THE PHILIPPINE NAVY

Learning Outcomes:

After the class discussion, the students are expected to:

- Enumerate the mission and role of the Modern Philippine Navy
- Develop an appreciation on the short history of the Philippine Navy during its infancy stage

Four-fold Mission:

1. National Defense
2. Security Operations
3. Deterrence
4. National Development

The Navy's Roles

The modern Navy has expanded its roles beyond the initial mandate to protect the country's shores. These roles include:

1. The Navy shall defend the territory from external aggression.
2. The Navy shall continue its role of securing the Philippine maritime areas from all forms of intrusions and encroachment, piracy and drug trafficking.
3. The Navy shall assist other government agencies in protecting our marine resources and environment.
4. The Navy shall continue to assist in the conduct of rescue and relief operations not only during accidents

at sea but even during natural calamities in land such as earthquakes, volcanic eruptions and floods.

5. The Navy shall continue assisting in national socio-economic development.
6. The Navy, as it acquires new and more potent assets, will be an effective instrument of government in fulfilling various security-related international commitments.

History

The Philippines had long been a seafaring nation. Early Filipino inhabitants came from across the seas - from Ancient China, Borneo and Malay Peninsula. For centuries, seafaring natives living along the coastal areas of the country have sailed across the uncharted waters of the surrounding seas in their frail little boats. The Filipino seafarers engaged in a very active trade and made regular voyages to neighboring countries in Southeast Asia and the Far East. During the Spanish regime, Filipino sailors have also been utilized by the Spaniards on their local expeditions and fights against their enemies.

As an island archipelago, the early Filipinos had realized that the Philippines is a maritime country. Its development and progress depended primarily on the sea and the sustaining trade and commerce not only with other countries but also with neighboring islands. The Filipino

nationalist fighting against Spanish domination were fully aware of this as they underscored it as vital factor in their struggle for independence. The destruction of the Spanish Navy became a major component of their revolutionary undertaking.

The Philippine Revolutionary Navy of 1898

The history of the Philippine Navy traces its early beginnings during the later part of the Philippine Revolution in 1898. General Emilio Aguinaldo, leader of the revolution, organized the Navy in June 23, 1898 as he proclaimed a Philippine revolutionary government. Captain Pascual Ledesma, a merchant marine ship captain, was appointed as the Director of the Navy assisted by another merchant, marine ship captain, Captain Angel Pabie. The Navy was placed under the Department of War headed by General Mariano Trias responsible for naval operations in support of the land forces and the merchant marine.

The Revolutionary Navy was initially composed of a small fleet of eight Spanish steam launches captured from the Spaniards. Their rich owners - Leon Apacible, Manuel Lopez and Gliceria Marella de Villavicencio, later donated five other vessels of greater tonnage, the TAALENO, BALAYAN, BULUSAN, TAAL and the PURISIMA CONCEPCION. The 900-ton inter-island steamer further reinforced the fleet, Compania de Filipinas (renamed Filipinas), steam launches purchased from China and other watercraft donated by wealthy patriots. Naval stations were later established in the ports of Aparri, Legaspi, Balayan, Calapan and San Roque, Cavite that served as ships' home bases.

The Navy of General Aguinaldo's revolutionary government bore the brunt of assisting ground operations and transporting Filipino troops and war materials to the different islands of the archipelago in support of the revolutionary cause.

When the revolution spread throughout southern, central and northern Luzon, TAALENO and DON FRANCISCO were the first naval boats used in the campaign. These boats led the first offensive along the Batangas line that contributed to the surrender of the Spaniards in Batangas. In one of its support operations, the naval ship, FILIPINAS, almost figured in an encounter with the German cruiser, Irene, which tried to protect the Spanish garrison in Subic. Successive victories of the revolutionaries in the North led further campaigns towards the south. Using Torrijos, Marinduque as a staging area for amphibious operations, the marines and reconnaissance divers trained by General Ananias Diokno were sent to liberate Bicol and the Visayas.

The Off Shore Patrol

During the Philippine Commonwealth under President Manuel L Quezon, the Filipino Navy existed as adjunct to the United States Armed Forces. Filipinos served the US military service. With the creation of a separate Philippine armed force, a naval organization was formed as a seagoing arm of the Philippine Army. On 09 February 1939, the Off Shore Patrol (OSP) was organized with headquarters located at Muelle Del Codo, Port

Area, and Manila. It was headed by 1LT JOSE V ANDRADA, a graduate of the US Naval Academy in Annapolis, Maryland.

Initially, the OSP was assigned with three US Navy Motor Torpedo Boats and christened as follows:

1. Luzon (Q-111) 83-footer
2. Abra (Q-112) - 65-footer
3. Agusan (Q-113) - 65-footer

On 09 January 1941, the OSP Training School was organized with CAPT MARCELO S CASTELO OSP PA as its first Commandant. It offered courses in torpedoes, depth charges, communications, seamanship, engineering and operations of gasoline engines in consonance with the characteristics and capabilities of the Q-Boats. During World War II, however, Japanese planes bombed the OSP Headquarters on 23 December 1941. The Base Commander burned the base before Japanese troops entered Manila.

The Philippine Naval Patrol

The Off Shore Patrol was reactivated on 01 October 1945, just after World War II. The OSP Training School was transferred to Cavite Naval Shipyard and renamed OSP Training Center; The OSP was further expanded and became a major unit of the Philippine Armed Forces. On 04 October 1947, the OSP was renamed Philippine Naval Patrol (PNP) during the time of President Manuel Roxas. On 05 January 1951, the PNP was further designated as the Philippine Navy.

THE PN ORGANIZATION

Learning Outcomes:

After the class discussion, the learners are expected to:

- Enumerate the two major type commands of the Philippine Navy
- Identify the different support commands and special units of the Philippine Navy
- Distinguish the different operational commands and their areas of responsibility

I. Major Type Commands

a. **Philippine Fleet**

Home of the sailors and fighting ships. As a type command, the Fleet has major units, namely: the Ready Force, Patrol Force, Service Force and Fleet Support Group and special units, Naval Air Group, Naval Special Operations Group and Fleet Training Group.

b. **Philippine Marines**

Rapid-deployment, amphibious strike force-small but highly mobile, hard-hitting and superbly trained.

Its mission is to provide combined arms units in the conduct of amphibious warfare and such other operations in order to accomplish the mission of the Philippine Navy.

II. Naval Support Units

a**. Naval Intelligence & Security Force (NISF)** - This unit conducts intelligence and counter-intelligence operations in support of naval operations. The NISF gathers and processes data into usable information for use by operating units of the Philippine Navy Coast Watch Stations. These stations are established at vital choke points in the country.

b. **. Naval Logistics Center (NLC)** - began as the OSP supply center under the finance branch of the Philippine Army for supporting the few vessels turned over by the US Navy. In October 1947, the supply center was elevated to a regular division. This paved the way to the establishment in 1950 of the general supply depot. In 1967, the Naval Supply Center was placed under control of the Commander, Naval Shore Establishment, later called the Fleet Support Command

and the Naval Support Command. Now, it is renamed the Naval Logistics Center.

c. **The Philippine Navy Finance Center (PNFC) -** provides prompt and timely financial services essential to administration and operation of the Philippine Navy. PNFC operates the PN payroll system and processes all financial claims.

d. **Manila and Cavite Naval Hospital (MNH and CNH)** -These medical facilities provide hospital and out-patient services to PN personnel and dependents.

e**. Bonifacio Naval Station (BNS)** - replicates the functions of Naval Base Cavite for Philippine Navy units located in Fort Bonifacio in Makati City.

f. **Headquarters & Headquarters Service Group**

III. Naval Support Commands

a. **The Naval Sea Systems Command (NSSC) -** the biggest industrial complex of the AFP, located at Ft. San Felipe in Cavite City with responsibilities for the operation and maintenance of shipyards, command and control system, combat system and research and development of technology for the Navy.

b. **Naval Reserve Command (NAVRESCOM)** - tasked to organize train, equip and administer the Naval reservists *(which includes the Naval Reserve Corps Training*

Units midshipmen and midshipwomen) in order to have a base for expansion of the regular force in the event of war, invasion, rebellion or disasters and calamities. The NAVRESCOM is presently based at Cabildo Street, Intramuros, Manila.

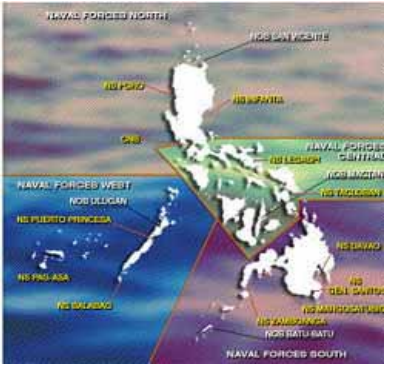
c. **Naval Education & Training Command. (NETC)** - provides basic and advanced training to PN Personnel.

d. **Naval Construction Brigade (NCBde)** - Tasked to conduct naval construction and combat engineering operations, this unit is more popularly known as the "SeaBees". It's a specialized unit which performs construction and rehabilitation of piers, harbors and beach facilities, harbor clearing and salvage works, construction of roads, bridges and other vital infrastructures.

e. **Naval Base Cavite (NBC)** - provides support services to the Philippine Navy and other AFP tenant units in the base complex, such as refueling, re-watering, shore power connections, berthing, ferry services, tugboat assistance, sludge disposal services and housing.

f. **Naval Communication, Electronics Information Services Center (NCEISC)** - Provides communication services, operates and maintains other computer systems in order to develop a systematic and scientific approach to timely decision making process through an effective and efficient Electronic Data Processing – oriented system.

IV. Naval Operational Commands



Tasked to conduct naval operations in order to protect and defend the country's maritime areas within its Area of Responsibility. They have capabilities for conducting territorial defense operations, internal security operations and such other activities to support naval administration, logistics, service support and community development in their area of responsibility.

1. **NAVAL FORCES NORTH** - responsible for the naval defense and security in Northern Luzon
2. **NAVAL FORCES SOUTH** - responsible for the naval defense and security in Western Mindanao
3. **NAVAL FORCES WEST** - responsible for the naval defense and security in Western Philippines and Kalayaan Island Group.
4. **NAVAL FORCES CENTRAL** - responsible for the naval defense and security in the Visayas
5. **NAVAL FORCES SOUTHERN LUZON** - responsible for the naval defense and security in the Southern Luzon Area.
6. **NAVAL FORCES EASTERN MINDANAO** - responsible for the naval defense and security in the Eastern part of Mindanao.

Headquarters Philippine Navy (HPN)

A. **The Flag Officer In Command, PN (FOIC, PN)** - He is the highest Naval Officer in the Navy or the commanding General of the Navy. He executes the command functions in relation to naval strategy, tactics and operations and act as the immediate advisor to the chief of Staff, AFP. He is responsible for the planning development and execution of Naval Defense in the country.

B. **The Vice Commander (Vice COM**) - He is the Deputy Commander of the Navy. He assists the FOIC and performs his functions in his absence.

C. **Chief of Naval Staff (CNS)** - He exercises general supervision over the central staff and special and technical staff and perform other duties that the FOIC, PN may assign.

D. **Personal Staff** - They assist in personal or in specific functional areas, Personal staff officers whom the FOIC selects to serve as his aides and those individual staff offices whose activities he desires to coordinate and administer directly.

1. NPIO – Naval Public Information Office
2. CMCPO – Command Master Chief Petty Officer
3. Flag Sec – Flag Secretary
4. TNIG - The Naval Inspector General
5. OESPA – Office for Ethical Standards & Public Accountability
6. TNIA – The Naval Internal Auditor
7. SJA – Staff Judge Advocate
8. OSS – Office for Special Studies

E. **Central Staff –** they are the functional staff and assist and advise the FOIC pertaining to their area of expertise.

1. N1 - for personnel and administrative
2. N2 - for intelligence
3. N3 - for operations, training
4. N4 - for logistics
5. N5 - for plans
6. N6 - for weapons, communication, electronics information system (WCEIS)
7. N7 – for civil military operations and environmental affairs
8. N8 - for retirees and reservist affairs
9. N9 - for yards and repair

F. Special and Technical Staff

1. TNCH – The Naval Chief Chaplain
2. TNJA - The Naval Judge Advocate
3. TCSN - The Chief Surgeon Navy
4. TCNN – The Chief Nurse Navy
5. TNDS – The Naval Dental Surgeon Navy
6. TNCE – The Naval Chief Engineer
7. NMO - Naval Modernization Office
8. NRMO – Naval Resources Management Office
9. NMFO - Naval Management and Fiscal Office
10. TNA – The Naval Adjutant
11. TNSSO – The Naval Special Service Office
12. TNH – The Naval Historian
13. TNPM – The Naval Provost Marshal
14. PNREMO – PN Real Estate Management Office
15. NASO – Naval Accounting Offce

THE PHILIPPINE FLEET

Learning Outcomes:

After the class discussion, the learners are expected to:

- Memorize the mission the Philippine Fleet
- Enumerate the different functions of the Fleet

The Philippine Fleet's mission is to prepare and operate assigned forces for naval operations in order to support the PN accomplish its mission.

Its general objectives are to optimize operational readiness and combat effectiveness of equipment and personnel and effectively manage available resources through efficient internal administration.

The specific functions of the Fleet are:

1). To provide assets that will conduct continuous naval patrol, sea control and amphibious operations in order to defend the sovereignty of the country, its territorial waters and EEZ from foreign aggression, intrusion and exploitation.

2). To assist in the conduct of national security operations and ensure safety and security of coastal areas.

3). To employ assets to assist in the conduct of disaster response, particularly maritime search and rescue and patrol, sealift and other type of operations as directed.

SHIP'S ORGANIZATION

Learning Outcomes:

After the class discussion, the students are expected to:

- Enumerate the four general departments of a typical PN ship
- Know the functions of the Commanding Officer and Executive Officer of a PN ship

General

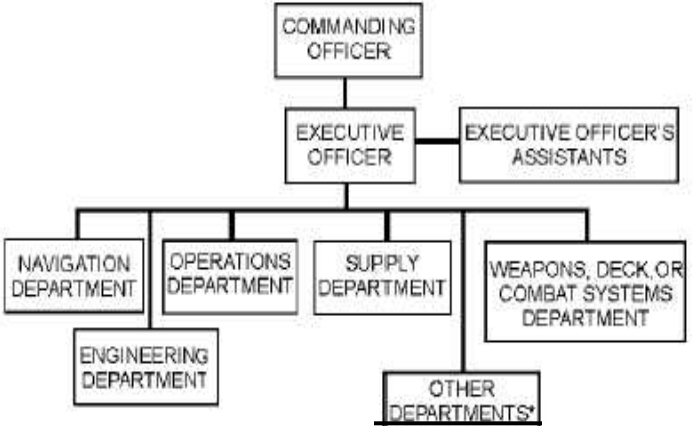
The function of a naval ship is primarily to fight or to provide support to naval combat operations. If a ship is to function well in combat, the crew must be organized in such a way that it can be effectively directed and controlled to accomplish its mission. Hence, the requirements for battle are the basis for organization of naval ships.

The ship's organization is essentially a war organization developed on the theory that ships operating in peacetime can be expanded quickly to a wartime operating condition if it becomes necessary. It consists of functional groupings, such as navigation, operations, engineering and damage control, weapons and supply, called departments, headed by key officers who are designated Department Heads. These key officers perform their administrative functions as well as carry out the requirements for battle as necessitated by the tactical situation.

Ship's Administrative Organization

Basically, a PN ship is organized into four (4) departments, namely: **Operations, Engineering and Damage**

Control, Deck and Gunnery and Mess and Supply. Large combatant or other type ships may have separate Weapons, Repair or Supply Departments and ships particularly hospital ships may have an organic or attached Medical Department. See Figure below for a typical shipboard administrative organization.



a. **Commanding Officer**. All commissioned ships of the Philippine Navy operates under the authority of a Commanding Officer (CO), a line officer who, by virtue of his training and experience, is assigned by the FOIC, PN with a responsibility to command the ship. No matter what his rank is, he is called "Captain." The CO is charge with the absolute

responsibility for the safety, well-being and efficient operation of his command. He must exert every effort to maintain his command in a high state of operational readiness. His specific duties, responsibilities and authority are set forth in the AFP and PN regulations and the customs and traditions of the naval service. Within the limits as prescribed by laws and regulations, he may delegate authority to his subordinates, but such delegation in no way relieves him of his responsibility of command.

b. **Executive Officer** - The Executive Officer (EXO), often called "XO", is a line officer next in rank to the CO who is designated second in command of the ship. In the absence of the CO, he becomes the acting CO and he must be prepared to assume command. The EXO is the direct representative of the Commanding Officer and all orders issued by him shall have the same force and effect as though issued by the commanding officer.

He is primarily responsible for the administration of the ship and personnel, overall training, daily routine, and the maintenance of good order and discipline in the entire command. In the performance of his duties, he shall conform to and effectuate the policies and orders of the commanding officer and shall keep him informed of all significant matters pertaining to the command. The EXO reports directly to the Commanding Officer. The entire department heads report to him for all matters pertaining to the internal administration of the command.

c. **Chief Master-At-Arms (CMAA)** - The Chief Master-At-Arms enforces AFP and PN regulations, ship's regulations and other directives; assists the OOD in the

execution of ship's routine including responsibility for crew turning out promptly at all hands evolutions and reveille, supervising the control of standing lights, maintaining silence after taps, handling of liberty parties leaving the ship or returning aboard and in the processing of all newly reported personnel; supervises extra duty men and men performing punishments, the rigging and unrigging for church, movies and other special functions and the preparation of delinquency reports; maintains a lucky bag; furnishes escorts for the CO, EXO and visitors as directed; renders 8 o'clock reports if not designated to BMW or DPOW; and, ensures the safety and welfare of prisoners at the brig, frequent inspections of the ship, that ship's regulations and instructions pertaining visitors are adhered to and the presence of masters-at-arms at all mess lines, pay lines, store lines, captain's masts and courts-martial, at scenes of emergencies and other official gathering of personnel.

d. **Heads of Departments**. The head of a department functions as the direct representative of the Commanding Officer in all matters that pertain to the department and as such, he shall conform to the policies and comply with the order of the commanding officer. He shall not disable the equipment for which he is responsible when such action may affect adversely the safety or operation of the command, without permission of the Commanding Officer.

The Different Heads of Department

1) **Navigator -** The Navigator is the head of the Navigation Department who is normally the most senior of the watch officer. In ships without a Navigation Department,

navigation becomes a function of the Executive Officer and as such, he is designated as the Navigator. The Navigator is responsible to the Commanding Officer for the safe navigation and piloting of the ship. He shall receive all orders relating to his navigational duties directly from the CO and shall make reports in connection therewith directly to him.

2) **Operations Officer -** The Operations Officer is the head of the Operations Department. The Operations Officer is responsible under the Commanding Officer for the collection, evaluation and dissemination of combat and operational information required for the assigned mission and tasks of the ship.

The following officers, if assigned or designated, whose duties are indicated, reports to the Operations Officer:

a) **Combat Information Center (CIC) Officer** - He is responsible for the collection and dissemination of combat and operational information; operation, care and maintenance of equipment CIC equipment except those assigned to other officers; training of CIC personnel; and, control of aircraft, when assigned.

b) **Communications Officer** - He is responsible for supervising the receipt, transmission and routing of ship's messages; operation and maintenance of visual and electronic communications equipment; proper handling and control of all registered publications; and, the maintenance of communications security which includes crypto, transmission and physical security.

3) **Engineering Officer -** The Engineering Officer is the head of the Engineering Department. This department includes the function of damage control and repair and may have officers assigned or designated to perform such functions.

The Engineering Officer is responsible to the Commanding Officer for the operation, care and maintenance of all propulsion and auxiliary equipment; the control of damage; and the accomplishment of repairs.

The following officers, if assigned or designated, whose duties are indicated, reports to the Engineering Officer:

a) **Damage Control Officer** - He is responsible for prevention and control of damage including control of stability, list and trim; placing the ship in proper condition of closure as ordered by the CO; coordination and supervision of compartment tests for tightness; maintenance of bills for control of stability; posting of correct compartment check-off list; training of ship's personnel in damage control including fire fighting, and emergency repairs; and, operation, care and maintenance of auxiliary machinery piping and drainage systems, shop repair facilities and the repair of hull and boats.

b) **Repair Officer** - He is responsible for planning, scheduling, accomplishing and inspecting works to ensure its timely and satisfactory completion; establishment of an adequate job order system; and, preparation of estimated funds required for work to be performed.

4) **Weapons Officer**. In large combatant ships where there is a preponderance of weapons systems, the Weapons Officer is the head of the Weapons Department. This department includes the functions of anti-submarine warfare (ASW), gunnery and deck seamanship and normally have officers assigned or designated to perform the functions. In smaller ships, however, there is only a Deck and Gunnery Department headed by a First Lieutenant and Gunnery Officer who perform the functions of deck seamanship and gunnery. If the ship is armed with ASW weapons, an ASW Officer is designated who reports to the Operations Officer for the employment of such weapons. The Weapons Officer is responsible to the Commanding Officer for the supervision and direction of the employment of the ordnance equipment and the equipment associated with seamanship.

The following officers, if assigned or designated, whose duties are indicated, report to the Weapons Officer or to the Commanding Officer in the case of the Deck and Gunnery Officer for ships with only a Deck and Gunnery Department or to the Operations Officer in the case of the ASW Officer for ships armed with ASW weapons:

a) **Gunnery Officer** - He is responsible for the conduct of gunfire; operation, care and maintenance of all guns including designation and fire control equipment and associated ordnance; and, training of gunnery personnel and gun crews.

b) **Deck Officer (First Lieutenant)** - He is responsible for the preservation and cleanliness of the exterior of the ship except that part assigned to another department;

operation, care and maintenance of the ground tackle, mooring lines and related equipment, ship's boats, except boat machinery, and of the life rafts and other lifesaving equipment; towing gears and equipment, rigging, gangways, fueling and provisioning at sea gears and other deck appurtenances and equipment related to deck seamanship including those involved in loading and unloading operations; planning and execution of deck seamanship evolutions and operations including anchoring, mooring, fueling and replenishment at sea; supervising loading, unloading and stowage of cargo; and, supervising operation of paint, sail and boatswain's lockers as well as garbage disposal.

If no other officer is assigned or designated, the Deck and Gunnery Officer performs the following collateral duties:

1) Cargo Officer
2) Special Service Officer
2) Athletic Officer

5) Mess and Supply Officer. The Mess and Supply Officer is the head of the Mess and Supply Department. In large ships, the Mess and Supply Department maybe organized separately and would have officers assigned to perform each function. The Mess and Supply Officer is responsible to the Commanding Officer for procuring, receiving, storing, issuing, shipping, transferring, accounting and while in his custody, maintaining all stores, provisions and equipment of the command.

PN Enlisted Rating Structure

Learning Outcomes:

After the class discussion, the students are expected to:

- Distinguish the different rating of the PN Enlisted Personnel
- Know by heart the different functions of these ratings

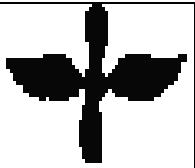
BM  Crossed anchors	**BM - Boatswain's Mate** BMs train and supervise personnel in all activities relating to marlinspike, deck and boat seamanship, and the maintenance of the ship's external structure and deck equipment. They act as petty officers in charge of small craft and may perform duties as master-at arms, serve in or take charge of gun crews and damage control parties.
GM  Crossed cannons	**GM - Gunner's Mate** Navy GMs operate, maintain and repair all gunnery equipment, guided-missile launching systems, rocket launchers, guns, gun mounts, turrets, projectors and associated equipment. They make detailed casualty analyses and repairs of electrical, electronic, hydraulic and mechanical systems. They also test and inspect ammunition, missiles and their ordnance components. GMs train and supervise personnel in the handling and stowage of ammunition, missiles and assigned ordnance equipment.

QM  Ship's helm	**QM - Quartermaster** QMs assist the navigator and officer of the deck (OOD), steer the ship, take radar bearings and ranges, make depth soundings and celestial observations, plot courses and command small craft. Additionally, they maintain charts, navigational aids and oceanographic publications and records for the ship's log. reports. They maintain files and service records.
ET  Helium atom	**ET - Electronics Technician** ETs are responsible for electronic equipment used to send and receive messages, detect enemy planes and ships, and determine target distances. They must maintain, repair, calibrate, tune and adjust all electronic equipment used for communications, detection and tracking, recognition and identification, navigation and electronic countermeasures.
DK  Key on check	**DK - Disbursing Clerk** DKs maintain the financial records of Navy personnel. They prepare payrolls, determine transportation entitlements, compute travel allowances and process claims for reimbursement of travel expenses. DKs also process vouchers for receiving and spending public money and ensure accounting data is accurate. They maintain fiscal records and prepare financial reports and returns.

SK  Crossed keys	**SK - Storekeeper** SKs are the Navy's supply clerks. They see that needed supplies are available including everything from clothing and machine parts to forms and food. SKs have duties as civilian warehousemen, purchasing agents, stock clerks and supervisors, retail sales clerks, store managers, inventory clerks, buyers, parts clerks, bookkeepers and even fork lift operators.
YN  Crossed quills	**YN - Yeoman** YNs perform secretarial and clerical work. They deal with visitors, telephone calls and incoming mail. YNs organize files and operate copy machines and order and distribute supplies. They write and type business and social letters, notices, directives, forms and reports. They maintain files and service records.
DT  "D" on caduceus	**DT - Dental Technician** Navy dentists, like many civilian ones, are assisted by dental technicians. DTs have a variety of "chairside," laboratory and administrative duties. Some are qualified in making and fitting artificial teeth; dental X-ray techniques; clinical laboratory required.

HM  Caduceus	**HM - Hospital Corpsman** HMs assist medical professionals in providing health care to service people and their families. They serve as pharmacists, medical technicians, food service personnel, nurse's aids, physician's or dentist's assistants, battlefield medics, X-ray technicians and more. An HM's work falls into several categories: first aid and minor surgery, patient transportation, patient care, prescriptions and laboratory work, food service inspections and clerical duties.
EM  Globe with longitude, latitude lines	**EM - Electrician's Mate** The operation and repair of a ship's or station's electrical power plant and electrical equipment is the responsibility of EMs. They also maintain and repair power and lighting circuits, distribution switchboards, generators, motors and other electrical equipment.
EN  Gear	**EN - Engineman** Internal combustion engines, diesel or gasoline, must be kept in good order. This is the responsibility of ENs. They also maintain refrigeration, air-conditioning, distilling-plant engines and compressors.

 Micrometer and gear	**MR - Machinery Repairman** MRs are skilled machine tool operators. They make replacement parts and repair or overhaul a ship's engine auxiliary equipment, such as evaporators, air compressors and pumps. They repair deck equipment, including winches and hoists, condensers and heat exchange devices. Shipboard MRs frequently operate main propulsion machinery, besides performing machine shop and repair duties
 Carpenter's square on plumb bob	**BU - Builder** Navy builders are like civilian construction workers. They are skilled carpenters, plasterers, roofers, cement finishers, asphalt workers, masons, painters, bricklayers, sawmill operators or cabinetmakers. BUs build and repair all types of structures including: piers, bridges, towers, underwater installations, schools, offices, houses and other buildings.
	**PH - Photographer's Mate** PHs photograph actual and simulated battle operations and make photo records of historic and newsworthy events for the Navy. They expose and process light-sensitive negatives and positives, maintain cameras, related equipment, photo files and records and perform other photographic services for the Navy.



AD - Aviation Machinist's Mate

Usually, ADs are assigned to billets concerned with maintaining turbo-jet aircraft engines and associated equipment or to any one of several types of aircraft maintenance activities. ADs maintain, service, adjust and replace aircraft engines and accessories, as well as perform the duties of flight engineers.

Other ratings found in the navy

MU

RM

Four sparks

DC

Crossed fire ax and maul

DP

Quill on gear

EO

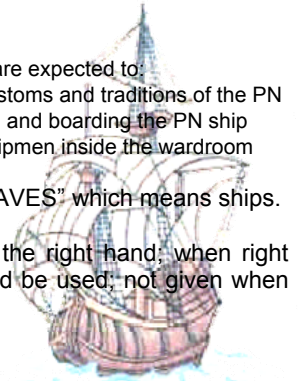
Bulldozer

NAVAL CUSTOMS AND TRADITIONS

Learning Outcomes:

After the class discussion, the students are expected to:

- Know by heart the different customs and traditions of the PN
- Know the procedure of leaving and boarding the PN ship
- Know the guidelines for midshipmen inside the wardroom



NAVY – came from a Latin word "NAVES" which means ships.

1. **Salute:** normally given with the right hand; when right hand is encumbered, left hand could be used; not given when uncovered

2. **Honors To The Flag**

Colors – paying honors to the flag; hoisted in the morning and lowered in the afternoon.

a. For ships not underway and Shore Commands:

- 0800H – Morning Colors
- Sunset – Evening Colors

Procedures:

- Five minutes before colors, first call is sounded (announce as "first call to colors)
- 0800H or time of sunset – "attention to colors" is sounded and passed - National ensign is raised/ lowered at the flag gaff.
- At the completion of music – "carry on" is passed
- Jack flag is also raised/lowered

b. For ships underway: National ensign is raised/lowered at the mast; the jack flag is not raised.

Shifting colors:

When ship leaves the pier or weighs her anchor, shifts the National Ensign from the flag gaff to mast. The national Ensign is then called steaming ensign. Jack Flag is lowered at the same time.

When is it done*? When the last mooring line leaves the pier or when the anchor is aweigh, a long blast of whistle is sounded that signal for the shifting.*

When ship arrives at the pier or anchors: Shifts the National from mast to flag gaff. Jack flag is raised at the same time.

When is it done? *When the first mooring line reaches the pier or when the anchor is dropped, a long blast of whistle is sounded that signal for the shifting.*

b) **Honors Rendered by Merchant Ships (Dipping**):

Merchant ships salute navy ships by dipping their ensign. Navy Ships respond by lowering the steaming ensign to half-mast for a few seconds then close it up. After which, the merchant ship may raise again her flag.

c) **Passing Honors**: honors exchange between two ships or boats when comes close aboard:

1) Distance : Ships: 600 yds Boats: 400 yds
2) Who renders ?

Ships/boats who's Commanding Officer/Boat Captain is junior in rank renders passing honors to Commanding Officer/Boat Captain Senior in rank.

3) Procedure:

a. Attention is sounded at the "Junior" ship/boat using the following:

- 1 long Blast – attention to starboard (the ship/boat to be honored is at the starboard)
- 2 long Blasts – attention to port (the ship/boat to be honored is at the portside)

b. Ship/boat being honored does the same after such

c. Carry on – 3 long blasts rendered by ship/boat being honored

d. End of salute of ship rendering honors – 2 long blasts

3. OTHER HONORS:

- The arrival/departure of the ship's Captain is usually announced at the PA system. He is always piped when he boards or leaves the ship
- Nobody is allowed to sit in the Captain's Chair at the bridge unless offered.
- In boarding the ship, Junior goes first. In disembarking, senior goes first.
- Navy Officers eat in the place called "Wardroom"
- Side boys are detailed in the quarter deck to welcome a distinguished visitor:

CAPT AND BELOW – 4 side boys
COMMO TO REAR ADMIRAL – 6 side boys
VICE ADMIRAL UP – 8 side boys

4. BRIDGE CUSTOMS:

Bridge is the center of operations of the ship while underway. If CO is present, appropriate greetings must be rendered.

5. PROCEDURE IN ENTERING/LEAVING THE SHIP:

a. At the gangway – if the National ensign is flying, turn aft before getting aboard and salute the ensign. Upon boarding, before striking the ship's deck, render another salute to the OOD or his/her representative by saying "Request permission to come aboard Sir." For disembarking, it is done in a reverse manner.

b. When boarding in-group – only the one in charge shall render salute.

6. CROSSING THE NEST:

Usually done when your ship is in nest with other ships:

Boarding: Salute the colors and OOD of inboard ship
Say "Request Permission to cross" until you reach your own ship

Leaving: Salute your OOD and the National Ensign
Say "Request Permission to cross" until you reach your own ship

- Do not salute the OOD and the National Ensign of ships between your ships and the ship alongside the pier
- Salute your OOD and the National Ensign of the ship alongside the pier.

7. HALF MASTING – tribute to the dead

- when raising, the flag is first closed up then lowered at half mast
- when lowering, closed up first then lowered.

8. BASIC RULE FOR BOATS AND VEHICLES:
"SENIORS ARE LAST IN, FIRST OUT"

9. DIVINE SERVICES:

- Church pennant is flown at the mast
- All persons within the area are required to uncover including watches

10. SICK BAY:

Uncover when entering

11. WARDROOM ETIQUETTE:

These are some guidelines for midshipmen when invited to mess in the wardroom by officers in authority:

1. The wardroom is each officer's seagoing home – a home in which they should be proud to entertain family and friends. Whatever the event, it is a place where members should conduct themselves with the ordinary rules of propriety,

common sense, and good manners in observing the rules of etiquette founded on customs and traditions.

2. Always remove your cover upon entering the wardroom. Never place it on the table; it should be stowed in an appropriate location. If unsure, ask.

3. Be punctual for all meals. All officers should remain standing until all guests and the seniors of the mess are seated. If an officer is late for a meal, an apology should be made to the senior officer of the table by stating " Request permission to join the mess, sir." Never choose a place at the wardroom table until you are sure of seating arrangements.

4. Never appear at the wardroom out of uniform. (Civilian clothes may be worn in wardroom only when passing through. Do not lounge around onboard in civilian clothes.

5. Do not be boisterous or noisy in the wardroom. It is the home of all officers, and their rights and privileges should be respected.

6. Consideration of others is one of the basic elements of a lady or gentleman. Show consideration for your fellow officers by:

a. Moderating the sound of audiovisual devices to minimize interference with others. These devices should not be turned on during meal hours unless authorized by the Commanding Officer.

b. When playing cards, etc., by choosing a table location that will not interfere with others.

c. There is no objection to dropping into wardroom for coffee, but do not make a practice of loitering there during working hours.

d. The mess tables must be cleared at least thirty (30) minutes before meals in order to permit the mess personnel to set up on time.

e. Magazines and papers should be carefully handled, not left adrift, damaged, hoarded or removed where they have been placed for availability to all members.

f. When you are finished with your coffee, except meals, remove the cup and saucer from the table to pantry shelf or sideboard if there are no mess personnel available. This is a little thing that will help improve the general appearance of the wardroom.

g. Remember that obscenity and vulgarity do not belong in an officer's conversation at any time.

7. A junior officer pursues the correct course by being the best listener in the mess; the senior officer, by setting the example in manners, consideration, and intelligent conversation. Unkind and unfavorable comments about officers and opinions about seniors are not appropriate.

8. When guests are present, especially seated alongside of you, their presence should be recognized. Engaging them in polite conversation, if the opportunity presents itself, will be appreciated by the guests and their host.

9. Your feet belong on the deck and not on the furniture. If you wish to sleep, you should retire to your stateroom.

10. Stay clear of the wardroom immediately after breakfast, usually the period of general cleaning.

11. When leaving the wardroom, leave the place you have been occupying neat and orderly whether you found it

that way or not. These will be appreciated by those who follow you.

12. Office work should not be performed in the wardroom unless absolutely necessary.

13. When authorized to view movies in the wardroom, midshipmen are to stay in the rear. They are to remain seated only if all officers have seats.

14. Impeccable table manners are the mark of a lady or gentleman. Ensure that your table manners are above reproach at all times.

15. Always rise when the commanding officer, squadron commander or a flag officer enters the wardroom, unless in the process of eating- then follow lead of the senior member of the wardroom.

OFFICERS AND CPO'S COUNTRY:

Includes staterooms, mess hall for CPO's, wardroom and living spaces:

- EP are not allowed to enter unless on official business.
- NOT used as passageways or shortcuts

AT THE MESS HALL:

Uncover when entering

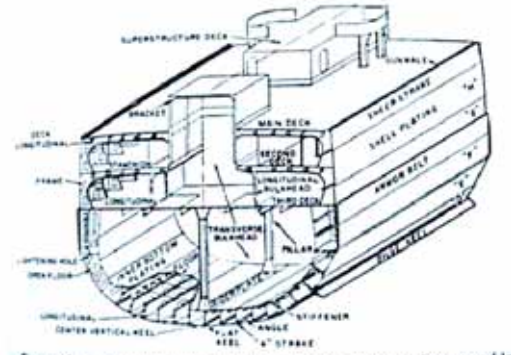


Figure 12–1 A ship's deck is strengthened by transverse beams and longitudinal girders. This is the hull structure of a cruiser.

NAVAL TERMS AND PHRASEOLOGIES

Learning Outcomes:

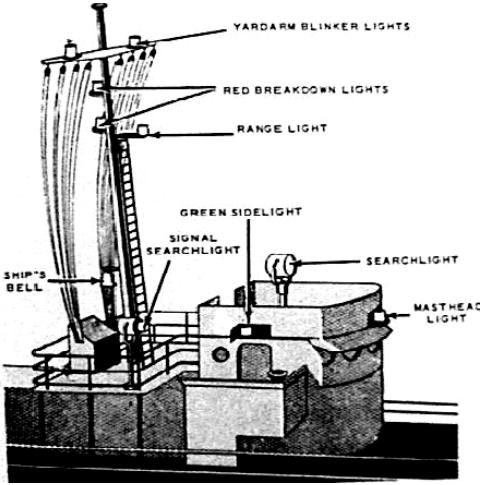
After the class discussion, the students are expected to:

- Know the different definition of nautical terms commonly used in the Philippine Navy aboard ship

A. Naval terms (denotes direction and location)

1. Abaft- behind or further aft, astern or toward the stern.
2. Abeam- at right angle to the centerline of the ship
3. Aft-in- near or toward the stern
4. Alongside- on side a pier or berth
5. Amidship- the middle portion of the ship
6. Astern- toward the stern, an object or vessel that is abaft another vessel or object
7. Bridge- raised platform from which a ship is navigated
8. Bow- the forward part of the ship
9. Broadside- at right angle to the fore and aft line of the ship
10. Centerline- imaginary line running from the ships bow to stern: divides the ship lengthwise vertically
11. Dead ahead- directly ahead of the ship s bow in line of the centerline
12. Dead astern- directly aft of the ship in line of the centerline
13. Draft- depth of the water from the surface waterline to the ships keel
14. Fantail- main deck section in the after part of the ship
15. Freeboard- height of ships side from the waterline to the main deck

16. Leeward- direction away from the wind
17. Port Bow- bearing 315 degrees relative to the bow of the ship
18. Portside- left hand side of the ship facing forward
19. Starboard Bow- bearing 45 degrees relative to the bow
20. Starboardside- right hand side of the ship facing forward
21. Waterline- the line which makes the surface with the hull
22. Windward- direction toward the wind



B. Naval Terms (denotes nomenclature of fittings)

1. Bitts- strong iron post on a ships deck for working of fastening lines almost invariably in pairs.
2. Bulkhead- one of the vertical wall like structures enclosing a compartment
3. Brig – a prison on a ship or a shore base
4. Bollard- wooden or iron post on a pier or wharf for securing mooring lines
5. Cleat- a small deck fittings or metal with horns used for securing lines
6. Deck- on a ship, its corresponds to a floor in a building

7. Compartment- it corresponds to a room in a building
8. Overhead- equivalent to a ceiling of a building ashore
9. Head- compartment of a ship having toilet facilities
10. Superstructure- all equipment and fittings except armament extending above the hull
11. Mast- upright spar supporting signal halyard and antennas in a naval ship
12. Wardroom- officers mess and lounge room aboard ship
13. Yardarm- a spar attached to the of a mast running athwart ship
14. Rudder- flat movable structure and vertically attached to the stern used for steering the ship
15. Lazarette- storage compartment of the stern below deck
16. Galley- the ship kitchen
17. Cabin- the captains living quarter

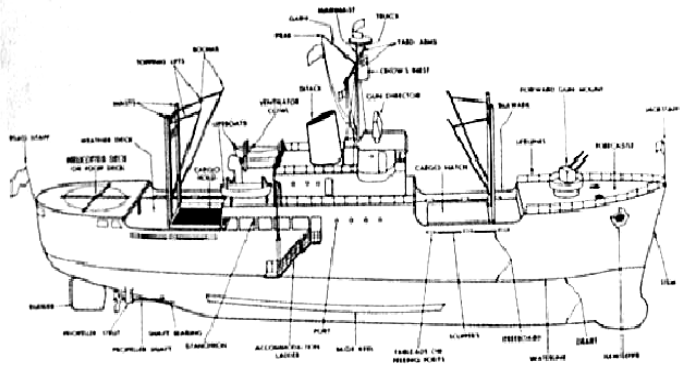
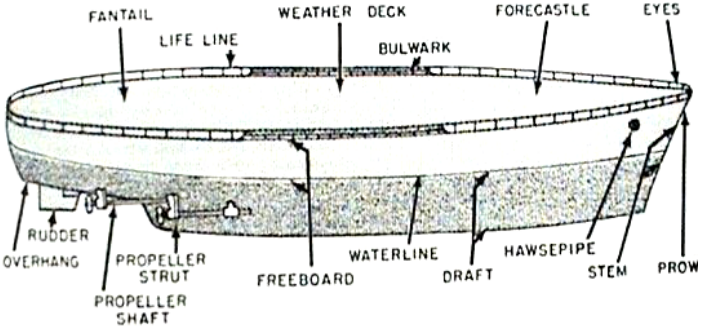


Figure 13-6. These are the principal parts of a typical auxiliary ship



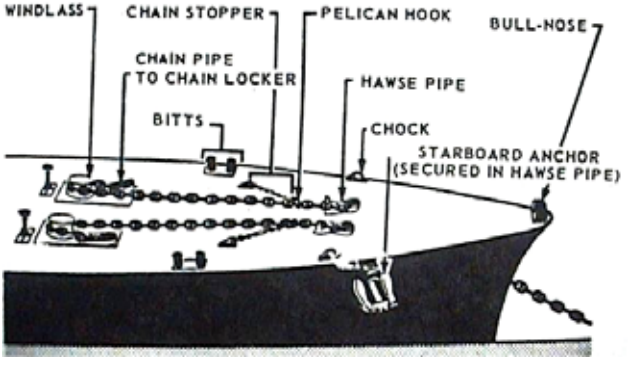
Parts of a ship's hull.

C. Other Naval Terms

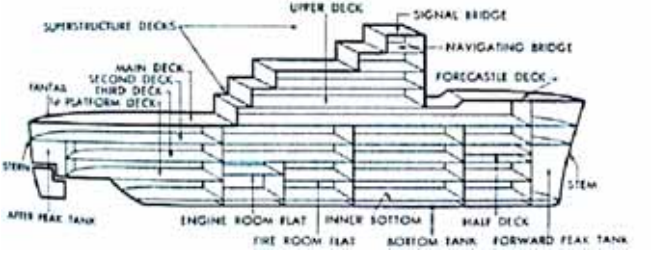
1. Adrift- loose from mooring or out of place
2. Aye-Aye- a reply to an order to indicate that it is understood and will be carried out
3. Billet allotted sleeping place: also a man s location in the ships organization
4. Avast- a command to desist for whatever is being done
5. Black Gang- slang for the engineering force
6. Bear Hand- cooperation among the ship s company
7. All Hands- entire ship's company
8. Binnacle list - sick list: list of men excuse for duty
9. Boot- slang for new recruit
10. Coxswain- enlisted men in charge of a boat
11. Crossing the line- crossing the earth equator
12. Dolphin- cluster of piles at the corner or edge of a pier

13. Dead in the water- said of a ship when she has neither headway nor steerway in the water
14. Fathom- six (6) feet unit of length
15. Field day- general cleaning day aboard ship, usually a day before inspection
16. Flag Officer- an officer with the rank of COMMODORE and above
17. Gangway- opening in the bulwarks: order to stand a while and get out of way
18. General Quarters- battle station for all hands
19. Gig- ships boat designated for the use of the Commanding Officer
20. Java- slang for coffee time
21. Jump ship- slang for leaving the ship without authority/permission
22. Irish pennant – untidy loose end of a line
23. Lucky bag- stowage of article found adrift
24. Landlubbers- seaman s term for one that has never been at sea
25. Passageway- corridor
26. Pipe down- an order to keep silent
27. Pass the word- to repeat an order or information to the crew
28. Pollywog- a person who has never cross the equator
29. Sea dog- an old sailor
30. Sea lawyer- an enlisted men who likes to argue; usually one who thinks he can twist the regulations and standing order to favor his personal inclinations
31. Shell back – a man who has cross the equator and has been initiated
32. Skag- slang for cigarettes
33. Ship-shape- term for a neat and orderly condition

34. Sickbay- ships hospital or dispensary
35. Skippy- slang for undershirt
36. Secure- to make fast; to tie; an order given in completion of a drill or exercise meaning to withdraw from drill station and duties



Decks are named and numbered by their position and function on a ship.



NAMING AND CODE DESIGNATION OF PN VESSELS

Learning Outcomes:

After the class discussion, the students are expected to:

- Know how name and designation of ships is being done
- Know the procedure of assigning tail numbers to aircraft of the PN

A. Naming of PN Ships and Aircraft

The Philippine Navy has a system of naming and/or assigning codes to all of its ships, small craft and aircraft. The assignment of names and designation of codes are decided at Headquarters, Philippine Navy. Commissioned vessels likewise carry the word "BAPOR NG REPUBLIKA NG PILIPINAS OR (BRP)" before the name to identify it as a ship owned by the government of the Republic of the Philippines. For purposes of visual or voice radio communication, the code designation of ships maybe used for initial call to establish communication.

1. **Naming of PN Commissioned Ship**

In general, only commissioned ships are given names while those categorized as small craft, boats and service craft are only given code designations. The name is etched on a nameplate displayed on each side of the superstructure as well as marked at the stern. The following is the guide in naming PN ships:

Type of Ship	-	Prospective Names
Aircraft Carriers	-	The three geographical division of the Philippines
Surface Combatants	-	National heroes, historical figures, past heads of State
Submarines	-	Philippine native fishes
Amphibious Warfare Ships	-	Philippine provinces and cities
Mine Warfare Ships	-	Historical military sites and places
Auxiliary Ships	-	Philippine tribes and ethnic groupings
Medical Ships	-	Native term related to ship's mission
Service Ships	-	Philippine peaks
POL/Water Tankers	-	Major rivers and the smaller islands not classified as province or sub-province

7. **PN Ships and Small Craft Code Designation**

All PN ships, small craft, boats and service craft are assigned code designation consisting of two letters followed by numbers. The first two letters are the type code designation and the class code designation and the numbers following is the bow number. Small craft and boats organic and assigned to bigger ships carry the serialized marking consisting of the mother unit's bow number followed by a dash (-) and the number assigned to the small craft. The bow number is marked conspicuously both at the bow and stern for a ship; at the bow for small craft, boats and service craft; and, at the tail assembly for aircraft.

8. **Assigning Tail Number to PN Aircraft**

All aircraft in the inventory of the PN are assigned numbers in accordance with the order of their acquisition consisting of three digits. The first digit refers to the code number for the type of aircraft and the second and third digit refer to the number based on the order of their acquisition using the **system of base 5**. The fixed-wing aircraft are assigned **code number 3** while the rotary-wing aircraft are assigned **code number 4**. The assigned tail number is marked at the vertical fin assembly, centered horizontally. When referred to, the tail number is prefixed with the letter PN to identify it as an aircraft assigned to the Philippine Navy. As an example, the tail number PN304 refers to the fourth fixed-wing aircraft acquired belonging to the Philippine Navy. On the other hand, the tail number PN403 refers to the third rotary-wing aircraft acquired belonging to the Philippine Navy.

SHIP TYPE AND THEIR CHARACTERISTICS

Learning Outcomes: :

After the class discussion, the students are expected to:

- Know some of the different combatant vessels and samples of each
- Know the procedure of leaving and boarding the PN ship
- Know the guidelines for midshipmen inside the wardroom

A. COMBATANT VESSELS

1. **Warships** – primarily used for naval operations

a. Aircraft Carrier - a warship designed to deploy and recover aircraft—in effect acting as a sea-going airbase. Aircraft carriers thus allow a naval force to project air power great distances without having to depend on local bases for land-based aircraft.

General Characteristics :

Power Plant : Eight nuclear reactors, four shafts
Length, overall : 1,101 feet 2 inches (335.64 meters)
Flight Deck Width : 252 feet (75.6 meters)
Beam : 133 feet (39.9 meters)
Displacement : 89,600 tons (81,283.8 metric tons) full load
Speed : 30+ knots (34.5 miles per hour)
Aircraft : 85
Crew: Ship's Company : 3,350
Air Wing : 2,480
Armament : Two *Sea Sparrow* missile launchers,
Three *Phalanx* 20 mm CIWS mounts

b. Cruisers - A **cruiser** (From Dutch *Kruiser*, "something that crosses") is a large warship capable of engaging multiple targets simultaneously. Historically they were generally considered the smallest ships capable of independent operations

General Characteristics :

Propulsion system : four General Electric LM 2500 gas turbine engines
Propellers : two : Blades on each Propeller: five
Length : 567 feet (173 meters)
Beam : 55 feet (16.8 meters)
Draft : 34 feet (10.2 meters)
Displacement : approx. 9,600 tons full load
Speed : 30+ knots
Aircraft : two SH-60 *Sea Hawk* (LAMPS 3)
Armament : Two Mk 41 VLS for standard missiles, Tomahawk, ASROC; Mk 46 torpedoes, Harpoon missile launchers, Two Mk 45 5 inch / 54 caliber lightweight guns, Two Phalanx CIWS
Crew: 33 Officers, 27 Chief Petty Officers and approx. 340 Enlisted

c. Destroyers - In naval terminology, a **destroyer** (French: "contre-torpilleur", German: "Zerstörer", Spanish: "destructor", Italian: "cacciatorpediniere", Portuguese: "contra-torpedeiro", Russian: Esminets (Escadrenniy minonosets) - Эсминец (Эскадренный миноносец), Polish: "niszczyciel", Greek: "αντιτορπιλλικό") is a fast and maneuverable yet long-endurance warship intended to escort larger vessels in a fleet or battle group and defend them against smaller, short-range attackers (originally torpedo boats, later submarines and aircraft).

General Characteristics :

Length : “Short hull” 289' 5" x 283' 6"
Molded Beam : 35' 2"
Displacement : 1,140 long tons standard; 1,430 full load.
Draft: Light : 8' 3"; Deep: 11' 0"
Designed Complement: Officers, 15; Enlisted, 183.
Shaft Horsepower: 6,000
Speed: Trial: 21.5 knots; Service: 19.5 knots.
Screws: Two
Rudders: Two
Bridge: High, open.
Stacks: One
Initial Armament:

3 x 3-inch/50 dual purpose guns.
1 x quad 1.1-inch cannon
2 x single 40mm guns;
1 x quad 40mm gun.
8 x single 20mm guns.
3 x depth charge racks.
8 x depth charge projectors.
1 x Hedgehog.

d. Submarines - specialized watercraft that can operate underwater. Submarines, first widely used in World War I, are used by all major navies today, especially the American, Russian and British navies. Civilian submarines and submersibles are used for marine and freshwater science and for work at depths too great for human divers

General Characteristics :

Displacement: 18,700 tons submerged
Length: 560 feet
Beam: 42 feet
Draft: 36 feet
Speed: 25+ knots submerged
Depth: Greater than 800 feet
Complement: 154 (approx.)
Vertical Tubes: 24 TRIDENT C-4 (or D-5) Missile Tubes
Horizontal Tubes: Four 21-inch Tubes
Builder: General Dynamics, Electric Boat Corporation

2. **Amphibious Warfare Ships** – ships utilized for the forward deployment of infantry units of the navy

a. Amphibious Force Flagship (AGC) - a floating command post with advanced communications equipment and extensive combat information spaces to be used by the amphibious forces commander and landing force commander during large-scale operations.

General Characteristics :

Displacement: 12,550 tons
Length: 459 ft 2 in (140 m)
Beam: 63 ft (19.2 m)
Draft: 25 ft
Speed: 15 knots (31 km/h)
Complement: 664
Armament: 1 × 5 in (127 mm)/38 cal gun
8 × 40mm guns (4x2)

b. Attack Cargo ships (AKS) - designed to carry military cargo and landing craft, and to use the latter to land weapons, supplies, and Marines on enemy shores during amphibious operations.

General characteristics :
Displacement : 13,910 tons full
Length: 459 ft 2 in (140 m)
Beam: 63 ft (19.2 m)
Draft: 26 ft 4 in (8.0 m)
Speed: 16.5 knots (31 km/h)
Complement: 362
Armament: 1 × 5 in (127 mm)/.38 cal dual purpose gun mount,
4 × twin 40mm gun mounts

c. Dock Landing ship - designed to support amphibious operations. These amphibious assault ships transport and launch amphibious craft and vehicles with their crews and embarked personnel. They are mainly used to carry

Landing Craft Air Cushions (LCACs), as well as carrying United States Marines.

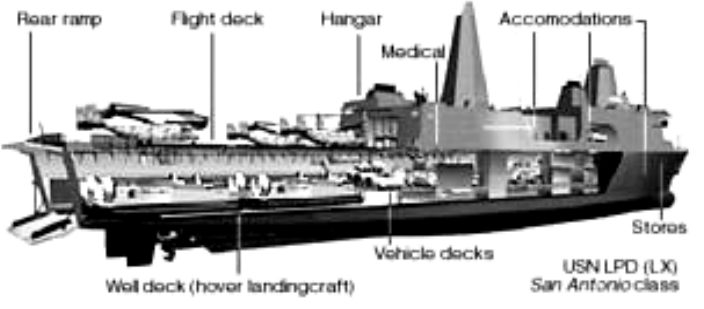
General characteristics :

Length: 609 feet (185.6 m)
Beam: 84 feet (25.26 m)
Fully Loaded Displacement: 16,708 tons (16,976 t)
Speed: 20+ knots
Armament:
- 1 or 2 Mk 49 RAM missile launchers
- 2 Mk 15 Vulcan Phalanx
- 2 Mk 38 25 mm guns
- 6 M2 .50 cal machine guns

Ship's Company: 22 officers, 391 enlisted
Military Lift: 402 standard, 102 additional for surge
Aircraft: Large helicopter platform aft, no hangar

d. Amphibious Transport Dock - (also called a landing platform dock or LPD) is an amphibious assault ship, a warship that embarks, transports, and lands elements of a

landing force for expeditionary warfare missions. The United States Navy operates several of this type of ship; their helicopters, vertical take-off and landing aircraft, and air-cushion or conventional landing craft support of the United States Marine Corps's "vertical envelopment" assault doctrine.



General characteristics :

Power plant: four sequentially turbocharged marine Colt-Pielstick diesel engines, two shafts
Length: 684 ft (208.5 m)
Beam: 105 ft (31.9 m)
Displacement: Approximately 24,900 tons (25,300 metric tons) full load
Speed: in excess of 22 knots (39 km/h)
Aircraft: Launch or land up to four CH-46 Sea Knight helicopters; or up to two MV-22 Osprey tilt rotor aircraft simultaneously with room to spot four MV-22s on deck and one in the hangar.
Complement:
Ship's Crew: 28 officers, 333 enlisted;
Landing Force: 66 officers, 633 enlisted
Armament: Two Bushmaster II 30 mm Close in Guns, fore and aft; two Rolling Airframe Missile launchers, fore and aft.
Landing Craft/Assault Vehicles: Two LCACs or one LCU; and 14 Advanced Amphibious Assault Vehicles.

e. Tank Landing Ship - created during World War II to support amphibious operations by carrying significant quantities of vehicles, cargo, and landing troops directly onto an unimproved shore

General characteristics :

Displacement:
unloaded: 1,780 t (1,600 t),
fully loaded: 3,880 t (3,500 t)

Length: 328 ft (100 m)
Beam: 50 ft (15 m)
Draft
unloaded: bow 2 ft 4 in (0.7 m); stern 7 ft 6 in (2.3 m)
loaded: bow 8 ft 2 in (2.5 m); stern 14 ft 1 in (4.3 m)
Speed: 12 knots (22 km/h)
Complement: 8 to 10 officers, 100 to 115 enlisted;
Troop Capacity: approx. 140 officers and enlisted;
Boats: 2-6 LCVP;
Armament:
1 x 3 in (76 mm) gun
6 x 40 mm gun
6 x 20 mm gun
2 x .50 cal (12.7 mm) machine guns,
4 x .30 cal (7.62 mm) machine guns
Propulsion: two General Motors 12-567 diesel engines, two shafts, twin rudders.

3. **Minesweeper** - a military ship designed to neutralize naval mines placed in the sea by enemies. The same ships are sometimes used for mine laying, equipped with mechanical or influence sweeps to detonate mines, produces much less noise than other ships and are often constructed with hulls of wood, plastic or low-magnetic steel.

General characteristics:

Displacement: 460 tons
Length: 56.8 m (186 ft)
Beam: 7.8 m (25.5 ft)
Draft: 2.2 m (6.9 ft)
Speed: 15 knots (28 km/h)
Complement: 45
Armament: 1 x 3"/50
4 x 40mm (2x2) 2 x k guns (2x1)
2 x depth charge tracks 6 x 20mm (6x1)

4. **Patrol Ships** -Used mainly to screen convoys, hunt down submarines and serve as general warning craft.

a. Destroyer Escort Ship (DE) - classification for a small, comparatively slower warship designed to be used to escort convoys of merchant marine ships, primarily of the United States Navy in WWII. It is usually employed primarily for anti-submarine warfare, but also some protection against aircraft and smaller attack vessels in this application.

General characteristics:

Displacement : 4,064 tons
Length: 438 ft
Beam: 47 ft
Draught: 25 ft
Propulsion: Steam Turbines
Speed: 27 knots
Complement: 243 officers and enlisted
Armament: ASROC, 1 5", 4 tt

b. Guided Missile Escort Ship (DEG) -

General characteristics:

Warship kind : Missile escort ship
Boat shape : Flat deck type
Standard displacement : 3,050 tons
Total length: 131.0m
Width : 13.4m
Draft : 4.2m
Main engine : Ishikawajima GE impulse type steam turbine x 2 basic 2 axial propulsion
Output : 60,000hp
Speed : 33 knots
Crew-member : 290
Anti-aircraft armament : Tartar / Standard anti-aircraft missile
Anti-submarine armament : ASROC 8 connected launchers
2 hedgehog anti-submarine rocket launchers
Torpedo armament : 2 - triple launchers
CIWS : 2 - 20 millimeter CIWS Mk15
Gun : 2 - 50 caliber 76 mm connected mount rapid fire guns

c. Destroyer Escort Radar picket ship (DER) - a radar-equipped ship used to increase the radar detection range around a force to protect it from surprise attack. Often several detached radar units encircle a force to provide increased cover in all directions.

General characteristics:

Evarts Class Destroyer Escort:
Displacement: 1,436 tons
Length: 289'5"
Beam: 35'1"
Draft: 11'10"
Speed: 21 knots
Armament: 3 3"/50, 1x2 40mm or 1 1.1", 9 20mm, 1 hedgehog, 2 deptch charge tracks, 8 "K" gun projectors
Complement: 15 officers, 183 enlisted
Diesel-electric drive with tandem-motor drive; 6,000 hp.
Built at Boston Navy Yard and commissioned 9 July 1943

d. Patrol Craft Coastal (Fast) (PCF)

General characteristics:

Length, Overall : 51.62 M (169 ft 4 1/4 in.)
Beam, Maximum : 7.62 m (25 feet)
Length at design waterline (DWL) : 48.00 m (157 ft 5 3/4 in.)
Draft above Bottom of Keel :2.14 m. (7.02 ft)
Displacement, Full Load : 315.32 tonnes (SW)
[310-34 L Tons (SW)]
Height of highest projection above baseline
to lowest projection below baseline : 17.77 m (58 ft 3 3/4 in.)
Superstructure Material : 5086 Aluminum
Fuel Capacity : 47,772 Liter (12,620 gallons)
Fresh Water Capacity : 4,701 liter (1,242 gallons)
Lubricating Oil : 568 liter (150 gallons)
Boats : (1) 20' RIB, (2) Combat Rubber Raiding Craft (Large)
Crew : 30 persons
Capacity (including crew) : 39 persons
Maximum Speed (sea state 1, 50% fuel capacity): 35 knots
Cruising Speed (sea state 3, 50% fuel capacity) : 25 knots

Minimum maneuvering speed : 3 knots
Seaworthiness : Survive through sea state 5
Minimum Range : 2000 nautical miles at most economical speed over 12 knots
Endurance : 10 days

5. AUXILIARY VESSELS

The Navy could start a war without auxiliary ships, but it couldn't fight very long without these vessels since the auxiliaries provide the material and services which keep the fleet and its advanced base operational.

Example:

a. Destroyer Tender
b. Repair Ship (AR) Hospital Ship (AH)
c. Salvage ship (ARS) Submarine Ship (AH)

6. SERVICE CRAFT

The navy service craft come in an even greater variety of sizes and functions than the auxiliaries. Once called yard and distinct craft, most of them work around harbors and navy yards

MARLINESPIKE SEAMANSHIP

Learning Outcomes:

After the class discussion, the students are expected to:

- Know what is marlinspike seamanship
- Know the different kinds of ropes and their stowage

Marlinespike Seamanship is the art of handling and working all kinds of fiber and wire rope. It includes every variety of knotting, splicing, serving, and fancy work.

- Use line for tying up during mooring and docking and for rigging aloft or over the side during painting details.
- Use wire rope during replenishment of supplies and for highline transfers. These are only a few of the jobs that require to use line or wire rope; there are many more.

1. ROPE

- Rope is manufactured from wire, fiber, and combinations of the two. Fiber rope–or line, as it is commonly called–is fashioned from natural or synthetic fibers.
- Rope, a general term, can be applied to both fiber rope and wire rope. In the Navy, sailors refer to fiber rope as line, whereas they refer to wire rope as rope, wire rope, or just wire. More clearly defined, a line is a piece of rope, either fiber or synthetic, that is in use or has been cut for a specific purpose, such as a lifeline, heaving line, or lead line.

1.1 CONSTRUCTION OF LINE

- Line currently used in the Navy may be three-strandine, braided, or plaited. In three-strand line, fibers

are twisted into yarns or threads, the yarns are twisted in the opposite direction into strands, and the strands are twisted in the first direction, making line. Taking the process further, lines are twisted into cable. Line can have various numbers of strands, and the direction the strands are twisted determines the lay of the line. That is, if the strands are twisted to the right, the line is said to be right-laid.

- ***Four-strand line*** is right-laid strands around a center core. Each strand is aramid fibers laid into parallel yarns left laid helically around the strand core with a braided helical of alternating aramid and polyester yarns.
- ***Braided lines*** have certain advantages over twisted ropes. They will not kink nor will they flex open to admit dirt or abrasives. The construction of some braids, however, makes it impossible to inspect the inner yarns for damage. The more common braided lines are hollow braided, stuffer braided, solid braided, and double braided lines.
- ***Hollow braided lines*** usually have an even number of parallel, tapelike groups of small yarns braided into a hollow, tubelike cord. This type of construction in cotton formerly was used for signal halyards–a purpose now served largely by three-strand and double braided nylon. Other uses are parachute shroud lines and shot lines for line-throwing guns.
- ***Stuffer braided lines*** are manufactured in a similar manner except that the braid is formed around a highly twisted yarn core, which rounds out and hardens the line. This type of construction in cotton is used for sash cord (heaving lines).
- ***Solid-braided lines*** are fashioned in various ways. One familiar construction is that used for leadlines, taffrail log lines, and the like. This braided line is of large yarns,

either single or plied, tightly braided to form a hard, relatively stiff line that will not kink, snag, or swell in water.

➢ ***Single braided line*** consists of 12 strands in a twill pattern, where one strand of one direction of rotation about the axis of rope passes over two strands of the opposite direction and then passes under the next two strands of the opposite direction. Single braided line is used for mooring lines and towing hawsers.

➢ ***Double braided line*** is two hollow braided lines, one inside the other. The core is made of large, single yarns in a slack braid. The cover is also made of large, single yarns but in a tight braid that compresses and holds the core. Double braided line is manufactured only from synthetics, and about 50 percent of the strength is in the core. It is used for mooring lines, towing hawsers, signal halyards, dressing lines, and many other purposes.

➢ ***Plaited line*** is made of eight strands–four right-twisted and four left-twisted. The strands are paired and worked like a four-strand braid.

1.2 USE AND CARE OF LINE

➢ Following are some pointers on the use and care of fiber line for you to remember:

- Coil right-laid line right-handed or clockwise. Flake down braided and plaited line.
- Keep line from touching stays, guys, or other standing rigging.
- When surging line around bitts, take off enough turns so the line does not jerk but surges smoothly.

- If line becomes chafed or damaged, cut and splice. A good splice is safer than a damaged section. However, do not cut a line without your supervisor's permission.
- Do not lubricate the line.
- Whip all line ends.
- Inspect natural fiber line frequently for deterioration. Open the lay and inspect the fibers. White, powdery residue indicates internal wear.
- Dragging a line over sharp or rough objects cuts or breaks the outer fibers. When line is dragged on the ground, other particles are picked up and eventually work into the line, cutting the inner strands.
- Natural fiber line exposed to the atmosphere deteriorates about 30 percent in 2 years from weathering alone. Natural fiber line received from supply that is 3 years old should be returned to supply noting uneconomical to use.

2. SMALL STUFF

Line 1 1/2 inches or less in circumference is called small stuff. Its size specification is governed by the number of yarns it contains (called threads in this instance).

2.1 SIZE OF SMALL STUFF

To find the size of a piece of small stuff, open a strand, count the number of threads it has, and multiply this result by 3 for three-strand stuff. The largest small stuff is 24-thread, with three strands each containing eight yarns.

2.2 USE OF SMALL STUFF

Round line is three-strand, right-laid tarred hemp is used for seizing and servings on ships where neatness is required.

Sail twine is small stuff laid up right-handed by machine, like regular line, but it is not much larger than fishing line is used for servings when a fancier job than can be done with marline is desired.

Cod line is the light, white line formerly used in hammock clews (lines for suspending a hammock) is used for decorative purposes.

2.3 STOWING SMALL STUFF

Coils of natural fiber line should always be stowed on shelves or platforms clear of the deck.

Arrange the coils of small stuff along a shelf according to its size.

The most commonly used sizes of small stuff should be put on reels; then you will not have to worry about somebody fouling up a partially used coil.

Coils of large line should be stowed with their proper side up for opening.

Whenever possible, wet line should be dried thoroughly before stowing.

3. SYNTHETIC FIBER LINES

Aramid, nylon, polyester, polypropylene, and polyethylene, in the descending order of strength are the synthetic fibers used to make line.

3.1 SECURING ENDS

Never leave the end of a line dangling loose without a whipping to prevent it from unlaying. The end of line will begin to unlay of its own accord. To prevent fraying, you should put a temporary plain whipping on with anything, even a rope yarn, as shown in figure 3-6.

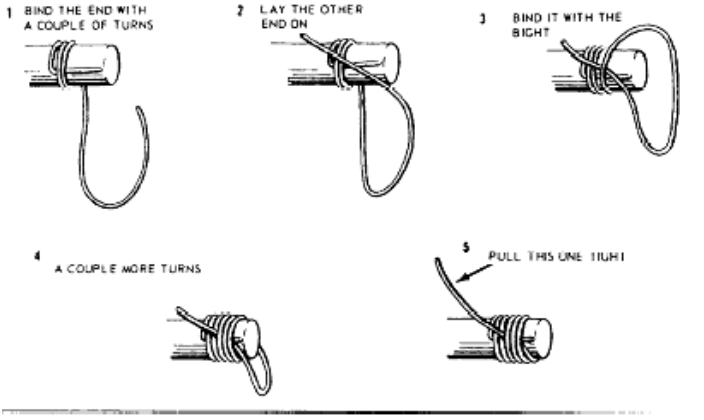


Figure 3-6.–Plain whipping a line.

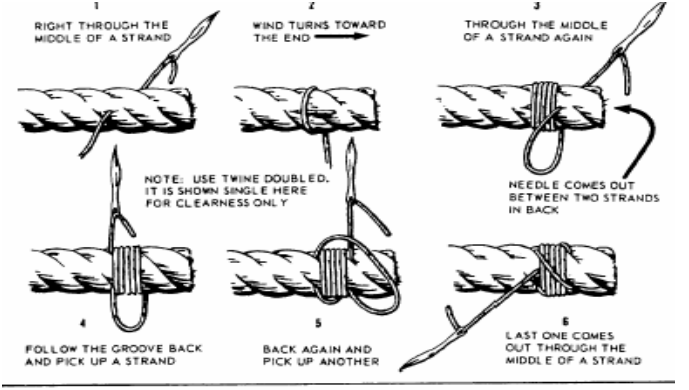


Figure 3-7.–Palm and needle whipping.

4. FAIRLEADS, KINKS AND TWISTS

If a line does not lead fairly to a winch or capstan, it becomes badly distorted when it is heaved in.

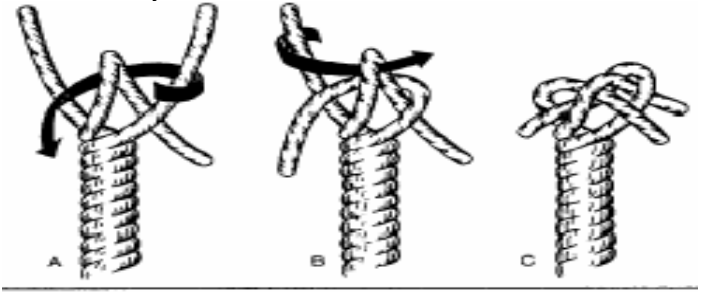


Figure 3-8.–Steps in making a crown.

Frequently, it is necessary to put on inside turns when a fairlead does not line up properly with a winch drum.

A line with a kink in it, or a tackle that is twisted from having a dip in it, should never be heaved hard while that condition exists. A strong strain on a kinked or twisted line puts a permanent distortion in the line.

Deterioration of natural fiber line through age or exposure is indicated by the gradual change in its color from a yellowish white to a gray.

Deterioration from use or abuse is shown by the bristling of the ends of broken yarns. An overstrained line also shows a decrease in diameter. An individual should never be sent aloft or over the side on such a line.

If the identification marker tape indicates the natural fiber rope is 5 years old, it should not be used for critical operations or those involving the lives of personnel.

5. KNOTS

Seamen must know which knot, bend, or hitch will serve best in a particular circumstance.

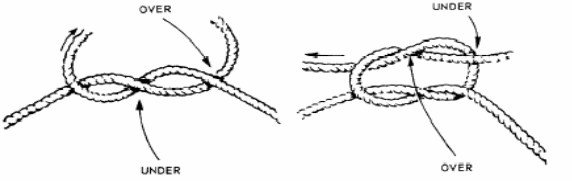


Figure 3-12.–Square knot.

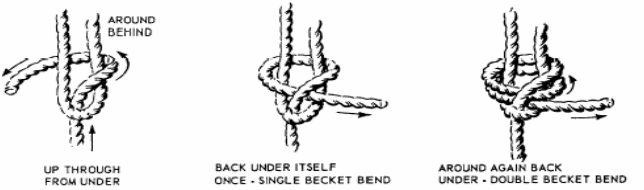


Figure 3-13.–Tying single and double becket bends.

The bowline is a good knot with many uses. It is used whenever a loop is needed, such as in making a temporary eye in a mooring line.

According to a Seaman's use of the term knot, the line usually is bent to itself. The knot forms an eye or knob or secures a cord or line around an object, such as a package.

A bend ordinarily is used to join two lines together. The square knot, also called the reef knot, is the best known knot for bending two lines together. However, it can jam on a strain and become very difficult to untie.

For a square knot, both parts of the line must be under the same bight. If one part is up and the other part is down, you have a granny knot, which is of no use to any seaman. Figure 3-12 shows how to get a square knot every time.

Here is the proper procedure for tying a square knot: Take the end in your right hand, say to yourself, “over-under,” and pass it over and under the part in your left hand, as shown. With your right hand take the end that was in your left, say to yourself this time, “under-over,” and pass it under and over the part in your left hand.

A becket bend, is especially good for bending together two lines of different sizes.

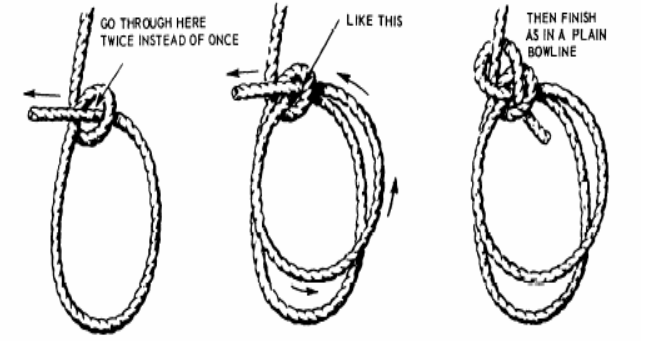


Figure 3-17.–Tying a French bowline.

5.1 BENDING TO A HOOK, RING, OR SPAR

You can use a hitch to secure a line to a hook, ring or spar. We will describe various hitches in this section. A hitch differs from a knot in that it ordinarily is tied to a ring, around a spar or stanchion, or around another line. It is not tied back on itself to form an eye or to bend two lines together.

The rolling hitch is one of the most useful and important hitches on deck.

Use it for passing a stopper on a mooring line when shifting the line from a winch or capstan to a cleat or bitts. It may also be used to secure a taut line back on itself. If tied properly, it holds as long as there is a strain on the hitch.

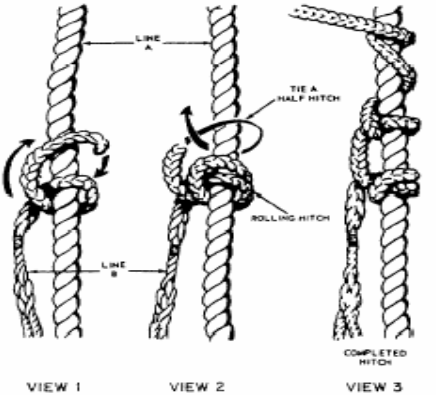


Figure 3-18.–Rolling hitch.

6. SPLICES

Splices are used to make permanent eyes and permanent repairs in lines. There are three general types of splices: eye, short, and long. When splicing fiber line, you should take three or four tucks with each strand.

Figure 3-19.–Throwing a clove hitch.

Figure 3-20.–Clove hitch and two half hitches.

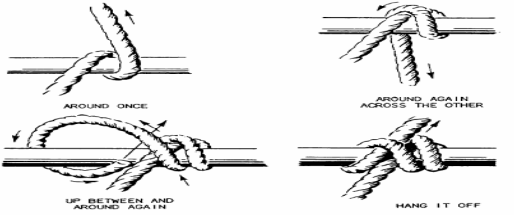


Figure 3-21.–Stopper hitch.

6.1 EYE SPLICE

To make an eye splice with manila or synthetic lines, you must untwist the strands in the end of your line anywhere from 4 inches to 2 feet, depending on the size of the line, and splice them into the standing part of the line by tucking the unlaid strands from the end into the standing part.

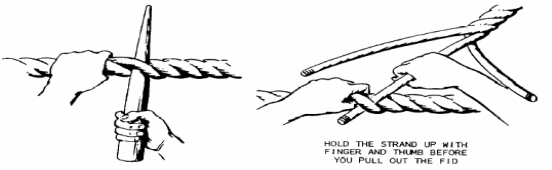


Figure 3-22.–Working the fid.

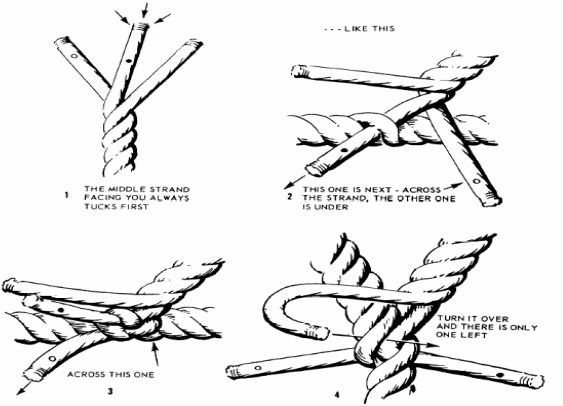


Figure 3-23.–Making an eye splice.

6.2 SHORT SPLICE

Lines are short spliced together when a slight enlargement of the diameter of the line is of no importance. Slings are made of pieces of line, with their own ends short spliced together.

The only trick to short splicing is in seizing the ends together (fig. 3-24) so each strand in one end lies along a corresponding strand in the other end. After unlaying the strands, you simply butt the two ends against each other until you see that they are interlaced correctly.

With large lines you now must put on a temporary seizing where they join to keep them from suddenly coming apart. It is better to do that with small lines, too, until you get the hang of holding them together while you tuck.

Once your seizing is on, tuck over and under the same way you finish off an eye splice. Three tucks on each side of the seizing are sufficient.

6.3 SAILMAKER'S SPLICE FOR FOUR-STRAND ROPE

An eye splice consists of three main component, the eye, individual strands, and the standing part of the rope.

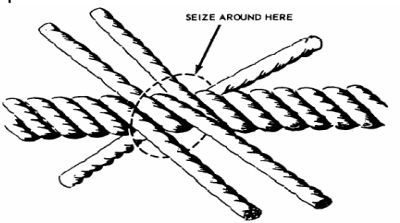


Figure 3-24.–Seizing lines for splicing.

NOTE

The last two tucks may be tapered, if desired, by cutting approximately half of the fibers for each taper. Chafing gear on the eye is required for abrasion.

7. WIRE ROPE

Although wire rope may have only a few applications in some Navy ships, in others, wire rope is very important. It behooves all seamen to learn all they can about wire rope.

7.1 CONSTRUCTION OF WIRE ROPE

The basic unit of wire-rope construction is the individual wire made of steel or other metal in various sizes. These wires are laid together to form strands.

The number of wires in a strand varies according to the purpose for which the rope is intended. A number of strands are laid together to form the wire rope itself.

Wire rope is designated by the number of strands per rope and the number of wires per strand. Thus, a 6 X 19 rope has 6 strands with 19 wires per strand, but has the same outside diameter as a 6 X 37 wire rope, which has 6 strands with 37 wires of much smaller size per strand.

Wire rope made up of a large number of small wires is flexible, but the small wires break so easily that the wire rope is not resistant to external abrasion.

Wire rope made up of a smaller number of larger wires is more resistant to external abrasion, but is less flexible.

Wire rope is made of annealed steel, traction steel, or improved plow steel. The basic metal may be plain or galvanized. galvanizing protects the rope from the elements, but makes it stiffer and reduces its strength by as much as 10 percent.

Galvanized rope most commonly is used for standing rigging, but also is used for some running rigging (such as wheel ropes) where it is not subject to much wear.

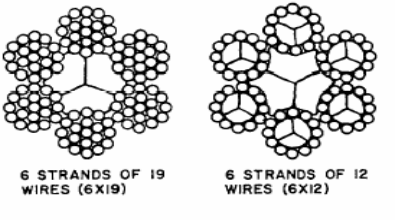


Figure 3-25.–Arrangement of strands in wire rope.

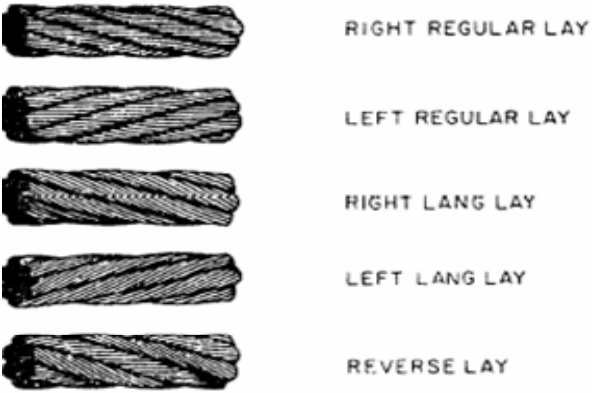


Figure 3-26.–Lays of wire rope.

RIGHT LANG LAY: Both wires in the strands and strands in the rope are twisted to the right.

LEFT LANG LAY: Both wires in the strands and strands in the rope are twisted to the left.

RIGHT REGULAR LAY: Wires in the strands are twisted to the left; strands in the rope are twisted to the right.

LEFT REGULAR LAY: Wires in the strands are twisted to the right; strands are twisted to the left.

6.2 CARE OF WIRE ROPE

- Long lengths of wire rope are usually on reels hen received from your supply activity.
- Never try to unreel wire rope from a stationary reel.
- Mount the reel on a pipe or rod supported by two uprights.
- When spooling under the reel, start at the right and work toward the left. Naturally, handle left-laid wire rope just the opposite.
- If wire rope is being run off one reel to a winch drum or another reel, run it from top to top or from bottom to bottom.
- Make up short lengths of wire rope in coils and stop off tightly for stowage.
- When uncoiling wire rope, stand the coil on edge and roll along the deck, uncoiling as you go.
- If a wire rope becomes kinked, never try to pull it out by putting a strain on either part. As soon as a kink is noticed, uncross the ends by pushing them apart.
- If a heavy strain is put on a wire rope with a kink in it, the rope no longer can be trusted. Cut out the kinked part and splice the ends together.
- Wire rope should be inspected frequently, checking for fishhooks, kinks, and worn and corroded spots. Worn spots show up as shiny flattened surfaces. One or more of the following conditions is sufficient

7.2 STORAGE

Wire rope should not be stored in places where acid is or has been kept.

Stress the importance of keeping acid or acid fumes away from wire rope to all hands at all times.

Before storage, wire rope should always be cleaned and lubricated.

Lubricant film is applied properly and the wire is stored in a dry place, corrosion will be virtually eliminated.

7.3 SEIZING WIRE ROPE

Seizing is the process of securing one rope to another, two or more parts of the same rope to itself, or fittings of any kind to a rope by binding with small stuff or with annealed iron wire.

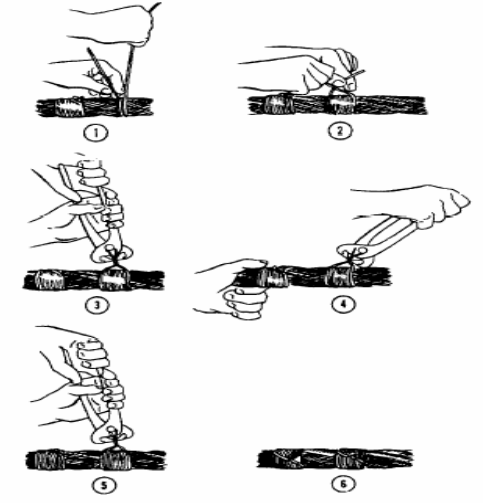


Figure 3-31.–Putting seizing on wire rope.

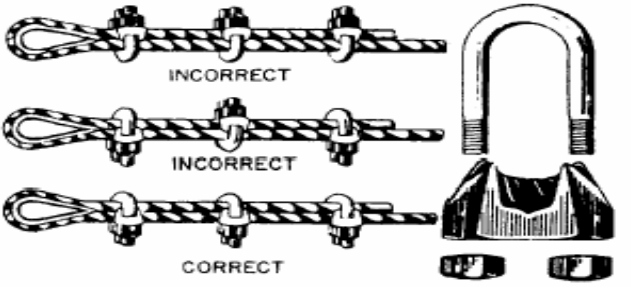


Figure 3-32.–Correct and incorrect use of wire-rope clips.

7.4 WIRE-ROPE CLIPS

A temporary eye splice may be put in wire by using wire-rope clips. The correct and incorrect ways of using these clips are shown in figure 3-32. The U-bolt always goes over the bitter end and the roddle goes on the standing part. Space the clips at a distance apart equal to six times the diameter of the wire. After the rope is under strain, tighten the clips again as a safety measure.

The clips must be rechecked periodically thereafter and retightened as needed. Pay particular attention to the wire at the clip farthest from the eye because vibration and whipping are dampened here and fatigue breaks are likely to occur.

KNOTS, BENDS AND HITCHES

Learning Outcomes:

After the class discussion, the students are expected to:

- Enumerate the different kinds of knots and their usage
- Be able to perform or tie commonly used knots

There are four classes of knots:

(1) knots in the end of line, used in fastening a line upon itself or around an object:

(2) Knots for bending two lines together;

(3) knots that secure a line to a ring or spar (hitches or bends);

(4) knots used to give finished to the end of a line and to prevent unreeling or for ornamental purposes.

CLASS 1 KNOTS

Knots in the end of a single line – the knots of class 1 are used in fastening a line upon itself or around some other object. Some of these are:

a. Overhead Knot – used in making other knots. Never used alone
b. Bowline - a temporary eye in the end of a line. It will not slip or jam.
c. Running bowline – a convenient form of running an eye. Formed by making a bowline over its own standing part.
d. Bowline on a bight – used to sling a man over the side. It will not slip and constrict him

e. French Bowline – has the same purpose as the bowline on a bight. It gives two loops that can be adjusted to fit.
f. Spanish bowline - Can be used wherever it is desirable to have two eyes in the line. Its primary purpose however is, as a substitute for the boatswains chair.
g. Sheepshank – used to shorten a rope in three parts, and half hitch each part around the bight of the other two parts.
h. Cats Paw - a double loop formed by twisting two bights of a rope. The hook of a tackle is passed through them.
i. Figure Eight – used to prevent the end of line form unreeling through a block or eyebolt.
j. Black Wall Hitch – used to secure a line to a hook quickly

CLASS II KNOTS - Knots for bending or joining two lines together.

a. Square of reef knot - used for tying reef points and bending tines together
b. Granny knot – usually mistaken for a square knot. It will slip under strain.
c. Sheet or becket bend (single) – used for bending line to becket and for bending lines of different sizes together.
d. Sheet or becket bend (double) - same use as the sheet or becket bend (single)
e. Two bowlines – a safe and convenient way of bending two hawsers together

f. Carrick Bend – used to bend two hawsers together – it noll not slip or jam, and no matter how long the hawsers are in the water it can e easily untied
g. Reeving line bend – used to bend together two lines that must reeve around a capstan or which drum.

CLASS III KNOTS

Knots for securing a line to a ring or spar. They are called bends and hitches.

a. Fisherman's Bend - used to secure a rope to a toupee or a hawsers to the ring of a anchor
b. Tolling hitch used to bend a line to a spar or to the standing part of another line
c. Round Turn and Two Half Hitches –used to secure the end of a line made around any other object.
d. Clove or Ratline Hitch – convenient for making a line fast to a spar, the standing part of another line, or a bollard.
e. Half hitch or two half hitch – used to secure a line temporarily around any object
f. Stopper hitch – used to check a running line
g. Cats paw – used to secure a line to a hook.

CLASS IV KNOTS

Knots worked in the end of a line. They are fancy knots which are used to give a finish to the end of a line, prevent unreeling, or for ornamental purposes

a. Wall knot - the reverse of a crown knot. It is never used alone, but always as a part of a line. There are various combination of wall and crown knot.

b. Crown knot the simplest and best-known knots in the end of a line. It is never used alone, but always as a part of some other knot.
c. Manrope - combination of a double crown and wall not. An ornamental knot worked in the end of gangway (handrails made of line)
d. Mathew Walker - the navy standard knot for the end of hammock jackstay. The three strands are bought back together, so they can be laid up again.

COMMONLY USED KNOTS

Knowing how to tie a few basic knots is essential to a boater's security. Following are simplified instructions for tying a few commonly used knots.

Two Half Hitches

This reliable knot is quickly tied and is the hitch most often used in mooring. To tie:

- Pass end of rope around post or other object.
- Wrap short end of rope under and over long part of rope, pushing the end down through the loop. This is a half hitch.
- Repeat on long rope below first half hitch and draw up tight.

Bowline

This knot doesn't jam or slip when tied properly. To tie:

- Make the overhand loop with the end held toward you, then pass end through loop.
- Now pass end up behind the standing part, then down through the loop again.
- Draw up tight.

Figure Eight

This knot is ideal for keeping the end of a rope from running out of tackle or pulley. To tie:

- Make underhand loop, bringing end around and over the standing part.
- Pass end under, then up through the loop.
- Draw up tight.

Square Knot

This knot is used at sea in reefing and furling sails. To tie:

- Pass left and over and under right end. Curve what is now the left end toward the right and cross what is now the right end over and under the left.
- Draw up tight.

Anchor Bend
This knot is used to secure a rope or a line to an anchor. To tie:

- Pass two loops through ring.
- Place free end around standing line.
- Pass free end through loops.
- Complete by making half hitch.

Clove Hitch
This knot is the "general utility" hitch when you need a quick, simple method of fastening a rope around a post, spar or stake. To tie:

- Make a turn with the rope around the object and over itself.
- Take a second turn with the rope around the object.
- Pull the end up under the second turn so it is between the rope and the object. Tighten by pulling on both ends.

DECK SEAMANSHIP

Learning Outcomes:

After the class discussion, the students are expected to:

- Know what is deck seamanship
- Know the different kinds of ground tackle
- Know the different kinds of deck fittings and equipment aboardship

In general, *rigging* is a large part of deck seamanship. The ship's standing rigging consists of *lines, wires, turnbuckles, and other gear* supporting and attached to the stacks, the masts, and the topside structure. Running rigging includes the rigging used in hoisting and lowering heavy weights or in positioning and operating movable deck gear.

1. GROUND TACKLE - equipment used in anchoring and mooring with anchors and buoy mooring with chain and appendages.

The following are defined as ground tackle:

- ❑ Anchor chain, wire rope, synthetic line, or combinations of these materials, when used with anchors
- ❑ Appendages consisting of connecting shackles or links, detachable links, pear-shaped links, end links, bending shackles, mooring shackles, mooring swivels, detachable-link tool sets, clear hawse pendants, dip ropes, chain stoppers, wrenches for chain stoppers, outboard swivel shots, chain cable jacks, mooring hooks, chain hooks, anchor bars, and anchor buoys.

1.1 SHIP'S ANCHORS

All anchors are designed to take hold as quickly as possible after they hit bottom. They take hold in one of two ways: either by hooking into the ground with one or both of their sharp flukes or by burying themselves completely. When an anchor is let go in fairly deep water, it strikes the bottom crown first. From this position, any drag on the chain causes the flukes, if properly set, to dig into the bottom. As the drag continues, the fluke is forced further into the bottom.

1.2 CHAIN AND WIRE ROPE CABLES

Chain, wire rope cables, or cable composed of both chain and wire rope for use with ships' anchors is a part of the ship's ground tackle. Ground tackle is the collective term applied to all equipment used in anchoring. It includes the anchors, their chain or cables, connecting fittings, and all associated equipment used in anchoring, mooring with anchors, buoy mooring, being towed, or securing or letting go anchors in or from their hawsepipes.

1.2.1 TYPES OF ANCHORS

Anchors used in the Navy today are grouped according to type. The most common types used are stockless anchors, lightweight (LWT) or stock-incrown anchors, and two-fluke balanced-fluke anchors. Stock anchors (old-fashioned) and mushroom anchors are no longer specified as a part of Navy ship ground tackle.

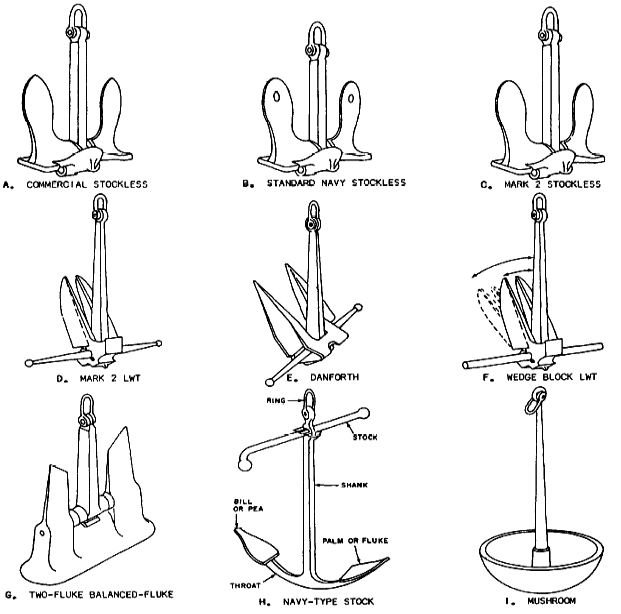


Figure 4-1.–Types of anchors.

1.2.1.1 STOCKLESS ANCHORS

Three designs of stockless anchors are in use on naval ships: commercial, standard Navy, and the Mark 2 (Mk 2). These are shown in views A, B, and C of figure 4-1. Of the three, the Mk 2, with its long flukes, has the greatest holding power. It is made only in the 60,000-pound size for use aboard aircraft carriers. The short, commercial-type flukes have the least holding power.

1.2.1.2 LIGHTWEIGHT ANCHORS

Two types of lightweight anchors are used on Navy ships: the Mk 2 LWT and the wedge block LWT anchor. These are shown in views D and F of figure 4-1.

Lightweight anchors are constructed of comparatively light metal, but are very strong in tension. They gain their holding power by digging deep into the bottom rather than lying as a deadweight.

1.2.1.3 TWO-FLUKE BALANCED-FLUKE ANCHORS

The two-fluke balanced-fluke anchor (view G of figure 4-1) is used for anchoring some surface ships and the newer submarines and is normally housed in the bottom of the ship. This anchor is used on certain combatant-type surface ships in place of a bower anchor, which could interfere with the ship's sonar dome.

1.2.1.4 STOCK ANCHORS

Old-fashioned, or stock, anchors (view H of figure 4-1) have been abandoned by large merchant and Navy ships because they are extremely cumbersome and difficult to stow.

1.2.1.5 MUSHROOM ANCHORS

Mushroom anchors are shaped like a mushroom with a long narrow stem serving as the shank.

1.3 CHAIN AND APPENDAGES

Navy anchor chain of the flash butt welded type is the Navy standard for new ship constructions and replaces die-lock chain as required for back fit.

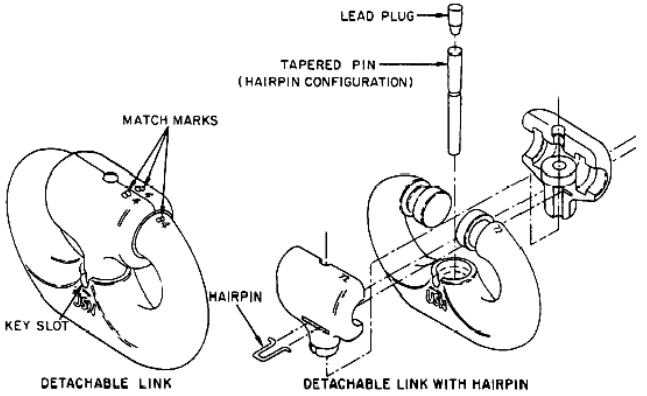


Figure 4-2.–Detachable link.

An anchor chain is made up of many parts besides common links and requires a variety of equipment and fittings to use and maintain the chain. The following descriptions will acquaint you with the details of anchor chain and some of the equipment associated with using and maintaining the chain.

1.3.1 Standard Shot

The lengths of chain that are connected to make up the ship's anchor chain are called *shots* and are made up with an odd number of links.

A standard shot is 15 fathoms (90 feet) long.

1.3.2 Detachable Links

Navy-type detachable link consists of a C-shaped link with two coupling plates that form one side and stud of the link A taper pin holds the parts together and is locked in place at the large end by a lead plug.

Detachable link parts are not interchangeable, so matching numbers are stamped on the C-link and on each coupling plate to ensure its identification and proper assembly.

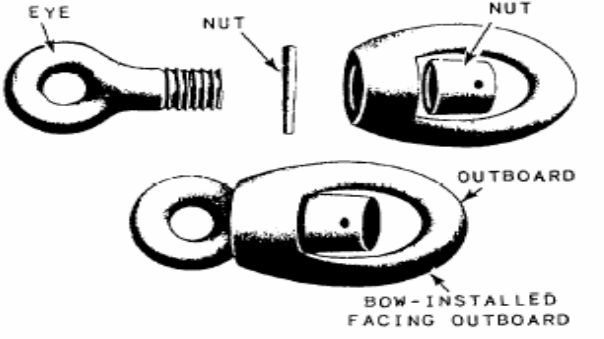
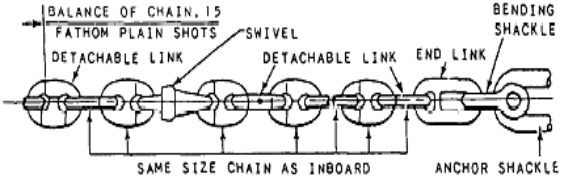
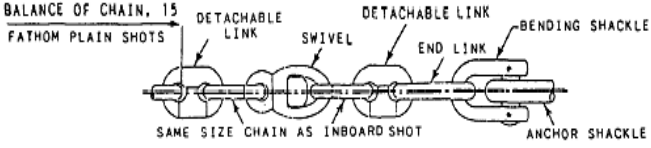


Figure 4-3.–Chain swivel.

Chain swivels (fig. 4-3) are furnished as part of the outboard swivel shot. They reduce kinking or twisting of the anchor chain.



STANDARD OUTBOARD SWIVEL SHOT & METHOD OF ASSEMBLING*



ALTERNATE ARRANGEMENT OF OUTBOARD SWIVEL & METHOD OF ASSEMBLING*

* NOTE

STANDARD AND ALTERNATE OUTBOARD SWIVEL SHOTS SHOWN REFLECT LATEST DESIGN ON LATER SHIP CLASSES USING FLASH BUTT WELDED CHAIN. VARIOUS ARRANGEMENTS WILL EXIST ON OTHER SHIPS USING DIE-LOCK CHAIN WITH COMMON LINES ON EACH SIDE OF THE SWIVEL.

1.3.3 Riding, Housing and Towing Chain Stoppers

Riding and housing chain stoppers consist of a turnbuckle inserted in a couple of links of chain. A pelican hook is attached to one end of the chain; a shackle is attached at the other end. The housing stopper is nearest the hawsepipe and must be installed outboard Bending shackles (fig. 4-4) are used to attach the anchor to the chain of the swivel; the riding stopper is farther inboard. These stoppers are secured by the shackles to permanent pad eyes on the ship's deck Chain stoppers are used to hold the anchor taut in the hawsepipes, to

ride to an anchor, or to hold the anchor when the anchor chain is disconnected for any reason.

1.3.4 Mooring Shackles

Forged steel mooring shackles (fig. 4-6) are used to attach the anchor chain to mooring buoys.

All mooring shackles, regardless of size, have a standard opening of 7 inches. Mooring shackles are not to be used for any other purpose.

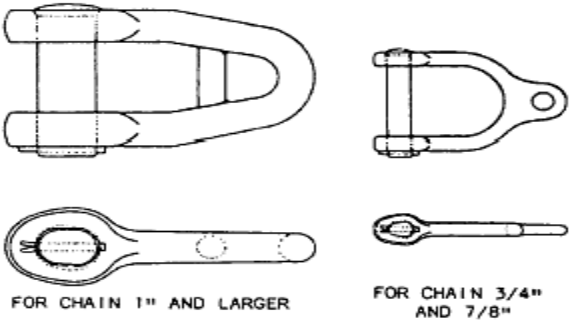


Figure 4-6.–Mooring shackles.

1.3.5 Mooring Swivels

Forged steel swivels, with two links attached at each end, are used to moor with anchors. They are inserted in the chain outboard of the hawse and serve to keep the chain from twisting as the ship swings. Mooring swivels are attached in the chain with the eye end outboard, or down, to prevent them from hooking on the outer lip of the hawse when they are heaved back aboard.

1.3.6 Chain Cable Jacks

A cable jack (fig. 4-8), consisting of a lever mounted on an axle and two wheels, is used to handle anchor chain of 2 3/4 inches, or larger, in size. It is used to pick the chain up to pass a chain stopper. A pinchpoint crowbar type of anchor bar is issued for smaller sizes of chain.

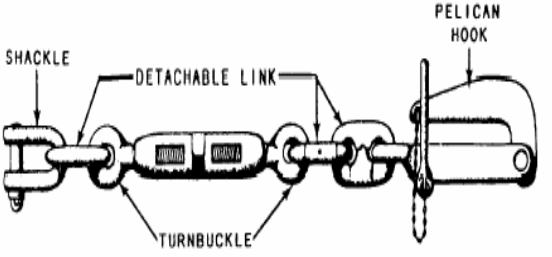


Figure 4-5.–Navy standard chain stopper.

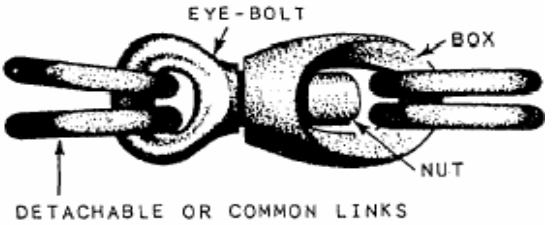


Figure 4-7.–Mooring swivel.

1.3.6 Clear Hawse Pendants

A clear hawse pendant is a wire rope pendant, 5 to 15 fathoms long, with a thimble at one end and a pelican hook attached to a length of open-link chain fitted in a thimble at the other end. This pendant is used to clear a hawse fouled by the anchor chain. See figure 4-9.

1.3.7 Dip Ropes

A dip rope is a fiber or synthetic rope pendant, 14 to 36 fathoms long, fitted at one end with a thimble and a dip shackle large enough to engage a link of the anchor chain. A dip rope is used when mooring or clearing a hawse.

1.3.8 Chafing Chain or Pendant

A short length of chain and/or a wire rope pendant is inserted between the anchor and the anchor buoy line. This prevents the anchor buoy line from chafing on the anchor and parting.

1.3.9 Anchor Chain Markings

The detachable links of anchor chains are painted red, white, or blue as follows: red for 15 fathoms, white for 30 fathoms, blue for 45 fathoms, red for 60 fathoms, white for 75 fathoms, and so on.

Each link of the entire next-to-last shot is painted yellow. The last shot is entirely red. These last two shots give warning and danger signals of the approach of the bitter end of the anchor chain.

1.4 CARE OF GROUND TACKLE

The chain is overhauled by the ship's force whenever necessary and precautions are taken to see that the various shots are properly marked and in good order.

Once each quarter, and more often if subjected to normal use, all anchor chains in sizes up to and including 1 1/2 inches are laid on deck and their entire lengths examined.

Anchor chain and appendages are carefully examined for cracks, excessive wear, distortion, or other defects.

Parts that require coating are painted with anchor chain gloss black paint.

Shackles, bolts, locking pins, and swivels are examined carefully and put in order.

The turnbuckles in chain stoppers require frequent attention to keep them clean, free from rust, and well lubricated with graphite grease.

Chain of sizes by more than 1 1/2-inch wire diameter is overhauled, wire brushed, and placed in a good state of preservation as often as required.

At least once every 18 months all anchor chain, regardless of size, (including all fittings) is examined, overhauled, and placed in a good state of preservation (5 years for carriers).

2. ANCHOR WINDLASS

Windlasses are installed on board ships primarily for handling and securing the anchor and chain used for anchoring the ship and for handling anchor chain used for towing the ship.

Capstan and gypsy heads fitted on windlasses are keyed to the drive shaft and rotate when the windlass power

source is turning. When using the heads, apply the wildcat hand brake, then disengage the wildcat locking head. The heads will now operate independently of the wildcats. When the wildcats are used, however, the capstan heads will always rotate.

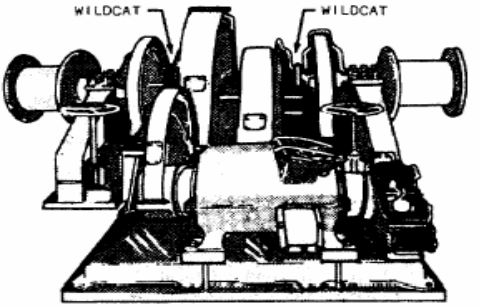


Figure 4-11.–Horizontal shaft anchor windlass.

3. Letting Go

When anchoring and weighing anchor, the ship's first lieutenant is in charge on the forecastle. Aboard most ships, the first lieutenant's assistant is the ship's Boatswain or Chief Boatswain's Mate.

The windlass is tested, the anchor in the hawse is freed, the anchor is walked out if anchoring is in deep water or if the bottom is rocky; the brake is set; and the wildcat is disengaged.

All but one stopper is taken off and the anchor buoy line is shackled to the chafing chain or pendant.

The chain locker is checked for loose gear that may become wedged in the chain pipes or come flying out, endangering personnel on deck.

An order then is given to stand clear of the chain. For obvious reasons, it is urgent that all hands obey this order!

At the command “STAND BY” the brake is released and two Seamen-one with a sledgehammer or maul-take stations at the stopper outboard side of the chain. When the command “LET GO” is given, one Seaman pulls the pin from the stopper tongue.

The Seaman with the maul knocks the bail off the tongue of the pelican hook and steps clear. As soon as the Seaman is clear, the brake is fully released. If for some reason the stopper does not fall clear, the chain can still be controlled by the brake.

The Seaman tending the anchor buoy tosses it over the side and the jack is two-blocked (hoisted all the way up). On the signal bridge, the anchor ball is hoisted.

4. Weighing Anchor

Weighing anchor, the same gear must be checked and readied.

Securing gear must be available on the forecastle as for anchoring. In addition, there is a grapnel (a small four-armed anchor) used to retrieve the anchor buoy.

A hose is rigged to wash mud from the anchor and the chain.

The windlass is energized and tested, and then the wildcat is engaged.

The brake is then released and the wildcat is tested. The brake is set, and all stoppers but one are cast off.

When ready, the report “READY TO HEAVE IN” is made to the bridge.

On the command “HEAVE AROUND,” the brake is taken off and the chain is heaved in enough to take the strain off the stopper.

Reports are made to the bridge periodically on the direction the chain is tending, the amount of chain remaining out, and the degree of strain on the chain. If the command were “HEAVE AROUND TO SHORT STAY” the chain would be heaved in just short of breaking out the anchor (pulling the anchor loose from the bottom).

On the command “HEAVE AROUND AND UP,” start heaving.

When the flukes have broken out, and the crown still rests on the bottom, the report “ANCHOR IS UP AND DOWN” is made.

When the anchor is free of the bottom, it is said to be “AWEIGH” and is so reported.

The jack and anchor ball are hauled down and the ship is legally underway.

When the anchor comes into view and its condition can be noted, the report “ANCHOR IN SIGHT, CLEAR (or FOUL) ANCHOR” is made. The anchor is reported as housed when the shank is in the hawsepipe and the flukes are against the ship's side.

The anchor buoy is recovered as soon as possible, and a report is made to the bridge when the anchor buoy is on board.

5. DECK FITTINGS

Deck fittings are the various devices attached to the hull that assist in handling the ship.

The most common fittings are found around the weather decks. A brief description of some common deck fittings (fig. 4-17).

5.1 CLEATS

A cleat is a device consisting of a double-ended pair of projecting horns used for belaying a line or wire.

5.2 BITTS

Bitts are heavy vertical cylinders, usually arranged in pairs, used for making fast lines that have been led through chocks.

5.3 CHOCKS

A chock is a heavy fitting with smooth surfaces through which mooring lines are led.

There are three types of chocks: An ***open chock*** is a mooring chock that is open at the top. A ***closed chock*** is a mooring chock, closed by an arch of metal across the top. A ***roller chock*** is a mooring chock that contains a roller for reducing friction.

5.4 PAD EYES

A pad eye is a plate with an eye attached, welded to the deck to distribute the strain over a large area and to which a block can be hooked or shackled. A pad eye is also used in towing operations.

5.5 BOLLARDS

A bollard is a strong cylindrical upright on a pier, over which the eye (or bight) of a ship's mooring line is placed.

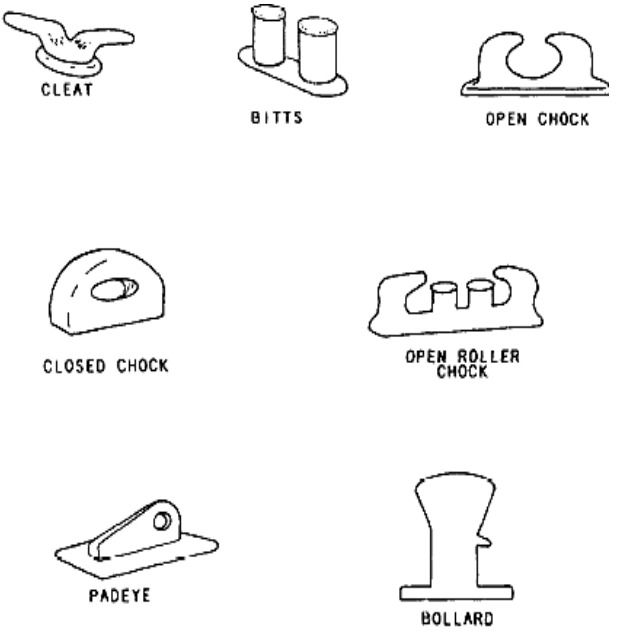


Figure 4-17.–Various deck fittings.

6. LIFELINES

- Lifelines are safety barriers to prevent personnel from falling or being washed over the side

- Lines erected around the edges of decks; referred to as follows:

a. Top - Lifeline
b. Middle - Housing line
c. Bottom - Foot rope
d. Snaking - Netting stretched between the deck and the housing line or foot rope to prevent personnel and objects from being washed overboard

Safety Note: Ensure that all lifelines are in place and in good condition.

7. OTHER DECK EQUIPMENT

7.1 Paint stage - Platform rigged over-the-side to support personnel

7.2. Boatswain's chair - Used for sending only one person over-the-side

Safety precautions:

- Personnel over-the-side must wear inherently buoyant life preservers.
- All boatswain's chairs must have a hand-tended safety line tended from the deck above.
- Safety lines should never be secured to lifelines.

7.3 Jacob's ladder - Flexible, portable ladder with ropes and wooden rungs, slung over-the-side temporary use, commonly used for access to small boats secured to boat booms

7.4 . Boat boom - A spar swung out from a ship's side permitting small boats to ride safely alongside a ship while at anchor

7.5 Pilot's ladder - Flexible, portable ladder that is usually made of metal (sturdier than Jacob's ladder)

7.6 Sea ladder - Rigid, portable ladder that may be mounted and secured to the side

7.7 Accommodation ladder - Rigid, inclined ladder rigged to the side of the ship to provide a convenient means for boarding or leaving an anchored ship.

PAINTING

Learning Outcomes:

After the class discussion, the students are expected to:

- Know the objective of painting
- Know how to prepare surfaces for painting
- Know the tools needed for removing rust and old paint
- Learn how to apply paint by brush
- Know different kinds brush and their uses
- Know the proper care and cleaning substance of brushes
- Know what to paint and not to paint surgace
- Know safety precautions in painting

1. OBJECTIVE OF PAINTING

The protection of metal surfaces is the chief objectives of painting done aboardship.

Paints and varnishes are also used to decorate surfaces.

The only effective protection against rust is good paint properly applied to metal surface that have been carefully prepared for painting.

2. PREPARING SURFACES FOR PAINTING

Even the most expensive paint is of little value if it is applied on an insecure foundation.

Loose old paint, rush, dirt, dust, moisture of grease on any surface will prevent new paint from adhering to.

Before painting steel, it is necessary to remove all scale, grease, rust and moisture.

Rust spreads even if it is covered by paint.

Painting rusty surface causes paint to flake off.

Rust and old paint may be removed in several ways depending on the thickness of the coating, thickness of steel underneath, and materials stored on either side of steel plating

.

3. TOOLS FOR REMOVING RUST AND OLD PAINT

- **Scraper** – used for removing rust on plating surfaces.
- **Wire Brush** – used as welded areas.
- **Sand Paper** – used as abrasive to polish.
- **Chipping Hammer** – used for thick rust.
- **Scaling Hammer or Jitterbug** – never used in plating less than ¼ inch in thickness.
- **Rotary Power Brush** – it is operated by compressed air.
- **Power Sander** – it is also operated by compressed air.
- **Rotary Chipping Tool**.
- **Blow Torch** – satisfactory but should be hot enough to blister the paint and to burn wood underneath or to discolor paint.

4. APPLICATION OF PAINT BY BRUSH

- Hold brush firmly by the handle not by the stock. If held by the stock, hands become covered with paint and may cause poisoning especially if small cuts are exposed and lead paints are used.
- Hold brush at right angle to the surface with the end of the bristles alone touching and lift it clear to the surface when starting the return stroke.
- Do not completely fill the brush with paint. Dip only the end of the bristles into the paint. Do not charge the brush with paint until the preceding charge has become sufficiently exhausted.
- Apply paint with long stroke parallel to the grain of the wood.
- Cross the work by laying on the paint over a small section with parallel strokes. Then cross the first application with parallel strokes at right angle to the first one, all laying off (final) should be lengthwise.
- For vertical surfaces, work should be laid off vertically.
- For overhead surfaces, ceiling panels should be laid off fore and aft and the beams athwartships.
- Keep paint well-mixed while work is proceeding. Best result can be obtained by applying two coats of thin or medium body paint than one coat of heavy paint

5. **TYPES OF BRUSHES AND GENERAL RULES**

Flat Paint Brush---------- large surface
Oval Sash and Trim Brush-----small surface
Fitch Brush--- small and very small surfaces
Oval Varnish Brush---------- rough
Flat Varnish Brush---------- medium work
French Bristle Brush--------- high grade work
Lettering Brush -small surface & large work
Painter Duster---------- cleaning work

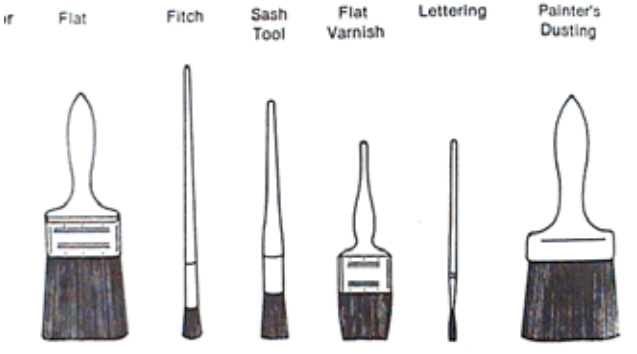


Figure 20–8 Types of brushes.

NOTE:*(Flat, oval and trim brushed are the two most useful brushes)*

6. CARE OF BRUSHES

Before using, rinse brushes with paint thinner and soak in boiled oil for about 48 hours to make them more flexible and easier to clean.

Care after use:

- Provide a container with compartments for stowing different types of brushes for a short period.
- The bristles must not touch the bottom as they eventually become distorted.

- Brushes which are to be used the following day should be cleaned with proper thinner and placed in the proper compartment of the container.

- Brushes not to be used soon should be cleaned in thinner, washed with soap and water and hang to dry. After drying, wrapped in waxed paper and stowed flat.
- Do not leave brush soaking in the water because it will cause the bristles to separate into hunches, flares and become bushy.

7. PROPER CLEANERS FOR BRUSHES WITH DIFFERENT FINISHES

Oil base paints and varnishes -- turpentine or mineral spirits
Rubber based paint---------- water
Shellac---------- alcohol
Lacquer ---------- lacquer thinner

8. WHAT NOT TO PAINT

- Start-stop mechanism of electrical safety devices and control switchboards.
- Bell, pulls, sheaves, annunciator, chains, and other common mechanical devices.
- Dry sprinkling piping within magazines.
- Heat exchange surfaces of heating and cooling equipment.
- Identification plates.
- Joint faces of gaskets and packing surfaces.
- Rubber elements of isolated mounts, ground plates.
- Springs, strainers, threaded parts, hose and applicator nozzles.
- Knife edges, rubber gaskets, dogs, drop blots, electrical contact points and insulators.

9. PAINTING SAFETY PRECAUTIONS

- Complete ventilation of the compartment is essential to ensure immediate removal of vapors and paint dusts.
- Personnel using spray gun should wear clothing which fits smartly or tightly at the ankles, neck and wrist.
- Approved respirator must be worn and parts of the body not protected by clothing should be covered with petrolatum (Vaseline).
- Smoking, open flames, welding, grounding of spray equipment, chipping, and other spark-producing operations are prohibited in the compartment when spraying is in progress.
- Explosion proof portable lights should be used.
- Bulbs must not be replaced in a compartment or tank being painted until flammable or explosive vapors have been removed.
- Painted compartments long closed without ventilation must be entered with caution.

- Paint and varnish removers should not be used by persons having open cuts on their hands, unless rubber gloves are used.
- Paint and varnish removers should not be used in confined spaces because some have dangerous anesthetic property.
- If paint and varnish removers touch the skin and begin to burn, wash off with cold water immediately and consult the medical officer.
- Never use turpentine, spirits or other thinners for cleaning your hands after work because they can be absorbed through the skin pores. Use hand soap and water only.

SHIPBOARD ROUTINE
(AT-SEA AND IN-PORT)

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know and enumerate the different shipboard duties at-sea and in-port

SHIPBOARD ROUTINE

Ships have standard routine in port and at sea.

PLAN OF THE DAY

Prepared and issued by the executive officer. It will name the duty officer, various watches, and include information as to changes or additions to normal routine. It also includes activities such as training, duty section, liberty section, and hours, working parties inspection etc. It is distributed and implemented by the OOD to all offices, officers, and division bulletin of the ship.

SHIPBOARD WATCHES

Duty personnel aboardship on a 24-hour a day basis to man all stations. It is usually of four (4) hours duration.

In-port watches:

- **Officer of the Deck (OOD) in port** - is responsible for the Safety of the ship and carries out the plan of the day.
- **Deck Petty Officer of the Watch (Deck POW)** – Assistant of the OOD.
- **Quarter Master of the Watch** – Assists the OOD in navigation and reports all changes in weather,

temperature and makes appropriate entry in the QM logbook.

- **Radioman of the Watch** – Maintains required communication in the radio room.
- **Anchor Watch** – Tasked to assist the OOD during the night for such task as veering chain or adjusting lines.
- **Main Engine and Auxiliary Watches** – Tasked to maintain the operational readiness of main and auxiliary engines.
- **Bridge & Signal Watch** – Keeps the OOD informed on notable changes in weather, boats approaching the ship, unusual disturbances or distress in harbor and movements of other ships.
- **Cold Iron Watch** – Inspects secured machinery spaces.
- **Electrical Equipment Watch** – Assist the OOD in the maintenance of electrical equipment
- **Messenger** – commonly known as OOD messenger.
- **Oil King** – Records fuel soundings

At-sea or Underway Watches:

a. Bridge and Deck Watch

1. Command Duty Officer (CDO). In large ships, the CO normally appoints a CDO whenever they are at sea and this duty is performed by senior heads of departments. He is a line officer eligible for command who handles in behalf of the CO routine shipboard operational and watch related activities for the entire day. He is empowered by the CO to advice, supervise and direct key watchstanders in matters concerning

the general operations and safety of the ship. He reports to the CO for the conduct of the watch and to the XO for affairs relating to the internal administration of the ship. He normally have no specific watch station but usually remains in close proximity to the ship's bridge.

2. Officer of the Watch (OOW). The OOW underway is the officer on watch stationed at the bridge responsible for the safe and proper operation of the ship. He reports directly to the CO for the safe navigation and general operation of the ship; to the EXO and CDO, if appointed, for carrying out ship's routine; and, to the Navigator for sightings of navigation landmarks and for any changes of course and speed.

3. Junior Officer of the Watch (JOOW). The JOOW is the principal assistant of the OOW and assists him in carrying out the duties of the watch. Normally, he answers the radio telephone and decodes messages. The OOW may give to the JOOW the conn or the authority to order course and speed changes, but, the latter should always retain the deck, i.e., the authority and responsibility for the bridge and the ship.

4. Boatswain Mate of the Watch (BMW). The BMW is the principal enlisted assistant of the OOW with a boatswain mate rating responsible for the bridge and deck watch. He conducts muster of the incoming watch section and sees to it they are properly posted and the outgoing watch section is properly relieved. He makes regular inspection of the top decks and upper deck compartments for any unusual occurrences and reports it to the OOW. He makes appropriate announcements to the ship's PA system in accordance with the

ship's routine, subject to the permission of the OOW, and may sound the alarm for scheduled drills or actual emergencies.

5. Quartermaster of the Watch (QMW). The QMW is an enlisted man with a quartermaster's rating who assists the OOW in navigational matters. He maintains the ship's log and QM's Notebook and plots the ship's course on the bridge's navigational chart. He keeps the OOW informed on the ship's position and alerts him to any significant course and speed changes required, any navigational aids available to the ship and advices him concerning the weather and shipping likely to be encountered,. acts as the signalman and transmits and/or receives visual signals and records it in appropriate logs.

6. Helmsman. The helmsman, also called steersman, is an enlisted personnel with a seaman rating assigned to man the steering wheel and is responsible for steering the ship as ordered by the officer who has the conn. He repeats all orders given to the wheel word for word and reports back when the ordered action is completed or complied with.

7. Lee Helmsman. The lee helmsman or announcer who has a seaman rating is assigned to man the engine order telegraph responsible for transmitting ship's speed and direction orders to the engine room as he receives it from the officer who has the conn. He repeats all orders given to the engine order telegraph word for word and reports back when the ordered action is completed or complied with, ensuring that the engine orders are recognized and properly answered by the engine room watch personnel.

8. Telephone Talkers. The telephone talkers are enlisted personnel with seamen ratings assigned to man

various SPT circuits and intercoms (MC) to relay all messages between the OOW and other watch stations. They communicate between stations in accordance with sound-powered telephone procedures.

9. Lookout Watches. The lookouts are enlisted personnel with seamen ratings who are stationed at a location where they can best see the areas of the sea and/or sky assigned to them. They serve as the eyes and ears of the ship in addition to the various detections and tracking equipment available on board. They are responsible for conducting visual search of their respective assigned sectors and reporting any sightings to the OOW, such as, smoke, markers, discolored waters, floating objects, small islands and islets, shallow waters, ships, small craft, aircraft, flares, men on the water, etc., which may have escape detection by radar or sonar because of their size, aspect, altitude or because of the weather as well as sounds of whistle signal, bells and engine noises.

10. Messenger of the Watch. The messenger is usually a young enlisted man who stands watch on the bridge responsible for delivering messages and answering telephones or carrying out duties as maybe assigned by the BMW or OOW.

11. Lifeboat Watch. In large ships or when conditions are such which requires the capability to rapidly recover personnel from the sea, a lifeboat watch is set and placed on readiness. This watch is composed of a boat crew stationed to man a designated lifeboat in case an immediate need to lower and use it becomes necessary.

12. CIC Watch Supervisor. The CIC Watch Supervisor is the most senior enlisted assistant of the CIC Watch Officer, usually with a radarman rating, who assists him in the conduct and performance of the watch. He maintains a complete and accurate written chronological accounts of both routine and unusual events pertaining to the watch in the CIC log. When necessary, he operates equipment, plots and works on maneuvering problems ensuring that proper evaluation is made on combat and operational information received and disseminated to the OOW.

13. Equipment Operators. The equipment operators are enlisted personnel with appropriate ratings that are assigned to operate radar, sonar, depth sounder, tactical voice radio and other electronic equipment at the CIC. They ensure that ships, aircraft, submarines and/or missiles are detected and reported as well as properly tracked.

14. Plotters/Recorders/SPT Talkers/Technicians. These are enlisted personnel of various seaman ratings assigned to maintain various plots and status boards, communicate and record messages and repair equipment malfunctions.

b. Communications Watch

1. Communications Watch Officer (CWO). In large ships, junior officers or senior enlisted watch stander are assigned as CWO responsible for the reliable, rapid and secure conduct of external visual and radio communications, other than tactical voice radio, and for the expeditious and

efficient routing of messages. He exercises general supervision in the handling of communications traffic over the radio central (or radio room) and signal bridge through designated supervisors; and, personally check correctness of outgoing traffic and ensure that they are released as well as the routing of incoming traffic, except tactical signals.

2. Radio Watch/Signal Bridge Supervisors. These are the most senior enlisted assistant of the CWO, a radioman rating at the radio central and a quartermaster rating at the signal bridge. The radio watch supervisor monitors the frequencies in use, inspecting message traffic and logs to detect errors and taking immediate action to notify the CWO, CIC Watch Officer and OOW in the event of any equipment failure. The signal bridge supervisor assists the CWO in informing signalmen as to the location of ships to or from which messages maybe sent, ensuring that watchstanders know the meanings of all signals and maintaining all visual equipment ready for use.

3. Radiomen. The radiomen are enlisted personnel qualified in their rating assigned at the radio central to operate radio telegraph and radioteletype communications equipment; transmit and receive communications in accordance with the standard phraseology; and, process all types of messages including those requiring encryption and decryption as well as the handling and routing of same.

4. Signalmen. The signalmen are enlisted personnel with a quartermaster's rating assigned at the signal bridge and qualified to transmit and receive tactical signals as directed by

the OOW through flashing light, flaghoist and semaphore signaling.

c. Engineering Watch

1. Engineering Officer of the Watch (EOOW). The EOOW is a commissioned officer or senior enlisted watchstander assigned to take charge of the engineering watch underway. He is responsible for the safe and proper operation of the ship's main and auxiliary propulsion systems. In the absence of a Damage Control Watch Officer his responsibility normally includes that of damage control.

2. Engineering Petty Officer of the Watch (EPOW). The EPOW is the principal enlisted assistant of the EOOW who assists him in the proper operation of the ship's engineering plant.

3. Main Engine Watches (MEW). These are enlisted personnel with firemen rating MEW who are assigned to operate and ensure the prompt and efficient operation of the main propulsion including engine controls.

4. Auxiliary Engine Watches (AEW). These are enlisted personnel with firemen ratings who are assigned to operate auxiliary engines, generators and switchboards, pumps and motors, refrigeration and air conditioning units and other auxiliary machinery in operation.

5. Sounding and Security Patrol. In large ships, these are enlisted personnel with firemen ratings who are assigned to check watertight integrity and maintain the material condition

of readiness in effect throughout the ship. They conduct continuous inspection of all compartments and spaces below the waterline to check for flooding, fire and fire hazards, damage control closures, or other evidence of thief and sabotage. In addition, they also check soundings of ship's tanks to determine amount of fuel or water they contain.

6. Aft Steering Watch. In large ships, these are enlisted personnel composed of firemen and seamen ratings who are assigned to monitor the ship's aft steering and in the event of steering casualty, they take over steering control from the bridge helmsman as directed by the OOW. In small ships, however, this detail is organized from among the members of the section on watch and is only called upon when steering casualty is encountered.

NAVAL ORDNANCE

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know the different naval ordnance terms
- Be able to distinguish explosive ordnance from inert ordnance

A. DEFINITION OF TERMS:

1. ORDNANCE - comprises the physical equipment pertaining to weapon. Classified as:

a. Explosive Ordnance - including such elements as:

1) Gun Ammunition - the complete assemblage of the component parts of ammunition details which makes up a round or a charge to any type of gun.

2) Torpedo - a self-propelled underwater missile use against ships and submarines.

3) Mines - are typically static weapon use to hinder enemy operations.

4) Bomb - covers all missiles dropped from aircraft, except torpedoes, mines and guided missiles.

5) Rocket - a self-propelled weapon whose absence of recoil makes it particularly suitable for firing from small craft or aircraft.

6) Guided Missiles - are new weapons which can travel great distance with heavy load and contain their own guidance.

7) Depth Charge - are thin walled container filled with relatively heavy charge of explosives and designed to explode at a predetermined depth or by the charge action of an influence type fuse.

8) Projector Charges - Similar to rockets and are used against submarines and close landing supports.

9) Chemicals - used to describes the variety of solid and gases which can be fired in projectiles from guns and mortars or dropped from aircraft. Used for screening, harassing etc.

b. Inert Ordnance - includes projecting devices such as:

1) **Guns** - typically consist of a tube closed at one and from which a projectile is fire by the burning in a enclosed space of the propellant charge.

2) **Launchers** - used to launch rockets or a device for head thrown missiles or anti-submarine weapons.

3) **Projectors** - used to project DC, projector charges, etc.

4) **Release Gears** - one type of track use to drop DC from the astern of a ship.

2. **GUNNERY** - the art and science of using guns to include the operations and control of all elements of armaments.

3. **BALLISTICS** - the science of projectile's motion classified as;

a. Interior Ballistics - pertains to the motion of the projectile inside the gun bore.

b. Exterior Ballistics- pertains to the motion of projectile outside the gun bore or the action of the projectile in flight.

4. **FIRE CONTROL**- the practical application of exterior ballistics and the methods and devices used to control the guns and other weapons.

5. **CALIBER OR GUN**- the diameter of the bore measured between the top of the lands and it is expressed in inches or millimeters.

6. **MOUNT**- support and secure the gun to the ship's structure and provides for the train and elevation.

7. **TRAIN**- the position of the axis of the gun bore in azimuth as measured from the ship's centerline.

8. **ELEVATION** - the angle that the gun bore axis makes with the deck measured in a plane perpendicular to the deck.

9. **RECOIL** - the force tending to push the gun to the rear as the projectile is discharged. It is the gun's reaction to firing.

10. **COUNTERRECOIL** - the forward movement of the gun after recoil which return the gun into battery or original position.

11. **IN BATTERY** - gun is said to be in battery when the gun is in its firing position. A gun moves out of battery during recoil and returns to battery during counter recoil.

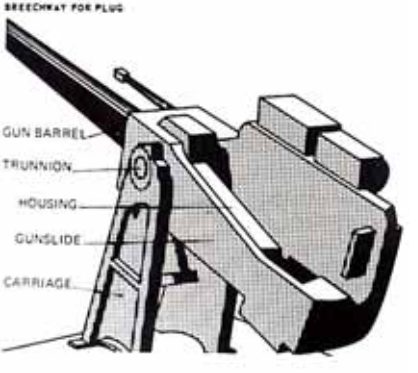
12. **AUTOMATIC GUN** - guns in which some of the energy of explosion of the propellants is used to open the breech, eject the empty case and automatically load another round. Automatic gun can continue to fire as long as there is enough supply of ammunitions and trigger is pressed.

13. **SEMI-AUTOMATIC GUNS** - guns in which some of the energy of the explosion of the propellants is use to open the breech, eject the empty case, and automatically closed the

breech when another round is loaded either by hand or by auxiliary equipment.

14. **NON-AUTOMATIC GUNS** - guns in which none of the energy of the explosion of the propellant is used to perform breech opening or loading and unloading functions.

15. **AXIS OF THE GUN BORE** - a straight line passing through the center of the gun bore



GUN AMMUNITION RECOGNITION AND PROJECTILE IDENTIFICATION

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know the different components of gun ammunition
- Be able to recognize the system of color coding

A. Basic Components of gun ammunition:

1. **Projectile** - contains the burster charge, fuze and/ or tracer.
2. **Propelling charges** - explosives that propels the projectile out of the gun bore.
3. **Primer** - initiates the burning of the propelling charges.

B. Gun ammunition is recognized by the information; ammunition lot number (ALN) stenciled/printed on their boxes and powder tanks through series of letters.

1. B - series for 5-inch gun ammunition
2. P - series for 3-inch gun ammunition
3. U - series for 40MM gun ammunition
4. Z - series for 20MM gun ammunition

C. Identification of projectile:

1. **By color** - which identify the primary role of the projectile and maybe in the form of an overall body color or if the projectile is colored green (old system) or olive drab (new system) it will have a 50MM (2") wide role band.

System of Color Coding:

a. For 3 -inch and larger caliber projectiles, colors are applied as overall body. Nose fuze and rotating band are not painted.

Color	**Interpretation**
Yellow	High Explosive
Brown	Low Explosive
Black	Armor Piercing
Silver/Aluminum	Counter measure
Light Green	Smoke/Marker
Light Red	Incendiary
White	Illuminating
Bronze	Drill/Inert/Dummy
Blue	Practice/Target
Orange	Exercise/Recoverable
Gray	Toxic or Irritant Agent

Non-significant color

Olive drab	All ordnance
Black	For lettering
White	For lettering

b. **Burster charge Color** - painted one (1) caliber from the nose of the projectile or from the base of the nose fuze.

Burster Charge	**Band Color**
Explosive D	Yellow
Composition A	Medium
Inert material w/ color burst unit	Slate
Inert Material or Empty	Red

Illuminating, Chemical and Window Not painted with buster charge or load. Area painted the same as the body color.

c. In addition to the body color and the buster charge color, projectile were marked to indicate certain characteristics such as the presence of tracer, dye load or chemical filler.

2. **By code lettering** marked to indicate characteristics such as the presence and code of the tracer, dye load, a color burst unit and chemical filler.

Projectile 3-inch & larger are lettered on the body by the manufacturer with the following information:

Caliber and type of projectile
Ammo Lot Number.
Mark & Mod of fuze (SD or NSD).
Manufacturer's initials.
Mark & Mod of the projectile
Serial Number.
Mark & Mod of ADF (if applicable).
Year of manufacture.
Mark and Mod of Illum load or W Load (for ILUM and W only).

PN STANDARD SHIPBOARD NAVAL GUNS

Learning Outcome:

After the class discussion, the students are expected to:

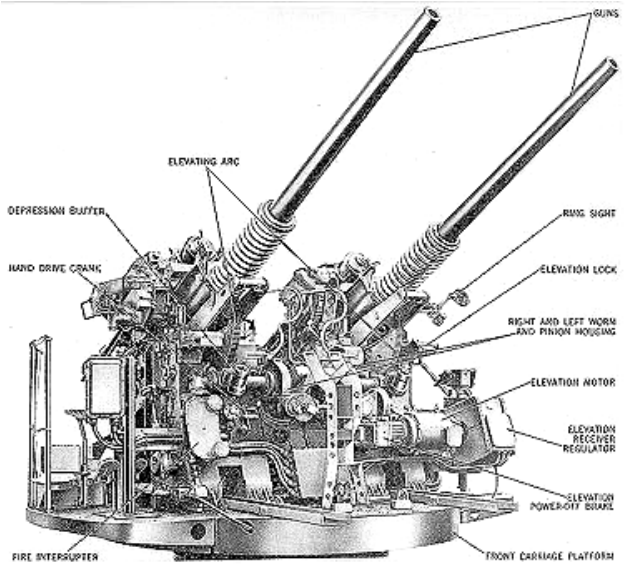
- Be able to recognize some of the PN shipboard standard guns and their characteristic
- Be able to enumerate the different gun personnel and their functions

The standard shipboard naval guns currently available in the PN inventory are mostly of the U.S.-made minor caliber guns - the **3-inch 50 caliber dual-purpose guns**, **40MM** and **20MM anti-aircraft guns**. These are the types of armaments installed in patrol combatants and naval auxiliary ships which were acquired by the Philippine government from the U.S. at the end of World War II. Since their acquisition, the PN has developed the technical expertise in maintaining and extending the operational serviceability of these guns.

During the late 70s, the PN has acquired a relatively modern weapon system as part of its modernization program, the **30MM Emerlec guns**, which are now installed in some of its newly-acquired or newly-constructed patrol gunboats. Some modern **belt-fed 20MM guns** have also replaced the old 20MM AA guns. In line with the enactment of the AFP Modernization Law, plans are in the offing for the PN to acquire some of the latest gun systems, such as the **Oto Melara 76MM/62 caliber dual-purpose**, rapid-fire guns and the **Bofors 40MM AA guns**.

Characteristics of Naval Guns in the PN Inventory

a. The 3-inch 50 Caliber (3"/50) Single Gun



The 3"/50 gun is a pedestal mounted, single or semiautomatic firing, dual-purpose gun designed for action against surface and air targets.

This was developed by the U.S. towards the end of World War II to combat high altitude bomber aircraft and replace the 40MM and 20MM AA guns.

The gun is air-cooled, recoil operated and uses a fixed type of ammunition.

It can be fired electrically by means of a solenoid key or manually through a firing foot pedal connected to the gun by mechanical linkages at the rate of 20 rounds per minute.

The gun is provided with a manual as well as telescopic gun sights and sight setting mechanism to aid in hitting the target and a fuze setting mechanism for setting the projectile's mechanical time fuze.

The following are other important data about the gun:

Weight of the gun	- 7,817 lbs
Muzzle velocity	- 2,700 ft/sec
Rifling	- right-hand twist
Number of grooves	- 24
Length of recoil	- 10-11.5 inches
Maximum horizontal range	- 14,600 yards
Maximum vertical ceiling	- 29,300 feet
Effective range (horizontal)	- 8,000 yards
Effective range (vertical	- 4,000 yards

The 3"/50 single gun mount is normally manned by a gun crew of nine (9) personnel, maximum, and seven (7), minimum. These personnel with duties indicated are as follows:

a) **Gun Captain** - he is in charge of gun crew directing the operation of the gun and is provided with sound-powered telephone (SPT) to communicate and take orders directly from the Gunnery Control Officer. He takes station by the hand-operating lever at the right side of the breech mechanism of the gun.

b) **Pointer** - he operates the hand wheel to elevate and depress the gun and keep it pointed in the position angle of the designated target using the manual gun sight or by setting the horizontal crosshair of the telescopic gun sight to the target in coordination with the Trainer and fires the gun when ordered. He takes station to the left seat of the gun.

c) **Trainer** - he operates the hand wheel to move the gun to the left or right and keep it trained in the direction of the designated target using the manual gun sight or by setting the vertical crosshair of the gun sight to the target in coordination with the Pointer. He takes station to the right seat of the gun.

d) **Sight Setter** - he operates the range and deflection scales of the sight setting mechanism as directed and repeats all orders to control. He takes station at the sight setting platform on the left side of the gun at the back of the pointer. In case none is assigned, the Gun Captain acts as the Sight Setter.

e) **Fuze Setter No. 1** - he operates the fuze setting mechanism or in the absence of such mechanism, provides himself with a hand wrench for adjusting nose fuze setting of the projectile. He takes station at the fuze setting platform on the left side of the gun. He may be the only Fuze Setter assigned, hence, he should take one round from the ammunition locker, take station at the fuze setting platform on the left side of the gun to set the fuze and prepare to pass the round to the Second Loader.

f) **Fuze Setter No. 2 (or Third Loader)** - he normally takes out one round from the ammunition service locker for setting the fuze and prepares to pass the round to the Second Loader. He also takes station at the fuze setting

platform in front of the Fuze Setter No. 1 on the left side of the Second Loader.

g) **Second Loader** - he normally stands by to receive the round from the Third Loader and prepares to pass it to the First Loader. He takes station in front of the Third Loader and to the left of the First Loader.

h) **First Loader** - he normally stands by to trip the salvo latch and receive the round from the Second Loader and prepares to ram the round into the gun. He takes station to a place behind and a little to the left of the gun with his left foot just beyond the danger circle.

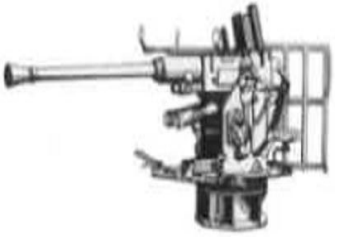
i) **Hot Shellman** - he prepares to catch the ejected hot empty shell coming out of the gun as soon as it is fired. He takes station to a place behind and a little to the right of the gun convenient enough for him to do his job wearing asbestos gloves.

40 Millimeter Anti-Aircraft Gun(40MM AA)

The 40MM AA gun is a single or automatic firing (rapid firing), recoil operated gun designed for action against dive bombing aircraft or low flying aerial targets but maybe used against surface targets.

It maybe a single barrel (Army type), manually (local control) operated, air cooled gun; or, a twin or quadruple barrel (Navy type), manually or automatically (local or gun director control) operated, water cooled guns equipped with power drives for electric or electric/hydraulic operations.

This gun uses clip-feed ammunition, consisting of four (4) rounds, which are fired electrically by the gun director firing key and/or manually by pressing the firing foot pedal at the rate of 130-150 rounds per minute.

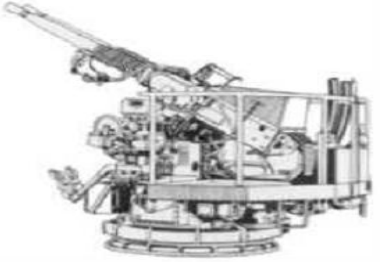


The gun is provided with manual gun sights for giving the necessary lead to allow for target motion during the time of flight of the projectile and also to provide for quick changing of the lead as the position of the target changes.

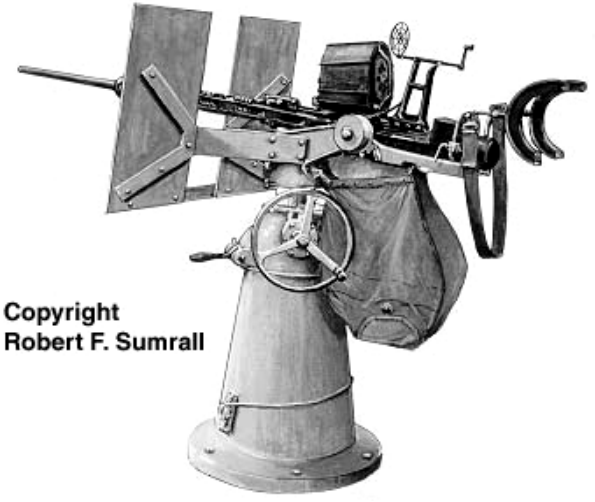
The following are other important data about the gun:

Weight of the gun	- 2,300 lbs
Muzzle velocity	- 2,830 ft/sec
Rifling	- right-hand twist
Number of grooves	- 16
Length of recoil	- 7.5 - 8 inches
Maximum horizontal range	- 11,000 yards
Effective range (horizontal)	- 5,000 yards
Effective range (vertical)	- 2,000 yards

The 40MM AA gun is manned and operated by a gun crew composed of seven (7) members for a twin mount plus two (2) more for each mount with a gun director Mark 51 and five (5) members for a single mount. A quad mount would need as much as 12-15 personnel.



20 Millimeter Anti-Aircraft (20MM AA) Gun



The 20MM AA gun is a single or twin barrel, pedestal mounted, automatic firing, magazine-fed gun designed for action against low-flying aerial torpedo attack aircraft but can also be used against surface targets.

It is air-cooled and blowback operated wherein the barrel does not recoil but the breechblock is never locked and in constant motion at the instant the round is fired.

The force of counter-recoil is being checked by the explosion of the next round.

The gun maybe provided with a manual gun sight or the Mk 14 electrically operated telescopic gun sight to aid the gunner in hitting the target.

The magazine is a cylindrical drum containing 60 rounds of ammunition which is placed on constant tension.

The gun can be fired electrically through a solenoid switch or manually by means of a trigger mechanism at a rate of 450 rounds per minute.

The mount is provided with a cocking devise (a wire rope or bar), an empty cartridge bag, a bracket that supports the shields, cradle spring and cradle.

The following are other data about the gun:

Weight of the gun	- 141 lbs
Muzzle velocity	- 2,725 ft/sec
Rifling	- right-hand twist
Number of grooves	- 9
Maximum range (45° elev)	- 4,000 yards
Effective range (horiz)	- 2,000 yards
Effective range (vert)	- 1,200 yards

The 20MM AA gun is manned and operated by a gun crew composed of a minimum of 3 personnel (single barrel gun) and a maximum of six (6) personnel (twin barrel gun).

WATCH, QUARTER AND STATION BILL

Learning Outcome:

After the class discussion, the students are expected to:

- Recognize and discuss the importance of watch, quarter and station bill
- Know the different conditions of readiness
- Know what is the special sea detail

It shows the personnel duty assignments for a division as specified in the ship's Battle Organization and Regulation's Manual. Its purpose is to inform division personnel of their assignments. It is arranged in tabular form.

Column are provided for entering data from the battle organization manual and for the duties assigned under certain condition of readiness of the ship's Bill.

Some ships have additional columns too suit their special needs.

A. Battle Organization Manual:

1) It is a special organization and a special system of communication for battle conditions in order for the CO to fight the ship to the best of their abilities.

2) It contains four chapters describing the following:

a) **Battle Organization Chapter** - discusses chain of command; control of ship, armaments, communications, aircraft, casualties, etc. and the doctrines to fight the ship.

b) **Conditions of Readiness Chapter** - Covers the consideration affecting the selection of the proper condition of readiness and the measures that individual ships take to comply with the specified condition.

Conditions of Readiness:

1. Condition Watch I - the maximum state of readiness for battle, with the entire crew at battle stations prepared for imminent action. Modified version:

a) Condition Watch IE - a condition to provide temporary relaxation from the first degree of readiness and to permit designated personnel to draw and distribute meals at their action stations.

b) Condition Watch IA - frees enough personnel from their assigned GQ stations to carry out the ship's mission in amphibious assault operations.

2. Condition Watch II - a special watch applicable to gunfire support ships for situation such as extended period of shore bombardment.

3. Condition Watch III - Normal wartime cruising condition when surprise attack is possible. Part of the armament is manned and ready for immediate action.

4. Condition Watch IV - that condition to provide effective ship and aircraft control during peacetime cruising. No armament is manned.

5. Condition Watch V - ship in port peacetime, no armament manned.

c) **Battle Bill Chapter**: Lists the stations, which must be manned under battle conditions and for various conditions of

watches and indicating the personnel requirements for manning those stations.

d) **Chapter 4** - Provides descriptive information on the various interior communication systems which include alarms and warning devices, battle announcing system, sound powered telephone circuits, ship's service telephone systems and voice tubes.

B. Ship's Organization and Regulations Manual:

1) It is a general directive, but it has the force and effect of regulations.

2) It is necessary to provide for almost any contingency. Routine work and other details or duties to be performed by or assigned to the several divisions are set forth in the manual.

3) This book outlines in a specific manner the following:

a) Administrative Bills:

1) Special Sea detail:
2) Underway replenishment:
3) Rescue and Assignment Bill
4) Landing Party
5) Visit and Search, Prize Crew, Boarding and Capture Bill

b. Emergency Bills - detailed procedures and specific assignment of men to perform an evolution on short notice when there is danger of loss of life or of the ship itself.

1) General Emergency Bill - collisions, grounding, explosion, storm or battle damage
2) Man Overboard Bill:
3) Fire in Port/ At Sea; and
4) Collision in Port/At Sea.

C. **Special Sea Detail (SSD) –**

- It is set whenever a ship gets underway from a pier or anchorage and goes to sea or returns from sea to an anchorage or mooring.
- It is set about a half-hour before getting underway and continues until the ship clears the harbor and is also set before entering port until the ship is docked or anchored.

D. Regular Underway Watch Detail:

Once the ship has cleared the harbor, the SSD is relieved and the regular underway watch is stationed: that is the cruising watches begin and the regular sections of the watch take over their prescribed duties.

MACHINERY AND EQUIPMENT

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know the different shipboard machinery and equipment
- Know the different types of propulsion used by the navy

1. **Ship Propulsion Engines**: Those engines used aboard ship that will enable the ship to move by rotating a propelling device such as oars, paddle, wheels or propellers.

Typical propulsion used in the Navy:

a) Steam turbine gear drive
b) Gas turbine gear drive
c) Diesel engines (GM-6, GM-12, GM-16, GM-32)

2. **Auxiliary Machinery and Equipment** – Provides ship's smooth operation and personnel safety and comfort aboard ship.

a) Refrigeration plant – primarily used for food storage, water cooling, and ice making.
b) Air conditioning equipment – installed on naval ships for certain spaces where personnel efficiency, health, and safety on operation of equipment may be endangered by high temperatures or high humidity.
c) Distilling plants – used to supply fresh water for shipboard uses and boiler feed water.

d) Steering gears – there are two basic types of steering mechanisms used in the navy:

1) Electromechanical steering gear – used extensively on small non-combatant ships.
2) Electro-hydraulic steering gear – used extensively on large combatant ships.

e) Anchor windlass – a piece of deck machinery used primarily for paying out and heaving in an anchor chain.
f) Capstan – spool shaped, vertically mounted drum used for heaving in heavy mooring lines.
g) Lube oil purifier – normally located in the engine room, used to for contaminated lube oil, water, sediments and other impurities.
h) Air compressor – driven by electric motors commonly used for operating pneumatic tools, ejecting gas from ship's guns, starting diesel engines, charging and firing torpedoes, operating gun counter-recoil, providing pressures for the ship's horn.

Types:

1) Low pressure compressor – has a discharge pressure of 150 psi or less
2) Medium – has a discharge pressure of 151 psi to 1000 psi.
3) High-pressure compressor – has a discharge pressure of more than 1000 psi.

i) Cranes – are used to raise a load, lower and move it in horizontal direction. Used for handling airplanes, boats, bombs, torpedoes, minesweeping gears, missiles, trucks and stores.

j) Elevator – used to raise and lower a load. The same use as the crane, except that it cannot move in horizontal direction.

k) Winches – a piece of deck machinery that has a drum or drums on a horizontal shaft for handling loads with wire rope. In addition, cargo winches may be equipped with one or two gypsy heads fitted for handling manila rope.

l) Laundry Equipment – consists of washer, extractor combinations, dryers, various types of ironing and pressing equipment plus numerous miscellaneous items such as laundry marking machine.

m) Galley Equipment – food preparation and service equipment located in the galley and messing spaces aboard ship.

Examples:

1) ranges
2) ovens
3)deep fan fryers
4) mixing machine
5) meat slicing machine
6) cube steak machine
7) coffee urns
8) toasters
9) steam jacketed kettle
10) refrigerators
11)dishwashing machine
12) cooking utensils

DAMAGE CONTROL

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know the different damage control system at the ship
- Know the reasons why ship compartmentalization is important

Damage Control – Procedure that helps reduce the harmful effects of impairment to the ship.

1. Preserve the watertight integrity of the ship.
2. Maintain the stability and maneuverability of the ship.
3. Make rapid repairs to damage gear on structures.
4. Furnish fire protection and extinguish fires.

THE DIFFERENT DAMAGE CONTROL SYSTEM

1. Drainage and flooding system.
2. Fire Main and Sprinkling system.
3. Ventilation System.
4. Fuel and fresh water system.
5. Compressed air system.
6. Communication system.

❑ **Drainage and Flooding**

Drainage used for:

a. Removing large quantity of water from compartment.
b. Removing water from the hull under normal operating condition.

Flooding used for: Flooding compartments to balance the ship.

Three Principal types of drainage system:

1. **Main drainage system -** High capacity and is made up of piping and pumps that can move large quantities of water in short time.
2. **Secondary drainage system -** Serves to drain small compartment forward and aft of the time drainage system.
3. **Main condenser circulatory pumps -** Can be used for emergency drainage of the engine room.

- **Fire Main System -** made up of piping, pumps, plugs, valves and controls designed to supply plenty of water for fighting.

- **Ventilation System -** supplies fresh water, air and remove stale air and gases. It helps to prevent fires and explosion by preventing the accumulation of explosive gases.

- **Fuel Fresh Water System -** Consists of tanks, filling lines and feed lines. This is important in damage control because the list and trim of the ship can be partially controlled by shifting contents of the tanks. This method of balancing is better than flooding when the damage is below the waterline.

- **Compressed Air System -** Provides air for guns and torpedoes and for testing and blowing out compartment and tanks.

- **Communication System -** When ship is in action, the communication is vital importance in notifying the control system as to:

1. Location of casualties
2. Extent of damage
3. Corrective measure taken progress being made

SHIP COMPARTMENTATION

The ship is divided into compartments to:

1. Control flooding
2. Restrict chemical agents and gases
3. Segregate activities of personnel
4. Provide underwater protection by means of tanks and voids
5. Strengthen the structure of the ship

Compartments are designated and identified by symbols that are made up of letters and numbers. Symbols are stenciled on bulkheads.

Port compartments have even numbers while starboard compartments carry odd numbers.

DAMAGE CONTROL ORGANIZATION

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know the organization of the repair party
- Know the different functions of the repair party

Major Administrative Responsibilities:

1. The damage control function is delegated to the damage control assistant located in the damage control central (or designated repair party station on smaller ships).
2. Damage control can be accomplished only by the participation of all department aboardship. each department is responsible for the following:
   a. Set material condition of readiness.
   b. Enforce watertight integrity discipline.
   c. Inspection of spaces in accordance with the hull report.
   d. Require that damage control equipment and fittings be maintained in their proper location and in operation order.
   e. Require the assignment of damage control duties to individual within each division, including the designation of a division damage control Petty Officer.
   f. Secure department material and equipment against possible damage by heavy weather.
   g. Immediately report to the damage control assistant any deficiency in damage control markings, devices, fittings, equipment or materials.
   h. Train personnel in damage control matters.

i. Furnish personnel to repair parties as required by battle bill.

j. Be prepare to strip ship or clear for action.

k. Emphasize self-sufficiency in all battle stations by OJT in handling casualties to personnel and equipment.

Repair Party Organization:

a. Repair 1 - Main deck repair party
b. Repair 2 - Forward repair party below deck
c. Repair 3 - After repair party below deck.
d. Repair 4 - Amidships below deck repair party.
e. Repair 5 - Propulsion Repair Party
f. Repair 6 - Ordinance Repair Party
g. Repair 7 - Gasoline Repair party and,
h. Repair 8 - Flight deck repair party

General Functions of Repair Parties:

- Each repair parties must be capable of effecting repairs to electrical and battle telephone circuits.
- Capable in rendering first aid.
- Capable of detecting, identifying, measuring dose rate intensities and decontaminating the effect of nuclear, biological and chemical (NBC) attack.
- Organized to evaluate correctly the extent of damage in the areas in order to ensure the accuracy of on scene reports.

WATERTIGHT INTEGRITY

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know the different damage control system at the ship
- Know the reasons why ship compartmentalization is important
- Know the different tests for watertight integrity

The progress of damage control depends upon the proper utilization of watertight integrity features of the ships. The ship is divided into compartments and its purposes are:

1. Control flooding
2. Restrict NBC agents
3. Segregate activities of personnel
4. Provide underwater protection by means of tanks and voids.

The large combatant ships have an armored belt to protect vital machine spaces. In some instances an increase in an armored belt would reduce speed or have an adverse effect in the open of the ship as in aircraft carrier. Compartmentalization has been increased to compensate for reduction of armor.

1. Bulkhead – a traverse or longitudinal partition that separates the compartment.
   a) Watertight bulkhead:
      1) Heavier metal than ordinary bulkhead.
      2) Some area unpierced except with watertight door or piping and wiring.

b) Collision Bulkhead:

1) Designed to protect flooding through the ship.

2) Bow collision bulkhead is the first transverse bulkhead aft of the stern.

3) The last transverse bulkhead aft is the collision bulkhead that protects the after part of the ship.

Doors and Hatches:

Enclosures for bulkhead opening. They are constructed such they will be as structurally strong as the bulkhead where they are installed.

1. Watertight doors
   a. Used in watertight bulkhead on second deck and below.
   b. Designed to resist 1 ½ times as much pressure as the bulkhead it services.
   c. Have 6 to 12 dogs for securing.
      c.1 Some dogs must be secured individually.
      c.2 Usually a hand wheel is used for quick closing of the door.

2. Non-watertight Doors
   a. Used on non-watertight bulkheads.
   b. Usually they have fewer dogs than watertight doors and are made of dogs which require individual protection.

3. Airtight Doors
   Are also fume and gas tight.

a. When used in locks, hand wheel is provided for quick closing.
b. When used in other places, individual dogs are provided.

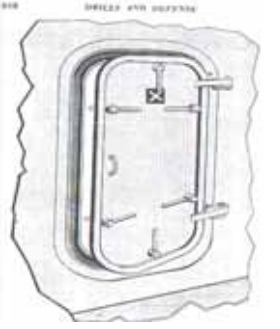
4. Spray tight Doors – topside on ships with low freeboard to prevent entry of spray and water.
5. Panel Doors – ordinary metal joined doors to provide privacy in wardrooms, etc.
6. Hatches – are merely horizontal doors which are used for access through decks.
6. Escape scuttle – a round opening quick acting closure placed in a hatch.
8. Manholes

a. Are really miniature hatches which are provided in deck for occasional access to water and fuel tanks.

b. Bolted manholes are merely section of steel plates which are gasketed and bolted over deck access opening.

c. Manholes are also found in bulkheads but are not so common as deck manholes.

Closure Fitting and Gaskets:



1. Gasket

a. Made of rubber installed on doors and hatches.

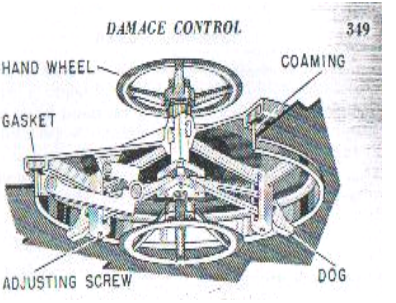
b. Close against knife edges to form a water tight fitting and form air and gas tight fitting.

c. Must be kept free of dirt and grease.

2. Knife edges
   a. Built out from decks and bulkheads.
   b. Gasket on watertight doors and hatches close on knife-edges.

3. Dogs and Pins
   a. Pins – are used to connect dogs
   b. Dogs – are used to make closure.

4. Apply a light coat of heavy oil on dogs and pins.



Watertight tests:

- **Chalk test** – for knife edges and gasket fitting.
- **Visual Test**:
  Every six months
  For compartment that cannot be tested.
- **Air Test** – Compartment designated for air test should be tested every 18 months.

MATERIAL CONDITION OF READINESS

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know the reasons for classifying fittings aboard ship
- Know the different kinds of material condition of readiness

In order to use compartments to its fullest advantage and to provide maximum preparedness, all the doors, hatches scuttles access valve and fittings of damage control valves are classified and manned. Navy vessels maintain different material conditions according to whether contact of enemy is improbable or imminent. Each condition represents a different degree of tightness.

To avoid confusion and frequent changes in regards to damage control fittings, settings are referred to by an old phonetic alphabet.

1. Reason for classification of Fitting:

a. Maintain the maximum degree of watertight integrity consisting of working requirements and health and comfort of the crew.

b. Maintain the maximum degree of readiness for battle station consistent with the demands of tactical situation.

c. Minimize the amount of time it takes to put the ship in a battle condition without jeopardizing the operational ability of the ship and the comfort of the crew.

2. **Kinds of Material Conditions**:

a. **Condition X-RAY** – Enemy improbable – Color Black.

- Setting provided the least amount of protection and in use only in well-protected harbors.
- Assigned to storeroom, tanks, voids, airtight fittings, fire main valve, etc.

b. **Condition YOKE** – Enemy is probable – Color Black.

- Next higher degree of watertight integrity.
- Used in unprotected ports during wartime cruising and entering port leaving during peacetime.
- Assigned to workshop, airport, lens, pump room, and fire main segregation valves.
- Set daily from sunset or at the end of the working day until sunrise.

c. **Condition ZEBRA** – Enemy is imminent - Color Red.

- Provide for the maximum degree of watertight integrity.
- Used in battle condition, emergency, when entering or leaving port during wartime.
- Assigned to fittings that would normally be opened at all times, except during battle condition and emergencies.

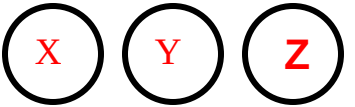
CLASSIFICATION OF FITTINGS

MATL CONDITION	X – RAY	YOKE	ZEBRA
X-RAY	Closed	Opened	Opened
YOKE	Closed	Closed	Opened
ZEBRA	Closed	Closed	Closed

3. **Modifications to the Material Condition of Readiness**:

a. Black Circle X – Ray Black Circle YOKE

- Fittings that give access to battle station ammunition, transfer and operation of vital systems.
- Opened without DC central permission
- Closed when not in use.



b. Red Circle ZEBRA\

- Fittings that may be opened during prolonged period of general quarters.
- Opened when authorized by the CO only.
- Allows for the preparation and distribution of battle ration and for ventilation of vital spaces such as engineering rooms, etc.
- When opened, these fittings are equipped with quick action devices.

c. Red ZEBRA Surrounded by a D

- Fitting that have access to weather deck not equipped with tight locks.
- Used for darken ship.

d. Circle Williams – Color Black

- Primarily to ventilation fittings.
- Access opening which are closed only in the event of NBC attack to prevent smoke or other airborne contamination from entering the ship.
- Applies to non-vital sea section valves which when secured would not impair the mobility or fire protection of the ship.

e. Williams

- Special classification assigned to fittings essential for the operation of the ship such as valves, in piping system needed for safety and operation of the ship.
- If closed would seriously hamper the mobility and fire protection of the ship.
- Closed only to effect repairs or when causing flooding.

FIREFIGHTING

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know three elements of fire
- Know the different classifications of fire and corresponding remedy
- Know the classification of firefighting equipment and samples of each classification
- Know the general safety precautions of firefighting

Everyone on aboard ship have another big job - to work aside from their primary duties. This big job is to look out constantly for the safety of the ship and crew. When the ship puts out on a mission, all hands must do everything they can to:

1) Keep the ship afloat
2) Keep the ship underway
3) Keep the guns firing or ready to fire
4) Protect the lives of the crew

Causes of damage to a ship is divided into:

1) Fire
2) Collision
3) Enemy Action
4) Grounding
5) Weather

Fire - Is a chemical reaction between three elements such as oxygen, fuel and heat.

Classification of fire and extinguishing agent :

- Class A - common combustible materials like papers, woods, ropes, canvass - solid stream or water spray.
- Class B - flammable liquids and gases. Like kerosene, LPG, Gasoline - water fog, mechanical foam fire extinguisher.
- Class C - energized electrical equipment. - CO2 fire extinguisher
- Class D - combustible metal such as thermite, sodium and magnesium – sodium bicarbonate, lots of water,

FIREFIGHTING EQUIPMENT:

Firefighting equipment are classified into:

1) Portable - can be carried to the scene of fire. Contained in a cylindrical bottle.
2) Installed - are permanently or semi-permanently fitted on a ship and include the following:
   a) Fire Main System
   b) All-purpose fire nozzles and applicators.
   c) Foam equipment
   d) Fog sprays
   e) CO2 Rail system
   f) Mechanical Foam Equipment

SPECIAL PROTECTIVE EQUIPMENT:

The Navy believes in protecting its fire fighter. This protection includes the use of the following:

1) Oxygen Breathing apparatus (OBA)
2) Asbestos Suits
3) Hose (Air line) Mask
4) Life line

GENERAL SAFETY PRECAUTIONS:

You cannot win against fire. You can fight it, and you can hold down its damage. But some property will be destroyed and all too often men will be injured and even killed. Time is always lost, productive work is interrupted and additional efforts and materials are required to make repairs and to clean up the mess. The best thing therefore is to prevent fire from starting.

1. **Three (3) general rules to good fire prevention:**

a) Keep things clean. Shipshape and in their right places.

b) Keep flammable materials (gasoline, oily rags, paints, etc) away from fire starting things (torches, cigarettes, sparking equipment, heated areas). Do not take open flames near gasoline tank. Do not bring cleaning fluid near torch.

c) Keep the correct fire fighting equipment in the right places and in good condition.

2. **Fuel oil** – Fuel oil itself is non-explosive and very difficult to ignite, and is normally incapable of spontaneous combustion. Fuel oil vapor however is heavier than air and it

will accumulate in bulges and bottoms of tanks where it remains undiscovered until ignited by a naked light or spark.

Vapor is always present in partly filled compartments or tanks that contain fuel oil-unless the tank has been blown or washed out. While oil is being received or discharged there will be no naked light; no smoking; no electrical apparatus liable to spark are permitted on board ship within 50 feet of an oil hose tank and in compartments containing a tank or pump or a vent from a tank. Carrying of any matches when cleaning tank is prohibited.

3. **Static Electricity**:

Static Electricity is produced when gasoline or similar flammable liquids flow through hose, poured from one receptacle to another passed thru a filter or even splashed around a can. Enough static electricity can accumulate to cause a spark which can result in fire and explosion.

When working in or near fuel tanks or magazines you should never wear neither boots nor shoes with exposed nails, nor wear metal buttons or metal fastening.

In hazardous areas you must not wear outer – undergarments made of wool, silk, or synthetic textiles such as rayon and nylon. These materials can generate sufficient static electricity to cause ignition of inflammable products.

4. **Electrical Equipment:**

The following requirements are particularly not applicable where work with electricity is being carried on.

a) Gasoline and similar flammable cleaning fluids are not used on either energized or de-energized electrical apparatus.

b) Alcohol is not used for cleaning equipment. It damages most types of insulating varnishes.

c) Alcohol is not used for cleaning near electrical equipment from which a spark might be received.

d) Oil, grease, carbon dust, etc can be ignited by electrical spark. Machinery is to be kept absolutely clean and free of all such deposit.

Fumes from gasoline or other volatile flammables may be ignited by any of the following:

a) Heat from a broken electrical lamp;
b) Sparking in a motor;
c) Ground or short in electric circuit;
d) Spark from opening electric switches; and
e) Static electric sparks caused by rubbing two things together.

NAVIGATION

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know what is navigation and its branches
- Know the various terms in navigation
- Know the different navigational aids and equipment
- Know what is a nautical chart and basic marine plotting and getting bearing and fixes

Navigation: The art or science of determining the ship's or aircraft's position and of conducting a ship or aircraft from one position to another. The problems of navigation are those of position, direction and distance.

FOUR (4) BRANCHES OF NAVIGATION:

1. Dead Reckoning (DR) – a method of navigation by which the position of the ship is calculated from the direction and rate of progress through the water from the latest well-determined position.
2. Piloting – near-shore navigation method by which the movement of a ship is directed by reference to landmarks, navigational aids or soundings.
3. Electronic Navigation – a method of navigation which employs the use of various electronic devices. It differs from piloting primarily in the manner of collecting information.
4. Celestial Navigation – the position of the ship is determined by the observation of celestial bodies such as the sun, moon, planets and stars.

B. **Nautical Terms**:

1. Earth - the planet with which we are most familiar, although it is approximately an ablate spheroid, for navigational purposes, it is assumed to be a true sphere.

DIAMETER OF THE EARTH:

a. Polar Diameter – 6,864.57 nautical miles;
b. Equatorial Diameter – 6,887.91 nautical miles or a
c. Difference of 23.34 nautical miles

2. Axis – the diameter about which the earth rotates. The north end is the north pole while the south end is the south pole.

3. Great Circles – a circle on the surface of the earth, the plane of which passes through the center of the earth.

4. Small Circle – a circle on the surface of the earth, the pale of which does not pass through the center of the earth.

5. Equator – the great circle which is equidistant to the poles. The plane is perpendicular to the surface of the earth's axis.

6. Parallel – small circle on the surface of the earth having planes parallel to the plane of the equator and perpendicular to the earth's axis.

7. Meridians – great circle on the surface of the earth that passes through the poles.

8. Prime Meridians – meridians used as the origin of measurement of longitude, the meridian of Greenwich England.

9. Latitude – the angular distance between the position and the equator measured northward or southward from the equator along a meridian and labeled as appropriate N or S.

10. Longitude – the angular distance between the position and the prime meridian measured either eastward or westward from the prime meridian along the area of the equator to the meridian of the position in degrees from 0 – 180 deg and labeled E or W.

11. Direction – angular inclination of that line to the meridian measured right or counter clockwise from the north point of the meridian and expressed in three digits.

12. Course – as applied to marine navigation, is the intended direction of travel of a ship through the water

13. Heading – the direction in which the ship point or heads at a given time.

14. Bearing – the direction of a terrestrial object from the observer; azimuth as applied to the celestial bodies.

15. Distance – the length of a line joining two places on the surface of earth and is expressed in nautical miles. The shortest distance between two points on the surface of the earth is along the great circle joining them.

16. Speed – the velocity of travel and is expressed in knots. One (1) knot is equal to 6,080.2 feet per hour. One (1) minute of angular measurement in great circle for navigation purpose, is also equals to 2,000 yards.

II. NAVIGATIONAL AIDS:

A. **Aids to navigation**: - any device external to a vessel or aircraft intended to assist a navigator to determine his position or safe course or to warn him from danger or obstruction to navigation.

Buoys – the primary functions is to warn of some danger or to delineate channels.

VARIOUS TYPES OF BUOYS:

1. Can Buoy – built up of steel plates having the shape of a tin cylinder used to mark left side of the channel from seaward.
2. Nun Buoy – built up of steel plates, the above water portion having the shape of truncated cone, cone in shape used to mark right side of the channel from seaward.
3. Bell Buoy – steel floats with a flat top on which a framework containing a bell is mounted. Most bell buoys are sounded by the motion of the sea and struck by compressed gases or electrically operated hammer.
4. Spar Buoy – slightly tapering pole or spar frequently used to mark side of channel. May replace the nun or can buoys.
5. Gong Buoy – similar in construction to bell buoy but has four (4) gongs each of different tones.
6. Whistle Buoy – provides a sound signal which is useful at night and also during fog and low visibility; cone in shape with a whistle, sounded by the motion of the sea.
7. Lighted Buoy – having batteries or gas tanks. Framework supports the light. A metal float on which is mounted a short skeleton tower.
8. Combination Buoy – lights and sound signals are combined, such as lighted bell buoys, lighted gong buoys and a lighted whistle buoy.
9. Radar Reflected Buoy – radar reflectors which return a strong echo to the radar screen are fitted on many buoys of all types.

10. Lighthouses – it is a man made permanent fixture having a light of certain characteristics and is usually watched.

11. Lightships – such as

a. Floating lighthouses that mark approaches or entrances to harbors.

b. Used when building a permanent structure is impractical.

12. Lighted Beacons – similar to lighthouses and generally unwatched.

13. Lighted Buoy – lighted floating marker.

NOTE: These lighted aids to navigation have individual characteristics. To obtain the full benefits from the light, the navigator must understand their uses and be able to interpret data concerning them in light list and charts.

B. Characteristics of Lights:

1. General System:
   a. Fixed light (F) – continuous steady light.
   b. Flashing Light – shows single flash at regular interval, the duration of light always shorter than the duration of darkness not more than 30 flashes per minute.
   c. Group Flashing (GP FL) – shows groups of two or more flashes at regular intervals.
   d. Quick flashing (QK FL) – shows not less than 60 flashes per minute.
   e. Interrupted Quick Flashing (I QK FL) – shows quick flashes for about 4 seconds followed by a dark period of about 4 seconds.

f. Short Long Flashing (S L FL) – shows short flashes of about 0.4 second followed by a long flash of about 4 seconds in duration.
g. Group Occulting (GP OCC) – a light with a group of 2 or more eclipse.

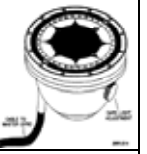
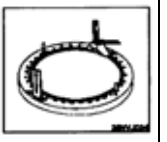
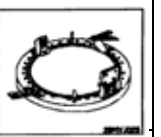
2. Standard Colors of Lights:
   a. White, Red, and Green.
   b. Brilliancy – range of visibility.

3. Light List Philippine Island: (Information Contained)
   a. In the Philippines, the number starts from North to south in their approximate order (Geographical)
   b. Name and Location
   c. Position by Latitude and Longitude
   d. Characteristics and Power
   e. Height of light in feet above the water
   f. Visibility in miles
   g. Structure description

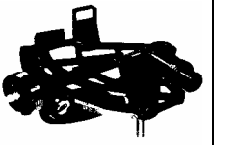
III. **NAVIGATIONAL INSTRUMENTS**:

A. **Direction Measuring Instruments**:

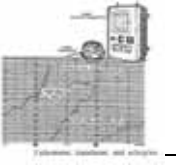
Compass	instruments that indicates directions.	
Magnetic compass	depends on the tendency of a pendulous gyroscope to seek to along its axis with that of the earth.	

Gyro compass repeaters	located at various positions throughout the ship to indicate the master gyro heading.	
Bearing circle	a non-magnetic ring formed to feet snugly over the compass bowl about which it can be turned to any desired direction. used to determined bearings of terrestrial objects.	
Azimuth circle	similar to the bearing circle with a special attachment for observing the sun. used to determine bearings of celestial bodies.	
Pelorous (dumb compass)	consists of a compass stand, compass bowls and compass card. used also in determining bearing.	
Alidade	an azimuth circle having a telescopic sight mounted over it.	

B. **Short Range Measuring Device**:

Stadimeter	used to find range of objects of known height or height of objects of known distance.	

B. **Depth Measuring Device**:

Hand lead	weight attached to a marked line from 7 to 14 lbs.	
Deep sea lead	from 30 to 100 lbs.	
Sounding machine	works under water pressure.	
Echo sounder (fathometer)	works under speed of sound.	

D. **Electronic Instruments**:

1. Radio Receiver – receives signals and weather information.
2. Radio direction Finder (RDF) – receiver and a loop antenna which has directional properties.

3. Radar (Radio Direction and Ranging) – used for obtaining bearings and ranges of objects in all conditions of visibility.

4. Loran (long Range navigation) – measures the difference in the time reception of two synchronized radio signals which is used to determine a hyperbolic line of position.

5. Sonar (Sonic Ranging) – uses speed of sound under water. It gives bearing and distance of objects underwater.

C. **Celestial Navigation Instruments**:

1. Sextant – measuring angular heights of celestial bodies and measuring angles between two visible objects.

2. Chronometer – accurate clock of superior construction for maintaining accurate time aboardship.

3. Ship's Clock – ordinary clock set to keep standard or zone time.

4. Comparing Watch – used for timing celestial observation.

5. Stop Watch – useful in piloting for identification of lights and in celestial observation.

6. Star Finder (H02102-D) – provides the navigator with positions of the celestial bodies relative to the position of the observer.

F. **Plotting Instruments**:

1. Pencils – soft lead pencil with eraser.

2. Navigator Case – contains drawing compass dividers, screwdrivers etc.

3. Parallel Ruler – for drawing a straight line in plotting direction.

4. Drafting Machine – measuring directions.
5. Protractor – for measuring angles.
6. Triangles – for transferring lines from compass rose to any place on the chart or vice versa.

G. Weather Instruments:

Barometer	atmospheric pressure (Mercurial or Anenoid)	
Thermometer	determines temperature.	
Psychrometer	measure relative humidity.	
Anemometer	measure wind direction and wind speed.	

IV. NAUTICAL CHART :

A. Chart – a pictorial representation of the earth surface or part of it with provision for determining position, distance and direction and information of interest to the navigator. This shows usually coastal areas of water and gives a great deal of hydrographic information which is useful to the navigator.

B. Map – for most part shows land areas including their political subdivision and topography.

C. Chart Projection: - methods of representing the curved surface of the earth on a flat surface.

D. Charts Symbols:

1. Fathom Lines – system of lines that indicates extent of fairways and restricted waters.
2. Soundings – (depth of water) numbers scattered on water areas of the charts. Sounding can be either in feet or fathoms and can be determined from the title of the charts.
3. Light (Lighthouse, Lighted Beacons, Lighted Buoys) – indicated on the charts by a red color or star. Characteristics and features near the symbols.

Examples: GP FL – 30 seconds 156 ft and 19 miles.

4. Buoys – opal or red colors other than black solid shape for black vertical stripes and horizontal stripes, lighted red/gray.
5. Compass Rose – used to measure directions. Outer indicates true direction, the inner indicates magnetic directions and it also gives variation to locality.

E. Shorelines:

1. Sandy Beach – rows of fine dots.
2. Gravel – small circles
3. Boulders – irregular shapes

F. Heights – numbers in feet above high water.

V. TYPES OF COMPASS:

A. Gyrocompass – a compass that measures the direction by means of the principles of gyroscopic inertia and precision.

B. Magnetic Compass – a compass on its directive force upon the attraction of the magnetic poles of the earth.

C. Gyro Repeaters – may also be treated as a compass due to its parts. The compass card is driven through synchro system which receives an electrical input from the Master Gyro.

VI. BEARING AND FIXES:

A. Bearing – direction of terrestrial object from observer, azimuth as applied to a celestial body.

B. Fixes – position obtained from lines of position taken at the same time or the intersection of two (2) or more lines of position taken simultaneously.

C. LOP (Line of Position) – a line on some point of which the ship is located. This is established by the following means:

1. By Ranges – if two objects appear to be in line as seen from the ship, the ship must be along this line.
2. By Bearing – if the direction of the known object is sighted from the ship, it must be along this line.
3. By Distance – if the distance to known object is determined, the ship must be somewhere on a circle of which the object is the center.

SEMAPHORE

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know what is semaphore signaling and its advantages and limitations over other means of naval communications
- Know the procedures in conducting semaphore
- Know the alphabetical/numerical meaning of semaphore flag signalling

A. Standard apparatus

1. Generally 15 - 18 inches square flag
2. Similar to OSCAR Flags
3. Attached to a staff long enough to be grasp firmly by the hand
4. Some times substituted by the PAPA Flag.

B. Advantages and Limitations

1. Faster than flashing light
2. Possibly more secure than flashing light due to its short range
3. Best substitute for handling administrative traffic when radio silence is imposed.

C. Procedures

1. When transmitting
   a) Chose a good background
   b) Characters are made facing the ships addressed
   c) A distinct pause is made at each character position
   d) When sending pro signs, operating signals and

abbreviations, the pause is of double duration.

e) Between words or groups, drop your arms to the front position between letters.

f) When sending double letter, drop your arms to the front position between letters.

g) Numeral are spelled

h) If numerals or groups of numerals are to be recorded as digits, precede and follow the numerals with numeral sign, except in the heading or ending.

2. When calling

a) Send the call sign of the station called

b) Making the attention sign

c) When flashing light is used to make a call - to indicate that a semaphore message will follow, send the pro sign SEM.

d) Using flag hoist - hoist flag JULIET for all ships present or the call sign of the ship called above the flag JULIET.

e) If the precedence of the message to follow must be indicated:

1) DESIG is hoisted below JULIET for priority message.

2) DESIG followed by appropriate precedence sign for message of higher precedence.

3. When answering

a) Made by sending either answering sign by semaphore or pro sign K by F/L.

b) When call is made by flaghoist:

1) Hoist answer to the dip - have seen the signal

2) Close-up - ready to receive

3) Hauled down or dipped - acknowledge or receipt.

4. Receipting

a) Sending prosign R by semaphore or flash light

b) Hauling down answer after the transmitting station hauls down the call.

5. Repetition, Interruption and Relay

a) Use IMI after the transmitting station completes the message - either by light or by semaphore.

b) In flaghoist method of calling - request for repetition should be made before receipting for the message.

c) If the transmitting station is required to interrupt a message.

1) I dips the call - (flaghoist)

2) Send prosign AS - Semaphore

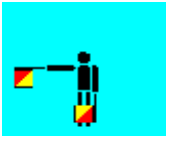
3) Receiving station dip the answering call when the transmitting station indicates interruption or when unable to receive.

d) Relay procedure - essentially the same with flashing light except that relay ship should not wait for the end of the message before commending relay.

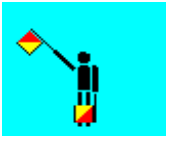
MEANING OF SEMAPHORE FLAGS (A-Z)

A -

B -



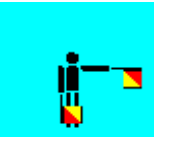
C -



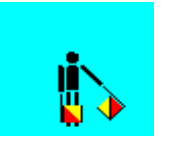
D -

E -

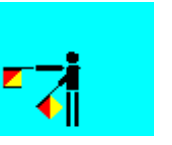
F -



G –

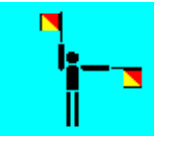


H –



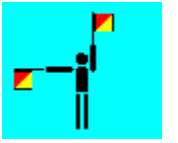
I -

J -



K -

P –

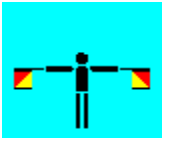


L –

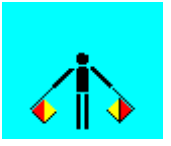
Q –

M –

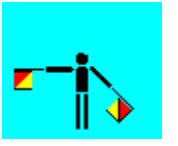
R –



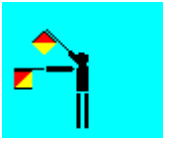
N –



S –



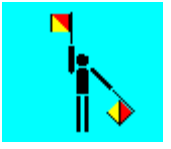
O –



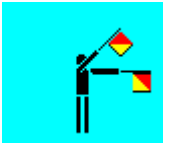
T –

U –

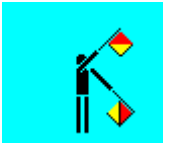
V –



W –



X –

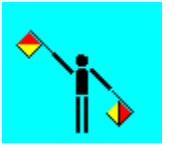


Y –

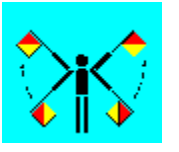
Z –

NUMERAL –

ANNUL –



ERROR –



FLAGHOIST SIGNALLING

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know what is flaghoist signaling and its advantages
- Know the procedures in flaghoist signalling
- Know the different meanings of flags as hoisted aboard ship

A. ADVANTAGES

1. Provides a rapid and accurate system of handling tactical and international signals of reasonable length during daytime between ships in proximity.

2. Ensures a more uniform execution of a maneuver than any other system.

3. The navy uses the international alphabet flags, numeral flags and pennants, special flags and pennants and Navy flags.

B. PARTS OF A FLAG

1. Flag - the length of the flag measured from the staff to the outside edge.

2. Hoist - is the vertical width of the flag when flying free.

3. Tabling - the double thickness of bunting type, bound and switch which is at the hoist of the flag.

4. Tail line - a short length of halyard attached to the lower part of the tabling and carrying the snap book, it serves as the spacer separating the flags of a hoist for clearness.

C. TERMS

1. Flag bag - a bag of flame metal covered with canvass where signal bags are stowed.

2. Halyards - light lines used in bending flags - numbered from out board to in board.

**Uphaul - part of halyard that is made fast to the last flag in a hoist*.

3. Retriever - a separate line attached with a metal ring to each halyard used to recover a lost flag.

4. Point of hoist - the block attached to the yardarm through which the halyard carrying the hoist is rove.

5. At the dip - when the hoist is three fourth of the way up toward the point of hoist.

6. Closed-up - when the top flag is touching the point of hoist.

7. Dipped - one a signal is closed up and is lowered a fourth of the way down from the point of hoist.

8. Hoist - a signal consisting of one or more flags in a single halyard.

9. Display - a complete signal, whether on one hoist or on one hoist or on two or more adjacent hoist.

10. Tack line - a 6 feet length of halyard having a ring at one end and a snap hook at the other used to separate flags or groups of flag.

D. PROCEDURES IN READING FLAGHOIST

1. Single joist - from top to down

2. Two or more hoist - from top to down, from outboard

3. Triatic stay - from top to down, from forward to

4. Yardarm of different heights - from higher to lower yardarm.

MEANING OF ALPHABET FLAGS (A-Z)

1. Flag A
   a. Divers of friendly underwater demolition personnel down.
   b. Displayed where best seen
   c. Position indicator - precede numerals latitude and longtitude

2. Flag B
   a. Weapons practices
   b. Fueling or transferring of explosives
   c. Displayed on appropriate side or where best seen

3. Flag C
   a. Affirmative
   b. Displayed where best seen

4. Flag D
   a. Degaussing
   b. Displayed where best seen

5. Flag E – I am altering my course to starboard

6. Flag F
   a. Flight operations
   b. Displayed where best seen

7. Flag G
   a. Guide flag
   b. Displayed where best seen

8. Flag H
   a. Helicopter operations
   b. Displayed where best seen

9. Flag I
   a. Going alongside (In port or at anchor)
   b. Displayed on side rigged

11. Flag J
    a. Semaphore message
    b. Where best seen
    c. Answered by addressee(s)

12. Flag K
    a. Personnel working aloft
    b. Displayed where best seen
    c. In port only

13. Flag L
    a. RADRAZ ZERO WARMING
    b. Displayed where best seen

Flag M
    a. Medical duty ship (Not underway)
    b. Displayed where best seen
    c. Movements (Underway)-disregard my movements
    d. Displayed where best seen, repeated by addressee(s)

Flag N

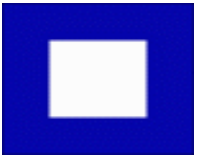
a. Your movements not understood
b. Displayed where best seen, repeated by addressee(s)
c. Visual watch--not keeping visual watch
d. In port- displayed where best seen

Flag O

a. Man overboard
b. Displayed where best seen

Flag P

a. General recall - all personnel belonging to this unit return to ship immediately.
b. In port



Flag Q

a. Boat recall
b. Displayed where best seen

Flag R

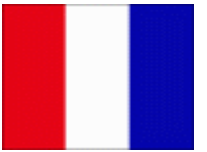
a. Replenishing or transferring alongside method
b. Fueling astern method
c. Displayed on side rigged/ on side hose is rigged
d. Ready duty ship (Roger ship)
e. Displayed where best seen

Flag S

a. Drill signal - signal flying is for flaghoist drill only
b. Displayed where best seen

Flag T

a. Time indicator - precede numerals
b. Displayed where best seen



Flag U

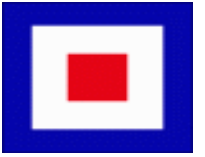
a. Anchoring, mooring, weighing anchor
b. Displayed where best seen or on appropriate side

Flag V

a. Streaming/recovering towed sonic devices not including mine sweeping equipment.
b. Displayed on appropriate side or where best seen

Flag W

a. Information addressee- info addressee follow
b. At yardarm



Flag X

a. Exercise - evolution/exercise completed
b. Displayed at fore yardarm repeated by addressee(s)

Flag Y

a. Acknowledge - repeated by addressee
b. Displayed at yardarm
c. Location of OTC
d. Displayed where best seen
e. Visual communication duty ship - A visual communication duty ship
f. Displayed where best seen

Flag Z

a. I require a tug.

b. When made by fising vessels operating in close proximity on the fishing grounds, it means “I am shooting nets”.

FLASHING LIGHTS

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know the different types of flashing lights
- Know by heart the international Morse code

A. TYPES:

1. Directional

a) Signals are sent out by signal searchlight that is pointed and trained directly at the receiver so as to be visible through a limited area.

b) It is the long range or visual signaling method

1) 12" Searchlight
2) 24" Searchlight

2. Non-directional

a) Signals are sent out from yardarm blinkers which are operated from the transmissions key located in the pilot house or on the signal bridge.

b) Lights are visible in any direction away from the ship, thus affording the sender effective way to communicate simultaneously with many addressees.

B. INTERNATIONAL MORSE CODE

1. Standard or all naval communications transmitted by flashing light or radiotelegraph.

2. Dot & dashes system
   a) A dot equals 1-unit duration
   b) A dash equals 3 unit
   c) The period between dots or dashes in the same character equals one unit
   d) The period between two characters equals 3 units
   e) The period between groups equals 7 units

3. Basic all consist of 36 sight patterns
   a) 26 alphabets - A-Z
   b) 10 numbers 1-0
   c) Additional and punctuation marks

4. Best way to learn code is by wholes
5. Try code group first then plain language

6. Letters and their Morse code equivalents:

A	**._**	**J**	**._ _ _**	**S**	**...**
B	**_...**	**K**	**_._**	**T**	**_**
C	**_._.**	**L**	**._..**	**U**	**.._**
D	**_..**	**M**	**_ _**	**V**	**..._**
E	**.**	**N**	**_.**	***W***	**. _ _**
F	**.._.**	**O**	**_ _ _**	**X**	**_.._**
G	**_ _.**	**P**	**._ _.**	**Y**	**_._ _**
H	**....**	**Q**	**_ _._**	**Z**	**_ _..**
I	**..**	**R**	**._.**		

7. Numerals and their Morse code equivalents

1	**._ _ _**	**6**	**_....**
2	**.._ _**	**7**	**_ _...**
3	**..._**	**8**	**_ _ _..**
4	**...._**	**9**	**_ _ _ _.**
5	**.....**	**10**	**_ _ _ _ _**

THE PHILIPPINE MARINE CORPS

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know what is the Philippine Marine Corps in relation to the Philippine Navy
- Know the reasons why ship compartmentalization is important
- Know the different tests for watertight integrity

The Organization of the Philippine Marine Corps was conceived in 1950 by the late PRESIDENT RAMON MAGSAYSAY when he was the Secretary of the National Defense. He envisioned a Marine force that is light, hard hitting, highly mobile, and composed of disciplined and dedicated officers and men who are capable to aggressively and persistently purse sea-going smugglers, pirates and other lawless elements engaged on nefarious activities all over the archipelago.

The Philippine Marine Corps has always to measure up to the standard or professional excellence set by President Magsaysay. In its almost five decades of dedicated service to our country, it has served as effective and indispensable tool of the government for nation building.

CREATION OF THE CORPS

The authority that provided for the formal creation of the Philippine Marine Corps was **AFP General Order No. 319 dated 02 November 1950.** Pursuant to this order, "A" company of the authorized Marine Battalion was activated on 02 November 1950 at Cavite Naval Base, Cavite City. The company consisted of 6 volunteer officers and 8 NCOs from the Philippine Navy, as well as 230 new civilian recruits. Most of the original officers and NCOs who served as drill instructor in the fledgling Marine Corps were veterans of World War II and were former members of the famed Philippine Scouts.

LIEUTENANT MANUEL A GOMEZ, an outstanding member of the Philippine Military Academy Class 1941 served as the first Commanding Officer of the Marine "A" Company. Lt. GOMEZ in his speech during the oath-taking ceremony of the first batch of Marine recruits prophesied the future role of the Marine Corps in the Armed Forces of the Philippines:

" The task of turning these young men into Marines rests upon us. Today as we start the training of these 230 volunteers, we will be striking the first hammer blow in forging the Cutting Edge of the Armed Forces "

THE PHILIPPINE MARINE CORPS TODAY

Through the years, the Philippine Marine Corps has remained as the nation's true force-in-readiness. Today, the corps consists of Headquarters and Headquarters Service Group, Combat Service Support Brigade (CSSB), Marine Corps Training Center (MCTC), three (3) Marine Brigade

Headquarters with eleven (11) Marine Battalions under their operational control. To meet the growing combat support requirements of the unit, the Combat Service Support Brigade has absorbed the Assault Armored Battalion (AAB) and Field Artillery Battalion composed of three (3) howitzer batteries placed under the operational control of the three (3) Marine Brigades deployed in operational areas. The Corps also activated the Inshore Boat Company and upgraded the Reconnaissance Company into a Force Reconnaissance Battalion. In 1990, the Marine Guard Battalion was activated to perform security duties at the Senate and the House of Representatives.

For its reserve component, the Corps in 1996 activated the 4th Marine Brigade (reserve), the 202nd and 602nd Marine Reserve Battalions and Marine Mobile Medical and Surgical Company, manned by Marine Reservist all over the country.

At present, about 87 percent of the total strength of the officers and men of the Philippine Marine Corps are deployed in Luzon, Mindanao, Sulu and the Palawan regions. These Marines are actively participating in the government's effort to maintain National Security and to assist the local governments in these areas in promoting national development.

Today as the Philippine Marine Corps forges its almost five decades of service to our country and people its officers and men have constantly time-honored motto of **KARANGALAN, KATUNGKULAN AND KABAYANIHAN**. Marines in every assignment have always strived to live up to the renowned standard of excellence of the Corps and have proven their effectiveness in any mission they are tasked to perform. As always, they consistently carry out their duties

and responsibilities faithfully to the best of their abilities and efforts carving into the Corps' history, the Marine Traditions of excellence, heroism, loyalty and the highest standard of professionalism.

In recognition to the Organizations fidelity to its mission, the Philippine Marine Corps today proudly flies in its standard the following: 5 Presidential Unit Citation Streamers: an AFP Chief of Staff Streamer: The Anti-Dissidence Campaign, Luzon Campaign, Jolo Campaign, Mindanao-Sulo Campaign, Visayas Campaign Streamer; COMELEC Citation Streamer; and the Disaster, Relief and Rehabilitation Operation Streamer.

MARINE CUSTOMS AND TRADITIONS

Being a major unit of the Navy, and due to the fact that the most of the first Marines were volunteers from the navy, many naval customs and traditions have been carried over and practice in the corps today. Likewise, since the birth of the organization almost five decades ago, Marines have evolved their own peculiar customs and traditions. These customs and traditions include the following:

a. Like Navy personnel, Marines always in the affirmative ad acknowledge that they understand the instructions of their officers by saying "Aye-Aye, Sir or simply "Aye, Sir!"
b. Marine Officers and NCOs ascend to positions of command and responsibility in the corps only after strictly going through progressive billets, in the same manner as navy officers and the Petty Officers do in their shipboard and shore duties. Hence, a Marine NCO can never be designated as a Battalion Sergeant Major if he has not

served earlier as Platoon Sergeant and later as a Company First Sergeant. This tradition is necessary to ensure that every Marine is professionally prepared to assume any higher position that he may be tasked to perform.

c. Certain ceremonies in the Corps are variations, if not faithful copies of some enduring naval ceremonies. These include the parade for retiring Marine Officers, the commissioning of major weapon systems and equipment, the de-activation of a Marine unit, the welcome and send-off ceremonies for arriving and departing Marine Units, and many others. The Marine practice of providing side boys to honor visiting high civilian and military officials, is also an adoption of the ship side honors normally rendered to high-ranking visitors to Navy vessels.

d. Marine's work hard to retain in their vocabulary many naval terms to constantly remind themselves that they have come from the navy. They for example, insist in calling the toilet as "head", the floor as "deck", and the right side and the left side of any structure as "starboard and portside" respectively.

e. Marine units adapt the prescribed format of a "Naval Letter" when communicating either with Navy and Marine Headquarters and other Marine Units outside of the Navy and the Corps.

Marines regard their Commanding Officers with high respect and reverence in the same manner, as the crew would respect their ship's Captain. The CO's staff and immediate subordinates are sensitive to his wishes and generally try to unburden him of routine nuances and concerns in order that he

may fully concentrate on the more important task of running the unit. A ware of the pivotal role of the Commander during dangerous combat operations, his men ensure that he is well secured against enemy action at all times. They know that by protecting their Commander, they are also protecting themselves and are ensuring the accomplishment of the mission of their unit. Both in the garrison and the field, the Commanding Officer is traditionally assigned orderlies and aides to assist him in his personal needs and official functions.

Through the years, the Marine battle cry or growl " **OOOOOWHA! "** has evolved many meanings in the different context that it is used in the Corps. It was originally intended by Marines undergoing strenuous fitness exercises to clear their lungs of stale air as they chant along during their morning road runs. The practice also became a way for Marines to " psych " themselves up, as long-distance runners or wrestlers would do, in order to get their adrenaline hormones flowing in their systems before a physically demanding any dangerous activity. The marine growl has become an expression of the Marines "esprit-de-corps" and state of high morale, of their enthusiastic approval of the words of a speaker, of their affirmation of their trust and confidence for one another and their commitment to perform any task to the best of their abilities and efforts. In a gesture of cheerfulness and good humor, Marines among an audience often do the growl whenever the words **"Philippine Marine Corps" are spoken by the speaker.** The Marine growl is even said to be an effective psychological weapon to unnerve a less resolute enemy to loose his fighting spirit and to take flight **" OOOOOWHA "** therefore is also the abbreviation of the traditional battle cry, **" LETS GO MARINES!"**

Members of the Marine honor guard, side boys and plane side honor guards, when rendering honors to an arriving VIP visitor or Guest of Honor in Military Ceremonies, shout **" KARANGALAN "** upon their execution of the command of the Honor Guard Commander to present arms. This traditional gesture aims to impress on the guest that the troops warmly welcome him and are greatly honored by his visit. During the departure honors, they also shout **"SALAMAT PO! "**upon their execution of present arms.

Most Marines have served in the land of our Muslim brothers in the Southern Philippines and have been exposed to their custom and traditions. One of their traditions that Marines admire is the sincerity with which Muslim brothers extend their hands in a handshake. Many Marines after years of observing their gesture during their assignment in Muslim Mindanao, have developed the habit of practicing it wherever they go. After firmly clasping the hand and looking directly at the eye of the person they meet, Marines now customarily bring their right hand to their chest, close to their hearts, as a sincere expression of goodwill. This peculiar form of handshake has become one of our trademarks as Marines, which distinguishes them from the other members of the AFP.

RAIDS AND AMBUSCADES

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know what are combat patrols and its types
- Know the procedures in the conduct of raid
- Know the different types, categories and fundamentals of a successful ambush as well as counter-ambush

Combat patrols provide security, harass, destroy, or capture enemy troops, equipment and installations. There are two (2) types of combat patrols.

A. Raid

A raid is conducted by a combat patrol whose mission is to attack a position or installation for any or all of these purposes:

1. Destroy the position or installation.
2. Destroy or capture troops or equipment.
3. Liberate personnel. Surprise, firepower, and violent action are the keys to raid.
4. Surprise is best achieved by attacking:
   a) When the enemy may least expect an attack.
   b) When visibility is poor, and
   c) From an unexpected direction e.g., approaching from the rear or through seemingly impossible terrain such as a swamp.
5. Fire is concentrated at critical points to suppress the enemy.

6. Violence is best achieved by gaining surprise, by using massed fire, and by attacking aggressively.

Conduct of Raid

The patrol moves to an Objective Rallying Point (ORP) – as described for a reconnaissance patrol. Once ORP is secured, the leaders's reconnaissance is conducted, and plans are confirmed. Elements and team move to their positions. If possible, their movements are coordinated so that all reach their positions about the same time. This improves the patrol's capability for a decisive action if it is detected by the enemy too soon.

1. Security Element -- the teams of the security element move to positions from which they can secure the ORP, give warning of enemy approach, block avenues of approach into the objective area, prevent enemy escape from the objective area, or perform any combination of these tasks within their capability.

As the assault and support elements move into position, the security element keeps the patrol leader informed of all enemy action. It shoots only if detected or on the patrol leaders order.

Once the assault starts, the security element prevents enemy entry into, or escape from, the objective area.

When the assault is completed, the security element covers the withdrawal of the assault and support elements to

the ORP. It withdraws itself on order or on a pre-arranged signal.

2. Support Element -- the support element moves into position prior to the assault element so that it can suppress the objective and shift fire when the assault starts. It normally covers the withdrawal of the assault element from the immediate area of the objective. It withdraws itself on oral order or on signal.

3. Assault Element -- the assault element deploys close enough to the objective to permit immediate assault if detected by the enemy. As supporting fire is lifted or shifted, the assault element assaults, seizes, and secures the objective. It protects demolition teams, search teams, and other teams while they work. On order or signal, the assault element withdraws to the ORP.

At the ORP, the patrol reorganizes and moves about 1,000 meters or one terrain feature away to disseminate information. During reorganization, ammunition is redistributed, casualties are treated and status reports are given.

B. Ambush

An ambush is a surprise attack from a concealed position on a moving or temporarily halted target. It may include an assault to close with and destroy the target, or the attack may be fire only. It does not require that ground be seized and held. It enables a small unit with few weapons and little equipment to harass or destroy a larger better armed unit.

1. Types of Ambush

A ***Point Ambush*** is one which troops deploy to attack a *single kill zone*.

An ***Area Ambush*** is one which troops are deployed as *multiple related point ambush*.

2. Categories of Ambush

Ambushes are categorized as either hasty or deliberate.

a) A ***Hasty Ambush*** is an immediate action drill.

b) A ***Deliberate Ambush*** is planned as a specific action against a specific target. Detailed information on the target are required e.g. size, organization, weapons, and equipment carried, route and direction of movement, and times the target will reach or pass certain points on its route.

3. Terms

AMBUSH SITE - The terrain on which a point ambush is established.

KILL ZONE - The part of an ambush site where fire is concentrated to isolate, trap, and destroy the target.

ASSAULT ELEMENT- The part of the patrol that fires into and assaults the kill zone.

SUPPORT ELEMENT - The part of the patrol that supports the assault element by firing into and around the kill zone. The early warning and security part of an ambush patrol. It secures the ORP and blocks enemy avenues of approach into and out of the ambush site. It does this to prevent any enemy from getting into or out of the ambush site.

4. Fundamentals of a Successful Ambush

Surprise -- surprise must be achieved, else the attack is not ambush.

Coordinated Fire -- all weapons, including mines and demolition, must be positioned, and all fire, including that of supporting artillery and mortars, must be

Control -- close control must be maintained during movement to, occupation of, and withdrawal from the ambush site. Control is most critical at the time of the target's approach.

Ambush Formations

- **LINE** -- the assault and support elements are deployed generally parallel to the target's route of movement (road, trail, streams). This positions the assault and support elements parallel to the long axis of the kill zone and subjects the target to flanking fires. The size of the target which can be trapped in the kill zone is limited by the size area which the assault and security elements can cover with a great volume of fire. The target is trapped in the kill zone by natural obstacles, mines (Claymore, anti-tank, anti-personnel) explosives, and direct and indirect fire.

"L" Formation –a variation of line formation. The long leg of L (Assault Element) is parallel to the kill zone. This provides flanking fire. The short leg (support element) is at the end of, and at right angle to the kill zone. This provides enfilade fire, which interlocks with fire from the other leg.

"Z" Formation – another variation of the line formation. The attack elements are deployed as in the "L" formation, but with

on additional side so that the formation resembles the letter “Z” the additional side may serve any of the following purpose:

“T” Formation – can be used to interdict small groups attempting to high movements across open areas.

“V” Shaped Formation – The attack element is deployed along both sides of the target’s route so that it forms a letter “V”.

DEFENSE AGAINST AMBUSH

The small unit commander responsible for moving his unit independently must plan for the formation to be used, march security, communications and control, special equipment, and the actions to be taken if ambushed and needs to reorganize.

Two things should be done immediately:

1). Return fire with all weapons.
2). Get out of the killing zone.
3). Smoke and grenades are extremely effective in executing counter ambush.
4). Elements that are not trapped must initiate an immediate flank or rear assault.

AMPHIBIOUS OPERATIONS

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know what is an amphibious operation, its purpose and phases of operation
- Know the organization of boat teams and different functions

An amphibious operation is an aggressive incursion to hostile territory. It is an attack launched from the sea by naval and ground forces embarked in ships and which involve landing on a hostile shore.

Amphibious Operation is a complex operation that incorporates land, sea and air forces into one cohesive assault force and integrates them into a highly balanced, concentrated and tremendous combat power to defeat an enemy force entrenched ashore.

A heliborne operation may also be conducted to support an amphibious operation. The Philippine Marine Corps with its operating units is especially organized, equipped, and highly balanced; concentrated and tremendous combat power to defeat an enemy force entrenched ashore.

PURPOSE OF AMPHIBIOUS OPERATION

Amphibious operations are generally conducted to establish landing forces on a hostile shore for the following purpose:

1. Prosecute further combat operations.
2. Secure site for forward naval or air bases.
3. Decisively deny the enemy of the use of vital areas of facilities.
4. Conduct swift and unexpected incursion into hostile territory or inflict casualties and damage to enemy personnel and material.
5. Gather vital information about the enemy activities and intentions.

PHASES OF AMPHIBIOUS OPERATION (PERMA)

Following are different phases of an amphibious operation:

1. Planning Phase (**P**). This phase starts from the time of the issuance and receipt of the initiating directive by the concerned units and extends to the creation of the amphibious Task Force. It also includes actual planning and revision of plans of all units

2. Embarkation Phase **(E)**. The embarkation phase covers the period when the units that consist the landing force with all their equipment and supplies are assembled at the staging areas and are embarked aboard their assigned naval vessel.

3. Rehearsal Phase **(R)**. The conduct of rehearsal is necessary in an amphibious operation to determine the

adequacy of plan, the workability of communication equipment and armaments and to insure to familiarity of all members of the landing force with the over-all plan. Rehearsals are usually conducted on a beach similar to the actual beach objective and also as much as possible under similar time and sea conditions.

4. Movement to the Objective Area **(M)** . In this phase, the vessels of the Amphibious Force with the landing force aboard maneuver in convoys towards the Amphibious Objective Area (AOA).

5. Assault Phase **(A)**. This is the final phase of an amphibious operation. It commences when the Amphibious Task Force arrives at the objective area and ends with the accomplishment of the task force mission. It includes the disembarkation of troops from the transport ships into the landing crafts, their movement to the beach and subsequent landing under tactical condition. Once ashore, the landing force units assault their respective objectives using standards tactics of fire and maneuver and fire movement. After seizing the task force objective, administrative unloading of personnel, supplies and equipment from the transport ships ad helicopters will commence.

ORGANIZATION OF BOAT TEAM

The elements of the amphibious landing force are organized into boat teams to ensure their fast and systematic loading. A boat team includes all the personnel, equipment and supplies assigned and embarked in one landing craft of a particular wave. Following are the members of the boat team and their respective responsibilities.

- Boat Team Commander – He is the most senior commissioned or non-commissioned troop officer of the boat team. He maintains the discipline of the boat team and sees to it that all loose gears are properly secured. He directly coordinates with the boat crew for the control of the craft.

- Assistant Boat Team Commander – He is the second most ranking troop commander aboard the craft. He assists the boat team commander in the performance of his duties and takes over his responsibilities in the event that becomes a casualty.

- Loaders – Loaders are required when landing crafts used and when disembarkation of troops and equipment are done alongside transport ships. There maybe at least eight Loaders in a boat team when surface landing crafts are used. They are composed of four Deck Loaders and four Boat Loaders. Loaders are not necessary when troops, supplies and equipment are preloaded in Landing Vehicles, Tract (LVT)

- Net Handlers - Four men are normally designated as net handlers but additional Net Handlers may be assigned depending on the size of the disembarkation net and sea condition. The Net Handlers are the first to go down the net and they relieve the boat crew from holding it. They keep the net taut and away from the side of the ship and the landing craft.

- Boat Paddle Handler – Every boat, whether the landing craft used is a surface or an amphibious vehicle, the boat team is identified by a boat paddle. This marker is

used by the Wave Commander in controlling the formation of boats prior to the assault of the beach

INDIVIDUAL EQUIPMENT PREPARATION

When surface landing crafts are used, equipment of participating personnel are rigged in peculiar manner so that they may quickly be dropped from the shoulder in the event that the marine falls into the water while disembarking from the ship or while wading to the ashore during the actual assault. This is the proper way on how to do it.

1. Canteens are hooked on the ammo belt well back on the left and right hip.
2. The ammunition or pistol belt is fastened and is left from the belt suspender straps on the pack.
3. The rifle is slung on the right shoulder with the muzzle down and with its sling loosened. Right, the weapon is then carried across the pack with the sling placed around the pack, bringing it to a vertical position behind the left shoulder. The rifle should fit snugly; otherwise you should properly adjust your sling. Marines may pair off in order to adjust the snugness of each other's rifle and equipment.
4. Your helmet strap should be worn loose but be fastened in order that you can easily discard your helmet when necessary, as when you accidentally fall from the disembarkation net into the water.
5. When a life jacket is used, it is normally put on after all the individual equipments are adjusted. The jacket is placed around your neck, crotch and waist and the straps are brought under the individual equipment. Extra care should be taken in order that the straps are not entangled with your

clothing or other equipment, such that it will be hard to discard them when necessary.

LASHING AND LOWERING OF EQUIPMENT

It is the duty of the boat leaders to see to it that every piece of equipment or supplies to be lowered in the landing craft is properly lashed with a line, prior to the start of disembarkation.

In lowering, the rule to follow is to always keep the lines taut, carefully keeping the equipment away from the side of the ship and guiding it carefully into the landing craft.

Following are the different lines that are use in lashing and lowering equipment and supplies from the transport ship to the landing craft.

1. The Lashing line to be used should b strong enough to hold at least a 300-pound load and must have a 4-inch splice at each end.
2. The guide line is hooked at the eye of the lashing line which is nearer to the heavier end of the equipment.
3. The lowering line which also has a hook is engaged at the lighter end of the load.

GOING DOWN THE DISEMBAKATION NET

Members of particular wave will assemble by boat teams at the designated Assembly area at the deck of the transport ship. They shall wait for their turn to be called upon to go down the disembarkation net, into the landing crafts below.

1. Do not rush in going down the disembarkation net. Once you have positioned yourself approximately in line with the other member of your boat team, take one secured foothold. Look directly to the forward, neither looking up nor down.

2. "Feel" the next lower rung (net ladder step) with your feet without looking down.

3. Firmly take hold only of the vertical strands of the disembarkation net with your hands to avoid being stepped on by the others above you.

4. Avoid swinging and keep your body as close as to the net as possible.

5. If you lose your balance and you are about to fall, or has in fact fallen into the water, immediately loosen off and drop your equipment. Your immediate concern should be to save your own life.

6. Do not jump from the disembarkation net until you have reaches its lowest rung. Immediately clear the area and proceed to your position in the landing craft, in order to give way to others who are still going down.

ACTION DURING THE ASSAULT

When aboard a surface landing craft, the boat team commander will loudly give a warning when the craft is about a hundred meters from the beach. Upon hearing this, slightly bend forward and brace yourself in anticipation of the beaching of the craft. When this is done ad the landing craft ramps, dash out to the nearest cover. Disperse upon clearing the ramp of the landing vehicle and avoid bunching up with others. During a "wet" landing, wade as fast as you can to the shore.

When on the beach, dash to the first available cover and concealment. Note the location of your other boat team members and take positions approximately in line with other marines of your wave to avoid being accidentally hit by friendly forces from behind. When there is adequate cover or when enemy resistance is non-existent or light, orient yourself with the surroundings and immediately reorganized yourselves in order that you can begin to fight effectively as a unit.

Once reorganized, your commander will lead you attacking your designated objective using the standard tactics of fire and maneuver and fire and movement. This assault should be done as rapidly and aggressively as possible, regardless of the progress of the other squads or platoon of the landing force. After the seizure of your objective and the beachhead has been securely established, subsequent operations ashore may follow.

HELIBORNE OPERATION

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know what are heliborne operations and related terms
- Know the purpose, advantage and disadvantages
- Know the heli-team organization and the responsibilities of the team members

Heliborne Operation – an offensive operation in which combat forces and their equipment move out in the battlefield aboard air vehicles under the control of the ground force commander to engage in ground combat.

A. DEFINITION OF TERMS

- **Heli-Team** – consist of combat equipped troops lifted in a helicopter at one time

- **Helicopter Wave** – consist of helicopters which arrive together and land approximately and at the same landing zone.

- **Landing Zone** – a specified ground area for landing assault helicopter to embark or disembark troops and cargo.

- **Landing Point** – a point where one helicopter can land. It is designated by two (2) digit number.

- **Ready Circle** – are alert points from which the heli-teams are called to be enplaned.

B. PURPOSE

1. Reconnaissance and security operations – to block and screen enemy avenues of approach.
2. Diversionary actions.
3. Seizure and retention of key terrain.
4. Counter-attack of enemy penetrations
5. Long-range combat patrols
6. Raids

C. ADVANTAGES

1. Versatility and unique capabilities of the helicopter makes it the most suited aircraft for vertical envelopment missions.

2. Utilization of the rotary-winged aircraft increases the battlefield mobility of ground forces.

3. Makes the enemy territory deep inside accessible to combat units for conduct of offensive operations.

D. DISADVANTAGES

1. Adverse weather conditions may curtail the use of helicopter.

2. Limited support weapons, heavy equipment and means of communications.

3. Limited capability to engage in sustained combat.

4. Lack of vehicular mobility.

5. Vulnerability to enemy action during landing, assembly, and pick-up.

6. Loss of the element of surprise if airmobile operation is often resorted to by the commander since the enemy may learn to counter-act such operations.

E. HELI-TEAM ORGANIZATION AND RESPONSIBILITY

Principles to be considered:

1. Unit Integrity – this means that the unit organization of forces are preserved whenever possible.

2. Tactical Spread – key personnel & important equipment are judiciously distributed on the different aircraft to forestall their total loss in the event that same A/C will not successfully reach the landing zone.

ORGANIZATION: *the helicopter team, also referred to as HELI-TEAM consist of combat equipped troops lifted in one helicopter at one time. The HELITEAM is composed of nine men:*

1 – Squad Leader (Heli-team Commander)
2 – Fire Teams (A and B)
3 – Members of A and B fire teams and their equipment

RESPONSIBILITY:

1. Inspect each individual member for proper uniform, equipment while in the assembly area.
2. Muster the members of the heli-team prior to enplaning.
3. Checks all equipment assigned to the heli-team and sees to it that they are properly located before the team is called to the landing zone.

4. Ensures that all weapons are in safe position, all loose gears of the men are properly secured and that they do not carry anything higher than their heads.

5. Leads his heli-team from the assembly area to the control point and ready circle in the loading zone.

6. Supervise the enplaning of his heli team.

7. Supervises the deplaning of his heli-team personnel and equipment at the landing site.

NAVAL TERMS

Ahoy. A nautical hail, once the dreaded war cry of the Vikings.

Airdale. A naval aviator. It can also refer to any member of the naval aviation community, officer or enlisted. **"Brownshoe"** also refers to an officer or chief petty officer in the aviation branch as they are authorized to wear brown shoes whereas mere mortals in other branches of naval service are forever tainted as common **"Blackshoes."**

Anchor Clanker. Slang term for a Boatswain Mate or member of ship's Deck Department. Deck Ape is also used as a term of endearment.

Aweigh. The moment a ship's anchor leaves the sea bottom, the anchor is said to be aweigh. "Weigh" from the Old English infers movement. Anchors "away" is incorrect usage. But when a ship weighs anchor it is said to be under way even though it may or may not be making way (powered).

Aye Aye. Aye is old English for "yes." A bluejacket says, "Aye aye, sir," meaning, "I understand and I will obey."

Barge. An admiral's boat.

Beam. The width of a ship.

Belay [1]Stop an action. "Belay the whistling! You're no boatswain." [2] Make fast. "Belay the line here." The use of a belaying pin in days of sail most likely is responsible for coining

the term. [3] Disregard an order. "Right full rudder. Belay my last."

Bilge. The lower part of the ship were waste water and seepage collect. "Yuk, the mess cook is making this coffee out of bilge water." **Bildged.** Fail and examination. "Jones bilged her dc quals (damage control qualifications)." Also, refers to denting the side of a ship.

Binnacle List. Listing of the names of crew members excused from duty by the Medical Officer. The binnacle supported the ship's compass. Lists posted thereon were prominent.

Bluejacket. The first uniform that was ever officially sanctioned for sailors in the Royal Navy was a short blue jacket open in the front. A generic name for a Navy enlisted person.

Boats. From the Anglo-Saxon "bat" that stood for a small ship or vessel. Also slang for a Boatswain.

Boatswain. From the Saxon word "swein" which meant a boy or servant. The boat refers to the ship and not to her small boats.

Boatswain Pipe. One of the oldest and most distinctive pieces of nautical equipment, the pipe or flute, was used in Greece and Rome to keep the stroke of galley slaves. The pipe was used in the Crusades to call English cross bowmen on deck for attack. In time, the pipe came to be used as a badge of office by commanders. The whistle was used for salutes to distinguished persons as well as to pass orders.

A 1645 publication detailing honors for an admiral, orders; *"The ship's barge to be sent to fetch the visitor having the cockson with his silver whistle in the stern... Upon the near approach of the barge the noise of the trumpets are to sound and so to hold on until the barge comes within less than musket shot, at that time the trumpets are to cease and all such as carry whistles are to whistle a welcome three several times."*

Originally, a distinctive call on a boatswain's whistle sent the crew below decks or down below. Now to "pipe down" means to be quiet.

Meals aboard ship are announced by the boatswain pipe. Crew members who respond immediately to the call are said to have their meals "piping hot."

The four primary parts of the boatswain pipe are the buoy, gun, keel and shackle.

Boxing the Compass. Calling the names of the 32 points of the compass in order.

Bulkhead. Transverse or longitudinal partition separating portions of a ship. Landlubbers call it 'a wall.'

Bumboat. A boat selling supplies or provisions to ships. Derived from "boomboat," signifying boats permitted to lie at the ship's booms.

Cannon Cocker. A Gunner's Mate or one associated with the Weapon's Department.

Chaplain. Tradition gives the origin of the title as from the French. The legend offers that St. Martin divided his coat with a poor beggar on a cold wintry day outside of Amiens. It is

related that the coat was miraculously preserved and thereby became a sacred banner for the Kings of France. This cloak or cape, French "chape," was preserved in a place of prayer that took the name of "chapelle," or chapel, and the one charged with its keeping was called the "chapelain."

Chit. From the Hindstani word "chitti" and referring to a letter, note, voucher or receipt. "Where is your chit for the supplies sailor?"

Charlie Noble. The galley (ship's kitchen) smoke stack on early ships.

Colors. The national ensign. Also the daily ceremony of raising the national ensign at 0800 and lowering of the ensign at sunset. "First call to colors" is five minutes prior to colors. Naval ships underway fly the national ensign continuously therefore do not hold colors ceremonies at sea.

Coxswain. Or "cockswain" from the combination of "cock," a small boat, and "swain," a servant. It originally meant one who had charge of a boat and a crew in the absence of an officer.

Crossing the Line. The boisterous ceremonies of "crossing the line" are ancient and their derivation is lost. It is well known that ceremonies took place long ago when the ship crossed the thirtieth parallel, and also when going through the Straits of Gibraltar. Early ceremonies were rough and to a great extent supposed to try the crew to determine whether or not the novices on their first cruise could endure the hardships of life at sea. The custom then, as at present, is primarily a crew's party.

The Vikings were reported at an early date to carry out these ceremonies on crossing certain parallels. It is highly probable that the present day ceremony was passed on to the Anglo-Saxons, and Normans from the Vikings. As at earlier times, ceremonies of propitiation are carried on to appease Neptune, the mythological god of the seas.

One who has crossed the line (equator) is called a **Shellback**. The **Sons of Neptune** (shellbacks) prepare the ship for King Neptune and the Royal Party's arrival and conduct the solemn ceremonies.

Bluejackets treasure the certificate which testifies that *"in Latitude 00-00 and Longitude xx-xx,"* and usually addressed to all Mermaids, Sea Serpents, Whales, Sharks, Porpoises, Dolphins, Skates, Eels, Suckers, Lobsters, Crabs, Pollywogs and other living things of the sea*," __(name)__ has been found worthy to be numbered as one of our trusty shellbacks, has been gathered to our fold and duly initiated into the solemn mysteries of the ancient order of the deep."*

Members of Neptunus Rex's party usually include **Davy Jones**, Neptune's first assistant, **Her Highness Amphitrite**, the **Royal Scribe**, the **Royal Doctor**, the **Royal Dentist**, the **Royal Baby**, the **Royal Navigator**, the **Royal Chaplain**, the **Royal Judge**, Attorneys, Barbers and other "dignitaries" that suit the party. The uninitiated are lowly **pollywogs**.

A **Golden Shellback** is one who crosses the equator at the 180th meridian (international date line).

Cumshaw. Something procured outside official channels and without official payment. Word derived from beggars of Amoy, China, who said "kam sia" meaning "grateful -thanks." The Navy term usually relates to unauthorized work done for a ship or station usually obtained by bartering. "The shipyard welder

added the brackets in exchange for five pounds of coffee." A "cumshaw artist" is one who is adapt at getting projects done or items for free or by bartering.

Davy Jones' Locker. The bottom of the sea. Davy Jones being Neptune Rex's first assistant.

Ditty Box or Ditty Bag. A small box or bag carried by sailors in which is kept letters, small souvenirs, and sewing supplies. Probably from the Saxon word "dite," meaning tidy.

Divine Services at Sea. William Murrell, in his book, *Cruise of the Frigate Columbia,* describes a typical Divine Worship Service on board the USS Columbia during a round the world cruise in 1838-1841.

"On Sunday mornings, immediately after quarters, should the weather permit, all hands are called to muster. The summons is instantly obeyed, by every one proceeding to the quarter-deck (the sick alone are exempted) where the minister stands in readiness arrayed in his clerical robes, and the capstan covered with the national flag, to answer the purpose of a pulpit. The commodore takes his station on the weather side of the chaplain; the lieutenants, and all other commissioned and warrant officers on the weather side of the the deck; the forward officers at the fife-rail, and petty officers at the fore-part of the main-mast. The bluejackets take up their position abaft the mizzen mast, clad in white frocks with blue collars, white trowsers, and straw hats, looking the picture of cleanliness; whilst the marines are stationed and drawn up in rank, on the lee side of the deck, headed by their commanding officer, all in blue uniform."

Drawing a Dead Horse. A "dead horse" is advance payment of wages. In the British Merchant Service, approximately a months pay was advanced when a sailor shipped. A ceremony was held when the crew "stopped working for nothing," usually after about five weeks at sea. The men made a horse out of canvas stuffed with waste material or out of a cask. Permission was requested to light it and hoist it out to the end of a boom or yard. Cheers went up as it marked the time the crew started to accumulate wages "on the books."

Dog. A metal fitting or handle used to secure a water tight door (WTD), hatch and scuttle. Dogging or undogging a single WTD may require manipulation of eight to ten separate handles, although under normal non combat conditions a single dog may secure the WTD with other dogs left open. A **dogging wrench** is a short pipe used as an extension on the fitting to gain leverage.

Dreadnaught. An early battleship characterized by a single caliber big gun with a main battery of guns of 11 inches or more, no intermediate battery, a secondary battery from 3 to 6 inches caliber and a speed of at least 18 knots.

Eight O'clock Reports. On shipboard shortly before 8 P.M. (2000) the Executive Officer, (second in command, XO) receives reports from the heads of departments. He in turn makes "eight o'clock reports" to the Commanding Officer. "Now lay before the mast all eight o'clock reports." Never 2000 reports!

Ensign. [1] The junior commissioned officer. Also known as a **"Butter Bar"** for the gold rank insignia collar device. May be

addressed as "Enswine" if lacking in wardroom etiquette. In addition, **"George"** is the junior ensign, the lowest ranking person in a wardroom, while **"The Bull Ensign"** is the senior ensign. [2] **Ensign.** The national flag flow from the flagstaff in port and the gaff at sea.

Ex. Short for exercise. FLEETEX. Often used in combination with words to describe fouled up evolutions; MOBEX, GROPEX, BOREX.

Exec. Shortened title for Executive Officer, second in command on a naval unit. Also, XO.

Fathom. Saint Paul relates in the New Testament that soundings were taken after a gale, and the ship was found to be in twenty fathoms of water. The Greek word *orgina,* which means to stretch or reach out with the arms. A sailor stretches out both arms and measures from finger tip to finger tip - an approximate fathom. More precisely, a fathom is six feet.

Field Day. A day set aside to clean ship. Also, to clean or straighten. "Seaman Jones! This compartment is a rat's nest. Field day it and report when it is **squared away."**

Firing Three Volleys at Military Funerals. Best explained as a superstitious custom that was supposed to drive away evil spirits as they escaped from the hearts of the dead. Before the advent of firearms, the number three had mystical significance. In ancient Roman funeral rites earth was cast three times into the grave; those present called the dead three times by name, and on leaving the grave site mourners called farewell three times.

Fleet. From the Anglo-Saxon "floet," or "floetan." An organization of ships, aircraft, Marines, and shore based activities all under one commander. Even numbered fleets are in the Atlantic area and odd numbered fleets operate in the Pacific area. Also, a term for all naval operating forces.

Flotilla. From the old Spanish "flota." An administrative or tactical organization consisting of two or more squadrons together with a flag ship.

Foul Anchor. An anchor that is foul of the cable or chain is a symbol found in various Navy crests. The device is on the cap of American naval officers, the distinguishing device of a Chief Petty Officer, the collar device of midshipman, and on the cap badges of the British naval officers. Many sailors regard the device a sign of poor seamanship. Although, artistic to a civilian, it has been called a sailor's disgrace by some. The badge has been traced back to 1601 and Lord Howard of Effingham, the Lord High Admiral, who used it first as a seal of his office, but the device was used previous even to that time.

Gig. A captain or commander's personal boat. A recorded fault. "Jones received a gig at personnel inspection for his dirty white hat." Also, **gig line**. An imaginary straight line running down the front center of the torso for uniform alignment. Non alignment of the shirt edge, belt buckle and trouser fly results is a "gig."

Galley. The ship's kitchen or food preparation area. See **Mess** and **Mess deck.**

Gangway. From the Anglo-Saxon "gang." Meaning to go, or make a passage in or cut through. An opening in a ship to give entrance for boarding or leaving the ship. It may be either an opening in a bulkhead or railing.

Also, "Gangway," a command to step aside or make way. Who remembers not the messcooks cry, *"Gangway, hot stuff."* Or in a jovial mood, *"Gangway, lady with a baby."*

Geedunk. Items from vending machines or ship's store such as candy, soda and ice cream. Any dessert, sweets, or good deal. Also **Pogey Bait**.

Gunboat. Light patrol vessel unarmored for use in shallow coastal waters.

Hand Salute. The hand salute in the American Navy came by way of the British Navy. It is generally agreed that the salute is the first part of the movements of uncovering. That there was nothing in the hand is a possible explanation of the British salute with the palm turned out. From the earliest days of organized military units, the junior has uncovered in addressing or meeting the senior. Lord St. Vincent, in 1796, promulgated an order to the effect that all officers were to take off their hats when receiving orders from superiors.

Sketches of Naval Life, written on board the USS Constitution, in 1826, gives an account of a Sunday inspection on board that describes the salute of the day. *"The Captain and First Lieutenant, Mr. Vallette, are now on the deck; they pass around and examine every part of it, each man lifting his hat as they pass, or in default of one, catching hold of a lock of hair."*

And in 1849, an officer records: *"Some very good officers to*

show a marked distinction between the petty officers and other part of the crew, have given instructions that on those occasions on which the seamen generally pull off their hats as a mark of respect, such as divisions, muster by the open list, etc., that the petty officers shall then only touch their caps."

In 1890, the hand salute only was decreed by Queen Victoria because of her displeasure at seeing officers and men stand uncovered when they appeared for royal commendation.

In the United States Navy, officers in the open uncover only for divine services. Men uncover when at "mast" for reports and requests, and in officers' country unless under arms or wearing a watch belt.

Honors. See **Rendering Honors.**

Holystone. A large flat stone used to polish the wooden deck of a ship.

Irish Pennant. Any loose or untidy end of a line. Lines dangling from a ship's rigging. Threads hanging from a uniform. "You have an irish pennant hanging from you pocket, shipmate."

Java. Bluejacket term for Coffee. For twenty years before "grog" was legislated out of the Navy, the rum ration was cut back and coffee and tea were supplied as a substitute. Congress passed a bill on 23 May 1872 that provided *"an additional ration of coffee and sugar to be served at his (the bluejacket's) first turning out."* Not a surprise to most, the United States Navy uses more coffee than any other military organization in the world.

Jack-of-the-Dust. Jack o' the Dust. Person in charge of breaking out provisions for the food service operation. Originates with the British Navy. "Jack," a Royal Navy sailor, who worked in the bakery and was covered with flower dust. Also, "Dusty."

Knee-knocker. The coaming of a watertight door or bulkhead opening. Coaming edges are raised about one foot off the deck and strike the shins if one fails to step over them.

Landlubber. Seaman's term for one who does not go to sea. Perhaps from "land lover." Also known as landsman and more derogatory, a sandcrab.

Lucky Bag. A compartment or locker where masters-at-arms stow articles of clothing, bedding, and other items left adrift. Originally, articles were placed in a bag called the "lucky bag" which was in the custody of the master-at-arms. In a narrative of a cruise in the USS Columbia in 1838, the writer relates that the bag was brought to the mainmast once a month, and the owners of the articles *"if their names are on them, get them again, with a few lashes for their carelessness in leaving them about the deck."* The term "lucky" in this case is a bluejacket's twisted humor. One wag suggested another definition is "a sailor's wife."

Mail Buoy Watch. A practical joke pulled on inexperienced crewmembers and midshipmen which revolves around convincing the victim that mail is delivered to a ship at sea via a buoy. The more gullible victims are dressed in outlandish garb (lifejacket, helmet) and with a boat hook and sound

powered telephone directed to stand watch for the buoy and retrieve the mail.

Mate. A companion. Mate appears as early as the 13th century, as a corruption of the Dutch word "mattenoot." Loosely translated it means companion, or the person with whom you shared your hammock (one being on duty while the other slept in it. Hot bunking is not new!). In some trades, like that of stevedores, the French word "matelot" is used in the same sense as the English word mate. That being the person with whom you lift sacks which are too heavy to be lifted by one man alone.

Mess. From the Latin term "mensa" meaning tables. "Mesa" is Spanish for table and "mes" in old Gothic means a dish. The English word originally meant four, and at large meal gatherings diners were seated in fours. Shakespeare wrote of Henry's four sons as his *"mess of sons."* The word "mess" that suggests confusion comes from the German "mischen," meaning to mix. Messmates, are those who eat together. Smythe's, Sailors' Word Book, yields the ditty, *"Messmate before shipmate, shipmate before stranger, stranger before a dog."*

Mess deck. Eating area for the ship's crew.

Mustang. An enlisted person who continues through the ranks to officer status other than warrant officer. "You can't fool Mr. Roberts with that story. He's a mustang."

Nonrate. Navy or Coast Guard enlisted personnel in the first three pay grades who are not petty officers. Pay grades E1, E2 and E3 are nonrates. A nonrate may be a "**striker,"**

performing authorized on-the-job training to qualify for a specific petty officer specialty. Or, a nonrate may be "designated" in that they have met the training qualifications but not promoted to petty officer. "Electronic Technician Seaman Joan Pauline Jones has completed ET School and should be soon promoted to Electronic Technician Third Class."

Nav. Short for Navy, navigation or navigator. "How long you been in the Nav man?"

Navy Shower. Fresh water economy aboard ship may dictate using as little water as possible. Hence, the navy shower; wet down, turn off the water, soap up, turn the shower on to rinse off. If a ship's fresh water making device, the evaporators (evaps) have problems, a ship may experience "water hours" in which no showers are allowed except at select times. Generally, the smaller the ship the more experience the crew has with Navy showers.

Navigator. Officer responsible to the captain for planning the ship's course and the safe navigation of the ship. Also know as the "Naviguesser."

Officer of the Deck. OOD. The officer in charge of the ship and on deck as the Captain's representative. "Lieutenant Hazard has the deck," notes that Lt. Hazard is the OOD.

Old Man. Slang term for the Commanding Officer. The term for the Admiral is "the old gentleman."

Oil King. Petty Officer who maintains fuel oil records aboard ship.

Port. Larboard signified the left side on ships in the United States Navy until about 1846. It is recorded that in that year the word was passed on board an American man-of-war cruising off the coast of Africa: *"Do you hear there fore and aft? The word "larboard" is to be forever dropped in the United States Navy, and the word "port" is substituted. Any man using the word 'larboard' will be punished."*

The word "port" came from the British Navy from the orders of the Portuguese Tagus River pilots.

Peacoat. Short heavy topcoat worn by seafarers in cold weather. Originally made of a material called "pilot cloth." Name was probably pilot-cloth coat, pilot coat, P-coat, and finally peacoat. In the old Navy the topcoat was also called a "Reefer."

Plank Owner. A member of the original commissioning crew of a ship. In the days of wooden ships plank owners upon transfer or retirement were awarded a piece of wood from the ship. With metal ships a commemorative plaque or certificate is given to the commissioning crew members. In austere commands a plaque is received only if one buys it.

Rendering Honors. Originally, the one who saluted first rendered himself or his ship powerless for the time it took to render honors. In Henry VII's period the average time to fire a gun was twice in an hour. Under sail, passing ships lowered topsails. The point of the sword on the ground at the finish of the sword salute rendered the one who salutes powerless for

the time being. The British palm forward hand salute was intended to show that the hand was empty. The salute executed today by "present arms" originally meant to present for taking.

Rudder. Derived from the old Anglo-Saxon "rother," that which guides. The Viking "steer board" was on the starboard side of the ship. The sternpost rudder didn't come into use until the 12th century.

Saluting the Quarterdeck. Some hold that the salute to the quarterdeck is derived from the very early seagoing custom of the respect paid to the pagan altar on board ship, and later to the crucifix and shrine. Others hold that the custom comes from the early days of the British Navy when all officers who were present on the quarterdeck returned the salute of an individual by uncovering (removing the hat). The original salute consisted of uncovering. The salute, touching the hat, to the seat of authority, the quarterdeck, the place nearest the colors, is an old an tradition.

Scuttle-butt. Originally a cask of fresh water for drinking purposes used by the crew. Now any drinking fountain. Also, any ship board rumor or gossip. Taking a long slow drink, the sailor announced to anyone who would listen, "We're headed for Hong Kong. I heard it from the mess cook." Scuttle-butt passes through the ship rapidly, embellished and gaining creditability as it spreads.

Show a Leg. Awaking the crew at reveille, the call "show a leg" is heard. It originated in the days of sail when women often lived aboard ship. At reveille, a woman in her hammock would

display a leg and thereby was not required to turn out (get up) and turn to (go to work).

Skipper. Derived from the Scandinavian word "schiffe," meaning ships, or the Dutch word "schipper," meaning captain.

Starboard. From the Viking "steer board" or rudder that was placed on the right side of the ship.

Sword Salute. Generally thought to be derived from the oriental custom of the junior raising the sword and shading his eyes from the "magnificence" of the superior.

Sea Legs. Adapt to the motion of the ship. "The new man has his sea legs."

Snipe. Slang term for a member of the Engineering Department working below decks. Other affectionate terms for engineers are Bilge Rats and **Black Gang** (from the days of shoveling coal).

Son of a Gun. In the early days, sailors were permitted to keep their "wives" on board ship. The term was used to refer to children born alongside the guns of the broadsides. The expression questioned the legitimacy of a person.

The old definition of a man-o'-war was: *"Begotten in the galley and born under a gun. Every hair a rope yarn, every tooth a marline spike; every finger a fish hook and in his blood right good Stockholm tar."*

A British officer commanding a brig off the Spanish coast in 1835 wrote in his diary. *"This day the surgeon informed me that a woman on board had been laboring in child for twelve*

hours, and if I could see my way to permit the firing of a broadside to leeward, nature would be assisted by the shock. I complied with the request and she was delivered of a fine male child." Gunners Mate's to the rescue!

Square Away. To make tidy, neat, clean and secure is to square away. "Jones, there is gear adrift in the storeroom. Square away for sea."

Individuals are directed to "square away" when their actions or uniform are other than military. A sharp sailor or Marine is referred to as, "A. J. Squared-Away."

Tending the Side. Piping as a ceremony with side boys is a custom evolving from the days when visitors were hoisted aboard by use of the boatswain's chair. The pipe was used for the commands "hoist away" and "avast heaving." Members of the crew of the host ship did the hoisting. It is from the aid they rendered in tending the side that the custom originated of having a certain number of men, ("**side boys,"**) present. In time it became a courtesy for high ranking officers and diplomatic officials to honored by sideboys and piping ceremony.

Taps. The word "taps" is derived from the Dutch word *taptoe*, or time to close up all the taps and taverns in the garrisoned towns. In a volume entitled, *The Military Guide to Young Officers*, by Thomas Simes, reprinted in Philadelphia, in 1776 there are instruction for the officer of the guard. *"The tat-too is generally best at nine o'clock at night in the summer and eight in the winter. It is performed by the Drum Major, and all the drummers and fifers of that regiment which gave a captain of the main guard that day. The tat-too is the signal given for the*

soldiers to retire to their barracks or quarters, to put out their fire and candle and go to bed. The public houses are at the same time, to shut their doors, and sell no more liquor that night."

A British military dictionary published in 1876 states, *"The term Post is given to the bulging which precedes the tattoo. This is the first part, the last part that follows it is the last Post."* The last post is sounded on the trumpet or bugle at British military funerals.

When the American Navy adopted the custom of sounding taps at funerals seems to be unknown. Accounts of military funerals on board the *Constitution* in 1846 record the *"Dead March from Saul"* as the only music at a burial at sea. Muffled drums are mentioned in addition to the *"Dead March"* at the burial of Commodore Claxton at Valparaiso in 1841.

A letter to the *New York Times* suggested that the world famous bugle call was composed by General Daniel Butterfield, commander of a brigade in the Army of the Potomac, and that it was first sounded by the writer's father, Oliver W. Norton, brigade bugler, in July 1862, at Harrison's Landing on the lower James River in Virginia. The General reportedly wrote the notes on the back of an old envelope and summoned Bugler Norton and directed him to sound the notes. After a few changes, the call was finally arranged to please General Butterfield and ordered substituted that night for regulation "taps" or extinguish lights, which up to that time have been used by the US Army.

Twidget. Slang name for an electronics technician.

Unauthorized Absentee. Used to describe a person absent from their command or place of duty without authority. Often

spoken as an abbreviation. "Seaman Jones is UA this morning." Unauthorized absentee replaces the older terms, straggler, absentee, and absent without leave (AWOL). Also in slang terms, Jump Ship, Over the Hill, French Leave and others.

"Very Good," "Very Well." The response given by a senior to the report of a junior. The helmsman reports, "Rudder is amidship sir." The Officer of the Deck responds, "Very well."

Weigh Anchor. Weigh here is from the Old English meaning to move or to carry. To "weigh anchor" is to hoist the anchor off the bottom.

Way. Ship's movement through the water. "The ship has way on." "Sir, we are making way." "The only time the chief smiles is when we're under way."

Yarn & Sea Story. Sailors "spin yarns" or tell "sea stories" which may contain marginal truth. They differ from landlubber fairy tales in that whereas a fairy tale begins, "Once upon a time," the sea story begins with an assertion of truthfulness, "This is no s..."

Zero Dark Thirty. Very early in the morning or late at night. "Why are we getting under way at zero dark thirty." Also known as "Oh Dark Thirty."

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