

Professional Knowledge Book

2024 - 2025

AN INTRODUCTION TO THE U.S. NAVY AND MARINE CORPS

_____**ALPHA**_____**CO**_____

UNITED STATES NAVAL ACADEMY

Honor…. Courage…. Commitment….

PROFESSIONAL DEVELOPMENT

Class of 2028,

The Navy Warfare pins and Marine Corps Eagle, Globe, and Anchor on the cover of this Professional Knowledge Book (Pro-Book) represent the ranks of Navy and Marine Corp professions that you will one day join. The Navy and Marine Corps are in the profession of national defense. A profession encompasses professional knowledge, professional ethic, and professional autonomy.

Regardless of which community you are assigned in the fall of 2027, there is a core professional knowledge that you are required to attain prior to receiving a commission as a trained Navy or Marine Corps Officer from the U.S. Naval Academy. The Midshipmen Training Program (MTP) is a principal means of accomplishing that requirement.

The MTP consists of six basic components:

1. **Midshipmen Qualification Standards (MQS)** – core Learning Objectives (LO's) that are divided by class year. Your Qualification Standards are located on the Training Website.
2. **References** – used to acquire the knowledge necessary to complete the MQS. They include this Pro-Book, websites listed in each MQS, and files posted on the USNA Training website.
3. **Instruction Periods** – used for "come-arounds" and other training opportunities during which you will show that you have mastered the LOs.
4. **4/C Pro-Quizzes / Exam** – quizzes administered weekly or bi-weekly to assess comprehension of the applicable LOs, and a mid-point evaluation administered at the end of the fall semester.
5. **Professional Competency Boards (PCB)** – oral boards administered to 4/C midshipmen in the spring to objectively assess comprehension of all LOs for the year.
6. **Professional Competency Assessments (PCA)** – exams administered to 3/C and 2/C midshipmen to objectively assess comprehension of LOs.

The MTP is managed by the Training Department. It is part of a training continuum that includes the Career Information Program (CIP) - managed by the Professional Development (PRODEV) Division, and Core Courses taught by PRODEV and the Leadership Education and Development (LEAD) Division. This continuum is intended to:

- Prepare you for each summer's training events
- Enable you to make informed choices regarding your preferences for service assignment
- Prepare you to be a junior officer

While there are new and different challenges that face all of us in this upcoming year, as you move forward, take pride in your growing knowledge and understanding of the Naval Service. This book is the basis of your professional knowledge and you will expand upon this knowledge over the next four years. Take advantage of this opportunity; it will contribute to your success here at the academy and, more importantly, in the Fleet.

CDR C. B. Stone
Training Officer
United States Naval Academy

4/C, 3/C & 2/C MIDSHIPMEN PROFESSIONAL KNOWLEDGE TRAINING SCHEDULE

Chapter	Training Dates	Professional Topic	Pages
FALL 2024			
1	19 Aug – 25 Aug	**USNA Notable Graduates & First Link Assignment (4/C Only)**	**4**
2	*26 Aug – 8 Sep	**U.S. Navy Personnel**	**12**
3	*9 Sep – 22 Sep	**Mission of the U.S. Navy: Tactics, Operations, Strategy, & the Joint Environment**	**33**
6 WEEK ACADEMIC RESERVE PERIOD			
4	*30 Sep – 13 Oct	**Surface Warfare**	**47**
5	*14 Oct – 27 Oct	**Undersea Warfare**	**75**
12 WEEK ACADEMIC RESERVE PERIOD			
6	*04 Nov – 15 Nov	**Naval Air Warfare**	**88**
17 Nov – 26 Nov		**2/C and 3/C- PCAs** **4/C- Review Period**	
1 – 6	02 Dec – 06 Dec	**4/C - End of Semester Assessments**	
SPRING 2025			
7	*7 Jan – 19 Jan	**United States Marine Corps**	**112**
8	*20 Jan – 2 Feb	**Naval Special Warfare & Explosive Ordnance Disposal**	**142**
9	3 Feb – 9 Feb	**Global Challenges – China**	**157**
6 WEEK ACADEMIC RESERVE PERIOD			
10	17 Feb – 23 Feb	**Global Challenges – Russia**	**171**
11	24 Feb – 2 Mar	**Global Challenges – Rogue States: North Korea & Iran**	**182**
12	3 Mar – 9 Mar	**Global Challenges – Cyber, Space, & Transnational Threats**	**193**
SPRING BREAK			
17 Mar – 22 Mar		**REVIEW WEEK**	
1 – 12	23 Mar – 30 Mar	**End of Year Assessments**	
12 WEEK ACADEMIC RESERVE PERIOD			

Notes:

1. Respective MQS Learning Objectives (located on the Training website under the Professional Development tab) must be signed off in full prior to taking a quiz, exam, or board. Specific timelines are located at the beginning of each MQS.

2. The Brigade Training Staff with support from the Training Department will develop questions for all Pro-Quizzes, the Pro-Exam, and PCA's using the MQS Learning Objectives. The 4/C Training Officer shall provide guidance and review all quiz and exam questions.

3. When evaluating a plebe on Professional Knowledge during a come-around, the focus should be a plebe's preparedness for Pro-Quizzes, the Pro-Exam, and PCB's. A plebe should arrive at the come-around already knowing the required information. Upperclass are to provide context based on previous years' MQS knowledge and experiences from class, extracurricular and community events, professional reading, and summer training.

4. Come-arounds shall be conducted daily during the week using designated Instruction Periods listed in the Battle Rhythm contained in the Midshipmen Regulations (MIDREGS). They may only be scheduled outside of these periods if a scheduling conflict arises for an upper-class midshipman or the plebe.

5. Pro-Quizzes and the Pro-Exam shall be completed at the designated time in accordance with the MIDREGS Battle Rhythm. **Plebes on an approved Movement Order (MO) or Excusal during this time shall complete the quiz or exam at the earliest designated opportunity.**

*Dates with an asterisk in the chart above denote two-week chapters.

PRO-QUIZ AND EXAM QUESTION TYPES AND GRADING CRITERIA

QUESTION TYPE	GRADING CRITERIA
MULTIPLE CHOICE	CORRECT per the key – Full credit INCORRECT – No credit
TRUE OR FALSE	CORRECT per the key – Full credit INCORRECT – No credit
MATCHING	CORRECT per the key – Full credit Partial credit awarded to each correctly matched item in the list.
FILL IN THE BLANK	CORRECT per the key – Full credit INCORRECT – No credit
LIST	Each answer in the list should be correct per the key (i.e. verbatim). Credit awarded for each correct item in the list.
LIST AND DESCRIBE	Each answer in the list should be correct per the key (i.e. verbatim). Credit awarded for each correct item in the list. Incorrect, incomplete, or no description results in no credit for that item.
STATE VERBATIM	CORRECT per the key – Full credit INCORRECT – No credit
STATE BRIEFLY	CORRECT per the key – Full credit (does not need to be verbatim) Grader should assign credit based on the midshipman's demonstrated understanding.

Notes:

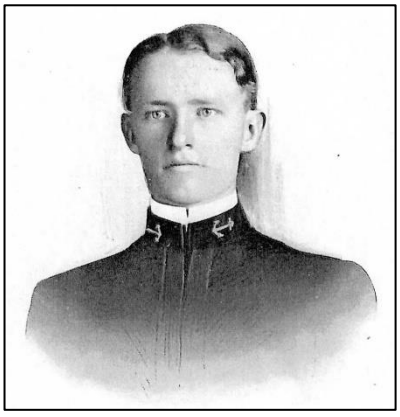
1. The Pro-Quizzes and Pro-Exam are written by the Brigade Training Staff and reviewed by the 4/C Training Officer.
2. Each Pro-Quiz shall contain approximately 20 questions.
3. Details for the Pro-Exams and PCAs will be distributed no less than 2 weeks prior to the exam date.
4. Passing is 70%.
5. There are no-retakes for Pro-Quizzes.

CHAPTER 1: USNA NOTABLE GRADUATES & FIRST LINK ASSIGNMENT

I. USNA Notable Graduates

The United States Naval Academy is an institution dedicated to producing officers of the highest caliber for the nation. We have been proud to help shape the lives of countless outstanding individuals. Below are just a few of the many USNA graduates who have emerged as leaders in both the military and civilian world.

Chester W. Nimitz
Class of 1905
Fleet Admiral/10th Chief of Naval Operations

Profile

Born in Fredericksburg, Texas, Nimitz graduated from the U.S. Naval Academy in 1905. He spent almost two decades in submarines, service punctuated by instruction in diesel engines, study at the Naval War College, and tours as executive officer of an oiler and a battleship. Nimitz then commanded heavy cruiser USS Augusta, flagship of the U.S. Pacific Fleet.

In 1939, he was assigned as Chief of the Bureau of Navigation. Following the Japanese attack on Pearl Harbor on 7 December 1941, the Navy named Nimitz Commander in Chief, U.S. Pacific Fleet, and soon afterward Commander in Chief, Pacific Ocean Areas. In recognition of his superior leadership of naval forces during the victorious three-year Pacific campaign, in December 1944 Congress promoted him to fleet admiral.

As Chief of Naval Operations at the dawn of the Cold War, Nimitz directed the forward deployment of naval forces to the Mediterranean and the Far East, worked to adapt the naval services to the joint requirements of the National Security Act of 1947, and promoted adoption of jet aircraft and other advanced technologies. In recognition of his accomplishments, the Navy named USS Nimitz (CVN-68), the first ship in a new class of nuclear-powered aircraft carriers, in his honor.

Rear Admiral Alan B. Shepard, Jr.
Class of 1945
NASA Astronaut/1st American in space




Profile

Alan B. Shepard was born November 18, 1923, in East Derry, New Hampshire and died on July 21, 1998. He attended primary and secondary schools in East Derry and Derry, New Hampshire; received a Bachelor of Science degree from the United States Naval Academy in 1944, an Honorary Master of Arts degree from Dartmouth College in 1962, and Honorary Doctorate of Science from Miami University (Oxford, Ohio) in 1971, and an Honorary Doctorate of Humanities from Franklin Pierce College in 1972. Graduated Naval Test Pilot School in 1951; Naval War College, Newport, Rhode Island in 1957.

He was awarded the congressional Medal of Honor (Space), two NASA Distinguished Service Medals, the NASA Exceptional Service Medal, the Navy Astronaut Wings, the Navy Distinguished Service Medal, and the

Navy Distinguished Flying Cross. He was a recipient of the Langley Medal (highest award of the Smithsonian Institution) on May 5, 1964, the Lambert Trophy, the Kinchloe Trophy, the Cabot Award, the Collier Trophy, the City of New York Gold Medal (1971), and the achievement Award for 1971. Shepard was appointed by the President in July 1971 as a delegate to the 26th United Nations General Assembly and served through the entire assembly that lasted from September to December 1971.

Rear Admiral Shepard was one of the Mercury astronauts named by NASA in April 1959, and he holds the distinction of being the first American to journey into space. On May 5, 1961, in the Freedom 7 spacecraft, he was launched by a Redstone vehicle on a ballistic trajectory suborbital flight--a flight that carried him to an altitude of 116 statute miles and to a landing point 302 statute miles down the Atlantic Missile Range.

James Earl "Jimmy" Carter

Class of 1947

39th President of the United States





Profile

James Earl (Jimmy) Carter, Jr., who in 1976 became the fifth consecutive President with prior Navy service, was born in Plains, Georgia on 1 October 1924. Graduating from Plains High School in 1941, he attended Georgia Southwestern College in Americus, Georgia. After a year there, Carter transferred to Georgia Institute of Technology to study mathematics for a year in order to qualify for the U.S. Naval Academy. In 1943, Carter received an appointment to the academy and became a member of the Class of 1947. After completing the accelerated wartime program, he graduated on 5 June 1946 with distinction and obtained his commission as ensign. After serving in positions such as radar officer, CIC officer, Training and Education Officer, he attended the U.S. Navy Submarine School, Submarine Base, New London, Connecticut from 14 June to 17 December 1948. Carter was honorably discharged on 9 October 1953 at Headquarters, Third Naval District in New York City. On 7 December 1961, he transferred to the retired reserve with the rank of Lieutenant at his own request.

In 1962 he won election to the Georgia Senate, became Georgia's 76th governor on January 12, 1971 and, on December 12, 1974, he announced his candidacy for president of the United States. He won his party's nomination on the first ballot at the 1976 Democratic National Convention, and was elected president on November 2, 1976. Jimmy Carter served as president from January 20, 1977 to January 20, 1981. In 1982, he became University Distinguished Professor at Emory University in Atlanta, Georgia. On December 10, 2002, the Norwegian Nobel Committee awarded the Nobel Peace Prize for 2002 to Mr. Carter "for his decades of untiring effort to find peaceful solutions to international conflicts, to advance democracy and human rights, and to promote economic and social development". In 2010, he published his 25th book, *White House Diary*.

Vice Admiral James B. Stockdale

Class of 1947

Vietnam Prisoner of War/Congressional Medal of Honor Recipient





Profile

Vice Admiral Stockdale was born on December 23, 1923 in Abingdon, Illinois. After graduating from the Naval Academy in 1946, he attended flight training in Pensacola, FL and in 1954 was accepted to the Navy Test Pilot School where he served as an instructor for a brief time. Stockdale's flying career took him west, and in 1962, he earned a Master's Degree in International Relations from Stanford University.

On September 9, 1965 while returning from a mission, his A-4 Skyhawk was hit by anti-aircraft fire. Stockdale ejected, breaking a bone in his back and badly dislocating his knee. Stockdale wound up in Hoa Lo Prison, the infamous "Hanoi Hilton", where he spent the next seven years. Despite being kept in solitary confinement for four years, in leg irons for two years, physically tortured more than 15 times, denied medical care and malnourished, Stockdale organized a system of communication and developed a cohesive set of rules governing prisoner behavior.

The spring of 1969, he was told that he was to be taken 'downtown' and paraded in front of foreign journalists. Stockdale slashed his scalp with a razor and beat himself in the face with a wooden stool knowing that his captors would not display a prisoner who was disfigured. Later, after discovering that some prisoners had died during torture, he slashed his wrists to demonstrate to his captors that he preferred death to submission. This act so convinced the Vietnamese of his determination to die rather than to cooperate that the Communists ceased the torture of American prisoners and gradually improved their treatment of POWs. He was released from prison in 1973. He was awarded the Congressional Medal of Honor by President Gerald Ford in 1976. He was one of the most highly decorated officers in the history of the Navy, wearing twenty-six personal combat decorations, including two Distinguished Flying Crosses, three Distinguished Service Medals, two Purple Hearts, and four Silver Star medals in addition to the Medal of Honor. He was the only three-star Admiral in the history of the Navy to wear both aviator wings and the Medal of Honor.

After serving as the President of the Naval War College, Stockdale retired from the Navy in 1978. He published a number of books and articles and was awarded eleven honorary doctoral degrees. In 1992 he agreed to the request from H. Ross Perot to stand in as the vice-presidential candidate of the Reform Party. Upon his retirement in 1979, the Secretary of the Navy established the Vice Admiral Stockdale Award for the Inspirational Leadership presented annually in both the Pacific and Atlantic fleet. Vice Admiral Stockdale was a member of the Navy's Carrier Hall of Fame and The National Aviation Hall of Fame, and he was an Honorary Fellow in the Society of Experimental Test Pilots.

Vice Admiral Stockdale died on July 5th, 2005 and is buried at the United States Naval Academy Cemetery at Hospital Point.

H. Ross Perot
Class of 1953
Entrepreneur/1992 Presidential Candidate

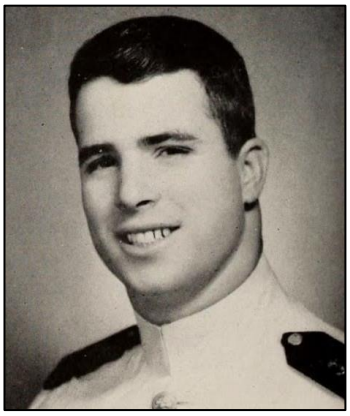



Profile

H. Ross Perot was born in 1930 in Texarkana, Texas. In 1957, he went to work for IBM as a salesman. He then founded Electronic Data Systems (EDS) in 1962, which he sold to General Motors in 1984. In 1979, he funded an operation during the Iran hostage crisis that resulted in the rescue of two of EDS employees.

Concerned over the budget crisis, he ran for president as an independent with Vice Adm. James B. Stockdale in 1992. They won a fifth of the popular vote and finished third in the election. Following his defeat, he formed the Reform Party and ran as their presidential candidate in 1996, where he also came in third.

John McCain
Class of 1958
Vietnam Prisoner of War/United States Senator from Arizona

Profile

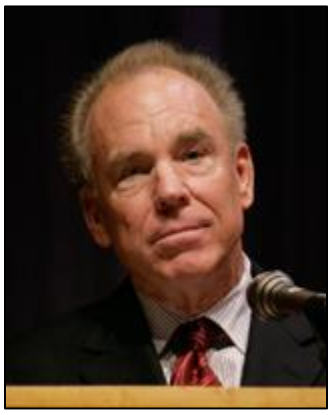
John Sidney McCain, III was born in Panama Canal Zone, August 29, 1936. He attended school in Alexandria, Va., and graduated from the United States Naval Academy in 1958. In 1973, he graduated from the National War College, Washington, D.C.

He was a Pilot in the United States Navy from 1958 until 1981. From 1967 to 1973, he was a prisoner of war in Vietnam. He received numerous awards, including the Silver Star, Legion of Merit, Purple Heart, and Distinguished Flying Cross.

He was elected as a Republican in 1982 to the Ninety-eighth Congress (Arizona), reelected to the Ninety-ninth Congress in 1984, and served from January 3, 1983, to January 3, 1987. He was elected to the United States Senate in 1986, reelected in 1992, 1998, 2004, 2010, and 2016. He served as the Chair of the Senate Armed Services Committee from January 2015 to August 2018. He pursued the Republican presidential nomination for 2000, and ran (unsuccessfully) for President of the United States as the Republican nominee in 2008.

Senator John McCain died on September 2nd, 2018 and is buried at the United States Naval Academy Cemetery at Hospital Point.

Roger Staubach
Class of 1965
1963 Heisman Trophy Winner/Professional Football Player




Profile

As a midshipman, Roger Staubach was the recipient of college football's top honor, The Heisman Trophy. He is the second Midshipman to earn the trophy, after Joe Bellino, who won in 1960. Colorblind, Staubach graduated from the Naval Academy in 1965 and was the Academy's first direct commission Supply Corps officer. He went on to serve four years of active duty service in the Navy, volunteering for one year of overseas duty in Vietnam. Staubach played 11 years of professional football with the Dallas Cowboys and led the Cowboys to two Super Bowl victories. He was elected into the Hall of Fame in 1985, his first year of eligibility.

Outside of sports, in 1977 Staubach founded the Staubach Company; a commercial real estate firm that later merged with Jones Lang LaSalle Incorporated in 2008. He was CEO of Staubach Company for a number of years and following the merger became Executive Chairman, Americas.

Roger Staubach was on the Board of Directors of the United Way of America and the Board of Advisors of the Children's Scholarship Fund. He played an active part in the American Cancer Society Annual Children's Luncheon, and other civic, charitable, and professional organizations. Honors bestowed on Roger include Office & Industrial Properties 1998 Executive of the Year, Commercial Property News Corporate Services Executive of the year in both 1999 & 2000, and was the NCAA 2000 'Teddy' Roosevelt Award Winner. In November of 2018, President Trump awarded Roger Staubach with the Presidential Medal of Freedom.

Major General Charles Bolden
Class of 1968
NASA Astronaut



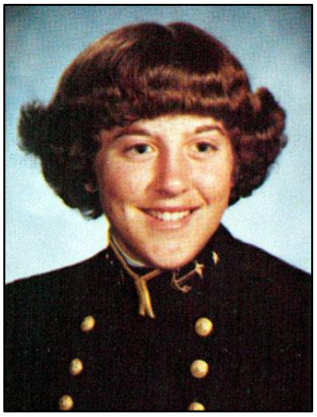

Profile

After graduating from the Naval Academy, Charles Bolden accepted a commission in the U.S. Marine Corps. As a naval aviator, he flew more than 100 sorties into North and South Vietnam, Laos, and Cambodia, in the A-6A Intruder. Following his return to the United States, Bolden graduated from the U.S. Naval Test Pilot School at Patuxent River, Maryland.

Major General Bolden became an astronaut in 1981. He has served on four space flights including STS-31, during which the crew deployed the Hubble Space Telescope, and has logged over 680 hours in space.

Bolden left NASA in 1994 and returned to active duty in the U.S. Marine Corps to become Deputy Commandant of Midshipmen at the U.S. Naval Academy. Major General Charles F. Bolden, Jr., then served as the Deputy Commander, U.S. Forces, Japan, Yokota Air Base, Japan. In 2003, he retired from the Marine Corps and in 2009 he became the Administrator of NASA.

Captain Wendy Lawrence
Class of 1981
NASA Astronaut

Profile

Wendy Lawrence was born July 2, 1959, in Jacksonville, Florida. She graduated from Fort Hunt High School, Alexandria, Virginia, in 1977 and received a Bachelor of Science degree in ocean engineering from U.S. Naval Academy in 1981. She also received a Master of Science degree in ocean engineering from Massachusetts Institute of Technology (MIT) and the Woods Hole Oceanographic Institution (WHOI) in 1988. She was awarded the Defense Superior Service Medal, the Defense Meritorious Service Medal, the NASA Space Flight Medal, the Navy Commendation Medal, and the Navy Achievement Medal. She was a recipient of the National Navy League's Captain Winifred Collins Award for inspirational leadership (1986).

Lawrence has more than 1,500 hours flight time in six different types of helicopters and has made more than 800 shipboard landings. While stationed at Helicopter Combat Support Squadron SIX (HC-6), she was one of the first two female Helicopter Pilots to make a long deployment to the Indian Ocean as part of a carrier battle group. In October 1990, Lawrence reported to the U.S. Naval Academy where she served as a physics instructor and the novice women's crew coach.

Selected by NASA in March 1992, Lawrence reported to the Johnson Space Center in August 1992. She completed one year of training and is qualified for flight assignment as a mission specialist. A veteran of four space flights, Lawrence has logged over 1,225 hours in space. Lawrence retired from NASA in June 2006.

Admiral Michelle Howard
Class of 1982
First female four-star in the U.S. Navy



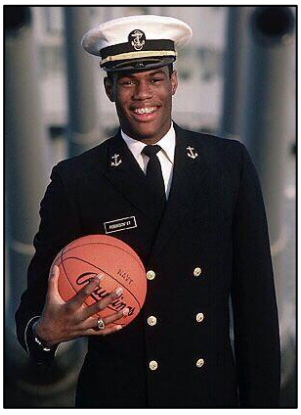

Profile

Admiral Howard graduated from the United States Naval Academy in 1982 and from the Army's Command and General Staff College in 1998, with a Masters in Military Arts and Sciences.

Admiral Howard served on several ships to include USS Lexington (AVT 16) where she received the secretary of the Navy/Navy League Captain Winifred Collins award in May 1987. This award is given to one female officer a year for outstanding leadership.

She took command of USS Rushmore (LSD 47) on March 12, 1999, becoming the first African American woman to command a ship in the U.S. Navy. She has been in several sea and shore assignments such as the first woman to serve as the Vice Chief of Naval Operations. Admiral Howard retired in December 2017.

David Robinson
Class of 1987
1987 Naismith College Player of the Year/Professional Basketball Player

Profile

Recruited by Annapolis to play for the Academy's basketball team, David Robinson went from being a 6' 4" freshman who averaged just 7.6 points per game to a dominating 7' 1" College Player of the Year as a senior.

Selected by the San Antonio Spurs with the number one pick in the 1987 National Basketball Association (NBA) draft, the man known as 'The Admiral' put off his rookie season until the 1989-90 season due to his commitments to the Navy. This decision clearly had no adverse effect upon him, as he would go on to be named 'Rookie of the Year.'

He was the first male basketball player to play on three U.S. basketball teams in the Olympic Games. In 2009, he was inducted into the NBA Hall of Fame along with Michael Jordan and John Stockton.

In 1991, he visited the 5th grade class at Gates Elementary School in Texas. He challenged the 94 students of the class to finish high school, promising each of them a $2,000 scholarship if they did so. In 1998 when 50 of those students graduated, he presented each of them with an $8,000 scholarship. In 1997, he donated $5 million dollars to found the Carver Academy, which he continued to donate to in the following years. Due to his commitment to the community, the NBA renamed their Community Assist Award to be the David Robinson Plaque in 2003.

LCDR Erik Kristensen
Class of 1995
Navy SEAL




Profile

Erik Kristensen graduated with honors from the U.S. Naval Academy in 1995. He served first as a Surface Warfare Officer onboard USS Chandler (DDG-996) and as an Officer in Charge (OIC) of a Rigid Hull Inflatable Boat (RHIB) Detachment at Naval Special Warfare Boat Unit TWELVE (SBU-12).

Kristensen subsequently taught at the Naval Academy and attended graduate school prior to transferring to Basic Underwater Demolition/SEAL (BUD/S). His first assignment as a SEAL was OIC of a Platoon at SEAL Team EIGHT.

In March 2005, LCDR Kristensen deployed to Afghanistan as a Task Unit Commander for SEAL Team TEN to support the Global War on Terrorism. On June 28, 2005, he led a daring mission to rescue a four-man SEAL reconnaissance squad engaged in a fierce firefight with overwhelming Taliban forces in rugged 10,000-foot mountains. Kristensen, seven other SEALs, and eight Army 'Nightstalkers' died when their MH-47D Chinook helicopter was shot down by a rocket-propelled grenade.

Eleven SEALs died that day. It was the biggest single loss of life for Naval Special Warfare since World War II. These SEALs embodied the Navy's Core Values of Honor, Courage, and Commitment, and took care of their teammates to the last. Erik Kristensen and those who perished with him are remembered with the greatest respect and gratitude by his fellow SEALs, the Naval Academy, the Navy, and our nation.

LCDR Erik Kristensen is buried at the United States Naval Academy Cemetery at Hospital Point.

II. USNA First Link Program (Commandant of Midshipmen Instruction 1771)

Memorial Hall is the most sacred space at the Naval Academy. It is the "sanctuary of sanctuaries" where USNA remembers our honored dead and the unique contributions Naval Academy alumni have made to the nation. Listed in Memorial Hall are the names of over 2,600 graduates killed in action (KIA), missing in action (MIA), or killed in the conduct of military operations (Operational Losses). The names of these men and women, and the stories of their heroism, inspire future generations of leaders and represent the finest traditions of sacrifice and valor.

As part of the First Link Program, codified in COMDTMIDNINST 1771, each Plebe at the Naval Academy is assigned a unique name from Memorial Hall. It is your responsibility to learn the details of your assigned hero. When you walk into Memorial Hall going forward, it will not be some abstract sense of sacrifice and overwhelming list of names. You will be able to walk to a specific class panel and name, and know their specific story that was assigned to you as your own "first link." Detailed information for every name in Memorial Hall can be found at www.usnamemorialhall.org.

Honor is not just a concept that involves doing the right thing and not lying, cheating, or stealing. Living a life of honor also means that you can walk into Memorial Hall in the future and pass the "Mem Hall Test"-knowing that you have conducted yourself as an officer in a way that honors the sacrifice of so many that went before you and gave "the last full measure of devotion." One of your Company Honor Representatives will assign you a unique name from Memorial Hall this week as part of your professional development. More information is available from the Officer Representative for the First Link Program, CAPT Richardson in the Political Science Department (Building 105 office #224, 410-293-6851, drichar@usna.edu).

FIRST LINK – ASSIGNED HERO FROM MEMORIAL HALL:

NAME: _____

USNA CLASS: _____



CHAPTER 2: U.S. NAVY PERSONNEL

I. Unrestricted Line, Restricted Line, and Staff Corps Officers

Unrestricted Line (URL) Officers serve in all warfare communities in the United States Navy and are eligible for command opportunities both at sea and ashore. These are the primary officer communities in the Navy: aviation, submarine, surface, SEALs and EOD. The United States Naval Academy is committed to graduating Unrestricted Line Officers, but each year exceptions are made that allow midshipmen to be assigned Restricted Line and Staff Corps. The URL warfare communities will be discussed in greater depth in future chapters.

Restricted Line (RL) Officers provide highly specialized, technical services that directly support the missions of the United States Naval Service. Restricted Line officers are not generally eligible for command at sea; however, they may command auxiliary vessels and various shore activities. Restricted Line officers wear rank insignia identical to those of Unrestricted Line officers.

Staff Corps (SC) Officers provide various highly specialized services necessary to naval installations, units, service members, and their families. Staff Corps officers may command auxiliary vessels and various shore activities, and may attain command within their own corps. Unlike Line Officers, Staff Corps officers wear their rank on the right collar, and their corps insignia device on the left collar. The corps insignia replaces the star worn by line officers on sleeves and shoulder boards.

II. Information Warfare Community

The Information Warfare Community brings together both URL and RL officers to meet their unique mission.

Mission

Gain a deep understanding of the inner workings of our adversaries, develop unmatched knowledge of the battlespace, provide our operating forces with sufficient over-match in wartime command and control, and project power through and across cyberspace. The focus of the IWC is:

- Information Warfare
- Kinetic and non-kinetic weapon/defense
- Development and experimentation of manned and unmanned vehicles
- Expansion of the electromagnetic maneuver warfare concept to include space and cyberspace in partnership with the fleet
- Cybersecurity
- The warfighting pillars:
    - Assured Command and Control (C2). assures secure and rapid sharing of information across all commands and most platforms
    - Battlespace Awareness. The IWC maintains awareness of the physical environment and threats posed by potential adversaries.
    - Integrated Fires. cyberspace operations, electronic warfare, and information operations that are used to deny, disrupt, defeat, or manipulate an adversary's capabilities

History

The Information Warfare Community (IWC) was created in 2009, bringing together (restricted line) officers, enlisted, and civilian professionals who possess extensive skills in information-intensive fields. This corps of professionals receives extensive training, education, and work experience in information, cyberspace, intelligence, counterintelligence, human-derived information, networks, space, meteorological, and oceanographic disciplines. Members of the IWC continually develop and deliver warfighting capabilities in support of U.S. Navy, Joint and national warfighting requirements.

Information as a warfighting discipline. Until 2009, the information-intensive communities of Meteorology and Oceanography (METOC), Cryptologic Warfare (CW), Information Professional (IP), and Intelligence (INTEL) were treated principally as individual enablers necessary to support the Navy's traditional warfighting

pillars. Recognizing the enhanced combat power of fusing the Navy's manpower, information and cyberspace capabilities, the Chief of Naval Operations consolidated these communities under the banner of Information Dominance and created a warfare pin. In 2010, the Navy created the Cyber Warfare Engineer (CWE) community in order to fill the gap of a uniformed officer corps dedicated to cyberspace capability development. In February of 2016, the Information Dominance Corps was redesignated the Information Warfare Community. In August of 2021, the Maritime Space Officer (MSO) community was created. The Navy's aggregate information capability is now identified as a critical component of today's modern warfighting enterprise, and serves as a potent asymmetric complement to its kinetic warfare capabilities, as well as an alternate means to achieve objectives. Information Warfare has been established as the Navy's newest warfighting discipline in support of the Navy's primary tenet of Warfighting First, and information itself has become a potent weapon

Capabilities

Intelligence (INTEL)

The Naval Intelligence Community (IC) provides evaluated intelligence about an adversary's capabilities, vulnerabilities, movement, trends, and intentions in support of planning and operations. Intelligence allows anticipation or prediction of future situations and circumstances and it informs decisions by illuminating the differences in available courses of action.

One goal of naval intelligence is to reduce the risk to operations by identifying adversary capabilities, vulnerabilities, and intentions. It attempts to impart knowledge of the situation through the application of three basic intelligence functions that form the foundation of required analytical support to the commander:

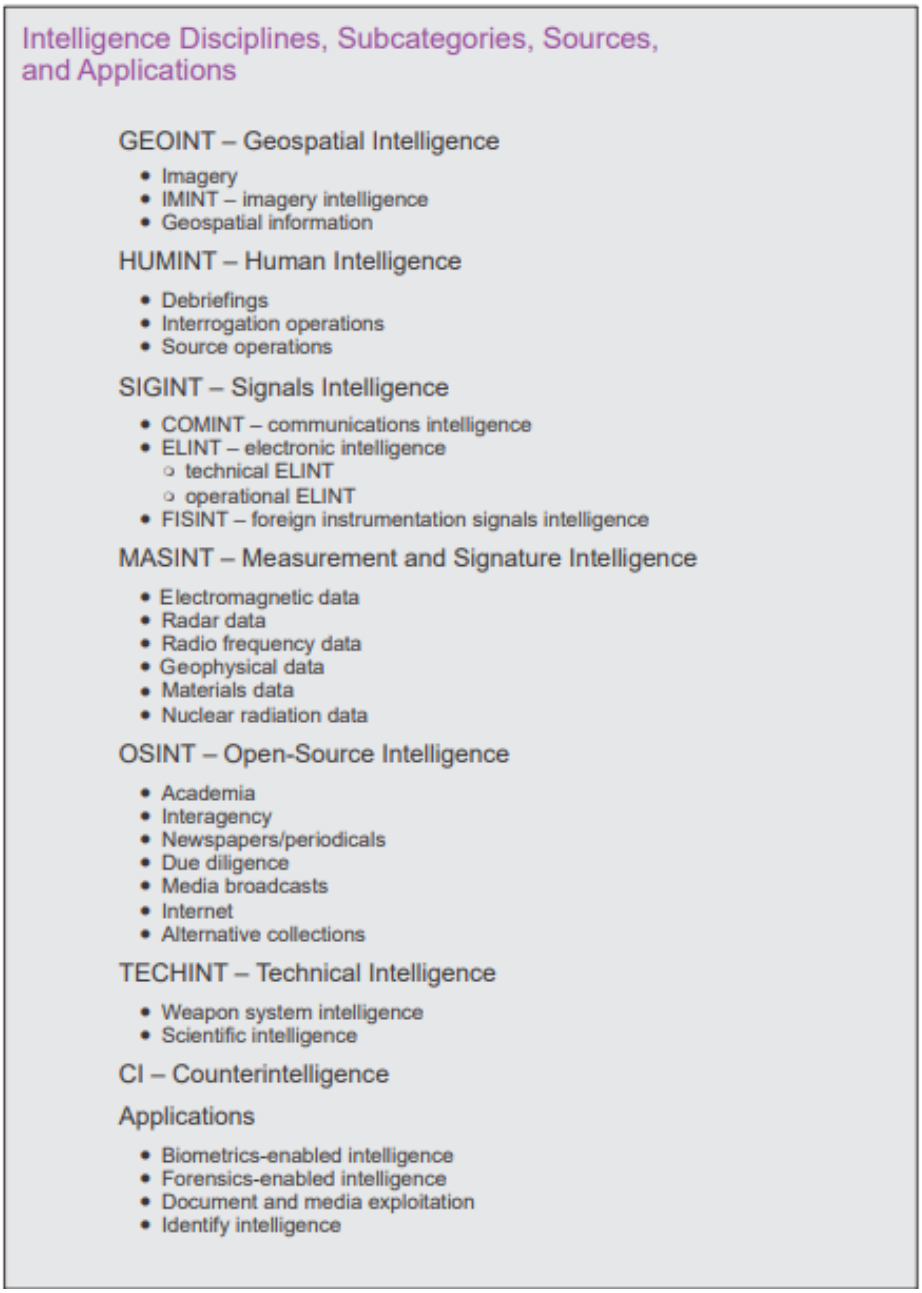
1. **Intelligence Preparation of the Battlespace (IPB) –** Intelligence Preparation of the Battlespace (IPB), sometimes also referred to in Joint Doctrine, as Joint Intelligence Preparation of the Operating Environment (JIPOE), is the systematic and continuous analysis of the adversary, terrain, and weather in the assigned or potential battlespace. Its goals include understanding the adversary's forces, doctrine, tactics, training, and probable courses of action, together with the physical and environmental characteristics of the target area. IPB identifies gaps in knowledge that require intelligence collection efforts.
2. **Indications and Warning (I&W) –** The goal of Indications and Warning (I&W) is to provide early warning of potential hostile action. To accomplish this goal, the analyst must be familiar with an adversary's operational order of battle (*i.e.* inventory) and normal operating patterns. The intent of I&W is to prevent surprise and reduce risk through early detection of adversary actions that may threaten friendly forces.
3. **Targeting** – Targeting is a function of both intelligence and operations, in which an adversary's critical vulnerabilities are identified for possible attack or disruption. For example, the destruction of a single enemy radar site can render multiple surface-to-air missile (SAM) sites useless. *Targeteering*, which is an intelligence function, identifies which weapons will achieve the desired effects on a specific target.

Intelligence Specialist (IS) is the enlisted rating associated with INTEL Community. While all ISs have a common core of duties (assist in collection, processing, analysis and dissemination of intelligence products and reports; prepare and present intelligence briefs; assist in mission planning and debrief; assist in IPB; and safeguard classified materials

Levels of Intelligence



Intelligence Sources (*i.e.* the "-INTS")



Key Concept: Each "-INT" provides one source of information leading to all source analysis. Thus, intelligence is derived from all available sources, such as HUMINT, SIGINT, OSINT, and is combined into customized and relevant intelligence products supporting warfare commanders.

Cryptologic Warfare (CW)

The Cryptologic Warfare Community provides the Commander with kinetic and non-kinetic means of achieving key objectives by affecting adversary and protecting friendly capabilities. This is achieved through the application of:

- *Cyberspace Operations (CO)*, categorized as: Offensive Cyberspace Operations (OCO) and Defensive Cyberspace Operations (DCO), and Department of Defense information network (DODIN) operations and defense.
- *Signals Intelligence (SIGINT)* – The collection and analysis of electromagnetic signals from an adversary's communication, radar, and weapons systems.
- *Electronic Warfare (EW)* – Includes Electronic Attack (EA) which targets an adversary, Electronic Protection (EP) which protects friendly units, and Electronic Support (ES) which includes the detection of Indications and Warnings (I&W).

Cryptologic Technicians (CT) are the enlisted Information Warfare Specialists of the Navy. Due to the highly technical and specialized nature of their jobs, the CT community is broken into various branches.:

Meteorology/Oceanography (METOC)

Both the terms 'METOC' and 'OCEANO' are used to refer to the Oceanography community that provides actionable information to include meteorological, climatological, oceanographic, and space environment observations, analyses, prognostic data or products and meteorological and oceanographic effects. The METOC Community has four Warfare Directorates that support the warfighter.

- Undersea Warfare Directorate
- Expeditionary Warfare
- Weather Services Directorate – Supports several distinct operations including Fleet Operations, Maritime ship routing, and flight weather support.

Aerographer's Mate (AG) is the enlisted rating associated with the METOC community. AGs collect, measure, and analyze elements of the physical operating environment (land, sea, air, space). They prepare weather forecasts and weather briefs. They prepare and disseminate air space and water column analysis in support of operations. They predict how the physical environment impacts the performance of sensors and weapons systems.

Cyber Warfare Engineer (CWE)

The Cyber Warfare Engineers (CWE) are a corps of Officers that are highly trained in specialized areas of disruptive technologies, cyberspace capability development, and the full spectrum of cyberspace operations. They apply principles and techniques of:

- Cyber operations
- Computer science, and
- Computer engineering.

These principles and techniques are used to research, design, develop, test, and evaluate software and firmware for:

- Cyberspace defense
- Cyberspace exploitation, and
- Cyberspace attack.

Information Professional (IP)

Information Professional (IP) officers operate, maintain, secure, plan, acquire, and integrate three network domains afloat and ashore. The domains are separated based on the classification of information being transmitted on them [ref. (6)]:

- **NIPRNET:** Non-Classified Internet Protocol Routing Network, used for Unclassified information only

- **SIPRNET:** Secret Internet Protocol Routing Network, used for information up to and including information classified at the Secret level
- **JWICS:** Joint Worldwide Intelligence Communications System, used for information up to and including Top Secret (TS) and Sensitive Compartmented Information (SCI).

Information Systems Technician (IT) is the enlisted rating associated with the IP community. ITs manage communication operations and networks aboard Navy vessels, and play a vital role in everything from electronic mail systems to special intelligence and information warfare systems. There are two types of Information Systems Technicians depending on whether they serve on ships or submarines.

Maritime Space Officer (MSO)

Maritime Space Officers (MSOs) are the Navy's space professionals uniquely qualified to integrate joint space capabilities into maritime plans and operations. MSOs leverage their skills, experience, and training in core positions in Fleet Maritime Operations Centers (MOCs), joint commands, the intelligence community, naval warfighting development centers, the Naval War College, and staff positions to support operations, as well as man, train, and equip functions. MSO's are the Navy's subject matter experts on space.

Networks and Communication

Radio Frequency (RF) Communications: Radio frequency is any electromagnetic wave frequencies ranging from 3kHz to 300Ghz. Radio waves can be used to transmit information, ranging from high frequency communications, very high frequency communications (VHF), to ultrahigh frequency communication (UHF). The type/frequency of RF communication that is used depends on the purpose of communication, distance and the strength of the transmitter.
RF communications can experience harmful interference from both intentional and unintentional disturbances. Two types of harmful interferences include communications jamming and imitative communications deception. Communications jamming is the deliberate radiation, re-radiation, or reflection of electromagnetic signals with the object of impairing or denying the use of communications circuits by the enemy. This is accomplished by the transmission of electromagnetic signals to enemy receivers. Imitative communications deception is the introduction of fraudulent transmissions, in imitation of authentic transmissions, into enemy communications systems for the purpose of confusing or deceiving.

Satellite Communications v. Terrestrial Network Infrastructure: Satellite communications utilize satellites in space or non-terrestrial transmitters to send information from one user to another. Terrestrial networks utilize terrestrial transmitters, or transmitters within the Earth's atmosphere in order to send information. Terrestrial networks generally rely on cell towers whereas non-terrestrial systems utilize either exclusively non-terrestrial technology or a combination of both terrestrial and non-terrestrial devices. The advantages of using a satellite communication system is the increased access, redundancy, reduced latency and the versatility to have additional features that are not available with a traditional terrestrial network.

Joint Intelligence Preparation of the Operating Environment

Joint intelligence preparation of the operational environment (JIPOE) is the analytical process joint intelligence organizations use to produce intelligence assessments, estimates, and other intelligence products in support of the joint force commander's (JFC's) decision-making process. Throughout the document the term adversary may imply other relevant actors based on the threat or impact the relevant actors may have on joint operations. JIPOE is a continuous process that involves four major steps:

(1) Define the operational environment (OE).
(2) Describe the impact of the OE.
(3) Evaluate the adversary and other relevant actors.
(4) Determine the course of action (COA) for adversary and other relevant actors, particularly the most likely COA and the COA most dangerous to friendly forces and mission accomplishment.

JIPOE's main focus is to provide predictive intelligence designed to help the JFC discern the adversary's probable intent and most likely future COA. The JIPOE process identifies adversary and other relevant actor centers of gravity (COGs) and determines their capabilities to operate within the OE. JIPOE also helps the JFC gain information superiority by providing timely intelligence, focusing intelligence collection at the right time and place, and analyzing the evolving OE. By enhancing the JFC's understanding of relevant aspects of the OE, JIPOE improves the JFC's ability to understand, anticipate, and/or influence the decision making and associated behavior of relevant actors in a manner consistent with operational objectives. Of greatest significance, understanding relevant aspects of the OE enables the JFC to leverage aspects of the OE to achieve the objectives and attain the desired end states of the operation.

Personnel and Insignia

The IWC is made up of Meteorology and Oceanography Officers (METOC), Cryptologic Warfare Officers (CW), Cyber Warfare Engineers (CWE), Information Professional Officers (IP), Intelligence Officers (INTEL), and Maritime Space Officers (MSO). Below is a chart depicting the officer designators and associated enlisted ratings.

Officer  **Information Warfare Officer (IWO)**	**Meteorology/ Oceanography (METOC)**	**Cryptologic Warfare (CW)**	**Cyber Warfare Engineer (CWE)**	**Information Professional (IP)**	**Intelligence (INTEL)**	**Maritime Space Officer (MSO)**
Enlisted  **Enlisted Information Warfare Specialist (IWS)**	**Aerographer's Mate (AG)** 	**Cryptologic Technician (CT)** 	**Cryptologic Technician, Networks (CTN)** 	**Information Systems Technician (IT)** 	**Intelligence Specialist (IS)** 	**N/A**
Civilians/Other	**METOC Civilian**	**Cryptologic Civilian**	**Civilian Developer**	**IT Civilian**	**Intelligence Civilian**	**Space Civilian**

III. Restricted Line Communities

Engineering Duty Officer: An Engineering Duty Officer (EDO) provides leadership in the acquisition, design, construction, life-cycle maintenance, and modernization of the Navy's warfighting platforms in space, in the air, on land, and under the sea. The role of an EDO is to sustain combat readiness and build the future Fleet by using their operational experience and technical education, which is coupled with a strong understanding and application of Congressional budget processes and procedures. Some EDOs also have the opportunity to serve again on ships in particularly technically challenging positions such as Combat Systems Officer, Chief Engineer, or Reactor Officer on aircraft carriers and amphibious ships.

Officers for this community are typically selected from their commissioning source (USNA or ROTC programs) as an EDO "Option" as part of their surface or submarine warfare service assignment. However, officers may transfer into the community later in their career through the lateral transfer process. Midshipmen who major in engineering, math, or the physical sciences are eligible for the surface or submarine EDO Option service assignment. After completing their warfare qualification and required sea tours, they become EDOs, are sent to obtain a technical Master's degree, receive additional business and acquisition training, and complete an Engineering Duty Qualification Program resulting in their Engineering Duty Qualification Insignia. One of the most famous EDOs include USNA Class of 1922 graduate Admiral Hyman G. Rickover (Father of the Nuclear Navy).

Some EDOs are also selected to become **salvage diving officers**. In addition to serving traditional EDO roles, these officers may also be in charge of or provide technical direction to fleet salvage operations (harbor clearance, battle damage repair, etc.), deep ocean search and recovery, and major underwater ship repairs. Salvage divers complete all the standard EDO qualification requirements as well as attend the Joint Diving Officer course and additional salvage engineering training.



Engineering Duty Officer Qualification Insignia

Aerospace Engineering Duty Officer: AEDOs provide professional management and technical direction in the entire air weapon system acquisition process from design to production and later product improvements of naval aircraft, spacecraft, and weapons. AEDOs test and evaluate new aircraft, weapons systems, and weapons in various stages of development.

Aerospace Maintenance Duty Officer: In addition to working in fleet maintenance organizations throughout the fleet, AMDOs are very much involved in all aspects of material acquisition and support as top-level Program Managers in NAVAIR and as Commanding Officers of the Naval Aviation Depots. In addition, AMDOs are involved in all aspects of material acquisition and support as top-level Program Managers in NAVAIR and as COs of the Naval Aviation Depots.

Information Warfare Community: IWC is comprised of four communities: Information Professional (IP), Cryptologic Warfare (CW), Intelligence (INTEL), and Meteorology and Oceanography (METOC). USNA midshipmen who are physically qualified can be assigned directly to a small number of Cryptologic Warfare and Information Professional billets, as well as a SWO-Option in any of the four: SWO (IP), SWO (CW), SWO (INTEL), and SWO (METOC). Once SWO-Options qualify as a Surface Warfare Officer, are within six months of promotion to O-3, and have completed specified career milestones, they will be re-designated and transferred to their IWC Community. IWC is discussed in more in depth later in the chapter.

Public Affairs Officer: The Public Affairs (PAO) community is responsible for 'Telling the Navy Story.' Navy Public Affairs comprise three functional areas:

1. Media Operations: PAOs work with media outlets to communicate with the American public.

2. Internal Communications: PAOs produce publications, briefings, and video news programs to communicate with Sailors, their families, reservists, retirees, and civilian employees.
3. Community relations: PAOs reach out to the American public through 'hands-on' programs like public tours, Congressional and VIP visits and embarks, speaking engagements, open houses, and special events. PAOs serve at sea, ashore, and in joint assignments, and are always deployed where Navy news is being made. All PAOs join the community through lateral transfer. Today there are about 190 officers in this community, the smallest in the Restricted Line.

Human Resources: *The Human Resources Community (120X) is charged with "delivering Human Resources expertise to define, recruit, develop, assign, and retain a highly-skilled workforce for the Navy Total Force mission." Its core competencies include Workforce Requirements; Training and Education Development; Personnel Management; and Recruiting.*

Foreign Area Officer: *FAOs are the Navy's maritime international engagement professionals, providing a unique combination of operational experience, cultural knowledge, and language expertise to the fleet. Directly supporting the National and Maritime Strategies, FAOs are force multipliers, forging critical global relationships through persistent and credible presence in 70 counties.*

IV. Staff Corps Communities

There are five Navy Staff Corps communities: Medical, Supply, Civil Engineer, Judge Advocate General, and Chaplain.

- **Medical Community.** All officers in the Medical, Medical Service, Dental, and Nurse Corps are licensed medical professionals and are organized under the Bureau of Medicine and Surgery.
    - **Medical Corps:** The Medical Corps consists of commissioned doctors who are responsible for maintaining the general health and medical readiness of personnel in the Navy and Marine Corps. They provide direct support to Navy and Marine Corps operational communities ashore, at sea, and on deployment. In addition, these physicians provide medical and administrative services for hospitals and clinics supporting active duty, retirees, and family members.
    - **Medical Service Corps:** This is the most highly diversified Corps within the Medical Community, and includes 2,700 officers who are specialists in clinical, scientific, and administrative health care fields. Health care scientists and clinical care specialists make up about 60 percent of the total Corps, serving in 31 different specialties including aerospace physiology, psychology, physical therapy, physician assistant, optometry, pharmacy, biochemistry, and radiation health, while health care administrators comprise the remaining 40 percent.
    - **Dental Corps:** Commissioned dentists provide dental services on shore and onboard large ships, such as aircraft carriers and amphibious ships. While on sea duty, a Dental Corps Officer is responsible for preventing and controlling dental disease, oral surgery, and supervising dental hygiene. On shore duty, dental officers may also provide a wide variety of specialty services such as orthodontics and implants. In addition, dental officers frequently advance their education through residency or expand their career paths by managing clinics or teaching. There are currently over 1,100 active duty Dental Corps Officers.
    - **Nurse Corps:** Established in 1908 by President Roosevelt, the Nurse Corps is composed of over 4,200 Active Duty and Reserve professional registered nurses from all specialties who provide quality healthcare worldwide to the active duty force, retirees, and beneficiaries, they care for many patients whose illnesses and injuries are no different from those found in civilian facilities. They also care for those who suffer from a variety of injuries and illnesses attained from the operational theater. Additionally, they are educators, researches, and executives in military medicine.
- **Supply Corps:** The mission of Naval Systems Command and the Supply Corps is to conduct and enable supply chain, acquisition, operational logistics and Sailor & family care activities with our mission partners to generate readiness and sustain naval forces worldwide to prevent and decisively win wars. Supply Corps Officers handle the supply phases of the naval logistics. The broad responsibilities of the Supply Corps are closely related to those of many executive positions in private industry. The 3,500 Supply Officers are the business managers of the Navy and they are responsible for the supply support of the ships of the active

fleet, operational units, and hundreds of naval shore installations. The most important responsibility of the Supply Corps is the worldwide, integrated Navy Supply System, which gets the Fleet what it needs, where and when it needs it.

- The Supply Corps of the United States Navy traces its beginnings to February 23, 1795 when the nation's first Purveyor of Public Supplies, Tench Francis, Jr., was appointed by President George Washington. The Supply Corps is one of the oldest staff corps in the U.S. Navy. The official motto of the Supply Corps is 'Ready for Sea' - reflecting the Supply Corps' longstanding role in sustaining warfighting.
- Supply Corps Officers are proficient in a variety of disciplines such as supply management and expeditionary logistics, inventory control, disbursement, financial management, contracting, information systems, operations analysis, material and operational logistics, fuels management, food service, and physical distribution.
- Supply Corps Purpose: To optimize the Naval Support Network to meet the Operational Readiness and Quality-of-Life Requirements of our Maritime Forces.
- Supply Corps Mission: To deliver sustained global logistics and Quality-of-Life Support to the Navy and Joint Warfighter.
- Operational Supply Departments are organized in the following manner:
    - Stock Control (S1)
        - Charged with executing the ships operating budget to include procurement of all shipboard repair parts, government purchase credit card transactions and financial services.
    - Food Service (S2)
        - Responsible for all culinary operations to include ordering, receiving, storage and preparation of meals.
    - Retail Services (S3)
        - Provides Quality of Life services such as laundry, ships store operations, vending machines and barbershop services.
    - Disbursing (S4)
        - Similar to the Disbursing Office here at USNA, shipboard office maintains the Navy Cash system onboard and holds physical US Currency for operations.

- Primary enlisted ratings that support the mission of the supply corps are:
    - *Culinary Specialist (CS):* Culinary Specialists receive extensive training in culinary arts, hotel management and other areas within the hospitality industry. Culinary Specialists provide food service catering and hospitality services for Admirals, senior government executives, and within the White House Mess for the President of the United States. This rating is responsible for all aspects of the dining (shipboard mess decks) and shore duty living areas. Culinary Specialists work in the "heart of the ship," and are vital in maintaining high crew morale on ships, construction battalions and every shore base.

    - *Logistics Specialists (LS)*: Logistics Specialist receive basic training in supply and postal related surface and aviation logistics functions. Logistics Specialists are responsible for providing exceptional customer service, operating financial accounting systems, managing inventories of repair parts and general supplies that support ships, squadrons and shore-based activities to include the Military Postal System. Advanced and technological training opportunities are available throughout your career development.

    - *Retail Specialists (RS)*: Retail Services Specialists are responsible for managing and operating all shipboard retail and service activities. These include the ship's store, vending machines, coffee kiosks (CVN units only), barber shops and laundry operations. They play a large role in the morale of the ship.

- **<u>Civil Engineer Corps:</u>** The U.S. Navy Civil Engineer Corps (CEC) was established in 1867 to build and maintain the naval shore establishment. Its officers are the Navy's uniformed professional engineers and architects responsible for executing and managing the planning, design, construction, operation, and maintenance of the Navy's shore infrastructure. CEC Officers work in one of three areas: construction

contract management, public works, or the Seabees. The Seabees consist of highly skilled personnel, schooled in both construction and defensive combat. Seabees are responsible for a wide variety of military construction and humanitarian efforts in times of peace or war, to include:

- Constructing and repairing aircraft runways and parking aprons
- Constructing munitions storage areas and large-scale camp sites
- Erecting bridges and constructing roads
- Renovating schools, medical clinics, and municipal facilities
- Repairing piers and wharves, underwater and above
- Constructing border outposts, expeditionary camps, community outreach centers, and medical clinics

- *Engineering functions are categories* of related engineer capabilities and activities grouped together to help JFCs integrate, synchronize, and direct engineer operations. These functions fall into three basic groups—combat engineering, general engineering, and geospatial engineering.
  - Combat Engineering consists of those engineer capabilities and activities that support the maneuver of land combat forces and requires close support to those forces. Combat engineering consists of three types of capabilities and activities*: mobility, counter mobility, and survivability*. Examples include combined arms breaching operations, gap crossing operations, and constructing and maintaining combat roads and trails; development of barriers, obstacles, and minefields; and construction of fighting and protective positions.
  - General Engineering consists of those engineer capabilities and activities, other than combat engineering, that modify, maintain, or protect the physical environment. Examples include the construction, repair, and maintenance of infrastructure, Class III/V storage area requirements, LOCs, and bases; protection of natural and cultural resources; terrain modification and repair; and selected explosive hazard (EH) activities
  - Geospatial Engineering consists of those engineer capabilities and activities that portray and refine data pertaining to the geographic location and characteristics of natural and constructed features and boundaries in order to provide engineering services to commanders and staffs. Examples include: terrain analysis, terrain visualization, digitized terrain products, nonstandard tailored map products, precision survey, geospatial data management, baseline survey data, identification of significant cultural sites and natural resources, facility support, and force bed down analysis.

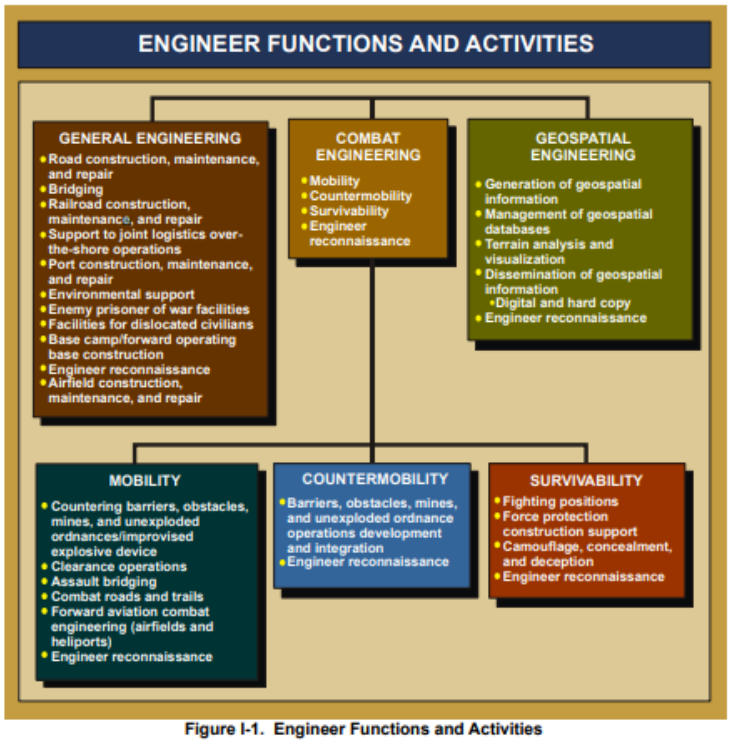
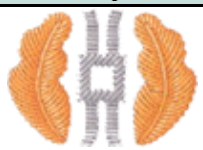


Figure I-1. Engineer Functions and Activities

- **<u>Judge Advocate General Corps:</u>** The JAG corps was established in 1967 and is composed of lawyers who provide legal services to commands, service members, and their families. The Judge Advocate General directs an organization of more than 730 judge advocates in addition to other enlisted and civilian personnel, and provides legal and policy advice to the Secretary of the Navy in all legal matters.
- **<u>Chaplain Corps:</u>** The Chaplain Corps is the Staff Corps established within the Department of the Navy to provide for and manage the delivery of religious ministry by religious ministry professionals within the Department of the Navy and, as authorized, beyond, e.g. to the USCG.
    - Chaplains are Religious Ministry Professionals endorsed by Religious Organizations accredited with the Department of Defense, to serve in the military. Each chaplain is true to his/her religious tradition, there is no 'generic' religion or worship service, while at the same time respecting the beliefs of others and cooperating with chaplains of other religious traditions. Navy chaplains serve with the Navy, Marine Corps, Coast Guard, and Merchant Marines on ship and shore, in CONUS and OCONUS. The four core capabilities of a Navy chaplain are as follows:
        - To PROVIDE religious services, teaching, pastoral counseling, and ministry according to his/her faith tradition.
        - To FACILITATE the free exercise of worship and the provision of religious needs for those of other faith traditions.
        - To CARE for all, including those of the same faith tradition, other faith traditions, or no faith tradition at all. CARE entails treating all with dignity and respect.
        - To ADVISE the Command and leaders at all levels on issues of morale, morals, ethics, spiritual well-being, and emerging religious requirements.
    - Unique to the chaplain is that ONLY the chaplain has Absolute Confidentiality. The chaplain cannot reveal what has been communicated to her/him by Sailor, Marine, or authorized civilian without the permission of the person who communicated the information.

				
Medical Corps	**Dental Corps**	**Nurse Corps**	**Medical Service Corps**	**Civil Engineer Corps**
				
Chaplain Corps (Christian)	**Chaplain Corps (Jewish)**	**Chaplain Corps (Muslim)**	**Supply Corps**	**Judge Advocate General's Corps**

V. The Limited Duty Officer and Chief Warrant Officer Programs

The Limited Duty Officer and Chief Warrant Officer programs are two separate programs that provide the Navy with officer technical managers. Both programs provide the opportunity for outstanding senior enlisted personnel to compete for a commission without the need for a college degree. Combined, these two communities make up more than eleven percent of the officer corps.

- **Limited Duty Officers (LDOs):** As officer technical managers of the Line or Staff Corps, LDOs progressively advance within broad technical fields related to their former enlisted ratings. They fill leadership and management positions at the Ensign through Captain level that require technical background and skills not attainable through normal development within other officer designators. LDOs serve as, but are not limited to serving as, division officers, department heads, OICs, XOs, and COs, ashore or afloat. *LDOs wear identical rank structure to that of Unrestricted Line officers*.
- **Navy Band Officers:** Officers in the Navy Band are Limited Duty Officers who started their careers by enlisting in the Navy Band. Enlisted personnel must be at least an E-6 in order to apply. Upon commissioning, they are assigned to one of fourteen bands, and will rotate every two to three years. Senior billets are those with the Navy Band, Washington, and the U.S. Naval Academy Band.
- **Chief Warrant Officers (CWOs):** Although intended primarily as technical specialists, CWOs may also serve as division officers, department heads, OICs, XO, and CO, ashore or afloat. Like Staff Corps officers, CWOs wear special insignia above the rank devices on their shoulder boards and sleeves to indicate their field of expertise. The ranks of CWO start at CWO2 and end at CWO5.

Chief Warrant Officer Rank Structure of the United States Navy



VI. Enlisted Sailors

In preparation for PROTRAMID and 2/C cruise, it is important for you to understand more about the enlisted Sailors with whom you will be interact with. Enlisted Sailors in the modern Navy have a higher level of training

and education than ever before. Many of our Sailors have acquired college credits and degrees either before entering the Navy or as a result of self-development. Today the Navy requires unprecedented technical proficiency and expertise in its enlisted Sailors. Officers are tasked with leading these motivated individuals and developing them into a cohesive team with mission accomplishment as the highest priority. Given the quality and diversity of these sailors, officers will find leading them both challenging and rewarding. The trust and professionalism shared between an officer and his or her Sailors starts with an appreciation and respect for the value of these individuals and a desire to know them beyond their productivity levels. Therefore, it is essential that officers learn about their Sailors, how they are trained, and how they advance.

For all branches of the military, the initial enlistment requires an eight-year service obligation. The eight years is broken into active, reserve, and/or inactive reserve service. For example, the Master at Arms rating requires a four-year active obligation, and the remaining four years will be spent in the Individual Ready Reserve (IRR) status. While in the IRR status, you are under no obligation to attend Reserve drills but you could be called back to active duty if a national need arises.

VII. Paygrade, Rating, and Rates

Every member of the Navy is either nonrated, rated, or a commissioned officer. Men and women who enlist in the Navy begin as nonrated personnel. A combination of experience and specialized training will allow them to move into a rated category and then advance through a number of levels. Rated personnel are called 'petty officers.' Nonrated and rated personnel together are referred to as 'enlisted personnel.'

Paygrade

Everyone in the Navy has a paygrade (E-1 to O-10). A **paygrade** defines a person's relative standing in the Navy and, of course, determines how much money they are paid per month. A new enlisted recruit enters the Navy as an E-1, which is the first enlisted paygrade. The most senior officer is an O-10, Admiral. Enlisted personnel advance through their paygrades by taking advancement exams (E-4 though E-7) and having their records evaluated by a selection board (E-7 through E-9).

Enlisted Ratings

A **rating** is an occupational specialty in the Navy. In order to qualify for a rating, a Sailor must work their way through the general apprenticeship levels (E-1 through E-3) or attend a service school. Personnel in paygrades E-1 through E-3 can be considered either designated or non-designated. Non-designated personnel pick one of three available Professional Apprenticeship Career Track (PACT) programs: Airman, Seaman, or Fireman. A PACT Sailor seeking to advance into a specific rating is considered a 'striker' and is required to achieve a significant level of experience and training toward a particular rating to formally recognize as a 'designated striker.' Once designated a formal rating abbreviation is added to the general rate and paygrade (i.e., BMSA, YNSR, etc.)

There are three categories of ratings: general, service, and emergency.

- General ratings are occupations for paygrades E-4 through E-9. Each general rating has a distinctive badge. Examples are OS, GM, ET.
- Service ratings are those general ratings that are subdivided into specific services. Examples are Gas-turbine systems Technician (GS), which is subdivided into GSE (electrical) and GSM (mechanical).
- Emergency Ratings can be created in times of war or national emergency and are ratings not normally needed by the Navy. There are currently no emergency ratings active today.

The following is a list of common ratings that you should know by name and abbreviation:

AB (Aviation Boatswain's Mate)
AT (Aviation Electronics Technician)
AD (Aviation Machinist's Mate)
AE (Aviation Electrician's Mate)
AO (Aviation Ordnanceman)
AS (Aviation Support Equipment Technician)
AW (Aviation Warfare Systems Operator)
HM (Hospital Corpsman)
IT (Information Systems Technician)
IS (Intelligence Specialist)
LN (Legalman)
LS (Logistics Specialist)
MA (Master-at-Arms)
MC (Mass Communications Specialist)

CS (Culinary Specialist)
CT (Cryptologic Technician)
DC (Damage Controlman)
EM (Electricians Mate)
EN (Engineman)
ET (Electronics Technician)
EOD (Explosive Ordnance Disposal Technician)
FC (Fire Controlman)
GM (Gunner's Mate)
MM (Machinist's Mate)
MU (Musician)
NC (Navy Counselor)
OS (Operations Specialist)
QM (Quartermaster)
PS (Personnel Specialist)
SO (Special Warfare Operator)
ST (Sonar Technician)
YN (Yeoman)

Enlisted Rates

Petty Officers are identified by a combination of letters and/or numbers that represent the individual's paygrade and rating. This is known as an enlisted personnel's **rate**. The first two or three letters represent the general or service rating; the number or letter(s) following indicate the paygrade. An enlisted person who identifies him/herself as BM2 Smith would be a Boatswain's Mate Second Class. The 'BM' is the general service rating and the '2' indicates the paygrade of an E-5. Examples:

HM3	Hospital Corpsman Third Class (Petty Officer)
LN2	Legalman Second Class (Petty Officer)
OS1	Operations Specialist First Class (Petty Officer)
LSC	Chief Logistics Specialist
CTTCS	Senior Chief Cryptological Technician-Technical
MMCM	Master Chief Machinist Mate

VIII. Enlisted Roles and Responsibilities

Petty Officers

In the Navy, E-4 to E-6 personnel are considered non-commissioned officers (NCOs), and are called Petty Officers. Petty Officers perform not only the duties of their specific career field but also lead junior enlisted personnel. They take responsibility for their subordinates, address grievances, inform the chain of command on matters pertaining to good order and discipline, and may even have to place personnel on report. The title Petty Officer comes from the French word *petit* meaning small. In medieval England, villages had several 'petite' or 'petty' officers who were subordinate to major officials. Thus, Petty Officers are assistants to senior officers.

Chief Petty Officers

In the Navy, E-7 to E-9 personnel are senior NCOs collectively known as the Chief's Mess. In addition to leading their Enlisted Sailors, Chiefs are specifically tasked, in writing, with the duty of training Junior Officers (Ensign, Lieutenant Junior Grade (J.G.), Lieutenant, and Lieutenant Commander). They have separate berthing and dining facilities (where feasible), wear khaki uniforms similar in appearance to a commissioned officer's, and perform separate duties from other enlisted Sailors. Advancement to Chief Petty Officer (E-7) or above requires selection by a promotion board comprised of Chief Petty Officers and presided by a Navy Captain. Beyond the normal examination score, a technical exam determines an E-6's board eligibility. The proper form of address to a Chief Petty Officer is 'Chief,' 'Senior Chief,' or 'Master Chief.'

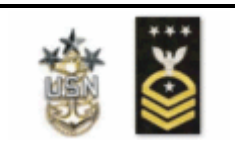
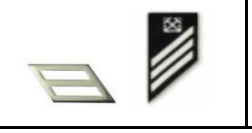
Command Master Chief (CMC)

After obtaining Master Chief Petty Officer, service members may choose to further their career by becoming a Command Master Chief Petty Officer (CMC). A CMC is considered to be the senior-most enlisted service member within a command, and is the special assistant to the Commanding Officer in all matters pertaining to the health, welfare, job satisfaction, morale, utilization, advancement and training of the command's enlisted personnel. CMC insignia are similar to the insignia for Master Chief, except that the rating symbol is replaced by an inverted five-point star, reflecting a change in their rating.

IX. Enlisted Uniform Insignia

Enlisted personnel will wear rating badges or insignias on all uniforms with the exception of non-rated personnel when they wear utilities and coveralls. Insignias and badges with no rating specific markings will be worn on utilities or coverall for E-4 personnel and above. Personnel in paygrades E-7 through E-9 wear collar devices (i.e., gold anchors with USN and fouled chain). A Senior Chief will have one Silver Star above the anchor, and a Master Chief will have two silver stars. When wearing either the peacoat or outer jacket, rating badges or collar devices will be worn with the exception of non-rated personnel. An E-4 (Petty Officer Third Class) wears one chevron on their rating badge, an E-5 (Petty Officer Second Class) has two, and an E-6 (Petty Officer First Class) has three.

The insignia shown below depict that a Boatswain's Mate (BM). The crossed anchors below the 'crow' identify the individual as a BM on the rating badge. Notice the star in the place of the anchors on the insignia of the Master Chief Petty Officer of the Navy. The star shows the individual is a CMC.

Non-Commissioned Officer and Enlisted Rate Structure of the United States Navy				
Master Chief Petty Officer of the Navy	Master Chief Petty Officer	Senior Chief Petty Officer	Chief Petty Officer	Petty Officer First Class
E-9	E-9	E-8	E-7	E-6
				
Petty Officer Second Class	Petty Officer Third Class	Seaman	Seaman Apprentice	Seaman Recruit
E-5	E-4	E-3	E-2	E-1
				No insignia

Personnel in paygrades E-3 and below are identified by their diagonal stripes and the color assigned to their prospective community.

General Apprenticeships	Color of Stripes
Seaman	White on Black Background/Black on White Background
Airman	Green Stripes on Black or White Background
Fireman	Red Stripes on Black or White Background
Hospital Corpsman	White on Black Background/Black on White Background
Constructionman	Light Blue Stripes on Black or White Background

X. Naval Enlisted Classification (NEC) Codes

The Navy Enlisted Classification (NEC) system, of which the NEC coding system is a part of, supplements the enlisted rating structure in identifying personnel on active or inactive duty with special skills and billets in manpower authorizations that require these skills. NEC codes identify a non-rating wide skill, knowledge, aptitude, or qualification that must be documented to identify both people and billets for management purposes. For example, not all Boatswain's Mates (BM) are qualified LCAC Loadmaster's. They would go through the qualification process and earn the NEC BM-700B. This tells the detailer – the administrative personnel at Navy Personnel Command (NAVPERSCOM) in Millington, TN, who match individuals to specific assignments (billets) in the Navy- that this particular Sailor can be assigned an LCAC Loadmaster billet anywhere in the Navy. With few

exceptions, NECs are assigned to personnel by the Enlisted Personnel Management Center (EPMAC) in New Orleans.

There are five types of NEC codes: Entry Career Field, Rating Career Field, Special Career Field, Tracking, and Planning.

XI. Service Schools

For some ratings, graduation from a particular service school is necessary for advancement. Selection for a service school depends on the rate, time in service, current duty assignment, school quotas, and the operational schedule of the Sailor's unit. The five types of enlisted service schools are:

- **Class A –** Provides the basic technical knowledge required for job performance and further specialized training. A NEC may be awarded to identify the skill.
- **Class C –** Advanced skills and techniques needed to perform a particular job are taught. A NEC may also be awarded to identify the level of skill.
- **Class E –** Designated for professional education leading to an academic degree.
- **Class F –** Trains fleet personnel who are en route to, or are members of ships' companies. Also provides individual training such as refresher, operator, maintenance, or technical training of less than 13 calendar days. A NEC is not awarded.
- **Class R –** This is the basic school that provides initial training after enlistment, also known as 'boot camp' or 'recruit training.' It prepares the recruit for early adjustment to military life by teaching basic skills and knowledge about military subjects. Class R schooling for all recruits is conducted at Recruit Training Center, Great Lakes, IL.

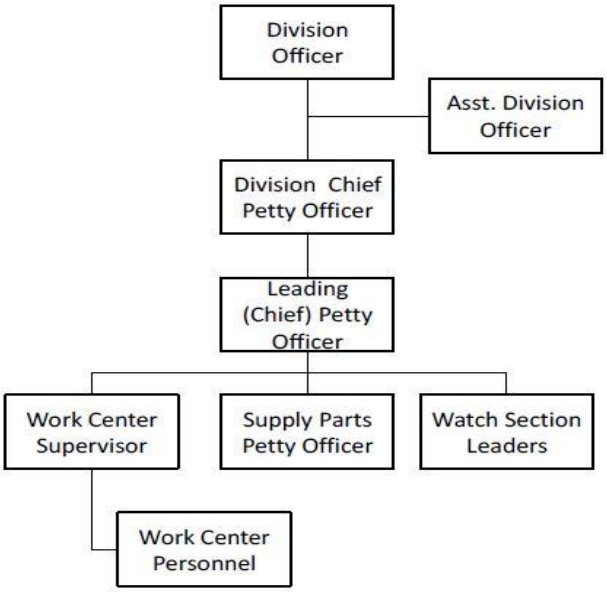
XII. Enlisted Advancement

The Navy Advancement Center (N3 Department) is responsible for Navy-wide administration of the Navy Enlisted Advancement System. Advancement in the Navy means greater responsibility, increased pride, better pay, and more privileges. Advancements to Petty Officer in the Navy are made through centralized competition based on a Final Multiple Score (FMS) process with Sailor evaluations and a measure of rating knowledge as the primary elements. The general requirements for advancement are:

- Recommendation by the Commanding Officer/OIC
- Advancement to E-2 and E-3 is based on Time-In-Rate (TIR), 9 months in length, and performance.
- Advancement to E-4 through E-9 is based on a combination of time in service, TIR, awards, performance (evaluations), and score on the annual/semi-annual exams held in March and September for E-4 through E-6. For E-7 the advancement exam is held annually, in January (determines board eligibility). A selection board is convened in July and results are posted in early August. For E-8 and E-9, advancement is based on performance and board selection.
- Be in proper path of advancement
- Fulfill special requirements (citizenship, security, medical, ASVAB) for certain ratings.
- Successfully complete Service School; if required
- Meet all physical readiness/body fat standards per OPNAVINST 6110.1(series)
- Eligibility documented in electronic service record entry
- Career Waypoint-PACT (C-WAY) Approval
- Complete Selectee Leadership Course

The advancement-in-rate examination is a tool used, as part of the Final Multiple Score, to help rank qualified candidates on the basis of rating and professional military knowledge at the next higher rate. Sailors are ranked within their rating/paygrade, and the number of Sailors advanced is based on Navy needs.

Typical Divisional Chain of Command



XIV. U.S. Navy Reserve

Representing 20 percent of the total Navy force, the Navy Reserve plays a larger and more critical role than ever in the Navy's routine operations. Today the Navy Reserve is an important component of the Navy's balanced and affordable force. Every Navy officer should have a basic understanding of the organization and role the Navy Reserve plays in meeting peacetime commitments and wartime requirements.

History of the Navy Reserve

The U.S. Navy Reserve was officially established on 3 March 1915, although historians trace the advent of the Reserve to colonial days and the Revolutionary War. Predecessors of the citizen-sailors of today include the members of naval militias in Massachusetts (1888) and then New York, Pennsylvania, and Rhode Island (1889). In 1891 the Office of Naval Militia was established in the Navy Department. Six years later, sixteen states had naval militia whose personnel served with the Regular Navy during the Spanish-American War.

The Division of Naval Affairs replaced the Office of Naval Militia in the Navy Department by 1914. During World War I, approximately 30,000 reserve officers and 300,000 reserve enlisted members served on active duty at sea and ashore.

In the period between World War I and II, there were no Ready Reserve units as we know them today, and no reserve officers on extended active duty. Reserve officers trained during voluntary two-week active-duty tours on combatant ships or at shore stations. Just prior to World War II, some junior officers went on active duty following their graduation from NROTC, so that in the opening days of the war a few members of the Reserve were serving in fleet units. After Pearl Harbor, larger numbers of reservists helped man and command the Navy's ships, submarines, and aircraft; by the end of the war, four out of five Navy personnel were reservists. Many reservists remained in the Navy after the war, either on extended active duty as reservists or as members of the Regular Navy. Shortly after the end of the war, the Navy set up the framework for the modern-day Navy Reserve by establishing the Naval Air Reserve Training Command and the Naval Surface Reserve Training Command.

During the Korean War, many reservists returned to active duty for the duration of the war. During the conflict in Vietnam, the President decided not to call up the Reserve, except for selected air and Seabee units, but to use the draft to obtain extra manpower. This decision resulted in the widespread perception that the Reserve had become largely irrelevant to the national defense.

In the early 1970s, in response to a Reserve force that had fallen far behind the active forces in its training and equipment readiness, the "Total Force" concept was born. This plan recognized that the Navy Reserve was likely to

be an important part of any response to a future national emergency; and that modern equipment and training were essential to ensure the Navy Reserve could rapidly and seamlessly integrate into the fleet.

During the 1980s the Department of Defense introduced a "horizontal integration" strategy, which assigned reservists to train with the active commands they would serve with in time of national emergency. During this period the Navy Reserve increased in size and received the most modern equipment, including F-14 Tomcat and F/A-18 Hornet aircraft, HH-60 Seahawk helicopters, and FFG7-class-guided missile frigates. Horizontal integration remains a key feature of today's Navy Reserve training and mobilization strategy.

The first major test of the "Total Force" concept came during the Desert Shield/ Desert Storm Operations of 1990-91. A large-scale call-up of some 22,000 medical, logistics, Seabee, and other reserve personnel demonstrated that the reserve forces could indeed be rapidly mobilized and deployed in response to a crisis situation.

Following the up September 2001 terrorist attacks, more than 20,000 Navy Reservists were mobilized to take part in Operations Noble Eagle (DoD support to homeland security), Enduring Freedom, and Iraqi Freedom. In 2005 Congress officially re-designated the Naval Reserve as the Navy Reserve.

Components of the Reserve

In 2010 the Navy Reserve consisted of approximately 690,000 personnel in three components: the Ready Reserve, which is the primary source of personnel for mobilization, the Standby Reserve, consisting of individuals who have a temporary disability or hardship and those who hold key defense related civilian jobs, and the Retired Reserve. The majority of reservists are in the latter two components, which are at a lower level of readiness, and subject to being called for active duty only in the event of a declared war or other national emergency. Without the concurrence of Congress, the President may order members of the Ready Reserve to active-duty status during war or national emergency.

All individuals obligated to serve in the Navy Reserve are initially assigned to the Ready Reserve, and most remain in the Ready Reserve for the remainder of their service obligation. There are three groups in the Ready Reserve: the Selected Reserve (SELRES), Full Time Support (FTS), and the Individual Ready Reserve (IRR).

SELRES members hold valid mobilization billets and drill for pay. The First Call program provides an expedited mechanism to activate a small number of SELRES members with critical skills, such as crisis action team members, in the early stages of developing crises. SELRES members who elect to fill First Call billets can expect to report to their assigned duty stations within one to seven days of notification and serve on active-duty status in the training and administration of the Navy Reserve Force program.

FTS members serve on active-duty status in the training and administration of the Navy Reserve Force program; the Canvasser Recruiter (CANREC) program includes FTS reservists temporarily recalled to active duty to serve as recruiters.

The IRR includes members of the Voluntary Training Unit (VTU) and Active Status Pool (ASP). VTU members participate in monthly drills for which they receive retirement credit but are not paid. ASP members do not participate in monthly drills but may accrue retirement credits through correspondence courses.

Drilling reservists, the IRR, and some standby reservists are considered to be on "active status:' This term, not to be confused with the term "active duty;' denotes personnel who are eligible to train (sometimes without pay) as well as to earn points toward retirement, and who may be considered for advancement or promotion. These are also the first reservists called to active duty upon mobilization. Conversely, reservists who are not on "active status" may not receive drill pay, earn retirement points, or be considered for promotion.

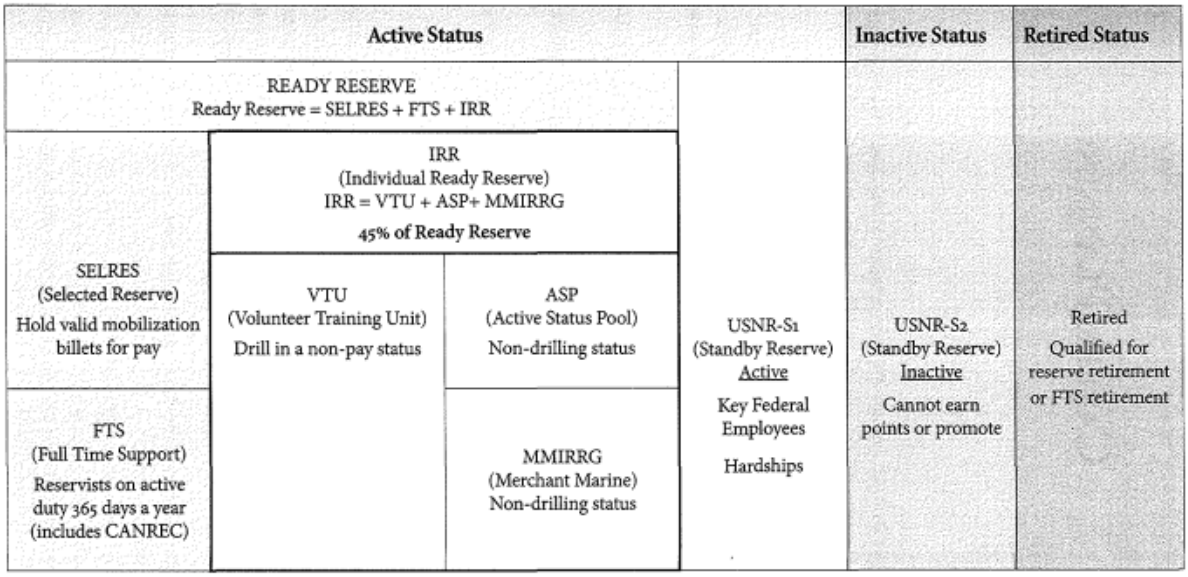


Illustration of the relationships between the various categories of the Navy Reserve

Mission and Organization of the Navy Reserve

The mission of the Navy Reserve is to provide strategic depth and deliver the full range of operational capabilities to the Navy and Marine Corps team as well as to Joint forces. The Navy Reserve can provide a broad range of cost-effective, adaptable military capabilities and civilian skills to fulfill mission requirements.

The Navy Reserve is commanded by a vice admiral, with a subordinate rear admiral in charge of Navy Reserve Forces Command. Types of Navy Reserve assignments include aviation, engineering, information warfare, public affairs, intelligence, special operations, surface warfare, and logistics.

Transfer to the Navy Reserve from Active Duty. Many officers who leave active duty elect to retain their commissions in the Navy Reserve. In fact, acceptance of a Reserve Commission is a prerequisite for acceptance of separation pay for officers who are involuntarily discharged prior to reaching retirement eligibility.

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CHAPTER 3: MISSION OF THE U.S. NAVY: TACTICS, OPERATIONS, STRATEGY, & THE JOINT ENVIRONMENT

I. Mission

The United States is a maritime nation, and the U.S. Navy protects America at sea. Alongside our allies and partners, we defend freedom, preserve economic prosperity, and keep the seas open and free.

II. Ethos

We are the United States Navy, our Nation's sea power – ready guardians of peace, victorious in war.

We are professional Sailors and civilians – a diverse and agile force exemplifying the highest standards of service to our Nation, at home and abroad, at sea and ashore.

Integrity is the foundation of our conduct; respect for others is fundamental to our character; decisive leadership is crucial to our success.

We are a team, disciplined and well prepared, committed to mission accomplishment. We do not waver in our dedication and accountability to our Shipmates and families.

We are patriots, forged by the Navy's core values of Honor, Courage, and Commitment. In times of war and peace, our actions reflect our proud heritage and tradition.

We defend our Nation and prevail in the face of adversity with strength, determination, and dignity.

We are the United States Navy.

III. The Chief of Naval Operation's Vision

The Chief of Naval Operations (CNO), Admiral Lisa Franchetti, has provided her priorities for the Navy with the publication of "America's Warfighting Navy".

The CNO outlines the Who, What, and Where of the Navy:

- ***Who We Are.*** We are the United States Navy, the most powerful navy in the world. We are the Sailors and Civilians who have answered our Nation's call to service. We are Americans who embody character, competence, and dedication to our mission. Our identity is forged by the sea and we serve with honor, courage, and commitment.
- ***What We Do.*** We are here to preserve the peace, respond in crisis, and win decisively in war. We operate far forward, around the world and around the clock, from the seabed to space, in cyberspace, and in the information environment to promote our Nation's prosperity and security, deter aggression, and provide options to our nation's leaders. We deliver power for peace, but are always postured and ready to fight and win as part of the Joint Force and alongside our Allies and partners.
- ***Where We Are Going.*** The threats to our nation and our interests are real and growing. The strategic environment has changed; gone are the days of operating from a maritime sanctuary against competitors who cannot threaten us. The National Defense Strategy makes clear that we must defend our homeland, deter strategic attack, deter and be prepared to prevail in conflict against the People's Republic of China, and meet the acute challenge of an aggressive Russia and other persistent threats. Our adversaries have designed their militaries to overcome our traditional sources of strength. We must move rapidly to stay ahead and continuously create warfighting advantages. We must think, act, and operate differently, leveraging wargaming and experimentation to integrate conventional capability with hybrid, unmanned, and disruptive technologies. Tomorrow's battlefield will be incredibly challenging and complex. To win decisively in that environment, our Sailors must be the best warfighters in the world with the best systems, weapons, and platforms to ensure we can defeat our adversaries. We will put more players on the field—platforms that are ready with the right capabilities, weapons and sustainment, and people who are ready with the right skills, tools, training, and mindset.

Our Priorities

Warfighting: Deliver Decisive Combat Power. We will view everything we do through a warfighting lens to ensure our Navy remains the world's preeminent fighting force. We will prioritize the readiness and capabilities required to fight and win at sea, and the logistics and shore support required to keep our Navy fit to fight. We recognize that we will never fight alone. We will advance naval integration with the Marine Corps, and synchronize and align our warfighting efforts with the Joint Force. We will design and drive interoperability with our Allies and partners to deliver combined lethality.

Warfighters: Strengthen the Navy Team. We will use the principles of mission command to empower leaders at all levels to operate in uncertain, complex, and rapidly changing environments, ready to take initiative and bold action with confidence. We will build strong warfighting teams, recruiting and retaining talented people from across the rich fabric of America. We will provide world-class training and education to our Sailors and Civilians, honing their skills and giving them every opportunity to succeed. We will ensure our quality of service meets the highest standards, and we will look after our families and support networks, who enable us to accomplish our warfighting mission.

Foundation: Build Trust, Align Resources, Be Ready. We will earn and reinforce the trust and confidence of the American People every day. We will work with Congress to field and maintain the world's most powerful Navy and the infrastructure that sustains it. We will team with industry and academia to solve our most pressing challenges. We will cooperate with the interagency to bolster integrated deterrence. We will align what we do ashore with the warfighting needs of our Fleet.

IV. Operational Mission Areas

Navy ships, staffs, and reserve components are designed and/or organized to perform one or more mission areas. Mission areas define how the Navy executes naval warfare. Navy mission areas are continuously evolving as new weapons, sensors, and capabilities are introduced into the maritime domain. Listed below are the Navy's operational mission areas.

1. **AMPHIBIOUS WARFARE** (AMW). Amphibious Warfare involves military operations launched from the sea by an amphibious force (AF), embarked in ships or craft with the primary purpose of introducing a landing force (LF) ashore to accomplish the assigned mission. An AF is an amphibious task force (ATF) and an LF together with other forces that are trained, organized, and equipped for amphibious operations.
2. **ANTISUBMARINE WARFARE** (ASW). Operations conducted with the intention of denying the enemy the effective use of submarines.
3. **AIR WARFARE** (AW). The detection, tracking, destruction, or neutralization of enemy air platforms and airborne weapons, whether launched by the enemy from air, surface, subsurface, or land platforms.
4. **BALLISTIC MISSILE DEFENSE** (BMD). All active and passive measures designed to detect, identify, track, and defeat attacking ballistic missiles (and entities), in both strategic and theater tactical roles, during any portion of their flight trajectory (boost, post-boost, midcourse, or terminal) or to nullify or reduce the effectiveness of such attack.
5. **COMMAND, CONTROL, AND COMMUNICATIONS** (CCC). Providing communications and related facilities for coordination and control of external forces, and control of own unit's capabilities.
6. **EXPEDITIONARY WARFARE** (EXW). A military operation conducted by an armed force to accomplish a specific objective in a foreign country. Expeditionary Operations encompass the entire range of military operations, from foreign humanitarian assistance to forcible entry. The defining characteristic of expeditionary operations is the projection of force into a foreign setting. Includes Naval Special Warfare, Mine Warfare, Amphibious Warfare, Navy Expeditionary Combat, and Sea Basing.
7. **INFORMATION OPERATIONS** (IO). The integrated employment of the core capabilities of electronic warfare, computer network operations, psychological operations, military deception, and operations security, in concert with specified supporting and related capabilities, to influence, disrupt, corrupt, or usurp adversarial human and automated decision making while protecting our own.
8. **INTELLIGENCE OPERATIONS** (INT). The variety of intelligence and counterintelligence tasks that are carried out by various intelligence organizations and activities within the intelligence process. Intelligence operations include planning and direction, collection, processing and exploitation, analysis and production, dissemination and integration, and evaluation and feedback.

9. **MINE WARFARE** (MIW). The strategic, operational, and tactical use of mines and mine countermeasures. Mine warfare is divided into two basic subdivisions: the laying of mines to degrade the enemy's capabilities to wage land, air, and maritime warfare and the countering of enemy-laid mines to permit friendly maneuver or use of selected land or sea areas.
10. **MOBILITY** (MOB). A quality or capability of military forces that permits them to move from place to place while retaining the ability to fulfill their primary mission.
11. **STRIKE WARFARE** (STW). Naval operations to destroy or neutralize enemy targets ashore, including attacks against strategic or tactical targets, such as manufacturing facilities and operating bases, from which the enemy is capable of conducting or supporting air, surface, or subsurface operations against friendly forces.
12. **SURFACE WARFARE** (SUW). That portion of maritime warfare in which operations are conducted to destroy or neutralize enemy naval surface forces and merchant vessels.

V. Strategic Mission

National Security Strategy (NSS)

In October 2022, President Biden's Administration released the 2022 National Security Strategy articulating three mational interests, one overall goal for the strategy, and three lines of effort for achieving that goal.

National Interests

- "**Protect the security of the American people**"
- "**Expand economic prosperity and opportunity**"
- "**Realize and defend the democratic values at the heart of the American way of life**"

Overall Goal

"**Our goal is clear—we want a free, open, prosperous, and secure international order.** We seek an order that is free in that it allows people to enjoy their basic, universal rights and freedoms."

Lines of Effort

- "**Invest** in the underlying sources and tools of American power and influence"
- "**Build** the strongest possible coalition of nations to enhance our collective influence to shape the global strategic environment and to solve shared challenges;"
- "**Modernize and strengthen** our military so it is equipped for the era of strategic competition with major powers, while maintaining the capability to disrupt the terrorist threat to the homeland"

National Defense Strategy (NDS)

In October 2022, the Secretary of Defense, Secretary Austin, published our National Defense Strategy. As the former Deputy Secretary, Pat Shanahan, explains, "The NDS builds upon the President's National Security Strategy, and is the living framework that will drive DoD plans, organization, and activities." It is the Department of Defense's enduring mission to provide combat-credible military forces needed to deter war and protect the security of our nation. The DOD will focus on safeguarding and advancing vital US national interests. We will work along side other agencies and departments to:

- ***Protect the security of the American people***
- ***Expand economic prosperity anmd opportunity***
- ***Realize and defend the values at the heart of American way of life***

DOD Priorities

- **Defending the homeland, paced to the growing multi-domain threat posed by the People's Republic of China (PRC)**
- **Deterring strategic attacks against the United States, Allies, and partners**
- **Deterring aggression, while being prepared to prevail in conflict when necessary – prioritizing the PRC challenge in the Indo-Pacific region, then the Russia challenge in Europe**
- **Building a resilient Joint Force and defense ecosystem**

VI. National Military Structure

President of the United States (POTUS)

The President of the United States serves as the Commander in Chief (CINC) of all U.S. military forces. The President is responsible to the citizens of the United States for maintaining a military that performs our nation's security needs.

Secretary of Defense (SECDEF)

The Secretary of Defense is the principal defense policy adviser to the President and is responsible for the formulation and execution of general defense policy. Subordinate to the Secretary of Defense are the individual service secretaries, including the Secretary of the Navy.

Joint Chiefs of Staff (JCS)

The Joint Chiefs of Staff advise the CINC. There are eight four-star officers on the Joint Chiefs of Staff:

1. Chairman of the Joint Chiefs of Staff	Gen Charles Browns, Jr., USAF
2. Vice-Chairman of the Joint Chiefs of Staff	ADM Christopher Grady, USN
3. Commandant of the Marine Corps	Gen Eric Smith, USMC
4. Chief of Naval Operations	ADM Lisa Franchetti, USN
5. Chief of Staff of the Army	Gen Randy George, USA
6. Chief of Staff of the Air Force	Gen David Allvin, USAF
7. Chief of the National Guard Bureau	Gen Daniel R. Hokanson, ARNG
8. Chief of Space Operations	Gen B. Chance Saltzman, USSF

The Chairman is the principal military adviser to the President, Secretary of Defense, and the National Security Council (NSC); however, all JCS members are military advisers by law. Since the National Security Act of 1947, the Joint Chiefs of Staff have served as planners and advisers, although they have no executive authority to command combatant forces.

National Security Council (NSC)

The National Security Act of 1947 was the first definitive legislative statement "to provide for the effective strategic direction of the armed forces and for their operation under unified control and for their integration into an efficient team of land, naval, and air forces." The act went on to say that it was the responsibility of the Joint Chiefs of Staff to "establish unified commands in strategic areas when such unified commands are in the interest of national security," and the President would establish unified and specified combatant commands to perform military missions.

Thus, one outcome was the establishment of the National Security Council to consider national security issues that require Presidential decision. The National Security Council is chaired by the President. Its regular attendees (both statutory and non-statutory) include:

1. The Vice President
2. The Secretary of State
3. The Secretary of the Treasury
4. The Secretary of Defense
5. The Secretary of Energy
6. National Security Advisor (NSA)
7. The Chairman of the Joint Chiefs of Staff (CJCS)
8. Director of National Intelligence (DNI)

VII. Department of the Navy Leadership

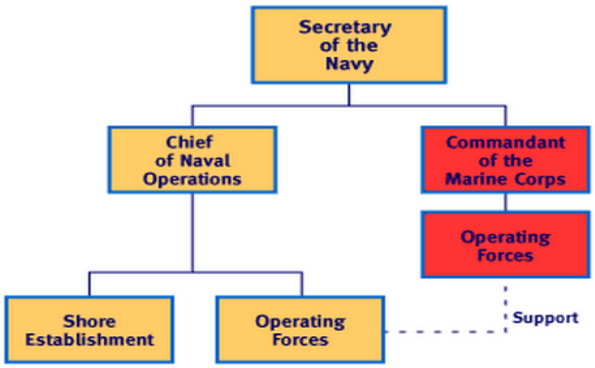
Secretary of the Navy (SECNAV). The Secretary of the Navy has authority over both the Navy and Marine Corps. He is responsible for conducting all the affairs of the Department of the Navy, including recruiting, organizing, supplying, equipping, training, mobilizing, and demobilizing. The Secretary also oversees the construction, outfitting, and repair of naval ships, equipment, and facilities.

Chief of Naval Operations (CNO). The Chief of Naval Operations (CNO) is the senior military officer in the Navy. The CNO is a four-star admiral and is responsible to the Secretary of the Navy for the command, utilization of resources and operating efficiency of the operating forces of the Navy and of the Navy shore activities assigned by the Secretary. The CNO is responsible for manning, training, and equipping the naval force.

A member of the Joint Chiefs of Staff, the CNO is the principal naval advisor to the President and to the Secretary of the Navy on the conduct of war, and is the principal advisor and naval executive to the Secretary on the conduct of naval activities by the Department of the Navy. Assistants are the Vice Chief of Naval Operations (VCNO), the Deputy Chiefs of Naval Operations (DCNOs) and a number of other ranking officers. These officers and their staffs are collectively known as the Office of the Chief of Naval Operations (OPNAV).

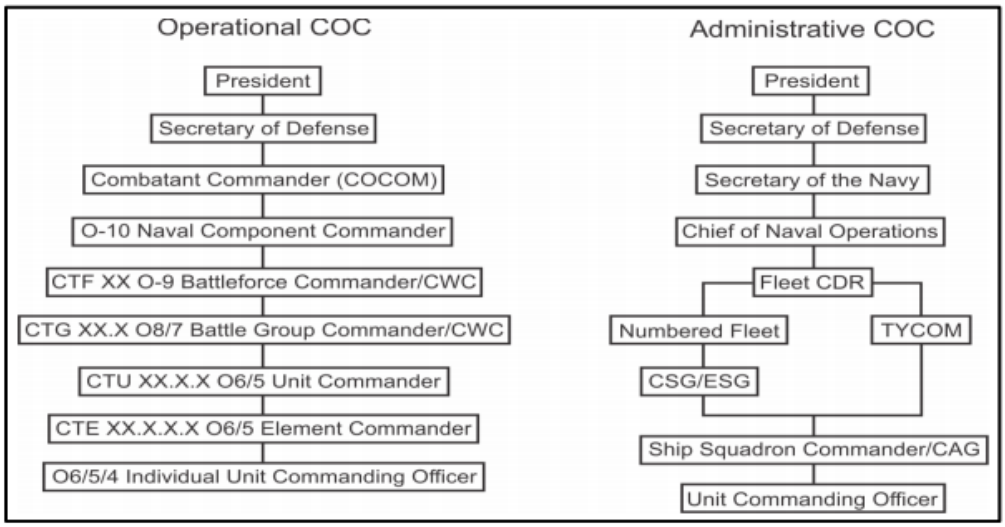
Commandant of the Marine Corps (CMC). The Commandant of the Marine Corps (CMC) is the senior military officer in the Marine Corps. The Commandant is a four-star general and is responsible to the Secretary of the Navy for the command, utilization of resources, and operating efficiency of the operating forces of the Marine Corps.

A member of the Joint Chiefs of Staff, the CMC is the principal Marine advisor to the President and to the Secretary of the Navy on the conduct of war, and is the principal advisor and Marine executive to the Secretary on the conduct of USMC activities.



VIII. Chains of Command

The President and the Secretary of Defense (SecDef) exercise authority, direction, and control of the Armed Forces through two distinct chains of Command and Control (C2). One branch runs from the President, through SecDef to the Component Commanders (CCDRs) for missions and forces assigned to their commands – operational chain of command. For purposes other than the operational direction of the CCDRS, the chain of command runs from the President to SecDef to the Secretaries of the Military Departments and, as prescribed by the Secretaries, to the commanders of Military Service forces – administrative chain of command.



Operational Chain of Command

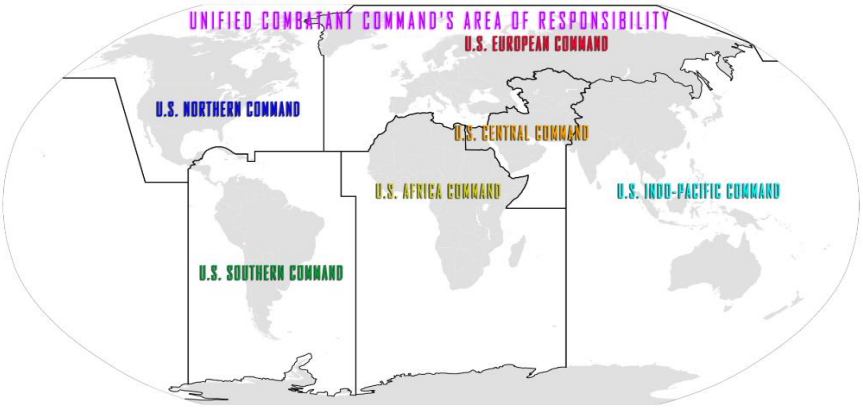
The operational chain of command is tasked with using the forces provided by all four services to carry out the orders of the National Command Authority (NCA). **The NCA consists only of the POTUS and the SecDef or their duly deputized alternates or successors.** The Navy's operational chain of command is:

1. NCA (POTUS and SecDef)
2. Unified Combatant Commander (COCOM) – Operational commanders by geographic area of responsibility (AOR). (i.e. INDO-PACOM)
3. Subordinate Component Commander – Responsible to Unified Commanders for the employment of forces/capabilities in the respective AOR. (i.e. COMUSPACFLT)
4. Numbered Fleet Commander – Responsible for operational naval forces supporting the Component Commanders. (e.g. 2nd, 3rd, 4th, 5th, 6th, 7th, and 10th Fleets)
5. Task Force Commander – Subordinate to the Numbered Fleet Commander and responsible for the planning and execution of operations to achieve military objectives. (i.e. CTF-XX where the first digit would indicate the Numbered Fleet and the second digit would indicate the specific Task Force)
6. Task Group Commander – Subordinate to the Task Force Commander. A Carrier Strike Group (CSG) or Expeditionary Strike Group (ESG) Commander. (i.e. CTG-XX.X where the last digit would indicate the Task Group)
7. Task Unit Commander – Functional Warfare Commanders generally within the CSG/ESG. (i.e. CTU-XX.X.X where the last digit would indicate the Task Unit)
8. Task Element Commander – An individual platform or group of platforms (ships, aircraft, etc.) with a special purpose such as a Surface Action Group (SAG). (CTE-XX.X.X.X where the last digit would indicate the Task Element)

Administrative Chain of Command

The administrative chain of command is tasked with **manning, training, and equipping forces** and is responsible for personnel management, supply, services, maintenance, certification, and other matters not directly related to the operational chain of command. This chain of command includes the CNO, Fleet Commanders, and individual unit commander.

IX. Unified Combatant Commands



Unified Combatant Commands (CCMDs) are composed of forces from two or more services, have broad and continuing missions, and are normally organized on a geographical basis. There are currently eleven unified commands; six are geographic (Geographic Combatant Commands – GCC) and five are functional. They are listed below along with the headquarters (HQ) locations.

Geographic:

- U.S. European Command (USEUCOM) – Patch Barracks in Stuttgart, Germany
- U.S. Indo-Pacific Command (USINDOPACOM) – Camp H. M. Smith in Honolulu, HI
- U.S. Southern Command (USSOUTHCOM) – Miami, FL
- U.S. Central Command (USCENTCOM) – MacDill AFB in Tampa, FL
- U.S. Africa Command (USAFRICOM) – Kelley Barracks in Stuttgart, Germany
- U.S. Northern Command (USNORTHCOM) – Peterson SFB in Colorado Springs, CO

Functional:

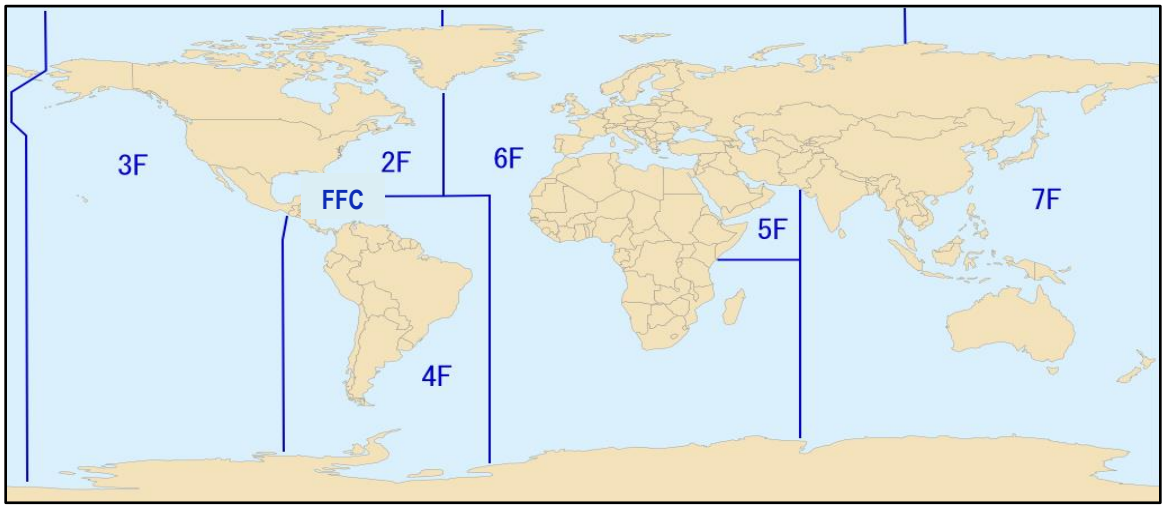
- U.S. Special Operations Command (USSOCOM) – MacDill AFB in Tampa, FL
- U.S. Space Command (USSPACECOM) – Peterson SFB in Colorado Springs, CO
- U.S. Transportation Command (USTRANSCOM) – Scott AFB in St. Clair County, IL
- U.S. Strategic Command (USSTRATCOM) – Offutt AFB in Omaha, NE
- U.S. Cyber Command (USCYBERCOM) – Fort Meade, MD

X. Numbered Fleets

As previously stated, Combatant Commanders (CCDRs) have subordinate Component Commanders responsible for employment of their forces in the respective AOR. Below the Component Commanders are Numbered Fleet Commanders. The graph below depicts alignment of those Fleet Commanders with their respective area of operation (AO), headquarter (HQ) location, and Combatant Command (CCMD).

Fleet	Area of Operation	Headquarters	CCMD
SECOND	U.S. East Coast and Northern Atlantic	Norfolk, Virginia	NORTHCOM
THIRD	Eastern and Central Pacific	San Diego, California	INDOPACOM
FOURTH	Caribbean Ocean, surrounding waters of Central and South America	Mayport, Florida	SOUTHCOM
FIFTH	Middle East (Red Sea, Arabian Sea, Persian Gulf)	Manama, Bahrain	CENTCOM
SIXTH	Mediterranean Sea	Naples, Italy	EUCOM
SEVENTH	Western Pacific and Indian Ocean	Yokosuka, Japan	INDOPACOM
TENTH	Cyber Warfare	Fort Meade, Maryland	CYBERCOM

In 2011, Second Fleet was disestablished and many of its assets and responsibilities were merged into USFF Command. In July 2018, CNO Adm. John Richardson reestablished U.S. Second Fleet headquartered out of Norfolk, VA. Commander, Second Fleet, exercises operational and administrative authorities over assigned ships, aircraft, and landing forces on the East Coast and northern Atlantic Ocean, ultimately reporting to USFF.



XI. Armed Forces of the United States

U.S. Army Mission: *To deploy, fight and win our nation's wars by providing ready, prompt and sustained land dominance by Army forces across the full spectrum of conflict as part of the joint force.*

U.S. Air Force Mission: *The Department of the Air Force and the U.S. Air Force were established in 1947 by the National Security Act, which severed the Air Force from the Army. The Air Force includes air combat, missile, and service forces. It is organized, trained, and equipped for prompt and sustained offensive and defensive combat operations in the air. The mission of the United States Air Force is to fly, fight and win - airpower anytime, anywhere.*

U.S. Space Force Mission: *Secure our Nation's Interests in, from, and to Space***.** *The USSF is responsible for organizing, training, and equipping Guardians to conduct global space operations that enhance the way our joint and coalition forces fight, while also offering decision makers military options to achieve national objectives.*

U.S. Coast Guard Mission: *The United States Coast Guard ensures our Nation's maritime safety, security and stewardship through Maritime Law Enforcement, Maritime Response, Maritime Prevention, Marine Transportation System Management, Maritime Security Operations, and Defense Operations.*

XII. Doctrine of the Armed Forces of the United States

The purpose of joint doctrine is to enhance the operational effectiveness of joint forces by providing fundamental principles that guide the employment of US military forces toward a common objective.

As a nation, the US wages war employing all instruments of national power— diplomatic, informational, military, and economic. The President employs the Armed Forces of the United States to achieve national strategic objectives. The Armed Forces of the United States conduct military operations as a joint force. "Joint" connotes activities in which elements of two or more Military Departments participate. Joint matters relate to the integrated employment of US military forces in joint operations, including matters relating to:

- National military strategy (NMS)
- Deliberate and crisis action planning
- Command and control (C2) of joint operations
- Unified action with Department of Defense (DOD) and interagency partners. The capacity of the Armed Forces of the United States to operate as a cohesive joint team is a key advantage in any operational environment. Unity of effort facilitates decisive unified action focused on national objectives and leads to common solutions to national security challenges.

Interoperability: Unified action demands maximum interoperability. The forces, units, and systems of all Services must operate together effectively, in part through interoperability. This includes joint force development; use of joint doctrine; the development and use of joint plans and orders; and the development and use of joint and/or interoperable communications and information systems. It also includes conducting joint training and exercises. It concludes with a materiel development and fielding process that provides materiel that is fully compatible with and complementary to systems of all Services. A key to successful interoperability is to ensure that planning processes are joint from their inception.

Levels of Warfare

While the various forms and methods of warfare are ultimately expressed in concrete military action, the three levels of warfare—strategic, operational, and tactical—link tactical actions to achievement of national objectives. There are no finite limits or boundaries between these levels, but they help commanders design and synchronize operations, allocate resources, and assign tasks to the appropriate command. The strategic, operational, or tactical purpose of employment depends on the nature of the objective, mission, or task.

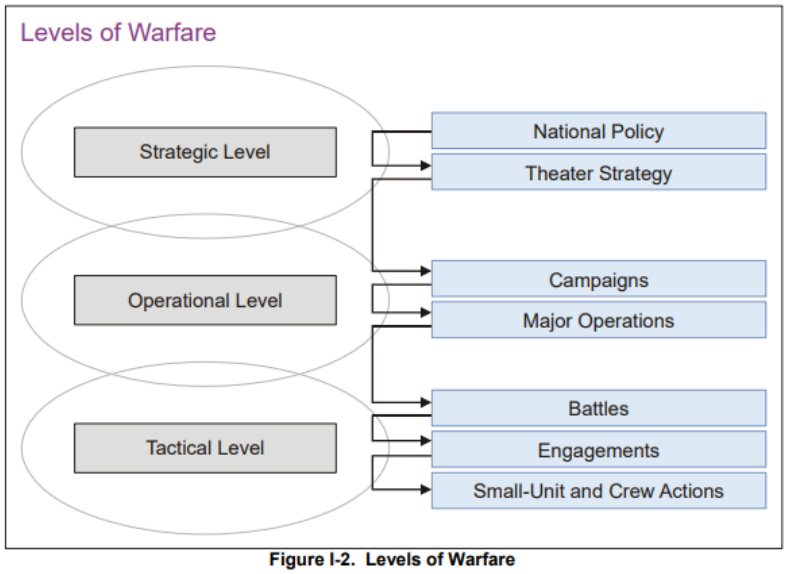


Figure I-2. Levels of Warfare

Strategic Level. Strategy is a prudent idea or set of ideas for employing the instruments of national power in a synchronized and integrated fashion to achieve theater and multinational objectives. At the strategic level, a nation often determines the national (or multinational in the case of an alliance or coalition) guidance that addresses strategic objectives in support of strategic end states and develops and uses national resources to achieve them. The President, aided by the National Security Council (NSC) and Homeland Security Council (HSC) as the National Security Staff, establishes policy and national strategic objectives. The day-to-day work of the NSC and HSC is accomplished by the combined National Security Staff, the President's principal staff for national security issues. The Secretary of Defense (SecDef) translates these into strategic military objectives that facilitate identification of the military end state and theater strategic planning by the combatant commanders (CCDRs). CCDRs usually participate in strategic discussions with the President and SecDef through the Chairman of the Joint Chiefs of Staff (CJCS) and with partner nations. The CCDR's strategy is an element that relates to both US national strategy and operational-level activities within the theater.

Operational Level. The operational level links strategy and tactics by establishing operational objectives needed to achieve the military end states and strategic objectives. It sequences tactical actions to achieve objectives. The focus at this level is on the planning and execution of operations using operational art: the cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, and means. JFCs and component commanders use operational art to determine when, where, and for what purpose major forces will be employed and to influence the adversary's disposition before combat. Operational art governs the deployment of those forces and the arrangement of battles and major operations to achieve operational and strategic objectives.

Tactical Level. Tactics is the employment and ordered arrangement of forces in relation to each other. The tactical level of war is where battles and engagements are planned and executed to achieve military objectives assigned to tactical units or joint task forces (JTFs). Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and enemy to achieve combat objectives. An engagement can include a wide variety of activities between opposing forces normally in a short-duration action. A battle consists of a set of related engagements involving larger forces than used in engagements and normally affect the course of an operation or a campaign. Forces at the tactical level generally employ various tactics to achieve their military objectives.

XIII. Navy, Marine Corps and Joint Staff Organization

Navy	USMC	Joint Directorate
N1: Administration and Personnel N2: Intelligence N3: Operations N4: Logistics N5: Plans N6: Communications	S1: Personnel S2: Intelligence S3: Operations S4: Logistics S5: Civil-military Operations S6: Signal Operations	J1: Manpower and Personnel J2: Intelligence J3: Operations J4: Logistics J5: Strategy, plans and policy J6: Command, control, communications and computers/cyber

XIV. Navy Planning Process (NPP)

Step One - Mission Analysis: Mission analysis drives the NPP. As the first step of the process, its purpose is to produce a mission statement and gain an understanding of the situation. The planning team and staff review and analyze orders, guidance, intelligence, and other information in order to gain knowledge and situational understanding to support the commander's decision making. In a particularly complex or unfamiliar situation, the commander may wish for the planning staff to use the methodologies of design to more accurately frame the mission analysis and subsequent planning steps.

Step Two - Course of Action Development: Planners use the mission statement, commander's intent, and planning guidance with the commander's governing factors to develop multiple COAs. Then they examine each prospective COA for validity by ensuring suitability, feasibility, acceptability, distinguishability, and completeness with respect to the current and anticipated situation, the mission, and the commander's guidance and intent.

Step Three - Course of Action Analysis (Wargaming): Course of action analysis involves a detailed assessment of each COA as it pertains to the adversary and the OE. Each friendly COA is war-gamed against selected adversary COAs. This step assists planners in identifying strengths, weaknesses, and associated risks, and in assessing shortfalls for each prospective friendly COA. Wargaming also identifies branches and potential sequels that may require additional planning. Short of execution, COA wargaming provides the most reliable basis for understanding and improving each COA. This step also allows the staff to refine its initial estimates based on a more refined understanding of the COA that is gained through the war game.

Step Four - Course of Action Comparison and Decision: All retained friendly COAs are evaluated against established evaluation criteria and against each other, ultimately leading to a decision by the commander.

Step Five - Plan or Order Development: The staff uses the commander's COA decision, mission statement, commander's intent, and guidance to develop plans or orders that direct subordinate actions. Plans and orders serve as the principal means by which the commander expresses the decision, intent, and guidance.

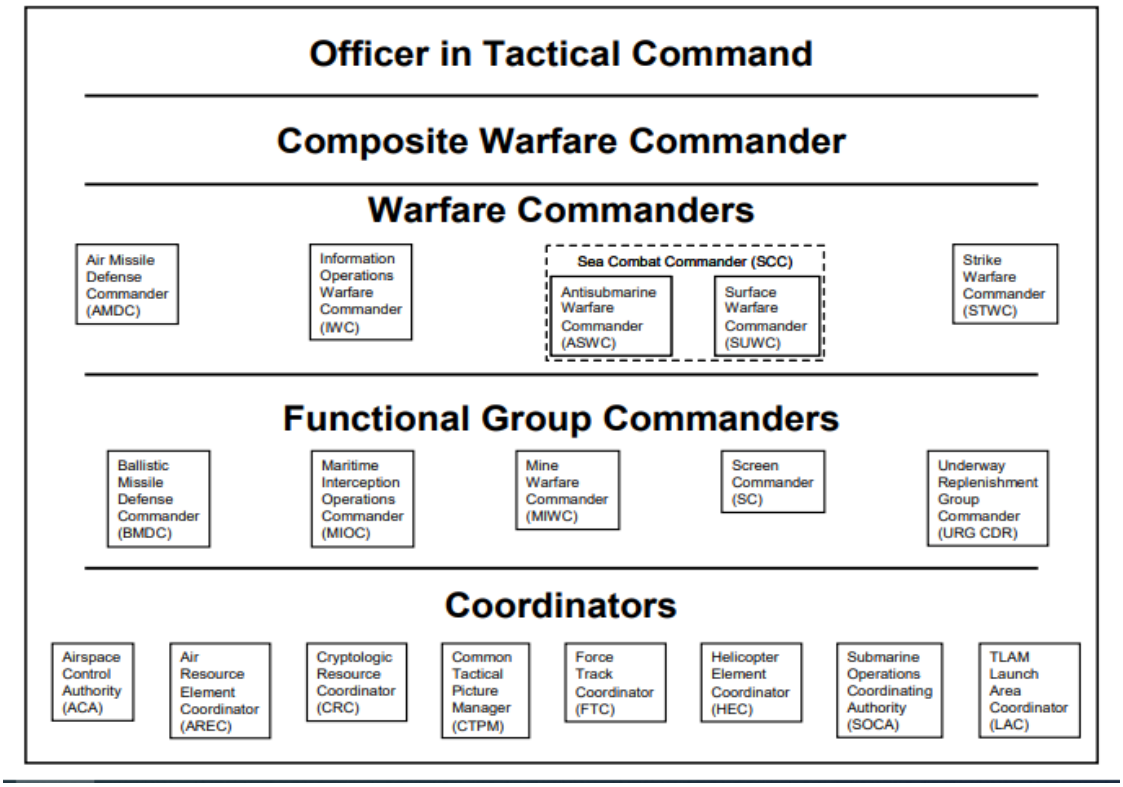
Step Six - Transition: Transition is the orderly handover of a plan or order to those tasked with execution of the operation. It provides staffs with the situational understanding and rationale for key decisions necessary to ensure that there is a coherent transition from planning to execution. The process, however, does not end here; the process is continuous Staffs maintain running estimates that allow for plans and orders refinement. The planning staff continues to examine branches and sequels to plans and orders. Key to this continuous process is the ongoing assessment of the operation's progress.

XV. Composite Warfare Doctrine

Tactical Level Command

The tactical command environment is considerably different than either the strategic or operational environments. The command staffs are smaller, the time horizons are shorter and the commander's decision cycles within them are faster. In addition, the tactical level is comprised of multiple command echelons. At the lowest level are unit commanding officers. At the highest level are numbered fleet commanders. Between these two extremes are unit and staff commands that have varying degrees of command authority.

The operational level commander provides the tactical level commander the "what," "where," "when," and maybe "why" a particular task needs to be accomplished. It is the tactical commander's charge to determine "how" the task will be accomplished. For example, in the battle of Midway, Admiral Nimitz's orders to Rear Admiral Fletcher and Rear Admiral Spruance comprised ten pages, most of which provided information on and assessment of the Japanese. Admiral Nimitz directed his commanders to wait for the Japanese northeast of Midway by 31 May (where, when) and inflict maximum damage on the Japanese (what). Fletcher and Spruance then had to determine the tactics, transit formations used, when aircraft would launch, and when to stop pursuit of the Japanese



Composite Warfare Command Organization

The composite warfare construct allows the OTC to assign some or all of the command functions associated with warfare commander and coordinator duties and supports the execution of a decentralized command philosophy. The OTC and/or CWC may choose to activate all commanders and coordinators described in this NWP or activate only a few of them. Flexibility of implementation, reinforced by clear guidance to subordinates, and use of command by negation is key to decentralized control of the tactical force. The composite warfare organization enables offensive and defensive combat operations against air, surface, undersea, electronic and land-based threats. The OTC may implement a composite warfare organization whenever, and to whatever extent required, depending upon the composition and mission of the force and the nature and severity of the threat.

Callsigns of Combatant Warfare Commanders

Position	Title	Primary CS	Alternate CS
Command	Officer in tactical command (OTC)	'__A'[1]	None
Warfare Commander	Composite warfare commander (CWC)	'__B'	'__V'
Warfare Commanders	Air and missile defense commander (AMDC)	'__W'	'__C'
	Antisubmarine warfare commander (ASWC)	'__X'	'__Y'
	Information operations warfare commander (IWC)	'__Q'	'__E'
	Sea combat commander (SCC)[2]	'__Z'	None
	Strike warfare commander (STWC)	'__P'	'__K'
	Surface warfare commander (SUWC)	'__S'	'__T'
Functional Group Commanders[3]	Ballistic missile defense commander (BMDC)	'__U'	None
	Maritime interception operations commander (MIOC)	'__J'	None
	Mine warfare commander (MIWC)	'__G'	'__F'
	Screen commander (SC)	'__N'	'__D'
	Underway replenishment group commander (URG CDR)	None	None
Coordinators	Airspace control authority (ACA)	None	None
	Air resource element coordinator (AREC)	'__R'	'__R'
	Common tactical picture manager (CTPM)	None	None
	Cryptologic resource coordinator (CRC)	None	None
	Force track coordinator (FTC)	None	None
	Helicopter element coordinator (HEC)	'__L'	'__L'
	Submarine operations coordinating authority (SOCA)	None	None
	Tomahawk land attack missile launch area coordinator (LAC)	None	None

Notes

1. The alpha prefix is reserved for JFMCC/numbered fleet commanders. Therefore when the JFMCC/numbered fleet CDR is also the OTC the JFMCC/numbered fleet commander CS is "AA."
2. Sea combat links ASWC and SUWC duties under one commander. SCC activation is situational dependent.
3. Functional groups are established to perform duties which are generally more limited in scope and duration than those acted upon by warfare commanders. Commanders establish functional groups to meet operational tasking and are not limited to those described.

Figure 1-6. Standard Call Sign Convention for Warfare, Functional Commanders, and Coordinators

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CHAPTER 4: SURFACE WARFARE

I. Mission

To provide combat ready ships to the fleet; and to supply those ships and supporting commands with the leadership, manpower, equipment, training, and material needed to achieve operational excellence and conduct prompt, sustained combat operations at sea to ensure victory.

The surface fleet is able to conduct a myriad of operations in both peace and wartime environments. All ships must maintain a basic level of operability and sustainment, this is defined as mobility. The remaining warfare areas are dependent on ship type.

1. Air Warfare (AW)
2. Surface Warfare (SUW)
3. Anti-submarine Warfare (ASW)
4. Ballistic Missile Defense (BMD)
5. Strike Warfare (STW)
6. Maritime Interdiction Operations (MIO)
7. Naval Surface Fire Support (NSFS)
8. Electronic Warfare (EW)
9. Expeditionary Warfare (EXW)
10. Amphibious Warfare (AMW)
11. Mine Warfare (MIW)
12. Mobility (MOB)

II. Surface Warfare Insignia

The Surface Warfare Officer insignia is the first milestone qualification an eligible commissioned officer may receive in surface warfare. The Surface Warfare Officer pin was designed to depict the traditional and typical elements of naval service: waves breaking before the bow of a ship, overlaid on crossed swords, rendered in gold. The insignia recognizing surface warfare officers was introduced in 1975.

The Enlisted Surface Warfare Specialist insignia also known as the ESWS pin, is authorized for wear by any enlisted member of the United States Navy who is permanently stationed aboard a navy afloat command and completes the Enlisted Surface Warfare qualification program and personal qualification standards (PQS). The silver cutlass was available for the first time in April 1979.



<u>Warfare Tactics Instructors (WTI)</u>

WTIs, pronounced “Witties,” are a cadre of officers trained by the Naval Surface and Mine Warfighting Development Center (SMWDC) to conduct advanced tactical training, doctrinal development, assessments of shipboard at-sea training, and serve in critical operational billets. There are four different types of WTI areas – integrated air and missile defense, anti-submarine warfare surface warfare, mine warfare, and amphibious warfare. WTIs are Warriors-Thinkers-Teachers ready to fight and win across the spectrum of high-end operations. Junior officers must first earn their SWO pin and also demonstrate superior performance in at-sea assignments before pursuing a WTI qualification.



SWO(N) Community (Surface Warfare Officer (Nuclear))

SWO(N) (pronounced SWO-NUKE) is a service assignment available to a select number of midshipmen. Similar to the Submarine selects, SWO(N) candidates must interview with Naval Reactors prior to being selected for SWO(N). Midshipmen selected for SWO(N) participate in Ship Selection and their first tour will be a "Conventional Tour" with "Conventional" SWOs. Following their conventional tour, SWO(N)'s go to Nuclear Power School in Charleston, SC to qualify standing watch on a Nuclear Power Plant. Afterwards, SWO(N)'s go to a carrier (CVN) and qualify as a Propulsion Plant Watch Officer (PPWO). While the SWO(N) Community shares similarities with the Submarine Community (such as training and monetary bonuses), the Junior Officers in the SWO(N) community consider themselves "SWOs First" due to the time and dedication required to earn the SWO pin on the first tour. The SWO(N) community is smaller than the other service communities, meaning that normally less than 40 midshipmen are selected for it per year from USNA. Additionally, SWO(N)'s receive advanced technical training, large monetary bonuses and priority detailing for shore tours, making it one of the most selective service communities options.

III. History of Surface Warfare

American Revolution

The American Revolution bore witness to the official birth of the U.S. Navy and the birth of American surface warfare. During the American Revolution, privateers sailing on converted merchant ships managed to capture between 600 and 2,000 merchant ships from the British, thereby causing a significant hike in insurance rates for British commercial vessels. The Continental Navy was officially established by the Continental Congress on October 13, 1775. The most significant action of the Continental Navy during the American Revolution was the Raid of Nassau where a squadron under Commodore Esek Hopkins and a contingent of Marines under Samuel Nicholas launched an amphibious invasion of British Nassau to raid the city for stores, ammunition, and gunpowder, and marked the creation of the US Amphibious Forces and the bond between the US Navy and the Marine Corps was forged.

The Naval Act of 1794 allowed for the construction of six frigates to fight against the Barbary States. Although peace was achieved in 1795 before the ships were built, President Washington urged Congress to authorize the completion of the first three frigates: *United States*, *Constellation*, and *Constitution*. The *Constellation* played an important role in the Quasi War with France where Commodore Truxton used a number of innovative surface tactics (use of grapeshot and crossing the T) to defeat the French ships *Insurgente* and *Vengeance*.

Early Nineteenth-Century

War with the Barbary States broke out again in 1801, following the election of Thomas Jefferson. Jefferson ordered all existing frigates into the Mediterranean and Congress approved the construction of additional warships. Commodore Preble continued to refine surface tactics and used ships in the first act of joint naval surface fire support, when three ships from Preble's squadron supported General Eaton and his troops in the Battle of Derna.

The first permanent overseas naval squadron, the Mediterranean Squadron, was established in 1815 following the brief Second Barbary War. Over the course of the next few decades, the US Navy established six permanent overseas squadrons: the Mediterranean, Pacific, West India/Home, Brazil, Africa, and East India squadrons. This marked the beginning of the shift from using the Navy as a tool for commerce protection towards a tool of commerce regulation.

Late Nineteenth Century

The surface navy changed drastically as the United States approached the Civil War. Steam instead of wind became the primary method of propulsion, and both the Union and the Confederacy developed a new kind of ship: the ironclad. These ships were clad with iron plating that rendered contemporary naval cannons useless. The introduction of steam propulsion was critical to the outcome of the Civil War. Ships operating on the western rivers aided General Grant and others with their assaults against Confederate river fortifications. The coordinated assaults of the Union Navy and Army against these positions allowed the Union to take and maintain control over the Mississippi River.

The Age of Mahan and World War I

Alfred Thayer Mahan argued that for a nation to become a sea power (and therefore a great power), it required an economic manufacturing base, overseas colonies, and a flourishing merchant marine. Thayer reasoned that a large fleet composed of the most powerful ships be available at all times in order to ensure the safety and security of these elements.

In 1907, President Roosevelt ordered the voyage of sixteen battleships known as the Great White Fleet -to sail around the world. Although the Great White Fleet was an important step in showing the world that the United States intended to become and remain a sea power, a secondary effect of the voyage was the identification of a number of crucial design flaws in the contemporary fleet. Following the completion of the voyage, design changes were implemented to include: flared bows, increased armor, heightened freeboard, heightened turrets, and the standardization of gun calibers. These changes were applied to the first dreadnought-style battleship of the US Navy: *South Carolina*.

When the US entered WWI in April 1917 and the threat of surface-to-surface remained ever present. However, the British managed to force the German fleet to remain in Wilhelmshaven following the Battle of Jutland and a new threat to the US Navy emerged: German submarines, otherwise known as U-boats. To combat this threat, the Americans and British began establishing shipping convoys. Cruisers and in particular, destroyers, played a crucial role in ensuring the safe convoy of troops and merchant shipping across the Atlantic, adding anti-submarine warfare to the list of warfare areas these ships must conduct. The first convoy took place in July 1917 and from then on, U-boat effectiveness was driven down. The standard convoy was comprised of 20-25 merchants and 6-8 escort warships.

World War II

World War II was perhaps the "golden age" of Surface Warfare. Following the Japanese attack on Pearl Harbor. In the Pacific Theater, aircraft carriers, cruisers, destroyers, and amphibious transport ships played the leading role in beating back the Imperial Japanese Navy (IJN) while in the Atlantic, cruisers, destroyers, destroyer escorts, and escort carriers formed the core of the Atlantic convoy system in the fight against German submarines.

Amphibious transport ships were crucial to the Army and Marine Corps' strategy of island hopping in campaigns like the Marianas, Guadalcanal, Okinawa, and the Philippines. These ships were vulnerable to attack from both shore batteries and from Japanese aircraft, yet the transport ships performed their duties and getting Soldiers and Marines onto the beaches. In what is considered the last major naval battle in history, Leyte Gulf, the destroyers and destroyer escorts of TAFFY-3 fended off a massive Japanese assault and protected the amphibious transport ships which were landing forces on the Philippines.

During the "Battle of the Atlantic," surface ships played a crucial role in protecting merchant ships and troop transports as they sailed from the United States to the European theater. "Hunter-Killer" groups were formed later in the war where a number of destroyers and an escort carrier actively sought out German submarines before they could reach the convoys. During this time, the Navy developed a number of new anti-submarine warfare technologies that shaped how ships would detect and hunt submarines for decades to come.

Cold War

With the start of the Korean War, surface warfare and amphibious transportation became critical once again. In a daring move, General MacArthur ordered the amphibious invasion of Inchon. Despite the enormous tidal range and the serious defensive fortifications by the beaches, naval transports supported by other warships managed to land Marines to secure the beachhead followed by waves of soldiers to support the follow-on assault against Seoul.

The Vietnam War introduced a number of challenges for the Navy. Given the geography of Vietnam and the importance of inland rivers, the Navy adopted new methods of surface warfare. During Operations Market Time and Game Warden, the Navy operated Patrol Boats on the rivers and coastal areas to root out insurgents and prevent the shipment of weapons from North Vietnam to the Viet Cong in the south. Admiral Elmo Zumwalt, then Commander Naval Forces Vietnam, implemented a program called Southeast Asia Lake, Ocean, River, and Delta Strategy (SEALORDS) that combined the Mobile Riverine Force, coastal surveillance units, and SEAL teams to more effectively locate and destroy Viet Cong outposts in the Mekong Delta region. Admiral Zumwalt was promoted to CNO and established the Surface Warfare Officer insignia in 1975. Throughout the Vietnam War, the US Navy became proficient at brown water operations and irregular warfare operations.

President Ronald Reagan pushed for a 600-ship Navy to keep the Soviets at bay, thereby enabling the Navy to maintain continuous forward presence and power projection capabilities. As the most visible component of power projection, surface ships operated all across the globe, reassuring allies that the United States Navy would be prepared to respond to any acts of aggression from the Soviet Union. In 1983 ADM Wayne E. Meyer, USN, created the Aegis weapons system which first deployed on the USS Ticonderoga (CG-47). This new system was developed

with five main components (SPY-1 Radar, Vertical Launching System (VLS), the Standard Missile, Fire Control and the computer system to track all contacts. The Aegis Weapon system is the world's premier fighting system with the ability to track and target over 500 targets at once, while constantly evaluating the threat each target poses and prioritizing engagement plans. Along with Aegis, the surface forces also add new technologies to include Close-In Weapons System (CIWS), the Harpoon surface-surface missile, the Tomahawk Land Attack Missile (TLAM) to ships in order to thwart any attempts by the Soviet Union at establishing dominance on the high seas. Many of these technologies remain cornerstones of the surface fleet today, albeit with significant advances and improvements.

Post-Cold War & and the War on Terror

Precision TLAM strikes have become one of the surface forces most used tactical weapons in order to respond to crises around the world. Ships can target critical military infrastructure while minimizing the amount of collateral damage. During the late 1990's and through today, the surface navy has played a significant role in maritime interdiction operations (MIO). Surface forces stop and search vessels, and when required seize contraband, such as weapons bound for rogue nations or terrorist groups and illicit drugs.

Over the course of the Global War on Terrorism (GWOT), precision-guided TLAM strikes were an important piece of naval strategy. These strikes were often the first wave of attacks against a position, and would be followed-up with a ground-based invasion, as was the case in Operation Viking Hammer where the US launched 64 TLAMs against a terrorist position and then cleared out the position with ground forces. Similar strikes have taken place even more recently, as was the case in 2017 where USS *Porter* and USS *Ross* launched 59 TLAMs into Syria which damaged an important Syrian airbase used for the staging of chemical weapons for deployment against the Syrian people. Today, Aegis cruisers and destroyers play an important role in area air defense. By tracking friendly and potentially-hostile aircraft, the layered defense made possible by the Aegis weapons system ensures the safety of all friendly units operating in hostile areas. Surface ships are the Navy's only defense against ballistic missiles that are fired from countries such as North Korea, Iran, China or Russia. Utilizing the Aegis weapon system with SM-3 and SM-6 missiles, Arleigh Burke class destroyers are able to destroy IRBM and ICBM missiles while they are still in space as well as after re-entry into the atmosphere. Amphibious forces patrol major theaters of operations ready to land Marines ashore to assault the enemy. Littoral Combat Ships (LCS) have been added to the fleet in order to operate close to other countries' territorial waters with the capability to support mine hunting/clearing operations as well as protect forces from other surface attacks. All surface forces are continuing to be upgraded with critical intelligence gathering equipment as well as cryptologic and cyber warfare capabilities to enable a complete response to any enemies that may wish to deter the U.S. In a new era of Great Power Competition, the continuous forward presence provided by surface ships have and will continue to be invaluable to the upholding of the international system.

Surface Warfare in the Spotlight

- In February 2008, an SM-3 fired from USS Lake Erie (CG 70) successfully intercepted and destroyed a non-functioning government satellite as part of Operation Burnt Frost. The mission preserved human life from the toxic hydrazine fuel and demonstrated the capabilities of sea-based BMD.
- In April 2009, four pirates in the Indian Ocean hijacked the cargo ship *Maersk Alabama.* The siege ended after a rescue effort by USS Bainbridge (DDG 96), which marks the U.S. Navy's first successful pirate seizure of a ship registered under the American flag since the early 19th century.
- Following the devastating 2011 Tohoku earthquake and tsunami in Japan, surface ships participated in Operation Tomodachi rendering aid to the Japanese people. Participating units included USS Ronald Reagan (CVN 76), USS Chancellorsville (CG 62), USS Cowpens (CG 63), USS Shiloh (CG 67), USS Curtis Wilbur (DDG 54), USS John S. McCain (DDG 56), USS Fitzgerald (DDG 62), USS Stetham (DDG 63), USS McCampbell (DDG 85), USS Preble (DDG 88), USS Mustin (DDG 89), USS Germantown (LSD 42), USS Tortuga (LSD 46), USS Harpers Ferry (LSD 49), USS Essex (LHD 2), and USS Blue Ridge (LCC 19).
- While operating off the coast of Yemen in 2016, the USS Mason (DDG 87) warded off multiple cruise missile attacks, showing strategic excellence which earned the crew the Battenberg Cup from Naval Surface Force Atlantic Commander.
- USS Porter (DDG 78) and USS Ross (DDG 71) fired 59 Tomahawk Land Attack Missiles in a series of strikes on a Syrian airfield in April of 2017.
- Following the 2017 hurricane season in the Caribbean and Gulf of Mexico – Hurricane Harvey, Irma, and Maria – the U.S. Navy and Marine Corps mobilized a massive response of ships, helicopters, and personnel to provide humanitarian and disaster relief, notably USS Abraham Lincoln (CVN 72), USS Iwo Jima (LHD

7), USS Wasp (LHD 1), USS Kearsarge (LHD 3), USS New York (LPD 21), USS Oak Hill (LSD 51), USS Farragut (DDG 99), and USS San Jacinto (CG 56).

- In December 2019, the USS America arrived at its new homeport in Sasebo, Japan. One of the newest ships in the Fleet, the USS America is designed to support the F-35B Lightning II Joint Strike Fighter. This deployment brings fifth generation technology to forward deployed forces operating at the tip of the spear in support of security and stability in the region as they work alongside their Marine Corps partners.
- In 2020, the US Navy destroyer USS John Finn (DDG 113) successfully shot down the first Inter-Continental Ballistic Missile (ICBM) with an SM-3 IIA missile.
- The USS Portland (LPD 27) fired the first LASER weapon against inbound surface threat in 2021.
- Just a year later in 2022 the USS Preble (DDG 88) was the first destroyer installed with LASER to kill inbound cruise missiles.
- USS Mason (DDG 87), USS Thomas Hudner (DDG 116), and USS Carney (DDG 64) shoot down multiple Houthi launched drones and missiles in the Red Sea while protecting international shipping and US ships during the Israel-Hamas conflict in late 2023 into early 2024.

IV. Capabilities of the U.S. Navy

With over 275 warships and more than 110 Military Sealift Command ships around the world, the Navy's surface fleet is a dynamic force enhanced by advancements in technology and strategy. Ship classes are no longer built around a single mission area; they are built to specialize in one warfare area and additionally they must also be able to operate in several additional roles. Modern surface ships possess many unique capabilities listed below.

- **Stealth –** Ship classes such as the Arleigh Burke and Zumwalt class destroyers, San Antonio class amphibious transporters, and Littoral Combat Ships (LCS) employ an angled superstructure, radar absorbent and reflective material, and reduced emissions to significantly reduce the radar cross section of the ship, making it much more difficult to acquire.
- **Endurance –** Three primary sources of propulsion employed by the Navy are steam, gas turbine, and diesel. Range and speed vary based on platform; on average, a gas turbine ship has an endurance of 6000nm at 20 knots. These ranges are almost unlimited based on the Navy's ability to refuel at sea. Of note, Nuclear power is utilized to produce steam propulsion on Aircraft Carriers, providing unlimited endurance.
- **Firepower –** Includes gun mounts, land attack cruise missiles, surface to air missiles, self-defense weapons, and surface-to-surface missiles.
- **Mobility –** Because over two thirds of the world's surface is ocean and eighty percent of the world's population lives within 100 nautical miles of the coast, naval forces are a potent deterrent to potential adversaries. Naval forces can arrive quickly and remain indefinitely in the waters around the world. This presence reminds potential adversaries of the U.S. military's capability and resolve to enforce international law.
- **Communication** – The surface fleet utilizes several means of communication in order to provide and employ classified and unclassified voice, messaging, data and video information from every available source in order to effectively execute the mission. The two primary means used to provide ships, submarines, aircraft, and ground forces necessary information for joint missions are data transmission, via HAWKLINK, LINK 11, and LINK 16, Cooperative Engagement Capability (CEC) and voice transmission, via Satellite COMMS, High Frequency, Ultra High Frequency, Very High Frequency, Super High Frequency, and Extremely High Frequency systems.

<u>Carrier Strike Group (CSG):</u>

The CSG is a principal element of U.S. power projection capability. Along with Expeditionary Strike Groups, CSGs form the largest operational units within the U.S. Navy. It is a flexible naval force that can operate in confined waters or in the open ocean, during day and night, and in all weather conditions. It continues to be the centerpiece of our naval force. Although tailorable, a CSG usually consist of:

- One Aircraft Carrier (CVN)
- One Guided Missile Cruiser (CG)
- Two Guided Missile Destroyers (DDG)
- One Attack Submarine (SSN)
- One Combined Ammunition, Oiler, and Supply Ship

- One Carrier Air Wing (approximately 70 fixed and rotary wing aircraft)
    - F/A-18E/F Hornets and Super Hornets
    - EA-18G Growlers
    - F-35C Lightning II
    - E-2D Hawkeyes
    - C-2A Greyhounds
    - MH-60R "Romeo" Seahawks
    - MH-60S "Sierra" Knighthawk

Within the CSG, the principal role of the carrier and its air wing is to provide the primary offensive firepower while the other units provide defense and support. However, these roles are not exclusive. Other units in the CSG undertake offensive operations (i.e. launching cruise missiles), and the air wing contributes to its defense (i.e. combat air patrols and airborne anti-submarine missions). Thus, command and control of the CSG is exercised by mission (i.e. ASW, AW, etc.) through the Composite Warfare Commander (CWC) concept.

Expeditionary Strike Group (ESG):

The ESG center of gravity is the large deck amphibious ship, either an LHA or LHD and functions in similar ways to the CSG. Its strength is the flexibility of its amphibious ships, an embarked Marine Expeditionary Unit (MEU), and surface and submarine combatants. The total ESG provides operational freedom and expanded warfare capabilities on land and at sea. There are eight core capabilities provided by ESGs: power projection, maritime superiority (air, surface and subsurface), maritime special operations, amphibious operations, military operations other than war (i.e., humanitarian relief support), enabling operations, supporting operations, and Joint Task Force (JTF) enabler. A typical ESG consists of:

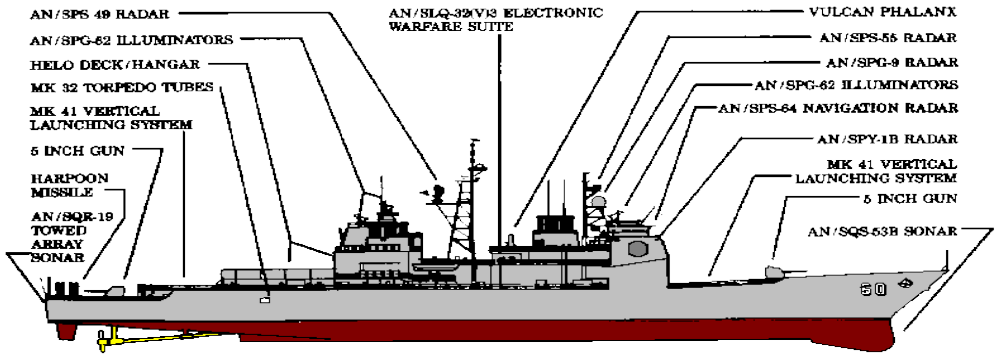
- One Amphibious Assault Ship (LHA or LHD)
- One Amphibious Transport Dock (LPD) Ship
- One Dock Landing Ship (LSD)
- One embarked Marine Expeditionary Unit (MEU)
- Surface combatants
- Submarine
- AV-8B Harrier IIs
- MV-22 Ospreys (V/STOL)
- AH/-1W Super Cobra helicopters
- UH-1 Huey helicopters
- MH-60S "Sierra" helicopters
- CH-53D Sea Stallion helicopters
- CH-46D Sea Knight helicopters
- KC-130J Super Hercules helicopters

An ESG combines an Amphibious Readiness Group (ARG) which consists of the amphibious ships, Marines and aircraft listed above, with the additional combat power of surface combatants and submarines. Amphibious landing ships transport troops, vehicles, and supplies wherever they are needed and provide great flexibility to commanders who are planning operations. However, amphibious ships are not designed for sustained surface-to-surface warfare, especially highly maneuverable patrol craft found in coastal environments. In order to counter those threats and provide Naval Surface Fire Surface (NSFS) in support of amphibious operations, the Navy transforms ARGs into ESGs by assigning dedicated surface and submarine combatants—cruisers, destroyers, and submarines—to support the amphibious ships.

Thus, an ESG is a scalable, adaptable force, capable of planning and executing rapid strike and combat operations while operating in a limited non-permissive (i.e., low threat) environment. ESGs combine a highly mobile group of platforms with a lean command and authority structure. This rapid response is enabled by the capability to rapidly coordinate, deploy, and move to locations where they are needed. In addition, ESGs are designed to be self-sustaining, as well as capable of autonomous action based on being composed of a diverse set of capabilities. A wide range of missions can be supported, from amphibious assault to disaster relief, based on the composition of integrated Navy and Marine Corps forces.

V. Surface Platforms



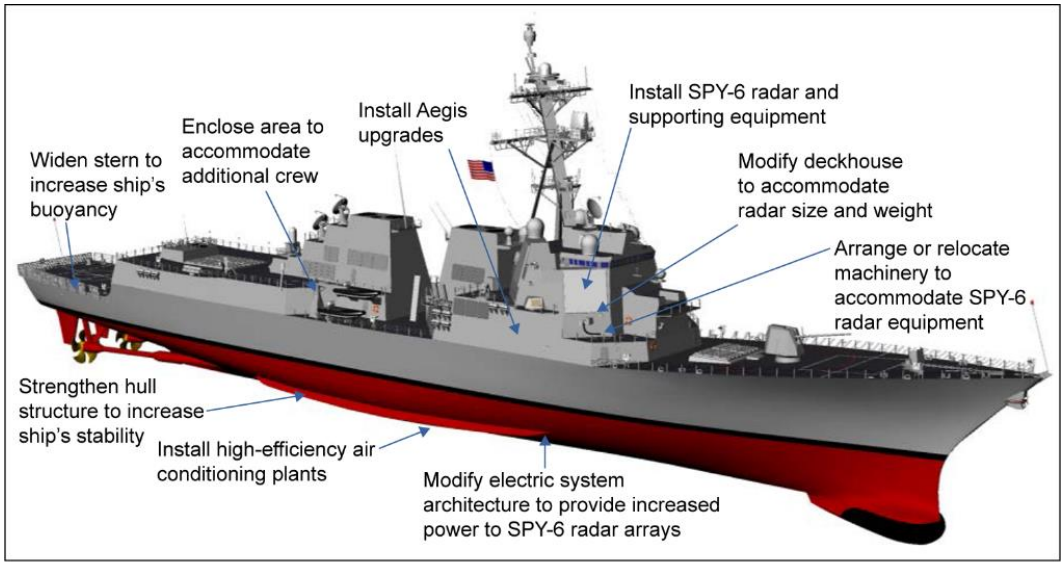


CG-47 Ticonderoga Class Guided Missile Cruiser	
Visual Identification	Hurricane bow, split superstructure with two SPY arrays facing forward and two aft. Two masts, with the shorter forward and taller aft. Two sets of exhaust stacks, one aft of each mast. 5in/54cal or 5in/62cal gun forward and aft.
Mission	Modern U.S. Navy guided missile cruisers perform primarily in a Battle Force role. These ships are multi-mission Air Warfare (AW), Undersea Warfare (USW), Strike Warfare (STW), and Surface Warfare (SUW) surface combatants capable of supporting carrier strike groups and amphibious forces or operating independently and as commanders of Surface Action Groups (SAG). Some Cruisers have been outfitted with a Ballistic Missile Defense (BMD) capability.
Weapons	2 x 5in/54cal or 5in/62cal dual purpose guns (1 fwd, 1 aft), 2 x VLS (61 cells fwd, 61 cells aft) 2 x 20mm Phalanx CIWS (port and stbd) 2 x Surface Vessel Torpedo Tube launchers (3 tubes per launcher) 2 x quadruple Harpoon canisters
Aircraft	2 MH-60 Helicopters
Mission Specific Capabilities	SPY-1B Air Search Radar, Aegis combat system, Towed Array Sonar





DDG-51 Arleigh Burke Class Guided Missile Destroyer FLT I/II		**DDG-51 Arleigh Burke Class Guided Missile Destroyer FLT IIA**
Visual Identification	Open bow, single 5in/54 cal or 5in/62 cal dual-purpose gun fwd, split superstructure, four SPY array faces on superstructure, swept mast, two separate sets of stacks (1 fwd, 1 aft). Flight deck aft.	Same as FLT I/II with have helo hangars.
Mission	DDG 51 warships provide multi-mission offensive and defensive capabilities. Destroyers can operate independently or as part of carrier strike groups, surface action groups, amphibious ready groups, and underway replenishment groups. Guided missile destroyers are multi-mission Air Warfare (AAW), Undersea Warfare (USW), and Surface Warfare (SUW) surface combatants. Some DDGs have been outfitted with a Ballistic Missile Defense (BMD) capability.	
Weapons	1 x 5in/54 cal or 5in/62 cal dual purpose gun 2 x VLS (29 cells fwd, 61 cells aft) 2 x 20mm Phalanx CIWS (one mount starting with DDG-85) 2 x Surface Vessel Torpedo Tube launchers (3 tubes per launcher) 2 x quadruple Harpoon canisters (DDG-51 through 78)	
Aircraft	Can land a multitude of USN/USMC Helos	Can embark 2 MH-60
Mission Specific Capabilities	SPY-1D Air Search Radar, Aegis combat system, Towed Array Sonar	
Crew Size	Varies based on Modernization: 28 officers/254 enlisted	Varies based on Modernization: 30 officers/280 enlisted



Source: GAO (analysis); Navy (image and data). | GAO-16-613

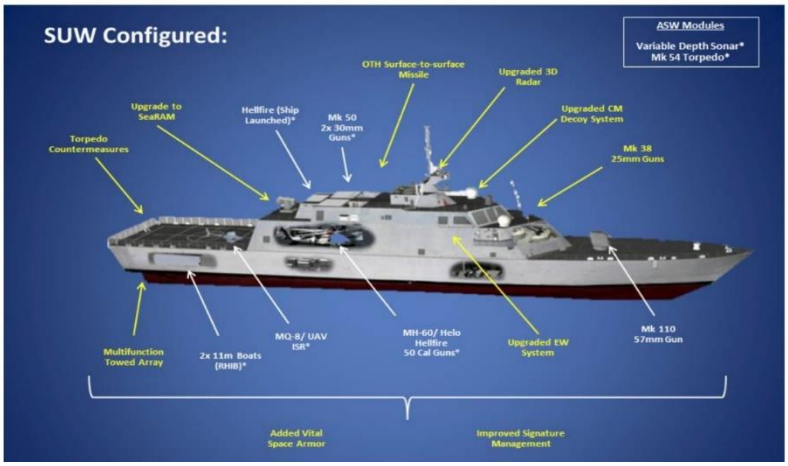
DDG-51 Arleigh Burke Class Guided Missile Destroyer FLT III (DDG 125+)	
Visual Identification	Open bow, single 5in/62 cal dual-purpose gun fwd, split superstructure, four SPY-6 array faces on superstructure, swept mast, two separate sets of stacks (1 fwd, 1 aft) Has helo hangars.
Mission	DDG 125+ warships provide multi-mission offensive and defensive capabilities. Destroyers can operate independently or as part of carrier strike groups, surface action groups, amphibious ready groups, and underway replenishment groups. FLT III destroyers are multi-mission Air Warfare (AAW), Undersea Warfare (USW), and Surface Warfare (SUW) surface combatants. Primary role will be to replace the decommissioning cruisers as the Anti-Air Warfare commander in the CSG. ALL FLT III DDGs have been outfitted with a Ballistic Missile Defense (BMD) capability.
Weapons	1 x 5in/54 cal or 5in/62 cal dual purpose gun 2 x VLS (32 cells fwd, 64 cells aft) 1 x 20mm Phalanx CIWS FWD 2 x Surface Vessel Torpedo Tube launchers (3 tubes per launcher) 2 x quadruple Harpoon canisters (DDG-51 through 78)
Aircraft	2 MH-60
Mission Specific Capabilities	SPY-6 AMDR (Air/Missile Defense Radar), Aegis combat system Baseline 10, Multi-Function Towed Array Sonar
Crew Size	Varies based on Modernization: 35 officers/300 enlisted



DDG 1000 Zumwalt Class Guided Missile Destroyer	
Visual Identification	A wave-piercing "Tumblehome" hull form
Mission	The multi-mission DDG 1000 is tailored for sustained operations in the littorals and land attack, and will provide independent forward presence and deterrence, support special operations forces, and operate as an integral part of joint and combined expeditionary forces. Its multi-mission design and littoral capabilities make it a 100 percent globally deployable asset to the Fleet.
Weapons	80 x advanced Peripheral Vertical Launch (PVLS) cells for Tomahawk, Evolved Sea Sparrow Missile (ESSM), Standard Missiles, and Vertical Launch Anti-Submarine Rockets (ASROC) (VLA) 2 x Advanced Gun System (AGS) 155 mm guns 2 x 30mm Close-in Guns Systems (CIGS)
Aircraft	2 x MH-60R Or 1 x MH-60R and 3 Vertical Take-off Unmanned Aerial Vehicles (UAVs)
Crew	Approx: 160 (20 officers and 140 enlisted including air det.)







LCS Littoral Combat Ship	
Visual Identification	Dual designed for max speed and shallow draft. FREEDOM class (odd numbers) – Mono-hull INDEPENDENCE class (even numbers) – Tri-hull
Mission	The LCS class consists of two variants, the FREEDOM variant and INDEPENDENCE variant - designed and built by two industry teams, respectively led by Lockheed Martin and General Dynamics. These sea frames can be outfitted with reconfigurable payloads, called Mission Packages. Mission packages are supported by special detachments that deploy manned and unmanned vehicles and sensors in support of mine, undersea and surface warfare missions.
Weapons	1 x 57mm Gun Rolling Airframe Missiles (RAM) Freedom variant/ SEARAM on Independence variant 2 x 20mm guns (Surface Mission Package Only)
Mission Specific Capabilities	Dependent on Mission Package. (Surface Warfare (SUW), Mine Warfare (MIW) or Anti-Submarine Warfare (ASW)
Crew Size	50-100 mission dependent

VI. Amphibious Platforms

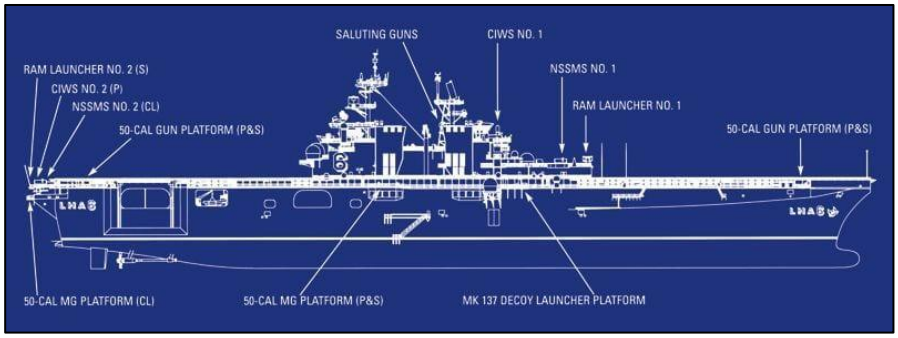




LSD-41 Whidbey Island Class Dock Landing Ship	
Visual Identification	Solid block superstructure. LSD 41- Two deck mounted boat/aircraft cranes LSD 49- Single boat/cargo crane starboard side
Mission	These ships transport and launch amphibious craft and vehicles with Marines in amphibious assault operations. Their ability to ballast down and flood a well deck makes possible the loading at sea of amphibious warfare craft and their cargo. LSD 41 was designed specifically to operate Landing Craft Air Cushioned (LCAC). It has the largest capacity for these landing craft (four) of any U.S. Navy amphibious platform.
Lift capability	LSD 41 Class -4 Landing Craft Air Cushion (LCACs), 3 LCU or 36 AAV. LSD 49 Class- 2 Landing Craft Air Cushion (LCACs), 1 LCU, or 15 AAV
Weapons	2 x 25mm machine guns 2 x 20mm CIWS mounts 2 x RAM launchers 6 x .50 caliber machine guns
Crew	22 officers/350 enlisted. Embarked troops: 402

LPD-17 San Antonio Class Amphibious Transport Dock	
Visual Identification	Two enclosed masts, single exhaust stack. Helo hangar on flight deck. Angled hull and superstructure to reduce radar cross-section (RCS).
Mission	LPDs are used to transport and land Marines, their equipment, and supplies by embarked air cushion (LCAC) or conventional landing craft, augmented by helicopters or vertical take-off and landing aircraft (MV-22). These ships support amphibious operations, special operations, or expeditionary warfare missions and can serve as secondary aviation platforms for amphibious ready groups. The SAN ANTONIO class offers many improvements over previous LPDs, including the ability to interface with other surface combatants via the Cooperative Engagement Capability (CEC), Link-11, and Link-16.
Lift capability	2 LCAC or 1 LCU; 18 AAVs in the well deck 2 CH-53E Sea Stallions or 2 MV-22 Ospreys or 6 UH-1N/Y Hueys or 6 AH-1W/Z Super Cobras on the flight deck.
Weapons	2 x 30mm guns 2 x RAM launchers 10 x .50 caliber machine guns
Crew	28 officers/340 enlisted. Embarked troops: 800, plus 102 surge.





LHD-1 Wasp, LHA-6 America Class landing Helicopter Dock	
Visual Identification	Flight deck along the main deck. Elevator port side. Superstructure amidships starboard side. Sterngate. Largest amphibious warship.
Missions	The largest of all amphibious warfare ships; resembles a small aircraft carrier; capable of Vertical/Short Take-Off and Landing (V/STOL), Short Take-Off Vertical Landing (STOVL), Vertical Take-Off and Landing (VTOL) tilt-rotor and Rotary Wing (RW) aircraft operations; contains a well deck to support use of Landing Craft, Air Cushion (LCAC) and other watercraft (with exception of the first two AMERICA Class ships, LHA 6 and LHA 7, which have no well deck).
Lift capability	WASP: Capable of carrying 3 Landing Craft Air Cushion (LCACs); 4 CH-53E Sea Stallions; 3 UH-1N/Y Hueys, 4 AH-1W/Z Super Cobras; MH-60S helicopters; 12 MV-22 Ospreys; 6 AV-8B Harriers or F-35B Lightning IIs. AMERICA: 4 CH-53E Sea Stallions, 8 AH-1W/Z Super Cobras, 4 MH-60S Knighthawks, 12 MV-22B Ospreys, and 10 AV-8B Harriers or F-35B Lighnting IIs.
Crew	1,108 crew (104 officers) + 1,894 embarked troops





LANDING CRAFT, UTILITY, AND MECHANIZED – LCU	
Visual Identification	Long flat open top; near the appearance of a barge LCU: Control compartment on the starboard side
Mission	Landing craft are capable of transporting cargo, tracked and/or wheeled vehicles, and troops from amphibious assault ships to beachheads or piers. LCUs have both bow and stern ramps for onload/offload, have the ability to operate at sea for up to 10 days, and are capable of carrying one M1 tank or 350-400 troops. LCMs have a bow ramp for onload/offload and are capable of carrying light vehicles and troops.
Lift capability	125 tons
Crew	14





LANDING CRAFT AIR CUSHION (LCAC)	
Visual Identification	Large black skirt. Two large propellers aft.
Mission	The LCAC is a high-speed, over the beach, amphibious landing craft. LCAC's air-cushion capability allows it to proceed inland to discharge cargo on dry, trafficable beaches, thus reducing buildups of troops, equipment, and other material in the surf zone. The landing craft is capable of carrying one M1 tank or four Light Armored Vehicles or three Amphibious Assault Vehicles. The LCAC is unrestricted by tides, beach gradients, and surf conditions, allowing it to access more than 70 percent of the world's beach areas. LCACs are carried by LHAs, LHDs, LPDs, and LSDs.
Lift capability	60-75 tons
Crew	5



MCM-1 Avenger Class Mine Counter Measure Ship	
Visual Identification	Small single deck house, crowded decks, wooden hull.
Mission	AVENGER class ships are designed as mine sweepers/hunter-killers capable of finding, classifying and destroying moored and bottom mines.
Weapons	.50 Caliber guns
Mission Specific Capabilities	Mine hunting specific systems
Crew Size	8 officers/75 enlisted

VII. Combat and Weapons Systems and Missiles

The surface community uses two major combat systems for all of its warships: Aegis Weapon System (AWS) and the Ship's Self Defense System (SSDS).

The AEGIS Weapon System (AWS) is a centralized, automated, command-and-control (C2) and weapons control system that was designed as a total weapon system, from detection to kill. The heart of the system is the AN/SPY radar, an advanced, automatic detect and track, multi-function phased-array radar. This high-powered radar is able to perform search, track and missile guidance functions simultaneously, with a track capacity of more than 100 targets at greater than 256 miles. Cruisers and Destroyers are equipped the AWS. It is made up of 5 major components: 1. SPY Radar, 2. Fire Control System, 3. Command and Decision (C&D) computer, 4. Weapons Control System and 5. Standard Missile family of missiles.

AWS is able to prosecute air, space, surface and subsurface targets utilizing all of the ships installed sensors and weapons. The SPY radar is able to simultaneously search and track targets while conducting communications to inflight missiles, updating target position in real time. The SPY-1 radar is installed on all Cruisers and Destroyers #51-124. The Flt III destroyer, DDG 125 + (except #127), are installed with the SPY-6 radar.

The Standard missile family of missiles are the backbone weapon for the AWS. Standard Missile 2 (SM-2) is the U.S Navy's primary surface-to-air air defense weapon. It is an integral part of the AEGIS Weapon System (AWS) aboard Ticonderoga-class cruisers and Arleigh Burke-class destroyers; and is launched from the Mark 41 vertical launcher system (VLS). Its primary missions are fleet area air defense and ship self-defense, but it also has demonstrated an extended area air defense projection capability. The SM-2 uses tail controls and a solid fuel rocket motor for propulsion and maneuverability. All variants are guided by inertial navigation and mid-course commands from AWS using semi-active radar or an infrared (IR) sensor for terminal homing.

Extended Range Active Missile (SM-6) provides an air defense force multiplier to the U.S. Navy to greatly expand the AWS battlespace. SM-6 provides an extended range anti-air warfare capability both over sea and over land by combining a modified advanced medium-range air-to-air missile (AMRAAM) active seeker onto the proven Standard Missile airframe. With integrated fire control support, SM-6 provides the Navy with an increased battlespace against anti-air warfare (AAW) threats over-the-horizon as well as giving the navy a hypersonic missile able to counter a multitude of advanced threats. The SM-6 missile is also capable of targeting Ballistic Missiles in the terminal phase of flight.

The SM-3 missile is the primary interceptor for short and medium range Ballistic missiles. The SM-3 uses a solid rocket booster and dual thrust rocket motor for the first and second stages of flight and the same steering control section and midcourse missile guidance for maneuvering in the atmosphere as the SM-2. To support the exo-atmospheric intercept, additional missile thrust is provided by a third stage dual pulse rocket motor. The SM-3 missile is different from any other missile in the US Navy inventory, it does not use any explosives when intercepting Ballistic Missiles in space, it is a direct hit to kill weapon which uses the kinetic energy of its kill vehicle to intercept re-entry vehicles in space. In simplest terms, it is a bullet hitting another bullet at closure speeds of Mach 20+. Because the SM-3 interceptor utilizes infra-red targeting, the intercept must occur in space, and limits the SM-3 to only being used for Ballistic Missile Defense.

Ship's Self-Defense System (SSDS). SSDS is the primary combat system for all amphibious class warships as well as Aircraft Carriers. SSDS is an open architecture combat management system that uses a variety different radar and electronic sensors to track incoming threats and engage them with installed ships weapons system such as RAM, SEA SPARROW and CIWS to protect ships from cruise missiles and other immediate threats to the ship. Unlike Aegis, SSDS is not an offensive weapon system, it uses weapons whose range in less than 25 miles.



Aegis Weapon System and AN/SPY-1 Phased Array Radar	
Purpose	The AEGIS Weapon System (AWS) is a centralized, automated, command-and-control (C2) and weapons control system that was designed as a total weapon system, from detection to kill. The heart of the system is the AN/SPY, an advanced, automatic detect and track, multi-function phased-array radar. This high-powered radar is able to perform search, track and missile guidance functions simultaneously, with a track capacity of more than 100 targets.
Platforms	Ticonderoga Class guided-missile cruisers (CGs), Arleigh Burke Class guided-missile destroyer (DDGs)

AN/SQQ-89 Undersea Warfare/Anti-Submarine Warfare Combat System	
Purpose	The AN/SQQ-89(V) Surface Ship Anti-Submarine Warfare (ASW) Combat System provides integrated Undersea Warfare (USW) combat management, fire control, command and control, and onboard training to enable surface combatants to support engagement of USW targets in both open ocean and littoral environments. The AN/SQQ-89(V) provides surface warships with a seamlessly integrated USW/ASW detection, localization, classification and targeting capability. The system presents an integrated picture of the acoustic tactical situation by receiving, combining and processing active and passive sonar sensor data from a variety of hull-mounted arrays, towed arrays, and sonobuoys.
Platforms	Ticonderoga Class guided-missile cruisers (CGs), Arleigh Burke Class guided-missile destroyer (DDGs)



BGM-109 Tomahawk Land Attack Missile (TLAM)	
Purpose	The Tomahawk Land Attack Missile (TLAM) is an all-weather, long range, subsonic cruise missile used for deep land attack warfare. Tomahawk cruise missiles are designed to fly at extremely low altitudes at high subsonic speeds, and are piloted over an evasive route by several mission tailored guidance systems.
Platforms	Ticonderoga Class guided-missile cruisers (CGs), Arleigh Burke Class guided-missile destroyer (DDGs)



MK 15 Phalanx Close-in Weapon System (CIWS)	
Purpose	MK 15 Phalanx CIWS provides ships of the U.S. Navy with an inner layer point defense capability against anti-ship missiles (ASM), aircraft and littoral warfare threats that have penetrated other fleet defenses. Phalanx automatically detects, evaluates, tracks, engages and performs kill assessment against ASM and high-speed aircraft threats. Phalanx is the only deployed close-in weapon system capable of autonomously performing its own search, detect, evaluation, track, engage and kill assessment functions.
Platforms	DDGs. CGs, LSDs, and CVNs



MK 45 5” 54/62 Caliber Gun	
Purpose	The MK 45 is designed to engage surface and air targets and to provide naval surface fire support for expeditionary operations. The gun mount includes a 20 round automatic loader drum. The gun's maximum firing rate is 16-20 rounds from the loader drum per minute.
Platforms	Ticonderoga Class guided-missile cruisers (CGs), Arleigh Burke Class guided-missile destroyer (DDGs)



MK 46 Torpedo	
Purpose	The MK 46 torpedo, first introduced in 1965, is a surface ship and aircraft-launched anti-submarine weapon. It is presently identified as the NATO standard and has been acquired by more than 25 countries. The MK 46 torpedo utilizes liquid propellant and has a high-explosive warhead of 100 pounds.
Platforms	Ticonderoga Class guided-missile cruisers (CGs), Arleigh Burke Class guided-missile destroyer (DDGs)



Mk 54 Torpedo (Lightweight Hybrid Torpedo – LHT)	
Purpose	The MK 54 MOD 0 Lightweight Torpedo integrates existing torpedo hardware and software from the MK 46 and MK 50 torpedo programs with state-of-the-art commercial-off-the-shelf (COTS) digital signal-processing technology. It incorporates an advanced guidance and control (G&C) section employing COTS processing technologies and tactical software improvements to significantly increase torpedo performance in challenging scenarios at reduced lifecycle costs.
Platforms	Ticonderoga Class guided-missile cruisers (CGs), Arleigh Burke Class guided-missile destroyer (DDGs)



RIM-116 Rolling Airframe Missile (RAM)	
Purpose	The RIM-116 Rolling Airframe Missile (RAM) is a lightweight, quick-reaction, fire-and-forget missile designed to destroy anti-ship cruise missiles and asymmetric air and surface threats. For all versions of the missile, there is no shipboard support required (i.e., no illuminators) after missile launch.
Platforms	Amphibious Assault Ships (LHA/LHD), Landing Platform Dock Ships (LPD), Carriers (CVN), Dock Landing Ships (LSD), and Littoral Combat Ship (LCS)



RIM-162 Evolved Sea Sparrow Missile (ESSM)	
Purpose	ESSM is a medium-range, semi-active homing missile that makes flight corrections via radar and midcourse data uplinks. The missile provides reliable ship self-defense capability against agile, high-speed, low-altitude anti-ship cruise missiles (ASCMs), low velocity air threats (LVATs), such as helicopters, and high-speed, maneuverable surface threats.
Platforms	CVN, LHA, LHD, Arleigh Burke class destroyers, Zumwalt Class destroyers, and Ticonderoga Class cruisers



RGM-84 Harpoon	
Purpose	The RGM-84 Harpoon is an all-weather, over-the-horizon, anti-ship missile system that provides the Navy with a common missile for air and ship launches. The Harpoon's active radar guidance, warhead design, low-level cruise trajectory, and terminal mode sea-skim or pop-up maneuvers assure high survivability and effectiveness. The missile is capable of being launched from surface ships, submarines, shore batteries, or aircraft (without the booster).
Platforms	Ticonderoga Class guided-missile cruisers (CGs), Arleigh Burke Class guided-missile destroyer (DDGs), LCS





SM-2 and SM-6 Standard Missiles	
Purpose	Standard Missile 2 (SM-2) is the U.S Navy's primary surface-to-air air defense weapon. It is an integral part of the AEGIS Weapon System (AWS) aboard Ticonderoga-class cruisers and Arleigh Burke-class destroyers; and is launched from the Mark 41 vertical launcher system (VLS). Its primary missions are fleet area air defense and ship self-defense, but it also has demonstrated an extended area air defense projection capability. Extended Range Active Missile (SM-6) provides an air defense force multiplier to the U.S. Navy to greatly expand the AWS battlespace. SM-6 provides an extended range anti-air warfare capability both over sea and over land by combining a modified advanced medium-range air-to-air missile (AMRAAM) active seeker onto the proven Standard Missile airframe.
Platforms	Ticonderoga Class guided-missile cruisers (CGs), Arleigh Burke Class guided-missile destroyer (DDGs), LCS



SM-3 Standard Missile	
Purpose	The SM-3 interceptor is a defensive weapon the U.S. Navy uses to destroy short- to intermediate-range ballistic missiles. The interceptor uses sheer force, rather than an explosive warhead, to destroy targets in space. This technique, referred to as “hit-to-kill,” has been likened to intercepting a bullet with another bullet.
Platforms	Platforms with Aegis Weapons System (AWS) equipped with BMD capabilities, i.e. Flight III DDGs

VIII. Future Advances in Surface Warfare

Unmanned Surface Vessels: The Surface Navy is investing heavily in unmanned technology, both medium and large unmanned surface vessels. These vessels can be used to assist with locating and detecting of targets, as well as intel gathering and communications relays.

DDG (X): The Navy is developing a new hull form for its next generation warship. With the advancement of new hypersonic missiles and laser weapon systems, the Navy's current combatant warships do not have enough space or power to support the advances in technologies.

LASER Weapons System: The Surface Navy currently has 3 prototype LASER systems installed on USS Portland (LPD 27), USS Stockdale (DDG 106) and USS Spruance (DDG 111). These systems are in a testing phase in order to prove that they can be used repetitively in order to neutralize incoming cruise missile threats at a rate equal to or greater that current systems. LASER systems provide an unlimited reload capability as long as the ship has electricity.

IX. Roles and Responsibilities on Surface Ships

Commanding Officer: The commanding officer is charged with the absolute responsibility for the safety, well-being, and efficiency of the ship and crew until properly relieved by a competent authority. The duties and responsibilities of the commanding officer are established by U.S. Navy Regulations (NAVREGS), general orders, customs and tradition. The authority of the commanding officer is commensurate with their responsibility, subject to the limitations prescribed by constitutional, statutory, international, and regulatory law including NAVREGS. The commanding officer may issue a formal delegation of authority to the lowest level of competence commensurate with the subordinate's assigned responsibility and capabilities.

Executive Officer: The executive officer is the direct representative of the commanding officer and shall be primarily responsible to the commanding officer for the organization, performance of duty, training, maintenance, and good order and discipline of the entire command. The executive officer executes the policies of the commanding officer assisted by subordinates. His/her orders will have the same force and effect as if issued by the commanding officer. The executive officer assumes command, should the need arise, as defined by NAVREGS. The executive officer subject to the orders of the commanding officer assisted by subordinates will:

1) Make frequent inspections in company, when practicable, with the subordinates concerned; and to correct defects.
2) Supervise and coordinate the work, exercises, training, and education of the personnel command of the command.
3) Supervise and coordinate the operational plans and schedules of the command.
4) Prepare and issue a daily schedule of employment and such other advance schedules as may aid subordinates in planning their work.
5) Ensure that all prescribed or necessary security measures and safety precautions are understood and strictly observed.
6) Evaluate the performance of officers and enlisted and personnel and make recommendations to the commanding officer concerning their promotion and advancement.
7) Regulate liberty and leave.
8) Oversee all boards and committees unless otherwise identified.
9) Supervise the organization and operation of the unit's Maintenance and Material Management System (3M) Program.

Command Master Chief: The command master chief (CMC), (chief of the boat, command senior chief), is the enlisted advisor to the command on the formulation and implementation of policies pertinent to morale, welfare, job satisfaction, discipline, utilization and training of all enlisted personnel. The CMC is superior to all other enlisted members. CMC reports directly to the commanding officer and works closely with the executive officer. The CMC ensures sailors are effectively led and developed.

Department Head: The Head of a Department (Department Head) is the officer detailed as such by competent authority and represents the commanding officer in matters pertaining to the department. The department head, subject to the orders of the commanding officer will:

1) Organize and train the department for battle readiness, including supervising the training of departmental personnel in damage control.
2) Prepare and maintain the bills and orders for the organization and operation of the department.
3) Assign personnel to stations and duties within the department.
4) Coordinate the department safety program with the unit's safety officer and supervise the department's division safety officers. Ensure all security measures and safety precautions are strictly observed by all persons within the department
5) Make frequent inspections of the personnel, material and assigned spaces of the department. Ensure proper cleanliness and upkeep of departmental spaces. Each department head or a representative inspects daily and reports the condition of the department to the executive officer, who then makes a similar report to the commanding officer.
6) Control the expenditure of allotted funds and operate the department within the limit of such funds. Ensure economy in the use of public money and stores.
7) Assume responsibility for the proper operation, maintenance, preservation, custody and inventory of equipment, and other material assigned to the department.
8) Maintain custody of the keys for departmental spaces and storerooms except those assigned by regulation to the custody of another officer. Designate subordinates within the department to have duplicate keys.
9) Supervise the training and professional development of junior officers assigned to the department. Develop division officers regarding morale matters or discipline within the department and keep the commanding officer informed of any matter adversely affecting the department, command, or the naval service.
10) Execute the maintenance and material management system or a current unit's maintenance project for the department.
11) Oversee department administration and record review as required by other regulations and instructions; initiate fitness reports, evaluation sheets, review periodic marks and makes recommendations to the executive officer for meritorious masts and disciplinary matters. Forwards special requests to the executive officer with recommended action and provide justification for special privileges including applicable comments on past conduct and performance.
12) Supervise the execution of PQS topics applicable to the department. Qualify personnel for watch stations and equipment/system operation and maintenance.
13) Prepare the department organization manual and directives and ensure dissemination and observance.
14) Perform other duties as assigned.

Division Officer: A division officer is assigned by the commanding officer to lead a division of the unit's organization. The division officer directs the operation of the division through leading (chief) petty officers as prescribed in the division organization. Specific duties of the division officer include:

1) Supervises the performance of the work centers within the division carrying out the shipboard maintenance and material management system to ensure optimum material readiness; assists in the management and is accountable to the department head for the proper operation of the 3M program for the equipment within his divisional responsibility.
2) Schedules and conduct training for division personnel. Division training should include indoctrination of new personnel, PQS related training within the division, and preparation for advancement in rating. The division officer designates petty officers qualified to authenticate completion of Sailor PQS qualifications.
3) By personal supervision and frequent inspection, ensure that spaces, equipment, and supplies assigned to the division are satisfactorily maintained. Conduct periodic inspections, exercises, and musters to evaluate performance and discipline in the division. Initiates appropriate corrective measure for identified deficiencies.
4) Promptly reports to the department head repairs which may be required or other defects which need correction which they are unable to affect.

5) Assigns personnel to watches and duties within the division and develop rotation programs for battle stations, watches, and general duties to ensure the training and proficiency of assigned personnel.
6) Maintains a division notebook containing personal data, training data, a space and equipment responsibility log, the watch and battle stations to be manned, and other useful data for the orientation of relieving officer and for ready reference. This information enables annual enlisted performance evaluations for personnel of the division.
7) Responsible for all administration of the division including forms, reports, and correspondence originated or maintained by the division. Forwards requests for leave, liberty, and special privileges with recommendations.
8) Ensures damage control equipment, fittings, and check-off lists in assigned spaces are in proper working condition and properly labeled. Supervises the division damage control (safety) petty officer in safety matters.

X. Underway Watches on Surface Ships

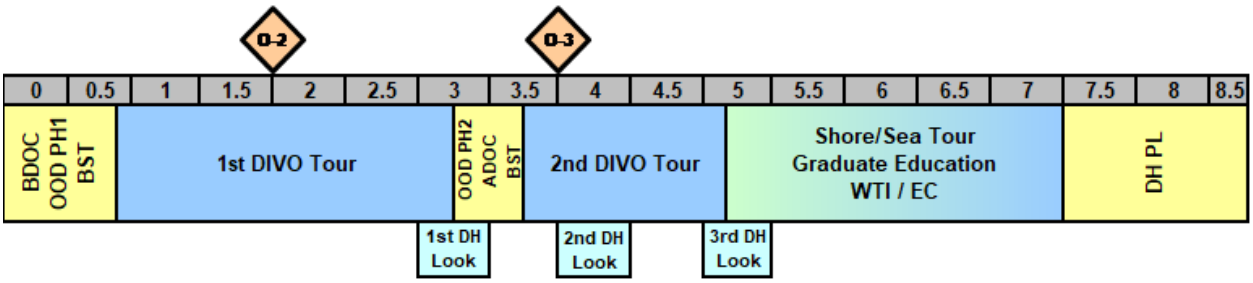
Officer of the Deck (OOD): The OOD underway is designated by the commanding officer to be in charge of the ship including its safe and proper operation. The OOD reports directly to the commanding officer for the safe navigation and general operation of the ship; to the executive officer and CDO (In port) if appointed, for carrying out the ship's routine; and to the navigator on sighting navigational landmarks, and on making course/speed changes. The following personnel report to the OOD:

1) Tactical Action Officer (TAO)
2) JOOD and JOOW
3) Combat Information Center Watch Officer (CICWO)
4) Engineering Officer of the Watch (EOOW)
5) Communication Watch Officer
6) Quartermaster of the Watch (QMOW)
7) Damage control watch
8) Boatswain’s Mate of the Watch (BMOW)
9) Bridge talkers
10) Duty Master at Arms (DMAA)

Engineering Officer of the Watch (EOOW): The EOOW is the officer or petty officer on watch designated by the engineer officer to be in charge of an engineering department watch section. They are responsible for safe and proper performance of engineering department watches following the orders of the engineer officer, the commanding officer and higher authority.

XI . Surface Warfare Officer Pipeline

The Surface Warfare Officer pipeline is managed by PERS-41, which helps SWOs through promotions, screening for career assignments and providing career advice.



The Surface Warfare community allows for Early Command opportunities for both post-Division officer and post-Department head tours. Post-DHs and post division officers may compete for executive/commanding officer opportunities for mine countermeasures (MCM), Naval support elements (NSE) and unmanned surface vessel (UXS) task group command (post division officer only) in lieu of a traditional second department head tour, post department head tour, or post division officer tour.

XII. Basic Rates on Surface Ships

Boatswain Mate (BM) - Responsible for all topside maintenance, deck gear operation, small boats and seamanship. On ships without an air department, BM's are responsible for all aviation operations to include landing and launching aircraft.

Operations Specialist (OS) - Responsible for monitoring radar systems, communication link systems and back up navigation inside of Combat Central.

Cryptologic Technician Technical (CTT) - Responsible for monitoring and prosecuting electronic signals emitted by other targets as well as electronic countermeasure systems.

Quartermaster (QM) - Responsible for the safe navigation of the ship, and preparing all navigation routes.

Gunner's Mate (GM) - Responsible for care and maintenance of all small arms, crew served weapons and other installed weapon systems as well as ammunition.

Sonar Technician Surface (STG) - responsible for the operation of the ship's sonar suite as well as anti-submarine warfare.

Fire Controlman (FC) - Responsible for the operation and maintenance of weapon targeting systems, to include the Aegis Weapon System.

Electronics Technician (ET) - Responsible for the maintenance and operation of all combat system electronic equipment, to include radars, radios and navigation positioning systems, less the SPY-1/6 Radar.

Information Systems Technician (IT) - Responsible for the operation and maintenance of the ships LAN and computer systems.

Engineman (EN) - Responsible for the operation and maintenance of all diesel engines and their sub systems.

Gas Turbine Systems Technician Mechanical (GSM) - Responsible for the operation and maintenance of the ship's installed gas turbine engines, less the electronic control systems

Gas Turbine Systems Technician Electrical (GSE) - responsible for the operation and maintenance of the Gas Turbine electronic control systems.

Electrician's Mate (EM) - responsible for the distribution and maintenance of electrical power systems throughout the ship.

Machinist's Mate (MM) - Responsible for the maintenance and operation of all auxiliary engineering systems onboard to include water, air and hydraulic systems.

Damage Controlman (DC) - Responsible for the maintenance and operation of al installed and portable damage control gear located throughout the ship.

Hull Technician (HT) - Responsible for the physical structure of the ship. Their specialties include welding, brazing and repair of broken tools and equipment.

Retail Service Specialist (SH) - Responsible for operation of the ships store and support services such as laundry, and hotel services.

Logistic Specialist (LS) - Responsible for ordering and maintenance of stock control of all required spare and replacement parts.

Culinary Specialist (CS) - Responsible for the order and stock control of food, and well as meal prep for the entire crew 3 times a day.

Yeoman (YN) - Responsible for the processing of all administrative tasking as well as personnel reporting requests.

XIII. Military Sealift Command (MSC)

The Military Sealift Command operates more than 110 ships around the world. These ships carry the designation "USNS" (United States Naval Ships) and are not commissioned ships. Also, they are crewed by civilians. Some MSC ships have small military departments assigned to carry out specialized military functions such as communications and supply operations. MSC ships carry the prefix "T" before their normal hull numbers.

The five basic categories of USNS ships are: combat logistics force (CLF), special mission, prepositioning, service support and sealift.

Combat Logistics Force (CLF): CLF ships include dry cargo/ammunition ships, fast combat support ships and fleet replenishment oilers. In their primary mission they provide logistics support, carry fuel, ammunition and supplies, and provide underway replenishment of fuel to U.S. Navy ships underway.

Special Mission: Special mission ships include auxiliary general purpose oceanographic research vessels, missile range instrumentation ships, navigation test support ships, ocean surveillance ships, oceanographic survey ships and submarine and special warfare support ships. These ships are designed to support research, data collection, and other operational tests.

Prepositioning: Prepositioning ships provide quick and efficient movement of military gear between operating areas without reliance on other nations' transportation networks. These ships give U.S. regional combatant commanders the assurance that they will have what they need to quickly respond in a crisis - anywhere, anytime. During a contingency, troops are flown into a theater of operations to rapidly employ the cargo from these ships.

Service Support: Service Support program ships provide the Navy with towing, rescue and salvage, submarine support, and cable laying and repair services, as well as a command and control platform and floating medical facilities.

Sealift: The Military Sealift ships help to provide transportation for the Department of Defense and other federal agencies during peacetime and war. Sealift ships help to provide rapid loading and off-loading of Army wheeled and tracked vehicles, as well as other oversized equipment.

Sources:

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2. https://mda.mil/system/aegis_bmd.html
3. The Navy Fact File: http://www.navy.mil/navydata/fact.asp
4. Ships and Aircraft of the U.S. Fleet
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CHAPTER 5: UNDERSEA WARFARE

I. Mission

As stated in the Commander's Intent for the United States Submarine Force and Supporting Organizations, "The mission of the U.S. Submarine Force is to execute the mission of the U.S. Navy in and from the undersea domain. In addition to lending added capacity to Naval forces, the Submarine Force in particular is expected to leverage those special advantages that come with undersea concealment to permit operational, deterrent, and combat effects that the Navy and the Nation could not otherwise achieve. These effects may be delivered within the undersea domain or across domain boundaries; they may be delivered from submarines far-forward or in broad ocean areas; they may be the result of carefully coordinated operations with other forces or achieved by independent operations; and they may be accomplished in peacetime, a time of tension, or during conflict." [(1)]

II. Submarine Warfare Insignia

The modern-day submarine warfare insignia, commonly called "Dolphins" or "Fish" are worn by submarine qualified officers (gold) and enlisted sailors (silver). The design, adopted in March 1924, is a bow view of a submarine, proceeding on the surface, with bow planes rigged for diving, and dolphin fish flanking the bow and conning tower of a submarine.





SSBN Deterrence Patrol Pin

The SSBN Deterrent Patrol insignia is worn by officers and enlisted sailors of the submarine service who have completed strategic deterrent patrols on nuclear ballistic missile submarines. The design is of a silver Lafayette-Class submarine with superimposed Polaris missile and electron rings which signify the armament and nuclear-powered characteristics of the Fleet Ballistic Missile Deterrent Force. A scroll beneath the submarine holds up to six award stars, with one gold star authorized for each successful deterrent patrol, or a silver star for five successful deterrent patrols. At twenty (20) successful patrols, the SSBN pin is upgraded to a gold design.



Submarine Combat Patrol Pin

The Submarine Combat Patrol Insignia is a uniform breast pin worn by officers and enlisted who have completed combat patrols during declared wars, the last of which conducted during World War II. The pin shows the broadside of a Gato-Class diesel submarine. A scroll beneath the submarine holds service stars, one gold star for each successful patrol after the first or a silver star for five successful patrols.

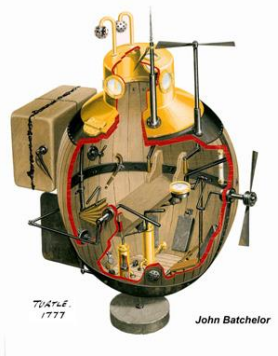


III. History

The U.S. Submarine force has a long heritage of sacrifice and valor. Every year on or around 11 April, the community comes together for the Submarine Birthday Ball to remember those who have lost their lives to the depths of the unforgiving ocean and to recognize the year's achievements in the community. The Submarine Force has, and always will, pride itself on its procedural compliance, intellectual capacity, and training and certification programs. A submarine will operate on its own, autonomously with no external support; undetected and typically in hostile waters. The crew works as one team to accomplish missions vital to national security, and every member of the crew is vital to its proper functioning and, if need-be, survival and war-fighting ability.

American Revolution

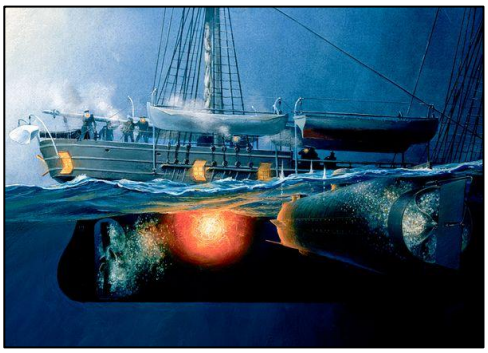
The first military submarine was the American-built Turtle (1775). Designed and built by the patriot David Bushnell, the hand-powered, egg-shaped device accommodated a single man. It is thought to be the first submarine capable of independent underwater operation, and the first to use a screw for propulsion. During the American Revolutionary War, Turtle attempted to sink a British warship, HMS Eagle (the flagship of British blockaders), moored in New York harbor. However, Turtle's attack failed.



David Bushnell's Turtle

Civil War

During the American Civil War, Confederate forces revived the submarine concept. On February 18, 1864, the Confederate States Submersible, the H.L. Hunley, performed the first successful military submarine mission when she sank the USS Housatonic off Charleston Harbor. Hunley performed her submerged attack using a spar torpedo (an explosive charge mounted on a long pole sticking out of her bow). Though her attack was successful, Hunley sank following the engagement and her entire eight-man crew perished. Finally located in 1995, Hunley was raised in 2000 and is on display in North Charleston, South Carolina.

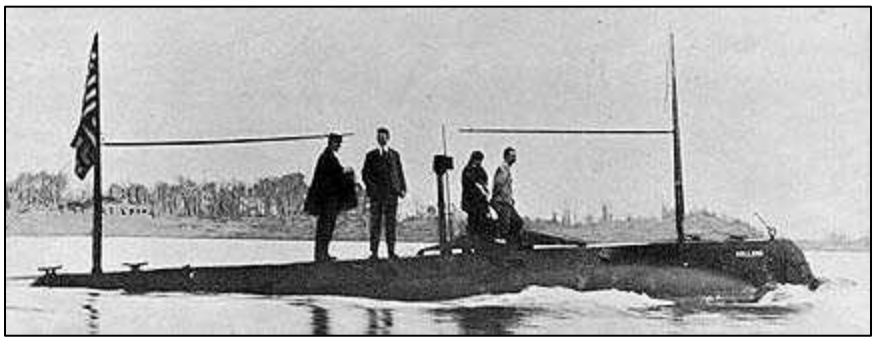




H.L. Hunley

Pre-World War Era

USS Holland (SS-1) was the United States Navy's first modern commissioned submarine. The boat was originally laid down in the shipyard in Elizabeth, New Jersey and launched in 1897. She was acquired by the USN on 11 April 1900 and commissioned six months later with Lieutenant H. H. Caldwell commanding. The Submarine Community celebrates 11 April as the birthday of the modern-day Submarine Force.



USS *Holland* (SS-1)

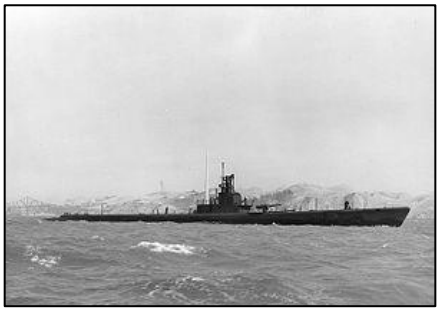
World War I

Submarines first made a significant military impact in World War I. German submarines (U-boats) were central to the German naval strategy. A torpedo fired from a German U-boat sank the ocean liner RMS Lusitania (May 7, 1915), which directly precipitated entry of the U.S. into WWI because American leaders would not tolerate the threat of unrestricted submarine warfare against civilian shipping traffic. The fleet of American diesel submarines was used primarily for coastal defense. However, after 1917, some American boats drew assignments to European waters.

World War II

"…It is to the everlasting honor and glory of our submarine personnel that they never failed us in our days of peril."
~ Fleet Admiral Chester William Nimitz

World War II produced significant improvements in the design and operation of submarines worldwide. Sidestepping the requirements of the Treaty of Versailles, Germany built a large submarine fleet prior to the war. Their 'wolfpack' tactics proved devastating to Allied military and civilian ships in the European theater. The U.S. submarine fleet employed the *Gato, Balao,* and *Tench* classes to operate in every naval theater and score the most complete victory of any force in any theater of the war. In spite of a hesitant beginning due to the attack on Pearl Harbor and difficulties with defective torpedoes, the submarine force destroyed 1,314 enemy ships totaling 5.3 million tons (including 8 aircraft carriers and more than 200 warships). Translated - 55% of all enemy ships sunk were by approximately 6% of the Naval force. Out of 16,000 submariners, the force lost 375 officers and 3,131 enlisted men in fifty-two submarines, the highest casualty rate of any U.S. service branch in WWII. Additionally, seven submarine Commanding Officers, all USNA graduates, were awarded the Medal of Honor for their actions during WWII.





USS Wahoo (SS-238). LCDR Mush Morton and LT Dick O'Kane. The 29-point cribbage hand.

"Tenacity Dick, stay with the bastard till he's on the bottom."
~ Mush Morton to Dick O'Kane.

Lore among submariners is that while patrolling in the shallow waters of the Yellow Sea during its fourth war patrol, Commanding Officer Mush Morton dealt the XO, LT Dick O'Kane (USNA '11) a perfect 29, the highest possible score for combinations in a single cribbage deal. The crew felt that it was a lucky omen and *Wahoo* sank two Japanese freighters that night. Three days later, while patrolling off the Korean coast, Morton dealt a 28-point hand to O'Kane. They sank two freighters that day and another one the following day.

Cold War

The Cold War redefined the mission of submarines. Against the rising threat of nuclear war with the Soviet Union, several critical design improvements transformed the U.S. submarine fleet. These improvements included: (1) *The tear-dropped hull shape,* which allowed much greater submerged operating speeds and higher propulsion efficiency. (2) *Nuclear powered propulsion*. Due in large part to the efforts of ADM Hyman Rickover (USNA '22), the 'Father of the Nuclear Navy,' the Naval Nuclear Power Program was born. On January 17, 1955, Commanding Officer Eugene Wilkinson spoke the famous words "underway on nuclear power" to launch the first nuclear powered submarine, USS Nautilus (SSN-571), on her maiden voyage. Within three years, *Nautilus* sailed to the North Pole and shattered virtually every submarine distance, speed, and endurance record. Nuclear power continues to afford U.S. submarines nearly unlimited operational endurance because they can remain submerged nearly indefinitely—limited only by their capacity to store food.




USS Nautilus (SSN-571). ADM Hyman G. Rickover.

During the 1960s, strategic planners divided the submarine force into two distinct components, ballistic missile (SSBN) submarines and fast attack (SSN) submarines. For SSBNs, the United States and the Soviet Union both developed submarine-launched nuclear weapons. American SSBNs continue to uphold the nuclear deterrence role, forming the most survivable element of the U.S.'s nuclear triad (the other two elements being land-based ballistic missiles and airdropped nuclear ordinance). SSNs assumed the role of protecting SSBNs to ensure successful execution of the nuclear deterrence mission. Equally important, SSNs assumed the offensive role of detecting and monitoring any foreign ballistic missile submarines. Through the height of Cold War, brave SSN crews tracked, photographed (underwater), and collected acoustic data on Soviet submarines. The crews rewrote the playbook on submarine tactics and conducted highly specialized and sensitive missions for national security. Submarine development and operation during the Cold War formed the majority of the bedrock of the submarine force today.

IV. Platforms

Terminology

Sail: The vertical section on the submarine where the bridge is located.
Fairwater plane: The "horizontal wings" located on the sail of the submarine.
Bow plane: The "horizontal wings" located on the bow of the submarine.

Fast Attack Submarines (SSN)

Fast Attack submarines are designed to: (1) seek and destroy enemy submarines (ASW) and surface ships (ASUW); (2) conduct precision strikes with Tomahawk cruise missiles (STRIKE); (3) deliver and support Special Operation Forces (SOF); (4) carry out Intelligence, Surveillance, and Reconnaissance (ISR) missions; (5) support Carrier Strike Groups; and (6) engage in mine warfare. Additionally, the *Virginia* Class design allows emphasis on littoral operations.

- West Coast SSNs are home-ported in Pearl Harbor, HI; San Diego, CA; Bremerton, WA; and Guam.
- East Coast SSNs are home-ported in Groton, CT, and Norfolk, VA.

There are three classes of SSNs now in service – *Los Angeles* class, *Seawolf* class, *Virginia* class. The crew complement typically consists of 15 officers and 120 enlisted sailors.



***Los Angeles* Class Fast Attack Submarines. Left to Right – 688 (I/II), and 688I (III)**

SSN-688 and 688I Los Angeles class Attack Submarines (SSN 688 -- SSN 773)	
	
Visual Identification	Length: 362ft; Beam: 33ft; Draft: 31ft *Flight I* have fairwater planes. *Flight II* have fairwater planes and 12 Vertical Launch Tubes (VLS) in the bow. *Flight III* have bow planes and 12 VLS tubes in the bow. Sails are unfaired at the leading edge.
Weapons	4 Torpedo Tubes – for MK 48 ADCAP Torpedoes or UGM-109 Tomahawk Cruise Missiles
Capability	Test depth: 800+ft; Speed: 20+knots submerged, 14+knots surfaced
Notes	USS *Los Angeles* (SSN-688) commissioned in 1976. Decommissioned at two per year, and replaced by the new Virginia Class SSNs.



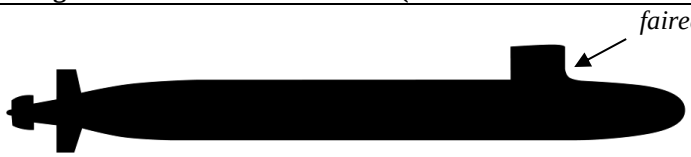
***Seawolf* Class Fast Attack Submarine (USS *Seawolf* (SSN 21) & USS *Jimmy Carter* (SSN 23))**

SSN-21 Seawolf Class Attack Submarine (SSN 21 -- SSN 23)	
	
Visual Identification	Broader beam and slightly shorter than Los Angeles Class submarines. The sails are faired at the leading edge and are fitted with bow planes.

Weapons	8 Torpedo Tubes – for MK 48 ADCAP Torpedoes or UGM-109 Tomahawk Cruise Missiles
Notes	USS Seawolf (SSN 21) commissioned in 1997. USS Jimmy Carter (SSN-23) has a 100-foot hull extension called the "Multi-mission Platform"




***Virginia* Class Fast Attack Submarine [USS Virginia (SSN 774) & USS North Dakota (SSN 784)]**

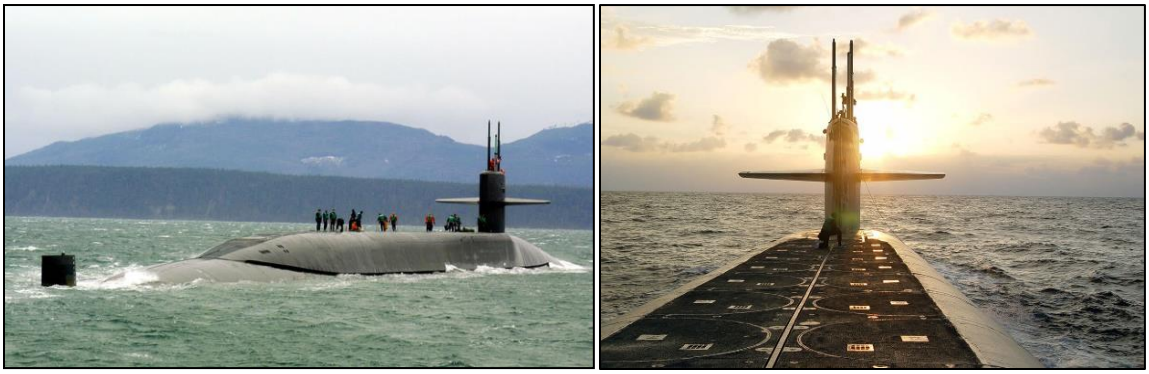
SSN-774 Virginia Class Attack Submarine (SSN 774 -- SSN 821 and beyond)	
	
Visual Identification	Longer than Los Angeles Class. The sails are faired at the leading edge and are fitted with bow planes and VLS.
Weapons	4 Torpedo Tubes – for MK 48 ADCAP Torpedoes or UGM-109 Tomahawk Cruise Missiles
Capability	Test depth: 800+ft; Speed: 25+knots submerged
Notes	USS Virginia (SSN 774) was commissioned on 2004. Block V have the Virginia Payload Tubes (VPT) which will provide additional guided-missile capability and replace the SSGNs.
Enhanced Capability	(1) a fly-by-wire ship control system that provides improved shallow-water ship handling; (2) enhanced special operation forces support systems; (3) a reconfigurable torpedo room, which can house either a combination of torpedoes and Tomahawk cruise missiles, or a large number of Special Operation Forces (SOF); (4) a large lock-in/lock-out chamber for divers; (5) two Photonics Masts that contain color, high-resolution black and white, and infrared digital cameras; (6) modular construction, open architecture, and commercial off-the-shelf components

Ballistic Missile Submarines (SSBN)

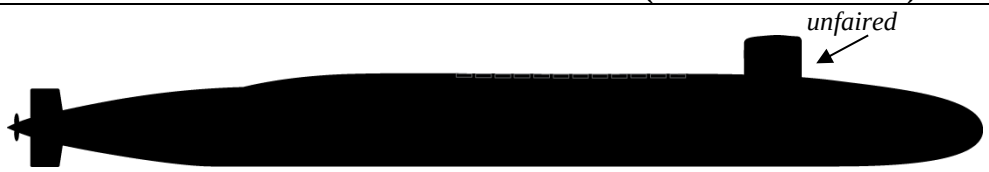
Since the 1960s, strategic deterrence has been the SSBN's primary mission, providing the United States with its most survivable and enduring nuclear strike capability. There is only one type of 'Boomer' in service, the Ohio Class submarine which has the capability to carry up to 24 submarine-launched ballistic missiles (SLBMs).

As of February 2018, the new Strategic Arms Treaty (START) is in effect, making the SSBN force responsible for 70% of the United States strategic weapons inventory.

West Coast Boomers are home-ported in Bangor, WA, and East Coast Boomers are home-ported in King's Bay, GA. SSBNs use two crews ('Blue' and 'Gold' crews) which alternate on-patrol.



***Ohio* Class Ballistic Missile Submarine [USS Maine (SSBN 741)]**

SSBN-726 Ohio Class Ballistic Missile Submarine (SSBN 726 – SSBN 743)	
	
Visual Identification	Length: 560ft; Beam: 42ft; Draft: 35ft Fairwater planes. Large "turtleback" hull design
Weapons	24 Trident II D5 SLBM Tubes 4 Torpedo Tubes - MK 48 Torpedoes
Capability	Test depth: 800+ft; Speed: 20+knots submerged

Guided Missile Submarines (SSGN)

The first four of the Ohio Class SSBNs were converted into guided missile submarines (SSGN). *Ohio* Class SSGNs provide the Navy with a combination of precision strike and Special Operation mission capability within a stealthy, clandestine platform. If the maximum number of TLAMs were loaded, one Ohio Class SSGN would carry an entire Carrier Strike Group's equivalent of cruise missiles. Two remaining missile tubes act as lockout chambers to be used by Special Forces personnel. The missile tubes can also be used to carry and launch Unmanned Aerial Vehicles (UAVs) or Unmanned Underwater Vehicles (UUVs). SSGNs can also carry the Dry Deck Shelter/SEAL Delivery Vehicle (DDS/SDV) in support of SOF.

Like SSBNs, SSGNs also use two crews, which alternate to increase the platform's operational tempo. West Coast SSGNs are home-ported in Bangor, WA and typically swap crews in Guam. East Coast SSGNs are home-ported in King's Bay, GA and typically swap crews in Diego Garcia.





***Ohio* Class Guided Missile Submarine. [USS *Ohio* (SSGN 726)]**

SSGN-726 Ohio Class Guided Missile Submarine	
	
Visual Identification	Fairwater planes otherwise known as sail planes Large "turtleback" hull design Deck stays dry while riding on the surface
Weapons	4 Torpedo Tubes - MK 48 Torpedoes 22 of 24 Missile Tubes x7 UGM-109 Tomahawk Cruise Missiles per tube -- Maximum 154
Enhanced Capability	Berth for a team of 66 SOF personnel for up to 90 days. Ability to carry the Dry Deck Shelter/SEAL Delivery Vehicle (DDS/SDV). Ability to launch Unmanned Aerial Vehicles (UAVs) or Unmanned Underwater Vehicles (UUVs).

Future Projects

The Columbia Class submarine is being designed to replace the Ohio Class ballistic missile submarine, whose remaining boats will be decommissioned, one per year, beginning in 2027. The Columbia Class will take over the role of submarine presence in the United States' strategic nuclear force. Design features will include X-shaped stern control surfaces (hydroplanes), sail-mounted dive planes, and electric drive.

V. Weapons Systems and Sensors

Weapons

Mk-48 and Mk-48/ADCAP (ADvanced CAPability) Torpedoes

The Mk-48 is the principal heavyweight Anti-Submarine and Anti-Surface ship torpedo in the U.S. inventory. It is an acoustic-homing torpedo, having its own onboard SONAR to seek and destroy enemy contacts. The ADCAP modification includes improvements in speed and accuracy, sophisticated SONAR, all digital guidance and control systems, and increased range. A single Mk-48 is capable of sinking most of the world's warships. The torpedo is designed to detonate underneath a ship, creating a steam void below the ship that breaks the ship's keel. The lack of water under the keel first cracks the hull, and then the surge of upward gases from the steam void rapidly pushes through the crack further splitting the ship. Finally, as the void collapses, the hull slams back into its original configuration only to collapse in on itself. After detonation, most ships have mere moments until it is sunk.



Typically, Sonar Operators passively collect data that is fed into Fire Control. The Fire Control operators resolve a solution to the contact, and determine the intended track to fire the torpedo. The Mk-48 follows a pre-programmed search routine using an active seeker to search for the target, and can be controlled by a guidance wire from the submarine. The ADCAP is so capable that the target may not even be aware that a torpedo is incoming until terminal homing, which occurs shortly before the ADCAP detonates. Additionally, by that time, the launch submarine can maneuver outside counter-fire range and silently listening for the pending explosion and hull destruction.



Tomahawk Cruise Missile

The Tomahawk Land Attack Missile (TLAM) is an all-weather, long range, subsonic cruise missile used for land attack warfare. U.S. submarines can launch the Tomahawk cruise missile either from a torpedo tube or from the Vertical Launch System, if capable. The most common cruise missile warhead is a conventional 1,000-lb, unitary warhead, but some are configured to release combined effects bomblets (anti-airfield).



Tomahawk Cruise Missile Launch from SSGN

Trident II (D5) Submarine Launched Ballistic Missile (SLBM):



Trident II (D5) missiles are deployed in Ohio Class SSBN submarines, each carrying up to 24 missiles. The Trident II (D5) is a three-stage, solid-propellant ballistic missile with a range of more than 4,000 nautical miles. Trident II is launched by the pressure of expanding gas within the launch tube, rising from the submarine in that pocket of air and is ejected out of the water. When the missile attains sufficient distance from the submarine, the first stage motor ignites and the boost stage begins. Each missile carries multiple nuclear warheads, housed in multiple independent re-entry vehicles (MIRVs), which launch from the missile and are independently targeted.

Trident Missile Launch from SSBN

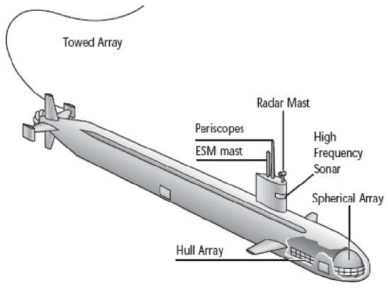
Sensors

Sonar

Unless using a periscope, a submerged submarine has no optical window to the outside world. To locate contacts, to locate the ocean floor, and for targeting purposes, a submarine uses SONAR (SOund NAvigation and Ranging). SONAR can function in two modes: active (used less frequently) and passive (constantly employed). In active SONAR, the submarine emits a sound pulse that reflects off an object, and the return signal allows the submarine to determine the bearing (direction) and range (distance) to the contact. Passive SONAR involves listening to sounds like the noise generated by a merchant's engines or the noise of another submarine's screw chopping through the water. SONAR can be used for navigational purposes as well. By identifying known features on the ocean floor, a submarine can keep track of its location.

There are several SONAR sensors:

- Spherical Array (in the bow)
- Hull Array (along the hull)
- Towed Array (out the stern)
- High Frequency Array (in the sail)



Periscopes and Photonics Masts

Periscopes are used to see outside the submarine for safety and targeting other vessels operating at periscope depth. Periscope depth is the depth at which the periscope is exposed while the hull of the submarine remains below the water line. The Virginia Class platform and SSGNs have photonics masts that utilize cameras to transmit images or video to the submarine instead of using mirrors and lenses like a periscope. Current uses of periscopes and photonics masts include but are not limited to visual detection of other ships and aircraft, ranging, infrared and low-level light detection, communications, and electromagnetic spectrum monitoring.







Dry Deck Shelters (DDS): Dry Deck Shelters give submarines greater ability to deploy special operations forces (SOFs) by transporting, deploying and recovering forces via the DDS. DDS can transport SEAL Delivery Vehicles (SDVs) or Combat Rubber Raiding Crafts (CRRCs) without having to surface.



VI. Primary Submarine Missions

Intelligence, Surveillance, Reconnaissance (ISR): Observe and record video of other countries' military exercises (etc.), relying on our stealth capabilities. Intercept communications to provide cueing to our forces. (SSN/SSGN)

Naval Special Warfare (NSW): DDS capabilities to insert SEALs near another country's shore, allowing them easy access to and extraction from enemy territory with maximum stealth. (SSGN)

Strike: Launch Tomahawk cruise missiles into enemy territory with no warning, while operating submerged and undetected. (SSN/SSGN)

Anti-Submarine Warfare (ASW) and Anti-Surface Warfare (ASUW): (ASW) Track other countries' submarines to get info regarding their operating patterns and acoustic information that we could use if we ever went to war. Capable of launching Mk-48 Advanced Capability torpedoes if needed to attack an enemy submarine. (ASUW) Track other countries' surface ships to get info about their operating patterns and discover vulnerabilities to counter-detect these platforms. (SSN/SSGN)

Mine Warfare: Able to detect, avoid, and neutralize enemy mines, allowing us to counter-act Anti-Access/Area-Denial capabilities. Against countries who may try to close off choke points critical to maritime commerce or their own security. (SSN/SSGN)

Counter-Drug Operations: Detect drug-running boats and submarines, then inform law enforcement. (SSN/SSGN)

Strategic Deterrence: Remain undetected as a capable delivery vehicle of nuclear warheads to hostile nations. SSBNs make up the survivable leg of the nuclear triad (bombers, missile silos, submarines) as they operate undetected in the world's oceans. Nuclear deterrence theory suggests that the only defense against a nuclear attack from a nation-state is a retaliatory nuclear strike resulting in mutual destruction. (SSBN)

VII. Deployment Cycles of SSNs, SSGNs, and SSBNs

SSNs and SSGNs: SSNs typically operate on 6 month deployments, and SSGNs have 15 month deployments. Like SSBNs, SSGNs will have two crews which are able to swap out in theater to allow for proper crew training, readiness and morale.

SSBNs: The Ohio-class design allows the submarines to operate for 15 or more years between major overhauls. On average, the submarines spend 77 days at sea followed by 35 days in-port for maintenance. Each SSBN has two crews, Blue and Gold, which alternate manning the submarines and taking them on patrol. This maximizes the SSBN's strategic availability, reduces the number of submarines required to meet strategic requirements, and allows for proper crew training, readiness and morale.

VIII. Command Organization and Roles and Responsibilities on a U.S. Submarine

Engineer Officer ("ENG"): The Department Head responsible to the CO for all systems related to the nuclear propulsion plant as well as auxiliary engineering systems.

Electrical Officer (EO): The Division Officer for the Electricians (EMN) on board. Oversees the planning and execution of all electrical maintenance, both nuclear and non-nuclear. Responsible for electrical power and distribution, as well as lighting and auxiliary power.

Reactor Controls Assistant (RCA): The Division Officer for the Nuclear Electronics Technicians (ETN) on board. Oversees the planning and execution of all reactor plant protective equipment maintenance. Verifies the Pre-Critical Checkoff and Estimated Critical Position before every reactor plant startup.

Main Propulsion Assistant (MPA): The Division Officer for the nuclear Mechanics (MMN) on board. Oversees the planning and execution of all nuclear mechanical system maintenance. Responsible for the ship's propulsion turbines, steam systems, and reactor plant fluid systems. The MPA is the Man-In-Charge for all flooding casualties, main engine casualties, and steam plant casualties in the Engine room.

Chemistry and Radiological Controls Assistant (CRA): The Division Officer for the Engineering Laboratory Technicians (ELT) on board. Oversees the proper execution and results of all required chemistry samples, and the planning and execution of chemistry maintenance. Primary manager for the ship's radiological control programs. The CRA is the Man-In-Charge for all radiological casualties.

Damage Control Assistant (DCA): The Division Officer for the Auxiliary Mechanics (MMA) on board. Oversees the proper planning and execution of all damage control system, sanitary system, hydraulic system, chill water system, and diesel system maintenance. The DCA is responsible for the proper operation of the ship's Diesel Generator.

Navigator / Operations Officer ("NAV"): The Department Head responsible to the CO for safe navigation of the ship, and all navigation related systems.

Communication Officer (COMMO): The Division Officer for the Radiomen and Electronic Warfare (ITS) on board. Approves all radio messages that leave the ship. Responsible for all external communication, electronic warfare, and cryptographical systems. Also responsible for the ship's optical periscopes (or photonics masts).

Assistant Operations Officer (AOPS): The Division Officer for the Navigation Electronics Technicians (ETV) on board. Responsible for the operational planning of ships missions and running the daily Operations Brief, presented to the CO. Oversees the proper planning and execution of all navigational system maintenance on board.

Combat Systems Officer ("WEPS"): The Department Head responsible to the CO for all weapons handling evolutions and ships tactical weapons systems.

Assistant Weapons Officer (AWEPS): The Division Officer for the Sonar Technicians, Fire Control Technicians, and Torpedomen (STS/FT/TM). Oversees the planning and execution of all tactical systems on board.

Dive Division Officer: The Division Officer for the ship's Dive Division. These are not necessarily sailors from the same rate, rather any Sailor or Officer who has completed the Navy Dive School. Responsible for conducting safety dives around the ship, hull inspections, and retrieving items dropped in the water by topside watch standers.

IX. Submarine Officer Training Pipeline

Naval Nuclear Power School (NNPS): After graduation, newly commissioned Officers move on to receive the advanced training that is at the core of Navy Nuclear Propulsion, starting with Naval Nuclear Power School (NNPS) in Charleston, S.C. This 24-week graduate-level course of intensive study covers a variety of science- and technology-based subjects from ordinary and partial differential equations to thermodynamics to reactor dynamics. NNPS provides the foundation of knowledge necessary for a theoretical understanding of nuclear propulsion. http://www.navsea.navy.mil/Home/NNPTC/

Nuclear Power Training Unit (NPTU): From there, Submarine Officers attend Nuclear Power Training Unit (NPTU), often referred to as Prototype, in either Charleston, S.C., or Ballston Spa, N.Y. This 26-week course involves hands-on training with several operational reactor prototypes. Here, Officers apply the concepts learned at Nuke Power School – studying systems and components of a nuclear propulsion plant and working with all the associated systems of a full-scale operating plant. The training culminates with qualification as Engineering Officer of the Watch.

Submarine Officer Basic Course (SOBC): Next comes Submarine Officer Basic Course (SOBC), a 12-week course located in New London, Conn. There, Officers learn all about submarine operations, including safety, damage control, seamanship and the responsibilities of leading an advanced submarine crew as a division Officer before reporting to an assigned submarine. Officers may receive an additional six weeks of advanced training

through the strategic weapons system course at Trident Training Facilities in either Kings Bay, Ga., or Bangor, Wash.

Prospective Nuclear Engineer Officer (PNEO): The Prospective Nuclear Engineer Officer examination gives an officer the opportunity to continue their career as a department head and quality as a nuclear Engineer Officer. This exam is conducted at the Washington Naval Yard with both written and oral examinations which culminate with a recommendation from the Director of Naval Reactors.

X. Junior Officer Watches and Qualifications

Engineering-Officer-of-the-Watch (EOOW): Responsible for the safe operation of the nuclear power plant. In charge of a 12 man watch team providing electricity, propulsion, and water to the ship.

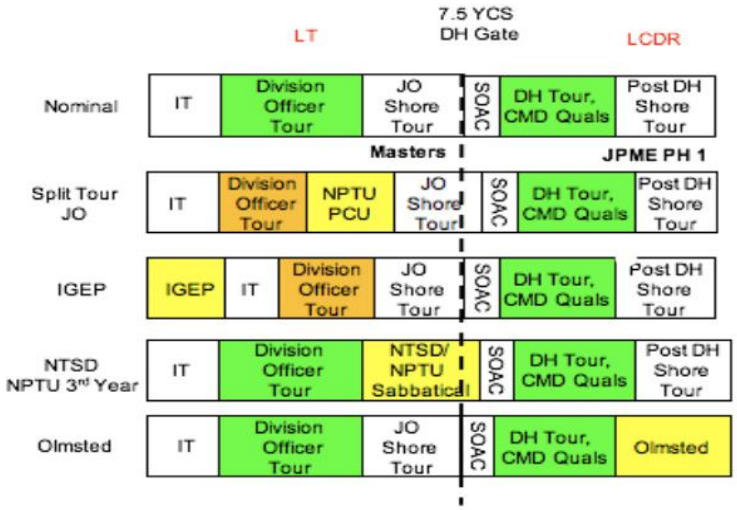
Junior-Officer-of-the-Watch (JOOW): Assistant to the Officer-of-the-Deck.

Contact Manager / Junior-Officer-of-the-Deck (JOOD): Responsible for providing an accurate and current contact picture to the Officer of the Deck. Leads the Contact Management team made up of Sonar Operators and Fire Control Technicians to convert raw sonar data into range, direction, course, and speed of other vessels and making navigational and tactical recommendations.

Officer-of-the-Deck (OOD): The on-watch representative of the Captain. Responsible to the Captain for the ship's safe navigation and operation. Leads the submarine watch team to accomplish the mission objectives.

XI. Shore Tour Opportunities

After the initial division officer tour, officers fill positions anywhere from Nuclear Power School to Prototype to Submarine School. During this period of time, officers will also have the opportunity to earn a graduate degree, whether that be an in residence or a distance program.



Sources:

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2. CSS Hunley: https://hunley.org/
3. Photos: http://www.navy.mil/view_gallery.asp?category_id=17
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7. The Navy Fact File: http://www.navy.mil/navydata/fact.asp
8. Ships and Aircraft of the U.S. Fleet

CHAPTER 6: NAVAL AIR WARFARE

I. Mission and Operations

The primary function of naval aviation is to closely coordinate with other naval forces in maintaining command of the seas while also establishing dominance in the airspace surrounding vital interests. Naval Aviation supports the following operations:

1. Air warfare (AW)
2. Surface warfare (SUW)
3. Anti-submarine warfare (ASW)
4. Close air support (CAS)
5. Combat search and rescue (CSAR) / search and rescue (SAR)
6. Command, control, communication, computers, combat systems, and intelligence (C5I)
7. Logistics support operations (LOG)
8. Intelligence, surveillance, and reconnaissance (ISR)
9. Mine warfare (MIW)
10. Strike warfare (STW)

The numerous naval aviation operations are carried out by multiple aviation platforms. In general, there are three categories of aircraft: **Fixed Wing**, **Rotary Wing,** and **Tiltrotor**. Within these categories, aircraft are developed with specific missions in mind. Fixed wing naval aviation assets can be further classified into one of two groups: **Carrier Aviation** or **Maritime Aviation**.

II. Naval Air Warfare Insignia

Naval Aviation personnel fall into many categories. Naval Aviators and Naval Flight Officers (NFO) operate the aircraft in today's fleet. Naval Aircrewmen support flight operations and operate mission equipment in flight. On the ground, maintenance and medical personnel support the mission by keeping both the aircraft and aircrews airworthy. Below is a brief description of some of the major roles within Naval Aviation:



Naval Aviator. Unrestricted Line Officer qualified for duty involving flying as a Pilot. As a qualified aircraft commander (AC), a Naval Aviator retains overall responsibility for the safe conduct of flight operations and physical control of aircraft, regardless of rank.



Naval Flight Officer (NFO). Unrestricted Line Officer who operates the advanced systems onboard naval aircraft and may also act as the overall tactical coordinator of multiple air assets during a mission.



Naval Aircrewmen. Enlisted personnel in a permanent flight status. Naval Aircrewmen perform in-flight duties in accordance with various aircrew positions and are responsible to the Aircraft/Mission Commander for the operation, maintenance, and training associated with applicable aircraft systems.



Flight Surgeon. Medical representative for an aviation command. The flight surgeon is a board-certified medical doctor and promotes aviation safety to decrease the potential for aircraft accidents through the implementation of aviation medicine programs, flight physicals for aircrew personnel, and other routine medical tasks. The flight surgeon is responsible to the CO of the squadron for medical readiness and routinely flies with the squadron to observe in-flight stressors and crew coordination.



Professional Aviation Maintenance Officer (PAMO). Established in 2009, the PAMO community is comprised of aerospace maintenance duty officers, aviation maintenance limited duty officers, and aviation maintenance chief warrant officers. They have significant experience and display a high level of knowledge in all aspects of aviation warfare support. In addition to serving a minimum of 24 months in an aviation maintenance activity and completing one operational deployment, PAMOs are required to complete a personnel qualification standard (PQS) and successfully pass an oral board. Once qualified, PAMOs serve as leaders within an aviation squadron's maintenance department, supporting aviation missions and the squadron's warfighting capabilities.

III. History

During the twentieth century, few military organizations played a more crucial role than Naval Aviation. During maritime conflicts, aircraft carriers replaced battleships as the decisive weapon, projecting their powerful air wings over vast expanses of water, striking with surprise at enemy fleets and land bases, and then disappearing with equal swiftness. In times of peace, the carrier and its battle group provided American political leaders a flexible and potent way to respond to regional crises wherever and whenever American vital interests were threatened. "Where are the carriers?" has been the first question asked by American presidents at the start of every national security crisis since the end of World War II.

The Navy's interest in airplanes as a naval weapon system dates back to 1898 when several naval officers became members of an inter-service board tasked to observe and investigate the military potential of the new flying machine. In 1908 and 1909, naval officer observers were present at the public demonstrations staged by the Wright brothers.

In 1910, LT Theodore G. Ellyson became the first naval officer selected for flight training. Ellyson underwent instruction with Glenn Curtiss, the producer of the first practical hydroplane and early aircraft developer. It was a Curtiss Pilot by the name of Eugene Ely who made the first shipboard takeoff from the USS Birmingham in 1910. Ely would later become the first Pilot to successfully land an aircraft on the deck of a ship. Just one year later, having successfully completed training, LT Ellyson demonstrated the ability to launch a plane utilizing a newly devised compressed air catapult.

The first naval air station was located in Annapolis at Greenbury Point in 1911. The first aircraft carrier, USS Langley, was commissioned in 1922 by converting an old collier to a flat top ship.

Naval aircraft saw action in WWI, but it was not until WWII that naval aviation gained prominence. While naval aviation saw action in both European and Pacific theaters, it was the performance at the battle of Midway that solidified their position of importance. Having destroyed all four Japanese carriers, naval aviators turned the war in the Pacific from defensive to offensive. From that point onward, the center of the fleet became the aircraft carrier instead of the battleship.

Naval aviation has continued to grow in distinction and popularity over the past few decades. From operations in Desert Storm, Iraqi Freedom, Enduring Freedom, and Inherent Resolve to humanitarian assistance at home and abroad, naval aircraft and aircraft carriers have assumed prominent roles and responsibilities.

At the start of hostilities in Afghanistan, the aircraft carriers in the North Arabian Sea provided the only viable option for tactical air support. In the first two years of sustained combat operations for Operation ENDURING FREEDOM (OEF), 72% of strike sorties were flown by aircraft based on six different carriers. Hornets, Prowlers, and Hawkeyes provided close air support at distances of 600 to 750 nautical miles from their sea base. Indicative of the dynamic employment of carrier aircraft, 80% of targets engaged were assigned to aircrews after launch and 93% of munitions were satellite-aided or laser-guided. In a single deployment, a Carrier Air Wing (CVW-8) attached to USS Theodore Roosevelt (CVN-71) flew 3,000 sorties, supporting Troops-In-Contact (TIC) 500 times.

In 2003, six of twelve aircraft carriers were surged for Operation IRAQI FREEDOM, flying half of all fighter sorties in the U.S. Central Command Area of Responsibility (AOR). Carriers were on station in the Mediterranean Sea as well as the Arabian Gulf. More than 700 Navy and Marine Corps aircraft provided critical combat capability, with each carrier flight deck active, on average, 16 hours a day to generate 120-130 sorties during the first month of the war. In a single deployment, CVW-14 aboard the USS Abraham Lincoln (CVN-72) dropped 1.865 million pounds of ordnance.

Naval aviation continues to provide unique capabilities for humanitarian relief operations. CVW-2 assigned to USS Abraham Lincoln (CVN-72) arrived on-station off the coast of Indonesia just five days after the Dec. 26, 2004 tsunami

devastated the region. The Abraham Lincoln Carrier Strike Group (ABECSG) spearheaded the emergency relief effort known as Operation UNIFIED ASSISTANCE. By month's end, Navy helicopters had flown 1,527 missions, delivering 4.8 million pounds of supplies and transporting 2,929 people. In 2011, when a 9.0 magnitude earthquake caused a tsunami to catastrophically damage the Fukushima nuclear reactor in Japan, the U.S. Navy swiftly responded with 24 ships and 140 naval aircraft to assist the Japanese Self Defense Force. Domestically, naval aircraft played a vital role conducting search and rescue and humanitarian operations during Hurricane Katrina in New Orleans in 2005 and Hurricane Harvey in Houston in 2017.

Likewise, sea-based aviation assets remain a valuable tool in complex contingencies such as the NATO operation in support of Libya's liberation in 2011 during Operations ODYSSEY DAWN and UNIFIED PROTECTOR. Air operations were led by EA-18G Growlers whose radar jamming pods, High-Speed Anti-Radiation Missiles, and APG-79 phased-array radar devastated the Qadhafi regime's air defense and communications networks, enabling AV-8B Harrier IIs of the 26th MEU to attack ground targets in Libya. Simultaneously, P-3C Orions attacked surface ships with AGM-65F Maverick missiles, and an MV-22 conducted combat search and rescue to recover the aircrew of a downed USAF F-15E.

Most recently, naval aviation has been a key player in the fight against ISIL/ISIS in Iraq and Syria by launching air strikes from aircraft carriers and forward deployed bases. During their 10-month deployment to the Arabian Gulf in 2014-2015, CVW-17 aircraft aboard the USS Carl Vinson (CVN-70) Strike Group launched 2,383 combat sorties in support of Operation INHERENT RESOLVE. CVW-17 aircraft deployed 869 precision-guided munitions, totaling over a half million pounds of ordnance, against ISIL/ISIS targets in Iraq and Syria.

The common link for those who participate in this exciting history is their training in Pensacola, Florida. Since 1914, it is there that young student naval aviators and naval flight officers have learned and mastered the unique demands of flying naval aircraft.

IV. Organization

Naval aircraft are grouped together in *squadrons* – military units composed of a number of similar aircraft. Every squadron is designated with a two or three-letter abbreviation describing the missions they accomplish

Squadron Type Decoder				**Squadron Designations**	
1st Letter	**Meaning**	**2nd Letter**	**Meaning**	**Squadron Type**	**Meaning**
V	Fixed Wing	Q	Electronic or Reconnaissance	VAW	Airborne Early Warning
H	Rotary Wing	R	Logistics	VP	Maritime Patrol
		W	Warning	VFA	Fighter/Attack
		P	Patrol	VAQ	Electronic Attack
		A	Attack	VQ	Fleet Air Reconnaissance
		F	Fighter	VR/VRC/VRM	Fleet Logistics Support/Carrier/Multi-Mission
				HSM	Helicopter Maritime Strike
				HSC	Helicopter Sea Combat
				HM	Helicopter Mine Countermeasures

Individual squadrons are often grouped together with other squadrons and surface units to accomplish their mission. Two ways they are grouped together are into Carrier Air Wings or Detachments.

Carrier Air Wing

A Carrier Air Wing (CVW) is composed of squadrons from different Type Wings and is embarked onboard an aircraft carrier. Until 1963, Carrier Air Wings were known as Carrier Air Groups (CAG); thus, the commander of each air wing came to be known as, and is still called, the CAG. The CAG holds the rank of Captain and reports directly to the Carrier Strike Group (CSG) Commander.

A typical modern CVW is composed of the following squadrons, putting the wing at approximately 70 aircraft:

- 4 VFA Squadrons (F/A-18E/F Super Hornet)
- 1 VAQ Squadron (EA-18G Growler)
- 1 VAW Squadron (E-2C/D Hawkeye)
- 1 VRC/VRM Detachment (C-2 Greyhound/CMV-22B Osprey)
- 1 HSC Squadron (MH-60S Knighthawk)
- 1 HSM Squadron (MH-60R Seahawk)

Detachments

Often times, helicopter, logistics, and patrol squadrons do not deploy as a whole squadron. When this is the case, the deploying aircraft are called a detachment. For example, VRC detachments are assigned to a CVW; HSC or HSM detachments each may be assigned to amphibious ships or small combatant ships (CG, DDG, LCS).

V. Aircraft Carriers



CVN-68 Nimitz Class Nuclear Powered Aircraft Carrier	
Visual Identification	Small superstructure and located approximately 2/3s of the distance from bow to stern
Mission	With their embarked air wing, aircraft carriers are the centerpiece of America's naval forces. On any given day, aircraft carriers exercise the Navy's core capabilities of power projection, forward presence, humanitarian assistance, deterrence, sea control, and maritime security.
Weapons	Multiple NATO Sea Sparrow, Phalanx CIWS, and Rolling Airframe Missiles (RAM)
Aircraft	1 Carrier Air Wing (approximately 60 aircraft)
Crew Size	Ship's Company: 3,000/Air Wing: 1,500/Other: 500



CVN-78 Gerald R. Ford Class Nuclear Powered Aircraft Carrier	
Visual Identification	Largest Ship in the U.S. Navy and 25 feet longer than the Nimitz Class Carriers at 1106 ft. The Ford class is able to be easily distinguished from the Nimitz class due to the more aft placement of the superstructure.
Mission	With their embarked air wing, aircraft carriers are the centerpiece of America's naval forces. On any given day, aircraft carriers exercise the Navy's core capabilities of power projection, forward presence, humanitarian assistance, deterrence, sea control, and maritime security.
Weapons	Multiple Evolved NATO Sea Sparrow (ESSM), Phalanx CIWS, and Rolling Airframe Missiles (RAM), and small caliber weapons
Aircraft	1 Carrier Air Wing (approximately 70 aircraft)
Crew Size	Ship's Company: 2600 /Air Wing: 2,480

VI. Aircraft Designations

All Navy aircraft, like all U.S. military aircraft, are designated with a scheme of letters and numbers that identify each aircraft's particular type, model, and series (T/M/S). Prefix letter(s), placed before the hyphen, identify an aircraft's primary mission(s). The number(s) following the hyphen define the particular model number. The letters following the model number indicate the series of that model (in successive alphabetic increments). The following prefixes (mission designators) are common to U.S. Navy aircraft:

Aircraft Type Decoder			
A	Attack	P	Patrol
C	Cargo/Transport	Q	Unmanned
E	Electronic	R	Reconnaissance
F	Fighter	S	Antisubmarine
H	Helicopter	T	Trainer
K	Tanker	U	Utility
M	Mine-Countermeasures & Multi-Mission	V	VTOL/STOL

VII. Fixed Wing

F/A-18E/F Super Hornet



Role: **Fighter/Attack**	Carrier-based all-weather fighter and attack aircraft. All F/A-18s can be configured quickly to perform either fighter or attack roles or both, through selected use of external equipment to accomplish specific missions. This 'force multiplier' capability gives the operational commander more flexibility in employing tactical aircraft in a rapidly changing battle scenario. The fighter missions are primarily fighter escort and fleet air defense; while the attack missions are force projection, interdiction, and close and deep air support. The F/A-18E/F Super Hornet replaced the F/A-18C Hornet and has the same capabilities. However, the Super Hornet has a greater range, higher service ceiling, larger payload, increased reliability, and an improved electronics suite. The Super Hornet also serves as the carrier air wing's only air refueling asset.
Distinguishing Features:	Twin V-oriented vertical stabilizers Rectangle shaped air intakes Single seat (E model) or Two seat (F model) cockpit
Crew:	E: 1 Pilot F: 1 Pilot / 1 NFO as a Weapons System Officer (WSO)
Responsibilities:	E: Pilot is responsible for aviation, navigation, communication, and tactical employment that includes air-to-air and air-to-ground missions. F: The crew is optimized through sharing the responsibilities above which makes them particularly suited for high task load missions such as close air support and forward air control.

EA-18G Growler



Role: **Electronic Attack**	Carrier based and expeditionary (ground based) all-weather electronic attack aircraft. A modified version of the F/A-18F, the EA-18G has replaced the Navy's EA-6B Prowler. The EA-18G Growler integrates the latest electronic attack technology, including the ALQ-218 receiver, ALQ-99 jamming pods, communication countermeasures, and satellite communications. Along with the electronic attack suite, the Growler also features the same APG-79 Active Electronically Scanned Array (AESA) radar found in the Super Hornet.
Distinguishing Features:	Twin V-oriented vertical stabilizers Rectangle shaped air intakes 35% larger fuselage and wing surface area compared to the Hornet Two seat cockpit *Jamming pods mounted on the wing tips*
Crew:	1 Pilot / 1 NFO as Electronic Warfare Officer (EWO)
Responsibilities:	The crew is optimized by sharing the responsibilities of aviation, navigation, communication, and tactical employment that includes electronic attack, electronic surveillance, and High-speed Anti-Radiation Missiles (HARM).

F-35C Lightning II



Role: **Stealth Fighter**	F-35C Lightning II is a fifth-generation fighter, combining advanced stealth technology with fighter speed and agility, fused targeting, cutting-edge avionics, advanced jamming, network-enabled operations and advanced sustainment. The F-35C will be a critical addition to the carrier strike group (CSG) integrated war-fighting package with stealth advantages to penetrate threat envelopes and the ability to detect and link that information to other CSG aircraft, ships and decision-makers. F/A-18 Super Hornets, with the ability to carry large payloads of advanced weapons will continue to provide lethality and flexibility and to complement the F-35C. The aircraft features a common design across three unique variants for the Air Force (F-35A), Marine Corps (F-35B), and U.S. Navy, capable of performing ground attack, reconnaissance, and air defense missions.
Distinguishing Features:	Twin V-oriented vertical stabilizers Rectangle shaped air intakes Single seat
Crew:	Crew: 1 Pilot
Responsibilities:	To take full advantage of the combination of the aircraft's stealth, avionics suite, and internal weapons carriage to establish a first-look, first-shot, first kill capability.

E-2D Hawkeye



Role: **Airborne Early Warning**	Carrier based all-weather tactical battle management, airborne early warning, and command and control aircraft. The E-2D uses computerized radar, Identification Friend or Foe (IFF), and electronic surveillance sensors to provide early warning, threat analysis against potentially hostile air and surface targets. Additional missions include surface surveillance coordination, air interdiction, offensive and defensive counter air control, close air support coordination, time critical strike coordination, search and rescue airborne coordination, and communications relay. Upgraded Hawkeyes also have an aerial refueling capability.
Distinguishing Features:	High wing Twin turboprop engines Large rotating radar dome on the spine of aircraft
Crew:	2 Pilots / 3 NFOs
Responsibilities:	Pilots: Aviation, navigation, and communication. NFOs: Mission Commander, Sensor Operator, Airborne Command & Control

C-2A Greyhound



Role: **Fleet Logistics Support**	Carrier Onboard Delivery (COD). Provides long-range logistics support to Carrier Strike Groups. The C-2A can deliver a combined payload of 10,000 pounds over a distance of 1,000+ nm. The interior arrangement of the cabin can readily accommodate cargo, passengers, and litter patients. The large aft cargo ramp/door and a powered winch allow straight-in rear cargo loading and unloading.
Distinguishing Features:	High wing Twin turboprop engines Rear loading ramp
Crew:	2 Pilots / 2 enlisted Aircrew
Responsibilities:	Pilot: Aviation Co-Pilot: Navigation and communication Aircrew: Loadmasters for cargo and passengers

P-8A Poseidon



Role: **Multi-mission Maritime Aircraft (MMA)**	The P-8A has phased in to the fleet to replace the aging P-3C aircraft. It is a modified Boeing 737-800ERX, bringing together a highly reliable airframe and high-bypass turbo fan jet engine with a fully connected, state-of-the-art open architecture mission system. This combination, coupled with next-generation advanced sensors, numerous weapon payloads, and aerial refueling capability, dramatically improves the Navy's Anti-Submarine Warfare (ASW), Surface Warfare (SUW), command and control, and intelligence collection capabilities.
Distinguishing Features:	Twin turbofan engines Raked wingtips
Crew:	3 Pilots / 2 NFOs / 4 enlisted Aircrew
Responsibilities:	Pilots: Aviation, navigation, and communication. Can serve as Mission Commander. NFOs: Tactical Coordinator (TACCO) and Co-Tactical Coordinator (COTAC) responsible for mission tactics and crew coordination. Can serve as Mission Commander. Aircrew: Sensor Operators (acoustics/non-acoustic/electronic support/radar/optical)

E-6B Mercury



Role: **Fleet Air Reconnaissance**	Dual-mission aircraft. Fulfills "Take Charge and Move Out" (TACAMO) mission by linking the National Command Authority (NCA) with the nation's nuclear forces (Bombers, ICBMs, SSBNs) by relaying Emergency Action Messages. Also serves as an Airborne Command Post (ABNCP) with the capability to launch U.S. land-based ICBMs via the Airborne Launch Control System (ALCS).
Distinguishing Features:	Boeing 707 airframe with 4 large high-bypass turbofan engines *Antenna pod on spine of aircraft*. HF antenna pod under each wing tip
Crew:	3 Pilots / 2 NFOs / 6-9 enlisted Aircrew
Responsibilities:	Pilots: Aviate, navigate, and communicate. May act as Mission Commander. NFOs: Airborne Communications Officer (ACO) and Combat Systems Officer (CSO). Responsible for Communications Central and release authority for all message traffic. May act as Mission Commander. Aircrew: Operation and maintenance of mission systems.

MQ-4C Triton



Role: **Persistent Maritime Intelligence, Surveillance, Reconnaissance**	The MQ-4C Triton is a forward deployed, land-based, autonomously operated system that provides a persistent maritime ISR capability using a multi-sensor mission payload of maritime radar, Electro-Optical/Infrared (EO/IR), Electronic Support Measures (ESM), Automatic Identification System (AIS) and basic communications relay. The MQ-4C Triton's ability to perform persistent ISR within a range of 2,000 nm allows the other aircraft in the maritime community, the P-8A, to focus on its core missions of USW and SUW weapons employment and Multi-Intelligence (INT) operations.
Distinguishing Features:	130 ft wing span, domed superstructure, engine on centerline of fuselage, V-oriented twin vertical stabilizer
Crew:	Aircraft is unmanned; 4 personnel required per ground station

Responsibilities:	Air Vehicle Operator, Tactical Coordinator, 2 Mission Payload Operators

VIII. Rotary Wing

MH-60R 'Romeo' Seahawk



Role: **Maritime Strike**	The primary missions of the MH-60R 'Romeo' are ASW and SUW. Other missions include intelligence, surveillance, and reconnaissance, search and rescue, vertical replenishment, counter-narcotics operations, and command and control operations. The Romeo has updated radar and sonar systems, electronic signal collection capabilities, a glass-cockpit configuration, and a 'dipping' sonar for active acoustic tracking of submarines.
Distinguishing Features:	*Rear-wheel is further forward, closer to the middle of the aircraft* Radar dome under nose Door on starboard side only Low pylon mounts *When equipped with a FLIR, the turret faces up*
Crew:	2 Pilots / 1-2 enlisted Aircrew
Responsibilities:	Pilot: Operate the aircraft Co-Pilot: Airborne Tactical Officer (ATO) supervises the tactical situation/directs the Pilot and sensor operators Aircrew: Sensor operators for all onboard systems, rescue swimmers, crew-served weapons operators

MH-60S 'Sierra' Knighthawk



Role: **Sea Combat**	The primary missions of the MH-60S 'Sierra' include SUW, Special Operations Forces support, and Combat Search and Rescue. Other mission areas include Humanitarian Assistance / Disaster Relief, Search and Rescue, and Logistics.
Distinguishing Features:	*The tail wheel is in the very back of the aircraft* Large cargo doors are on both sides of the cabin Gunner's windows are behind the cockpit *When equipped with a FLIR the turret faces down*
Crew:	2 Pilots / 1-5 enlisted Aircrew
Responsibilities:	Pilot: Operates the aircraft Co-Pilot: Navigation/tactical mission control Aircrew: Crew chief, aerial gunner/rescue swimmer

MH-53E Sea Dragon



Role: **Mine Countermeasure**	The primary mission of the MH-53E is Airborne Mine Countermeasures (AMCM). The secondary missions are vertical shipboard delivery and assault support. It is capable of towing a variety of mine hunting/sweeping countermeasure systems, including the Mk 105 magnetic minesweeping sled, the AQS-14A side-scan sonar, and the Mk 103 mechanical minesweeping system. When performing the assault support mission, the MH-53E can be fitted with the GAU-21 .50-cal. machine gun ramp-mounted weapon system.
Distinguishing Features:	Large size (99 feet long) 6 or 7 rotor blades depending on the variant
Crew:	2 Pilots / 1-2 enlisted Aircrew
Responsibilities:	Pilot: Operate the aircraft Co-Pilot: Navigation/tactical mission control Aircrew: Sensor operator, loadmaster, and aerial gunner.

MQ-8B and MQ-8C Fire Scout





Role: **ISR**	The MQ-8 Fire Scout is an unmanned autonomous helicopter that provides reconnaissance, situational awareness, and precision targeting support for ground, air, and sea forces. The system is comprised of one or more MQ-8 Fire Scout air vehicles, mission control systems, and associated control handling and support equipment. The system can operate from any suitably equipped air-capable ships or land bases. The MQ-8B (pictured on the left) is equipped systems have deployed from Guided Missile Frigates (FFG) and Littoral Combat Ships (LCS). The MQ-8C is pictured on the right and based on the TH-57 platform used in Helicopter Advanced Training.
Distinguishing Features:	Small size (31.5 ft and 2000 lbs), no windows or doors, skids
Crew:	1 Pilot / 1 Aircrewman
Responsibilities:	Pilot: Operates aircraft remotely

	Aircrew: Sensor Operator

IX. Tiltrotor

CMV-22B Osprey



Role: **Logistics / Multi-Mission**	The CMV-22B Osprey is a variant of the MV-22B and is the replacement for the C-2A Greyhound for the Carrier Onboard Delivery (COD) mission transporting personnel, mail, supplies and high-priority cargo from shore bases to aircraft carriers at sea. The Osprey is a tiltrotor V/STOL aircraft that can takeoff and land as a helicopter but transit as a turboprop aircraft. It will provide the Navy with significant increases in capability and operational flexibility over the C-2A. CMV-22B operations can be either shore-based, "expeditionary", or sea-based. The Osprey is a critical warfighting enabler, providing the time sensitive combat logistics needed to support combat operations.
Distinguishing Features:	Large twin rotors that reciprocate up and down at the end of the wings.
Crew:	1 Pilot / 1 Copilot / 2 Crew chiefs
Responsibilities:	Pilot: Operates aircraft Crew chief: Load Master

X. Aviation Weapons

AIM-9X Sidewinder



Description:	The mission of the AIM-9X is to detect, acquire, intercept, and destroy a wide range of high-performance and ever-evolving airborne threats. This missile program delivers a datalink-enabled, launch and leave, air combat munition that uses passive infrared (IR) energy to acquire and track enemy air targets. The AIM-9X provides fighter aircraft with first shot, first kill opportunities when conducting air combat maneuvering Within Visual Range (WVR).
Classification:	Air-to-Air
Platforms:	F/A-18C/D/E/F, F-35, E/A-18G

AIM-120 AMRAAM



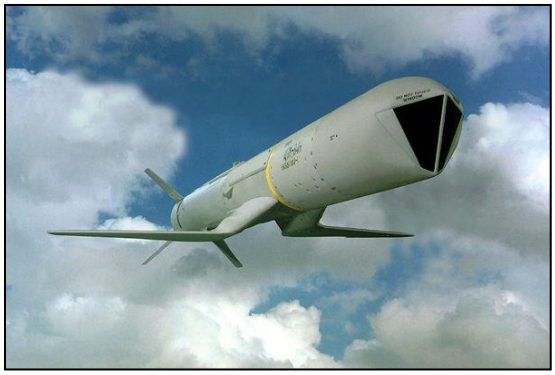
Description:	The AIM-120 Advanced Medium-Range, Air-to-Air missile has an all-weather, beyond-visual-range capability. AMRAAM serves as a follow-on to the AIM-7 Sparrow missile series. The new missile is faster, smaller, and lighter, and has improved capabilities against low-altitude targets.
Classification:	Air-to-Air
Platforms:	F/A-18C/D/E/F, E/A-18G, F-35B/C

Joint Direct Attack Munition (JDAM)



Description:	The Joint Direct Attack Munition (JDAM) is a guidance kit that converts existing unguided bombs into precision-guided "smart" munitions. The tail section contains an inertial navigational system (INS) and a global positioning system (GPS). JDAM improves the accuracy of unguided bombs in any weather condition and is fully integrated on Navy fighter-attack aircraft.
Classification:	Air-to-Ground
Platforms:	F/A-18C/D/E/F, F-35C

AGM-84 SLAM-ER



Description:	The AGM-84K Standoff Land Attack Missile-Expanded Response (SLAM-ER) is an air-launched, day/night adverse weather, over-the-horizon, precision strike missile. Most significant characteristics are: a highly accurate, GPS-aided guidance system; an imaging infrared seeker and two-way data link with the AWW-13 Advanced Data Link pod for Man-In-The-Loop (MITL) control; improved missile aerodynamic performance characteristics that allow both long range and flexible terminal attack profiles; an ordnance section with good penetrating power and lethality; and a user-friendly interface for both MITL control and mission planning.
Classification:	Air-to-Ground, Air-to-Surface
Platforms:	F/A-18C/D

AGM-88 HARM



Description:	The AGM-88 high-speed anti-radiation missile (HARM) is an air-to-surface tactical missile designed to seek and destroy enemy radar-equipped air defense systems. The AGM-88 can detect, attack, and destroy a target with minimum aircrew input. The proportional guidance system that hones in on enemy radar emissions has a fixed antenna and seeker head in the missile nose. A smokeless, solid-propellant, dual-thrust rocket motor that propels the missile.
Classification:	Air-to-Ground, Air-to-Surface
Platforms:	F/A-18C/D/E/F, E/A-18G, F-35

AGM-114 Hellfire



Description:	Hellfire is an air-to-ground, laser guided, subsonic missile with significant antitank capacity. It can also be used as an air-to-air weapon against helicopters or slow-moving fixed-wing aircraft.
Classification:	Air-to-Ground, Air-to-Surface
Platforms:	MH-60R/S

AGM-154 Joint Stand-Off Weapon (JSOW)



Description:	The AGM-154 Joint Standoff Weapon (JSOW) precision strike weapon, manufactured by Raytheon Company, is a 1,000-pound class air-to-surface missile that can carry several different lethal packages. The weapon's standoff range of 12 to 63 nautical miles allows JSOW to remain outside the threat envelopes of enemy point defenses while effectively engaging and destroying targets.
Classification:	Air-to-Ground
Platforms:	F/A-18C/D/E/F, F-35C

AGM-84 Harpoon



Description:	The AGM-84 Harpoon is an all-weather, over-the-horizon, anti-ship missile system that provides the Navy with a common missile for air and ship launches. The Harpoon's active radar guidance, warhead design, low-level cruise trajectory, and terminal mode sea-skim or pop-up maneuvers assure high survivability and effectiveness. The missile is capable of being launched from surface ships, submarines, shore batteries, or aircraft (without the booster).
Classification:	Air-to-Surface
Platforms:	F/A-18C/D/E/F, P-8A

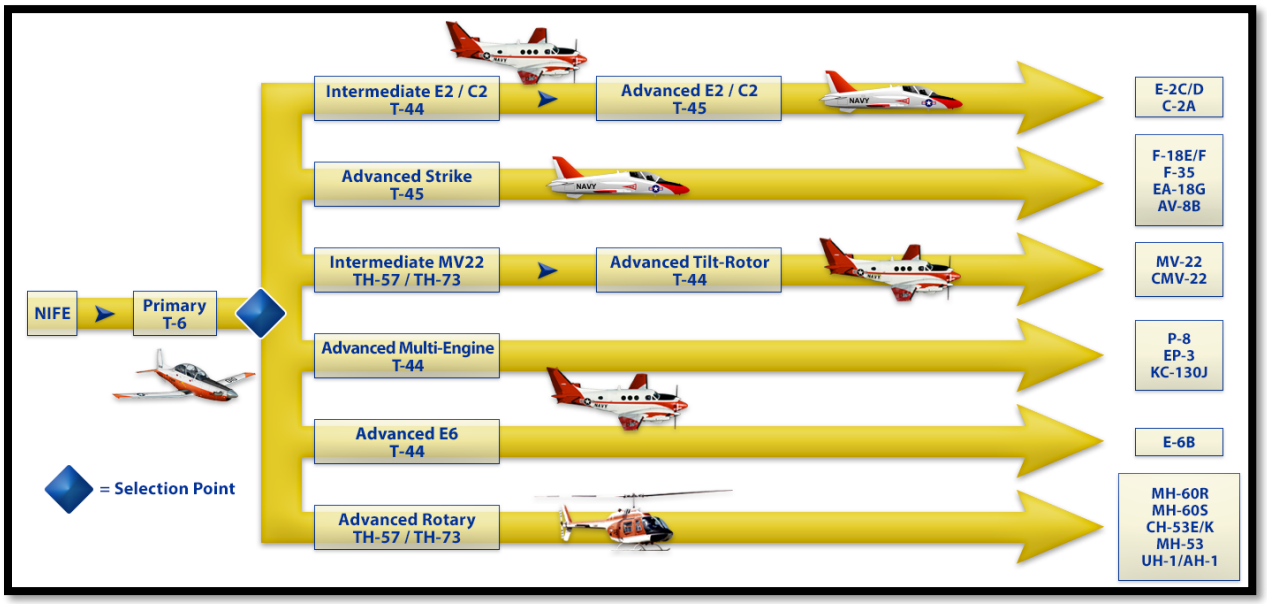
MK-54 Torpedo



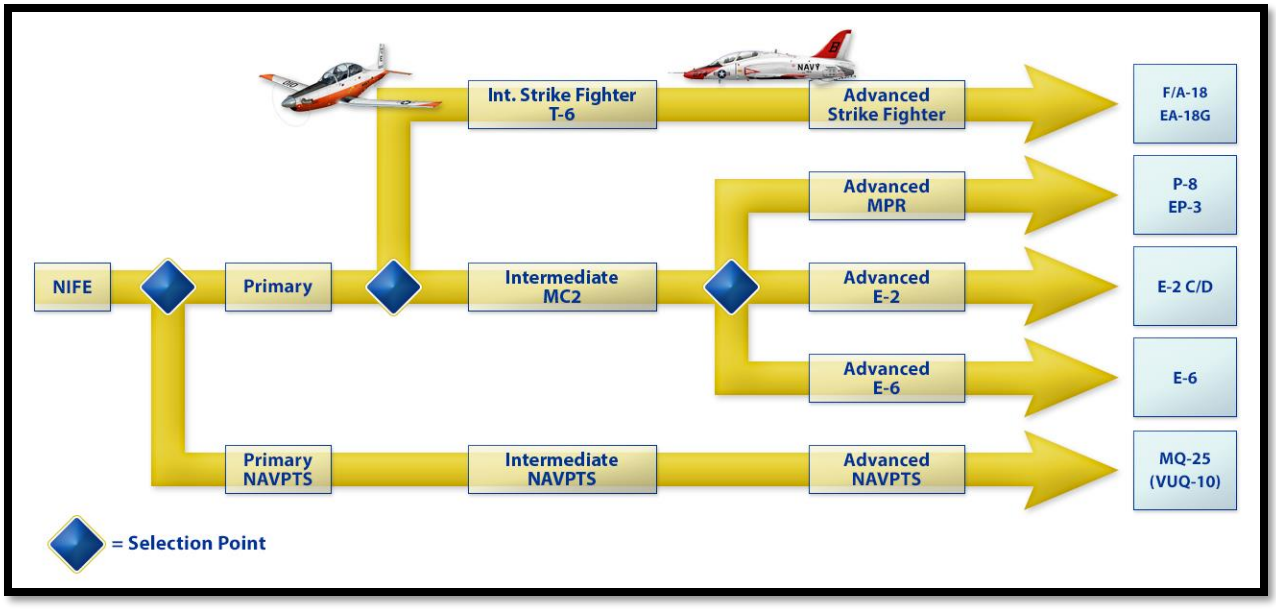
Description:	The MK 54 Lightweight Torpedo, previously known as the Lightweight Hybrid Torpedo (LHT), is a surface ship and aircraft-launched anti-submarine weapon.
Classification:	Air-to-Subsurface
Platforms:	MH-60R, P-8A

XI. Naval Aviation Junior Officer Pipeline

The Naval Aviation Training Pipeline consists of Naval Introductory Flight Evaluation (NIFE), Primary Flight Training, Intermediate and Advanced Flight Training, and the Fleet Replacement Squadron (FRS). The training pipeline from NIFE to completion of Advanced for SNA's takes approximately 1.5-2.5 years for SNA's, and 1-1.5 years for SNFO's. Graphics of the Student Naval Aviator and Student Naval Flight Officer pipelines and corresponding platforms are below.



Student Naval Aviator Pipeline



Student Naval Flight Officer Pipeline

Naval Introductory Flight Evaluation (NIFE) (Pensacola, FL): NIFE takes place in Pensacola, FL, also known as "The Cradle of Naval Aviation," and is the first step for all Student Naval Aviators and Student Naval Flight Officers in earning their "Wings of Gold." The purpose of NIFE is to provide initial aviation exposure and identify students who are aviation adaptable. NIFE consists of three phases, INDOC, Academics, and Flight Events. Academic courses include Aerodynamics, Engine Systems, Weather, Flight Rules and Regulations, and Navigation. The flight portion, includes 6 contact flights and 1 check flight. Also conducted during NIFE are the Intermediate Water Survival Course and a Land Survival course.

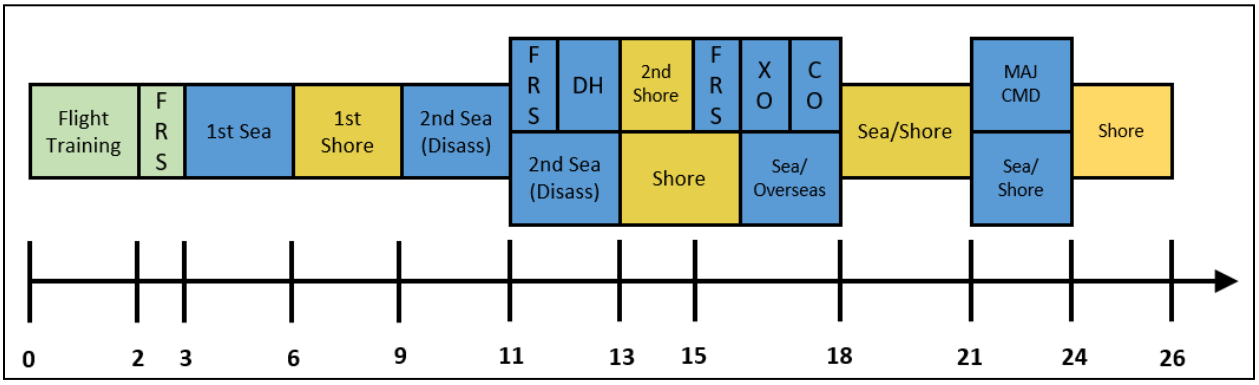
During NIFE, SNAs and SNFOs will be given a Navy Standard Score (NSS), that impacts standing for platform selection following Primary, similar to USNA Service Assignment. Your NSS is calculated beginning in NIFE, and continuing on to Primary, Intermediate, and Advanced Flight Training. Platform selection considers: 1 – the needs of the navy, 2 – your flight school performance (NSS), and 3 – your preferences.

Primary (Corpus Christi, TX; Milton, FL; Pensacola, FL (NFOs)): Primary is designed to provide foundation aviation skills and prepare SNA's and SNFO's for their follow-on training. During primary, SNAs will fly the T-6B Texan II and SNFO's will fly the T-6A Texan II. SNA and SNFO Primary consists of Ground School, Contact Phase, Instrument Phase, Navigation Phase, and Formation Phase. Upon the successful completion of Primary, SNA's and SNFO's will be assigned their future aviation platform.

Intermediate/Advanced: Intermediate training is conducted for E-2, C-2, and V-22 SNA's and for all platforms for SNFO's. During intermediate and advanced training, SNAs and SNFOs are provided with both fundamental and advanced skills in the aircraft coupled with tactical introductions. Intermediate and advanced training for SNA's is conducted in Corpus Christi, TX for multi-engine aircraft, Milton, FL for rotary aircraft, and either Meridian, MS or Kingsville, TX for strike and E-2/C-2 aircraft. Upon the completion of advanced, SNAs and SNFOs receive their "Wings of Gold" and are no longer called "students."

Fleet Replacement Squadron (FRS): The FRS is where newly winged Aviators and Naval Flight Officers will be introduced to their fleet aircraft. The FRS consists of ground school, simulator, and aircraft events. This is also the "hub" of the respective community, where your professional reputation will truly begin. Following training with the FRS, Aviators and Naval Flight Officers will be assigned to their operational squadron for their first Junior Officer (JO) Sea Tour.

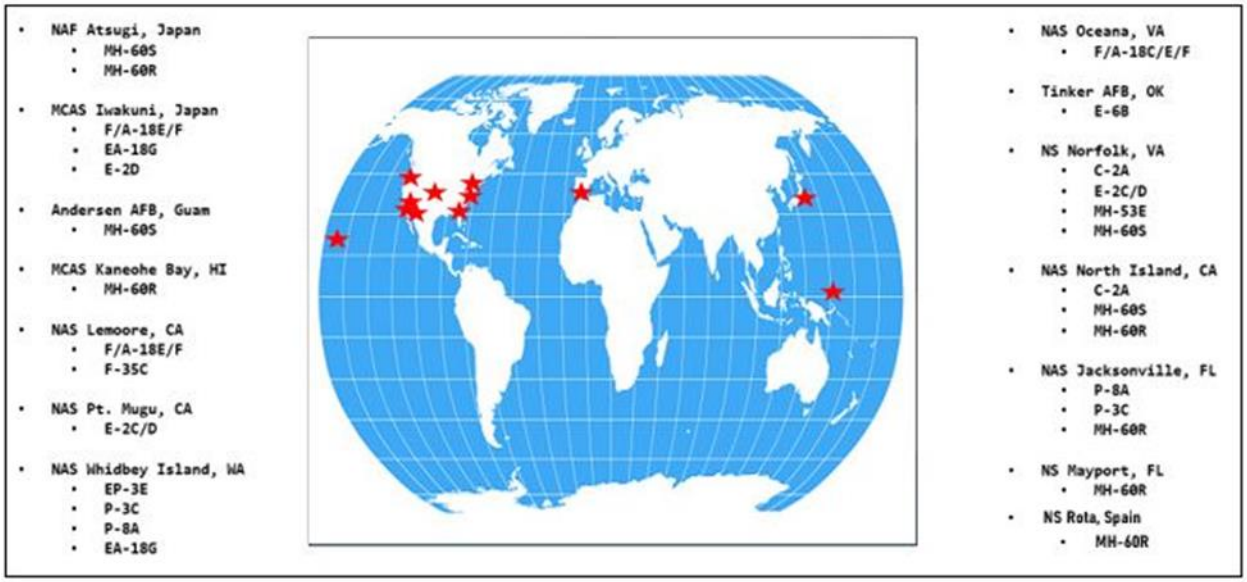
XII. Aviation Career Progression and Squadron Lifecycle



Aviation Career Progression Diagram

Fleet Squadron Tour: Following Flight School and the FRS, Aviators and Naval Flight Officers will join an operational squadron for their first Sea Tour. This tour is approximately 36 months and is where JO's will continue to develop their warfighting and leadership skills and deploy with their squadron. A JO's primary goals can be categorized into three categories: 1 – Airmanship, 2 – Officership, and 3 – Mentorship.

With respect to airmanship, Aviators and Naval Flight Officers will continue to sharpen their abilities in the aircraft by upgrading their qualifications, gaining experience and flight hours, and becoming an individual who can be trusted to complete the most demanding missions of the squadron. With respect to officership, JO's will continue to develop their leadership potential as a Division Officer, leading Sailors and Aircrew through evaluations, inspections, and their own qualifications. Overtime the "ground job" JO's are assigned will grow in importance and scope where they will distinguish themselves as a top leader in the squadron. With respect to mentorship, JO's will be looked at to be a consistent presence in the wardroom and train the more junior Aviators and Naval Flight Officers in attaining their qualifications.



Operational Squadron Homeports

Junior Officer Aircraft Qualifications: The attainment of advanced aircraft qualifications is the primary goal for a JO during their first Sea Tour. The specifics of these quals is dependent on the platform and designator. Examples of major qualifications are Patrol Plane Commander, Tactical Coordinator, and Mission Commander for the maritime (P-8) community, Helicopter Aircraft Commander for rotary wing, Section Lead and Division Lead for the strike community, and the pinnacle of qualifications, Weapons and Tactics Instructor (WTI). The specific naming and school required for obtaining

the WTI qualification varies for each community, with the most famous being Strike Fighter Tactics Instructor program (SFTI), more affectionately known as TOPGUN. It generally takes 1.5-2.5 years in the squadron to obtain the advanced qualifications, and some are only reserved for the highest performing Aviators and Naval Flight Officers. Performance during the first JO Sea Tour and the types of qualifications attained will lay the foundation for the rest of an Aviator and Naval Flight Officer's career.

Junior Officer Shore Tour: Following the first Sea Tour, Aviators and Naval Flight Officers will transfer to their JO Shore Tour. This tour is approximately 36 months. There are numerous opportunities during this tour, from competitive tours instructing in the FRS or Flight School, to other shore commands such as the Pentagon or Naval Academy. For Naval Flight Officers completion of this tour will typically align with the service obligation following Flight School, presenting the first decision to continue on with your Naval Career or separate from the Navy.

Second Sea Tour: Following the first Shore Tour, Aviators and Naval Flight Officers will transfer to another Sea Tour. Like the Shore Tour, there are numerous opportunities during this tour. Some typical billets include: Tactics Officer attached to another operational squadron if a Weapons School Graduate (e.g. TOP GUN), Catapult Officer, also known as a "Shooter," serving as a part of an aircraft carrier ship's company launching and recovering aircraft, or as an Admiral's Aide. For Naval Aviators completion of this tour will typically align with the service obligation following Flight School, presenting the first decision to continue on with your Naval Career or separate from the Navy. Also aligning with this timeline is a JO's first opportunity to promote to LCDR and screen for the Department Head career milestone.

XIII. Squadron Lifecycle

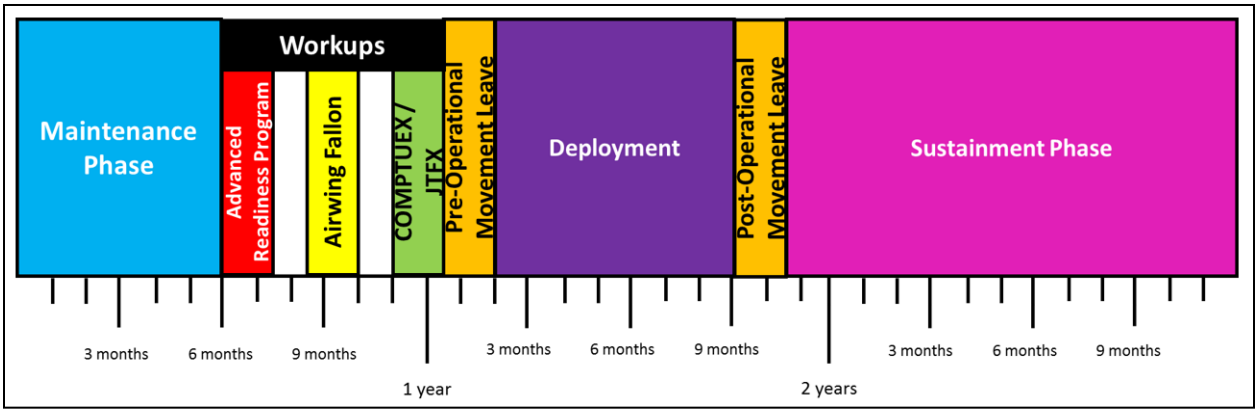
The lifecycle of a squadron is about 36 months. Phases generally include pre-deployment, deployment, and sustainment phases. The pre-deployment phase consists of the maintenance and work-up phases. Not all aviation squadrons have the same life cycle, but generally they can be broken down into two broad categories: 1 – Carrier based squadrons (figure below) and, 2 – Land based squadrons (Maritime and TACAMO).

The maintenance phase is approximately six months, with the main goal for the ships and aircraft to receive in-depth maintenance to ensure readiness for the coming deployment. Operational requirements during this phase are minimal, but there is many training (advancing individual pilot and NFO qualifications) and administrative (yearly maintenance and safety inspections) requirements during this time.

The term "Work-Ups" is a broad term for the operational inspections that a squadron, carrier, airwing, and strike group must go through prior to being certified ready to deploy. Work-ups last approximately eight months and are broken down into three parts: Advanced Readiness Program (ARP), Airwing Fallon, and COMPTUEX/JTFX.
Generally, work-ups are the most difficult and taxing part of the life cycle of a squadron due to the intense nature of the programs and the constant movement of the squadron from one location to another. Following the completion of the work-up phase, a CSG is certified ready to deploy.

The deployment phase is the phase where the Carrier Strike Group (CSG) departs to advance national interests where needed. This is a strict seven month deployment, with approximately 4.5 months in theater between transits to and from the operational area.

The sustainment phase, also known as the "surge" phase, is approximately 15 months long. During this time the CSG is required maintain its proficiency and is considered the emergency CSG for contingency operations, humanitarian assistance, or unexpected deployed carrier maintenance. Generally, the CSG will be in your homeport for most of the Sustainment Phase unless called to deploy again.



Carrier Based Squadron Lifecycle

XIV. Aviation Squadrons and Organization

An aviation squadron is led by the CO and the XO, both of which are Commanders, and the Command Master Chief (CMC). An aviation squadron is typically composed of five major departments lead by Department Heads who are Lieutenant Commanders. The major departments are Operations, Maintenance, Training, Admin and Safety. Depending on the structure of the squadron, the Training department is sometimes held within the Operations department or split into its own department.

Operations: The mission of "Ops" is to create the daily flight schedule, as well as creating the weekly and monthly plan for the squadron. Ops is also responsible for coordinating with the other departments and tracking and reporting readiness. Ops acts as the liaison between the Wing and the CVN, when embarked. The role of Operations Officer (OPSO) is typically the most senior department head in the squadron.

Maintenance: The maintenance department is the largest department in the squadron. The department is split into different shops with different maintenance specialties. The role of the maintenance department is to maintain mission-ready aircraft and to work with Ops to ensure aircraft availability. Maintenance department is also responsible for running part of the squadron budget and maintenance programs. The Maintenance Officer (MO) is usually the second most senior department head, and the Maintenance Master Chief is the second most senior enlisted only after the CMC.

Training: The training department may exist as a part of the Operations Department (squadron dependent). The Training Department is responsible for tracking and planning the qualifications of pilots, NFOs and aircrew. Training is led by the Training Officer (TRAINO) who will work with Operations in order to schedule training events, coordinate weapons ranges and live training events with outside agencies.

Administration: The Administration Department is responsible for all squadron administration, running the squadron budget and assisting squadron members with administrative issues. Admin is also responsible for squadron correspondence legal matters, public affairs and non-flight related assets. The Admin Officer (ADMINO) billet is typically an introductory DH job.

Safety: The Safety Department is responsible for ensuring that the squadron follows all safety publications and adheres to NATOPS requirements. The department tracks and analyzes safety trends and incidents, implements ORM and CRM programs and is in charge of HAZREPS and MISHAPS for the squadron. The Safety Officer is typically an introductory DH job.

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CHAPTER 7: UNITED STATES MARINE CORPS



I. Origin

Birth of the Marine Corps

The United States Marine Corps is a direct descendent of the British Royal Marines, who were founded in 1664. When the Second Continental Congress drew up plans for a Navy, it also established a Continental Marine Corps. The Continental Marine Act of 1775, Congress decreed, "That two battalions of Marines be raised…that particular care be taken that no persons be appointed to offices, or enlisted into said battalions, but such as are good seamen, or so acquainted with maritime affairs as to be able to serve for and during the present war with Great Britain and the Colonies"

II. The Ethos and Core Values of a United States Marine

Marine Ethos

Knowing who we are as Marines is essential to lead Marines. Marines come from all walks of life, but being a Marine transcends our differences. Being a Marine is not a job or particular occupational specialty (MOS). It is a calling. It is not male or female, majority or minority; nor is it a rank insignia. Rather, being a Marine comes from the eagle, globe, and anchor that is imprinted on the soul of every one of us who wears the Marine Corps uniform. It is a searing mark on our innermost being that comes after the rite of passage through boot camp or upon commissioning when a young man or woman earns the title "Marine." Being a Marine is being part of something larger than oneself. There is a spirit-an esprit- that defines our Corps. As a Marine leader, you must understand our naval character and expeditionary mindset, our philosophy that every Marine is a rifleman, and our commitment to selfless service, all of which are in keeping with Marine tradition.

Core Values: Honor, Courage, Commitment

Honor guides Marines to exemplify the ultimate in ethical and moral behavior. Never lie, never cheat or steal; abide by an uncompromising code of integrity; respect human dignity and respect others. Honor compels Marines to act responsibly, to fulfill our obligations and to hold ourselves and others accountable for every action.

Courage is the mental, moral and physical strength ingrained in Marines. It carries us through the challenges of combat and aids in overcoming fear. It is the inner strength that enables us to do what is right, to adhere to a higher standard of personal conduct and to make tough decisions under stress and pressure.

Commitment is the spirit of determination and dedication found in Marines. It leads to the highest order of discipline for individuals and units. It is the ingredient that enables constant dedication to Corps and country. It inspires the unrelenting determination to achieve victory in every endeavor.

III. Traditions

Early Traditions



- **Quatrefoil** – One of the traditions, which evolved from the late 1700s and early 1800s, was the use of the Quatrefoil. It enabled sharpshooting Marines in the riggings of sailing ships to distinguish between friend and foe. American boarding parties attached crossed pieces of rope to the top of their covers. From this evolved the Quatrefoil. Today the cross-shaped braid is worn on top of the officer's barracks cover.
- **Leatherneck** – The Marines long-standing nickname 'Leatherneck' goes back to the leather collar, or neckpiece, which was worn from 1775 to 1875, that was intended to ensure the Marines kept their heads erect, and to protect their necks from sword slashes. The high collar on the blue dress uniform commemorates it today.
- **Rank of Sergeant Major** – In 1798 Congress established the rank of Sergeant Major. The first Marine to rise to the rank of Sergeant Major was Sergeant Major Archibald Sommers. In 1957, the 21st Commandant, General Pate, established the billet of Sergeant Major of the Marine Corps as the Commandant's senior enlisted advisor. The first Sergeant Major of the Marine Corps was Sergeant Major Bestwick.
- **Marine Corps Band** – The Marine Band was established in 1798 and has played for every President except George Washington. Thomas Jefferson gave them the title 'The President's Own.'
- **Mameluke Sword** – In 1805, the Ruler of Tripoli, Prince Hamet, presented the Mameluke sword to First Lieutenant Presley O'Bannon as a token of gratitude for the Marines' actions during the Barbary Pirate Wars. A replica of that sword was adopted for use and is carried by all Marine officers. The Mameluke Sword is the oldest weapon still in use today by any of the U.S. Armed Forces.
- **The Blood Stripe** – The scarlet trouser stripe first appeared on uniform trousers in 1798, and reappeared in 1840 and 1859, partly because of the military fashions of the day. The popular story surrounding this tradition is that during the battle of Chapultepec in the Mexican War in 1847, 90% of the Marine officers and noncommissioned officers were casualties. Thirteen of the twenty-three Marine officers participating in this battle were decorated for bravery. Thus, the scarlet stripe, or 'blood stripe,' worn today on the blue dress trousers is to commemorate all the officer and noncommissioned officer casualties at the battle.
- **'The Grand Old Man of the Marine Corps'** – Archibald Henderson was appointed the 5th Commandant of the Marine Corps in 1820 and remained commandant until 1859, a period of 38 years, and is known as 'the Grand Old Man of the Marine Corps.'
- **Father of Marine Aviation** – The development of Marine aviation began in 1912. Second Lieutenant Alfred A. Cunningham was the first Marine to earn naval aviation wings. Lieutenant Cunningham worked to establish Marines as aviators and is considered the father of Marine Corps aviation.



- **Marine Corps Emblem**– During the post-Civil War period, in 1868 the Marine Corps emblem was adopted. The emblem consisted of an eagle with spread wings sitting on top of a globe of the Western Hemisphere with an anchor in the background. The eagle symbolizes the nation, the globe worldwide service, and the anchor naval traditions.

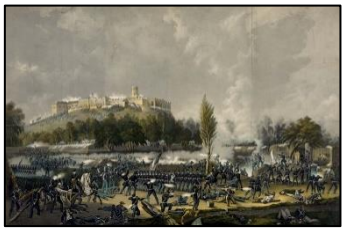
IV. A Brief History of the Marine Corps

On November 10, 1775, the Second Continental Congress meeting in Philadelphia passed a resolution stating that "two Battalions of Marines be raised" for service as landing forces with the fleet. This resolution established the Continental Marines and marked the birth date of the United States Marine Corps. Serving on land and at sea, these first Marines distinguished themselves in a number of important operations, including their first amphibious raid into the Bahamas in March 1776, under the command of Captain (later Major) Samuel Nicholas. The first commissioned officer in the Continental Marines, Nicholas remained the senior Marine officer throughout the American Revolution and is considered to be the first Marine Commandant.

Following the Revolutionary War and the formal re-establishment of the Marine Corps on 11 July 1798, Marines saw action in the quasi-war with France, landed in Santo Domingo, and took part in many operations against the Barbary pirates along the "Shores of Tripoli".

Marines took part in numerous naval operations during the War of 1812, as well as participating in the defense of Washington at Bladensburg, Maryland, and fought alongside Andrew Jackson in the defeat of the British at New Orleans.

The decades following the War of 1812 saw the Marines protecting American interests around the world, in the Caribbean, at the Falkland Islands, Sumatra and off the coast of West Africa, and also close to home in operations against the Seminole Indians in Florida.



During the Mexican War (1846-1848), Marines seized enemy seaports on both the Gulf and Pacific coasts. A battalion of Marines joined General Winfield Scott's army at Pueblo and fought all the way to the "Halls of Montezuma," Mexico City. Marines also served ashore and afloat in the Civil War (1861-1865). Although most service was with the Navy, a battalion fought at Bull Run and other units saw action with the blockading squadrons and at Cape Hatteras, New Orleans, Charleston, and Fort Fisher. The last third of the 19th century saw Marines making numerous landings throughout the world, especially in Asia and in the Caribbean area.

Following the Spanish-American War (1898), in which Marines performed with valor in Cuba, Puerto Rico, Guam, and the Philippines, the Corps entered an era of expansion and professional development. It saw active service in the Philippine Insurrection (1899-1902), the Boxer Rebellion in China (1900) and in numerous other nations, including Nicaragua, Panama, Cuba, Mexico, and Haiti.



In World War I the Marine Corps distinguished itself on the battlefields of France as the 4th Marine Brigade earned the title of "Devil Dogs" for heroic action during 1918 at Belleau Wood, Soissons, St. Michiel, Blanc Mont, and in the final Meuse-Argonne offensive.

Marine aviation, which dates from 1912, also played a part in the war effort, as Marine pilots flew day bomber missions over France and Belgium. More than 30,000 Marines served in France and more than a third were killed or wounded in six months of intense fighting.

During the two decades before World War II, the Marine Corps began to develop in earnest the doctrine, equipment, and organization needed for amphibious warfare. The success of this effort was proven first on Guadalcanal, then on Bougainville, Tarawa, New Britain, Kwajalein, Eniwetok, Saipan, Guam, Tinian, Peleliu, Iwo Jima, and Okinawa. By the end of the war in 1945, the Marine Corps had grown to include six divisions, five air wings, and supporting troops. Its strength in World War II peaked at 485,113. The war cost the Marines nearly 87,000 dead and wounded, and 82 Marines had earned the Medal of Honor.

While Marine units took part in the post-war occupation of Japan and North China, studies were undertaken at Quantico, Virginia, which concentrated on attaining a "vertical envelopment" capability for the Corps through the use of helicopters.

Landing at Inchon, Korea in September 1950, Marines proved that the doctrine of amphibious assault was still viable and necessary. After the recapture of Seoul, the Marines advanced to the Chosin Reservoir only to see the Chinese Communists enter the war. After years of offensives, counter-offensives, seemingly endless trench warfare, and occupation duty, the last Marine ground troops were withdrawn in March 1955. More than 25,000 Marines were killed or wounded during the Korean War.

In July 1958, a brigade-size force landed in Lebanon to restore order. During the Cuban Missile Crisis in October 1962, a large amphibious force was marshaled but not landed. In April 1965, a brigade of Marines landed in the Dominican Republic to protect Americans and evacuate those who wished to leave.

The landing of the 9th Marine Expeditionary Brigade at Da Nang in 1965 marked the beginning of large-scale Marine involvement in Vietnam. By summer 1968, after the enemy's Tet Offensive, Marine Corps strength in Vietnam rose to a peak of approximately 85,000. The Marine withdrawal began in 1969 as the South Vietnamese began to assume a larger role in the fighting; the last Marine ground forces were out of Vietnam by June 1971.

The Vietnam War exacted a high cost as well with over 13,000 Marines killed and more than 88,000 wounded. In the spring of 1975, Marines evacuated embassy staffs, American citizens, and refugees in Phnom Penh, Cambodia, and Saigon, Republic of Vietnam. In May, Marines played an integral role in the rescue of the crew of the SS *Mayaguez* captured off the coast of Cambodia.

The mid-1970s saw the Marine Corps assume an increasingly significant role in defending NATO's northern flank as amphibious units of the 2d Marine Division participated in exercises throughout northern Europe. The Marine Corps also played a key role in the development of the Rapid Deployment Force, a multi-service organization created to insure a flexible, timely military response around the world, when needed. The Maritime Prepositioning Ships (MPS) concept was developed to enhance this capability by prestaging equipment needed for combat in the vicinity of the designated area of operations, and reduce response time as Marines travel by air to link up with MPS assets.

The 1980s brought an increasing number of terrorist attacks on U.S. embassies around the world. In August 1982, Marine units landed at Beirut, Lebanon, as part of the multinational peace-keeping force. For the next 19 months these units faced the hazards of their mission with courage and professionalism. In October 1983, Marines took part in the highly successful, short-notice intervention in Grenada. As the decade of the 1980s ended, Marines were summoned to respond to instability in Central America. Operation Just Cause was launched in Panama in December 1989 to protect American lives and restore the democratic process in that nation.

Less than a year later, in August 1990, Iraq invaded Kuwait. Between August 1990 and January 1991, some 24 infantry battalions, 40 squadrons, and more than 92,000 Marines deployed to the Persian Gulf as part of Operation Desert Shield. Operation Desert Storm was launched 16 January 1991, the day the air campaign began.

The main attack came overland beginning 24 February when the 1st and 2d Marine Divisions breached the Iraqi defense lines and stormed into occupied Kuwait. By the morning of February 28, 100 hours after the ground war began, almost the entire Iraqi Army in the Kuwaiti theater of operations had been encircled, with 4,000 tanks destroyed and 42 divisions destroyed or rendered ineffective.

Overshadowed by the events in the Persian Gulf during 1990-91, were a number of other significant Marine deployments demonstrating the Corps' flexible and rapid response. Included among these were non-combatant evacuation operations in Liberia and Somalia and humanitarian lifesaving operations in Bangladesh, the Philippines, and northern Iraq.

In December 1992, Marines landed in Somalia marking the beginning of a two-year humanitarian relief operation in that famine-stricken and strife-torn nation. In another part of the world, Marine Corps aircraft supported Operation Deny Flight in the no-fly zone over Bosnia-Herzegovina. During April 1994, Marines once again demonstrated their ability to protect American citizens in remote parts of the world when a Marine task force evacuated U.S. citizens from Rwanda in response to civil unrest in the country.

Closer to home, Marines went ashore in September 1994 in Haiti as part of the U.S. force participating in the restoration of democracy in the country. During this same period Marines were actively engaged in aiding the Nation's counter-drug effort, assisting in battling wildfires in the western United States, and aiding in flood and hurricane relief operations.

During the late 1990's, Marine Corps units deployed to several African nations, including Liberia, the Central African Republic, Zaire, and Eritrea, in order to provide security and assist in the evacuation of American citizens during periods of political and civil instability in those nations.

Humanitarian and disaster relief operations were also conducted by Marines during 1998 in Kenya, and in the Central American nations of Honduras, Nicaragua, El Salvador, and Guatemala. In 1999, Marine units deployed to Kosovo in support of Operation Allied Force. Soon after the September 2001 terrorist attacks on New York City and Washington, D.C., Marine units deployed to the Arabian Sea and in November set up a forward operating base in southern Afghanistan as part of Operation Enduring Freedom.

In 2002, the Marine Corps continued to play a key role in the Global War on Terrorism. Marines operated in diverse locations, from Afghanistan, to the Arabian Gulf, to the Horn of Africa and the Philippines. Early 2003 saw the largest deployment of Marine forces since the Persian Gulf War of 1990-91 when 76,000 Marines deployed to the Central Command area for combat operations against Iraq.

The I Marine Expeditionary Force, including Task Force Tarawa and the United Kingdom’s 1st Armored Division, were the first conventional ground units to enter Iraq in late March as part of Operation Iraqi Freedom. Fixed-wing and helicopter aircraft from the 3d Marine Air Wing provided continuous close air and assault support to Marine and coalition units as they

drove deeper into Iraq. On the ground, Marines from I MEF moved nearly 400 miles from the Kuwait border to Baghdad and Tikrit, Iraq, and eliminated the last organized resistance by Iraqi military forces. Although I MEF would transition to stabilization and security operations and then redeploy to the U.S. by late September, I MEF began preparing for a return to Iraq in early 2004.

The adaptability and reliability of Marine forces continued to be highlighted around the world from the Horn of Africa to Haiti and to the Philippines.

Across the U.S., Marine units from both coasts fought and contained wildfires, and also supported hurricane relief efforts in various parts of the country. In December, 2004, a tsunami struck numerous nations in the Indian Ocean region killing more than 150,000 and causing enormous devastation. Marine units from III MEF were immediately deployed to Thailand, Indonesia, and Sri Lanka to assist in disaster relief operations.

In early 2005, the II Marine Expeditionary Force replaced I MEF in Iraq as the primary focus began to shift to partnership operations with the Iraqi Security Forces. Marine units continued to provide air and ground support to Operation Enduring Freedom in Afghanistan. Closer to home, the flexibility and responsiveness of the Navy/Marine team was exhibited during September and October when nearly 3,000 Marines and sailors conducted search and rescue, humanitarian relief, and disaster recovery operations in Louisiana and Mississippi in the aftermath of hurricanes Katrina and Rita.

V. The Marine Corps Warfighting Philosophy

To understand the Marine Corps' philosophy of warfighting, you first need an appreciation for how we view the unchanging nature of war itself – its moral, mental, and physical characteristics and demands. A common view of war among Marines is a necessary base for the development of a cohesive doctrine because our approach to the conduct of war, through maneuver warfare, derives from our understanding of the nature of war.

War is a violent clash of interests between or among organized groups characterized by the use of military force. ***The essence of war is a violent struggle between two hostile, independent, and irreconcilable wills***. It follows that the object in war is to impose our will upon the enemy.

At first glance, war seems like a simple clash of interests. On closer examination, it reveals its complexity and takes shape as one of the most demanding and trying of human endeavors. War is an extreme test of will. ***Friction, uncertainty, fluidity, disorder, and danger are its essential principles***. War displays broad patterns that can be represented as probabilities, yet it remains fundamentally unpredictable. Each episode is the unique product of myriad moral, mental, and physical forces. Individual causes and their effects can rarely be isolated. Minor actions and random incidents can have disproportionately large—even decisive—effects. While dependent on the laws of science and the intuition and creativity of art, war takes its fundamental character from the dynamic of human interaction.

We thus conclude that the conduct of *war is fundamentally a dynamic process of human competition requiring both the knowledge of science and the creativity of art but* ***driven ultimately by the power of human will***.

The challenge is to develop a concept of warfighting consistent with our understanding of the nature and theory of war and the realities of the modern battlefield. What exactly does this require? It requires a concept:

- That will help us function effectively in an uncertain, chaotic, and fluid environment—in fact, one with which we can exploit these conditions to our advantage.
- With which we can sense and use the time-competitive rhythm of war to generate and exploit superior tempo.
- That is consistently effective across the full spectrum of conflict because we cannot attempt to change our basic doctrine from situation to situation and expect to be proficient.
- With which we can recognize and exploit the fleeting opportunities that naturally occur in war.
- That considers the moral and mental, as well as the physical, forces of war because we have already concluded that these form the greater part of war.
- With which we can succeed against a numerically superior foe because we cannot presume a numerical advantage either locally or overall.
- With which we can win quickly against a larger foe on his home soil with minimal casualties and limited external support.

The Marine Corps concept for winning under these conditions is a warfighting doctrine based on rapid, flexible, and opportunistic ***maneuver***. In order to fully appreciate what we mean by maneuver, we need to clarify the term. The traditional understanding of maneuver is a spatial one; that is, we maneuver in space to gain a positional advantage. However, in order to maximize the usefulness of maneuver, we must consider maneuver in other dimensions as well. The essence of maneuver is taking action to generate and exploit some kind of advantage over the enemy as a means of accomplishing our objectives as effectively as possible. That advantage may be psychological, technological, or temporal, as well as spatial. Especially important is maneuver in time—we generate a faster operating tempo than the enemy to gain a temporal advantage. It is through maneuver in all dimensions that an inferior force can achieve decisive superiority at the necessary time and place.

Maneuver warfare is a warfighting philosophy that seeks to shatter the enemy's cohesion through a variety of rapid, focused, and unexpected actions which create a turbulent and rapidly deteriorating situation with which the enemy cannot cope.

VI. Mission



The Marine Corps composition and functions as prescribed by the US Congress in TITLE X of the US Code are as follows:
(a) The Marine Corps, within the Department of the Navy, shall be so organized as to include not less than three combat divisions and three air wings, and such other land combat, aviation, and other services as may be organic therein. The Marine Corps shall be organized, trained, and equipped to provide fleet marine forces of combined arms, together with supporting air components, for service with the fleet in the seizure or defense of advanced naval bases and for the conduct of such land operations as may be essential to the prosecution of a naval campaign. In addition, the Marine Corps shall provide detachments and organizations for service on armed vessels of the Navy, shall provide security detachments for the protection of naval property at naval stations and bases, and shall perform such other duties as the President may direct. However, these additional duties may not detract from or interfere with the operations for which the Marine Corps is primarily organized.
(b) The Marine Corps shall develop, in coordination with the Army and the Air Force, those phases of amphibious operations that pertain to the tactics, technique, and equipment used by landing forces.
(c) The Marine Corps is responsible, in accordance with integrated joint mobilization plans, for the expansion of peacetime components of the Marine Corps to meet the needs of war.

Informally, the Marine Corps mission can be expressed simply. "We are warfighters within a warfighting organization. Our Corps performs three important functions for our Nation - we **Make Marines** and we **Win Battles** and we **Return Quality Citizens**."

Fundamental to our character as a Marine Corps is our role as **the Nation's force-in-readiness**. We must continue to be ready for operations across the range of military operations (ROMO). At the same time, we recognize the current and future fight may not be what we experienced in the past. It will encompass not just the domains of land, air and sea, but also space and the cyber domain. It will include information operations and operations across the electromagnetic spectrum. It will involve rapidly changing and evolving technologies and concepts, which will force us to be more agile, flexible and adaptable. Most importantly, it will require Marines who are smart, fit, disciplined, resilient, and able to adapt to uncertainty and to the unknown."

VII. Organization

The Marine Corps is a task-organized, multi-capable military organization. It is a middleweight force that lies between our Special Operations Forces and our nation's heavier forces in the Army with a force that complements both. It is scalable and adaptive. The way the Marine Corps scales its force is through task-organized **Marine Air-Ground Task Forces (MAGTFs).** The MAGTF is the Marine Corps' principal warfighting organization. It provides combatant commanders with a scalable, versatile expeditionary force able to respond to a broad range of contingency, crisis and conflict situations. The MAGTF (regardless of size) is composed of the following four elements:

1. **Ground Combat Element (GCE)**: Infantry (battalion, regiment, or division) augmented with artillery, Light Armored Reconnaissance (LAR), Amphibious Combat Vehicles (ACV), combat engineers, and reconnaissance assets.

2. **Aviation Combat Element (ACE)**: Contains aircraft to support the tactical situation. Tactical helicopters with fixed wing assets for close air support

3. **Logistics Combat Element (LCE)**: Provides all necessary logistical support to the MAGTF including Transportation, Engineering, Embarkation, Medical/Dental, and Headquarters and Service.

4. **Command Element (CE)**: Administration, intelligence, operations, logistics, communications, medical, legal, chaplain, etc.

Types of MAGTFs:

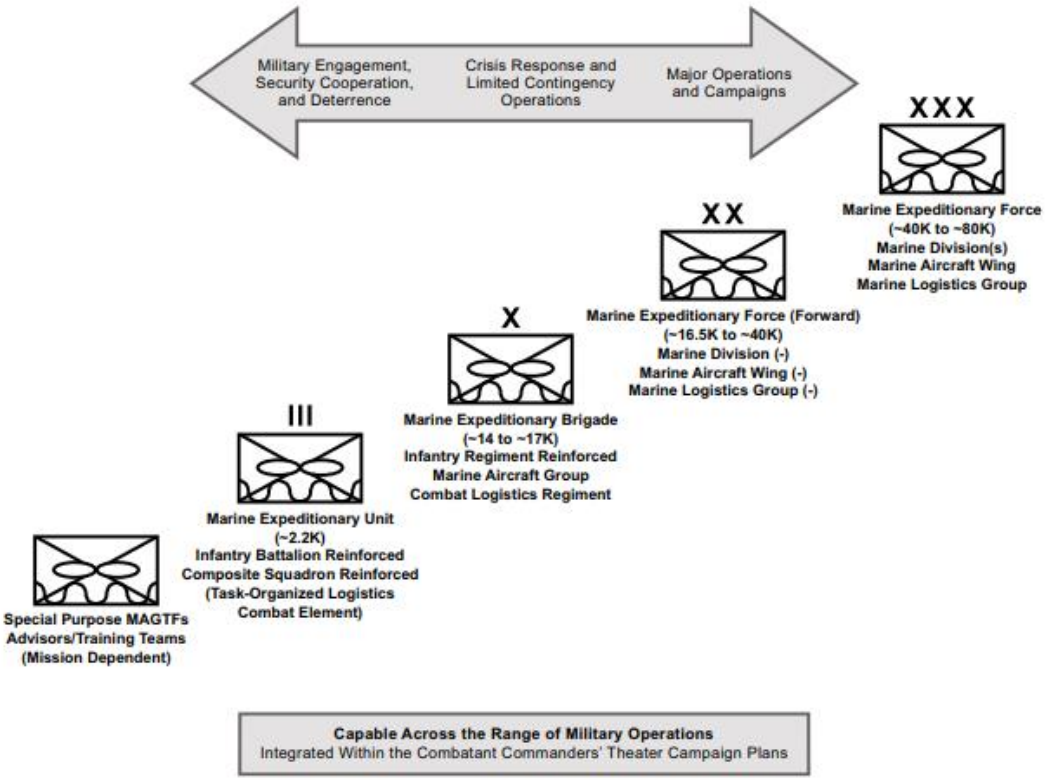


Figure 2-5. Types of MAGTF Organizations.

Marine Expeditionary Force (MEF) The MEF is the largest principal warfighting element in the active force structure of the Marine Corps and is usually commanded by a Lieutenant General. The size and composition of a deployed MEF varies depending on the needs of the mission. Each MEF has one to three Marine Expeditionary Units (MEU) assigned to it that deploy throughout the globe.

Marine Expeditionary Brigade (MEB) The MEB is the next largest MAGTF structure the Marine Corps employs. Unlike the MEF, which has permanent structure, the MEB is typically stood up for specific theaters and engagements, such as MEB Afghanistan (MEB A), or deployed as a smaller, forward deployed element of the MEF. The MEB is typically commanded by a Brigadier or Major General.

Marine Expeditionary Unit (MEU) In combat and non-combat situations alike, the Marine Expeditionary Unit (MEU) is our nation's self-contained, forward-deployed response force. Embarked aboard amphibious assault ships, the MEU maintains a constant state of readiness, able to plan and launch a mission within six hours.

Special Purpose MAGTF (SPMAGTF) A special purpose MAGTF (SPMAGTF) may be formed to conduct a specific mission that is limited in scope and focus and often in duration. A special purpose MAGTF may be any Expeditionary Operations size, but normally it is a relatively small force—the size of a Marine Expeditionary Unit or smaller—with narrowly focused capabilities chosen to accomplish a limited mission.

Other Formations:

Marine Littoral Regiment



An MLR is a self-deployable, multi-domain force optimized for the contact and blunt layers. It will persistently operate across the competition continuum to support the Joint Force's role in assuring allies and partners, deterring adversaries, conducting and enabling Joint Force contact, blunt, and surge activities. The MLR is designed as a naval formation, including capabilities to enable maneuver and operations in the maritime domain. It will be a stand-in force: mobile, low-signature, persistent in the contact to blunt layers, and relatively easy to maintain and sustain as part of a naval expeditionary force. MLRs will leverage the full ability of amphibious platforms, connectors, and boats. Significantly, the Navy and Marine Corps will field a Light Amphibious Warship to enhance MLR mobility and sustainment.

The MLR will be capable of the following missions:

- Conduct Expeditionary Advanced Base Operations
- Conduct Strike
- Coordinate Air and Missile Defense Actions
- Support Maritime Domain Awareness
- Support Surface Warfare
- Support Operations in the Information Environment

Marine Raiders (MARSOC)





The Marine Corps has long been involved in special operations. During World War II, Marines served in the Office of Strategic Service (OSS) and operated behind enemy lines in support of indigenous resistance to Axis occupation. In the Pacific theater**,** the Marine Raiders conducted reconnaissance, raids, and other special operations. However, the Marine Raider Regiment was ultimately redesignated prior to the end of the war. Following the terrorist attacks of 9/11 and the expansion of the Global War on Terrorism, the Marine Corps began to reassess its historical aversion to the establishment of a standing Marine special operations unit. Marine Special Operations Command (MARSOC) was established on 24 February 2006 as a component of U. S. Special Operations Command (USSOCOM), and was renamed the Marine Raider Regiment on 19 June 2015. One of its primary roles since its inception has been to train, advise, and assist friendly host-nation forces to enable them to support their government's security and stability against internal and external threats.

VIII. Future of USMC

Commandant's Planning Guidance: Core Values

Force Design:
Force design is named as the Commandant's number one priority with closer *naval integration* listed as the most important aspect of the design restructure. A forward naval presence is required to successfully execute sea control and denial operations. It is imperative that the Marine Corps supports our Naval forces in the fight to advance and protect our national interests and those of our allies at sea, especially in close and confined waters where large naval platforms are vulnerable to long-range precision enemy fire. A larger emphasis will be placed on taking care of the individual Marine and promoting based on merit. The new manpower model will value talent and performance over time and experience, and fitness reports will be redesigned to accurately identify Marine's skills, performance and future potential. Extended paternity and maternity leave times will be considered.

Warfighting:
Increase efficiency and flexibility of USMC's command and control processes. Work with the Navy on Littoral Operations in a Contested Environment (LOCE) and Expeditionary Advanced Base Operations (EABO). Project power by utilizing unmanned and minimally manned platforms to create low risk stand-in forces.

Education and Training:
Integrate more naval based education into our curriculum and emphasize the importance of Professional Military Education. Increase use of Modeling and Simulation training (M&S) and Wargaming; both of which incorporate realistic warfare simulations that can include computer-based exercises and artificial vehicles. Training must focus on winning in combat and incorporate a wide variety of challenging conditions and operating environments.

Core Values:
Continued emphasis on reducing actions which go against the Marine Corps core values including sexual assault, hazing and non-EAS attrition (Marines separated for drug/alcohol offenses and other misconduct).

Command and Leadership:
Higher leadership is expected to care for their Marine's wellbeing while not dropping expectations or standards. Additionally, leadership is expected to meet and exceed this set standard and serve as an example for their subordinates to follow.

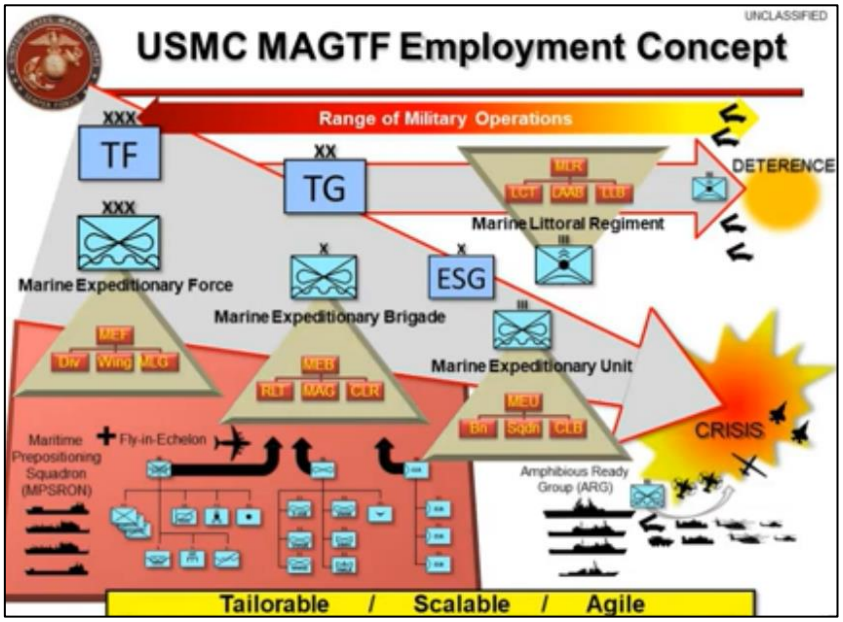
A New Environment

Although the current threat environment is rapidly evolving, the Marine Corps' two primary missions, **crisis response** and **deterrence**, remain the same. As the country's focus shifts to high intensity warfare with capable peer adversaries, the way in which the USMC accomplishes these missions must change. Because our current adversaries possess highly advanced technology and extremely accurate long-range weapons systems, the USMC is prioritizing **distributed operations** that can create the virtues of mass without the vulnerabilities of concentration. Units will be operating well within range of enemy weapons systems, so it is imperative that operations remain discrete and unpredictable. Spreading our capabilities across the Area of Responsibility (AOR) forces the enemy to guess which capabilities are where and in what quantities. Distributed operations require seamless **naval integration**; a smaller, more dispersed Marine Corps must work closely with the Navy in order to remain a lethal fighting force. As the Marine Corps downsizes in both personnel and heavy equipment to become a more dynamic, mobile force, it will need to rely heavily on the Navy for transport, resupply, and fire support.

The MAGTF will remain the USMC's principal warfighting organization, but the composition and capabilities of the MAGTF will adapt to the necessary situation and will remain a powerful tool. Designed with the Indo-Pacific region in mind, the **Marine Littoral Regiment** (MLR) is a new type of MAGTF that focuses on **deterrence by sea denial** - overwhelming and unpredictable presence of friendly forces that keeps the potential adversary guessing as to where we are and what our capabilities might be.

As shown in the graphic below, the traditional MEF continues to be the primary formation for crisis response. The MLR will deter enemies by supporting **expeditionary advanced base operations (EABO)** on islands in the Indo-Pacific. EABO requires small, independent teams of Marines to move by sea to a strategic location, conduct a short mission, and then return

to the sea to move to the next island. Missions may include conducting surveillance, launching anti-ship missiles, jamming enemy systems, etc. Depending on the mission set, the teams may have access to unmanned air, ground, and maritime assets and long-range weapons. EABO allows the Marine Corps to move away from the use of fixed bases in favor of smaller, less-vulnerable temporary bases that support maritime-oriented distributed operations. The MLR is expected to become operational in 2022. Other significant changes outlined in the current Commandant's Planning Guidance include the phasing out of tanks, the downsizing of the Infantry and its support elements, and the replacement of 16 artillery batteries with 14 more mobile, easily concealable rocket and missile batteries. Cuts have also been made to both attack helicopter squadrons and tilt-rotor, heavy lift helicopters in favor of increasing funding for Unmanned Aerial Systems and small, mobile Littoral Combat ships. As the United States prepares to contest a peer adversary in the Indo-Pacific, the Marine Corps is undergoing one of the greatest periods of change since its creation and continues to redefine its unique role as a naval expeditionary force.



IX. Combat Arms and Combat Support

Combat Arms: The Marine Ground Combat Element are those forces trained to engage in direct confrontation with enemy forces to kill or capture them, to break their will to continue the fight, and to seize and hold terrain or to deny it to the enemy. Military Occupational Specialties classified as combat arms within the Ground Combat Element exist to win battles on the ground by asserting combat power and dominance on the battlefield. These Marines excel at conducting land-based and amphibious operations. They are prepared to conduct offensive, defensive, humanitarian, reconnaissance or security missions. Trained in the art of land warfare, these Marines will often be the first on the scene to confront threats around the world.

Combat Support: Marines in Combat Support roles serve as an integral piece in making the Marine Corps an efficient warfighting organization. Combat support forces provide direct support of the forces on the battlefield by providing intelligence, communications, engineering, and chemical warfare services of immediate impact on the course of the battle. Combat service support forces provide administrative and technical (logistical) services to ensure that the combat and combat support forces are adequately manned, armed, fed, fueled, maintained, and moved as required. This division of forces into three functional groups applies specifically to the Army, but Navy, Marine Corps, and Air Force units and personnel fall into the same general categories. These Marines are trained to provide logistics, intelligence communication, and other support to move equipment, ammunition, first aid and Marines to wherever they need to be to win the mission ahead. Without them, the force would stand still.

X. Officer Military Occupational Specialties

Manpower Officer 0102: Manpower Officers are *the principal advisor to commanders on manpower staffing* and administrative issues that directly impact unit readiness. As the trusted agent of the commander, the Manpower Officer supervises and executes the four functions of administration: ***general administration, personnel administration, operational administration, and manpower administration***.

Intelligence Officer – 02XX: Entry-level Marine Intelligence Officers will be given specific training within one of the following disciplines: *Ground, Human Source, Signals or Air Intelligence*.

- **Ground Intelligence Officer – 0203**: Ground Intelligence Officers serve as commanders and staff officers in the operating forces and are responsible for *tactical planning and employment of ground surveillance and reconnaissance units* as well as the coordination of a unit's overall intelligence effort. Ground Intelligence Officers analyze and evaluate information; estimate the tactical situation; and formulate, coordinate, execute approved intelligence actions, operations, and activities to include offensive and defensive actions, reconnaissance, and fire support.
- **Human Source Intelligence Officer – 0204**: Counterintelligence/Human Intelligence (CI/HUMINT) Officers serve in both counterintelligence and human intelligence billets. They *command and/or lead CI/HUMINT units* in tactical information gathering operations and activities in support of identified collection requirements. CI/HUMINT Officers command, plan, and direct the employment and execution of CI/HUMINT units and approved operations and activities and advise commanders and staffs on information collection efforts and CI/HUMINT operations and activities.
- **Signals Intelligence/Ground Electronic Warfare Officer – 0206**: *Signals Intelligence/Ground Electronic Warfare (SIGINT/EW) Officers command and/or lead SIGINT/EW units* in tactical information gathering operations and activities in support of identified collection requirements. SIGINT/EW Officers advise commanders and staffs on the employment of SIGINT and EW assets in support of information gathering and information operations and activities.
- **Air Intelligence Officer – 0207**: Air Intelligence Officers serve as *the intelligence functional experts at all command levels of the Marine Air Wing (MAW)*. They develop and execute intelligence plans, policies, and procedures that facilitate operations across the six functions of Marine aviation.

Infantry Officer – 0302: Infantry Officers are central to the role of the Marine Corps as an expeditionary force. They are *responsible for training their Marines* for every variety of ground combat mission in any environment. Infantry Officers are the commanders or their assistants in infantry and reconnaissance units in MAGTFs. They plan, direct, and assist in the deployment and tactical employment of MAGTFs and any subordinate infantry and reconnaissance units. Infantry Officers are responsible for the discipline, morale, and welfare of their unit's Marines. To fulfill these responsibilities, they evaluate intelligence; estimate the operational situation; and formulate, coordinate, and execute appropriate plans for offensive/defensive maneuver, reconnaissance, fire support, nuclear, biological and chemical defense, directed energy warfare, communications and operational logistics and maintenance

Logistics Officer – 0402: Logistics Officers have a high degree of visibility due to their critical role in planning strategies for every major unit in the operating forces. They perform a variety of duties including *coordinating the movement of Marines and equipment from ship to shore to forward operating bases*. Logistics Officers plan, coordinate, execute and/or supervise the execution of all logistics functions and the six functional areas of tactical logistics: supply, maintenance, transportation, general engineering, health services, and services. Logistics Officers serve as commanders or assistants to the commanders of tactical logistics units/elements and as members of general or executive staffs in the operating forces, supporting establishment, and joint staff. They perform duties of Mobility Officer, Maintenance Management Officer (MMO), Motor Transport Officer (MTO), and Landing Support (LS) Officers, and are responsible for administrative and tactical unit movement of personnel, supplies, and equipment by all modes of transportation.

Communications Officer – 0602: Communications Officers are the backbone for command and control of operating forces in the Marine Corps. They are *responsible for the planning, installation, operation and maintenance of data, telecommunications and computer systems*. On the battlefield, officers must be able to quickly establish communications capabilities. Communications Officers command or assist in commanding a communication unit or element in the MAGTF. They are responsible for all aspects of the planning, installation, operation, displacement and maintenance of network,

transmission and data systems to support the command and control of the MAGTF. They are responsible for directing Department of Defense Information Operations and Defensive Cyberspace Operations planning and implementation in support of operations and exercises.

Field Artillery Officer – 0802: Field Artillery Officers lead Marines in tactics, gunnery, gun-line drills, communications, maintenance, transportation and logistics. *They provide close-fire support for infantry and armored reconnaissance units*. Their first assignment is to a firing battery within an artillery battalion, while future roles include fire support officer, fire direction officer, platoon leader and battery executive officer. Field Artillery Officers command or assist commanders in directing field artillery units. They direct tactical employment of the field artillery unit in combat, and coordinate the unit's fire with other artillery units with mortar, air, and naval surface fire support ships. They evaluate intelligence, plan targeting at all echelons, and direct administration, communication, supply, maintenance, and security activities of artillery units.

Combat Engineer Officer – 1302: Engineer Officers command or assist in commanding engineer units consisting of Marines in various MOSs whose duties include: repair, maintenance and operation of heavy equipment; engineer reconnaissance; obstacle system emplacement; breaching operations, to include reducing explosive hazards; mine/countermine operations; employment of demolitions and explosives; urban breaching; route clearance operations; assault, tactical and non-standard bridging; design, construction and maintenance of combat roads and trails; design and construction of expedient roads, airfields and landing zones; design and construction of survivability positions; expedient horizontal and vertical construction; and design, construction and maintenance of base camps/forward operating bases and combat outposts; storage and dispensing of bulk fuel products; and the installation, operation and maintenance of Tactical Utility Systems.

Cyberspace Officer – 1702: Cyberspace Officers plan, supervise, and direct the employment of cyber personnel and weapons systems. They conduct offensive and defensive cyber warfare at the tactical, operational, and strategic levels and possess an understanding of Department of Defense Information Network (DODIN) operations, defensive cyberspace operations, offensive cyberspace operations, as well as cybersecurity. The Cyberspace Officer evaluates intelligence and estimates the operational situation and integrates offensive and defensive cyber capabilities across warfighting functions.

Amphibious Assault Officer – 1803: Amphibious Assault officers lead their Marines in the tactical employment of their Amphibious Combat Vehicles (ACVs) in land operations, amphibious operations, and gunnery. They provide recommendations to the supported unit commander for the tactical employment of AA units. In conjunction with the U.S. Navy, they control ship-to-shore movement of embarked troops and equipment on contested landing areas. Amphibious Assault Officers command, or assist in commanding, assault amphibian units and provide recommendations to the supported unit commander for the tactical employment of assault amphibian units. They also direct assault amphibian units on maneuvers, tactical problems, and in combat. In conjunction with the U.S. Navy units, they control the ship to shore movement of ACVs. The AA Officers are responsible for the assault amphibian unit's personnel and equipment readiness, operational employment, and the identification and coordination of required logistics support.

Ground Supply Officer – 3002: Ground Supply Officers lead and train Marines in coordinating the equipment and material for mission requirements. They supervise the purchasing and contracting of supplies, manage budgets and develop spending plans. Ground Supply Officers are a special Staff Officer that supervises the Commanders' Property, Plant, & Equipment (PP&E) and Operating Material & Supplies (OM&S) to ensure data accuracy, existence, and completeness (equipment accountability, visibility, and auditability). They supervise and coordinate ground supply administration and operations for supply activities, units, bases, or stations, to include operating forces and shore station organizations. Ground Supply Officers may direct the activities of a maintenance distribution or industrial type organization. They command or serve in either an operating forces service unit or a non-operating forces activity. Ground Supply Officers supervise the execution of supply chain management policies and procedures pertaining to: procurement; receipt; inventory control; repair; storage; distribution; issue; disposal; and computation and maintenance of stock positioning requirements. They provide supply support insight for operational planning requirements; supervise transportation of supplies and equipment; manage the transmittal of public funds; participate in the budget process, administer, and expend allotted funds; and make necessary recommendations to the Commanding Officer regarding supply support procedures.

Financial Management Officer – 3404: Financial Management Officers formulate and supervise the execution of policies and procedures pertaining to the financial management of appropriated funds in the operating forces and the shore establishment. The functional areas of assignment are: budget formulation and execution, finance, and resource evaluation and analysis.

Judge Advocate – 4402: Soon after becoming a Marine Corps Judge Advocate, you will be given the *responsibilities of maintaining your own caseload and advising Marines on legal issues*. Additionally, the training you receive as a Marine Corps Officer will prepare you to be a leader, both inside the courtroom and out.

Communication Strategy and Operations Officer – 4502: The CommStrat Officer develops communication plans; communicates with internal, domestic, and international audiences; and oversees the execution of plans and activities by 45XX OccFld Marines in support of operational and Service communication objectives. Typical duties to support the OccFld's mission to build understanding, credibility, and trust with audiences critical to mission success include, but are not limited to: advising commanders and staffs on communication strategy matters; conducting research to develop an understanding of the information environment, key audiences, and problems and opportunities; incorporating research findings into planning and decision-making; participating in operational and Service planning; leading communication planning, integration and synchronization; developing annexes and appendices to operations orders; engaging with internal, domestic and international audiences via traditional news media, social media, and face-to-face communication; overseeing the development and official release of written and visual information products; identifying and developing approaches to mitigate potential or emerging risks to the Marine Corps' reputation or mission accomplishment; conducting crisis communication; and assessing and evaluating communication plans, products and engagement activities. CommStrat Officers also provide training to all levels of command and build communication strategy and operations capacity among partner nation.

Military Police Officer – 5803: Military Police Officers provide essential support to their commanding officers with all facets of law enforcement. Officers begin this MOS either on-base, providing security and law enforcement, or on deployment, supervising maneuver and mobility operations and internment operations, as well as providing area security and law enforcement.

Aircraft Maintenance Officer – 6002: Aircraft Maintenance Officers (AMOs) supervise and coordinate aircraft maintenance and repair activities. To be effective, 6002 AMOs must possess a detailed, working knowledge of all Navy-sponsored aviation maintenance programs and processes governed by CNAFINST 4790.2 series. MOS 6002 AMOs are different from MOS 6004, Aircraft Maintenance Engineer Officers, in that they are unrestricted officers whose career paths can lead to the command of a Marine Aviation Logistics Squadron (MALS) or to designation as an Acquisition Professional.

Aviation Supply Officer – 6602: Aviation Supply Officers make critical decisions concerning budget, inventory management, deployment, personnel and other support matters. They serve in the Aviation Supply Department at any one of the 11 different Marine Aviation Logistics Squadrons (MALS), all dedicated to keeping Marine aircraft ready and safe.

Aviation Command & Control – 72XX: Officers in Aviation Command & Control *serve as either Air Support Control Officers, Air Defense Control Officers or Air Traffic Control Officers*. The primary functions of these MOSs include directing the interception of hostile aircraft and coordinating employment of surface-to-air-missiles, coordinating air support missions and directing activities related to air traffic control and airspace management.

- **Low Altitude Air Defense – 7204:** Low Altitude Air Defense (LAAD) Officers command, or assist commanders in commanding Ground Based Air Defense (GBAD) units. They coordinate tactical employment of LAAD units through air command and control agencies, sensors, and other air defense weapons. They evaluate intelligence, plan surface to air fires at all echelons, and direct administration, communication, supply, maintenance, and security activities of LAAD units. LAAD officers also plan tactical employment and command LAAD units conducting air base ground security operations.
- **Air Support Control Officers – 7208:** Air Support Control Officers plan, direct, and coordinate air support missions in support of MAGTF operations. They are responsible for processing immediate requests for close air support and medical evacuations, integrating aviation with other supporting arms, and procedurally controlling aircraft throughout the MAGTF area o: f operations. Air Support Control Officers normally work in the Direct Air Support Center (DASC) or one of its subordinate elements, which are co-located with the GCE, specifically with the FSCC, when deployed. The DASC, while a MAW unit, deploys tactically with the GCE and provides procedural control of all aircraft within the GCE Commander's battlespace (up to a certain altitude). Above that altitude, and beyond the fire support coordination line (FSCL), Air Defense Control Officers, operating from the Tactical Air Operations Center (TAOC), are positively controlling the airspace via radar.
- **Air Defense Control Officers – 7210:** Air Defense Control Officers work in the TAOC where they direct aircraft and surface to air missile assets for the interception of hostile aircraft and missiles. Air Defense Control Officers

coordinate with intelligence resources to gather and share enemy targeting information to prosecute and direct deep air support missions. They are responsible for the identification and classification of aircraft. They are also responsible for providing navigational assistance of friendly aircraft and the dissemination of radar resources throughout the MAGTF and joint services.

- **Air Traffic Control Officers – 7220:** The ATC Officer serves as watch commanders or detachment commanders at an expeditionary ATC detachment. They act as Facility Watch Officers or officers-in charge at garrison ATC facilities. They may serve as Command Airspace Liaison Officers. They coordinate and direct activities related to ATC and airspace management as Staff Officers at squadrons, Marine Air Control Groups (MACG), MAW, and other Senior Marine, joint, or coalition units.

Unmanned Aircraft System (UAS) MAGTF Electronic Warfare Officer (EWO) – 7315: Unmanned Aircraft System MAGTF Electronic Warfare Officers (UAS/MAGTF EWOs) employ a network enabled and digitally interoperable UAS, from a Ground Control Station, to provide aviation fires and support across the full spectrum of combat operations. UAS/MAGTF EWOs will advise supported commanders on matters pertaining to electromagnetic spectrum effects and integration; and provide information of intelligence value not readily available from normal sources. EWOs are the supported commander's subject matter expert on Electromagnetic Spectrum Warfare tactics, techniques, and procedures.

Flight Students – 7599: Flight students (TBS) are undergoing or awaiting flight training that leads to designation as Naval Aviator.

XI. The Basic School

- Mission: To train and educate newly commissioned or appointed officers in the high standards of professional knowledge, esprit-de-corps, and leadership to prepare them for duty as company grade officers in the operating forces, with particular emphasis on the duties, responsibilities, and warfighting skills required of a rifle platoon commander.
- Quality Spread: In 1977, the Commandant of the Marine Corps made the decision to apply a quality spread to the assignment of MOSs. This decision was made to ensure every OccFld received a fair share of the most competitive lieutenants. This policy remains in effect today as MOS assignments at The Basic School (TBS) are made by balancing four factors: MOS quality distribution; student suitability; unique or additional considerations; and student preferences, in order of priority. Quality distribution has proven to be the most effective way to serve the needs of the Marine Corps while considering the desires of the students. In addition to quality distribution across the "thirds," all decisions on MOS assignment are made with consideration of student suitability, unique or additional considerations, and student preferences.
- Course Structure:
    - Phase I Individual Skills
        - Leadership
        - Rifle and Pistol Qualification
        - Land Navigation
        - Communications
        - Combat Lifesaving
        - MCMAP
    - Phase II Rifle Squad Leader Skills
        - Decision-making
        - Combined Arms
        - Rifle Squad Tactics/Weapons
        - Scouting and Patrolling
    - Phase III Rifle Platoon Leader Skills
        - Decision-making
        - Combined Arms
        - Rifle Squad Tactics/Weapons
        - Scouting and Patrolling
    - Phase IV Basic MAGTF Officer Skills
        - Military Operations in urban Terrain (MOUT)
        - Rifle Platoon (REIN) Tactics
        - Force Protection
        - Expeditionary Operations
        - Legal/Platoon Commander's Administration

XII. Rifle Platoon - Individual Weapons

M27 Infantry Automatic Rifle (IAR)



Primary Function: The M27 is the automatic weapon that delivers accurate suppressive fires in support of the Fire Team. It is a lightweight, magazine-fed 5.56mm weapon. The M27 is intended to enhance an automatic rifleman's maneuverability and displacement speed.
Caliber: 5.56mmx45mm NATO
Weight: 7.9 lbs (3.6 kg) empty
Effective Range: Area TGT 800m, Point TGT 550m

M4 Carbine



Primary Function: Infantry Weapon—less weight and shorter barrel than the M16 making it a more appropriate weapon for shorter distances and confined spaces.
Caliber: 5.56x45mm NATO
Weight: 7.5 lbs (with 30 round magazine)
Effective Range: Area TGT – 600 meters, Point TGT – 500 meters

M32A1 Multi-Shot Grenade Launcher (MSGL)



Primary Function: The MSGL is a lightweight 40 mm six-shot revolver-type grenade launcher capable of firing 6 rounds in 3 seconds.
Caliber: 40 x 46mm and 51mm grenades
Weight: 15.4 lb (7.0 kg) empty
Effective Range: Area TGT 400m, Point TGT 250m

M320 Grenade Launcher Module (GLM)



Primary Function: The GLM is a lightweight 40 mm single-shot grenade launcher capable of being caried by multiple members of each squad for immediate HE suppression.
Caliber: 40 x 46mm
Weight: 3.4 lbs mounted (1.54 kg), 6.4 lbs (2.9 kg) in stand alone configuration
Effective Range: Area TGT 350m, Point TGT 150m

XIII. Rifle Company/Battalion - Crew Served Weapons

M240B Medium Machine Gun



Purpose: The M240B Machine Gun provides Marines with a continuous and high rate of fire to engage long-range targets. It is a heavier automatic weapon than the M249 but provides a faster rate of fire and a longer effective range. Typically, the tripod is employed when the weapon is to be used for defensive situations, or when precise fire is needed in support of maneuver units. The bipod is always attached and is suitable for use while patrolling.
Ammunition: 7.62mm
Weight with bipod: 24 pounds
Maximum effective range with tripod: 1,800 meters
Maximum range: 3,725 meters
Can be mounted on tanks and light armored vehicles

MK-153 Shoulder Launched Multipurpose Assault Weapon (SMAW)



Purpose: Portable anti-armor rocket launcher. Its mission is to destroy bunkers and other fortifications during assault operations as well as other designated targets with the dual mode rocket and to destroy main battle tanks with the HEAA rockets.
Ammunition: 83mm
Weight:
To Carry: 16.6 pounds (7.54 kg)
Ready-to-Fire (HEDP): 29.5 pounds (13.39 kg)
Ready-to-Fire (HEAA): 30.5 pounds (13.85 kg)
Maximum effective range:
1 x 2 Meter Target: 250 meters
Tank-Sized Target: 500 meters

MK19 Mod 3 Automatic Grenade Launcher



Purpose: At the smallest unit level, the lightest weapons often carry the day, as maneuverability is one of the primary assets of a Marine fire team. When high-volume, suppressive fire support is required, there are few weapon systems as effective as the MK19 Mod 3 Automatic Grenade Launcher. Capable of destroying most light-armored vehicles, protecting supply convoys, and even defending against hovering rotary aircraft, the MK19 provides Marine infantry battalions with the means to deliver massive direct fire or indirect fire from hidden positions. The MK19 rapidly fires explosive 40mm grenades, making it an ideal weapon against armored, mechanized, and enemy infantry forces.
Ammunition: High-explosive, dual-purpose M430 40x53mm grenades
Weight: 72.5 pounds
Weight with tripod: 120 pounds
Maximum effective range: 1,500 yards
Nearest safe distance to launch: 75 meters in combat/310 meters in training

.50 Caliber Machine Gun



Purpose: The Browning .50 Cal Machine gun provides Marines with automatic weapon suppression fire for offensive and defensive purposes. This weapon can be used effectively against enemy personnel, light armored vehicles, and slow, low-flying aircraft.
Ammunition: .50 caliber rounds
Weight: 128 pounds (84-pound gun; 44-pound tripod)
Length: 65.13 inches
Maximum effective range: 1,829 meters with tripod mount

FGM-148 JAVELIN





Purpose: The greatest assets to Marines fighting on the ground are maneuverability and firepower, and perhaps no weaponry provides a better combination of both than the FGM-148 Javelin Anti-tank Missile. In fact, after firing the Javelin, Marines can begin moving to a different area before the missile even reaches its target, preventing the enemy from discovering their position.
Features: The FGM-148 Javelin is a fire-and-forget missile with lock-on before launch and automatic self-guidance. The system takes a top-attack flight profile against armored vehicles, but can also take a direct-attack mode for use against buildings and targets under obstructions. The missile also has the ability to engage helicopters in the direct attack mode. It can reach a peak altitude of 500 feet in top-attack mode and 190 feet in direct mode.

BGM-71 TOW Missile



Purpose: Tube launched, optically tracked wire-guided anti-tank missile capable of penetrating armor 30-inches thick at more than 3,000 meters.
Features: The TOW is one of the most widely used anti-tank guided missiles and can be found in a wide variety of manually carried and vehicle mounted forms, as well as on helicopters.

60mm Mortar



81mm Mortar



Purpose: Marines are known for their exceptional ability to work cohesively as a unit, and nowhere is this more evident than when mortar teams are providing effective, indirect fire on a target. With 60mm and 81mm mortars, Marines work together to provide constant and accurate high-angle suppressive fire on targets they may not be able to even see. Marine mortar teams locate targets by converting chart data to firing data, delivering mortar fire in timely response to the ground units they support.

Features: Serving as lightweight, portable artillery, mortars are fired by dropping each round into the muzzle. The round slides down the base of the barrel where it strikes the firing pin located inside the base cap. The flame from the exploding cartridge ignites the propelling charge, producing the gas pressure that drives the round up and out of the barrel, high into the air. After it has reached its apogee, the mortar round falls to the target.

Types of Mortars: 60mm mortars are organic to the rifle company and have a range of 3,500 meters. 81mm mortars are an asset of the infantry battalion and have a range of 5,700 meters. Both mortars can fire:

- High Explosive (HE) shells (several varieties) – Effective against lightly armored targets, personnel and fortifications
- Smoke rounds – Effective as a screening or signaling round
- Illumination rounds – Effective in night missions requiring illumination of an enemy target

XIV. USMC Ordnance

M142 High Mobility Artillery Rocket System (HIMARS)



Purpose: Transportable by the KC-130 Super Hercules, the HIMARS is the Marine Corps' most advanced artillery system, accurately engaging targets over great distances under all weather conditions. With high volumes of lethal rocket and missile fire, the HIMARS delivers precise strikes from over 40 miles away. A weapon system mounted on a truck, the HIMARS provides fire support for Marines fighting in every corner of the battlefield.
Features: From 40 miles out, HIMARS munitions are accurate within 26 feet; Six tubes hold 200-pound rockets; Crew of three Marines; 24,000 pounds; Fires M270 artillery rockets and anti-aircraft missiles; Ready to fire within 15 minutes of being unloaded; Consists of a launcher, carrier and a Fire Control System; Able to launch rockets and move to a different location before the enemy can locate its firing position.

M777 Howitzer



Purpose: Marines on the ground rely on the Marines by their side, but they also depend on Marine fire support from long range. The M777 Lightweight 155mm howitzer provides timely, accurate, and continuous firepower in support of Marine Infantry forces. In 2005, the Marine Corps began fielding the M777, a much smaller, lighter (9,000 pounds lighter) and more maneuverable towed cannon weapon than its predecessor, resulting in improved transportability and mobility without impacting range or accuracy. 7-ton trucks are used to move the M777s, enabling Marine artillery units to move faster between positions. A must for equipment in an expeditionary force, the howitzer is also highly deployable, able to be lifted externally by both the MV-22 Osprey and CH-53E Super Stallion.

Light Armored Vehicle-25



Purpose: The platform for the Marine Corps Light Armored Reconnaissance units, the LAV combines firepower, speed, and maneuverability for a variety of mission sets. It provides commanders with an all-weather, sustainable, combined arms platform capable of various security, reconnaissance and counter-reconnaissance mission sets.
Features: Detroit Diesel 6V537 300HP turbo-charged engine; 4-wheel drive transferrable to 8-wheel drive; M242 25mm Chain gun, M240C Coaxial and M240B pintle-mounted machine gun. Lightly armored, fully amphibious, there are anti-armor, communication, mortars, and recovery variants

Amphibious Combat Vehicle (ACV)



Purpose: The Marine Corps' replacement for the AAV, the ACV is designed to transport a squad-sized element from ship-to-shore and onto overland objectives across a contested landing zone. The ACV possesses ground mobility and speed during sustained operations ashore and has the capability to provide organic, direct fire support to dismounted infantry in the attack. The ACV supports expeditionary and survivable mobility capability and capacity.
Features: 8x8 wheeled vehicle with a land speed of 65 MPH and water speed of 6-7 knots; armed with a M2 .50Cal or Mk-19 40mm on a remote weapons station with the fielding of a 30mm in the mid-2020s. It is also equipped with a "v-shaped" hull and blast seats to mitigate the effects of undercarriage explosions. It has a crew of 3 Marines and 13 embarked troops.

Joint Light Tactical Vehicle (JLTV)



Purpose: JLTVs aim to improve the mobility and payload of the light tactical vehicles while providing increased survivability. This vehicle is a joint effort between the U.S. Army and Marine Corps and will replace a portion of both service's HMMWV fleet. These vehicles are lighter and faster than HMMWVs but offer comparable protection and fire power, making them an asset in unpredictable terrain.
Features: Transportable by fixed and rotary wing aircraft, scalable crew system, automatic fire protection system, fully integrated Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) capabilities, 3500-5100lbs payload, adaptable capabilities for multiple mission sets.

Medium tactical Vehicle-Replacement (MTVR)





Purpose: Also known as the '7-Ton', this is the most common cargo and personnel carrying vehicle in the Marine Corps. It is usually found in the Main Body. When mounted with a machinegun turret however, it can also be employed in the Lead Security Unit as a lead vehicle due to its survivability against IEDs (when up-armored).
Features: Employment: troop/cargo carrier; Payload: 7.1 tons off-road, 15 tons on improved surfaces; Personnel: 16x troops in the back of a short-bed, 20x for a long-bed o Curb/Gross Weight: 35,000lbs & 62,000lbs (armored variants); Pros: Can be mounted with the M2 .50 cal, M240 or M249 machine gun; Armored plating and bullet-resistant glass can be mounted. Armor and ground clearance provide decent protection from undercarriage blasts. Cons: limited maneuverability due to height/weight

RQ-20 PUMA



Purpose: Puma is a hand launched Small Unmanned Aircraft System designed to directly support organic reconnaissance requirements of battalion and below maneuver elements. The system is man-portable and is operated by 2 trained operators. The sensor is fully gimbaled and simultaneously provides EO, IR, and illuminator capabilities. Puma can operate in a wide range of environments, including rain and salt water conditions.
Features: The system is man-portable and is operated by 2 trained operators. The sensor is fully gimbaled, and simultaneously provides EO, IR, and illuminator capabilities. Puma can operate in a wide range of environments, including rain and salt water conditions. It has a range of 15km and an endurance of 120 minutes.

SKYRAIDER



Purpose: Suitable for immediate intelligence, surveillance and reconnaissance (ISR), clandestine operations, payload delivery, beyond line-of-sight (BLOS) reconnaissance, force protection, and advanced target recognition missions.

Features: Designed with an open architecture and deployable by a single operator, the skyraider has a maximum range of 8km and a flight time of 50 minutes.

XV. Marine Aviation Platforms

AH-1Z Super Cobra/Viper




Purpose: No aircraft defines the role of close air support better than the Marine AH-1 Super Cobra/Viper. Whether it is providing cover for advancing ground forces or escorting assault support helicopters en route to a landing zone, the AH-1Z is called on when Marines need firepower from the air.
Features: Able to project multiple missiles, rockets and 20mm cannon fire on targets otherwise inaccessible, the AH-1 has played a major role in every U.S. military conflict since Vietnam. Today it continues to provide the precision, armament, and tactical situational awareness to fight in close proximity with our Marines below. Equipped with enhanced navigation displays that distinguish friends from enemies, data transfer systems that deliver real-time aerial reconnaissance to Marines on the ground and composite rotor blades and tail booms that can withstand 23mm cannon fire, the Marine AH-1 is the perfect example of why Marine Aviation has been called 'flying artillery.'

UH-1Y Huey/Venom




Purpose: No single aircraft provides a better blend of all six Marine Aviation functions than the Marine UH-1. A case study in Offensive Air Support, Assault Support, Command and Control, and Aerial Reconnaissance, the Marine utility helicopter of choice is truly a microcosm of Marine Aviation. With low-flying AH-1s aimed in on the hostile street ahead and hovering UH-1s covering adjacent rooftops, combat Marines can engage under the watchful eye of close air support.
Features: When outfitted with door-mounted .50 caliber and 7.62 machine guns and teamed alongside AH-1s, Marine UH-1s arm MAGTF commanders with unprecedented response, situational awareness and a 360-degree field of fire support for advancing ground forces. The four-bladed UH-1Y Venom features cockpit avionics, a satellite data link network, and 50% increase in range and speed over the UH-1N it replaced in 2014. Now, with a 125% boost in

payload and the power to keep up with the larger helicopters they escort, utility helicopters will continue to support Marines for decades to come.

CH-53E Sea Stallion/Super Stallion Helicopter





Purpose: The heavy-lift helicopter of the Marine Corps can carry a 26,000-pound Light Armored Vehicle, 16 tons of cargo 50 miles and back, or enough combat-loaded Marines to lead an assault or humanitarian operation; but perhaps what's most amazing about the largest military helicopter in the U.S. is what it achieves despite its size. Though powerful enough to lift every aircraft in the Marine inventory except the KC-130, the CH-53E Super Stallion is compact enough to deploy on amphibious assault ships, and has the armament, speed, and agility to qualify as much more than a heavy lifter.
Features: Armed with window-mounted .50-caliber machine guns, chaff and flare dispensers for anti-air defense, an in-flight refueling probe for limitless range and a forward-looking infrared (FLIR) imager for night and all-weather navigation, the Marine CH-53E is commonly called on for assault transport of Marine ground forces. Though long-range insertion missions are standard protocol for this Marine workhorse, it is the rapid resupply of Marines at the forefront that makes the Super Stallion one of the most used aircraft in Marine Aviation.
CH-53K King Stallion: The CH-53K is the planned replacement for the aging CH-53E. It is designed to provide three times the lift capability of the CH-53E and double its combat radius. Its first deployment will likely be in 2023 or 2024.

MV-22 Osprey Tiltrotor





Purpose: With the speed and range of a turboprop, the maneuverability of a helicopter and the ability to carry 24 Marine combat troops twice as fast and five times farther than previous helicopters, the Osprey greatly enhances the advantages Marines have over their enemies. The Osprey's impact was felt immediately upon its arrival in Iraq. Commenting on its advanced expeditionary capabilities and staggering operational reach, a top Marine commander went as far as to say it turned his battle space "from the size of Texas into the size of Rhode Island".

Features: Designed for expeditionary assault, raid operations, cargo lift and special warfare; Built with composite materials, fly-by-wire flight controls, digital cockpits; Vertical takeoff and landing, and short takeoff and landing capabilities; In-flight refueling.

F/A-18 Hornet



Purpose: A basic tenet of all Marine aircraft is the requirement for usability in multiple missions, and the Marine F/A-18 upholds this doctrine. Able to be quickly configured for fighter or attack missions, or a combination of both, the twin-engine, all-weather, day or night Marine jet can be used for fighter escort, enemy air defense suppression, reconnaissance, air control and the calling card of Marine Aviation: close air support.
Features: With external and internal weapon stations able to deliver Sparrow, AMRAAM and Sidewinder air-to-air missiles, air-to-ground munitions in the form of Harpoon and Maverick missiles, general purpose, cluster and laser-guided bombs, and a 6-barrel 20mm gun in the nose section for extremely close encounters, few aircraft in the world are counted on as heavily as the F/A-18 Hornet.

F-35B Lightning II



The **F-35B Lightning II** is the replacement for the aging F/A-18A/C. Variants of the F-35 will be used by the Air Force (A-Variant), Marine Corps (B-Variant with V/STOL capability), and Navy (C-Variant with carrier capability), as well as a number of international partners. The Marine Corps is the first service to stand-up an operational squadron. In addition to the B-Variant, Marine pilots also fly the Navy C-Variant and deploy as part of a Carrier Air Wing.

KC-130J Hercules



Purpose: To achieve the global reach and rapid deployability our nation requires, Marine Aviation must be able to deliver Marines, fuel, and cargo where needed. Answering the call is the Marine KC-130 Hercules. A tactical tanker/transport aircraft that stretches more than 90 feet in length and 130 feet wing to wing, the KC-130 Hercules can resupply austere battle zones, provide a Direct Air Support Center, insert ground troops, and perform medevac operations. It is during the mission of tactical aerial refueling, however, that the Marine KC-130 has earned the reputation for being best in the world.
Features: Able to carry more than 12,000 gallons of fuel and simultaneously refuel two aircraft at 300 gallons a minute, the Hercules has been called the workhorse of Marine Aviation.

MQ-9A Reaper



Purpose: The MQ-9 Reaper is another UAV that holds a wide range of capabilities and mission sets. While its primary mission is ISR, it can also perform close air support, combat search and rescue, precision strike, buddy-lase, convoy and raid overwatch, route clearance, target development, and terminal air guidance. The Reaper has an assortment of weapon systems that can be leveled against dynamic and time-sensitive targets while posing no risk to the pilot or crew.
Features: The MQ-9 Reaper boasts an infrared sensor, color, monochrome daylight TV camera, shortwave infrared camera, laser designator, and laser illuminator. It is armed with an array of AGM-114 Hellfire missiles, GBU-12 Paveway II, GBU-38 Joint Direct Attack Munitions, GBU-49 Enhanced Paveway II, and GBU-54 Laser Joint Direct Attack Munitions. A Multi-Spectral Targeting System allows it to identify targets using a large collection of visual sensors.

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CHAPTER 8: NAVAL SPECIAL WARFARE & EXPLOSIVE ORDNANCE DISPOSAL



"The Only Easy Day was Yesterday"

I. SPECWAR Ethos

In times of war or uncertainty, there is a special breed of warrior ready to answer our Nation's call. A common man with uncommon desire to succeed. Forged by adversity, he stands alongside America's finest special operations forces to serve his country, the American people, and protect their way of life. I am that man.

My Trident is a symbol of honor and heritage. Bestowed upon me by the heroes that have gone before, it embodies the trust of those I have sworn to protect. By wearing the Trident, I accept the responsibility of my chosen profession and way of life. It is a privilege that I must earn every day. My loyalty to Country and Team is beyond reproach. I humbly serve as a guardian to my fellow Americans always ready to defend those who are unable to defend themselves. I do not advertise the nature of my work, nor seek recognition for my actions. I voluntarily accept the inherent hazards of my profession, placing the welfare and security of others before my own. I serve with honor on and off the battlefield. The ability to control my emotions and my actions, regardless of circumstance, sets me apart from other men. Uncompromising integrity is my standard. My character and honor are steadfast. My word is my bond.

We expect to lead and be led. In the absence of orders, I will take charge, lead my teammates, and accomplish the mission. I lead by example in all situations. I will never quit. I persevere and thrive on adversity. My Nation expects me to be physically harder and mentally stronger than my enemies. If knocked down, I will get back up, every time. I will draw on every remaining ounce of strength to protect my teammates and to accomplish our mission. I am never out of the fight.

We demand discipline. We expect innovation. The lives of my teammates and the success of our mission depend on me - my technical skill, tactical proficiency, and attention to detail. My training is never complete. We train for war and fight to win. I stand ready to bring the full spectrum of combat power to bear in order to achieve my mission and the goals established by my country. The execution of my duties will be swift and violent when required yet guided by the very principles that I serve to defend. Brave men have fought and died building the proud tradition and feared reputation that I am bound to uphold. In the worst of conditions, the legacy of my teammates steadies my resolve and silently guides my every deed. I will not fail.

II. The SEAL Code

Loyalty to Country, Team and Teammate
Serve with Honor and Integrity On and Off the Battlefield
Ready to Lead, Ready to Follow, Never Quit
Take Responsibility for Your Actions and the Actions of Your Teammates
Excel as a Warrior through Discipline and Innovation
Train for War, Fight to Win, Defeat our Nation's Enemies
Earn your Trident Everyday!

III. SPECWAR History

Naval Special Warfare (NSW) forces (or Naval Special Operations Forces [NAVSOF]) conduct special operations (SO) in any environment, but are uniquely trained and equipped to operate from, around, and in the maritime and riverine areas. NSW Training and preparation stresses an enduring commitment to individual initiative and responsibility, and mission completion. Today's NSW personnel trace their origins back to the Naval Combat Demolition Units (NCDUs) and Underwater Demolition Teams (UDTs) of World War II.

Naval Combat Demolition Units (NCDUs)

In June 1943, Lieutenant Commander Draper L. Kauffman, 'the father of naval combat demolition' established the Naval Combat Demolition Unit (NCDU) Training School in Fort Peirce, FL to train personnel specifically for European operations in WWII. The NCDUs, composed of six-man teams, were formed with volunteers acquired from the Navy Construction Battalion (Seabee).

By April 1944, 34 NCDUs were deployed to England in preparation for Operation OVERLORD, the Allied invasion of France on the beaches of Normandy. The NCDUs were utilized to destroy an array of barriers and underwater obstacles. The NCDUs suffered 31 dead and 60 wounded, a casualty rate of 52 percent. The majority of the NCDUs were then transferred to the Pacific Theater of operations and eventually absorbed into the UDTs.

Underwater Demolition Teams (UDTs)

The Underwater Demolition Teams were founded in November 1943 in response to the challenges faced by the U.S. Marine Corps in the amphibious landing on Tarawa. It was clear that the Navy needed a unit that could provide hydrographic reconnaissance and underwater demolition of obstacles prior to an amphibious landing. UDT-1 and UDT-2 were subsequently established, and saw action across the Pacific Theater to include the invasions of Saipan, Guam, Peleliu, Iwo Jima, and Okinawa, as well as in the European Campaign. With a formal training program established in Maui, Hawaii, the UDTs would perform mine clearing and demolition raids during the Korean War and canal clearance operations in the Vietnam War.

SEAL Teams

Beginning in 1961, the CNO stressed the need for a naval unit with unconventional warfare capabilities. President John F. Kennedy recognized the importance of such a unit and in 1962 established SEAL Teams ONE and TWO, with personnel transferred from the UDTs. These Teams were first tested in the initial stages of the Vietnam War as advisors to the Vietnamese in the conduct of clandestine maritime operations. Once U.S. troop involvement increased, the SEAL Teams began conducting reconnaissance and direct-action missions. During the war, LTJG Joseph Kerry, LT Thomas Norris, and PO Michael Thornton all received Medals of Honor for their actions in combat.

To ensure that special operations forces maintained a high state of readiness and to correct deficiencies accentuated by the failed attempt to rescue American hostages in Iran in April 1980, a comprehensive program of Special Operations Forces (SOF) revitalization began in 1981. Established in 1987, the United States Special Operation Command (USSOCOM) provided the funding and organizational relationships necessary to field a professional U.S. special operations capability.

In 1989, SEALs participated in Operation JUST CAUSE, the invasion of Panama to topple the Noriega dictatorship. NSW forces seized Paitilla Airfield to prevent General Noriega from fleeing by air as well as disabled his boat with explosives to hinder an escape by sea.

From August 1990 thru March 1991, SEALs participated in Operation DESERT SHIELD and Operation DESERT STORM. They conducted beach and land border reconnaissance, combat search and rescue (CSAR), and mine countermeasure missions. SEALs also conducted a maritime deception mission, a feint that successfully drew Iraq forces away from the point of the U.S. assault into Kuwait.

In the recent conflicts of Afghanistan (Operation ENDURING FREEDOM) and Iraq (Operation IRAQI FREEDOM), the SEAL teams have conducted numerous Counterinsurgency and Counterterrorism operations to include Direct Action, Surveillance and Reconnaissance, Foreign Internal Defense and personal security detachment operations for civilian government leaders. Starting in 2009, the NSW force began conducting village stability

operations to provide persistent presence within local population and support to the Afghan Local Police program. LT Michael Murphy and SO2 Michael Monsoor received Medals of Honor posthumously in Operation ENDURING FREEDOM and Operation IRAQI FREEDOM respectively. USS Michael Murphy (DDG-112) was also named in honor of LT Murphy. Most recently, SOCS Edward Byers and SOCM Britt Slabinski were awarded the Medals of Honor in Operation ENDURING FREEDOM.

IV. SPECWAR Organization

Commander, Naval Special Warfare Command (NAVSPECWARCOM), a two-star rear admiral headquartered in Coronado, CA, exercises operational and administrative control of all active and reserve NSW forces stationed in the United States. The NAVSPECWARCOM mission is to man, train, equip, deploy, and sustain NSW forces for operations and activities abroad in support of combatant commanders and U.S. national interests. NAVSPECWARCOM is an echelon II command under the combatant command of USSOCOM.

Deployable NSW forces are assigned to one of the six NSW Groups. NSWGs 1 and 2 command the eight active duty SEAL teams. Naval Special Warfare Group ONE, based in Coronado, CA, with SEAL Teams ONE, THREE, FIVE, and SEVEN as its subordinate commands. Naval Special Warfare Group TWO, based in Little Creek, VA, with SEAL Teams TWO, FOUR, EIGHT, and TEN as its subordinate commands.

Naval Special Warfare Group THREE, based in Pearl Harbor, HI, is responsible for NSW forces conducting undersea special operations worldwide. Subordinate commands include SEAL Delivery Vehicle Team ONE (SDVT-1), SEAL Delivery Vehicle Team TWO (SDVT-2), Training Detachment THREE (TRADET-3), and Logistics Support Unit THREE (LOGSU-3).

Naval Special Warfare Group FOUR, based in Little Creek, VA, organizes personnel to deploy combat-ready forces and maritime mobility systems with craft capabilities and capacities in accordance with USSOCOM priorities. Subordinate commands include Special Boat Teams TWELVE, TWENTY, and TWENTY-TWO.

Naval Special Warfare Group TEN, based in Little Creek, VA, is responsible for intelligence, surveillance, reconnaissance, and preparation of the environment capabilities, with NSW Special Reconnaissance Teams ONE and TWO, and the Mission Support Center as its subordinate commands.

Naval Special Warfare Group ELEVEN is responsible for NSW Reserve Components and personnel in support of NSW and joint special operations.

SEAL Teams

Typically, SEAL Teams are comprised of three Troops with two platoons each (six platoons/Team), a Command and Control Element, and a mobile support element that is deployable overseas for extended periods. The SEAL officer's first leadership assignment is as a Squad Leader (LTJG/LT) to a SEAL platoon, and then progresses to a Platoon Commander (LT), and eventually Troop Commander (LCDR) of three SEAL platoons.

A standard Troop can be task-organized for operational purposes into three platoons, each with 16 personnel. Troop core skills consist of Sniper, Breacher, Communicator, Maritime/Engineering, Close Air Support, Corpsman, Point-man/Navigator, Primary Driver/Navigator (Rural/Urban/Protective Security), Heavy Weapons Operator, Sensitive Site Exploitation, Air Operations Master, Lead Climber, Lead Diver/Navigation, Interrogator, Explosive Ordnance Disposal. The size of each SEAL Team with three troops and support staff is approximately 300 personnel.

The SEAL elements are trained to infiltrate their objective areas by fixed and rotary winged aircraft, Navy surface ships, submarines, vehicles, underwater, or on foot. Their ability to conduct clandestine, high-risk missions and provide real-time intelligence offers decision makers excellent situational awareness and provides multiple options to conduct warfare. NSW is a relatively small force consisting of approximately 9,250 personnel, 2,700 SEALs, 700 Special Warfare Combatant Craft-Crewmen (SWCC), 750 reservists, 4,000 Combat Support (CS) and Combat Service Support (CSS) personnel, and more than 1,100 civilians. NSW constitutes 11 percent of USSOF and less than 2 percent of the Navy’s forces.

Special Warfare Combatant Craft-Crewman

SWCC are specially selected and trained enlisted personnel who operate NSW combatant craft and other craft in maritime, coastal, and riverine environment. SWCC operators must complete the 7-week SWCC basic crewman training, which emphasizes physical conditioning, water competency, seamanship, navigation, boat tactics, teamwork, and mental toughness. The course includes a 51-hour navigation, boat tactics, and swimming evolution with little sleep and constant exposure to the elements. Completion of basic SWCC training requires proficiency in coxswain skills, over-the-horizon navigation, small-craft tactics, weapons, communications, maritime insertion and extraction, and coastal patrol and interdiction. On completion of SWCC Basic Crewman Training, students advance to Crewman Qualification Training (CQT).

CQT is a 21-week course covering weapons, seamanship, first aid, navigation, communications, waterborne patrolling, marksmanship, engineering, small-unit tactics, close-quarters combat, combative, SERE Level C, language training, and an introduction to NSW mission planning. Graduates of CQT are designated as Special Warfare Boat Operators (SB), authorized to wear the SWCC insignia, and assigned to a Special Boat Team.

V. SPECWAR Core Tasks and Limitations

Primary Core Tasks

- **Direct Action –** Short-duration strikes and other small-scale offensive actions taken to seize, destroy, capture, or recover in denied areas. Direct Action involves ambush, combat swimmer ship attacks, combat search and rescue; close quarters combat (CQC), and visit board search and seizure (VBSS).
  Example: Operation NEPTUNE SPEAR (Osama bin Laden raid)

- **Special Reconnaissance –** Acquiring information concerning the capabilities, intentions, and activities of an enemy. Special Reconnaissance involves counter-sniper operations, hydrographic reconnaissance, and listening and observation posts.
  Example: Prior to an amphibious assault by Marines during the Second World War, Underwater Demolition Teams (UDTs) would conduct hydrographic reconnaissance and destroy beach obstacles.

- **Counterinsurgency –** Counterinsurgency (COIN) is defined as "those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat an insurgency". A key aspect of COIN is the development of host nation security forces. NSW COIN operations are based on the ability to teach combat skills, regional expertise, language skills, and the ability to work among indigenous populations. Example: Operation ENDURING FREEDOM Village Stability Operations (VSO) in which teams have been dispersed in remote, austere, and hostile areas of Afghanistan to enable local security and reestablish or re-empower traditional local governance mechanisms that represent the population and that promote critical local development to improve the quality of life within village communities and districts.

- **Counterterrorism –** Counter Terrorism involves the prevention, deterrence, and response to terrorism. Example: Since 2009, SEALs have been conducting operations in Yemen against Al-Qaeda in Arabian Peninsula militants.

- **Security Force Assistance** – Security force assistance is defined as, "The Department of Defense activities that contribute to unified action by the US Government to support the development of the capacity and capability of foreign security forces and their supporting institutions." (JP 1-02). SFA supports the professionalization and the sustainable development of the capacity and capability of foreign forces, supporting institutions of host countries, and international and regional security organizations.

- **Foreign Internal Defense –** NSW offers training and other assistance to foreign governments and their militaries to enable the foreign government to provide for its country's national security. Foreign Internal Defense involves training the security forces of other nations in areas such as internal peacekeeping/law enforcement, border defense, counter-drug operations, and military strategy. These operations are

continuously ongoing around the world. Example: SEALs served as advisors and instructors for the Iraqi and Afghan Armies.

Secondary Core Tasks

- **Information Operations –** NSW forces do not conduct IO as a primary core activity but coordinate with naval and other forces. IO support to NSW operations consists primarily of coordinated operational security, military deception, electronic warfare, computer network operations, and military information support operations which affect enemy perceptions of friendly forces while protecting U.S. information.

- **Unconventional Warfare –** Operations conducted through surrogate forces that are organized, trained, equipped, supported, and directed by external forces. Unconventional Warfare involves training foreign guerrilla forces or other clandestine operations to operate in denied areas.

- **Preparation of the Environment –** PE is a term for actions to alter or shape the operational environment to create conditions favorable to the success of military operations. PE consists of operational preparation of the environment, AFOs, and intelligence operations.

Limitations
Employment of NSW should also consider whether the mission is appropriate, feasible, and supportable.

- **Conservation of Forces –** SEAL and SWCC operators require extensive investment in selection, training, and equipment; provide unique capabilities; and are relatively few in number. They cannot be replaced quickly nor expanded rapidly.

- **Sustained Engagement –** NSW forces can deliver a high volume of weapons fire relative to their size and are designed to strike when and where least expected, employing stealth to gain surprise or use other techniques to engage the enemy with a tactical advantage. However, their small size constrains their effectiveness as a static defense force.

- **Timing –** SEALs are a rapid-response force and can normally respond more quickly than other forces. However, preparation and rehearsal time varies with each situation. Some operations require assembly of a significant support package (submarine, ships, aircraft, etc.)

- **Support –** Support requirements may include basing, medical support, detainee operations, IO, fire support, ship, submarine, aircraft, or other attachments. Support considerations include transit to target area, air support, fire support, medical support, quick reaction force, and target security.

VI. Naval Special Warfare Craft





Mark VIII SEAL Delivery Vehicle (SDV)	
Mission	Electrically powered Mk VIII SEAL Delivery Vehicle is designed to deliver up to six combat swimmers and their equipment. Mk VIII is a `wet' vehicle, meaning that when it submerges the hull is completely flooded, the swimmers wearing underwater breathing apparatus (UBA). Vehicle is carried in a dry deck shelter aboard a U.S. submarine.
Payload	Equipment for up to six combat swimmers
Speed	6 kts
Range	70 miles
Crew	6 (Two operators, Four passengers)



Mine-Resistant Ambush Protected Vehicle (MRAP)	
Mission	Ground mobility vehicle used to carry SEALs in a variety of terrain. The vehicle is designed to protect the crew from explosive events.
Range	420 miles
Speed	60+ mph
Payload	Varies significantly depending on the configuration



Rotary Wing and Tilt Rotor Aircraft	
Mission	Rotary-wing support can be provided by many sources from various services and agencies. These include dedicated support (DS) SOF aircraft and general support (GS) conventional aircraft. They can provide precision overland and overwater insertion and extraction, ISR, and/or fire support. Rotary-wing aircraft are also used by SEAL snipers as overwatch platforms for fire support and to assist in guiding tactical movement of ground forces during assaults.
Payload	Varies significantly on the type of aircraft, configuration, and environmentals
Speed	RW ~110-170 knots/TR ~250 knots
Range	Varies significantly on fuel tank configuration and ability to conduct in-flight refueling





Combatant Craft: Assault (CCA) / Medium (CCM) / Heavy (CCH)	
Mission	Insertion and extraction of Navy SEALs in medium-to-high threat level environments





Lightweight Tactical All Terrain Vehicle (LT-ATV)	
Mission	Move operators and equipment in technical terrain
Range	Varies significantly depending on the configurations
Speed	Varies significantly depending on the configurations
Payload	2-4 Operators w/ various modifications

VII. SPECWAR Future Capabilities

Naval Special Warfare continues to execute some of the most dynamic missions for the DOD. Future officers will work in diverse environments from Helmand Province in Afghanistan to the Horn of Africa, and need to be culturally attuned to a variety of regions. The focus of NSW and USSOCOM is persistent engagement with our partners and allies around the world. The Commander, USSOCOM, wants a special operator that can work in a joint and interagency environment, act as a diplomat for our country, and continue to represent the best quality warrior in the military.



VIII. EOD Mission

We eliminate explosive threats so the Fleet and Nation can fight and win - whenever, wherever, and however it chooses.

The purpose of Navy EOD is: *TO PROTECT PERSONNEL AND PROPERTY*

Navy EOD has the ability to render safe the following types of hazards:

- Ground Ordnance (projectiles, rockets, grenades, landmines)
- Air Ordnance (bombs, missiles, aircraft explosive hazards, and dispensed munitions)
- Improvised Explosive Devices (IEDs)
- Weapons of Mass Destruction (WMDs) (chemical, biological, radiological, and nuclear weapons)
- Underwater Ordnance (mines, torpedoes, and depth charges)

IX. EOD Mission Areas

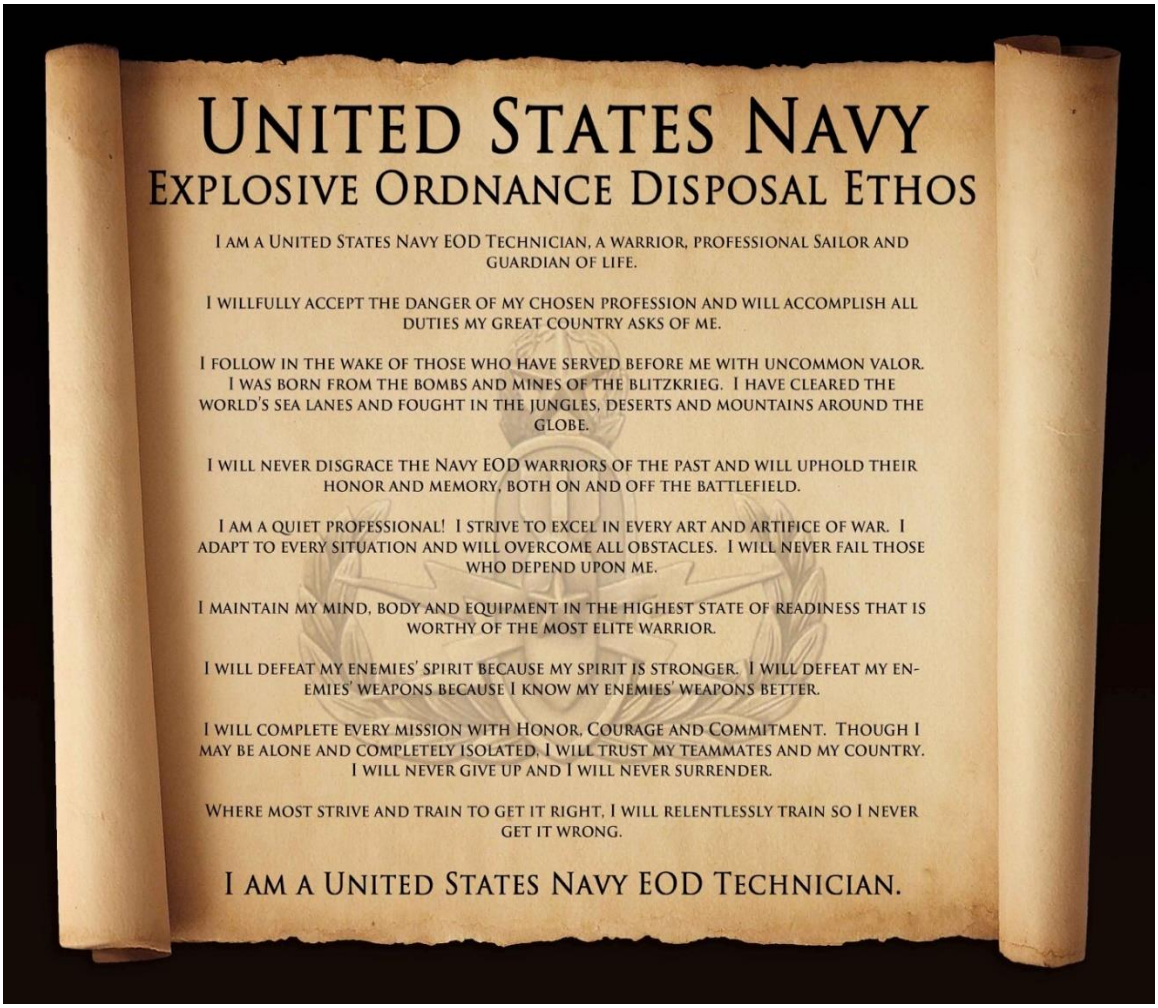
The mission areas of Navy EOD are:

- **Mobility (MOB)/Combat Expeditionary Support (CES).** MOB or CES is the standard mission area for Navy EOD platoons. MOB platoons are the standard operating forces in Navy EOD. MOB platoons support conventional Army units in Counter IED operations in Iraq and Afghanistan, Carrier Strike Groups (CSG), AT/FP, basic MCM operations.
- **Expeditionary Mine Countermeasures (ExMCM)**. Historically mine countermeasures (MCM) has been made up of three components: EOD personnel (Underwater MCM), surface ships (Surface MCM), and aviation units (Air MCM). Today, EOD units are able to deploy as an Expeditionary MCM package comprised of unmanned underwater vehicles (UUVs) and EOD technicians. Without requiring the services of certain surface and aviation platforms, the Expeditionary MCM package is able to provide additional options for Fleet Commanders around the world. EOD personnel are specifically tasked with diving, detecting, rendering safe, and disposal of armed underwater ordnance. Additionally, EOD personnel render safe dud-fired mines, torpedoes, limpet mines, and depth charges.
- **Special Operations Forces (SOF) Support**. As the chosen EOD force for Naval Special Warfare and Army Special Forces, Navy EOD Technicians lend their expertise to SOF units to ensure they achieve mission success. The skills learned in the EOD training pipeline lend themselves to participation in these types of operations. Navy EOD Technicians will participate in advanced training with the SOF unit to

include Close Quarters Combat (CQC), advanced Freefall parachuting, and other specialized techniques in order to support the entire spectrum of operations with which that unit may be tasked.

- **Expeditionary Diving and Salvage**. Expertise in diving is a vital skill needed for the disposal of underwater ordnance. All Navy EOD Technicians are Navy Divers and are trained in open-circuit SCUBA and the Mk-16 Mod 1, a computerized mixed-gas re-breather with low magnetic properties that allows EOD Technicians to operate on ordnance at up to 300 feet beneath the surface. Navy EOD Officers also serve at Mobile Diving and Salvage Units (MDSU) with Navy Divers in order to conduct salvage, recovery, ship's husbandry, deep submergence, and saturation operations.
- **Weapons Exploitation.** Combined Explosives eXploitation Cell (CEXC) PLTs conduct weapons technical exploitation operations on recovered IEDs, ordnance, and other captured enemy materials. The platoons normally operate in combat and high threat environments where enemy use of IEDs is prevalent. As IEDs are and will remain a rapidly evolving threat on the battlefield, near-real time intelligence on IED construction, employment and functioning is critical to the conduct of joint operations. The technical intelligence produced by CEXC supports decision making at all levels of warfare, primarily tactical commanders who must rapidly adapt blue force TTPs and countermeasures. These efforts also support service research, development and acquisition of technologies to counter or mitigate enemy IEDs.
- **U.S. Secret Service Support (USSS).** EOD Technicians regularly perform U.S. Secret Service support in order to mitigate and eliminate explosive hazards, which allows for travel all over the planet. Provide direct C-IED/Explosive Hazard support to USSS ISO POTUS, VPOTUS, FLOTUS, SECSTATE and foreign heads of state.

X. EOD Ethos



XI. EOD History and Overview

The Explosive Ordnance Disposal (EOD) community was officially organized as a warfare community in July of 1978 as the Special Operations Community, but the core missions and skills of EOD teams were employed and practiced far before the community's birth. A need for ordnance disposal skills was recognized during WWII, as German and Japanese military operations left behind large quantities of dud-fired ordnance. Mine Disposal School was founded in May 1941. Bomb Disposal School was founded in January 1942 by (then) LT Draper Kauffman; based, in large part, on the British Bomb Disposal model. The first two Navy EOD commands were established in 1953.

Today, all four services have EOD Technicians, all of whom are trained at the Naval School Explosive Ordnance Disposal (NAVSCOLEOD) at Eglin Air Force Base, Florida. Navy EOD Technicians go through additional rigorous training that enables them to operate across a wide range of environments. Navy EOD exists today as the only special operations capable Explosive Ordnance Disposal Technicians who are able to support Naval Special Warfare and Army Special Forces elements through the full range of military operations. Navy EOD is comprised of approximately 425 officers and 1200 enlisted personnel.

The Navy EOD community is primarily focused around the core competencies of EOD: Underwater Mine Countermeasures (UMCM), Special Operations Forces (SOF) support, Expeditionary Diving and Salvage Support Operations, Weapons Exploitation, and a variety of other skill sets. Navy EOD units can deploy as a shipboard detachment with a Carrier or Expeditionary Strike Group, as a land-based asset assigned to conventional or special operations, or as an independent unit capable of conducting operations in theater.

XII. EOD Personnel and Insignia

EOD Technicians and Officers



Navy EOD Officer

The EOD Badge. The EOD insignia is often referred to as the "crab" and is issued by all four services. The crab holds significant meaning for all EOD technicians. The Wreath is symbolic of achievements and laurels gained through minimizing accident potentials through ingenuity and devotion of EOD service members. The Bomb is copied from the World War II bomb disposal badge and represents the historic and major objective of the EOD attack, the unexploded bomb. The three fins on the bomb represent the major areas of nuclear, conventional, and chemical/biological interest. Lightning Bolts symbolize the potential destructive power of the bomb and the courage and professionalism of EOD personnel in their endeavors to reduce hazards as well as to render explosive ordnance safe. The Shield represents the EOD mission, to protect personnel and property.

All graduates of Naval School Explosive Ordnance Disposal (NAVSCOLEOD) are issued a Basic EOD badge. Whereas other services typically rely on time to dictate when an EOD Technician is awarded the subsequent EOD badges, Navy EOD Technicians pride themselves on proving their expertise and professionalism through a comprehensive board process. Enlisted EOD Technicians must spend two years before taking a board to become a Senior EOD Technician. After earning the Senior EOD badge, a Navy EOD Technician must prove themselves through a grueling, 30-day board process where they must demonstrate expertise and proficiency in order to earn the Master EOD badge.

Like their enlisted counterparts, EOD officers graduate NAVSCOLEOD as Basic EOD Technicians. However, EOD officers spend their first 18 to 24 months demonstrating EOD proficiency and leadership before completing scenario-based oral and performance-based qualification board while leading an EOD platoon. Successful completion of these requirements leads to qualification as an EOD Officer. The EOD Officer Qualification badge looks the same as the Master EOD Technician's, except it is gold rather than silver/pewter.

XIII. EOD Organization

The Type Commander (TYCOM) for Navy EOD is the Commander, Naval Expeditionary Combat Command (NECC). Under NECC, Navy EOD forces are divided into two Groups: EODGRU ONE in Coronado, CA and EODGRU TWO in Little Creek, VA. Each group contains EOD Mobile Units (EODMU) which are comprised of companies and platoons. Each EOD platoon consists of one officer and three to eleven enlisted EOD Technicians, depending on the platoon's mission. Each Group also contains an EOD Training & Evaluation Unit (EODTEU), an EOD Expeditionary Support Unit (EODESU), and a Mobile Diving & Salvage Unit (MDSU).

WEST COAST	EAST COAST
COMEODGRU ONE (Point Loma, CA)	COMEODGRU TWO (Little Creek, VA)
EODTEU- 1 (Point Loma, CA)	EODTEU-2 (Ft. Story, VA)
EODMU-1 (Point Loma, CA)	EODMU-2 (Little Creek, VA)
EODMU-3 (Coronado, CA)	EODMU-6 (Little Creek, VA)
EODMU-5 (Guam)	EODMU-8 (Rota, Spain)
EODMU-11 (Imperial Beach, CA)	EODMU-12 (Little Creek, VA)
MDSU-1 (Pearl Harbor, HI)	MDSU-2 (Little Creek, VA)
EODESU-1 (Coronado, CA)	EODESU-2 (Little Creek, VA)

EOD Command Structure

EOD Group – Commanding Officer (CO) is an O-6: provide EOD support through Request For Forces (RFF) and disseminate RFFs to MUs
EOD Mobile Unit – CO is an O-5: Command element for EOD companies/platoons, Man, Train, and Equip EOD units of action based on RFFs, typically has 10-12 EOD platoons and necessary support personnel
EOD Company – Commander is an O-3, personnel = 2 platoons with Company staff (1 EOD Officer, 1 EOD Senior Enlisted), 18-20 EOD technicians
EOD Platoon – Commander is typically an O-2 or O-3, personnel = 8 – 10 personnel, EOD unit of action

EOD Shore Detachments

EOD shore detachments are shore-based and geographically located to support selected Navy regional commanders. These detachments maintain tailored EOD equipment allowances to enable support in their respective areas of responsibilities. Unless specified, normal manning for an EOD shore detachment is one officer and four to five enlisted EOD technicians.

EOD shore detachments eliminate hazards from aviation, surface, ground, and improvised ordnance, and provide diving and demolition services to eliminate hazards from subsurface and mine ordnance. These detachments also provide EOD specific support during ammunition handling, ordnance testing, live fire training, and operations requiring diving. EOD shore detachments may be required to respond to requests for EOD support from civilian authorities in the local area and provide other EOD support when directed by higher authority.

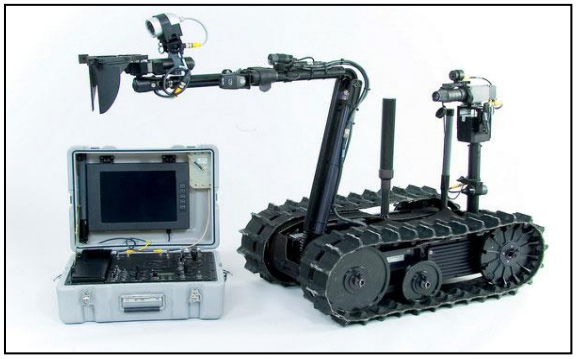
Navy EOD has Shore Detachments at Newport, RI; Earle, NJ; Dahlgren, VA; Yorktown, VA; Norfolk, VA; King's Bay, GA; Mayport, FL; Panama City, FL; Crane, IN; Whidbey Island, WA; Bangor, WA; China Lake, CA; San Diego, CA; Fallon, NV; Pearl Harbor, HI; Guam; Yokosuka, Japan; Rota, Spain.

XIV. EOD Tools and Equipment

The following list is by no means all-inclusive of the equipment Navy EOD Technicians use. Rather, these are examples of some of the most commonly used pieces of equipment.

Foster-Miller TALON Bomb Robot

Weight:	115-156lbs
Payload capacity:	100lbs
Arm lift:	10lbs at full extension 20lbs total lift
Cameras:	3 IR-illuminated



iRobot EOD Packbot Bomb Robot

Weight:	68lbs
Payload capacity:	46lbs
Arm lift:	10lbs at full extension 30lbs total lift
Cameras:	4 total: 2 color, 1 drive, 1 surveillance



MK-16 Mod 1 Underwater Breathing Apparatus (UBA)

The Mk-16 Mod 1 UBA re-breather produces no bubbles, instead exhaled CO^2 is 'recycled' with low acoustic and magnetic properties. It is electronically driven, the UBA uses 3 oxygen sensors which monitor the partial pressure of oxygen in the Diver's breathing loop and automatically adds O^2 if the ppO^2 is not within pre-established parameters. The Diver monitors rig performance through a primary and secondary electronics display. Divers utilizing the UBA are capable of diving to 300 feet of sea water (FSW). The MK-16 can use two diluent gases: N^2O^2 for dives 150 FSW or shallower, or HeO^2 for deeper dives.





MED-ENG EOD IX Bomb Suit

This suit provides extensive blast and fragmentation protection. It comes in multiple layers: trousers, groin protector, torso, and helmet. The IX Bomb suit also incorporates a fan and full body cooling system. The entire suit weighs over 85lbs.



XV. EOD Memorial

The EOD Memorial is located at NAVSCOLEOD at Eglin Air Force Base, FL. During the first Saturday in May every year, EOD technicians gather to place names on the wall of those individuals who have been killed in the line of duty during the previous year. The EOD Memorial contains names of sailors, airmen, soldiers, and Marines who have died in the performance of their duties since World War II. Since September 11th, the Navy EOD community has lost 21 EOD Technicians in the line of duty. The three most recent casualties include Explosive Ordnance Disposal Chief (EODC) Jason Finan, Explosive Ordnance Disposal Senior Chief (EODCS) Scott Dayton, and LTJG Aaron Fowler.



EODC Jason Finan. Jason Finan was born on 26 August 1982 in Anaheim, CA. He enlisted in 2003 and deployed to Iraq with EODMU THREE. EODC Finan served as the Leading Chief Petty Officer of Navy EOD Platoon 3-6-1, deploying with SEAL Team FIVE and Special Operations Task Force-Iraq. In October 2016, EODC Finan was killed when the vehicle he was riding in struck an improvised explosive device while engaged in combat with ISIL fighters.



EODCS Scott Dayton. Scott Dayton was born on 30 July 1974 in Woodbridge, VA. He enlisted in 1993 and served in operational units all across the world, including multiple deployments to Iraq and Afghanistan. EODCS Dayton served as the Leading Chief Petty Officer of Navy EOD Platoon 2-8-2, assigned to Combined Joint Task Force: Operation Inherent Resolve. In November 2016, EODCS Dayton was killed by an improvised explosive device while operating in Syria.

LTJG Aaron Fowler. LTJG Aaron Fowler, born November 6, 1992 and a USNA Class of 2018 graduate, tragically passed away on Sunday, April 17th while participating in a training evolution with the Marine Corps at Marine Corps Base Hawaii. He was in the third phase of the Marine Corps' Reconnaissance Leaders Course. As a member of Explosive Ordnance Disposal Mobile Unit 1, LTJG Fowler is described as "a brave warrior." His choice to enter such an elite community "was a testament to the dedicated and selfless character he embodied and his legacy will endure in our ranks through those he inspired by his service." As a midshipman, LTJG Fowler was a member of 25th and 8th Companies.



XVI. EOD Training Pipeline

All Navy EOD students, both officer and enlisted, participate in the same training pipeline, broken into five phases: Dive School, NAVSCOLEOD, Jump School, Expeditionary Combat Skills and EOD Tactical Training.

1. EOD Diver and JDO COI, Naval Diving & Salvage Training Center (NDSTC)

All Navy EOD personnel begin training at NDSTC in Panama City, FL. There, enlisted EOD students complete the 9-week EOD Diver Course of Instruction (COI) and learn to safely use open circuit SCUBA rigs and the closed circuit Mk-16 Mod 1 SCUBA re-breather.

EOD officer students attend a 21-week Joint Diving Officer (JDO) COI in which they learn SCUBA, surface supplied diving, and basic understanding of conducting diving operations. EOD officer candidates will join the enlisted EOD students for the Mk-16 phase of training.

2. Naval School, Explosive Ordnance Disposal (NAVSCOLEOD)

From Dive School, EOD students proceed to NAVSCOLEOD, at Eglin AFB, FL. The Navy provides EOD training to all four of the services. This school lasts nine months for Navy personnel, due to their additional two months of training in underwater ordnance. The school is very academically and physically intensive, especially when Navy students reach the Underwater Ordnance Division. Navy students must demonstrate capability in the following divisions in order to graduate:

- Core I
- Demolition
- Tools & Methods
- Core II
- Ground Ordnance Division
- Air Ordnance Division
- Improvised Explosive Devices Division
- Biological/Chemical Division
- Weapons of Mass Destruction Division
- Nuclear Ordnance Division
- Underwater Ordnance Division

Upon graduation from NAVSCOLEOD, all personnel (officer and enlisted) are designated as Basic EOD Technicians.

3. Jump School

Newly graduated Basic EOD Technicians leave NAVSCOLEOD and report immediately to parachute training at Ft. Benning, GA, or Otay Mesa, CA. EOD Technicians reporting to Ft. Benning will complete the Army Parachute COI, a three-week course leading to a static line parachuting qualification. EOD Technicians reporting to Otay Mesa, CA will complete the four-week Navy Parachute COI with Tactical Air Operations, leading to both a static line and military free-fall qualification.

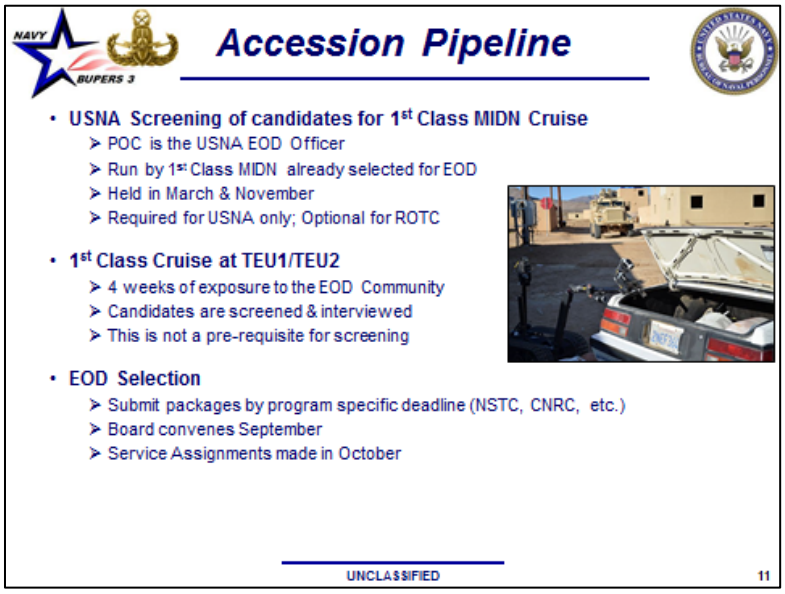
4. Expeditionary Combat Skills

EOD technicians will continue their training in Gulfport, MS where they learn basic combat skills. The technicians will attend a 4-week COI where they learn combat marksmanship in the M9 and M4 service weapons, land navigation, basic infantry skills, and combat first aid.

5. EOD Tactical Training

Upon completion of ECS, they report to EOD Tactical Training at EODTEU-1 in San Diego, CA. There they will receive training in small arms, Helo Rope Suspension Technique (HRST) operations, Special Insertion and Extraction (SPIE) rigging, cast and recovery operations, rappelling, land warfare techniques, and advanced combat first aid. Once Tactical Training is completed, the EOD Technician reports to a Mobile Unit for assignment to a platoon.

XVII. USNA EOD Selection Process



Sources:

1. NAVY WARFARE PUBLICATION (NWP 3-05) NAVAL SPECIAL WARFARE
2. https://www.sealswcc.com/ SEAL SWCC History and Information
3. http://www.public.navy.mil/bupers-npc/officer/communitymanagers/active/Unrestricted/nsw/Pages/SEALOfficerSelection.aspx
4. Navy EOD: http://www.public.navy.mil/NECC/Pages/EOD.aspx
5. NDSTC and NAVSCOLEOD information: http://www.netc.navy.mil/centers/ceneoddive/eods/
6. EOD Memorial: http://www.eodwarriorfoundation.org/eod-memorial

CHAPTER 9: GLOBAL CHALLENGES – CHINA

I. China's One Belt, One Road

Over the past two decades, China's People's Liberation Army (PLA) has transformed itself from a large but antiquated force into a capable, modern military. Its technology and operational proficiency still lag behind those of the United States, but it has rapidly narrowed the gap. Moreover, China enjoys the advantage of proximity in most plausible conflict scenarios, and geographical advantage would likely neutralize many U.S. military strengths.

A sound understanding of regional military issues — including forces, geography, and the evolving balance of power — will be essential for establishing appropriate U.S. political and military policies in Asia. Research and studies by groups such as RAND show that China is not close to catching up to the U.S. in terms of aggregate capabilities, but also that it does not need to catch up to challenge the U.S. on its immediate periphery. Furthermore, although China's ability to project power to more distant locations remains limited, its reach is growing, and in the future U.S. military dominance is likely to be challenged at greater distances from China's coast. To maintain robust defense and deterrence capabilities in an era of fiscal constraints, the U.S. will need to ensure that its own operational concepts, procurement, and diplomacy anticipate future developments in Chinese military capabilities.

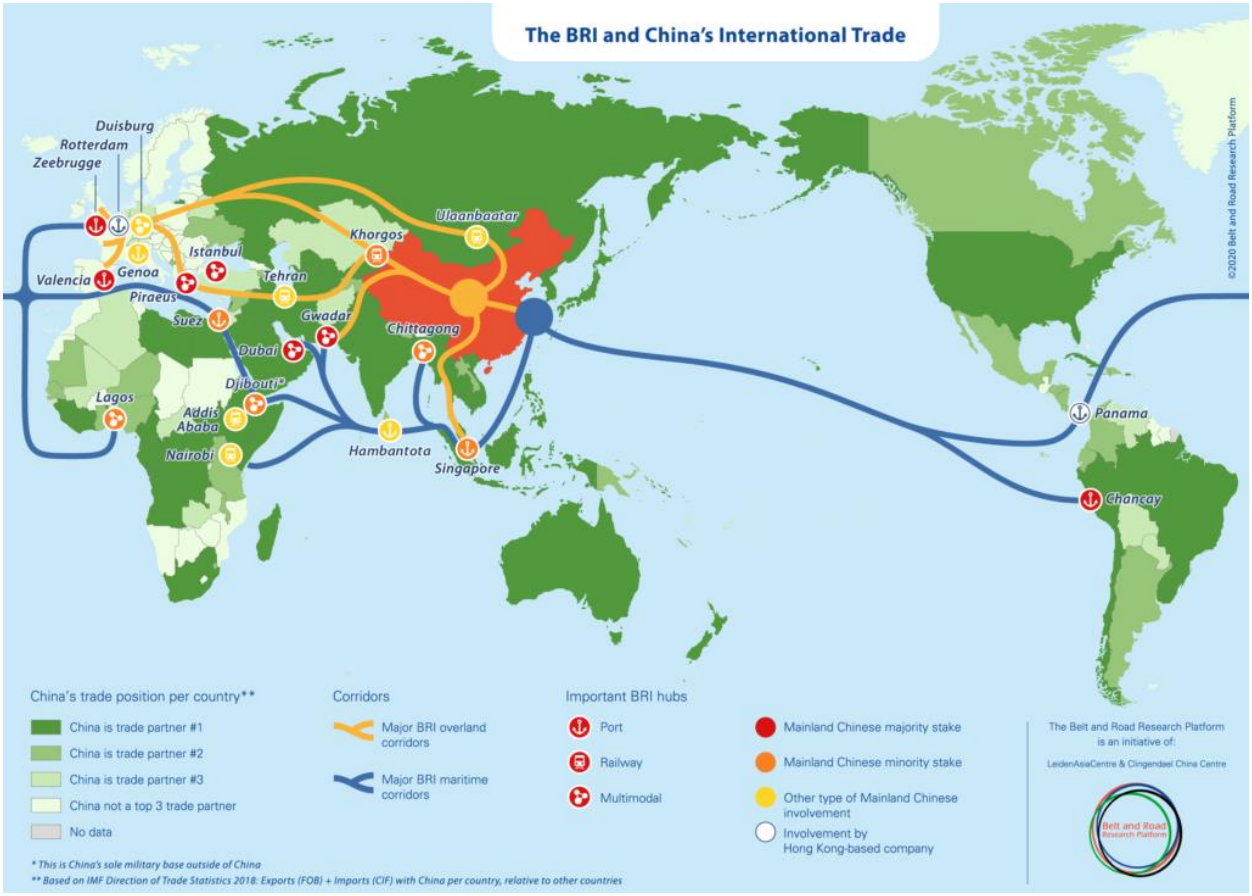
The Chinese Communist Party's (CCP) foreign policy reflects its strategic objectives. China seeks to displace the U.S. in the Indo-Pacific region, expand the reaches of its state-driven economic model, and reorder the region in its favor as the preeminent power. China's most substantial expansion of its military access in recent years has occurred in its near-abroad, where territorial disputes in the East and South China Seas persist, but China has also expanded its military operations further from the Chinese mainland. China seeks this presence based on its changing military focus and expanding international economic interests, which are increasing demands for the PLA to operate in more distant maritime environments to protect Chinese citizens, investments, and critical sea lines of communication(SLOC).

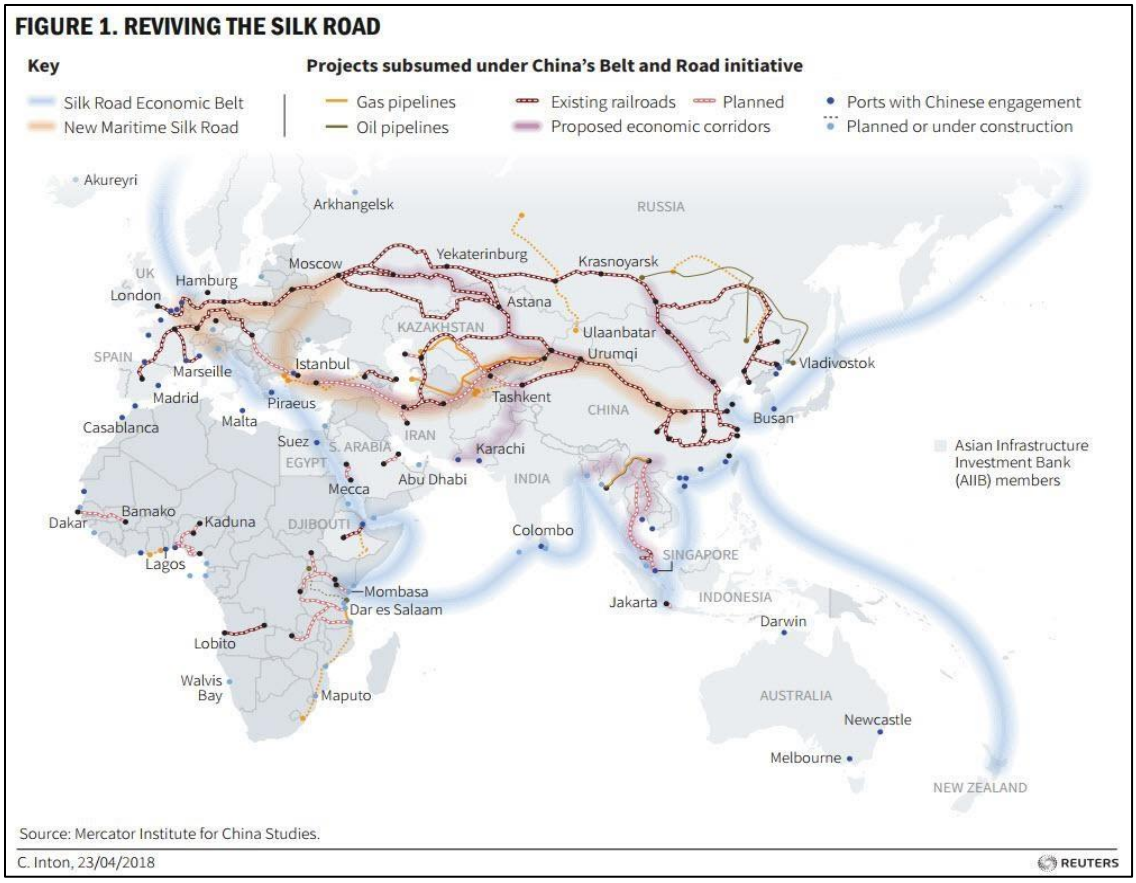
China's leaders in 2013 announced the *Belt and Road Initiative (BRI)*, also known as *One Belt, One Road or OBOR*. This initiative aims to strengthen China's connectivity with the world. In a basic sense, it is a term for an umbrella initiative which covers a multitude of investment projects designed to promote the flow of goods, investment, and people. This includes high-speed rail, highways, pipelines, energy projects like power plants, and investments in port infrastructure to create a *"21st Century Maritime Road"*. The new connections fostered by the BRI/OBOR could reconfigure relationships, reroute economic activity, and shift power within and between states. It combines new and old projects, covers an expansive geographic scope, and includes efforts to strengthen hard infrastructure, soft infrastructure, and cultural ties. According to the Council on Foreign Relations (CFR), as of 2023, "147 countries—accounting for two-thirds of the world's population and 40 percent of global GDP—have signed on to [BRI] projects or indicated an interest in doing so." Additionally, CFR estimates that China has already spent over $1 trillion and could spend as much as $8 trillion to complete BRI. President Xi of China has said: "In pursuing the Belt and Road Initiative, we should focus on the fundamental issue of development, release the growth potential of various countries and achieve economic integration and interconnected development and deliver benefits to all."

In 2017, China's leaders stated that the OBOR, which at first included economic initiatives in Asia, South Asia, Africa, and Europe, now encompasses all regions of the world, including the Arctic and Latin America, demonstrating the scope and reach of Beijing's ambition. While some OBOR projects appear to be motivated by economic considerations, OBOR also serves a greater strategic purpose. China intends to use OBOR to develop strong economic ties with other countries, shape their interests to align with China's, and deter confrontation or criticism of China's approach to or stance on sensitive issues.

China's military, particularly the PLA Navy (PLAN), has supported the BRI objective of expansion through far seas deployments as well as establishing overseas bases. In 2017, China formally opened a naval base in Djibouti, right near the entrance of the Red Sea and the Gulf of Aden. This is a strategically important location, overlooking a chokepoint of a major SLOC. In 2018, China indicated interest in establishing bases in Cambodia and Vanuatu. Although both governments initially stated they are not willing to host a Chinese military base, China continued attempts to advance their interests with varying levels of success. In Vanuatu, China financed and constructed a

major wharf on Vanuatu's largest island Espiritu Santo, and is attempting to persuade Vanuatu to convert the wharf into a dual-use facility for the PLAN. In Cambodia, the government agreed to receive new military aid from Beijing and participate in bilateral exercises with the PLA. Additionally, China has successfully built and began use of a pier off of Cambodia's Ream Naval Base. The pier was funded by China and constructed from 2020-2023. Beginning in December 2023 two PLAN vessels docked at the new pier and as of April 2024 were still there, potentially indicating the PLAN may use the Ream Naval Base pier for semi-permanent basing.





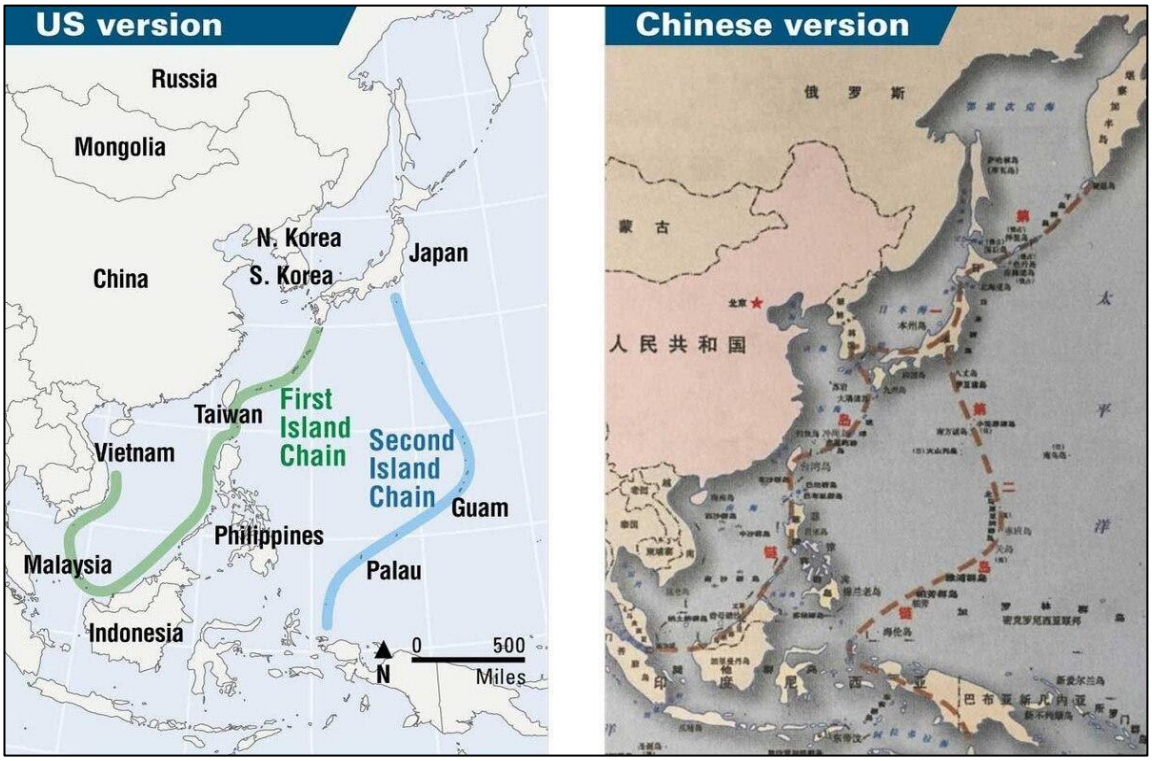
President Xi has promoted the *"21st Century Digital Silk Road"* alongside OBOR. Chinese state-owned or state-affiliated enterprises, including China Telecom, China Unicom, China Mobile, Huawei, and ZTE, have invested or submitted bids globally in areas such as 5G mobile technology, fiber optic links, undersea cables, remote sensing infrastructure connected to China's Beidou satellite navigation system, and other information and communications technology infrastructure. While providing benefits to host countries, these projects will also facilitate China's efforts to expand science and technology cooperation, promote its unique national technical standards, further its objectives for technology transfer, and potentially enable politically-motivated censorship. Data legally acquired via some of these projects may also contribute to China's own technological development in areas such as artificial intelligence.

China is also pursuing global leadership in strategic industries through state-backed investment, as outlined in its Five-Year Plans, "Made in China 2025" industrial strategy, and other national documents. China seeks to be the world leader in artificial intelligence by 2030, for example. Many of the key technologies China is targeting are integral to the rapid technological change occurring in multiple industries. These capabilities are key not only to economic growth, but to the U.S.' ability to maintain its military advantage. The report identifies a wide range of efforts China has undertaken to achieve its national technology goals.

II. First and Second Island Chains

When discussing the Indo-Pacific region and geopolitical strategy, policy makers, strategists, and academics often refer to the *"First and Second Island Chains"*. The extensive chains of Pacific islands ringing China have been described as a type of wall, a barrier to be breached by an attacker or strengthened by a defender. They are seen as springboards, potential bases for operations to attack or invade others in the region. In a territorial sense, they are benchmarks marking the extent of a country's influence. Senior officials and analysts in the West frequently refer to the first and second island chains ringing China to describe both the region's geography and predict China's intentions. In comparison, strategists and academics in China often assert that the United States uses

its military forces and relies on the first and second island chain to encircle or contain China and prevent the PLA Navy from operating freely in the Western Pacific. As China's regional maritime power expands, they have become benchmarks that in many ways define the field of play, both from a defensive and offensive operational standpoint. The range and development of Chinese missiles, as well as the operating patterns of China's military, all seem to be linked to this geography and viewpoint.



In 2020 in the South China Sea, China employed coercive approaches—such as using law enforcement vessels and maritime militias to enforce claims and advance interests—to deal with disputes in ways calculated to remain below the threshold of provoking armed conflict. In April 2020, Beijing named 80 geographic features and announced two new administrative subdistricts covering disputed territory and maritime areas in the South China Sea. China also conducted a coercive survey operation, using a government research vessel and multiple Chinese Coast Guard vessels, to follow a Malaysian hydrocarbon exploration vessel within Malaysia's exclusive economic zone. In August 2020, China test-fired multiple ballistic missiles that landed near Hainan and the Paracel Islands in the South China Sea. Further, China's Spratly Islands outposts are equipped with advanced anti-ship and antiaircraft missile systems and jamming equipment, comprising the most capable land-based weapons systems deployed by any claimant in the South China Sea.

In the East China Sea, China named 50 geographic features and continued using maritime law enforcement ships and aircraft to patrol near the Senkaku Islands and challenge Japan's territorial claim to and administration of the islands.

III. Chinese Military Modernization

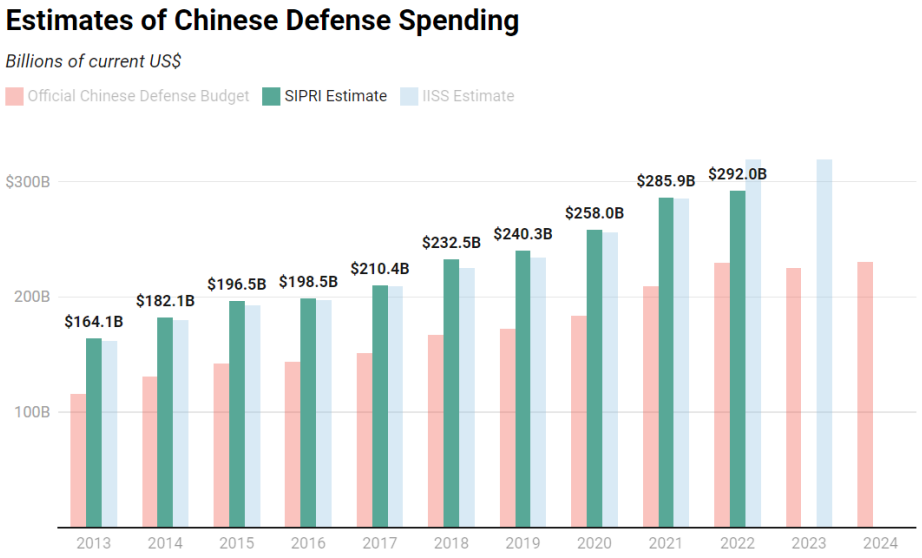
China poses a major security challenge and remains a long-term strategic competitor to the U.S. Beijing views the international environment and China's relationship with Washington as increasingly adversarial and perceives a number of threats to its sovereignty and security. China continues its decades-long military modernization campaign and ultimately aims to achieve its goal, first articulated in 2017, of establishing a "world-class military"—essentially a military as strong as that of the U.S. Looking forward, an increasingly capable and lethal Chinese joint force will almost certainly be able to hold U.S. and allied forces at risk at greater distances from the Chinese mainland. At the

same time, the People's Liberation Army (PLA) probably will extend its operational reach worldwide to support China's global interests.

Chinese leaders characterize China's long-term military modernization program as essential to achieving great-power status. The party's new milestone to "basically" achieve military modernization by 2027, which was unveiled at the plenum, probably signals an intent to accelerate some modernization efforts to ensure that the PLA achieves its previously stated goals of completing military modernization by 2035 and transforming into a dominant military by 2049. A fully modern military likely means that by 2027, Beijing seeks to develop key capabilities and better posture for a conflict with any country it views as a threat, including the U.S. The PLA frames its 2027 goal as necessary not only to safeguard China's national security and development but also to promote global stability and prosperity, assuaging concerns about its intentions and to present China as a global leader. However, the PLA clearly states that it needs to modernize to close gaps with stronger military powers and to deter and subdue separatist forces (primarily Taiwan), while protecting China's sovereignty and territorial integrity. Currently, the U.S. Department of Defense also believes the PLA's 2027 timeline specifically includes being prepared to invade Taiwan. Admiral Aquilino, Commander, U.S. Indo-Pacific Command, stated in March 2024 that "All indications point to the PLA meeting President Xi Jinping's directive to be ready to invade Taiwan by 2027."

China is pressing ahead with an ambitious military modernization agenda focused on developing and fielding advanced military capabilities in all warfighting domains—emphasizing long-range precision strike, air and maritime capabilities, cyberspace, electronic warfare, space and counterspace capabilities, and enhanced strategic nuclear forces —while also restructuring the PLA into a combat-capable global joint force. The PLA seeks a force capable of winning a number of high-end regional conflicts, including the forcible unification of Taiwan, while dissuading, deterring, or defeating third-party military intervention. At the same time, we expect the PLA to expand its capability to carry out smaller operations globally to support China's interests.

China continued funding its military modernization programs despite COVID-19's economic impact. According to the Center for Strategic & International Studies, "in March 2024, China announced a yearly defense budget of $231.3 billion, marking a nominal 7.2 percent increase from the 2023 budget of $224.8 billion. This continues a recent trend that has seen nominal yearly percentage increases in the upper single digits."



The PLA Rocket Force continues bolstering its ballistic long-range land-attack and anti-ship missile capabilities, which gives it the ability to conduct precision strikes in the Western Pacific, the Indian Ocean, and the South China Sea from mainland China. China continued emphasizing hypersonic glide vehicles (HGVs) to counter ballistic missile defense systems, including the claim they deployed their DF-17 missile system with a conventionally armed HGV.

China is expanding and diversifying its nuclear arsenal. The Fifth Plenum communique in October 2020, specifically called for strengthening strategic forces and creating high-level strategic deterrence. In 2019, the U.S. assessed that China had a nuclear warhead stockpile in the low-200s and projected it to at least double over the next decade. Since then, Beijing has accelerated its nuclear expansion and exceeded the previous projection. In 2022, the Pentagon announced China surpassed 400 nuclear warheads and warned that China could more than triple its arsenal by 2035. China probably seeks to narrow, match, or in some areas exceed U.S. qualitative equivalency with new nuclear warheads and delivery platforms that at least equal the effectiveness, reliability, and/or survivability of some U.S. and Russian warheads and delivery platforms under development. The PLA continues to improve its pursuit of a nuclear triad, and increasing evidence indicates that Beijing seeks to keep a portion of its nuclear forces on a "launch-on-warning" posture.

China probably has the technical expertise to weaponize chemical and biological agents and numerous conventional weapons systems that could be adapted to deliver these agents. China has consistently claimed that is has never researched, produced, or possessed biological weapons. However, China has engaged in potential dual-use biological activities and maintains sufficient biotechnology infrastructure to produce some biological agents or toxins on a large scale. China has declared it once operated a small offensive chemical weapons program but maintains the program was dismantled. China's chemical infrastructure is sufficient to research, develop, and procure some chemical agents on a large scale.

China's space program—managed by the PLA—continues to mature rapidly and invest in improving space-based ISR, satellite communication, satellite navigation, and meteorological capabilities as well as human spaceflight and robotic space exploration. China has built an expansive ground support infrastructure to support its growing on-orbit fleet and related functions. China continues to develop multiple counter-space capabilities designed to degrade and deny an adversary's use of space-based assets during a crisis or conflict.

The PLA Air Force (PLAAF) continues fielding modern fighters, including the deployment of J-20 stealth fighters to China's border with India during their military standoff. The PLAAF is also extending the range and capabilities of its bomber force. The PLA Navy (PLAN) continues a robust shipbuilding program by constructing new submarines, cruisers, a range of other surface warships and a new class aircraft carrier, which features a flat top, in contrast to the current ramp style. The PLAN is developing into a global force, gradually extending its ability to sustain operations beyond East Asia.

Military reforms in 2020 focused on enhancing the PLA's ability to conduct joint operations, fighting high-intensity conflicts at greater distances from the Chinese mainland and strengthening the party's control over the military. In a probable sign of the PLA's confidence in the progress of reforms, the Central Military Commission (CMC) issued a trial update to the PLA's joint doctrine that appears to codify warfighting reforms and will almost certainly improve the PLA's ability to conduct joint operations.

China recognizes the synergy between high-tech development and defense and seeks to lead the shift toward "intelligentized" warfare through a national strategy of "military-civil fusion" by reforming its organizations for research and development as well as those for developing strategy and doctrine. China continues investing heavily in new capabilities, particularly in AI, which could increase China's military and comprehensive national power. As of late 2020, Beijing is drafting new long-term goals for boosting scientific, technological, and economic strengths.

PLA exercises focus on improving the PLA's capacity to fight and win wars through joint operations under realistic combat scenarios. The CMC's first order of 2020 was a training directive that emphasized the implementation of Xi Jinping's ideological framework and focused on preparing for conflict with "strong enemy opponents"—a euphemism for the U.S.—under combat-realistic conditions across all warfighting domains. This training order almost certainly codifies the PLA's benchmark for success as defeating the U.S. military. The PLA will likely continue these training and exercise themes in the near-term.

According to the Center for Strategic Intelligence Studies, "since the mid-2000s, China and Russia have conducted an increasingly frequent number and more diverse range of Sino-Russian bilateral and multilateral military exercises." Although there is no formal alliance, the continuation of joint military exercises, drills, and patrols will likely improve their interoperability while also messaging to third parties intentions to provide mutual support. China also signaled its continuing reluctance to participate in meaningful arms control and risk reduction

discussions with the U.S. most recently rejecting multiple U.S. invitations throughout 2020 to join nuclear discussions between the U.S. and Russia.

IV. U.S. Response

The Department of Defense has responded to these implications in line with the 2022 *U.S. National Defense Strategy (NDS)* and in support of whole-of-government action. The 2022 NDS identified four priorities that were discussed in Chapter 2 of this book.

The Department of Defense supports a whole-of-government response as China's expanding global activities are not primarily or exclusively a military issue. The Department of Defense will continue to assess the military implications of China's expanding global access in support of these actions, and ensure the Department provides combat-credible military forces needed to fight a war and win, should deterrence fail.

V. China's Military & Geostrategic Environment

Strength of the Fleet		
Type	Active	Building
SSBN	5	-
SSN	7	4
SSK	52	4
Aircraft carriers	1	1
Destroyers	27	15
Frigates	51	4
Corvettes	40	4
Fast attack craft (missile)	86	-
Patrol craft	96	-
Minesweepers (ocean)	35	2
Mine warfare drones	6	-
Hovercraft	25	1
LPD	4	2
LSTs	29	-
LSMs	33	-
LCMs-LCUs	90	-
Survey/research	14	2
Intelligence vessels	7	2
Training ships	5	-
Troop transports (AP/AH)	5	-
Submarine support ships	11	-
Salvage and repair ships	3	-
Supply ships	14	-
Fleet replenishment ships	12	1
Support tankers	52	-
Hospital ship	3	-
Icebreakers	3	-

China's military is broken down into the following services: People's Liberation Army (PLA), Navy (PLAN), Air Force (PLAAF), Rocket Force (PLARF), and Strategic Support Force (PLASSF).

The PLA Navy (PLAN) is Asia's largest navy, with an inventory of more than 300 surface combatants, submarines, amphibious ships, patrol craft, and specialized units. The PLAN is rapidly replacing obsolescent, generally single-purpose ships in favor of larger, multirole combatants with advanced anti-ship, anti-air, and anti-submarine weapons and sensors. This modernization aligns with China's growing emphasis on the maritime domain, with increasing demands on the PLAN to conduct operational tasks at increasing distances from the Chinese mainland using multi-mission, long-range, sustainable naval platforms with robust self-defense capabilities.

The PLAN is organized into three fleets:

- North Sea Fleet based in the Yellow Sea and headquartered at Qingdao Naval Base.
- East Sea Fleet based in the East China Sea and headquartered at Ningbo Fleet Headquarters.
- South Sea Fleet based in the South China Sea and headquartered at Yulin Naval Base.

Major Naval Units of the PLAN

Surface Vessels



***Type 055 Destroyer (Renhai* Class Cruiser)**	
Visual Identification	Single forward gun. Square shaped sensor on superstructure. Lower helicopter landing pad.
Mission	The *Renhai* class is China's newest and most capable surface combatant. It was commissioned in 2020, with over 16 more planned for construction. The *Renhai* displaces more water than both the *Ticonderoga* and *Arleigh Burke* class ships. It has stealthy features and a 112-cell vertical launch system.
Weapons	112 VLS capable of surface-to-air, surface-to-surface, land attack cruise missile, and air launched torpedoes. 1 x CIWS 1 x 130mm Gun 2 x Torpedo Tubes
Aircraft	2 helicopters



***Luyang III* Class Destroyer**	
Visual Identification	The *Luyang III* is 515ft in length and has flat-paneled active electronically scanned array (AESA) radar.
Mission	The *Luyang III* is the most capable guided missile destroyers in the PLAN. Informally referred to as Chinese Aegis, portraying it as a peer of contemporary U.S. Navy ships equipped with the Aegis Combat System.
Weapons	1 x 24-cell SAM launcher 64 x VLS cells (YJ-18 or HHQ-9A) 1 x H/PJ-38 130mm Gun, 1 x H/PJ-12 30mm Gun 6 x Torpedo Tubes Advanced Physical and Electronic countermeasures, Surface search and navigation radars, hull-mounted and towed array sonar, and air search / fire control radars
Aircraft	2 helicopters



CV-16 Liaoning Aircraft Carrier	
Visual Identification	The ski-jump catapult is the most recognizable visual recognition of the *Liaoning 16*. The carrier sits at 999 ft length.
Mission	The first aircraft carrier commissioned into the People's Liberation Army Navy. It was purchased from Russia on the premise of becoming a floating casino. It achieved operational capability in 2016. A follow-on ship has been commissioned, named *CV-17 Shandong*, which was China's first domestically built aircraft carrier. It reached operational capability in 2019.
Weapons	Liaoning is equipped only with air defense weapons (18 cell missile system) and must use its aircraft for surface attack.
Aircraft	Total of 40 fixed wing and rotary wing aircraft most notably the J-15 Flanker X2.

Submarines

***Jin* Class Strategic Missile Submarine (Type 094)**



The Type 094 (NATO reporting name: Jin class) is a class of ballistic missile submarine developed by China for the People's Liberation Army Navy Submarine Force. Although a class of six boats was originally expected, construction appears to have been stopped at four. By 2018 Jin class boats have not been sent on long-range deterrent patrol missions, possibly due to various problems and design flaws. Instead these boats are patrolling in South China Sea, relatively close to China's coastal waters. The South China Sea is becoming a bastion for Chinese SSBN operations.

Crew: 140
Propulsion: Nuclear
Armament: 12x JL-2 Submarine Launched Ballistic Missiles
6x 533 mm torpedo tubes

***Shang* Class Attack Submarine (Type 093)**



The Type 093 (NATO reporting name: Shang class) is a class of second-generation nuclear-powered attack submarines designed in conjunction with Russian experts and deployed by the Chinese People's Liberation Army Navy Submarine Force. The 093G is now *confirmed to have a vertical launching system (VLS)* for YJ-18 supersonic anti-ship missiles, and anti-ship variants of the CJ-10 cruise missile.

Crew: 100 total
Propulsion: Nuclear
Armament: 6x 553 mm (21.8 in) or 650 mm (26 in) torpedo tubes
VLS tubes for either YJ-18 or CJ-10 (Type 093G) anti-ship missiles

Yuan Class Submarine (Type 039A)



The Type 039A submarine (NATO reporting name: Yuan class) is a class of diesel-electric submarine in China's People's Liberation Army Navy. It is China's first AIP (air-independent propulsion) powered submarine and presumed to be one of the quietest diesel-electric submarine classes in service. The Yuan-class SSK is integrated with advanced noise reduction techniques including passive/active noise reduction, asymmetrical seven-blade skewed propeller, the 039A is expected to be as quiet as other modern diesel-electric submarines, which are very difficult to track.

Crew: 36 total
Propulsion: Diesel-electric
Armament: 6x 533 mm (21 in) torpedo tubes,
YJ-832 ASCM capable

Aircraft

Su-30 Flanker



The Su-30 Flanker is a heavy class, all-weather, long-range strike fighter comparable to the American McDonnell Douglas F-15E Strike Eagle. The Su-30is *upgraded with avionics, maritime strike capabilities and electronic warfare systems.*

The Su-30 Flanker is known to be the primary aircraft capable of conducting maritime intercepts of the U.S. reconnaissance aircraft P-8 and P-3 operating in the East and South China Seas.

J-15 Flanker X2



The J-15 Flanker is a 4th generation, twin-jet, all-weather fighter aircraft. The J-15 is *the carrier-based aircraft in the PLA Air Force*.

On 6 May 2010, the aircraft conducted its first takeoff from a simulated ski-jump.

On 25 November 2012, the aircraft successfully performed its first takeoff and landing on China's first aircraft carrier Liaoning.

Missiles

YJ-12

The YJ-12 is a *Chinese supersonic anti-ship cruise missile*. The YJ-12 is capable of evasive maneuvers to avoid anti-missile threats. A saturation attack by YJ-12's fired at long range would pose a grave threat to American carrier strike groups; once the wave of sea-skimming missiles appeared over the horizon and was detected by ships' own sensors, they would only have some 45 seconds to engage before impact and if there were enough, short range defenses would be overwhelmed.

YJ-18

The YJ-18 is a *Chinese family of anti-ship and land attack cruise missiles*. The U.S. Department of Defense believes the YJ-18 is similar to the Russian 3M-54 Klub, with a subsonic cruise mode and a supersonic terminal attack; the missile is credited with a range of 290 nautical miles. The missile can be launched from vertical launching systems, and possibly from submarine torpedo tubes.

Chinese media claims the missile has an inertial guidance system using *BeiDou Navigation Satellite System* data, and carries a 660 lb high-explosive warhead or an anti-radiation warhead to destroy electronics at short range.

Dong-Feng 21 and Dong-Feng 26 Missiles

Also known as the "*Carrier Killer Missile*", the Dong-Feng 21 is a two-stage, solid-fuel rocket, single-warhead medium-range ballistic missile (MRBM) in the Dong Feng series. Originally developed as a strategic weapon, the DF-21's later variants were designed for both nuclear and conventional missions. The latest *DF-21D* was said to be the world's first anti-ship ballistic missile (ASBM).

The US Department of Defense stated in 2010 that China has developed and reached initial operating capability (IOC) of a conventionally armed high hypersonic land-based anti-ship ballistic missile based on the DF-21. This is the first ASBM and weapon system capable of targeting a moving aircraft carrier strike group from long-range, land-based mobile launchers. The *DF-21D* is thought to employ maneuverable reentry vehicles (MaRVs) with a terminal guidance system. The upgrades enhance China's ability to prevent US carriers from operating in the Taiwan Strait.

The Dong-Feng 26 (DF-26), also known as "*Guam Killer,"* is China's newest intermediate-range anti-ship ballistic missile. It is capable of both conventional and nuclear strikes, leading to ambiguity about a potential incoming launch. It is capable of being manuevered and launched on vehicles, increasing its survivabilty and decreasing abilities to detect where they are located. With a estimated range of 4,500 kilometers, it is capable of striking strategic facilities on Guam, Darwin, and Diego Garcia.

VI. Chinese Military Incidents & Milestones

2001: Hainan Island Incident
April - A Chinese air force plane collides in mid-air with an EP-3 Aries U.S. surveillance plane near the southern Chinese island of Hainan, leading the Chinese plane to crash into the sea and forcing the U.S. aircraft to land on Hainan. An 11-day standoff over China's holding of the plane and 24 crew members raises tensions with the new administration of President George W. Bush.

2005: Peace Mission
August - China and Russia hold their first joint military exercises. The exercise consisted of combined land, sea, and air elements simulating an intervention in a state besieged by terrorists or political turmoil. The force practiced air and naval blockades, an amphibious assault, and occupying a region.

2007: Missile Test
January - Reports say China has carried out a missile test in space, shooting down an old weather satellite. The US, Japan and others express concern at China's military build-up.

2012: South China Sea
May - Philippines and Chinese naval vessels confront one another off the Scarborough Shoal reef in the South China Sea. Both countries claim the reef, which may have significant reserves of oil and gas.

2012: Loaning 16
September - China launches its first aircraft carrier, the Liaoning - a converted former Soviet *Kuznetsov*-class aircraft vessel.

2015: Spratly Islands
October - China expresses anger at US naval ship sailing by artificial reefs Beijing is building among disputed Spratly Islands in South China Sea.

2017: Sandong 17
A first-generation Chinese aircraft carrier was launched on 26 April 2017 for the People's Liberation Army Navy (PLAN). It is the country's second aircraft carrier after the completion of Liaoning, and the first built domestically.

2018: Largest PLAN flotilla at sea
48 ships, dozens of fighter jets, and more than 10,000 military personnel deploy to South China Sea in largest ever PLAN flotilla to date.

2020: PLAN triples in size since 2000
As of the end of 2020, the PLAN had 360 ships, over 60 more than the U.S. Navy, with intentions of building to 400 by 2025, according to an ONI forecast

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CHAPTER 10: GLOBAL CHALLENGES – RUSSIA



I. Russia's Global Engagement

Since returning to power in 2012, Russian President Putin has sought to reassert Russia as a great power on the global stage and to restructure an international order that the Kremlin believes is tilted too heavily in favor of the United States at Russia's expense. Russia's foreign policy priorities traditionally have focused primarily on the post Soviet region and the West. However, Russia (like the Soviet Union before it) actively pursues foreign relations on a global scale, and this has included support of the al-Assad regime and military involvement in Syria since 2015. Most notably, Russia's invasion of Ukraine in February 2022 raises a complex number of geopolitical and economic issues that are still playing out with significant implications for U.S. national security and foreign policy.

Russia is *one of five permanent members of the U.N. Security Council*, where it plays a significant role. Until 2014, Russia was a member of the Group of Eight (G8), together with the West's seven leading economies (including Japan). It is also a member of *BRICS*, an alternative group of states with large economies that also includes Brazil, India, China, and South Africa. In these and other international fora, Russia has engaged on global issues such as nonproliferation (including combatting the nuclear weapons programs of Iran and North Korea), counterterrorism, counterpiracy, and global health.

Russia is a leading oil and gas exporter and the second largest major weapons exporter in the world (its top clients are India, China, and Vietnam). Russia has constructed nuclear power plants in Europe, Iran, India, and China, with more under construction or planned.

In addition, Russia has cultivated a variety of bilateral partnerships around the globe. In Asia, Russia's main partner is China, with which it has close security, economic, and political relations, although Russia has concerns about China's inexorable rise. In addition, Russia has cultivated good relations with Japan, with which it still has a territorial dispute over islands Russia annexed at the end of World War II. It also has developed good relations with India, Pakistan (more recently), Afghanistan, Vietnam, and across Southeast Asia.

In the Middle East, Russia's Syria intervention is exceptional in scope but reflects a long-standing policy of fruitful relations with regional governments including Algeria, Egypt, Iraq, Libya, and Sudan. In Latin America, Russia has sought to reengage with Soviet-era partners Cuba and Nicaragua, as well as Venezuela, Brazil, and others.

II. Historical Overview of U.S.-Russia Relations

For more than 25 years, the U.S.-Russian relationship has gone through positive and negative periods. The spirit of U.S.-Russian *"strategic partnership"* forged by Presidents Bill Clinton and Boris Yeltsin in the early 1990s was gradually overtaken by increasing tension and mutual recrimination, in large part as a consequence of disagreements over Russian efforts to reestablish a sphere of influence in the post-Soviet region and over U.S. promotion of NATO enlargement to Central and Eastern Europe and military intervention in the former Yugoslavia.

Presidents George W. Bush and Vladimir Putin believed they could restore U.S.-Russian relations, particularly in the aftermath of the terrorist attacks of September 11, 2001. The two countries reshaped their relationship on the basis of cooperation against terrorism and the economic integration of Russia with the West. However, tensions arose again around a number of issues, including the Iraq War; the so-called color revolutions in Ukraine, Georgia, and Kyrgyzstan involving protests against electoral fraud that unseated corrupt regimes; Russian energy and security pressure on its neighbors; and U.S. and NATO plans for missile defense. Cooperation continued in some areas, but the August 2008 Russian-Georgian conflict caused bilateral ties to deteriorate to their lowest point since the Cold War.

Upon entering office, the Obama Administration believed it could prompt yet another "reset" of relations with Russia's new president, Dmitry Medvedev, a relatively liberal Russian political figure who nonetheless remained informally subordinate to Prime Minister Putin. During a July 2009 meeting in Moscow, Presidents Medvedev and Obama established the U.S.-Russia Bilateral Presidential Commission consisting of 21 working groups to address a broad spectrum of issues. The commission's working groups met regularly for more than four years, until their activities were suspended as a result of Russian actions in Ukraine.

U.S.-Russian relations worsened with Russia's disputed December 2011 parliamentary elections and Putin's March 2012 return to the presidency. In 2014, U.S. relations with Russia deteriorated further in reaction to Russia's invasion and annexation of Ukraine's Crimea region and Russia's sponsorship and support of separatist militants in the Donetsk and Luhansk regions (the Donbas). The United States, in coordination with the EU and a number of other states, promised to impose increasing costs on Russia until it "abides by its international obligations and returns its military forces to their original bases and respects Ukraine's sovereignty and territorial integrity." The United States suspended discussions on trade and investment and military--to--military contacts, as well as certain kinds of nonproliferation and energy research cooperation. Russia also was removed from the G8, and the United States, EU, and other allies introduced sanctions on Russia for its actions.

Since 2014, the United States has imposed sanctions on more than 520 individuals and entities in response to Russia's aggressive actions in and toward Ukraine. Former President Barack Obama, in issuing decisions to curtail economic relations, declared Russia's activities in Ukraine as threatening the peace, security, stability, sovereignty, and territorial integrity of Russia's neighbor and, in turn, as constituting a threat to U.S. national security.

On January 6, 2017, the Office of the Director of National Intelligence (ODNI) released a declassified report on Russian activities and intentions related to the 2016 U.S. presidential election. The report states that the Central Intelligence Agency, the Federal Bureau of Investigation (FBI), and the National Security Agency have "high confidence" that President Putin "ordered an influence campaign in 2016 aimed at the US presidential election" in order to "undermine public faith in the US democratic process."

III. Russian Invasion of Ukraine (As of April 2024)

Russia invaded Ukraine in February 2022 to commence the deadliest conflict in Europe in decades. After initial gains, Russian forces encountered unexpected levels of Ukrainian resistance. Many analysts assessed that "during this first stage of the war the Russian military performed poorly overall and was hindered by specific tactical choices, poor logistics, ineffective communications, and command-and-control issues. The Ukrainian military, while at a quantitative and qualitative disadvantage in personnel, equipment, and resources, has proven more resilient and adaptive than Russia appeared to expect, including the effective use of guerilla tactics." Most recent assessments of the situation state that there have been hundreds of thousands of casualties and more than 10 million people displaced (as of January 2024). Military assistance from the U.S. and European allies have helped Ukraine continue defensive and counteroffensive operations.

The initial global response to the Russian invasion of Ukraine and implications for the future world order are complex, significant, and evolving. Of particular note, the U.S. and other U.S. aligned world powers have imposed sanctions on Russia and supported Ukraine with large amounts of monetary aid and modern military equipment (including drones, missiles, anti-armor systems, counter-artillery radars, armored vehicles, transport helicopters, guns, ammunition, and heavy artillery). Forty-seven different countries have provided military equipment and supplies to aid Ukraine since the February 2022 invasion began. While western nations have deployed additional forces in the region around Ukraine, no country has sent troops to aid in the defense of Ukraine within the country itself. The United States alone has committed over $75 billion in aid as of May 2023. In February 2024, The U.S. Senate approved another $60 billion in aid to Ukraine. Additionally, the unified and strong response of NATO seems to have surprised President Putin. Sweden and Finland responded to the invasion of Ukraine by applying to join the NATO alliance, and have since been approved.



IV. Russia's Military

Russia's armed forces surprised most U.S. and European observers with their actions in Ukraine (starting in March 2014 and then with the 2022 invasion) and in Syria starting in September 2015. Since the end of the Cold War, conventional wisdom about the Russian military has tended to indicate a force in relative decline, with aging Soviet--era equipment and with technology and a philosophy of warfare lagging well behind that of the United States and many NATO allies. Analysts noted that the shortcomings of Russia's military appeared to be confirmed by its relatively lackluster performance in the 2008 conflict with Georgia.

Over the past several years in particular, many analysts have been struck by the improved capabilities exhibited by the Russian military, as well as the unexpected ways in which Russia has used its military:

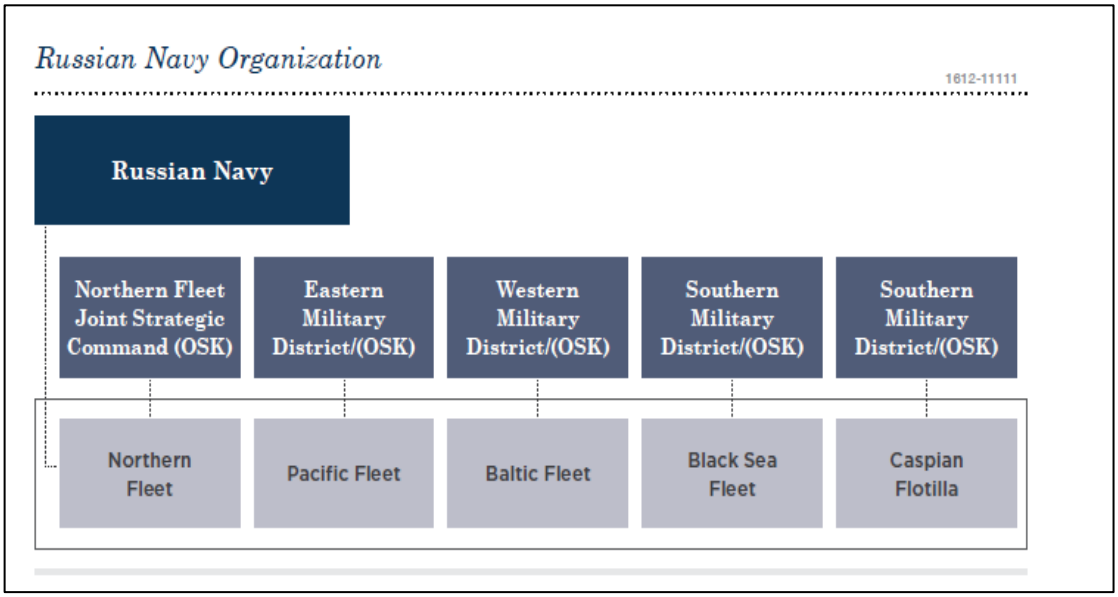
- Russian special forces, elite airborne troops, and naval infantry effected a swift and bloodless seizure of Crimea in March 2014.
- The subsequent Russian involvement in the conflict in eastern Ukraine highlighted the practice of *"hybrid warfare"*, centered on the use of irregular "separatist" forces covertly backed by the regular military, along with an information and propaganda campaign orchestrated to create misdirection and spread an alternate international narrative.
- The campaign in Syria, in addition to serving a number of broader Russian interests and diplomatic objectives, has allowed Russia to test and display how various components of its military work together in an expeditionary setting.
- The Syria operation has demonstrated noteworthy capabilities, such as the launch of long-range cruise missiles from naval vessels in the Caspian Sea and the deployment of Russia's most modern combat aircraft. It also has highlighted the Russian military's ability to effect "area denial" with an air defense "bubble" of overlapping advanced missile systems.
- At the same time, Russia has been upgrading or constructing new facilities in the Arctic and reactivating Soviet bases in the Arctic that fell into disuse with the end of the Cold War. *In December 2014, Russia launched a new Arctic Joint Strategic Command*. In addition, Russia has been forming two new brigades specializing in Arctic warfare.
- Over the past several years, Russia also has adopted an increasingly aggressive posture with its air and sea patrols and military exercises.

Russia pursued an ambitious modernization program as it steadily increased defense spending, at least until 2016, when the defense budget declined for the first time in years. In 2010, Russia announced a new 10-year *State Armaments Program (SAP)* for 2011-2020, calling for approximately 20 trillion rubles in new weapons procurement over that period (approximately $328 billion as of December 2016). The procurement goals of the SAP include:

- In the coming decade, Russian armed forces will be provided with over 400 modern land and sea-based inter-continental ballistic missiles;
- 8 strategic ballistic missile submarines and about 20 multi-purpose submarines;
- Over 50 surface warships;
- Around 100 military spacecraft;
- Over 600 modern aircraft including fifth generation fighter jets, as well as more than 1,000 helicopters;
- 28 regimental kits of S-400 air defense systems, 38 battalion kits of Vityaz missile systems, and 10 brigade kits of Iskander-M missile systems;
- Over 2,300 modern tanks, about 2,000 self-propelled artillery systems and vehicles, and more than 17,000 military vehicles.

Since 2014, the Russian economy has been negatively affected by falling oil prices and international sanctions, with a prolonged recession accompanied by severe currency depreciation, high inflation, and increased capital flight. The downturn has strained public finances and complicated long-term budgetary and planning efforts. Accompanying an overall decline in defense spending from 2016, the approval of a new 30-trillion ruble (approximately $492 billion) SAP for the period 2016-2025 was postponed until 2018 due to the instability of economic conditions. Additionally, some analysts doubt that the Russian defense industry can produce and deliver the full complement of equipment at the pace and scale envisioned by the SAP. The performance of the Russian military in the initial phases of the invasion of Ukraine, and the subsequent impacts of sanctions imposed by countries around the globe in response, reinforce the challenges that Russia faces in modernizing its military. Despite some of these fiscal challenges, in November 2023, Russia announced a national budget for 2024-2027 that is an increase by around 25% including Russia' highest defense budget in history.

Major Units of the Russian Navy





Russia has established five Joint Strategic Commands (Obyedinennoye Strategicheskoye Komandovaniye – OSK) to deal with perceived threats from the west, south, east, and Arctic.[48]

Surface Vessels

***Admiral Kuznetsov* Class Aircraft Carrier**



Visual Identification	The ski-jump catapult is the most recognizable visual recognition of the *Kuznetsov*. The carrier sits at 1,001 ft in length.
Mission	The design of Admiral Kuznetsov-class implies a mission different from that of the United States Navy's carriers. The carrier is intended to support and defend strategic missile-carrying submarines, surface ships, and naval missile-carrying aircraft of the Russian Navy.
Aircraft	18x SU-33 fighters, 6x MIG-29K fighters, 4x KA-31 helicopters, 2x KA-27 helicopters

***Sovremenny* Class Destroyer**



Visual Identification	The two four-cell anti-ship missile launchers installed port and starboard of the forward island and set at an angle about 15° are the most recognizable feature of the *Sovremenny*.
Mission	The Sovremenny class, Soviet designation Project 956, is a class of anti-ship and anti-aircraft guided missile destroyers of the Russian Navy primarily tasked with anti-ship warfare, while also providing sea and air defense for warships and transports under escort.
Aircraft	1x Ka-27 series helicopter

***Admiral Grigorovich* Class Frigate**



Visual Identification	The black search radar located behind the main super structure is the most recognizable visual recognition of the *Grigorovich*. The frigate sits at 409 ft in length.
Mission	The functions of *Admiral Grigorovich* class frigates are air defense, escorting of other warships and anti-submarine warfare.
Aircraft	1x Ka-27 anti-submarine warfare helicopter, or 1x Ka-31 airborne early warning helicopter

Submarines

Russia currently has *65 submarines*. Historically the backbone of the Russian Navy, 75% of the 65 operational submarines are over 20 years old and are slowly being replaced with highly capable platforms. Russia will continue production of its fourth-generation DOLGORUKIY-class submarines through 2020. Russia is also planning to construct a fifth-generation strategic missile SSBN between 2031 and 2050.

***Borei* Class Strategic Missile Submarine**

The Borei class, also referred to by the Russian designation Project 955 Borei, is a class of nuclear-powered ballistic missile submarines being built for the Russian Navy. The class is intended to replace the Soviet-era Delta III, Delta IV and Typhoon classes in Russian Navy service.

Crew: 107 total
Propulsion: Nuclear



***Yasen* Class Attack Submarine**



The Yasen class, also referred to by the Russian designation Project 885 Yasen is a series of newest and most advanced Russian nuclear-powered cruise missile submarines being constructed for the Russian Navy. It is projected to replace Russia's Soviet-era nuclear attack submarines.

Crew: 64 total
Propulsion: Nuclear

***Akula* Class Attack Submarine**



The Akula class, also referred to by the Russian designation Project 971 are series of nuclear-powered attack submarines (SSNs). The Akula incorporates a double hull system composed of an inner pressure hull and an outer "light" hull. This allows more freedom in the design of the exterior hull shape, resulting in a submarine with more reserve buoyancy than its western analogs. The distinctive "bulb" or "can" seen on top of the Akula's rudder houses its towed sonar array, when retracted.

Crew: 73 total
Propulsion: Nuclear

***Varshavyanka* Class Patrol Submarine**



The Varshavyanka class is an improved version of the Kilo class submarines, featuring advanced stealth technology, extended combat range and ability to strike land, surface and underwater targets. The Project 636 class boats displace 3,100 tons, reach speeds of 20 knots, and can dive to 300 meters. These attack submarines are mainly intended for anti-shipping and anti-submarine operations in relatively shallow waters.

Crew: 52 total
Propulsion: Diesel-electric

Aircraft

Su-35 Flanker-E

The Su-35 Flanker-E is the designation for two improved derivatives of the Su-27 air-defense fighter. They *are single-seat, twin-engine, and supermaneuverable aircraft.* The Sukhoi Su-35 Flanker-E is the top Russian air-superiority fighter in service today, and represents the pinnacle of fourth-generation jet fighter design. Distinguished by its unrivaled maneuverability, most of the Su-35's electronics and weapons capabilities have caught up with those of Western equivalents, like the F-15 Eagle.



The Su-35 Flanker-E is the most common Russian fighter to conduct intercepts against U.S. Military reconnaissance aircraft conducting operations in the Eastern Mediterranean and Black Sea.

Missiles

SS-N-26 Strobile

The SS-N-26 Strobile missile is a Soviet / Russian supersonic anti-ship cruise missile.

Advantages:

- Over-the-horizon (OTH) firing range
- Full autonomy of combat use ("fire and forget")
- A set of flexible ("low-profile sea-skimming", "high-low") trajectories
- High supersonic speed in all phases of flight
- Full harmonization for a wide range of platforms (surface ships, submarines and land-based launchers)
- Possible use of the missile in electronic countermeasures environment and under enemy fire

SS-N-27 Sizzler

The SS-N-27 Sizzler missiles are Russian group of surface ship, submarine-launched and airborne anti-ship and coastal anti-ship (AShM), land attack cruise missiles (LACM) and anti-submarine missiles. The missile *can be launched from a surface ship using a Vertical Launch System (VLS)*. It has a booster with thrust vectoring capability. The missile launched from a submarine torpedo tube has no need for such an addition but has a conventional booster instead. The air launched version is held in a container that is dropped as the missile launches, detaching from the container.

V. Notable U.S. and Russia Military Incidents

At the height of the Cold War in the 1960s, there were several incidents between forces of the U.S. Navy and the Soviet Navy. Incidents included planes of the two nations passing extremely close to one another at high speeds, ships bumping one another, and both ships and aircraft making threatening movements against those of the other side. In 1968, the U.S. proposed talks on preventing such incidents from becoming more serious. These talks eventually led to a formal agreement signed by both sides in Moscow on May 25, 1972 ("Agreement on the Prevention of Incidents on and Over the High Seas").

The Russian military intervention in the Syrian Civil War began in September 2015, after an official request by the Syrian government for military aid against rebel groups. The intervention initially consisted of air strikes fired by Russian aircraft stationed in the Khmeimim base at targets primarily in north-western Syria, against Syrian opposition militant groups opposed to the Syrian government, including the Syrian National Coalition, the Islamic State of Iraq and the Levant (ISIL), al-Nusra Front (al-Qaeda in Syria) and the Army of Conquest. In addition, Russian special operations forces and military advisors were stationed in Syria. Prior to the intervention, Russian involvement in the Syrian Civil War had mainly consisted of supplying the Syrian Army with arms and equipment. At the end of December 2017, the Russian government said its troops would be based in Syria permanently.

The relevance of this agreement remains today. The importance of understanding the challenge presented by Russia and its military forces is highlighted by many recent incidents at sea that include the following examples (not all inclusive):

April 2016 – A pair of Russian Su-24 fighter jets performed several low-altitude passes on the USS DONALD COOK *Arleigh Burke* class guided missile destroyer while the ship was conducting exercises with a Polish helicopter in international waters in the Baltic Sea 70 nautical miles (130 km; 81 mi) off Kaliningrad.

February 2017 – Multiple Russian SU-24 "Fencer" fighter jets and an Il-38 sub-hunting quad-engine aircraft buzzed the U.S. Navy destroyer USS PORTER (DDG 78) in the Black Sea.

January 2018 – A Russian Sukhoi SU-27 "Flanker" fighter jet came within five feet of an EP-3 Aries before crossing through the U.S. aircraft's flight path, forcing the EP-3 to fly through the SU-27's flight wash.

November 2018 – A Russian fighter jet flies dangerously close to a U.S. Navy reconnaissance plane on Monday over the Black Sea. A Navy EP-3E Aries II reconnaissance aircraft was flying in international airspace when it was intercepted by a Russian Su-27 fighter in an interaction that lasted about 25 minutes.

June 2019 – A Russian Sukhoi SU-35 fighter jet harassed a U.S. Navy P-8A Poseidon patrol plane over the Mediterranean Sea.

June 2019 – On 7 June 2019 the USS CHANCELLORSVILLE (CG 62) came close to a collision with the Russian destroyer *Admiral Vinogradov*. United States Seventh Fleet stated the Russian destroyer came within 50 to 100 feet of USS CHANCELLORSVILLE and did not adhere to proper "rules of the road".

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CHAPTER 11: GLOBAL CHALLENGES – ROGUE STATES: NORTH KOREA & IRAN

I. North Korea Security Challenges





For almost 70 years, the United States has been committed to security on the Korean Peninsula. It has used a range of military and diplomatic tools to underscore its commitments to its treaty ally South Korea and to deter North Korean aggression. Apart from occasional crises and provocations, deterrence appears to have been robust. The risk of large-scale conflict, while ever present, has remained relatively low.

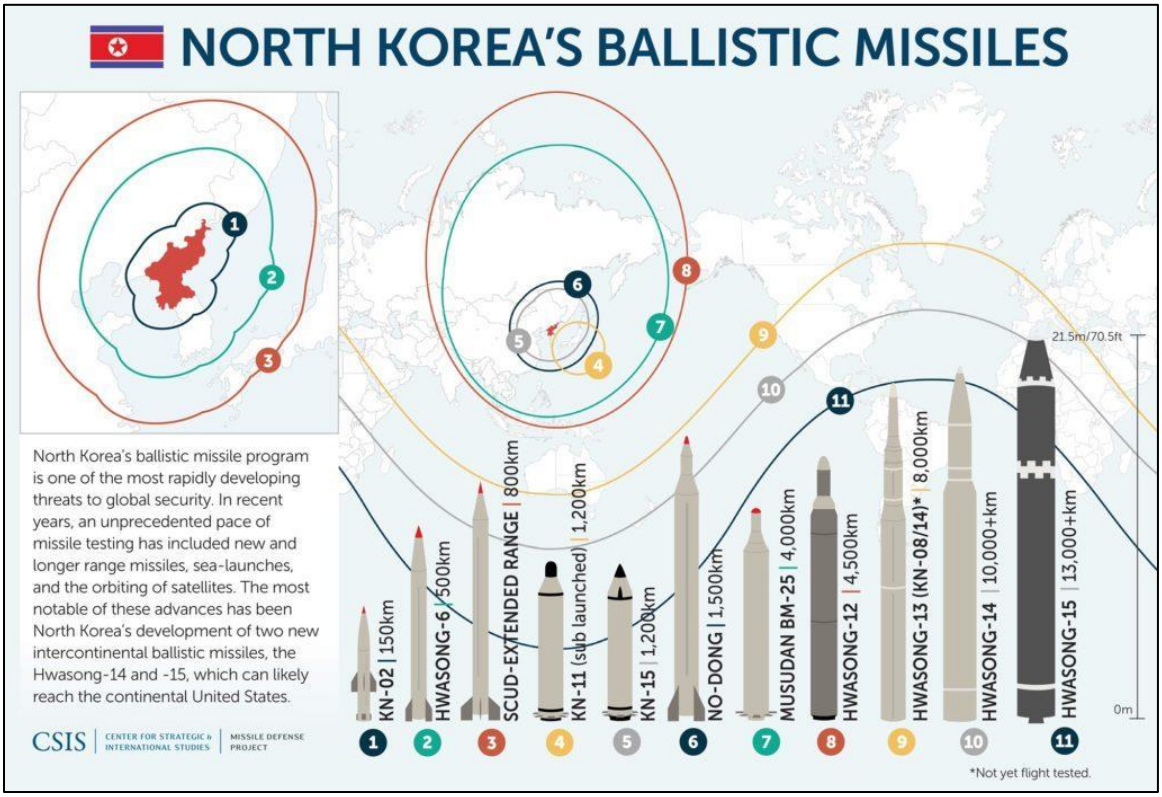
However, because of a combination of developments on the peninsula—the most important of which is North Korea's burgeoning nuclear program—this situation may be changing. Under leader ***Kim Jong Un***, North Korea has dramatically hastened the pace of nuclear weapon development—especially delivery vehicles, such as long-range missiles. At the same time, the rhetoric out of the North has become even more confrontational. Kim Jong-Un's regime appears stable, but a long series of arrests and killings of apparent rivals and the North Korean people's growing awareness of outside events and increasing involvement in trade point to the potential for sudden volatility.

In addition, South Korea's doctrine of disproportionate response to provocations and emphasis on preemption exacerbate escalatory dangers. The recent rapprochement between the two Koreas and the bilateral and multilateral summits now under way may ease these tensions. Should those talks fail to resolve key issues, however, the military situation in Korea could remain very dangerous.

As of early 2019, North Korea had not conducted any nuclear-capable missile or nuclear tests in more than a year, had declared its support for the denuclearization of the Korean Peninsula, and had reversibly dismantled portions of its WMD infrastructure. In his 2019 New Year's address, Kim Jong Un pledged that North Korea would "go toward" complete denuclearization and promised not to make, test, use, or proliferate nuclear weapons. However, he conditioned progress on U.S. "practical actions." The regime tied the idea of denuclearization in the past to changes in diplomatic ties, economic sanctions, and military activities. The Intelligence Community in the U.S. continues to assess that North Korea is unlikely to give up all of its nuclear weapons and production capabilities, even as it seeks to negotiate partial denuclearization steps to obtain key US and international concessions. . North Korean activity since 2019 has demonstrated North Korea's continued interest in being a nuclear power and their reluctance to completely shutdown their nuclear and missile testing programs.

- After announcing the closure of the Punggye-ri nuclear test site, North Korea dynamited the entrances to two test tunnels in May 2018; however, according to International Atomic Energy Agency (IAEA) reporting, "North Korea began restoring test tunnels in March 2022 and the test site 'remains prepared to support a nuclear test.'"

- From 2022-2023, North Korea conducted over 80 ballistic missile test launches, including at least five intercontinental ballistic missiles (ICBM).
- In his 2023 New Year's address, Kim Jong Un reversed his statements from 2019 and said North Korea would "exponentially expand its nuclear arsenal and mass produce tactical nuclear weapons."



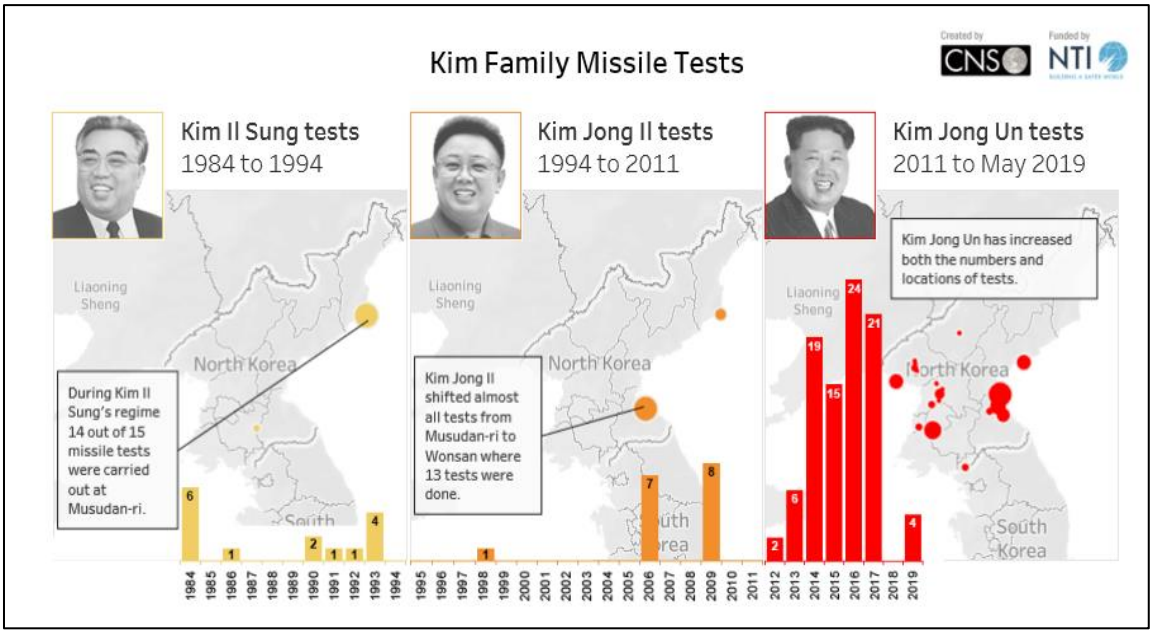
II. Foreign Engagement

North Korea continues its efforts to mitigate the effects of the U.S.-led pressure campaign, most notably through diplomatic engagement, counter-pressure against the sanctions on the regime, and direct sanctions evasion.

- Kim Jong Un has sought sanctions relief through a campaign of diplomatic engagement that included his first summits with foreign leaders since taking power in 2011. He met with South Korean President Moon Jae-in three times in 2018, leading to agreements to reconnect roads and rail lines, establish new military parameters, promote reforestation, and facilitate cultural exchanges.
- Kim has also sought to align the region against the U.S.-led pressure campaign in order to gain incremental sanctions relief, and North Korean statements have repeatedly indicated that some sanctions relief is necessary for additional diplomacy to occur.
- By late 2018, the enforcement of new UN sanctions had led to a precipitous decline in North Korea's monthly export revenue compared with 2017, a change that also reduced imports.
- North Korea generates revenue through overseas labor, cyber-theft operations, and illicit commercial exports of UN Security Council (UNSC)-prohibited goods.
- The United States and its allies have observed North Korean maritime vessels using at-sea, ship-to-ship transfers of petroleum from third-country tankers to acquire additional refined petroleum as a way to mitigate the effects of UN sanctions.
- In 2022, China and Russia blocked U.S.-led efforts at the UNSC to tighten restrictions on DPRK's petroleum imports.
    - China accounts for over 80% of North Korea's trade.
    - Russia's partnership with North Korea has also grown; exchanging food, fuel, and other goods and services; In 2023, Kim Jong Un visited Russia and met President Vladimir Putin; In 2024,

according to the State Department, North Korea transferred weapons and ammunition to Russia in support of Russia's war in Ukraine.

- With this strengthened support from China and Russia, Kim Jong Un may be emboldened to maneuver more freely and pursue North Korean national interests despite any UNSC sanctions.



III. North Korea's Military

North Korea's conventional capabilities continue to pose a threat to South Korea, Japan, and U.S. forces in the region. As a way to offset adversary military advantages, Kim Jong Un continues to pursue advanced conventional weapon programs and capabilities, including more accurate artillery and ballistic missile strike capabilities and UAVs.



Given the continued and growing threat from North Korea, its nuclear and missile programs, and its proliferation of related technology, the U.S. Department of Defense continues to manage the North Korean security challenge

through close coordination and consultation with the international community, particularly South Korea and Japan. The U.S. remains vigilant in the face of North Korea's continued provocations and steadfast in its commitments to allies in the region, including the extended deterrence commitments provided through both the nuclear umbrella and conventional forces.

IV. North Korean Notable and Recent Incidents

1968 January – North Korea captures the USS *Pueblo,* an unarmed U.S. Navy intelligence vessel, in international waters. North Koreans held the 83-man crew hostage for 11 torturous months and maintains possession of the ship to this day.

1969 April – North Korean Mig-21 fighters shoot down a U.S. Navy EC-121 reconnaissance aircraft over the Sea of Japan as it flew a regular surveillance mission in international airspace. All 31 sailors perished.

2006 July - North Korea test fires seven missiles including a long-range Taepodong-2 missile, which crashes shortly after take-off despite it reportedly having the capability to hit the US.

2006 October - North Korea conducts its first nuclear weapons test at an underground facility. The UN imposes economic and commercial sanctions on North Korea.

2009 April - North Korea launches a long-range rocket, carrying what it says is a communications satellite; its neighbors accuse it of testing long-range missile technology. Condemnation from the UN Security Council prompts North Korea to walk out of six-party talks and restart its nuclear facilities.

2009 May - North Korea carries out its second underground nuclear test. UN Security Council condemns move in June.

2012 October - North Korea claims it has missiles than can hit the US mainland after South Korea and Washington announce a deal to extend the range of South Korea's ballistic missiles.

2013 February - UN approves fresh sanctions after North Korea stages its third nuclear test, said to be more powerful than the 2009 test.

2014 March - North Korea test-fires two medium-range Rodong ballistic missiles for the first time since 2009, in violation of UN resolutions.

2017 July - Pyongyang test fires a long-range missile into the Sea of Japan, with some experts stating the missile could potentially reach Alaska.

2022 – A total of 69 launches of 13 different types of missiles were executed in 2022 , surpassing a previous high of 26 total launches in 2019.

2023 – North Korea launched four ICBMs (which have the longest range and pose the greatest threat)

V. Iran Strategic Challenges





For decades, Iran has vexed the international community. It introduced *Islam* as a form of governance in 1979 and has supported militants abroad and defied international norms. Iran has sought to become a regional power through conventional military capabilities as well as a pursuit for nuclear capabilities. In the 2000s, as Iran's nuclear program progressed, the U.S. focused on the use of sanctions to deter them. The Obama Administration used "increased sanctions coupled with offers of sanctions relief if Iran accepted constraints on the nuclear program." Iran eventually entered into international negotiations that concluded in the 2015 Joint Comprehensive Plan of Action (JCPOA) which "imposed restraints on Iran's nuclear program in exchange for relief from most U.S. and U.N. Security Council economic sanctions." In May 2018, the Trump administration withdrew from the 2015 JCPOA nuclear agreement. The administration argued that the deal did not adequately curb Tehran's nuclear program or address its missile program, human rights abuses, and support for terror. Washington re-imposed sanctions as part of a *"maximum pressure"* campaign to change Tehran's behavior. The Biden Administration attempted to revive the nuclear agreement, but those efforts stalled in 2022 and since then, Iran has decreased compliance with its original agreement. The U.S. intelligence community assess that "Iran is not currently executing nuclear weapons-related activities, but could enrich enough uranium for three nuclear devices within weeks if it chose to do so."

Tensions between Iran and the U.S. have waxed and waned over the years based on each countries' respective roles in multiple regional conflicts. In 2023-2024 tensions have been on the rise with Iran's role supporting multiple militant groups who have been actively involved in the Israeli-Palestinian conflict and groups who have directly attacked the U.S. and their interests in the region. Iran's government seeks, among other goals, to erode U.S. influence in the Middle East while projecting power in neighboring states by backing a range of regional armed groups, including Hamas, Hezbollah, the Houthis, and other U.S.-designated terrorist organizations.

Iran's regional ambitions and improved military capabilities almost certainly will threaten U.S. interests in the near future, driven by Tehran's perception of increasing U.S., Saudi, and Israeli hostility, as well as continuing border insecurity, and the influence of hardliners. The U.S. Intelligence Community assesses that Iran will attempt to translate battlefield gains in Iraq and Syria into long-term political, security, social, and economic influence while continuing to press Saudi Arabia and the UAE by supporting the Houthis in Yemen.

In Iraq, Iran-supported *Popular Mobilization Committee*-affiliated Shia militias remain the primary threat to U.S. personnel, and we expect that threat to increase as the threat ISIS poses to the militias recedes, Iraqi Government formation concludes, some Iran-backed groups call for the United States to withdraw, and tension between Iran and the United States grows. The United States continues to watch for signs that the Iranian regime might direct its proxies and partners in Iraq to execute further attacks on U.S. interests.

In Yemen, Iran's support to the *Houthis*, including supplying ballistic missiles, risks escalating conflict and poses a serious threat to U.S. partners and interests in the region. Iran continues to provide support that enables Houthi attacks against shipping near the Bab el Mandeb Strait and land-based targets deep inside Saudi Arabia and the

UAE, using ballistic missiles and surface and aerial drones. More than 3.4 million barrels of oil pass through the 20km wide Bab al-Mandab Strait each day. U.S. Navy vessels continually engage with Houthi drone and missile attacks in the area. In April 2024, the U.S. Navy engaged in 17 different incidents involving Houthi attacks. In those 17 incidents the U.S. Navy and partners successfully defended against approximately 20 Houthi launched drones and 12 Houthi launched missiles.

Iran's efforts to consolidate its influence in Syria and arm Hezbollah previously prompted Israeli airstrikes as recently as January 2019 against Iranian positions within Syria. More recently, the focus has shifted from Syria to Israel and Palestine and underscore the growing concern about the long-term trajectory of Iranian influence in the region and the risk that conflict will escalate.

On October 7th 2023, Hamas – which is funded, armed, and trained by Iran – committed the third deadliest terrorist attack since such data began being tracked in 1970. The Israeli government estimates the attack killed 1,200 Israelis. This catastrophically intensified the Israeli-Palestinian conflict resulting in 1,000s of displaced civilians, the potential for a famine in the region, and over 30,000 deaths including more than 13,000 children (as of May 2024).

Although Iran's responsibility for the specifics of October 7th 2023 are unclear, Iran publicly celebrated the attacks and furthered their support of Hamas and Hezbollah who continue executing strikes into Israel. In addition to supporting these groups, in April 2024, Iran directly entered the conflict when it launched over 300 drones and missiles into Israel, representing the first-ever direct Iranian military strike against Israel. Iran claimed the attack was in response to several Israeli strikes within Syria that killed multiple *Islamic Revolutionary Guards Corps (IRGC)* members including Iran's top General in Syria. After Iran's strike into Israel, Israel responded less than a week later with an airstrike of their own. This escalating back and forth is very destabilizing for the region and the U.S. and its partners have pushed for de-escalation with little success so far.

VI. Iran's Domestic Politics



Regime hardliners are more emboldened to challenge rival centrists by undermining their domestic reform efforts and pushing a more confrontational posture toward the U.S and its allies. The current President, Ebrahim Raisi, a hardliner close to Supreme Leader Ayatollah Khamenei, won the June 2021 election to succeed the moderate Hassan Rouhani. This election amongst other factors appears to have cemented a political shift toward a more hardline approached to Iran's relations with the U.S.

Nationwide protests, mostly focused on social grievances, and reform, intensified in 2022 after the death of a political prisoner. Some protests even called for an end to the Islamic Republic and chanting "death to the dictator." According to the Congressional Research Service, "As of April 2024, the protest movement has reduced, but the fundamental grievances that motivated the outbreak of unrest in September 2022 (and in previous years) remain unresolved, so further rounds of popular protests are possible. The protest movement apparently lacks an organized structure, a visible leader, and a shared alternative vision for Iran's future, and therefore may have limited capacity to pose an existential risk to the Islamic Republic."

VII. Iran's Military

Iran continues to develop military capabilities that threaten U.S. forces and U.S. allies in the Middle East region. Increased harassment of U.S. and allied warships and merchant vessels in the *Persian Gulf, Strait of Hormuz,* and *Gulf of Oman* is a consistent concern.

Iran continues to develop, improve, and field a range of military capabilities that enable it to target U.S. and allied military assets in the region and disrupt traffic through the Strait of Hormuz. These systems include ballistic missiles, unmanned explosive boats, naval mines, submarines and advanced torpedoes, armed and attack UAVs, anti-ship and land-attack cruise missiles, anti-ship ballistic missiles, and air defenses. Iran has the largest ballistic missile force in the Middle East and can strike targets as far as 2,000 kilometers from Iran's borders. Russia's delivery of the SA-20c SAM system in 2016 provided Iran with its most advanced long-range air defense system. Iran is also domestically producing medium-range SAM systems and developing a long-range SAM.
In September 2018, Iran struck Kurdish groups in Iraq and ISIS in Syria with ballistic missiles in response to attacks inside Iran, demonstrating the increasing precision of Iran's missiles, as well as Iran's ability to use UAVs in conjunction with ballistic missiles.

In recent years, the Iranian *Islamic Revolutionary Guards Corps (IRGC) Navy* has challenged US ships in the Persian Gulf and flown UAVs close to US aircraft carriers during flight operations. Moreover, Iranian leaders since July 2018 have threatened to close the Strait of Hormuz in response to US sanctions targeting Iranian oil exports.

VIII. Iran's "Two Navies"



Iran in essence has ***two*** navies that are distinct organizations with independent strategies, doctrines and missions. It is, in fact, a tale of two navies. The *Islamic Revolutionary Guard Corps Navy (IRGCN)* emphasizes an asymmetric doctrine to ensure national security in the Persian Gulf against regional neighbors and foreign presence. The *Islamic Republic of Iran Navy (IRIN)*, dubbed by the Supreme Leader of Iran as a strategic force, employs a more conventional doctrine and focuses on forward presence and naval diplomacy. Its mission areas include the Caspian Sea, the Gulf of Oman and out-of-area operations. Both navies have considerable equities and are well positioned to influence and leverage the Strait of Hormuz; a vital chokepoint for the flow of resources and international commerce.

Since undergoing a naval reorganization in 2007, both navies have engaged in dynamic acquisition programs. The IRGCN has continued to pursue smaller, faster platforms equipped with sophisticated weaponry, ideally suited for its asymmetric doctrine. The IRIN, largely neglected since the end of the Iran-Iraq War in the 1980s (with the exception of submarines), has undertaken a major recapitalization program to replace its aging surface fleet and augment its submarine force. Additionally, Iran's navies have been supplemented by its other military branches through acquisition of air-launched cruise missiles and anti-ship ballistic missiles. These developments are a clear indication that Iran understands the growing importance of controlling the maritime environment in its security calculus.

IX. Iran's Mining Threat and Strait of Hormuz

The Strait of Hormuz is one of the most critical chokepoints in the world. Nearly one-third of all seaborne crude oil (18+ million barrels per day) passes through the 21-mile-wide opening between Oman and Iran, as well as approximately 30% of all natural gas shipped on tankers. The strait is even narrower than it looks, since the deep-water shipping channel used by oil tankers is only two miles wide. Iran, with military presence on a number of islands near the strait and along the northern coastline, dominates this critical body of water. This theoretically gives Iran the opportunity to choke off one of the world's vital economic arteries, potentially inflicting economic losses on regional rivals like Saudi Arabia and even the U.S.



Nearly every time Iran feels cornered by pressure from the U.S. or U.S. regional allies, it brings up the issue of closing the Strait of Hormuz. Iran's navy has hundreds of small ships and fast attack craft armed with machine guns, rockets, and mine-laying capabilities. Iran has thousands of mines, both simpler, old-fashioned contact mines and newer, more sophisticated smart mines. Mine warfare, however, presents challenges for Iran as well. Deploying mines from submarines would be stealthier and harder for the U.S. to detect, but the shallow waters around the Strait of Hormuz make that a tricky operation. Deploying from small surface ships is easier, but it is also much easier to detect in the early stages. And mines that come unmoored and drift can present a hazard to all ships, including Iranian military ships and tankers. Iran previously laid mines in the Persian Gulf during the Iran-Iraq War in the 1980s. During the "Tanker War" phase of this conflict, multiple U.S. ships struck mines and suffered severe damage. To counter this potential threat, the U.S. has deployed four active minesweepers to Bahrain for many years.



Fast Attack Craft (FAC) - Since the end of the Iran-Iraq War in 1988, the IRGCN has significantly upgraded its fleet in terms of size and lethality, but it has remained a force comprised of smaller platforms. Rather than acquire larger ships as might a more traditional navy, the IRGCN has instead chosen to pursue smaller, faster vessels, armed with capable weapons systems, such as cruise missiles and torpedoes.

Fast Inshore Attack Craft (FIAC) - FIAC are lightly armed small-boats that have been a mainstay of the IRGCN since its inception in the 1980s, and they are by far, the most numerous of all IRGCN vessels. Usually fitted with only machine guns and/or rockets, and used en masse, these vessels are capable of harassing merchant shipping and conducting swarm tactics during a force-on-force naval engagement.



Iran has some of the largest numbers of FACs in operation today. Iran has been seen developing "swarm boats" to be used as harassing vessels against U.S. warships conducting transits in the heavily contested littoral waters of the Persian Gulf such as the Strait of Hormuz. To counter the threat, the U.S. Navy has been developing an ASUW Littoral Defensive Anti Surface Warfare doctrine, along with vessels such as the littoral combat ship.

LAND BASED MISSILES

Shahab-3 Medium-Range Missile

The Shahab-3 has a maximum range of 1,242 miles, making it capable of striking targets beyond its immediate border regions. The Shahab-3 is liquid fueled, and typically carries a single warhead. Although currently armed with conventional high explosive warheads, they are likely also capable of carrying nuclear warheads. As a road mobile system, the Shahab-3 can be launched from any location.

Fateh-110 Short-Range Missile

Prompted by its experience in the war with Iraq in the 1980s, Iran actively pursued a ballistic missile arsenal that had greater precision and accuracy. As part of this effort, Iran began developing the Fateh-110 in 1995. The Fateh-110 is a solid fueled short-range ballistic missile. The missile is also capable of carrying nuclear or biological warheads. As a road mobile system, the Fateh-110 series can be launched from any location.

X. Iran Notable and Recent Incidents

2008 January - Five Iranian patrol boats crewed by the Revolutionary Guard approached three United States Navy warships in the Strait of Hormuz: the cruiser USS PORT ROYAL, the destroyer USS HOPPER and the frigate USS INGRAHAM.

2009 September - Iran admits that it is building a uranium enrichment plant near Qom, but insists it is for peaceful purposes. The country test-fires a series of medium- and longer-range missiles that put Israel and US bases in the Gulf within potential striking range.

2011 December – Present Day - The Strait of Hormuz dispute is an ongoing dispute between a coalition of countries and Iran. The dispute arose on 27 December 2011, when Iranian Vice President Mohammad-Reza Rahimi threatened to close the Strait of Hormuz. In late April 2019 Iran said that it will block any shipping if it was barred from using the strategic waterway and in face of US sanctions. Subsequently, a number of naval drills and missile tests were carried out by Iran. A coalition of countries responded by sending a flotilla of warships to deter any Iranian attempt to close the Strait of Hormuz and warned Iran publicly and through letters not to close the Strait.

2015 July - After years of negotiations, world powers reach deal with Iran on limiting Iranian nuclear activity in return for lifting of international economic sanctions.

2016 January - Two United States Navy riverine command boats cruising from Kuwait to Bahrain with a combined crew of nine men and one woman on board strayed into Iranian territorial waters which extend three nautical miles around Farsi Island in Persian Gulf. Patrol craft of Iran's Islamic Revolutionary Guard Corps (IRGC) Navy seized the craft and detained the crew at a military base on Farsi Island for 15 hours.

2019 June – Iran's air defenses shot down an U.S. RQ-4A Global Hawk BAMS-D operating in international airspace. The BAMS-D is the Broad Area Maritime Surveillance – Demonstrator, the predecessor of the Navy's MQ-4C Triton. A nearby P-8A Poseidon, within range of the missile systems, recorded the incident.

2020 January – U.S. military armed drone strike killed IRGC-QF Commander Major General Qasem Soleimani. Iran retaliates with "Operation Martyr Soleimani" with a ballistic missile strike on two Iraqi bases – Ayn al-Asad and an airbase near Irbil. The U.S. reported no "casualties;" however, "about 110 U.S. military personnel were diagnosed with various forms of traumatic brain injury, mostly concussions from the blast."

2023 September – IRGCN interacted in an unsafe and unprofessional manner with a U.S. helicopter conducting routine operations in the international airspace in the Arabian Gulf. IRGCN vessels shone a laser multiple times at the aircraft while in flight.

2024 January – Iranian backed militant group launched a drone attack in Jordan that resulted in three U.S. service members' deaths. In response, the U.S. launched air strikes on 85 Iran-backed militia sites across Syria and Iraq.

2024 April – Iran launched over 300 drones and missiles into Israel in response to several Israeli strikes within Syria that killed multiple *Islamic Revolutionary Guards Corps (IRGC)* members including Iran's top General in Syria.

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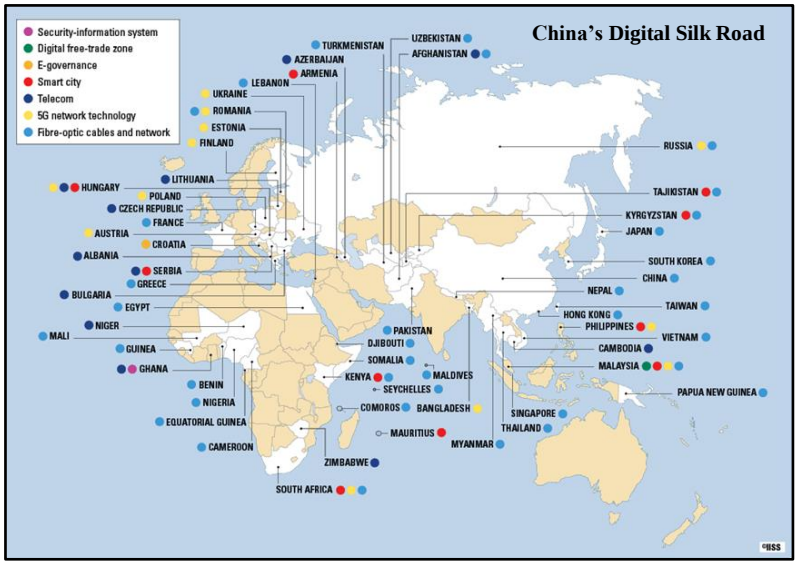
CHAPTER 12: GLOBAL CHALLENGES – CYBER, SPACE, & TRANSNATIONAL THREATS

I. Cyber

The U.S. Intelligence Community expects global cyber threats to the United States and our Allies to increase and emanate from a wide array of both state and non-state actors. Our networks, systems, and information are at risk from a myriad of malicious cyberspace activities. The most important emerging cyber threats to our national security will come from the exploitation of our weakest technological components: mobile devices and the Internet of Things (IoT). Our social media, web applications, cloud services, and critical infrastructure is also vulnerable to targeted attacks, influence operations, information leaks, and intellectual property loss. Adversarial cyber operations attempt to compromise critical infrastructure and expose U.S. military technology in fields such as precision guidance, stealth, and autonomous systems. Our adversaries also target U.S. military personnel on social media to gain insight into the disposition and movement of our forces and develop follow on cyber-attacks. Our top adversaries are developing and using cyberspace to increase their operational reach into our military and civilian systems, exploiting our vulnerabilities, and compromising our national defense. Their capabilities will continue to challenge our current cyber defenses and cybersecurity investments.

II. Chinese Cyber Activities

China outlines its cyber strategy in the Five-Year Plan, the Belt and Road Initiative, and the 'Made in China 2025.' As part of the Belt and Road Initiative, which includes the development of the Digital Silk Road, and the 'Made in China 2025' program, China leverages cyber-espionage operations to gather information in support of gaining economic and political advantages over Western countries. In addition to creating foreign economic dependency to benefit China, the Digital Silk Road will provide China with long-term access to global Information Technology (IT) networks as the infrastructure for future cyber operations.



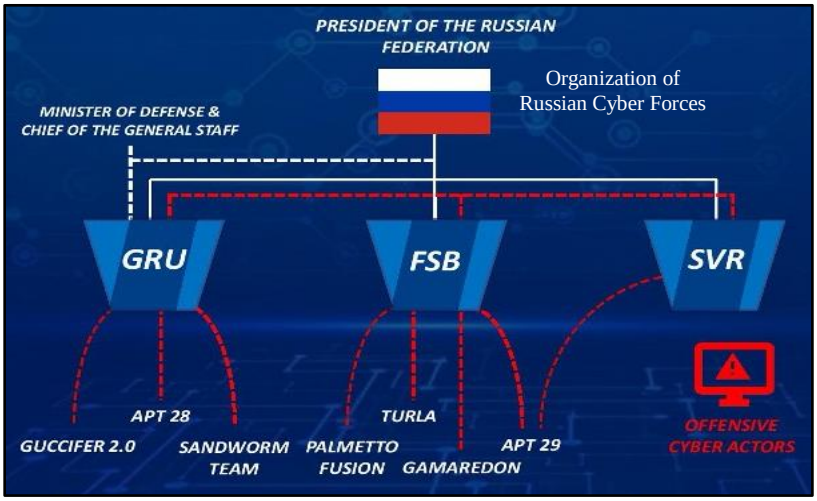
China's cyber elements are divided into two forces: The People's Liberation Army Strategic Support Forces (PLASSF) and the Ministry of State Security (MSS). In 2015, after two PLA cyber elements were publicly identified, the People's Liberation Army cyber elements from the General Staff Third (Technical Reconnaissance and Fourth (Electronic Countermeasures and Radar) Departments were reorganized into the Strategic Support Forces, combining cyber, space, and electronic warfare units into a single organization. Since the reorganization, the PLASSF forces have increased operational security and sophistication of their attacks.

China's MSS operates a global campaign of cyber espionage for economic, political and strategic purposes. In 2018, the United States Department of Justice indicted two MSS actors for their involvement in Operation Cloud Hopper, targeted at IT service providers in order to gain access into their clients and gain sensitive data from foreign governments and economic competitors throughout multiple industries.

Russia and China will remain the U.S.'s main adversaries in cyberspace and will increasingly integrate cyberattack capabilities into their militaries, seeking to deny or disrupt our networked forces and infrastructure. Iran

and North Korea, although less capable, can launch disruptive cyberattacks and use cyberspace as a means to asymmetrically respond to perceived challenges in political, military, or economic domains. Non-state actors and cyber criminals continue to use malicious cyberattacks to generate revenue, increase notoriety, and disrupt international communication and trade. The U.S. can strengthen partnerships and share best practices to counter malicious cyberattacks by partnering with our Allies to improve their cyberspace defenses. The U.S. will require a combination of next-generation technologies, capable of detecting and stopping the latest wave of elusive cyber threats, and a sound policy framework that balances the public interest with national defense in order to establish an effective cyberspace defense.

III. Russian Cyber Activities



Russia leverages their cyberspace capabilities to re-establish dominance in its near-abroad, damage Western and pro-democracy influence, and expand global influence. It's important to note that although there is a strong presence of cybercriminal actors operating out of Russia, there are not clear ties to their operations being state-sponsored or state-directed.

Russia organizes their state-sponsored cyber elements into three organizations: Federal Security Service (FSB), Foreign Intelligence Service (SVR), and the Main Directorate of the General Staff of the Armed Forces of the Russian Federation (GRU). The FSB is responsible for counterintelligence operations, the SVR is responsible for human intelligence, and the GRU encompasses all other intelligence services. Developed in the 1990's, the FSB developed Russia's first state-sponsored cyber capability and has continued to grow their forces throughout the 2000's. With the majority of Russia's Advanced Persistent Threat (APT) groups, the FSB globally targets in the government, defense, aerospace, and energy sectors. The GRU is assessed to be the best resourced organization for cyber operations. Associated with attacking government and defense industries, the GRU is responsible for breaching the Pentagon's network in 2015 and the Democratic National Convention's network in 2016. The GRU is also responsible for disabling power grids in multiple Eastern European countries, as demonstrated in Georgia in 2008 and in Ukraine in 2015. The SVR, the organization assessed to practice the highest operational security, is believed to work in conjunction with the FSB and GRU for cyberspace attacks. In 2020, the United States publicly acknowledge that the SVR was the lead element behind the SolarWinds attack, an attack focused on gaining long-term access to United States Government entities.

IV. Space

The **space domain** is the area above the altitude where atmospheric effects on airborne objects become negligible. United States Space Command (USSPACECOM) area of responsibility (AOR) is the area surrounding the Earth at altitudes equal to, or greater than, 100 kilometers (54 nautical miles) above mean sea level. Like the air, land, and maritime domains, space is a physical domain within which military, civil, and commercial activities are conducted. The relationship between space and cyberspace is unique in that many space operations depend on cyberspace, and a critical portion of cyberspace can only be provided via space operations.

Benefits From Access To Space

Space capabilities provide combatant commanders (CCDRs) with near-worldwide coverage and access to otherwise denied areas.

Advantages to using space for operational purposes include:

- Freedom of action.
- Overflight.
- Global perspective.
- Responsiveness.
- Multi-user capacity.
- Speed, reach, and persistence.

Threat to Space Operations

Space is a naturally hazardous environment and is increasingly congested, contested, and competitive. Space assets face many threats, both natural and manmade. Natural threats to satellites include solar activity, radiation, and natural orbital debris. Man-made threats can be both unintentional (e.g., satellite debris or electromagnetic interference [EMI]) or intentional (e.g., jamming, lasing, cyberspace attacks, and antisatellite weapons).

Space Missions

1. **Space domain awareness (SDA)** is the requisite foundational, current, and predictive knowledge and characterization of space objects and the operational environment (OE) upon which space operations depend—including physical, virtual, information, and human dimensions—as well as all factors, activities, and events of all entities conducting, or preparing to conduct, space operations. Space surveillance capabilities include a mix of space-based and round-based sensors. SSA is dependent on integrating space surveillance, collection, and processing; environmental monitoring; status of US and cooperative satellite systems; understanding of US and multinational space readiness; and analysis of the space domain.

2. **Space Control** Space control includes offensive space control and defensive space control operations to ensure freedom of action in space and, when directed, defeat efforts to interfere with or attack US or allied space systems. Space control uses a broad range of response options to provide continued, sustainable use of space. Space control contributes to space deterrence by employing a variety of measures to assure the use of space; attributing enemy attacks; and being consistent with the right to self-defense, target-threat space capabilities.

3. **Positioning, Navigation, and Timing**
Military users depend on assured positioning, navigation, and timing (PNT) systems for precise and accurate geo-location, navigation, and time reference services. PNT information, whether from space-based global navigation satellite systems (GNSSs), such as Global Positioning System, or non-GNSS sources, is considered mission-essential for virtually every modern weapons system.

4. **Intelligence, Surveillance, Reconnaissance**
Space-based intelligence collection synchronizes and integrates sensors, assets, and systems for gathering data and information on an object or in an area of interest on a persistent, event-driven, or scheduled basis. Space based intelligence, surveillance, and reconnaissance, which includes overhead persistent infrared (OPIR), is conducted by an organization's intelligence collection manager to ensure integrated, synchronized, and deconflicted operations of high-demand assets.

5**. Satellite Communications**
Satellite communications (SATCOM) systems inherently facilitate beyond line-of-sight connectivity. Depending on its configuration, a robust SATCOM architecture provides either equatorial coverage (nonpolar) or high-latitude coverage (includes poles). This provides national and strategic leadership with a means to maintain situational awareness and convey their intent to the operational commanders responsible for conducting joint operations.

6. **Environmental Monitoring**
Terrestrial environmental monitoring provides information on meteorological and oceanographic factors that affect military operations. Space environmental monitoring provides data that supports forecasts, alerts, and warnings for

the space environment that may affect space capabilities, space operations, and their terrestrial users. Environmental monitoring support to joint operations gives the JFC awareness of the OE.

7. **Missile Warning**
The missile warning mission uses a mix of OPIR and ground-based radars. Missile warning supports the warning mission executed by North American Aerospace Defense Command to notify national leaders of a missile attack against North America, as well as attacks against multinational partners (via shared early warning) in other geographic regions. It also includes notification to combatant commands (CCMDs), multinational partners, and forward-deployed personnel of missile attack and the assessment of a missile attack if the applicable CCMD or multinational partner is unable to do so.

8. **Nuclear Detonation Detection**
Nuclear detonation detection capabilities provide persistent, global, and integrated sensors to provide surveillance coverage of critical regions of the globe and provide warning and assessment recommendations to the President, Secretary of Defense (SecDef), and CCDRs, indicating place, height of burst, and yield of nuclear detonations.

9. **Spacelift**
Spacelift is the ability to deliver payloads (satellites or other materials) into space. Satellite Operations Satellite operations maneuver, configure, operate, and sustain on-orbit spacecraft. In a conflict, satellite operations are critical to the command and control (C2), movement and maneuver, protection, and sustainment of space capabilities.

10. **Satellite Operations (SATOPS)**
Satellite operations involves the maneuver, configuration, operations and sustainment of on-orbit assets. In a conflict, satellite operations are critical to the C2, movement and maneuver, protection and sustainment of space assets.

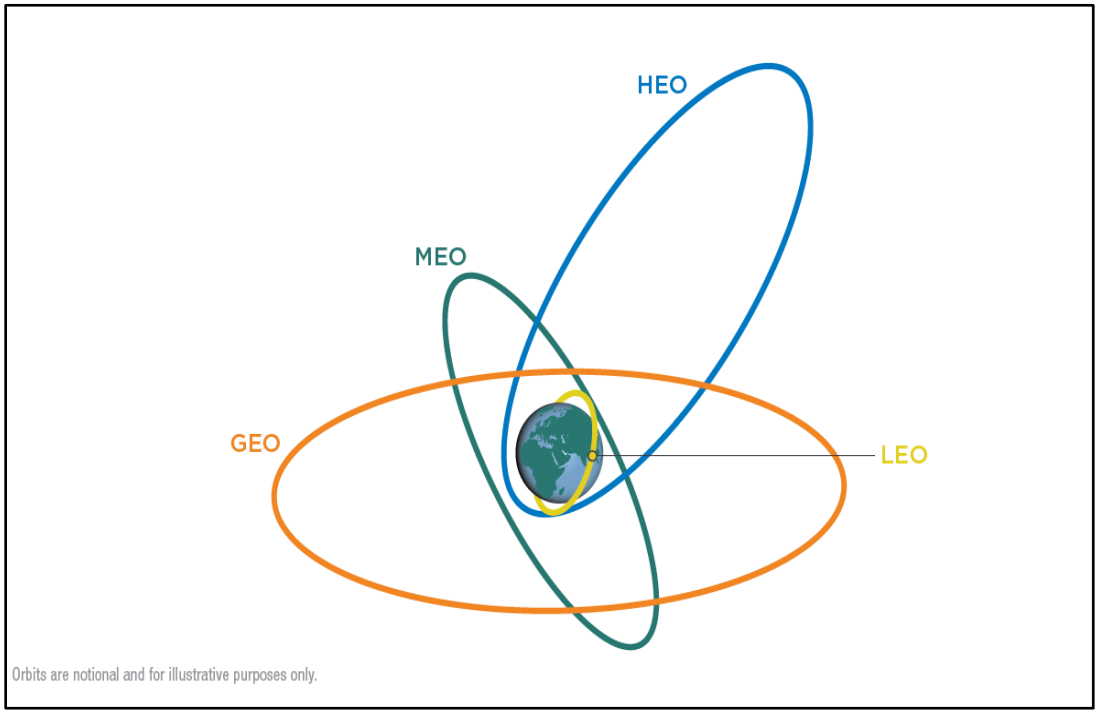


Figure #: Orbit Types

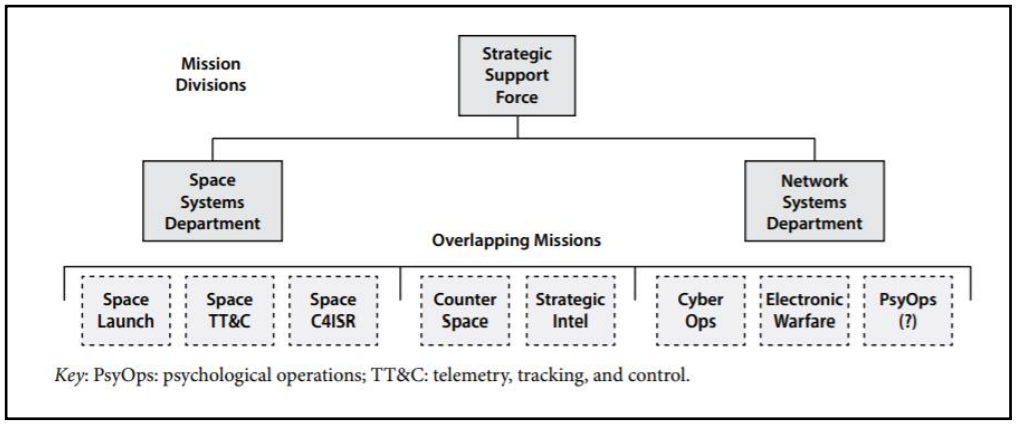
Orbit Type and Characteristics				
Type	**Description**	**Advantages**	**Disadvantages**	**Applications**
Geosynchronous Earth Orbit	Roughly circular ~23,000 miles above Earth's surface	Continuous coverage over specific area Coverage nearly Hemispheric	Far from Earth - resolution and signal limitations Easier to jam signal latency	Communication, surveillance, reconnaissance, weather collection, missile warning
Highly Elliptical Orbit	Long ellipse ~600 miles at perigee (closest to Earth) ~25,000 miles at Apogee (farthest from Earth)	Long dwell time over a large area Coverage of high North or South latitudes	Continuous coverage requires multiple satellites	Communication over high North or South latitudes, scientific, surveillance, reconnaissance, missile warning
Medium Earth Orbit	Roughly circular Between ~1,000-22,000 miles above Earth's surface	Stable orbit Less signal latency	Highest radiation level environment	Positioning, navigation, and timing Communication
Low Earth Orbit	Roughly circular Up to ~1,000 miles above Earth's surface	Near Earth – high resolution and signal strength	Small coverage area over Earth surface Limited coverage windows for any specific geographic region	Surveillance, reconnaissance, weather, collection Manned space flight, communications

Table #: Orbit Type and Characteristics

V. Chinese Space Activities

The People's Republic of China (PRC) is working to match or exceed US capabilities in space to gain the military, economic, and prestige benefits that Washington has accrued from space leadership. The PRC's space enterprise continues to mature rapidly. Beijing has devoted significant resources to growing all aspects of its space program, from military space applications to civil applications such as profit-generating launches, scientific endeavors, and space exploration.

The PLA Strategic Support Force (SSF) is a theater command-level organization established to centralize the PLA's strategic space, cyber, electronic, and psychological warfare missions and capabilities.



Network Systems Department. The SSF Network Systems Department is responsible for cyberwarfare, technical reconnaissance, electronic warfare, and psychological warfare. Its current major target is the United States.

Space Systems Department. The SSF Space Systems Department is responsible for nearly all PLA space operations, including space launch and support; space surveillance; space information support; space telemetry, tracking, and control; and space warfare.

Chinese Space Station

The Tiangong Space Station, once completed, will be roughly one-fifth the mass of the International Space Station. We expect the Chinese space station in low Earth orbit (LEO) to be operational between 2022 and 2024.

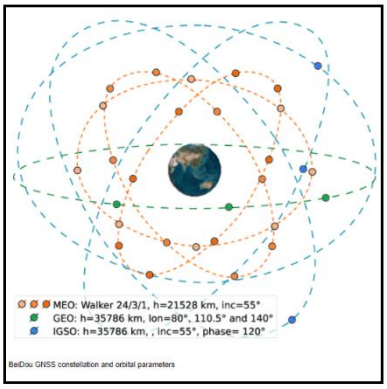


Figure #: An artist's illustration of China's space station in

Beidou Navigation Satellite System (BDS)

Chinese satellite navigation system that is comprised of 35 satellites in the constellation.

- 27x Medium Earth Orbit (MEO)
- 3x Inclined Geosynchronous Orbit (IGSO)
- 5x Geosynchronous (GEO)



Chang'e

Chang'e 5 is a Chinese National Space Administration (CNSA) lunar sample return mission that launched on 23 November 2020. The mission goal was to land on the moon and operate for up to one lunar day (two weeks) and return a roughly 2 kg sample of lunar regolith, possibly from as deep as 2 meters. The return capsule returned to Earth after landing in the Siziwang Banner grassland of the autonomous region of Inner Mongolia in China on 16 December 2020 with the sample.

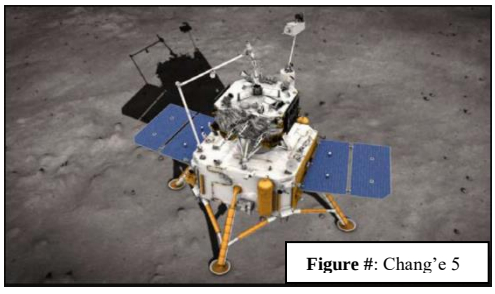


Figure #: Chang'e 5

Yaogan

Yaogan is a comprehensive Chinese earth-observing and remote-sensing satellite platform, which also includes the Jianbing sub-family reconnaissance satellites. The Yaogan series of satellites are believed to be operated by the Chinese military for intelligence-gathering purposes.

VI. Russian Space Activities

Russia is a key space competitor, maintaining a large network of reconnaissance, communications, and navigation satellites. It will focus on integrating space services—such as communications; positioning, navigation, and timing (PNT); geolocation; and intelligence, surveillance, and reconnaissance—into its weapons and command-and-control systems.

Russia continues to train its military space elements and field new antisatellite (ASAT) weapons to disrupt and degrade US and allied space capabilities, and it is developing, testing, and fielding an array of nondestructive and destructive counterspace weapons—including jamming and cyberspace capabilities, directed energy weapons, on-orbit capabilities, and ground-based ASAT capabilities—to target US and allied satellites.

GLONASS

Global Navigation Satellite System (GLONASS) is a global GNSS owned and operated by the Russian Federation. The operational system consists of 24+ satellites in MEO.



Nudol

The Russian PL-19 Nudol system is a variant of the A-235 anti-missile system developed by the Nudol Design Bureau. It is primarily focused on anti-satellite mission. It is the 19th system observed at the Plesetsk launch facility hence PL-19. It is expected that Russian anti-satellite weapons will be aimed at communications satellites and imagery intelligence satellites in low Earth orbit (LEO).



VII. Terrorism

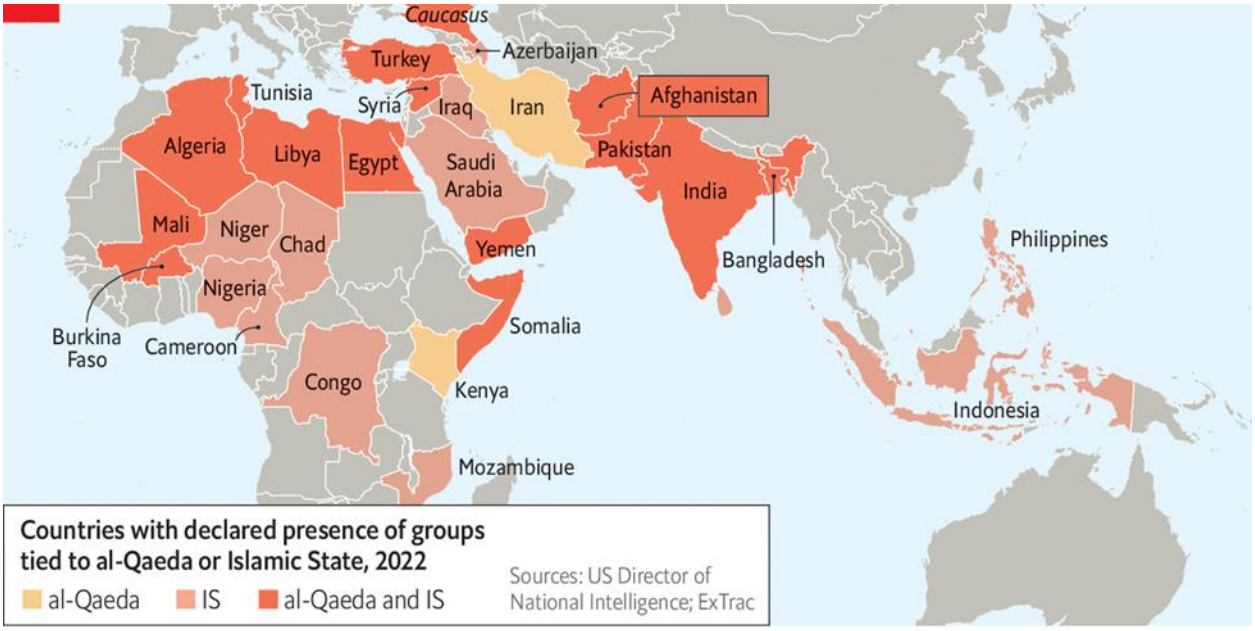
ISIS suffered significant setbacks since 2017, in particular the death of its leader, Abu Bakr al-Baghdadi, 2019. However, ISIS has attempted to maintain relevance by increasing its emphasis on ideology-inspired attacks and shifting its media efforts. Territorial losses in Iraq and Syria and persistent counterterrorism operations against ISIS's global network have degraded the group's strength and impeded its ability to exploit instability and societal discontent in the regions where it operates. ISIS members are dispersing and prioritizing clandestine terrorist operations to preserve their core capabilities. Counterterrorism operations have eliminated numerous key senior leaders, operatives, and facilitators, significantly reducing the group's ability to achieve its self-declared caliphate's territorial objectives. ISIS's capabilities have been degraded in numerous countries, including *Libya, Afghanistan, and the Philippines*; however, ISIS continues to inspire more attacks in major cities throughout the West than any other terrorist organization and to conduct high-profile operations in other countries, demonstrating that it remains a significant terrorist threat to the United States and other Western nations.

Despite losing many of its leaders and its territory, according to the National Counterterrorism Center (NCTC), "ISIS remains capable of conducting insurgent operations in Iraq and Syria while overseeing at least 19 branches and networks in Africa, Asia, and Europe." Some tactics used by ISIS include targeted killings, IED attacks, ambushes, military-style assaults, kidnappings, and suicide attacks.

Al-Qaida remains a serious and persistent threat to U.S. interests worldwide. In particular, the group's exploitation of conflicts in *Syria* and *Yemen* offers opportunities for reconstituted external attack capabilities. Al-Qaida leader Ayman al-Zawahiri's 2013 guidelines for jihad, intended to "exhaust America and bleed her to death," still resonate with the group, but al-Qaida leaders are struggling to reconcile the regional focus of some affiliated groups, especially in Syria, against al-Qaida's traditional focus on targeting the U.S. and its close allies.

Al-Qaida has five affiliates—al-Qaida in the Arabian Peninsula (AQAP); al-Qaida in the Lands of the Islamic Maghreb (AQIM) and its Sahel branch, Jama'at Nusrat al-Islam wal-Muslimin (JNIM); al-Shabaab; al-Qaida in the Indian Subcontinent (AQIS); and Hurras al-Din (HaD)— which operate across the Middle East, Africa, and South Asia. Each affiliate threaten local and regional stability and have the potential to support or sponsor attacks against U.S. interests.

In coming years, it is likely that ISIS will attempt to direct, enable, and inspire attacks in the U.S. and against U.S. interests across the globe unilaterally and with the assistance of its branches, networks, and cells. ISIS possibly will shift some of its resources to bolster its external branches in Afghanistan, Libya, the Sinai, and Yemen as the group increasingly relies on its global network to conduct attacks in its name. In addition, ISIS probably will seek to establish a foothold in other ungoverned or under-governed spaces with populations that are sympathetic to the Salafi jihadist ideology.



The Economist

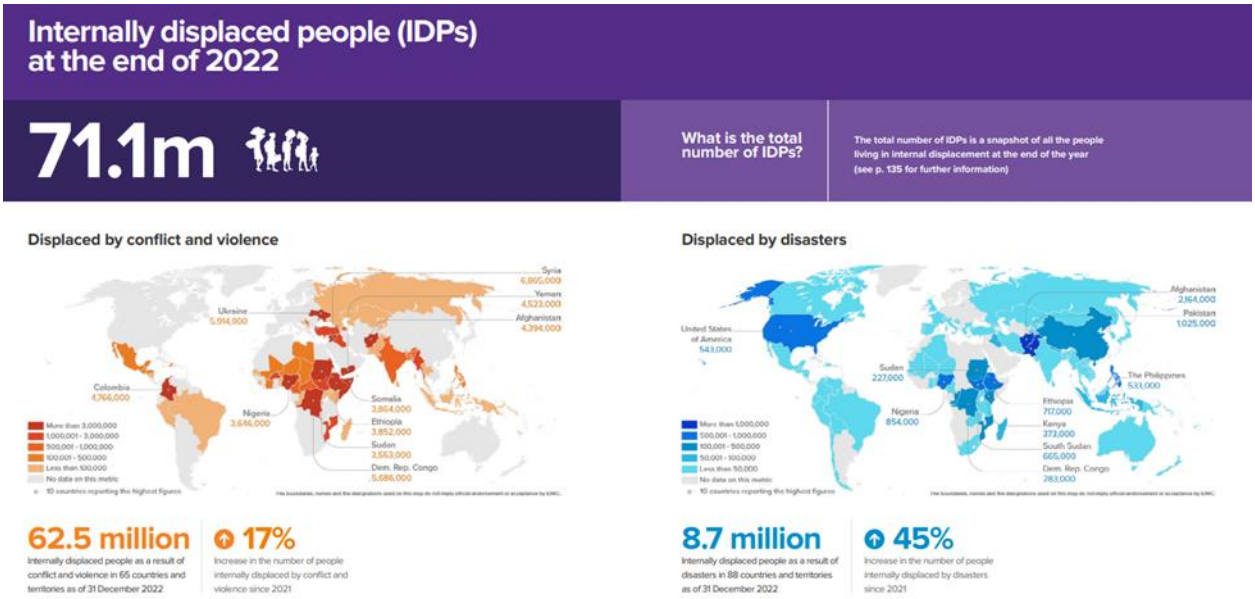
International focus on ISIS probably is alleviating some counterterrorism pressure on al-Qaida, enabling the group to recover from leadership losses. Al-Qaida and ISIS share the same underlying ideology, but it is important to note that ISIS advocates the immediate creation of a caliphate and implementation of its ideology, while al-Qaida is more willing to compromise with local groups over ideology and the implementation of its version of Islamic law. Both groups have found ideological traction with subsets of populations alienated by deep-rooted socioeconomic issues, as well as real and perceived grievances.

VIII. Protracted Conflicts Result in Record Displacement

Conflicts are driving record population displacement, resource shortages, demographic shifts, and unplanned expenditures of economic and military assets in countries of strategic interest to the U.S. At the end of 2022, 71.1 million people were living in internal displacement worldwide, a 20% increase and the highest number ever recorded. The number of displacements associated with conflict and violence nearly doubled to 28.3 million. The

war in Ukraine triggered 16.9 million displacements in 2022, the highest figure ever recorded for any country. The Israel-Gaza conflict is estimated to have caused 1.7 million displacements.

Many countries with large refugee populations are closing their borders because public service provisions and government finances are being overtaxed, living standards are declining, labor markets are narrowing, and they perceive a lack of burden sharing by countries outside the region. The longer conflicts continue, the more likely regional ethno-sectarian grievances will become entrenched, leading to additional instability and sowing the seeds of new military and security challenges.



Sources:

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