition Ships)

- USNS Kilauaea (T-AE 26)
- USNS Santa Barbara (T-AE 28)
- USNS Flint (T-AE 32)
- USNS Shasta (T-AE 33)
- USNS Mount Baker (T-AE 34)
- USNS Kiska (T-AE 35)

T-ATF (Fleet Ocean Tugs)

- USNS Catawba (T-ATF 168)
- USNS Navajo (T-ATF 169)
- USNS Mohawk (T-ATF 170)
- USNS Sioux (T-ATF 171)
- USNS Apache (T-ATF 172)

T-AO (Oilers)

- USNS Henry J. Kaiser (T-AO 187)
- USNS John Lenthall (T-AO 189)
- USNS Walter S. Diehl (T-AO 193)
- USNS John Ericsson (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)

T-AOE (Fast Combat Support)

- USNS Supply (T-AOE 6)
- USNS Arctic (T-AOE 8)

T-AH (Hospital Ships)

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

SPECIAL MISSION PROGRAM

T-AGOS

- (Ocean Surveillance Ships)
- USNS Stalwart (T-AGOS 1)***
 - USNS Indomitable (T-AGOS 7)***
 - USNS Prevail (T-AGOS 8)
 - USNS Assertive (T-AGOS 9)
 - USNS Bold (T-AGOS 12)
 - USNS Capable (T-AGOS 16)
 - USNS Victorious (T-AGOS 19)
 - USNS Able (T-AGOS 20)
 - USNS Effective (T-AGOS 21)
 - USNS Loyal (T-AGOS 22)
 - USNS Impeccable (T-AGOS 23)

***converted for counter-drug missions

T-AGS (Oceanographic Survey Ships)

- USNS John McDonnell (T-AGS 51)
- USNS Littlehales (T-AGS 52)
- 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)

T-ARC (Cable Repair Ship)

- USNS Zeus (T-ARC 7)

T-AG (Acoustic Research Ship)

- USNS Hayes (T-AG 195)

T-AG (Missile Range Instrumentation Ship)

- USNS Observation Island (T-AGM 23)
- USNS Invincible (T-AGM 24)
- USNS Waters (T-AGS-45)



(Special Mission Charter Ships)

- MV Carolyn Chouest
- MV Dolores Chouest
- MV Kellie Chouest
- MV Cory Chouest
- MV C-Commando

AFLOAT PREPOSITIONING PROGRAM

Maritime Prepositioning Ships (Support U.S. Marine Corps and U.S. Navy)

T-AK (Maritime Prepositioning Ships)

- 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)
- MV 1st Lt. Alex Bonnyman (T-AK 3003)
- MV PVT Franklin J. Phillips (T-AK 3004)
- SS SGT Matej Kocak (T-AK 3005)

* Under Construction
** Naval Reserve Force, Active

Military Sealift Command Ships

MSC



USNS *Comfort* (T-AH 20)

Photo by PHC Philomena Gorenflo

- SS *PFC Eugene A. Obregon* (T-AK 3006)
- SS *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)

- T-AK** (Maritime Prepositioning Force, Enhanced)
 - USNS *1st Lt. Harry L. Martin* (T-AK 3015)
 - USNS *LCPL Roy M. Wheat* (T-AK 3016)
 - USNS *GYSGT Fred W. Stockham* (T-AK 3017)

Combat Prepositioning Ships (Support U.S. Army)

- T-ACS** (Auxiliary Crane Ships)
 - SS *Gopher State* (T-ACS 4)

- T-AKR** (Large Medium-Speed, Roll-on/Roll-off Ships)
 - 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)

- T-AK** (Container Ships)
 - MV *LTC Calvin P. Titus* (T-AK 5089)
 - MV *SP5 Eric G. Gibson* (T-AK 5091)
 - MV *LTC John U.D. Page* (T-AK 4496)
 - MV *SSG Edward A. Carter Jr.* (T-AK 4544)

- T-AK** (Break Bulk Ammunition Ship)
 - SS *Cape Jacob* (T-AK 5029)

Logistics Prepositioning Ships (Support U.S. Air Force, U.S. Navy and the Defense Logistics Agency)

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



From left to right, **USS *Donald Cook* (DDG 75)**, **USNS *Kanawha* (T-AO 196)** and **USS *Harry S. Truman* (CVN 75)**.

Photo by PH2 Dwain Willis

- T-AK** (Container Ships)
 - MV *CAPT Steven L. Bennett* (T-AK 4296)
 - MV *MAJ Bernard F. Fisher* (T-AK 4396)
 - MV *A1C William H. Pitsenbarger* (T-AK 4638)

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

SEALIFT PROGRAM

- T-AKR** (Fast Sealift Ships)
 - 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)

- (Down Range Support Ships)**
 - MV *Sea Mark III*

- (Container Ship)**
 - MV *Sagamore*

- T-AOT** (Tankers)
 - MV *Gus W. Darnell* (T-AOT 1121)
 - MV *Paul Buck* (T-AOT 1122)



SS *Cape Gibson* (T-AK 5051)

Photo by JO1 Kevin Elliott

- T-AKR** (Roll-on/Roll-off Ships)
 - SS *Comet* (T-AKR 7)
 - SS *Meteor* (T-AKR 9)
 - SS *Cape Island* (T-AKR 10)
 - SS *Cape Intrepid* (T-AKR 11)
 - MV *Cape Texas* (T-AKR 112)
 - MV *Cape Taylor* (T-AKR 113)
 - GTS *ADM Wm. M. Callaghan* (T-AKR 1001)

- MV *Cape Orlando* (T-AKR 2044)
- MV *Cape Ducato* (T-AKR 5051)
- MV *Cape Douglas* (T-AKR 5052)
- MV *Cape Domingo* (T-AKR 5053)
- MV *Cape Decision* (T-AKR 5054)
- MV *Cape Diamond* (T-AKR 5055)
- SS *Cape Isabel* (T-AKR 5062)
- MV *Cape Hudson* (T-AKR 5066)
- MV *Cape Henry* (T-AKR 5067)
- MV *Cape Horn* (T-AKR 5068)
- MV *Cape Edmont* (T-AKR 5069)
- SS *Cape Inscription* (T-AKR 5076)
- MV *Cape Lambert* (T-AKR 5077)
- MV *Cape Lobos* (T-AKR 5078)
- MV *Cape Knox* (T-AKR 5082)
- MV *Cape Kennedy* (T-AKR 5083)
- MV *Cape Race* (T-AKR 9960)
- MV *Cape Washington* (T-AKR 9961)
- MV *Cape Wrath* (T-AKR 9962)
- MV *Cape Vincent* (T-AKR 9666)
- MV *Cape Rise* (T-AKR 9678)
- MV *Cape Ray* (T-AKR 9679)
- MV *Cape Victory* (T-AKR 9701)
- MV *Cape Trinity* (T-AKR 9711)

- T-AKR** (Large, Medium-Speed, Roll-on/Roll-off Ships)
 - MV *Samuel L. Cobb* (T-AOT 1123)
 - MV *Richard G. Matthiesen* (T-AOT 1124)
 - MV *Lawrence H. Gianella* (T-AOT 1125)
 - MV *Montauk*
- T-AKR** (Large, Medium-Speed, Roll-on/Roll-off Ships)
 - USNS *Shughart* (T-AKR 295)
 - USNS *Gordon* (T-AKR 296)
 - USNS *Yano* (T-AKR 297)
 - USNS *Gilliland* (T-AKR 298)
 - USNS *Bob Hope* (T-AKR 300)
 - USNS *Fisher* (T-AKR 301)
 - USNS *Seay* (T-AKR 302)
 - USNS *Mendonca* (T-AKR 303)
 - USNS *Piilaau* (T-AKR 304)
 - USNS *Brittin* (T-AKR 305)
 - USNS *Benavidez* (T-AKR 306)**

**to be delivered

READY RESERVE FORCE

- T-AK** (Break Bulk Ships)
 - SS *Cape Nome* (T-AK 1014)
 - SS *Cape Ann* (T-AK 5009)
 - SS *Cape Archway* (T-AK 5011)
 - SS *Cape Avinof* (T-AK 5013)

- T-AK** (Barge Carriers)
 - SS *Cape Fear* (T-AK 5061)
 - SS *Cape May* (T-AK 5063)
 - SS *Cape Mendocino* (T-AK 5064)
 - SS *Cape Mohican* (T-AKR 5065)
 - SS *Cape Flattery* (T-AK 5070)
 - SS *Cape Florida* (T-AK 5071)
 - SS *Cape Farewell* (T-AK 5073)

- T-ACS** (Auxiliary Crane Ships)
 - SS *Keystone State* (T-ACS 1)
 - SS *Gem State* (T-ACS 2)
 - SS *Grand Canyon State* (T-ACS 3)
 - SS *Flickertail State* (T-ACS 5)
 - SS *Cornhusker State* (T-ACS 6)
 - SS *Diamond State* (T-ACS 7)
 - SS *Equality State* (T-ACS 8)
 - SS *Green Mountain State* (T-ACS 9)
 - SS *Beaver State* (T-ACS 10)

- T-AP** (Troop Ships)
 - SS *Empire State* (T-AP 1001)
 - SS *Golden Bear*

- T-AOT** (Tankers)
 - MV *Nodaway* (T-AOT 78)
 - MV *Alatna* (T-AOT 81)
 - MV *Chattahoochee* (T-AOT 82)

AIHANDS Owner's + Operator's Manual 2003

- SS *Mission Buenaventura* (T-AOT 1012)
- MV *Mission Capistrano* (T-AOT 5005)
- SS *Mount Washington* (T-AOT 5076)
- SS *Potomac* (T-AOT 181)

- T-AK** (Freighters)
 - SS *Cape Breton* (T-AK 5056)
 - SS *Cape Bover* (T-AK 5057)
 - SS *Cape Borda* (T-AK 5058)
 - SS *Cape Blanco* (T-AK 5060)

- T-AK** (Modular Cargo Delivery System Ship)
 - SS *Cape Girardeau* (T-AK 2039)
 - SS *Cape Alexander* (T-AK 5010)
 - SS *Cape John* (T-AK 5022)
 - SS *Cape Gibson* (T-AK 5051)
 - SS *Cape Juby* (T-AK 5077)
 - SS *Cape Johnson* (T-AK 5075)

Source: HQ, Military Sealift Command



USNS *Spica* (T-AFS 9)

Photo by PH1 Jim Hampshire

CARRIER-BASED

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 MK-61 Vulcan cannon; AMRAAM, Sparrow and Sidewinder air-to-air missiles; Joint Direct Attack Munitions (JDAM), laser-guided and general purpose bombs; Harpoon and HARM
Crew: one or two

SQUADRONS

Blue Angels
VFA-15 Valions
VFA-22 Fighting Redcocks
VFA-25 Fist of the Fleet
VFA-27 Royal Maces
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 (Fleet Replacement Squadron)
VFA-113 Stingers
VFA-125 Rough Raiders (Fleet Replacement Squadron)
VFA-131 Wildcats
VFA-132 Privateers
VFA-136 Knighthawks
VFA-137 Kestrels
VFA-146 Blue Diamonds

F/A-18 Hornet

Photo by Vernon Pugh

VFA-147 Argonauts
VFA-151 Fighting Vigilantes
VFA-192 Golden Dragons
VFA-195 Dambusters
VFA-201 (USNR) Hunters
VFA-203 (USNR) Blue Dolphins
VFA-204 (USNR) River Rattlers
VFC-12 (USNR) Fighting Omars

F/A-18E/F Super Hornet

Both models of the Super Hornet provide the carrier battle group with a strike fighter that has significant growth potential and increased range, endurance and ordnance-carrying capabilities. The "E" is a single-seat aircraft and the "F" is the tandem-seat variant. The Super Hornet is replacing 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 MK-61 Vulcan cannon; AMRAAM, Sparrow and Sidewinder air-to-air missiles; Maverick, Harpoon, Shrike, HARM, SLAM-ER and Joint Direct Attack Munition (JDAM); Walleye and other bombs and rockets.

Crew: one or two

SQUADRONS

VFA-14 Tophatters (F/A-18E)
VFA-41 Black Aces (F/A-18F)
VFA-115 Eagles (F/A-18E)
VFA-102 Diamondbacks (F/A-18F)
VFA-122 Flying Eagles (Fleet Replacement Squadron)

F-14 Tomcat

The F-14 is a supersonic, twin-engine, variable sweep-wing fighter originally 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. Over the years the F-14 has been modified and upgraded to enhance its mission capability. Combined with the Tactical Air Reconnaissance Pod System (TARPS) the F-14 is the only manned TACAIR RECCE platform. In 1996, the LANTIRN Targeting Pod was added, which provides the laser targeting capability that transformed the Tomcat into the precision strike-fighter known today.

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 MK-61 Vulcan cannon; Sparrow, Sidewinder and Phoenix air-to-air missiles; laser-guided and general purpose bombs
Crew: two (one pilot, one radar intercept officer)

SQUADRONS

VF-2 Bounty Hunters
VF-11 Red Rippers
VF-31 Tomcatters
VF-32 Swordsmen
VF-101 Grim Reapers
VF-103 Jolly Rogers
VF-143 Pukin' Dogs
VF-154 Black Knights
VF-211 Checkmates
VF-213 Black Lions

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.

Combat Range: 955 nm

Armament: HARM

Crew: four (one pilot, three electronic warfare officers)

SQUADRONS

VAQ-128 Fighting Phoenix
VAQ-129 Vikings
VAQ-130 Zappers
VAQ-131 Lancers
VAQ-132 Scorpions



S-3B Viking

Photo by PH3 John Woods

VAQ-133 Wizards
VAQ-134 Garudas
VAQ-135 Black Ravens
VAQ-136 Gauntlets
VAQ-137 Rooks
VAQ-138 Yellow Jackets
VAQ-139 Cougars
VAQ-140 Patriots
VAQ-141 Shadowhawks
VAQ-142 Gray Wolves
VAQ-209 (USNR) Star Warriors

S-3B Viking

The S-3B, a carrier-based jet aircraft used for surface search, tanking, and anti-surface warfare is extremely versatile and is ideally equipped for long range radar, visual, and electronic search, surveillance, and attack around the aircraft carrier battle group.

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 2,300 nm (combat)

Armament: torpedoes, bombs,

Harpoon, Maverick, SLAM-ER
Crew: three (one pilot and two flight officers)

SQUADRONS

VS-21 Fighting Redtails
VS-22 Checkmates
VS-24 Scouts
VS-29 Dragonfires
VS-30 Diamond Cutters
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.



E-2C Hawkeye

Photo by PH2 James Farrally II

Weight: 53,288 lbs. maximum takeoff
Speed: 389 mph
Ceiling: 37,000 ft.
Range: 1,541 nm (ferry range)
Crew: five (two pilots, three mission systems operators)

SQUADRONS

VAW-77 (USNR) Night Wolves
 VAW-78 (USNR) Fighting Escargots
 VAW-112 Golden Hawks
 VAW-113 Black Eagles
 VAW-115 Liberty Bells
 VAW-116 Sun Kings
 VAW-117 Wallbangers
 VAW-120 Greyhawks
 VAW-121 Bluetails
 VAW-123 Screwtops
 VAW-124 Bear Aces
 VAW-125 Tigertails
 VAW-126 Seahawks

C-2A Greyhound

The C-2A is the principle aircraft used to provide Carrier Battle Group (CVBG) Fleet operational readiness support with rapid response Carrier Onboard Delivery (COD) of high priority logistics, personnel and equipment. It can deliver a payload of up to 10,000 lbs. Other missions include essential humanitarian assistance and MEDEVAC operations.

Wingspan: 80 ft 7 in.
Length: 56 ft., 10 in.
Height: 15 ft., 10.5 in.
Weight: 57,500 lbs. maximum takeoff
Speed: 310 mph
Ceiling: 33,500 ft.
Range: more than 1,040 nm (with freight)
Crew: four (one pilot, one co-pilot, one crew chief, and one crew man)

SQUADRONS

VRC-30 Providers
 VRC-40 Rawhides
 VAW-120 Greyhawks (FRS)

SHORE-BASED

E-6A/B Mercury

The E-6A provides secure, survivable, jam-resistant strategic communications while performing the Navy's TACAMO mission. The E-6B program has been established to upgrade TACAMO operational capabilities and will perform both the TACAMO and airborne command post mission with installed equipment. The E-6B is equipped with a battle-staff compartment and an airborne launch-control system (ALCS) capable of ground alert/force generation, force management, and airborne launch of *Peacekeeper* and *Minuteman* Inter-Continental Ballistic Missiles (ICBMs).

Wingspan: 14.3 ft.
Length: 152.3 ft.
Height: 42 ft., 5 in.
Weight: 341,000 lbs. gross takeoff
Speed: Mach .88
Ceiling: 42,000 ft.
Range: more than 6,400 nm (E-6A); 5,500 nm (E-6B)
Crew: three pilots, two navigators, two flight engineers, seven to 15 mission crew

SQUADRONS

VQ-3 Ironmen
 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. The *Orion* and *Aries II* provide multi-mission intelligence, surveillance, reconnaissance and anti-surface/anti-submarine warfare combat capability to theater commanders worldwide.

Wingspan: 99 ft., 8 in.
Length: 116 ft., 10 in.
Height: 33 ft., 8.5 in.



C-2 Greyhound

Photo by PH2 Dwain Willis

Weight: 146,000 lbs. maximum permissible
Speed: 473 mph
Ceiling: 28,300 ft.
Range: 1,346 nm with three hours on station
Armament: 20,000 pounds of ordnance, including *Harpoon*, *Maverick*, *SLAM*, *SLAM-ER*; torpedoes; mines
Crew: 10 (three pilots, three flight officers/engineers, three sensor operators, one in-flight technician)

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
 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 Sandman
 VPU-1 Old Buzzards
 VPU-2 Wizards

C-130 Hercules

The C-130 is a medium-sized transport with capability for intratheater and intertheater airlift operations. The C-130, capable of day, night, and adverse weather operations, provides rapid logistic support to operating forces. Delivery of cargo may be accomplished by parachute, Low-Altitude Parachute-Extraction System (LAPES), or landing. As a tactical transport, it can carry 92 ground troops or 64 paratroopers and equipment. It can be configured as a medical evacuation platform capable of carrying 74 litter patients plus attendants. The current Navy C-130 inventory includes 20 C-130Ts that are assigned to four Naval Air Reserve Force fleet logistic (VR) squadrons.

Wingspan: 132.7 feet
Length: 97.8 feet
Height: 38.1 feet
Weight: empty, 75,369 pounds; maximum normal takeoff, 155,000 pounds; maximum overload takeoff, 175,000 pounds
Speed: 374 mph
Ceiling: 33,000 feet
Range: 2,046 nm with maximum payload; 4,460 nautical miles with maximum fuel and 20,000-pound payload
Crew: two pilots, one flight engineer, one navigator, one loadmaster

SQUADRONS

VR-53 (USNR) Capital Express
 VR-54 (USNR) Revelers
 VR-55 (USNR) Minutemen
 VR-62 (USNR) Nor'easters

C-9B/DC-9 Skytrain

The C-9B – a military version of the McDonnell Douglas DC-9-32 airliner – was modified with upper cargo doors to allow for cargo or passenger loads or a mixture of both. The C-9 fleet provides cargo and passenger

transportation as well as forward-deployment logistics support. In routine operations, the C-9s provide unique logistics capabilities for the Navy, particularly the airlift of Naval Reserve personnel to and from training sites and the movement of naval personnel to support ship deployments.

Wingspan: 93.2 feet
Length: 119.2 feet
Height: 27.5 feet
Weight: 65,283 pounds in passenger configuration; 59,706 pounds in cargo configuration; maximum takeoff, 108,000 pounds
Speed: 565 mph
Range: 2,650 nm
Ceiling: 37,000 feet
Payload: 32,444 pounds of cargo or 90 passengers
Crew: Five (two pilots plus crew chief and cabin attendants)

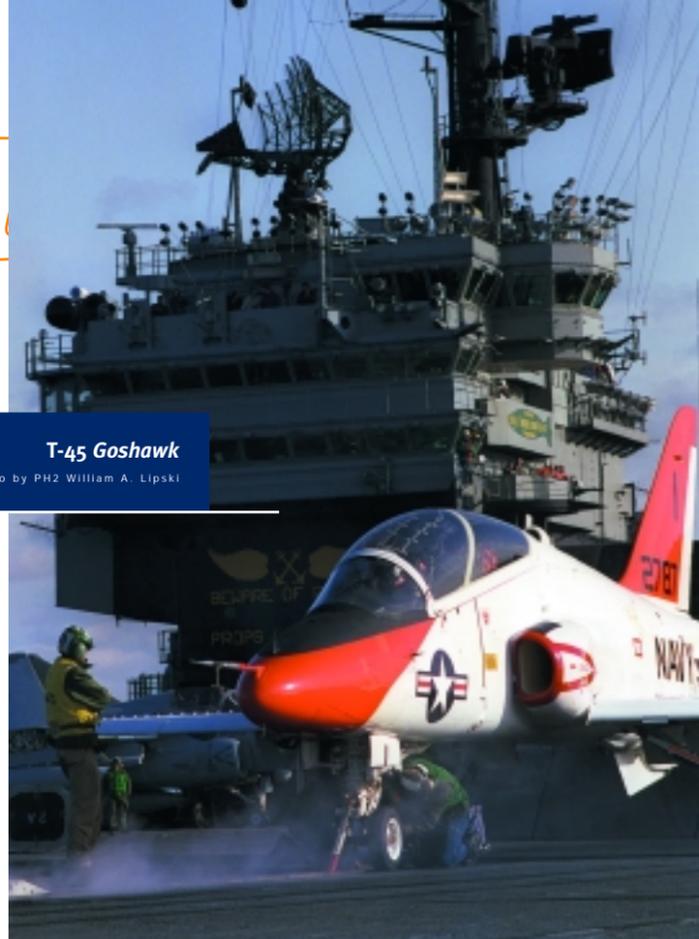
SQUADRONS

- 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-12 Huron

The C-12 is a military utility transport. Between 1979 and 1982, 66 UC-12Bs were procured to replace C-131 and US-2 aircraft in support of Navy and Marine Corps air stations and Reserve centers. Upgraded versions include 12 UC-12Fs and 10 UC-12Ms. Two RC-12Fs (converted from UC-12Fs) and two new-build RC-12Ms are used for range control, and 20 TC-12Bs (converted from UC-12Bs) augment the T-44As as multi-engine trainers in the Naval Air Training Command. One UC-12B has been converted to an NC-12B and performs

T-45 Goshawk
 Photo by PH2 William A. Lipski



sonobuoy testing missions. Three C-12Cs are on loan from the Army and serve as training aircraft at the U.S. Naval Test Pilot School.

Wingspan: 54.5 feet
Length: 43.75 feet
Height: 15 feet
Weight: empty, 7,315 pounds; maximum takeoff, 15,000 pounds
Speed: 338 mph
Ceiling: 35,000 feet
Range: 1,302 nm
Payload: 4,215 pounds of cargo or eight passengers
Crew: two pilots

TRAINERS

T-34C Turbomentor

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-45 Goshawk

SQUADRONS

- VT-7 Eagles
- VT-9 Tigers
- VT-21 Redhawks
- VT-22 Golden Eagles

T-2 Buckeye

SQUADRONS

- VT-9 Tigers
- VT-86 Sabre Hawks

T-44A Pegasus

SQUADRONS

- VT-31 Wise Owls

TA-4J Skyhawk

SQUADRONS

- VC-8 Redtails

T-39N Sabreliner

T-38 Talon

F-5 Tiger II

TA-6 Texan

HELICOPTERS

SH/HH-60 Seahawk

The SH-60B 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. It deploys sonobuoys and torpedoes in an anti-submarine role while extending the range of the ship's radar capabilities. The SH-60F is the carrier based anti-submarine helicopter, which uses SONAR, sonobuoys and torpedoes to detect and destroy submarines. The HH-60H is an armed aircraft 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: 175 mph
Range: 380 nm
Armament: MK46/50 torpedoes (SH-60B/F); 7.62mm or .50-caliber machine guns (SH-60B/HH-60H); Hellfire (SH-60B/HH-60H); and Penguin air-to-surface missiles (SH-60B);
Crew: three [two pilots, one crewman (SH-60B); or two pilots, two crewmen (SH-60F/HH-60H)].

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
- 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 War Lords
- HSL-60 (USNR) Jaguars

CH-46 Sea Knight

The CH-46D is a tandem-rotor transport helicopter designed for both land- and sea-based operations. It can accommodate 25 passengers or 15 litters, with two medical attendants or 10,000 lbs. of sling-loaded cargo.

Length: 84.3 ft.
Height: 16.7 ft.
Weight: 23,000 lbs. maximum takeoff
Speed: 162 mph
Ceiling: 10,000 ft.
Range: 150 nm
Crew: three (two pilots, one crewman)

SQUADRONS

- HC-3 Pack-Rats
- HC-5 Providers
- HC-6 Chargers
- HC-8 Dragon Whales
- HC-11 Gunbearers

SH-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 SH-3H has been replaced in the fleet by SH-60F and HH-60H aircraft. The UH-3Hs are programmed to be replaced by the CH-60 version of the Sikorsky *Blackhawk/Seahawk*.

Length: 72 ft., 8 in.
Height: 16 ft., 10 in.
Weight: 21,000 lbs. maximum takeoff
Speed: 166 mph
Ceiling: 14,700 ft.
Range: 542 nm
Crew: three to four (two pilots, one to two crewmen)

SQUADRONS

- HC-2 Fleet Angels
- HC-11 Gunbearers
- HC-85 (USNR) Golden Gaters
- HS-75 (USNR) Emerald Knights
- VC-8 Redtails



SH-60B Seahawk

Photo by PH2 Thomas Lorentzson

Aircraft



MH-53E Sea Dragon

Photo by PH1 David C. Lloyd

Range: 1,120 nm
Crew: three to eight (two pilots, one to six crewmen)

SQUADRONS

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

SH-2G Seasprite

The SH-2G *Seasprite* first flew in 1959 and served long as a utility and search-and-rescue helicopter and later as the first light airborne multipurpose system (LAMPS) helicopter.

Length: 38 ft., 4 in. (nose and blades folded)
Height: 15 ft., 6 in. (rotors turning)
Weight: 12,800 lbs. normal takeoff
Speed: 189 mph
Ceiling: 22,500 ft.
Range: 367 nm
Armament: MK46/50 torpedoes; 7.62mm machine guns
Crew: three (two pilots, one sensor operator)

SQUADRONS

HSL-84 Thunderbolts
HSL-94 Titans

SPECIAL SQUADRONS

VC-6 Firebees
VX-1 Pioneers
VX-9 Vampires

Sources: Navy Fact File; Naval Air (NAVAIR) Systems Command; NAVAIR Tactical Aircraft Programs; Commander, Naval Forces Pacific; Commander, Naval Forces Atlantic; Commander, Naval Air Reserve Force; and the Standard Naval Distribution List.

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: five (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.

CH-46 Sea Knight

Photo by PH3 Lewis Hunsaker



1st Naval Construction Division (1NCD) and Construction Forces Command (NCFC), NAB Little Creek, Va.

1NCD/NCFC
1NCD (FWD)

Training Components

Include Seabee Readiness Group, Atlantic (SRGLANT) and Seabee Readiness Group, Pacific (SRGPAC)

SRGLANT

Active

1NCD/NCFC
NCR 22

SRC PAC

1NCD (FWD)
NCR 30

Reserve

NCB 2
NCR 3
NCR 7

NCB 3
NCR 1
NCR 9

Naval Mobile Construction Battalions (NMCB)

Active

1NCD/NCFC	1NCD (FWD)
NMCB 1	NMCB 5
NMCB 7	NMCB 3
NMCB 74	NMCB 4
NMCB 133	NMCB 40

Reserve

1NCD/NCFC	1NCD (FWD)
NMCB 14	NMCB 15
NMCB 21	NMCB 17
NMCB 23	NMCB 18
NMCB 24	NMCB 22
NMCB 26	NMCB 25
NMCB 27	NMCB 28

Naval Amphibious Construction Battalions (ACB)

Active

ACB 1
ACB 2

Underwater Construction Teams (UCT)

Active

1NCD/NCFC	1NCD (FWD)
UCT 1	UCT 2

Naval Construction Battalion Units (CBU)

1NCD/NCFC	1NCD (FWD)
CBU 402	CBU 401
CBU 403	CBU 405
CBU 410	CBU 406
CBU 411	CBU 413
CBU 412	CBU 416
CBU 415	CBU 417
CBU 420	CBU 418
CBU 422	CBU 421
CBU 423	CBU 427

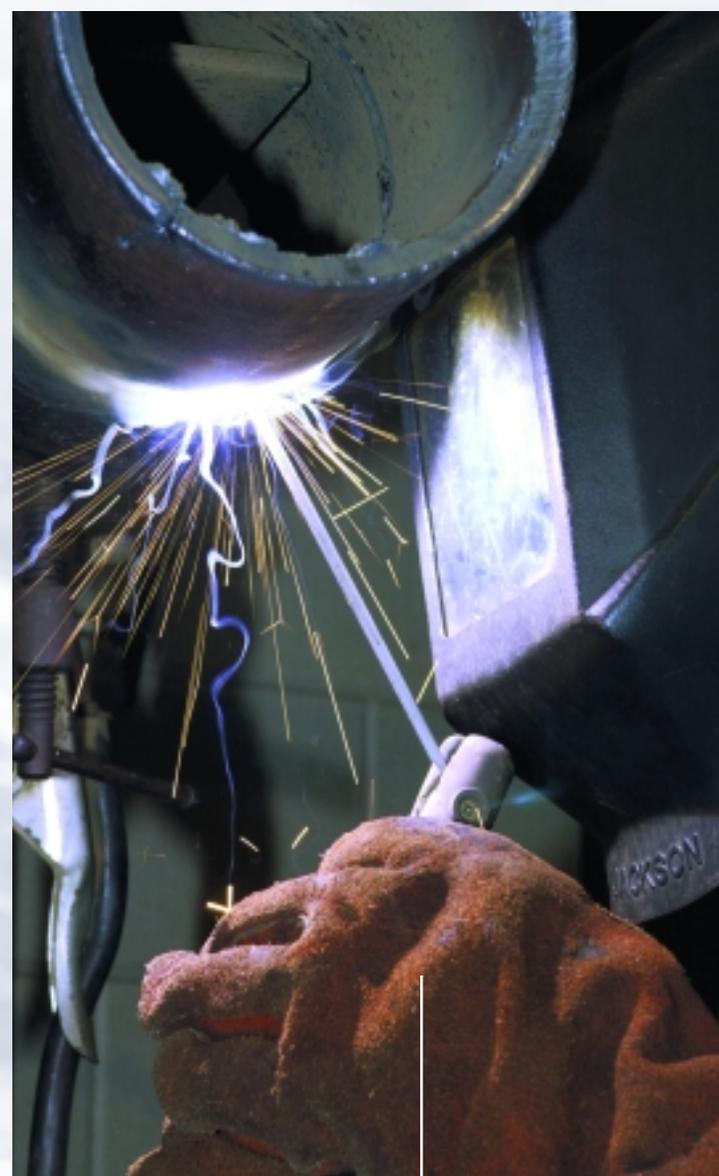
Construction Battalion Maintenance Unit (CBMU)

1NCD/NCFC	1NCD (FWD)
CBMU 202	CBMU 303

Naval Construction Force Support Units (NCFSU)

1NCD/NCFC	1NCD (FWD)
NCFSU 3	NCFSU 2

Source: HQ, Naval Facilities Engineering Command.



A U.S. Navy steelworker assigned to **Naval Mobile Construction Battalion(NMCB) 133** welds a pipe during an arc-welding class at the **Naval Construction Training Center, Gulfport, Miss.**

Photo by PH2 Jacob Johnson

STRATEGIC STRIKE

Trident I (C-4)

The *Trident I* replaced the *Poseidon* in the Navy's ballistic missile inventory. It became operational in 1979 and is carried on *Ohio*-class ballistic missile submarines.

Dimensions: 74 x 408 in.
Weight: 73,000 lbs.
Propulsion: Cross-linked, double-base fuel rocket
Range: 4,000 nm
Manufacturer: Lockheed-Martin

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.
Propulsion: Solid-fuel rocket
Range: 4,000 nm
Manufacturer: Lockheed-Martin

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 MK 80 series bombs are being converted from the MK designation to the bomb-loaded unit (BLU) designation during new production. The Navy's MK 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) Kit

Joint direct attack munitions kits were jointly developed with the U.S. Air Force to provide increased accu-

racy 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.

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.

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



AGM-65 *Maverick* missile and GBU-16 *Paveway I* laser-guided bomb

Photo by PHAN Dela Torres

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.



AGM-119 *Penguin* anti-ship missile

Photo by PH2 Lisa Aman

Warhead: 300 lbs.
Propulsion: Two-stage, solid-fuel rocket motor
Speed: Supersonic
Range: Approx. 14 nm
Manufacturer: Hughes/Raytheon

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)
Manufacturer: Raytheon

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.
Propulsion: Solid-fuel rocket motor/solid-fuel booster
Warhead: 265 lbs., semi-armor piercing
Range: 25 nm
Speed: Mach 1.2
Manufacturer: Konigsberg Vaapenfabrikk (Norway)

1984, it was 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+)
Manufacturer: Raytheon

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*, that 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: Turbojet (cruise) w/solid-fuel booster for ship launch
Range: 75 nm
Manufacturer: The Boeing Company



Joint Stand Off Weapons JSOW

Photo by PHAN J. Raynel Emmons

ANTI-AIR WARFARE (AAW) Aircraft Guns

M61A1

This 20mm Gatling gun, which also forms the basis for the *Phalanx* Close-In Weapons System 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)
Manufacturer: General Electric

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
Manufacturer: Raytheon

Standard Missile-1 (SM-1)/ 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-1/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: 1,100 lbs. (SM-1);



Standard SM-1 surface-to-air missile
 Photo by PH2 Kenneth Pace

1,380 lbs. (SM-2)
Warhead: Proximity fuse/high-explosive
Propulsion: Dual thrust/solid-fuel rocket
Range: 15 to 20 nm (SM-1); 40 to 90 nm (SM-2 MR)
Manufacturer: Raytheon

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
Manufacturer: Raytheon

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
Manufacturer: Raytheon

Phoenix Missile

The Navy's only long-range, air-to-air missile. The missile has been designed for use in an all-weather, heavy-jamming environment. First deployed in 1974.

Dimensions: 13 ft. long; 15 in. diameter; 3 ft. wing span
Weight: 1,024 lbs.
Propulsion: Solid-fuel rocket motor
Warhead: 135 lbs.; proximity fuse, high explosive
Range: In excess of 100 nm
Speed: In excess of 3,000 mph
Manufacturer: Raytheon

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 ver-

Medium Range Air-to-Air Missile AMRAAM

Photo by PH3 Mario DeAngelis



sion, 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
Manufacturer: Raytheon

Sidewinder

The *Sidewinder* is a short-range, infrared, within visual range, air-to-air missile 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

plan 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 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
Manufacturer: Raytheon

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
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

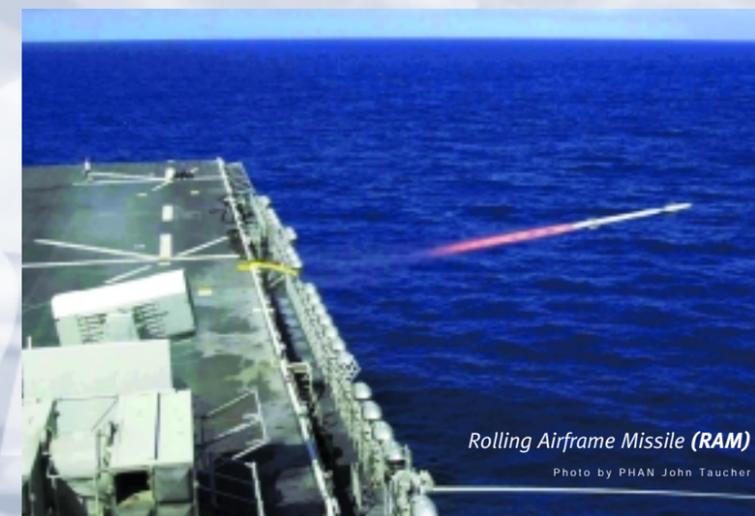
The naval version of the Army Bushmaster, or "Chain Gun." This single-barrel, air-cooled, heavy machine gun meets the needs of ships throughout the fleet, especially those operating in the Arabian Gulf.

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 auto.
Manufacturer: Crane Division, Naval Surface Warfare Center

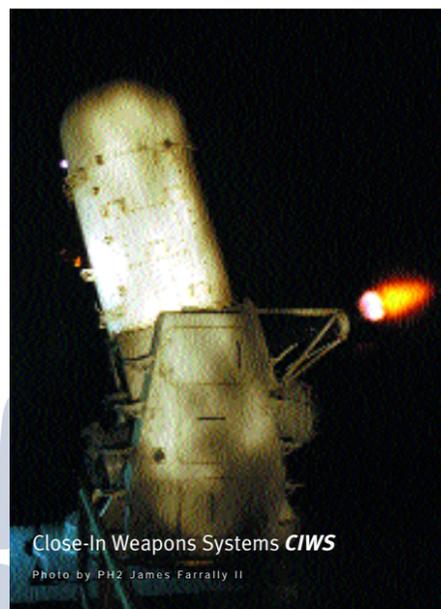
MK-75 - 76mm/.62 caliber 3-inch gun

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
Rate of Fire: 85 rounds/min.
Muzzle Velocity: 925 m/sec
Range: 10 nm
Weight: 7.35 tons
Manufacturer: FMC Naval Systems Division and OTO Melara



Rolling Airframe Missile (RAM)
 Photo by PHAN John Taucher



Close-In Weapons Systems **CIWS**
Photo by PH2 James Farrally II

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
Rate of Fire: 1,000-3,000 rounds/min.
Muzzle Velocity: 3,650 ft./sec
Range: 6,000 yds.
Manufacturer: Hughes Missile Systems Company

60mm Mortar

Often combined with the M-60 machine gun, the 60mm mortar is used aboard patrol boats (PBs).

Caliber: 60mm
Rate of Fire: 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.

Dimension: 8.5 ft. long, 12.75 in. diameter
Weight: 512 lb.
Range: More than 8,000 yds.
Speed: 52 mph
Propulsion: Two-speed, reciprocation external combustion
Warhead: 96 lbs. of PBXN-103
Depth: Greater than 1,200 ft.
Original Manufacturer: Alliant Techsystems, Honeywell

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 OPNAV 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.

Dimension: 19 feet long, 21 in. diameter
Weight: 3,434 lbs. (MK-48) 3,695 (MK-48 ADCAP)
Range: Greater than 8 nm
Speed: Greater than 32 mph
Propulsion: Positive displacement Piston-type engine with OTTO fuel II
Warhead: Not given
Depth: Not given
Original Manufacturer: Gould

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

AGM-88 HARM High-Speed Antiradiation Missile

Photo by PH3 Brian Fleske



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: MK-62, MK-63 and MK-65 are 500, 1,000 and 2,000 pound class respectively
Explosives: Various loads

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

Sources: Atlantic Ordnance Command, Yorktown, Va.; Strategic Systems Programs; Naval Sea Systems Command, Naval Air Systems Command, The U.S. Naval Institute Guide to World Naval Weapons Systems, 1997-1998

MK-60 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.



AIM-9 Sidewinder short-range missiles
AGM-84 Harpoon anti-ship missiles

Photo courtesy of Mark Meyer and Naval Institute Proceedings



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