



# Unit IV – The US Navy

## Chapter 1 - Navy Ships

### Section 2 – Types of Ships



# What You Will Learn to Do

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Identify the ships of the Navy and understand how they fulfill the Navy mission

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# Objectives

1. List types of Navy ships



# Types of Navy Ships - Overview

All Navy ships are either **combatant** or **auxiliary** ships.

The combatant ships vary greatly in type and function...



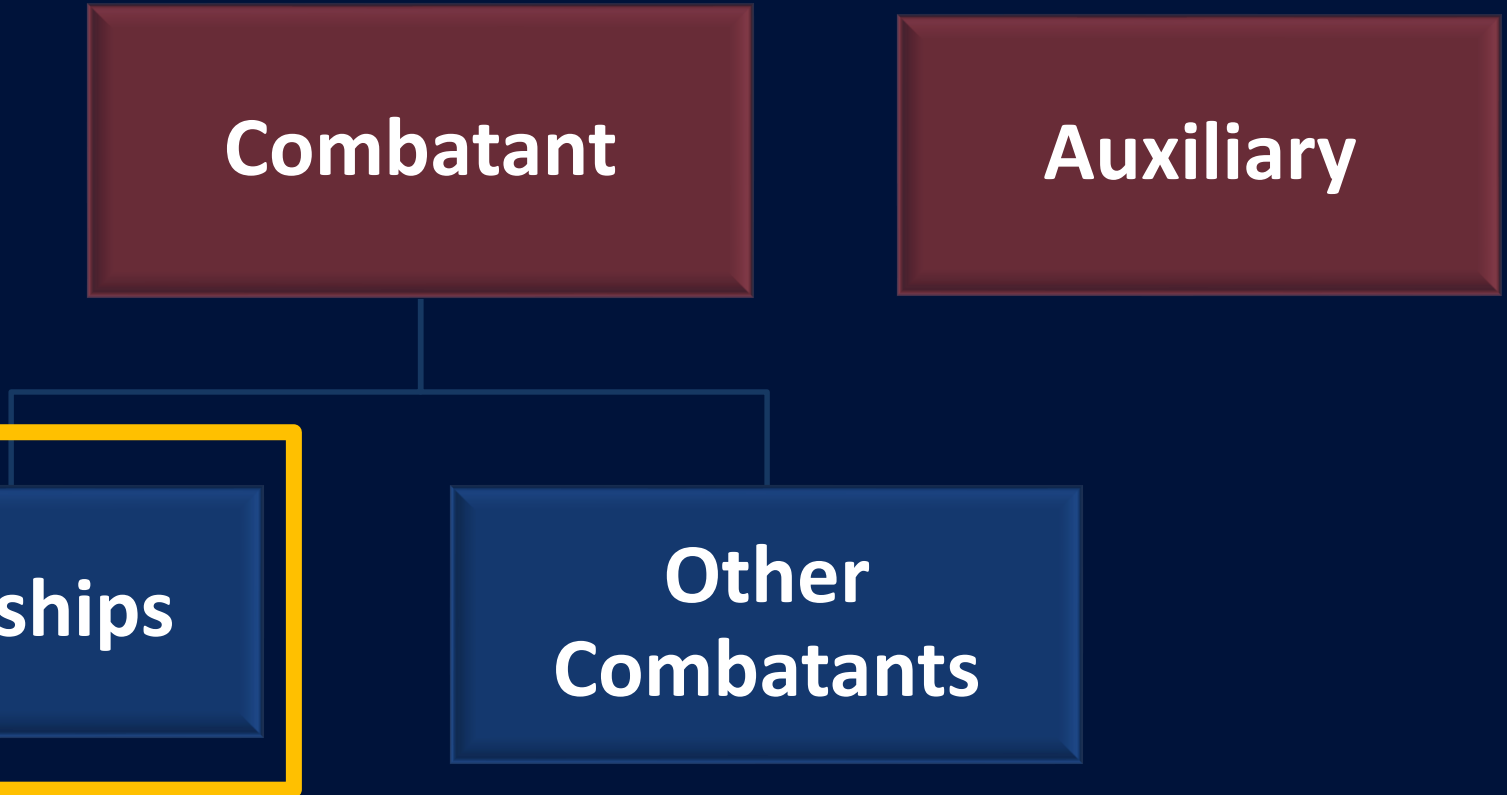
# Navy Ships Shown by Category

**Combatant**

**Auxiliary**

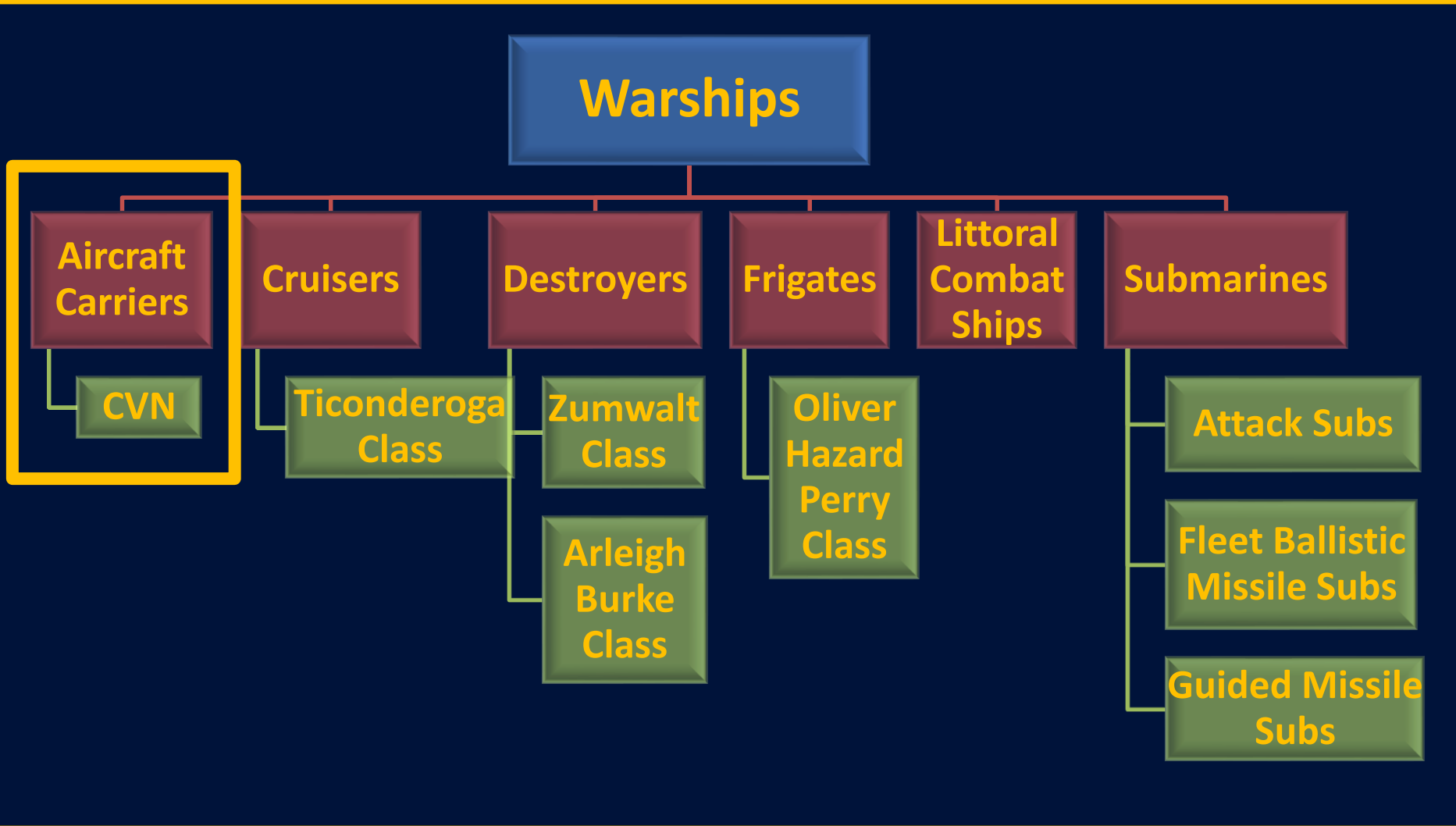
**Warships**

**Other  
Combatants**





# Navy Ships Shown by Category





# Warships – Aircraft Carriers

The (CVNs) are multipurpose carriers with nuclear propulsion.





# Warships – Aircraft Carriers

An aircraft carrier is at the center of carrier a battle group.

It's intended to carry, launch, retrieve and handle combat aircraft quickly and effectively.







# Warships – Aircraft Carriers

Video on  
aircraft  
carrier





# Nimitz-class CVNs

## USS *Harry S. Truman* (CVN 75)



Length: 1,090 + feet

Displacement: 97,000 tons

Crew: Approximately 6,000 with Air Wing

Can operate 85-90 aircraft almost indefinitely



# Nimitz-class CVNs

CVNs have an angled flight deck to launch and recover planes simultaneously.

Hydraulic elevators rapidly bring planes from the hanger deck to the flight deck.





# Nimitz-class CVNs

In addition to their aircraft, CVNs carry various defensive systems, such as the 20mm Phalanx Close-In Weapon System or (CIWS).







# Nimitz-class CVNs

The modern aircraft carrier can carry out sustained operations due to its:

- Logistical capabilities of power plant and engines
- Parts and munitions compartments
- Variety of repair shops
- Fast fueling equipment
- Massive size
- Speed of 30 + knots
- Sea-keeping ability





# Nimitz-class CVNs

In times of crisis, one of the first questions is “Where are the carriers?”



Carriers support and operate aircraft that can carry out attacks on air, surface, subsurface, and shore targets that threaten free use of the sea.

They can also engage in sustained operations in support of other forces, such as search-and rescue, amphibious assaults, or troops already ashore.



# Navy Ships Shown by Category

## Warships

Aircraft  
Carriers

CVN

Cruisers

Ticonderoga  
Class

Destroyers

Zumwalt  
Class

Arleigh  
Burke  
Class

Frigates

Oliver  
Hazard  
Perry  
Class

Littoral  
Combat  
Ships

Submarines

Attack Subs

Fleet Ballistic  
Missile Subs

Guided Missile  
Subs



# Warships - Cruisers

**Cruisers** (CGs) are the modern Navy's primary and largest surface warfare ships in the fleet.

They cruise at over 30 knots, and act as escorts for surface forces and fire support for amphibious operations.







# Warships - Cruisers

Cruisers are designed to carry the **Tomahawk cruise missile** in addition to two 5 inch gun mountings and dual-CIWSs to provide a heavy and sustained course of fire in the event of attack.



*USS Port Royal (CG73)*



*USS Ticonderoga (CG 47)*



# Warships - Cruisers

## USS *Normandy*(CG60)



Length: 567 feet

Displacement: 10,000 tons

Speed: 30+ knots (34.5+ mph)

Crew: 364 (24 officers, 340 enlisted)

Using the Aegis system, **Ticonderoga (CG 47) class cruisers** can accurately deliver a payload on target from 200 miles away.





# Warships - Cruisers

Video on  
Cruisers  
and  
Missiles





# Warships - Cruisers

Cruisers are multi-mission surface combatants capable of:



- Anti-Air Warfare (AAW)
- Anti-Submarine Warfare (ASW)
- Anti-Surface Warfare (ASUW)
- Expeditionary Strike Groups (ESG)
- Amphibious force
- Reconnaissance
- Flagship for surface-action groups



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Fleet Ballistic  
Missile Subs

Guided Missile  
Subs





# Warships - Destroyers

**Destroyers** (DDs) are known as the “greyhounds of the sea” for their speed. They were developed by the navies of the world to counter the speed of torpedo boats.





# Warships - Destroyers

Destroyers (DDs) and Guided-Missile Destroyers (DDGs) are multi purpose; fast with a variety of armament but lightly armored with displacement of 8,300 - 9,000 tons.



Their real advantages are **speed** and **mobility**.



# Warships - Destroyers

Destroyers are undersea, air-air, and air-surface warfare capable and the largest group of workhorses for the Navy.

There are two classes of destroyers:

- Zumwalt Class
- Arleigh Burke Class







# Arleigh Burke-Class Destroyers

- **Most powerful surface combatant ever put to sea**
- First commissioned in 1991
- Powered by four 33,600 hp gas turbine engines turning two controlled-pitch propellers
- Displacement: 9,033 tons
- Aegis Combat System; integrates sensors and weapons systems to track ships, aircraft and missiles hundreds of miles away and engage when needed
- 56 Tomahawk cruise missiles



# Zumwalt – Class Destroyers

- Have a low radar profile; an integrated power system, which can send electricity to the electric drive motors and weapons.
- Despite being 40% larger than an Arleigh Burk-class destroyer the radar signature is more like a fishing boat.





# Navy Ships Shown by Category

## Warships

Aircraft Carriers

CVN

Cruisers

Ticonderoga Class

Destroyers

Zumwalt Class

Arleigh Burke Class

Frigates

Oliver Hazard Perry Class

Littoral Combat Ships

Submarines

Attack Subs

Fleet Ballistic Missile Subs

Guided Missile Subs



# Warships - Frigates

**Frigates** (FFGs) are the Navy's term for ships used for open-ocean escort and patrol. They are similar to destroyers, with these differences:

- Slower
- Single propeller
- Less armament
- Shallower depth



*USS Ingraham (FFG61)*



# Warships - Frigates

Frigates protect shipping interests for amphibious forces, supply groups, and merchant convoys.

They are also used in anti-submarine warfare and coastal defense.



*USS Curtis (FFG38)*



# Warships - Frigates

Different classes of frigates carry different armaments.

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## **Oliver Hazard Perry-class FFGs**

Carry guns, missiles, Phalanx(CIWS), MK-32 triple-torpedo tubes, .50 caliber machine guns

## **Guided missile FFGs**

Have anti-air warfare(AAW) capabilities and are tough and durable

Lack multi-mission capabilities, so are being phased out to be replaced with new DDX type destroyer



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Missile Subs

Guided Missile  
Subs





# Warships – Littoral Combat Ships

The littoral combat ship (LCS) is a class of small surface vessels intended for operations in the “littoral zone” (close to shore).



USS Independence

LCS designs have been compared to corvettes of the US Navy.





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# Warships - Submarines

The Navy's submarine force is entirely **nuclear**.

This is far superior to older diesel submarines, which had to frequently surface for oxygen and to recharge battery power.

Nuclear subs operate a nuclear reactor and air-filtration system to sustain ship power and life support, making them the most sustainable submarine fleet in the world





# Warships - Submarines



USS Jimmy Carter (SSN 23)

The first SSN, *Nautilus*, traveled 62,000 miles without refueling. *Triton* went 83 days submerged while traveling around the globe.

Today's submarines are even more self-sustaining with:

- Air-revitalization equipment changing the air
- Oxygen extraction from outside seawater



# Warships - Submarines

Video on  
submarines





# Warships - Submarines

There are currently three types of submarines in operation:

- Attack submarines (SSNs)
- Ballistic missile submarines (SSBNs)
- Guided missile submarines (SSGNs)

SSN



SSBN



SSGN





# Attack Submarines

## Missions:

- To locate and destroy enemy ships and submarines
- To provide Intelligence collection to special forces
- To supply delivery to rescue and recon
- Act as primary defense against enemy submarine attack





# Attack Submarines

The driving force in US submarine development was and still is the concept of **technical superiority** over numerical superiority.

While many developing countries have submarines able to evade surface systems, and use similar methods to counter threat...



**“the best way to find a sub is with another sub.”**



# Attack Submarines

In 1989, construction began on the Seawolf class of submarines, intended to be the premier anti-ballistic missile submarine defense platform.

Initial sea trials took place in 1996, but production dropped off with the fall of the Soviet Union and the end of the Cold War.







# Attack Submarines

## *Seawolf-class strengths:*

- Superior sound suppression and detection systems
- Advanced sensors
- Ability to seek and destroy submarine and surface ships
- Ability to fire cruise missiles in support of surface forces



Length: 353 feet (SSN 21 and 22) or

Displacement: 8,060 tons surfaced;

9,150 tons submerged

Speed: 25+ knots (28+ mph)

Armament: Tomahawk missiles, Mk 48

torpedoes, advanced mobile mines



# Attack Submarines

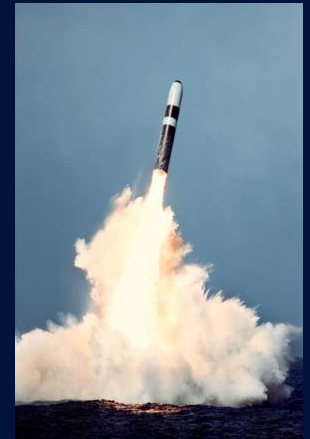
Video on  
Seawolf  
submarine





# Fleet Ballistic Missile Submarines

- Nuclear powered and armed with long-range strategic missiles
- Sole mission since inception in 1960:
  - Strategic deterrence, as our nation's most survivable nuclear strike platform
- Most destructive weapons platform in the US arsenal
  - A single SSBN could deliver several nuclear payloads on an enemy, even if all other US airborne and land-based missiles were destroyed





# Fleet Ballistic Missile Submarines

## *Ohio-class submarines:*

- Capable of carrying Trident missiles
- Providing sea-based leg of the triad of US strategic deterrent forces



Length: 560 feet / Beam: 42 feet  
Displacement: 18,750 tons  
submerged / Speed: 20+ knots  
Armament: 4 torpedo tubes with  
Mk 48 torpedoes, 24 multi-  
targetable Ship-Launched Ballistic  
Missiles (SLBMs)



# Guided Missile Submarines

- In 2002, Electric Boat received a contract for the conversion of four *Ohio*-class Trident subs.
- This created a unique submarine force that can
  - Independently destroy targets ashore, on the surface and beneath the waves
  - Function without use of surface ships, nuclear ordnance or the need to fully surface



*USS Florida*  
(SSGN728)





# Guided Missile Submarines

## *Virginia-class submarines:*

- A new attack submarine class
- Will fully support a new strategic concept
- Designed for dominance across a broad spectrum of missions as well as open ocean, “blue water” missions



Length: 377 feet / Beam: 34 feet  
Displacement: 7,800 tons submerged  
Speed: 25+ knots (28+ mph) submerged  
Armament: Tomahawk missiles, Mk 48 torpedoes, advanced mobile mines, and unmanned undersea vehicles





# Questions?

