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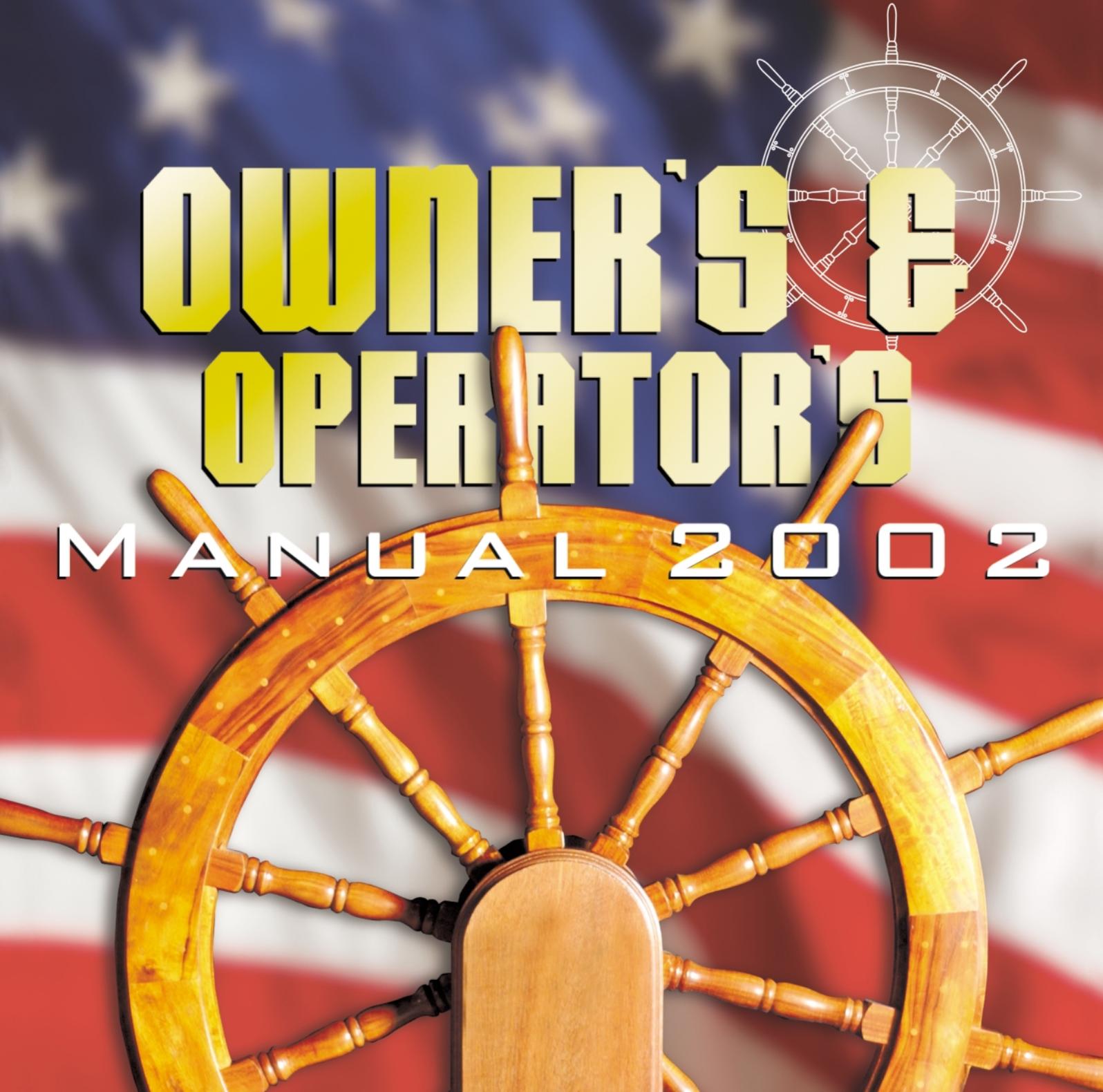
All HANDS

MAGAZINE OF THE U.S. NAVY

JANUARY 2002

OWNER'S & OPERATOR'S

MANUAL 2002



January

Number 1017

OWNER'S & OPERATOR'S
MANUAL 2002



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Pre-positioned and forward deployed, these lifeline vessels supply everything from ammo to gas, jeeps to docs.

35 Carriers

The heart of how the Navy operates at sea, these floating powerhouses are sovereign territories ready to execute war and diplomacy with awesome force.

36 Navy Aircraft

Whether on board one of the Navy's 12 carriers or at a shore facility, U.S. Navy aircraft remain the best in the world.

42 Navy 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.

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The Honorable Gordon R. England

Chief of Naval Operations
ADM Vern Clark

Chief of Information
RADM Stephen R. Pietropaoli
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EDITORIAL

Editor
Marie G. Johnston

Managing Editor
JOCS(AW) Dave Desilets

Assistant Editor
JO1 Preston Keres

Photo Editor
PH2 Robert Houlihan

Editorial Staff
JO1 Joseph Gunder III
JO1 Craig Strawser
PH2 Aaron Ansarov
PH2(AW) Jim Watson
PH3 Saul Ingle

WEB DESIGN

DM1 Rhea Mackenzie
DM2 Vitmary Rodriguez

ART & DESIGN

Rabil + Bates Communication Design Co.

Creative Director
Debra Bates

Art & Design Director
Roger O. Selvage Jr.

Graphic Designers
Michael Barkley
Marco Marchegiani
Seth H. Sirbaugh

Digital Prepress Coordinator
Lisa J. Smith

PRINTING

GPO Printing Specialist
John Kennedy

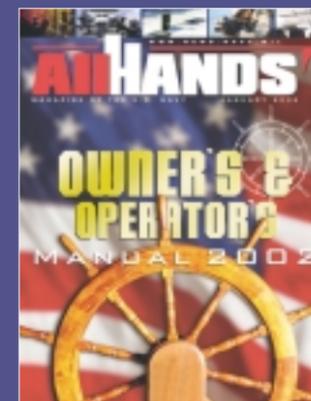
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On the Front Cover

As we begin 2002, the U.S. Navy and its Sailors and Marines are steering a course to defend our nation's freedom.

Next Month

All Hands looks at the responsibilities of a plane captain operating in war. We also examine the selected reservist recall process for those civilians who feel the need to serve their country. Readiness, from air to ground and bills to checkbook, is also covered.

All Hands WINNER

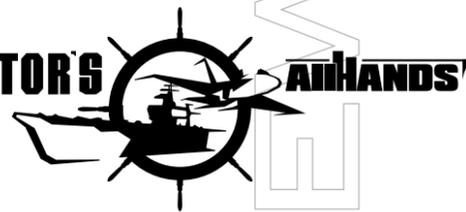


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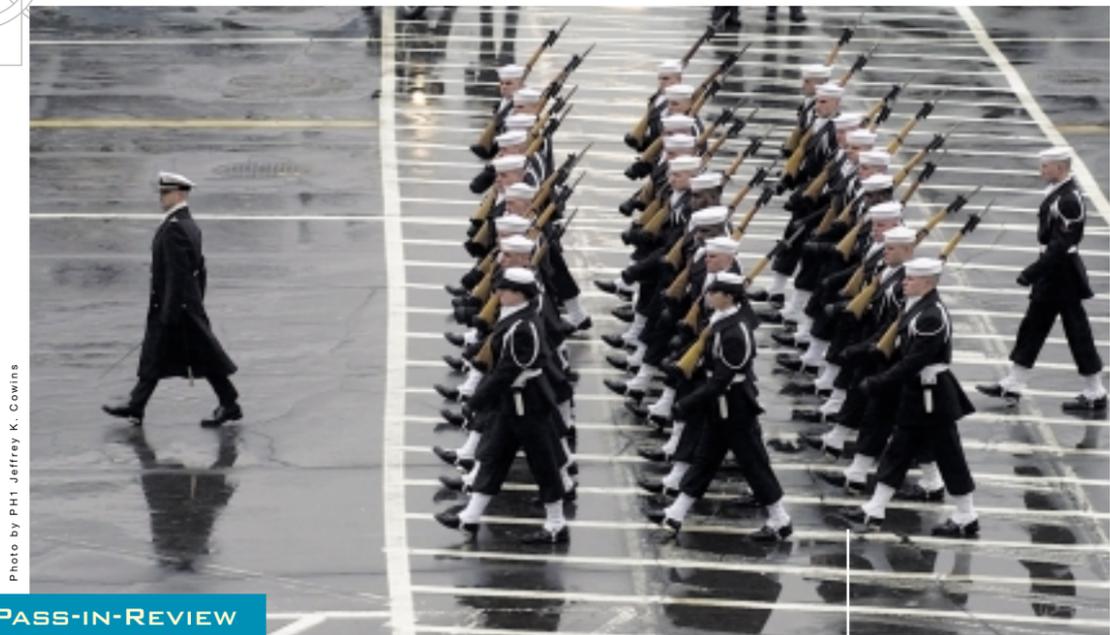


Photo by PH1 Jeffrey K. Cowins

PRESIDENTIAL PASS-IN-REVIEW

Members of the U.S. Navy Ceremonial Guard pass-in-review for their new Commander in Chief, President George W. Bush. One unit from each of the military services participated in the review, which then became part of the presidential escort, leading the new President to the White House following the Inauguration.



Photo by PH1 Chris Desmond

INTERNATIONAL LANGUAGE

MU3 Dave Cobble, of the U.S. Navy's 7th Fleet Band, takes a moment to meet one of many local children anxious to shake hands with the military personnel taking part in the International City Parade in Mumbai, India. The event was part of the International Fleet Review hosted by the Indian navy in Mumbai.

Seabees from Naval Mobile Construction Battalion (NMCB) 1, Gulfport, Miss., start to rebuild a bridge in the Shoalwater Bay training area, Australia, during Exercise *Tandem Thrust*.

HELPING HANDS



Photo by U.S. Air Force Staff Sgt. Jeremy T. Lock

CT2 Josef Edmonds greets his children upon arrival in Whidbey Island, Wash. Edmonds and other crew members from the Navy EP-3 *Aries II* aircraft involved in the April 1 accident with a Chinese F-8 aircraft were welcomed home after being detained in China for 11 days following the incident.

DADDY'S HOME



Photo by PH2 Michael B. W. Watkins



PEARL HARBOR PREMIERE

Fireworks explode at the conclusion of the movie "Pearl Harbor" aboard USS *John C. Stennis* (CVN 74). The carrier served as the stage for the movie's premiere showing.

Photo by PH3 Joshua R. Langhus

YEAR IN REVIEW

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OWNER'S & OPERATOR'S
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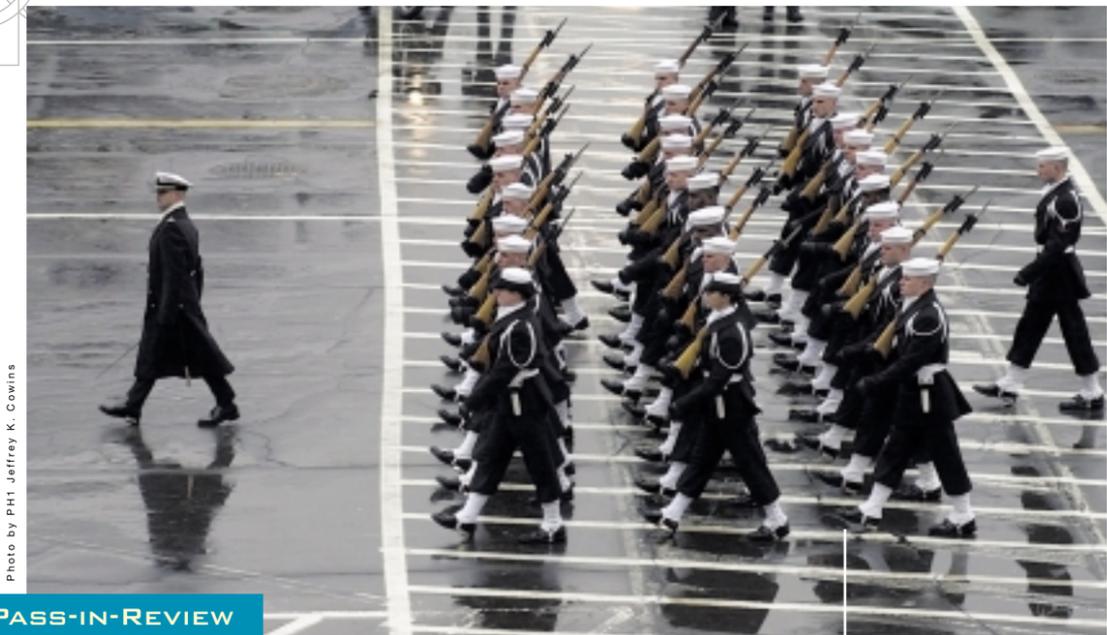


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Photo by PH3 Joshua R. Langhus

YEAR IN REVIEW

I CHRISTEN THEE

President George W. Bush and William P. Frick, chairman and chief executive officer of Newport News Shipbuilding watch as former-First Lady Nancy Reagan prepares to christen the newest nuclear-powered aircraft carrier, USS *Ronald Reagan* (CVN 76) in Newport News, Va.



Photo by U.S. Army Sgt. Ramona E. Joyce



SHALLOW-WATER SECURITY

MM1 Bob Howell, from SEAL Team 5, provides cover for his platoon, as members of Special Boat Unit 22 extract the team during an exercise conducted during *Northern Edge* 2001.

Photo by Air Force Tech. Sgt. Brian Snyder

AW2 Robert Simpson, in an SH-60B *Seahawk* helicopter assigned to Light Helicopter Anti-Submarine Squadron (HSL) 42 aboard USS *Monterey* (CG 61), overlooks 15 warships from five different nations as they assemble in the South Atlantic Ocean to kick off the Atlantic phase of the annual UNITAS exercise.

EXERCISE UNITAS



Photo by PH2 Aaron Peterson

READY TO DIVE

GM2(SW/DV) Brandon Pevear, assigned to Mobile Diving Salvage Unit (MDSU) 1, suits up in the Navy's MK-21 helmet before a dive in Lumut, Malaysia. MDSU 1 cross-trained with Malaysian divers while participating in Exercise *Cooperation Afloat Readiness and Training (CARAT)* 2001.

Photo by PH2 Erin A. Zocco



AMERICAN HEROES

A New York City fireman yells for more rescue workers to make their way into the rubble that was once the World Trade Center in New York City. Hundreds of others risked their lives in the shifting pile of debris around him to try and save those who may still be alive.



Photo by J01 Preston Keres

SEPTEMBER 11TH

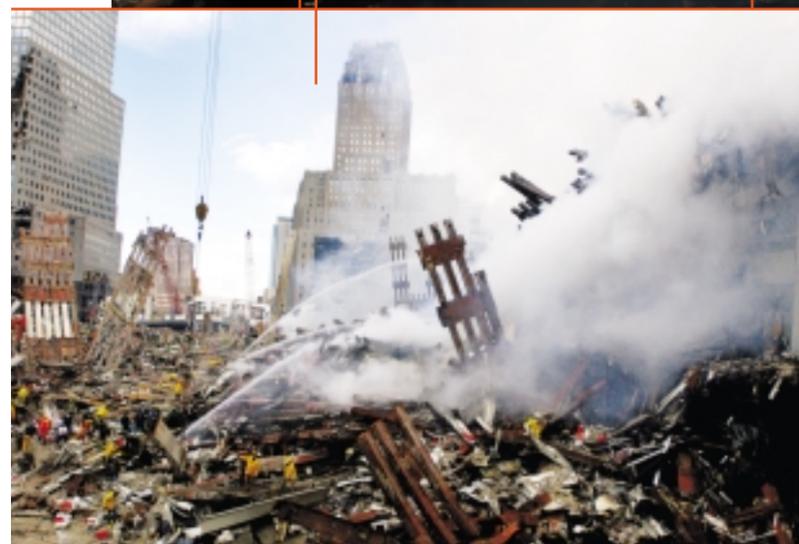


Photo by PH2(AW) Jim Watson

BURNING STILL

Days after the World Trade Center attack, the rubble still burned hot. Firefighters worked day and night to put out the fires so emergency rescue workers could find a path into the destruction.

YEAR IN REVIEW

RAPID RESPONSE

Medical personnel load wounded into ambulances at the medical triage area set up outside the Pentagon.



An aerial view shows the damage and relief effort after the attack on the Pentagon, Sept. 11, 2001. At 8:10 a.m., American Airlines Flight 77, departed Dulles International Airport bound for Los Angeles. Nearly 90 minutes later, it slammed into the northwest side of the Pentagon, killing at least 180; 42 of whom were Department of the Navy personnel.

BATTLEGROUND: WASHINGTON



Photo by Air Force Tech. Sgt. Cedric Rudisill

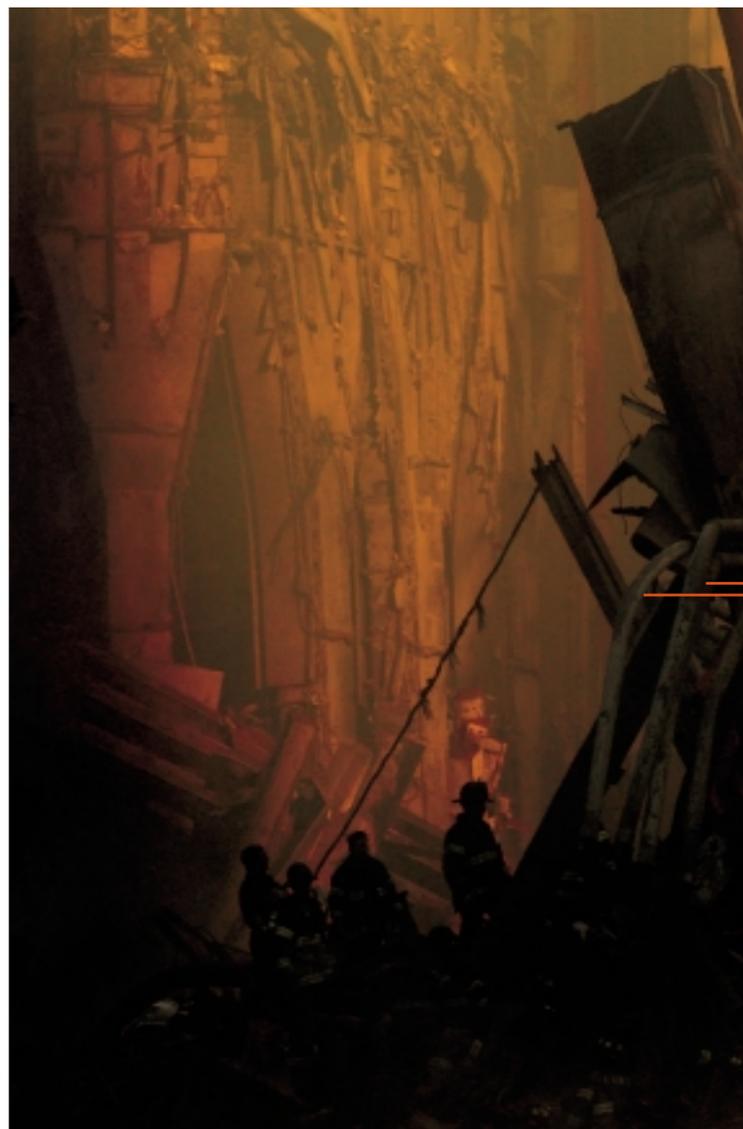


Photo by PH2(AW) Jim Watson

NOT GIVING UP

As the sun sets, rescue workers continue their recovery efforts in New York, climbing into the heart of the destruction to look for survivors and fallen comrades alike.



Photo by PHC Eric Clement

WEAPONS OF WAR

Aviation ordnancemen on board USS *Theodore Roosevelt* (CVN 71) move several GBU-16 laser guided bombs onto the elevator.

EYE IN THE SKY

An aircrewman aboard a Carrier Airborne Early Warning Squadron (VAW) 125 E-2C *Hawkeye*, embarked on USS *George Washington* (CVN 73), tracks all air and surface contacts off the East Coast of the United States to provide additional air defense to New York City following the terrorist attacks on the World Trade Center and the Pentagon.



Photo by PHAN J. Scott Campbell

YEAR IN REVIEW

LONG ARM OF FREEDOM

Tomahawk cruise missiles are launched from the forward Vertical Launch System aboard USS *Philippine Sea* (CG 58) in a strike against al Qaeda terrorist training camps and military installations of the Taliban regime in Afghanistan on Oct. 7, 2001.

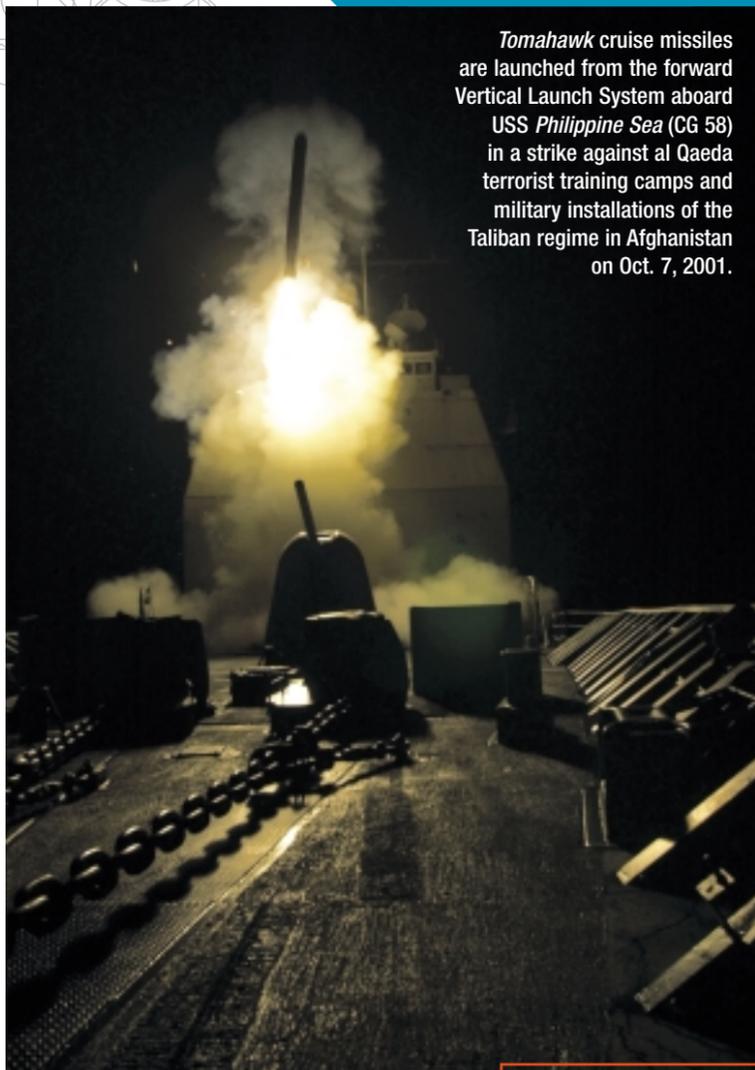


Photo by PHCM Terry Cosgrove

ENDURING FREEDOM

An F/A-18 *Hornet* approaches the flight deck of USS *Theodore Roosevelt* (CVN 71) as USS *McFaul* (DDG 74) trails behind as plane guard. *Theodore Roosevelt* and its carrier airwing are conducting missions in support of Operation *Enduring Freedom*.



Photo by PHC Johnny Bivara

U.S. Marines attach munitions to the wing of an F/A-18 *Hornet* aboard USS *Theodore Roosevelt* (CVN 71). *Theodore Roosevelt* and her attached Sailors, Marines and aircraft are operating in support of Operation *Enduring Freedom*.

RELOADING



Photo by PH2 Robert McRill

CONTROLLING THE SKIES

All stations are manned in the Carrier Air Traffic Control Center (CATCC) during flight operations. CATCC is responsible for the safe launch and recovery of carrier-based aircraft aboard USS *Theodore Roosevelt* (CVN 71) while underway in support of Operation *Enduring Freedom*.



Photo by Air Force Tech. Sgt. Cedric Rudisill

HELP ON THE WAY

USNS *Comfort* (T-AH 20) passes by the Statue of Liberty on her way to Manhattan to support the citizens of New York City after the attack on the World Trade Center.



Photo by JO1 Preston Keres

STILL FLYING PROUD

As the sun rises, the "Ground Zero American Flag," which was flown while Carrier Air Wing (CVW) 1 conducted flight operations, is brought down aboard USS *Theodore Roosevelt* (CVN 71).



Photo by PHC Eric Clement



Navy Personnel by Rank/Grade

E-9	3,253
E-8	7,096
E-7	23,490
E-6	52,401
E-5	74,528
E-4	63,990
E-3	47,785
E-2	27,150
E-1	19,908
Total Enlisted	319,601

O-10	8
O-9	30
O-8	73
O-7	107
O-6	3,400
O-5	7,020
O-4	10,512
O-3	16,795
O-2	6,659
O-1	7,624
W-4	352
W-3	371
W-2	957
Total Officers	53,908

Total Cadets-Midshipmen	4,301
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Grand Total	377,810
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Source: DOD Active-duty Military Personnel by Rank/Grade (September 2001)

Active-duty Navy Family Members

	Spouse	Children	Others	Total
Officer	39,371	56,005	432	95,808
Enlisted	176,008	264,740	3,510	444,258
Total	215,379	320,745	3,942	540,066

Source: Statistical Information Analysis Division Work Force Publications - Selected Manpower Statistics (September 1999)

Naval Reserve Personnel

Selected Reserve (SR)

Officers	17,328
Enlisted	56,013
Total*	73,341

* Excludes 1,742 SR on ADSW, but includes SR on Recall

Full Time Support (TAR)

Officer	1,713
Enlisted	12,859
Total	14,572

Individual Ready Reserve (IRR)

Officer	14,120
Enlisted	66,421
Total*	80,541

* Includes 3,623 VTU members

Standby Reserve

Officer	5,329
Enlisted	321
Total	5,659

Retired Reserve

Officer	81,906
Enlisted*	383,668
Total	465,574

*Includes 81,223 Fleet Reservists

Source: COMNAVRESFOR Manpower and Personnel (N-1) (Sept. 30, 2001)

Navy Civilians

182,286

Source: Monthly Report of Federal Civilian Employment (May 2001)

Where Active-duty Navy Serve

United States and Territories	312,756
Europe	10,843
Former Soviet Union	5
East Asia and Pacific	29,389
North Africa, Near East and South Asia	16,556
Sub-Saharan Africa	3
Western Hemisphere	3,641

Total Foreign Countries 60,437

Total Worldwide 373,193

Ashore 228,572

Afloat 144,621

Source: Worldwide Manpower Distribution by Geographic Area (Dec. 31, 2000)

Where Navy Dependents Live

Europe	8,099
Former Soviet Union	4
East Asia & Pacific	12,551
North Africa, Near East, & South Asia	455
Sub-Saharan Africa	8
Western Hemisphere	440

Total - Foreign Countries 21,560

Total - United States and Territories 523,185

Total - Undistributed 3

Total - Worldwide 544,745

Source: Worldwide Manpower Distribution by Geographic Area (Dec. 31, 2000)



Photo by JO1 Craig Strawser

2001 Deployment by the Numbers

USS Enterprise (CVN 65)

Total nautical miles traveled	62,331 nm
Operation Enduring Freedom weapons expended (including 735 precision-guided munitions)	829,000 lbs.
Operation Southern Watch weapons expended (including 27 precision-guided munitions)	33,000 lbs.
Total Selective Reenlistment Bonuses (SRB) for the cruise	\$9,908,861
Tax free salary savings to the crew	\$750,000
Number of arrested landings:	10,105
Number of catapult-assisted take-offs	10,042
Fuel received during Replenishment At Sea	18,396,636 gal.
Number of Underway Replenishments	24
Fuel issued to Aircraft	21,601,799 gal.
E-mails sent and received	3.5 million
Total gallons fresh water produced	61,626,502 gal.
Total mail CODS moved on/off	450,780 lbs.
Number of passengers CODS moved on/off	5,440
Number of Foreign Governments coordinated with	35
Reenlistments	426 (77% of eligibles)

Source: AIRLANT Public Affairs Office

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 2001. This list is updated 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.

"A" List: Required Reading List

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

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

Tin Can Sailor – Life Aboard the USS Sterett, '39-'45 By C. Raymond Calhoun

Battleship Sailor by Theodore C. Mason

Brave Ship, Brave Men by Arnold S. Lott

We Will Stand By You – Serving in the Pawnee, '42-'45 by Theodore C. Mason

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

Thunder Below by Rear Adm. Eugene B. Fluckey

The Battle of Cape Esperance – Encounter at Guadalcanal by Capt. Charles Cook

The Golden Thirteen – Recollections of the First Black Naval Officers by Paul Stillwell with Colin L. Powell

The Last Patrol by Harry Holmes

Raiders from the Sea by John Lodwick

Submarine Diary – The Silent Stalking of Japan by Rear Adm. Corwin Mendenhall

Devotion to Duty – A Biography of Admiral Clifton A. F. Sprague by John F. Wukovits

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

In Love and War: Revised and Updated by Jim and Sybil Stockdale

Nimitz by E. B. Potter

Ship's Doctor by Capt. Terrence Riley

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

Naked Warriors by Cmdr. Frances Douglas Fane and Don Moore

Iwo by Richard Wheeler

Descent Into Darkness by Cmdr. Edward C. Raymer

Blood on the Sea by Robert Sinclair Parkin

On Watch by Adm. Elmo Zumwalt

Wake of the Wahoo by Forrest J. Sterling

Quiet Heroes by Cmdr. Frances Omori

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

A Most Fortunate Ship – Narrative History of Old Ironsides by Tyrone Martin

A Voice From the Main Deck by Samuel Leech

Amongst My Best Men – African Americans in the War of 1812 by Gerald T. Altoff

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

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

That Gallant Ship: Yorktown by Robert Cressman

By Sea, Air, and Land – An Illustrated History of the U.S. Navy and the War in Southeast Asia by Edward J. Marolda

Shield and Sword – The U.S. Navy and the Persian Gulf by Edward J. Marolda and Robert J. Schneller Jr.

My Father, My Son by Elmo Zumwalt Jr. and Elmo Zumwalt III

Good Night Officially by William M. McBride

Tin Can Man by E. J. Jernigan

Raiders of the Deep by Lowell Thomas, introduction by Gary E. Weir

"B" List: Reference

American Naval History – An Illustrated Chronology of the U.S. Navy and Marine Corps, 1775-Present by Edward J. Marolda

The Book of Navy Songs by The Trident Society

Gray Steel and Black Oil: Fast Tankers and Replenishment at Sea in the U.S. Navy, 1912-92 by Thomas Wildenberg

Sea Power: A Naval History by E. B. Potter

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

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

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

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

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

Admiral John H. Towers – The Struggle for Naval Air Supremacy by William F. Trimble

The Magnificent Mitscher by Theodore Taylor

At Dawn We Slept by Gordon W. Prance

Prisoners of the Japanese by Gavon Daws

The Two Ocean War by Samuel Eliot Morrison

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

Clash of the Titans by Walter J. Boyne

Okinawa – The Last Battle of World War II by Robert Lackie

Normandy by Vice Adm. William P. Mack

War at Sea by Nathan Miller

War Beneath the Sea by Peter Sudfield

Miracle at Midway by Gordon W. Prance

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

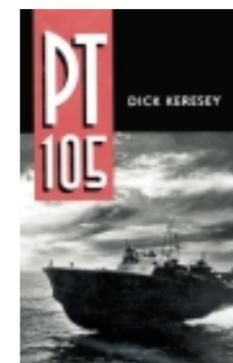
Rocks & Shoals: Naval Discipline in the Age of Fighting Sail by James E. Valle

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

Run Silent/Run Deep by Capt. Edward L. Beach

Decision and Dissent with Halsey at Leyte Gulf by Carl Solberg

PT 105 by Dick Keresey



Submarine Commander by Paul Schratz

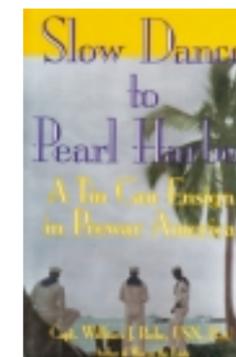
We Pulled Together and Won! Personal Memories of the World War II Era by Reminisce Books

War in the Boats by Capt. William J. Ruhe

Submarine Admiral by Adm. J. J. Galantin

All at Sea by Louis R. Harlany

Slow Dance to Pearl Harbor – A Tin Can Ensign in Prewar America by Capt. William J. Ruhe



The People Navy by Kenneth J. Hagan

Longitude by Dava Sobel

U-Boat Commander by Peter Cremer

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

Project Hula: Secret Soviet-American Cooperation in the War Against Japan by Richard A. Russell

Assault on the Sea – The Amphibious Landing at Inchon by Curtis Utz

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

Swift and Effective Retribution – The U.S. Sixth Fleet and the Confrontation with Qaddafi by Joseph T. Stanik

Revolt of the Admirals by Jeffrey Barlow

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



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

Great U.S. Naval Battles by Jack Sweetman

History of the U.S. Navy Part II by Robert Love

Black Shoes and Blue Water: Surface Warfare in the U.S. Navy 1945-1975 by Malcolm Muir

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

Anchors and Eagles by Paul Adkisson

Honor Bound: The History of American Prisoners of War in Southeast Asia, 1961-1973 by S.I. Rochester and F. Wiley

And I Was There by Rear Adm. Edwin T. Layton

The Lost Ships of Guadalcanal by Robert D. Ballard

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

"C" List: Reference

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

Leadership, Management & Personal Growth Reading List

Built to Last by James Collins and Jerry Porras

Changing the Game by Eric G. Flamholtz and Yvonne Randle

The Cluetrain Manifesto: The End of Business as Usual by Christopher Locke and Rick Levine

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

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

Digital Economy by Don Tapscott

The Digital Estate by Chuck Martin

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

The Human Side of Intranet: Content, Style and Politics by Jerry W. Koehler and Thom Dupper

Imaginization by Gareth Morgan

In Athena's Camp by John Arquilla and David Ronfeldt

The Leadership Engine – How Winning Companies Build Leaders at Every Level by Noel M. Tichy and Eli B. Cohen

Leadership is an Art by Max DePree

Leadership Without Easy Answers by Ronald Heifetz

The Lexus and the Olive Tree by Thomas L. Friedman

Managing at the Speed of Change by Daryl R. Conner

Who moved my Cheese? by Spencer Johnson, M.D.

The Other 90% by Robert K. Cooper

The Power of Alignment by George Labovitz and Victor Rosansky

Leading Change by John P. Kotter

ENLISTED RATINGS

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).



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
AMH – Hydraulics
AMS – Structures



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



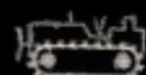
SM
Signalman



ST
Sonar Technician



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
Apprentice Training
Graduate



FN
Apprentice Training
Graduate



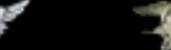
SN
Apprentice Training
Graduate

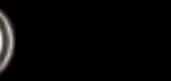
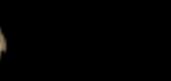
Source: www.staynavy.navy.mil

WARFARE PINS & BADGES



OWNER'S & OPERATOR'S MANUAL 2002

				
Naval Astronaut	Naval Astronaut (NFO)	Naval Aviator	Balloon Pilot (Obsolete)	Naval Aviation Observer and Flight Meteorologist
				
Naval Flight Surgeon	Naval Flight Nurse	Naval Flight Officer	Aviation Experimental Psychologist and Aviation Psychologist	Enlisted Aviation Warfare Specialist
				
Naval Aviation Supply Corps	Aircrew	Marine Combat Aircrew	Special Warfare	Special Operations
				
Surface Warfare (officer)	Surface Warfare (enlisted)	Surface Warfare (nurse)	Surface Warfare (medical)	Surface Warfare (dental)
				
Surface Warfare (medical service)	Surface Warfare (supply)	Submarine (officer)	Submarine (enlisted)	Submarine (medical)
				
Submarine (engineering duty)	Submarine (supply)	Submarine Combat Patrol	SSBN Deterrent Patrol (20 patrols)	SSBN Deterrent Patrol (12 patrols)
				
Seabee Combat Warfare Specialist (officer)	Seabee Combat Warfare Specialist (enlisted)	Naval Parachutist	Basic Parachutist	Naval Reserve Merchant Marine

					
Integrated Undersea Surveillance System (officer)	Integrated Undersea Surveillance System (enlisted)	Master Explosive Ordnance Disposal	Senior Explosive Ordnance Disposal	Explosive Ordnance Disposal	Fleet Marine Force Warfare Specialist
					
Diving (officer)	Diving (medical)	Master Diver	Diver (medical technician)	First Class Diver	Second Class Diver
					
Scuba Diver	Deep Submergence (officer)	Deep Submergence (enlisted)	Presidential Service Badge	Vice Presidential Service Badge	Office of the Secretary of Defense
					
Joint Chiefs of Staff	Recruiting Command	Recruiting Command for Excellence	Recruiter	Career Counselor	Recruit Company Commander
					
Command-at-Sea	Command Ashore	Officer in Charge (small craft)	Petty Officer in Charge (small craft)	Craftmaster	
					
Master Chief Petty Officer of the Navy	Force Master Chief Petty Officer	Fleet Master Chief Petty Officer	Master Chief Petty Officer of the Command	Senior Chief Petty Officer of the Command	Chief Petty Officer of the Command
					
U.S. Navy Police (officer)	U.S. Navy Police (enlisted)	U.S. Navy Security	U.S. Navy Corrections	U.S. Navy Guard	U.S. Navy Master-at-Arms

Devices are not shown to scale

Source: www.staynavy.navy.mil



Naval Construction Brigades (NCB)

- 2ND NCB (Atlantic)
- 3RD NCB (Pacific)

Naval Construction Regiments (NCR)

- 20TH NCR (Atlantic)
- 31ST NCR (Pacific)

Active

- 22ND NCR (Atlantic)
- 30TH NCR (Pacific)

Reserve

- 3RD NCR (Atlantic)
- 1ST NCR (Pacific)
- 7TH NCR (Atlantic)
- 9TH NCR (Pacific)

Naval Mobile Construction Battalions (NMCB)

Active

- 1ST NMCB (Atlantic)
- 5TH NMCB (Pacific)
- 7TH NMCB (Atlantic)
- 3RD NMCB (Pacific)
- 74TH NMCB (Atlantic)
- 4TH NMCB (Pacific)
- 133RD NMCB (Atlantic)
- 40TH NMCB (Pacific)

Reserve

- 14TH NMCB (Atlantic)
- 15TH NMCB (Pacific)
- 21ST NMCB (Atlantic)
- 17TH NMCB (Pacific)
- 23RD NMCB (Atlantic)
- 18TH NMCB (Pacific)
- 24TH NMCB (Atlantic)
- 22ND NMCB (Pacific)

Amphibious Construction Battalion (ACB) 1



Photo by PH3 Jan Smith

Underwater Construction Team (UCT) 2 participate in Exercise Tandem Thrust 2001.

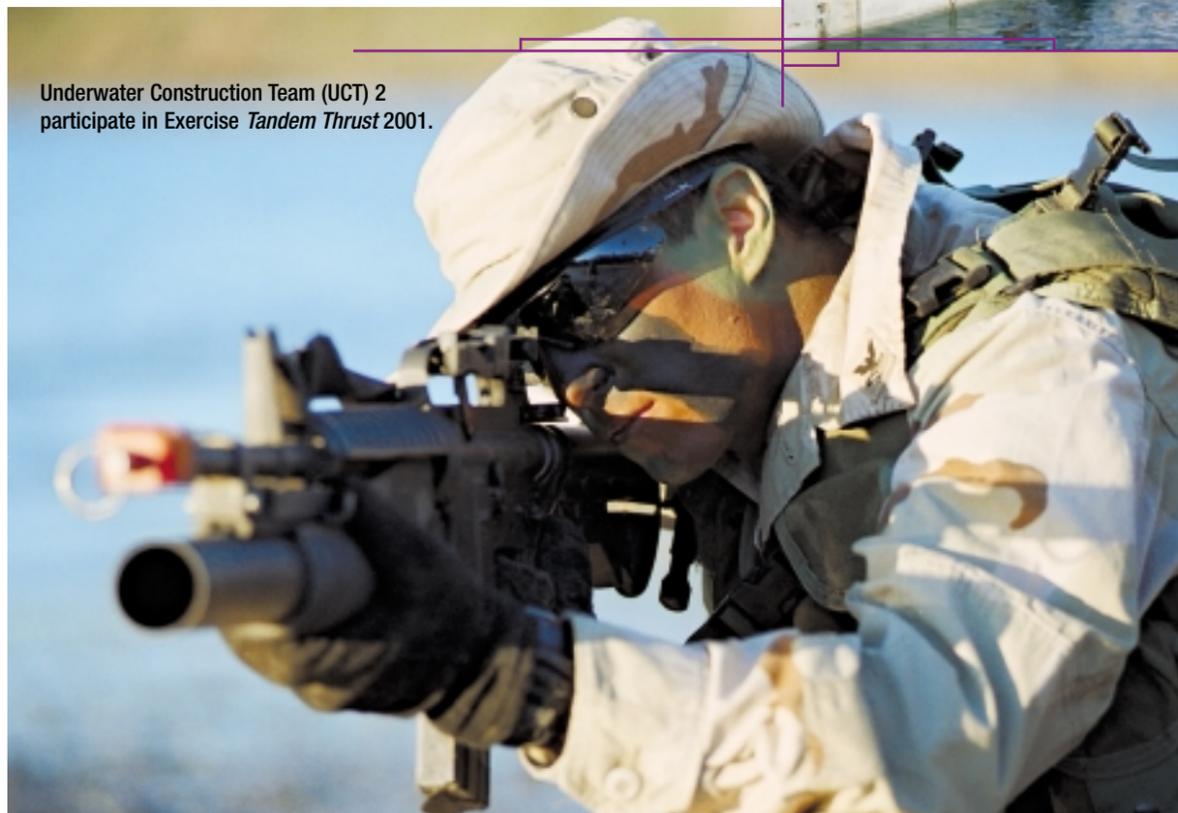


Photo by PH1(SW/DV) Eric Thiford

Naval Amphibious Construction Battalions (ACB)

Active

- Naval Beach Group 1 (Pacific)
- Naval Beach Group 2 (Atlantic)
- ACB-1 (Pacific)
- ACB-2 (Atlantic)

Underwater Construction Teams (UCT)

Active

- UCT 1 (Atlantic)
- UCT 2 (Pacific)

Naval Construction Battalion Units (CBU)

- CBU-402 (Atlantic)
- CBU-401 (Pacific)
- CBU-403 (Atlantic)
- CBU-405 (Pacific)
- CBU-410 (Atlantic)
- CBU-406 (Pacific)
- CBU-411 (Atlantic)
- CBU-413 (Pacific)
- CBU-412 (Atlantic)
- CBU-416 (Pacific)
- CBU-414 (Atlantic)
- CBU-415 (Atlantic)
- CBU-417 (Pacific)
- CBU-420 (Atlantic)
- CBU-418 (Pacific)
- CBU-422 (Atlantic)
- CBU-421 (Pacific)
- CBU-423 (Atlantic)
- CBU-427 (Pacific)

Construction Battalion Maintenance Unit (CBMU)

- CBMU 202 (Atlantic)
- CBMU 303 (Pacific)

Naval Construction Force Support Units (NCFSU)

- NCFSU 3 (Atlantic)
- NCFSU 2 (Pacific)

Source: Naval Facilities Engineering Command (Code SR), and www.seabee.navy.mil



Photo by PH2 Erin Zocco

Naval Mobile Construction Battalion (NMCB) 1 participates in CARAT 2001.



Photo by PH2 Laura Billett

Naval Mobile Construction Battalion (NMCB) 7

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 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)
- USS Jimmy Carter (SSN 23)*

Virginia-class

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

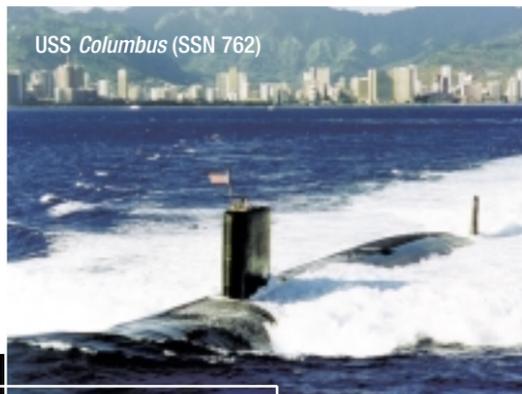
Sturgeon-class

- 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)



USS Columbus (SSN 762)

U.S. Navy photo



USS Pennsylvania (SSBN 735)



The deep submergence rescue vehicle *Mystic* (DSRV 1) on board USS *Dallas* (SSN 700)

Photo by JO1 Jason Everett Miller

Deep Submergence Rescue Vehicles

- Mystic* (DSRV 1)
- Avalon* (DSRV 2)

Submersible Research Vehicles

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

*Under Construction

Source: Naval Vessel Register



PAY CHART

Monthly Basic Pay Table

Effective January 1, 2002

PAY GRADE	YEARS OF SERVICE														
	<2	2	3	4	6	8	10	12	14	16	18	20	22	24	26
ENLISTED MEMBERS															
E-9	0.00	0.00	0.00	0.00	0.00	0.00	423.90	3501.30	3599.40	3714.60	3830.40	3944.10	4098.30	4251.30	4467.00
E-8	0.00	0.00	0.00	0.00	0.00	2858.10	2940.60	3017.70	3110.10	3210.30	3314.70	3420.30	3573.00	3724.80	3937.80
E-7	1986.90	2169.00	2251.50	2332.50	2417.40	2562.90	2645.10	2726.40	2808.00	2892.60	2975.10	3057.30	3200.40	3292.80	3526.80
E-6	1701.00	1870.80	1953.60	2033.70	2117.40	2254.50	2337.30	2417.40	2499.30	2588.10	2602.80	2602.80	2602.80	2602.80	2602.80
E-5	1561.50	1665.30	1745.70	1828.20	1912.80	2030.10	2110.20	2193.30	2193.30	2193.30	2193.30	2193.30	2193.30	2193.30	2193.30
E-4	1443.60	1517.70	1599.60	1680.30	1752.30	1752.30	1752.30	1752.30	1752.30	1752.30	1752.30	1752.30	1752.30	1752.30	1752.30
E-3	1303.50	1385.40	1468.50	1468.50	1468.50	1468.50	1468.50	1468.50	1468.50	1468.50	1468.50	1468.50	1468.50	1468.50	1468.50
E-2	1239.30	1239.30	1239.30	1239.30	1239.30	1239.30	1239.30	1239.30	1239.30	1239.30	1239.30	1239.30	1239.30	1239.30	1239.30
E-1<4	1105.50	1105.50	1105.50	1105.50	1105.50	1105.50	1105.50	1105.50	1105.50	1105.50	1105.50	1105.50	1105.50	1105.50	1105.50
E-1<4	1022.70														
C/S	13598.10														
M/S	5382.90														
WARRANT OFFICERS															
W-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5136.00	5478.60
W-4	2889.60	3108.60	3198.00	3285.90	3437.10	3586.50	3737.70	3885.30	4038.00	4184.40	4334.40	4480.80	4632.60	4782.00	4935.30
W-3	2638.80	2862.00	2862.00	2898.90	3017.40	3152.40	3330.90	3439.50	3558.30	3693.90	3828.60	3963.60	4098.30	4233.30	4368.90
W-2	2321.40	2454.00	2569.80	2654.10	2726.40	2875.20	2984.40	3093.90	3200.40	3318.00	3438.90	3559.80	3680.10	3801.30	3801.30
W-1	2049.90	2217.60	2330.10	2402.70	2511.90	2624.70	2737.80	2850.00	2963.70	3077.10	3189.90	3275.10	3275.10	3275.10	3275.10
COMMISSIONED OFFICERS															
O-10	8944.80	9259.50	9259.50	9259.50	9259.50	9614.70	9614.70	10147.50	10147.50	10873.80	10873.80	11601	11659.20	11901.30	12324.00
O-9	7927.50	8135.10	8308.50	8308.50	8308.50	8519.70	8519.70	8874.30	8874.30	9614.70	9614.70	10147.50	10293.60	10504.80	10873.80
O-8	7180.20	7415.40	7571.10	7614.90	7809.30	8135.10	8210.70	8519.70	8608.50	8874.30	9259.50	9614.70	9852.00	9852.00	9852.00
O-7	5966.40	6371.70	6371.70	6418.20	6657.90	6840.30	7051.20	7261.80	7472.70	8135.10	8694.90	8694.90	8694.90	8694.90	8738.70
O-6	4422.00	4857.90	5176.80	5176.80	5196.60	5418.90	5448.60	5448.60	5628.60	6305.70	6627.00	6948.30	7131.00	7316.10	7675.20
O-5	3537.00	4152.60	4440.30	4494.30	4673.10	4673.10	4813.50	5073.30	5413.50	5755.80	5919.00	6079.80	6262.80	6262.80	6262.80
O-4	3023.70	3681.90	3927.60	3982.50	4210.50	4395.90	4696.20	4930.20	5092.50	5255.70	5310.60	5310.60	5310.60	5310.60	5310.60
O-3	2796.60	3170.40	3421.80	3698.70	3875.70	4070.10	4232.40	4441.20	4549.50	4549.50	4549.50	4549.50	4549.50	4549.50	4549.50
O-2	2416.20	2751.90	3169.50	3276.30	3344.10	3344.10	3344.10	3344.10	3344.10	3344.10	3344.10	3344.10	3344.10	3344.10	3344.10
O-1	2097.60	2183.10	2638.50	2638.50	2638.50	2638.50	2638.50	2638.50	2638.50	2638.50	2638.50	2638.50	2638.50	2638.50	2638.50
COMMISSIONED OFFICERS WITH MORE THAN 4 YEARS ACTIVE-DUTY SERVICE AS AN ENLISTED MEMBER OR WARRANT OFFICER															
O-3E	0.00	0.00	0.00	3698.70	3875.70	4070.10	4232.40	4441.20	4617.00	4717.50	4855.20	4855.20	4855.20	4855.20	4855.20
O-2E	0.00	0.00	0.00	3276.30	3344.10	3450.30	3630.00	3768.90	3872.40	3872.40	3872.40	3872.40	3872.40	3872.40	3872.40
O-1E	0.00	0.00	0.00	2638.50	2818.20	2922.30	3028.50	3133.20	3276.30	3276.30	3276.30	3276.30	3276.30	3276.30	3276.30

NOTE - BASIC PAY FOR O-7-O-10 IS LIMITED TO \$11,141.70 (LEVEL III OF THE EXECUTIVE SCHEDULE FV02, Graduated Pay Raise Increase)

NOTE - BASIC PAY FOR O-6 AND BELOW IS LIMITED TO \$9,800.10 (LEVEL V OF THE EXECUTIVE SCHEDULE)

(Source: www.defenselink.mil/specials/militarypay2002/paychart2002.html)

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).

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 the Antarctic continent - a clasp for Antarctic Service Medal; a suspension ribbon and a disc for the service ribbon; bronze for the first winter, gold for the second winter, and silver for the third	"V" DEVICE Authorized for acts or service involving direct participation in combat operations	HOURGLASS Issued for each succeeding award of the Armed Forces Reserve Medal	EUROPE AND ASIA CLASPS Worn on the suspension ribbon of the Navy Occupation Service Medal	FLEET MARINE FORCE COMBAT OPERATIONS INSIGNIA For Navy personnel attached to Fleet Marine Force units participating in combat operations	SILVER "E" DEVICE Denotes Expert Marksman qualification
					
BRONZE "S" DEVICE Denotes Sharpshooter Marksman qualification	"M" DEVICE Denotes Naval Reserve mobilization in support of certain operations	STRIKE/LIGHT DEVICE Bronze Arabic numeral denotes the total number of strike/flight awards of the Air Medal earned subsequent to April 9, 1982	"3/16" PALM" DEVICE 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	

Devices are not shown to scale.

ORDER OF PRECEDENCE

ORDER OF PRECEDENCE

OWNER'S & OPERATOR'S MANUAL 2002



	AIR FORCE	ARMY	MARINE CORPS	NAVY & COAST GUARD	OF CERS
E-9	 Chief Master Sergeant of the Air Force Sergeant Major 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/Command Master Chief Petty Officer	General of the Air Force / Army (Reserved for Wartime) General Fleet Admiral (Reserved for Wartime) Admiral / Commandant of the Coast Guard
E-8	 Senior Master Sergeant, First Sergeant Master Sergeant, First Sergeant	 Master Sergeant, First Sergeant	 Master Sergeant, First Sergeant	 Senior Chief Petty Officer Chief Petty Officer	Lieutenant General Major General Brigadier General Rear Admiral (Upper Half) Rear Admiral (Lower Half)
E-7	 Master Sergeant, First Sergeant Sergeant First Class Gunnery Sergeant	 Sergeant First Class	 Gunnery Sergeant	 Chief Petty Officer	Lieutenant Colonel Major Colonel Captain
E-6	 Technical Sergeant Staff Sergeant	 Staff Sergeant	 Staff Sergeant	 Petty Officer First Class	Major Lieutenant Colonel Colonel Captain
E-5	 Staff Sergeant	 Sergeant	 Sergeant	 Petty Officer Second Class	Lieutenant Colonel Major Colonel Captain
E-4	 Senior Airman Corporal Specialist	 Corporal Specialist	 Corporal	 Petty Officer Third Class	Lieutenant Colonel Major Colonel Captain
E-3	 Airman First Class	 Private First Class	 Lance Corporal	 Seaman	Lieutenant Colonel Major Colonel Captain
E-2	 Airman	 Private Second Class	 Private First Class	 Seaman Apprentice	Lieutenant Colonel Major Colonel Captain
E-1	 Airman Basic	 Private	 Private	 Seaman Recruit	Lieutenant Colonel Major Colonel Captain
WARRANT OFFICERS	No Warrant No Warrant No Warrant No Warrant No Warrant	Warrant Officer 1 Warrant Officer 2 Warrant Officer 3 Warrant Officer 4 Warrant Officer 5	Warrant Officer 1 Warrant Officer 2 Warrant Officer 3 Warrant Officer 4 Warrant Officer 5	Warrant Officer 1 (No longer in use) Warrant Officer 2 Warrant Officer 3 Warrant Officer 4 Warrant Officer 5	Lieutenant First Lieutenant Second Lieutenant Ensign



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 Kearsarge (LHD 3)



Photo by PH1 Martin Maddock

USS Arctic (AOE 8)
USS Philippine Sea (CG 58)



Photo by PH1 Martin Maddock

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 Peterson (DD 969)
- USS David R. Ray (DD 971)
- USS Oldendorf (DD 972)
- USS John Young (DD 973)
- USS O'Brien (DD 975)
- USS Briscoe (DD 977)
- USS Stump (DD 978)
- USS Nicholson (DD 982)
- 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 John S. McCain (DDG 56)



Photo by PH2 Andrew Meyers

- 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)
- McCampbell (DDG 85)*
- Shoup (DDG 86)*
- Mason (DDG 87)*
- Preble (DDG 88)*

- Mustin (DDG 89)*
- Chafee (DDG 90)*
- Pinckney (DDG 91)*
- Momsen (DDG 92)*
- Chung-Hoon (DDG 93)*
- Nitze (DDG 94)*
- James E. Williams (DDG 95)*

FRIGATES

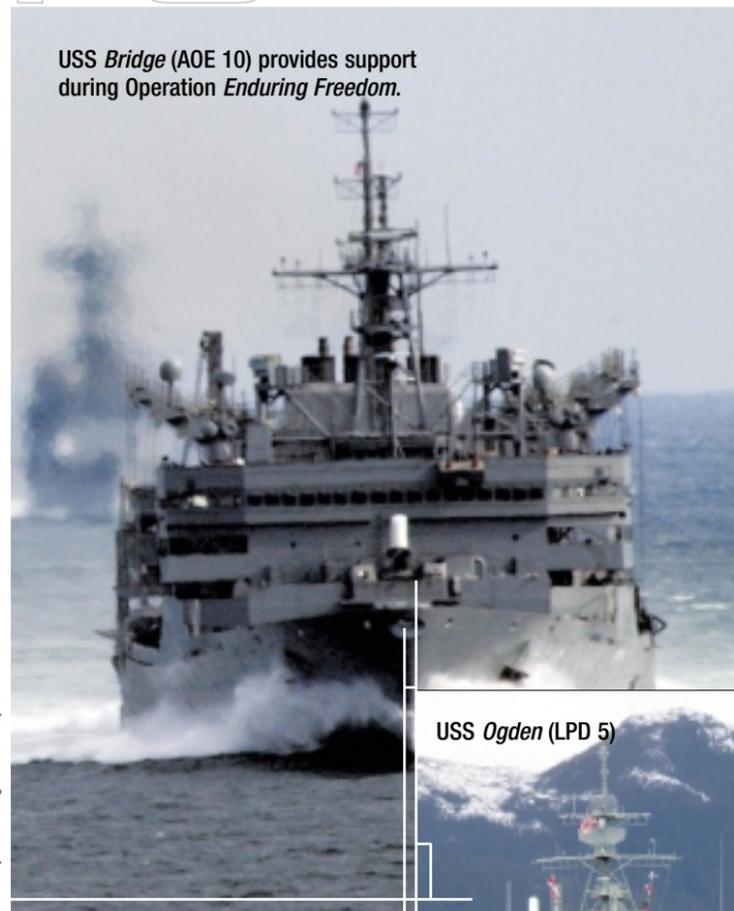
Oliver Hazard Perry-class

- USS *McInerney* (FFG 8)
- USS *Wadsworth* (FFG 9)**
- USS *George Phillip* (FFG 12)**
- USS *Samuel Eliot Morison* (FFG 13)**
- 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 46)
- USS *Vandergrift* (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 *Bridge* (AOE 10) provides support during Operation *Enduring Freedom*.

Photo by PH3 Margaret M. Taylor



USS *Ogden* (LPD 5)

Photo by Air Force Tech. Sgt. Brian Snyder

- USS *Shreveport* (LPD 12)
- USS *Nashville* (LPD 13)
- USS *Trenton* (LPD 14)
- USS *Ponce* (LPD 15)

San Antonio-class

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

AMPHIBIOUS DOCK LANDING

Anchorage-class

- USS *Anchorage* (LSD 36)
- USS *Portland* (LSD 37)
- USS *Pensacola* (LSD 38)
- 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)



Photo by PH3 Frederick McCahan

USS *Avenger* (MCM 1)

AMPHIBIOUS TANK LANDING

Newport-class

- USS *Frederick* (LST 1184)**

AMPHIBIOUS COMMAND

Blue Ridge-class

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

LaSalle-class

- USS *LaSalle* (AGF 5)

Coronado-class

- USS *Coronado* (AGF11)

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)

Inchon-class

- USS *Inchon* (MCS 12)**

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 *Arctic* (AOE 8)
- 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

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

* Under Construction

** Naval Reserve Force, Active

Source: Naval Vessel Register

MILITARY SEALIFT COMMAND SHIPS

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 *Kilauea* (T-AE 26)
USNS *Butte* (T-AE 27)
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 *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 *Tippicanoe* (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)

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 Pre-Positioning Program

Maritime Pre-positioning Ships
(support U.S. Marine Corps and
U.S. Navy)

T-AK (Maritime Pre-positioning 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 *1LT Alex Bonnyman*
(T-AK 3003)
MV *PVT Franklin J. Phillips*
(T-AK 3004)
SS *SGT Matej Kocak* (T-AK 3005)
SS *PFC Eugene A. Obregon*
(T-AK 3006)
SS *MAJ Stephen W. Pless* (T-AK 3007)
MV *2LT John P. Bobo* (T-AK 3008)
MV *PFC Dewayne T. Williams*
(T-AK 3009)
MV *1LT Baldomero Lopez*
(T-AK 3010)
MV *1LT Jack Lummus* (T-AK 3011)
MV *SGT William R. Button*
(T-AK 3012)

T-AK (Maritime Pre-positioning Force (Enhanced)

USNS *1LT Harry L. Martin* (T-AK 3015)
USNS *LCPL Roy M. Wheat* (T-AK 3016)**
USNS *GYSGT Fred W. Stockham* (T-AK
3017)

**To Be Delivered

Combat Pre-Positioning 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 *Bob Hope* (T-AKR 300)
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)**
**to be delivered

T-AK (Float-on/Float-off Ship)

MV *American Cormorant* (T-AK 2062)

T-AK (Heavy Lift Pre-positioned Ship)

MV *Strong Virginian* (T-AK 9205)

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 Pre-Positioning Ships (support U.S. Air Force, U.S. Navy and the Defense Logistics Agency)

T-AVB (Aviation Logistics Support Ships)

SS *Wright* (T-AVB 3)
SS *Curtiss* (T-AVB 4)

T-AK (Break Bulk Ship)

MV *Green Wave* (T-AK 2050)

(Down Range Support Ships)

MV *Seacor Clipper*
MV *Sea Mark III*

(Container Ship)

MV *Sagamore*



Photo by PHAN Talia Koenig

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)
USNS *Henry J. Kaiser* (T-AOT 187)
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)

(Roll-on/Roll-off Ship)

MV *Strong Texan*

T-AOT (Tankers)

MV *Gus W. Darnell* (T-AOT 1121)
MV *Paul Buck* (T-AOT 1122)
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 *Fisher* (T-AKR 301)
USNS *Seay* (T-AKR 302)
USNS *Mendonca* (T-AKR 303)
USNS *Pililaau* (T-AKR 304)
USNS *Brittin* (T-AKR 305)**
USNS *Benavidez* (T-AKR 306)**

**To Be Delivered



Photo by PH3 Jennifer A. Smith

AIRCRAFT CARRIERS

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)
Ronald Reagan (CVN 76)*

Enterprise-class

USS *Enterprise* (CVN 65)

Source: Naval Vessel Register

Kitty Hawk-class

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

John F. Kennedy-class

USS *John F. Kennedy* (CV 67)

*Under Construction

USS *Kitty Hawk* (CV 63)

Photo by PH3 Alex C. Witte



U.S. Navy Photo

USS *John C. Stennis* (CVN 74)

USS *George Washington* (CVN 73)

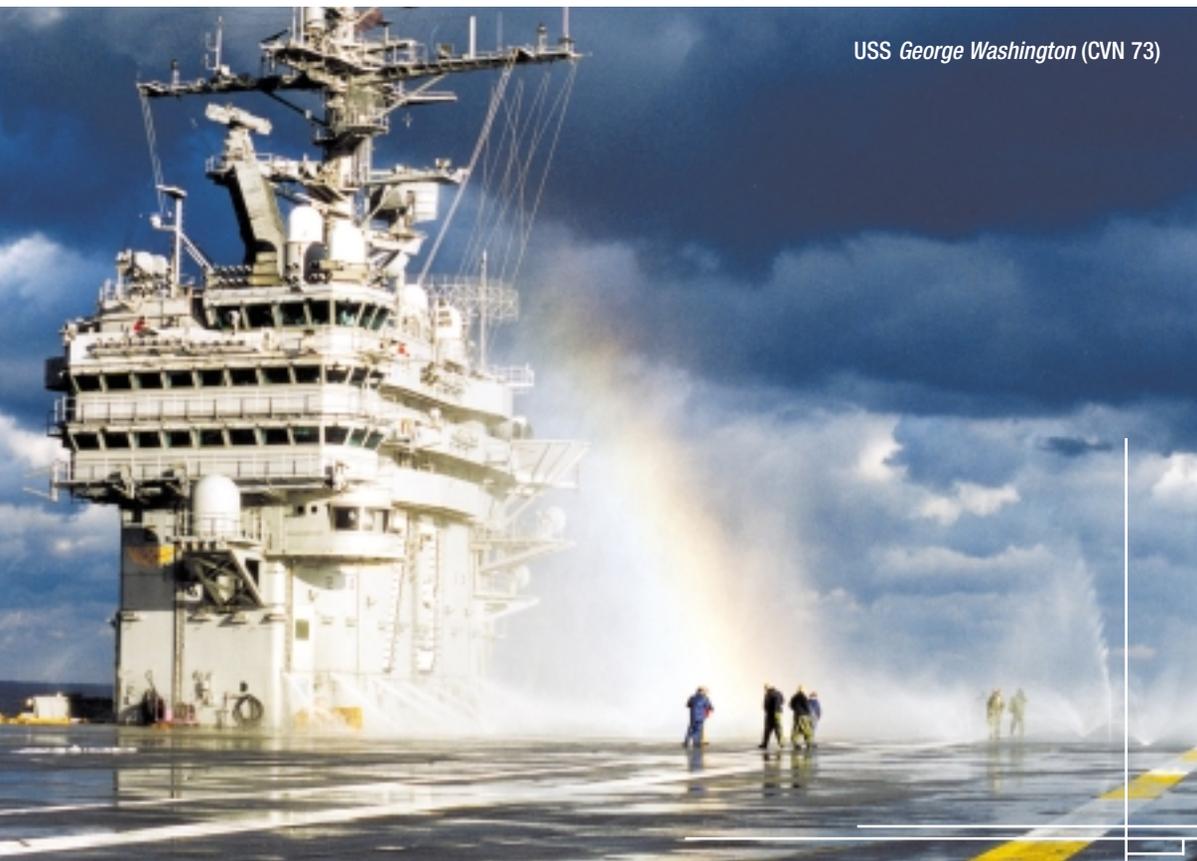


Photo by PH1 Antoni Rivera

AIRCRAFT CARRIERS

AIRHANDS

OWNERS & OPERATORS
MANUAL 2002

USNS *Comfort* (T-AH 20)



Photo by PHC Eric Tilford

- 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-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*

USNS *Rappahannock* (T-AO 204)



Photo by PHAN Ronald Guitridge

Ready Reserve Force

T-AK (Break Bulk Ships)

- SS *Cape Nome* (T-AK 1014)
- SS *Cape Ann* (T-AK 5009)
- SS *Cape Alexander* (T-AK 5010)
- SS *Cape Archway* (T-AK 5011)
- SS *Cape Avinof* (T-AK 5013)
- SS *Cape Johnson* (T-AK 5075)
- SS *Cape Juby* (T-AK 5077)

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-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)

T-AOT (Tankers)

- MV *Nodaway* (T-AOT 78)
- MV *Alatna* (T-AOT 81)
- MV *Chattahoochee* (T-AOT 82)
- 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 Girardeau* (T-AK 2039)
- SS *Cape Gibson* (T-AK 5051)
- SS *Cape Breton* (T-AK 5056)
- SS *Cape Bover* (T-AK 5057)
- SS *Cape Borda* (T-AK 5058)
- SS *Cape Blanco* (T-AK 5060)

Source: Military Sealift Command

The following is a list of the most commonly flown aircraft in the Navy's inventory and are the most likely to be encountered by today's Sailor.

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. Many squadrons have or will be transitioning to the F/A-18E/F *Super Hornet*.

WINGSPAN: 40 ft., 5 in.

LENGTH: 56 ft.

HEIGHT: 15 ft., 4 in.

WEIGHT: 51,900 lbs. maximum takeoff

SPEED: Mach 1.8+

CEILING: 50,000 ft.

RANGE: (with external tanks) 1,333-1,379 nm

ARMAMENT: 20mm MK-61 Vulcan cannon;

Sparrow III and *Sidewinder* air-to-air missiles;

laser-guided and general purpose bombs;

Harpoon, *HARM*, *Shrike*, *SLAM*, *SLAM-ER*,

Walleye, *Maverick* missiles; *JSOW* and *JDAM*

CREW: 1 or 2

F/A-18E/F Super Hornet

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

WINGSPAN: 44.9 ft.

LENGTH: 60.3 ft.

HEIGHT: 16 ft.

WEIGHT: 66,000 lbs. maximum takeoff

SPEED: Mach 1.8+

CEILING: 50,000+ ft.

ARMAMENT: 20mm MK-61 *Vulcan* cannon;

Sidewinder, *Sparrow* and *AMRAAM* air-to-air

missiles; *Maverick*, *Harpoon*, *Shrike*, *HARM*,

SLAM-ER and Joint Direct Attack Munition

(*JDAM*); *Walleye* and other bombs and

rockets.

CREW: 1 or 2

SQUADRONS

Blue Angels

VFA-15 Valions

VFA-22 Fighting Redcocks

VFA-25 Fist of the Fleet

VFA-27 Royal Macs

VFA-34 Blue Blasters

VFA-37 Bulls

VFA-81 Sunliners

VFA-83 Rampagers

VFA-82 Marauders

VFA-86 Sidewinders

VFA-87 Golden Warriors

VFA-94 Mighty Shrikes

VFA-97 Warhawks

VFA-105 Gunslingers

VFA-106 Gladiators

VFA-113 Stingers

VFA-115 Eagles

VFA-122 Redcocks

VFA-131 Wildcats

VFA-132 Privateers

VFA-136 Knighthawks

VFA-137 Kestrels

VFA-146 Blue Diamonds

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) Omars

F-14 Tomcat

The F-14 is a supersonic, twin-engine, variable sweep-wing fighter designed to attack and destroy enemy aircraft at night and in all weather conditions. The F-14 can track up to 24 targets simultaneously with its advanced weapons control system and engage any of them with one of its six *Phoenix* missiles while continuing to scan the airspace.

WINGSPAN: 64 ft.

LENGTH: 61 ft., 9 in.

HEIGHT: 16 ft.

WEIGHT: 72,900 lbs. maximum takeoff

SPEED: Mach 2+

CEILING: Above 50,000 ft.

ARMAMENT: 20mm MK-61 *Vulcan* cannon;

Sparrow, *Sidewinder* and *Phoenix* air-to-air

missiles; laser-guided and general purpose

bombs

CREW: 2 (one pilot, one radar intercept

officer)

SQUADRONS

VF-2 Bounty Hunters

VF-11 Red Rippers

VF-14 Tophatters

VF-31 Tomcatters

VF-32 Swordsmen

VF-41 Black Aces

VF-101 Grim Reapers

VF-102 Diamondbacks

VF-103 Jolly Rogers

VF-143 Puking 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., 8 in.

WEIGHT: 61,500 lbs. maximum takeoff

SPEED: Over 500 knots

CEILING: 37,600 ft.

RANGE: 1,000+ nm

ARMAMENT: *HARM*

CREW: 4 (one pilot, three electronic warfare officers)

SQUADRONS

VAQ-128 Fighting Phoenix

VAQ-129 Vikings

F-14A Tomcat



Photo by William R. Goodwin

VAQ-130 Zappers

VAQ-131 Lancers

VAQ-132 Scorpions

VAQ-133 Wizards

VAQ-134 Garudas

VAQ-135 Black Ravens

VAQ-136 Gauntlets

VAQ-137 Rooks

VAQ-138 Yellowjackets

VAQ-139 Cougars

VAQ-140 Patriots

VAQ-141 Shadowhawks

VAQ-142 Gray Wolves

VAQ-209 (USNR) Star Warriors

S-3B Viking

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

WINGSPAN: 68 ft., 8 in.

LENGTH: 53 ft., 4 in.

HEIGHT: 22 ft., 9 in.

WEIGHT: 52,539 lbs. maximum design gross weight

SPEED: 450 knots

CEILING: 40,000 ft.

RANGE: 2,300+ nm

ARMAMENT: torpedoes, bombs, *Harpoon*,

Maverick and *SLAM* missiles

CREW: 2/4

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



F/A-18 Hornet

U.S. Navy Photo

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., 6 in.
HEIGHT: 18 ft., 3 in.
WEIGHT: 53,000 lbs. maximum takeoff
SPEED: 300+ knots
CEILING: 30,000 ft.
RANGE: 1,541 nm (ferry range)
CREW: 5 (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

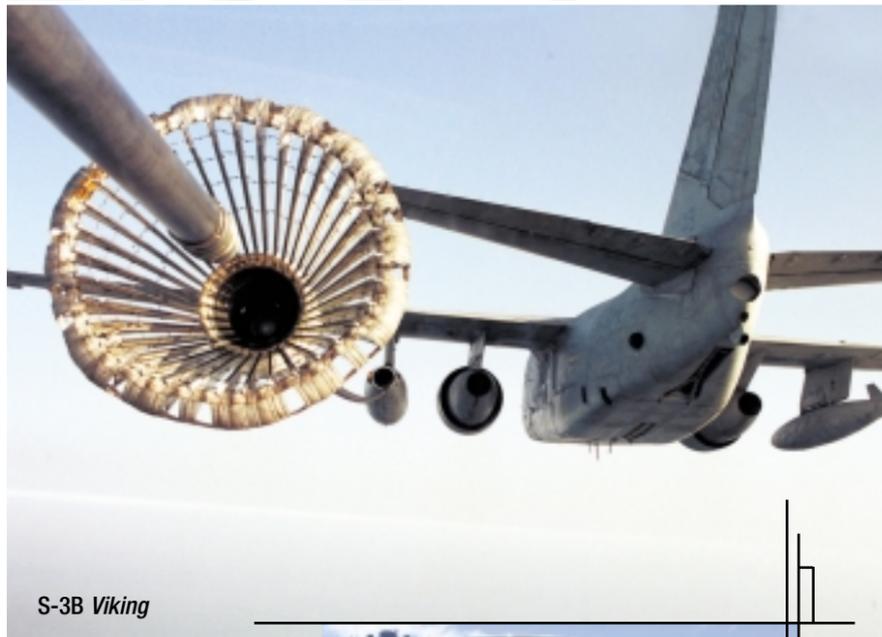
C-2A Greyhound

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

WINGSPAN: 80.5 ft.
LENGTH: 57 ft., 7 in.
HEIGHT: 17 ft.
WEIGHT: 57,000 lbs. maximum takeoff
SPEED: 300 knots
CEILING: 30,000 ft.
RANGE: 1,300 nm
CREW: 4

SQUADRONS

VRC-30 Providers
 VRC-40 Rawhides



S-3B Viking

Photo by Christopher B. Stoltz

Shore-Based

E-6A 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.

WINGSPAN: 148 ft., 4 in.
LENGTH: 150 ft., 4 in.
HEIGHT: 42 ft., 5 in.
WEIGHT: 342,000 lbs. maximum takeoff
SPEED: 522 knots
CEILING: Above 40,000 ft.
RANGE: 6,600 nm (with 6 hours loiter time)
CREW: 14 (E-6A); 22 (E-6B)

SQUADRONS

VQ-3 Ironman
 VQ-4 Shadows
 VQ-7 Roughnecks

P-3C Orion/EP-3E Orion (Aries II)

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

WINGSPAN: 99 ft., 6 in.
LENGTH: 116 ft., 7 in.
HEIGHT: 33 ft., 7 in.



E2-C Hawkeye

Photo by Jeff Russel

WEIGHT: 139,760 lbs. maximum permissible
SPEED: 328 to 411 knots
CEILING: 28,300 ft.
RANGE: 1,346 nm with three hours on station
ARMAMENT: Harpoon, SLAM and Maverick; torpedoes; mines
CREW: 11

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 Marlines
 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 Batmen
 VQ-11(USNR) Bandits
 VPU-1 Old Buzzards
 VPU-2 Wizards

C-130 Hercules

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

WINGSPAN: 132 ft., 7 in.
LENGTH: 97 ft., 9 in.
HEIGHT: 38 ft., 3 in.
WEIGHT: 155,000 lbs. maximum takeoff
SPEED: 374 mph maximum
CEILING: 33,000 ft. (with 10,000 lb. payload)
RANGE: 4,522 nm (with no cargo)
CREW: 5 (two pilots, one navigator, one loadmaster, one flight engineer)

SQUADRONS

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



P-3 Orion

U.S. Navy Photo

C-9B/DC-9 Skytrain II

The C-9B is used for fleet logistics support and military sealift.

WINGSPAN: 93 ft., 3 in.
LENGTH: 119 ft., 3 in.
HEIGHT: 27 ft., 5 in.
WEIGHT: 108,000 lbs. maximum takeoff
SPEED: 565 mph
CEILING: 37,000 ft.
RANGE: more than 1,739 nm
CREW: 8 (one pilot, co-pilot, one flight mechanic, two flight nurses and three aeromedical technicians)

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

WINGSPAN: 54 ft., 6 in.
LENGTH: 43 ft., 10 in.
HEIGHT: 15 ft.
WEIGHT: 15,000 lbs. maximum takeoff
SPEED: 294 knots maximum
CEILING: 35,000 ft.
RANGE: 1,974 nm
CREW: 2 (side by side)

Trainers

T-34C Turbomentor

The T-34C is the Navy's aircraft for primary pilot and navigator training. Six training squadrons are equipped with the Turbomentor. As of mid-1998, 313 T-34Cs remained in service, along with one NT-34C developmental aircraft. The Raytheon T-6A Texan II will replace the T-34C beginning in 2003.

WINGSPAN: 33 ft., 5 in.
LENGTH: 28 ft., 8 in.
HEIGHT: 9 ft., 11 in.
WEIGHT: 4,425 lbs. maximum takeoff
SPEED: 280 knots
RANGE: 600 nm
CEILING: 25,000 ft.
CREW: 2 (one instructor, one student)

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



C-2A Greyhound

U.S. Navy photo

T-45A Goshawk

The T-45A *Goshawk* is the Navy's training aircraft. The Navy has 187 T-45s in service.

WINGSPAN: 30 ft., 9.75 in.
LENGTH: 39 ft., 4 in.
HEIGHT: 14 ft.
WEIGHT: 14,081 lbs. maximum takeoff
SPEED: 625 mph
RANGE: 826 nm
CEILING: 40,000 ft.
CREW: 2 (one instructor, one student)

SQUADRONS

VT-21 Redhawks
 VT-22 Golden Eagles

T-2C Buckeye

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

WINGSPAN: 38 ft., 2 in.
LENGTH: 38 ft., 8 in.
HEIGHT: 14 ft., 9 in.
WEIGHT: 13,180 lbs. maximum takeoff
SPEED: 521 mph
RANGE: 910 nm
CEILING: 44,400 ft.
CREW: 2 (one instructor, one student)

SQUADRONS

VT-9 Tigers
 VT-86 Sabre Hawks

HELICOPTERS

SH/HH-60 Seahawk

The SH-60 is a twin-engine helicopter used for anti-submarine warfare, search and rescue, drug interdiction, anti-ship warfare, cargo lift and special operations. The SH-60B is an airborne platform based aboard cruisers, destroyers and frigates, that deploys sonobuoys and torpedoes in an anti-submarine role while extending the range of the ship's radar capabilities. The SH-60F is carrier based. The HH-60A is designed to accomplish today's combat search and rescue mission as well as other replenishment and utility functions.

LENGTH: 64 ft., 10 in. (rotors and tail pylon folded)
HEIGHT: 13 to 17 ft. (varies by version)
WEIGHT: 21,000 to 23,000 lbs. maximum takeoff
SPEED: 180 knots
RANGE: 380 nm
ARMAMENT: MK46/50 torpedoes (SH-60B/F); 7.62mm or .50-caliber machine guns (SH-60B); *Hellfire* and *Penguin* air-to-surface missiles
CREW: 3 (two pilots, one crewman (SH-60B); or 4 (two pilots, two crewmen (SH-60F).

SQUADRONS

HS-2 Golden Falcons
 HS-3 Tridents
 HS-4 Black Knights
 HS-5 Nightdippers
 HS-6 Indians
 HS-7 Shamrocks
 HS-8 Eight-balls
 HS-10 War Hogs
 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 Air Wolves
 HSL-41 Seahawks
 HSL-42 Proud Warriors
 HSL-43 Battle Cats
 HSL-44 Swamp Foxes
 HSL-45 Wolfpack
 HSL-46 Grandmasters
 HSL-47 Sabrehawks
 HSL-48 Vipers
 HSL-49 Scorpions
 HSL-51 Warlords
 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: 45 ft., 8 in. (rotors folded) to 84 ft., 4 in. (rotors spread)
HEIGHT: 16 ft., 8 in.
WEIGHT: 24,300 lbs. maximum takeoff
SPEED: 145 knots
CEILING: 10,000+ ft.
RANGE: 132 nm
CREW: 4 (pilot, co-pilot, crew chief, mechanic)

SQUADRONS

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



Photo by PH3 Timothy Smith

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.
HEIGHT: 17 ft.
WEIGHT: 21,000 lbs. maximum takeoff
SPEED: 120 knots (cruising)
CEILING: 14,700 ft.
RANGE: 542 nm
ARMAMENT: MK46/50 torpedoes, 7.62mm machine guns
CREW: 4 (two pilots, two crewmen)

SQUADRONS

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

SH-3 Sea King and an SH-60B Seahawk



Photo by PH1 Chris Desmond

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. (rotors turning)
HEIGHT: 10 ft.
WEIGHT: 3,200 lbs. maximum takeoff
SPEED: 138 mph
CEILING: 18,900 ft.
RANGE: 368 nm
CREW: 5 (one pilot, four student pilots)

SQUADRONS

HT-8 Eightballs
 HT-18 Vigilant Eagles

MH-53E Sea Dragon

The MH-53E, a mine-counter-measures 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: 28 ft., 4 in. (tail rotor turning)
WEIGHT: 21 tons (maximum gross)
SPEED: 196 mph
CEILING: 27,900 ft.
RANGE: 1,120 nm
CREW: 3 to 8 (two pilots, one to six crewmen)

SQUADRONS

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

Sources: Navy Fact File; Naval Air Systems Command; Commander, Naval Forces Pacific; Commander, Naval Forces Atlantic; Commander, Naval Air Reserve Force; and the Standard Navy Distribution List.

STRATEGIC STRIKE

Trident I (C-4)

The *Trident I* replaced the *Poseidon* in the Navy's ballistic missile inventory. It became operational in 1978 and is carried on *Ohio*-class ballistic missile submarines.

DIMENSIONS: 74 x 408 in.
WEIGHT: 70,000 lbs.
WARHEAD: Eight 100-kT MK 4 MIRV
PROPULSION: Solid-fuel rocket
RANGE: 4,350 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 August 1989 and deployed in 1990.

DIMENSIONS: 83 x 528 in.
WEIGHT: 130,000 lbs.
WARHEAD: Eight to 12 MK-5 RV or 14 150-kT MIRV or 7 300-kT MARV
PROPULSION: Three-stage, solid-fuel rocket
RANGE: 6,000 nm.
MANUFACTURER: Lockheed-Martin

UNGUIDED BOMBS/ AIR-LAUNCHED ROCKETS

MK-80 Series

The MK-80 series was developed in the late 1940s and has been the standard for Navy bombs ever since. The Mark (MK) number designates the weight of the bomb. Many other designations (*Paveway*, *Snakeye*, *Ballute*) use the standard MK-80 series bombs with guidance system kits to customize them for specific missions and purposes.

MK-81 (250 lbs.; 9 in. x 76.1 in.)
MK-82 (500 lbs.; 10.8 in. x 90.9 in.)
MK-83 (1,000 lbs.; 14 in. x 110.9 in.)
MK-84 (2,000 lbs.; 18 in. x 154 in.)

STRIKE/ANTI-SURFACE WARFARE (ASUM)

Joint Stand-off Weapon (JSOW)

Planned to replace the *Paveway*, *Skipper* and *Maverick* laser-guided weapons. Designed as a drop-and-forget weapon to protect delivery aircraft.

DIMENSIONS: 13.26 in. w x 17.4 in. h x 160 in. l; 106 in. wing span
WEIGHT: 1,065 lbs.
WARHEAD: BLU-97 or BLU-108 bomblets
PROPULSION: Unpowered; glide range of 15 nm. (low alt.), 40 nm. (high alt.).
MANUFACTURER: Raytheon

Paveway Laser-Guided Bomb

The *Paveway* series was developed to increase the accuracy of laser-guided bombs. All use standard MK-80 series bombs with *Paveway* kits attached to guide the explosives to their targets. The first of the *Paveway* series entered the fleet in 1968.

HARM (High-Speed Anti-Radiation Missile)

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

DIMENSIONS: 10 m x 13 ft. 7 in. x 44 in. wing span
WEIGHT: 798 lbs.
WARHEAD: 146 lbs.
RANGE: Depends on launch speed/altitude
PROPULSION: Dual-thrust rocket motor (Mach 2+)
MANUFACTURER: Raytheon

Harpoon/SLAM

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

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

DIMENSIONS: 12.6 ft. long - air launched; 15.2 ft. long - surface and submarine 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/ submarine launch
RANGE: 75 to 80 nm for surface-launched; 120 nm for air launched
MANUFACTURER: The Boeing Company

SLAM-ER

The *SLAM-ER (Stand-Off Land Attack Missile - Expanded Response)* is an upgrade 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 of the missile during the terminal phase of attack (the last five miles).

DIMENSIONS: 14.3 ft. long
WEIGHT: 1,400 lbs.
SPEED: In excess of 150 nm
MANUFACTURER: The Boeing Company

Maverick

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

DIMENSIONS: 8.2 ft. long; 12 in. diameter; 2.4 ft. wing span
WEIGHT: 635 lbs.
WARHEAD: 300 lbs.
PROPULSION: Two-stage, solid-fuel rocket motor
SPEED: Supersonic
RANGE: Approx. 14 nm.
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.

DIMENSION: 18.3 ft. long (20.6 ft. with booster); 20.4 in. diameter; 8.9 ft. wing span
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: General Dynamics

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. wing span
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)



MK-46 torpedo

Photo by PHZ Novia Harrington



Tomahawk missile

U.S. Navy Photo

ANTI-AIR WARFARE (AAW)

Aircraft Guns

M61A1

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

CALIBER: 20mm//62
MUZZLE VELOCITY: 3,400 ft./sec.
RATE OF FIRE: 4,000 or 6,000 rounds/min.
WEIGHT: 841 lbs. total (gun, feed system, ammunition)
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. wing span
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)
DIMENSIONS: 14.7 ft. long; 13.5 in. diameter; 3.6 ft. wing span
WEIGHT: 1,100 lbs. (SM-1); 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-1)/(SM-2)
DIMENSIONS: 26.2 ft long; 13.5 in. diameter; 5.2 ft. wing span
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



Standard Missile-3 (SM-3)

U.S. Navy photo

Air-to-Air Missiles

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

An all-weather, beyond-visual-range, air-to-air missile designed as a follow-on to the *Sparrow* missile series. Less dependent on the aircraft's fire control system for guidance, the missile frees the pilot to aim and fire multiple missiles while evading enemy fire. The AMRAAM program is the result of a joint agreement between the U.S. and its NATO allies to develop and share production technology. The AMRAAM was deployed in September 1991 and deployed aboard the F/A-18 *Hornet*.

DIMENSIONS: 12 ft. (long); 7 in. diameter; 21 in. wing span
WEIGHT: 335 lbs.
PROPULSION: High performance, directed 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, all-altitude, air-to-air missile found throughout the U.S. and NATO forces. A surface ship version, the *Sea Sparrow*, provides U.S. Navy and NATO ships with an effective, anti-air weapon. First deployed in 1976. Carried on F-14 *Tomcat* and F/A-18 *Hornet* aircraft.

DIMENSIONS: 12 ft. long; 8 in. diameter; 3.4 ft. wing span
WEIGHT: 500 lbs.
WARHEAD: 90 lbs. annular blast fragmentation
PROPULSION: Solid-fuel rocket motor
RANGE: In excess of 30 nm
SPEED: In excess of 2,660 mph
MANUFACTURER: Raytheon

Sidewinder

The *Sidewinder* is a short-range, heat-seeking, anti-air missile carried by fighter aircraft. The missile's high-explosive warhead and infrared, heat-seeking guidance system have contributed to the program's long life. The first prototype was fired successfully in 1953 and the initial production version became operational in 1956. The current version, AIM-9M, began fleet use in 1983. The *Sidewinder* is one of the oldest, least-expensive and most-successful missiles in the entire U.S. inventory.

DIMENSIONS: 9.6 ft. long; 5 in. diameter; 2.1 ft. fin span
WEIGHT: 190 lbs.
PROPULSION: Single-stage, solid-fuel rocket motor
WARHEAD: 20.8 blast fragmentation
SPEED: Supersonic
RANGE: 8.7-plus nm
MANUFACTURER: Raytheon/Ford Aerospace/Loral

SHIPBOARD GUNS

MK-45 - 5-inch/.54-caliber lightweight gun

This .54-caliber, lightweight gun provides surface combatants accurate naval gunfire against fast, highly-maneuverable, surface targets, air threats and shore batteries during amphibious operations.

CALIBER: 5 inch/54 inch
SHELL WEIGHT: 70 lbs.
FIRING RATE: 20 rounds per minute
MUZZLE VELOCITY: 2,650 ft./sec
RANGE: 13 nm
MAGAZINE CAPACITY: 475 to 500 rounds
WEIGHT: 47,820 lbs.

MK-38 - 25mm 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 automatic
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

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



NATO *Sea Sparrow* missile

Photo by PHAN John Taucher

60mm Mortar

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

CALIBER: 60mm
RATE OF FIRE: 40 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: 45 knots
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 which achieved Initial Operational Capability in 1980.

Additional efforts resulted in development of the digital advanced capability (ADCAP) MK-48 MOD 5 which 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 significantly reduced the weapon's radiated noise, 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 28 knots
PROPULSION: Positive displacement piston-type engine with OTTO fuel II
WARHEAD: Bulk charge 650 lbs. of high explosive
DEPTH: Greater than 1,200 ft.
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 Block I software upgrade program has enhanced the MK-50's shallow water and countermeasure capability. Also a new longer-lasting, safer and cheaper stored chemical energy propulsion system is currently being introduced.

DIMENSION: 9.3 ft. long, 12.75 in. diameter
WEIGHT: 750 lbs.
RANGE: In excess of 14,000 yds.
SPEED: Multiple speeds with a top speed in excess of 40 knots
PROPULSION: Close-cycle Stored Chemical Energy Propulsion System
WARHEAD: Approximately 100 lbs. high explosive shaped charge
DEPTH: 3,600 ft.
ORIGINAL MANUFACTURER: Alliant Techsystems, Westinghouse

MINES

MK-67 SLMM (Submarine Launched Mobile Mine)

Based on the MK-37 torpedo, the SLMM is a submarine-deployed mine used for covert mining in hostile environments. The MK-67 began active service in 1983.

TYPE: Submarine laid bottom mine.
DIMENSIONS: 13.4 ft. long; 19 in. diameter
DETECTION SYSTEM: Magnetic/seismic or Magnetic/seismic/pressure target detection devices (TDDs)
DEPTH RANGE: Up to 600 ft. (183 meters)
WEIGHT: 1,658 pounds (754 kilograms)
EXPLOSIVES: 330 pounds (150 kilograms) of high explosive

MK-65 Quickstrike

The *Quickstrike* is a shallow-water, aircraft-laid mine used primarily against surface ships. The MK 65 is a 2,390 lb. bomb fitted with a thin-walled mine casing. Older *Quickstrike* versions (MK-62, MK-63 and MK-64) were converted streamlined bombs of the 500 lb., 1,000 lb. and 2,000 lb. sizes. First fleet service in 1983.

TYPE: Aircraft laid bottom mine.
DIMENSIONS: 10.6 ft. long; 29 in. diameter
DETECTION SYSTEM: Magnetic/seismic/pressure target detection devices (TDDs) are used on various models.

Phalanx Close-In Weapons System (CIWS)



Photo by PH3 Dan Mark

MK-56 and MK-57

The MK-56 ASW mine (the oldest still in use) was developed in 1966.

TYPE: Aircraft-laid, moored mine (MK-56); submarine-laid, magnetically-moored mine (MK-57).
DIMENSIONS: (MK-56) 9.5 ft. long, 22.4 in. diameter; (MK-57) 10 ft. long, 21 in. diameter
DETECTION SYSTEM: Total field magnetic exploder.
DEPTH RANGE: Up to 1,000 ft.
WEIGHT: MK-56: 2,000 pounds; MK-57: 2,059 pounds
EXPLOSIVES: MK-56: 360 pounds HBX-3; MK-57: 340 pounds HBX-3

Source: Atlantic Ordnance Command, Yorktown, Va.



Phoenix missile

Photo by PHT William R. Goodwin

Extra! Extra!

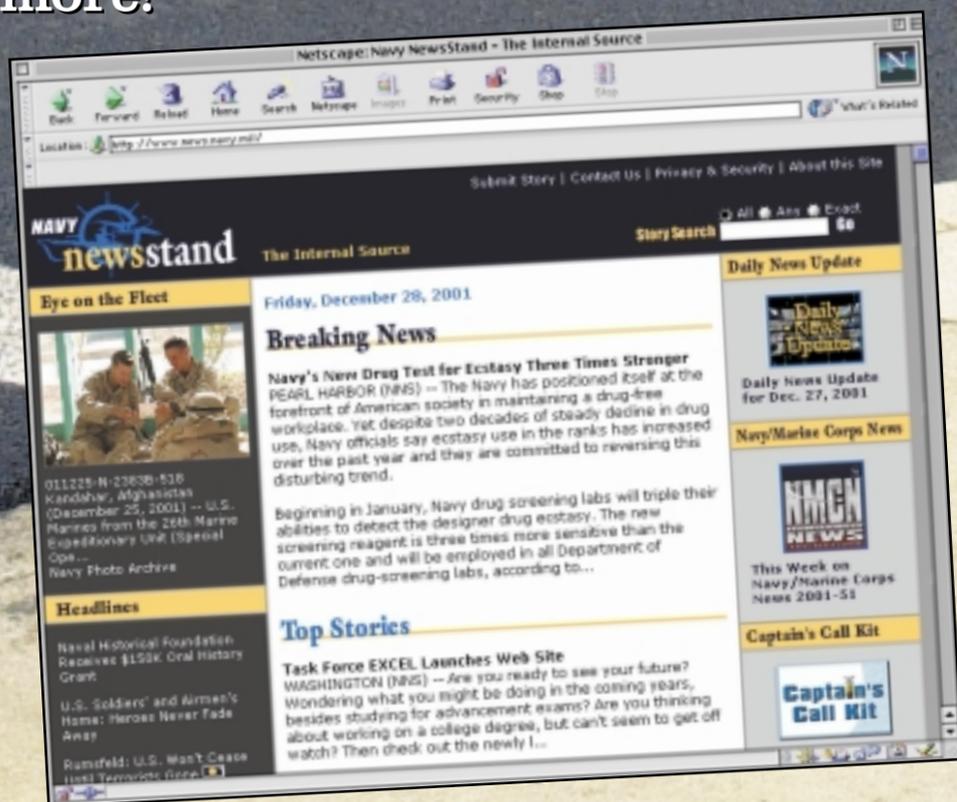
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