



Shipyard Induction and Operations

Agenda

- Shipyard Orientation & Workplace Fundamentals
- Occupational Safety, Health & Environment
- Safe Work Practices & PTW
- Shipyard Technical Operations
- Questions & Answers



Shipyard Orientation & Workplace Fundamentals



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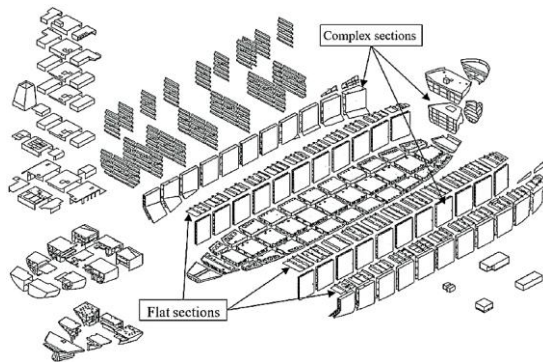
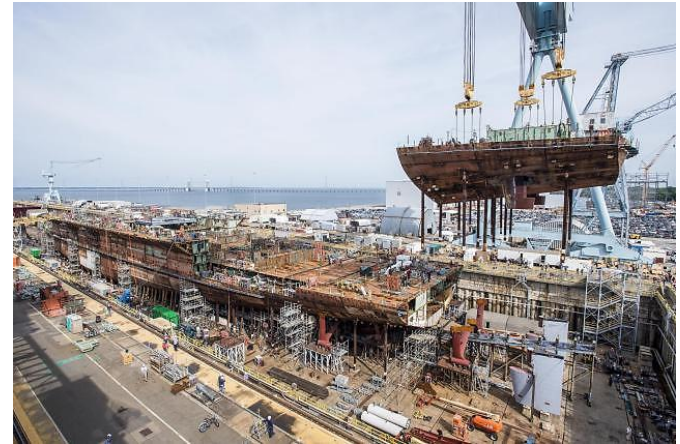
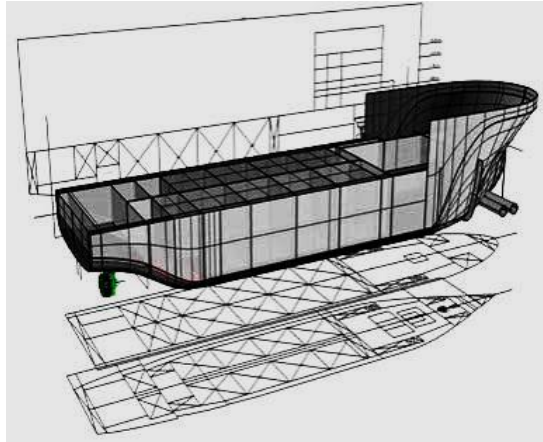
Introduction to the Shipyard

Confidence-building strategies

What is a Shipyard?

A shipyard is an industrial facility where ships and marine structures are:

- Design
- Constructed
- Repaired
- Converted
- Maintained
- Inspected

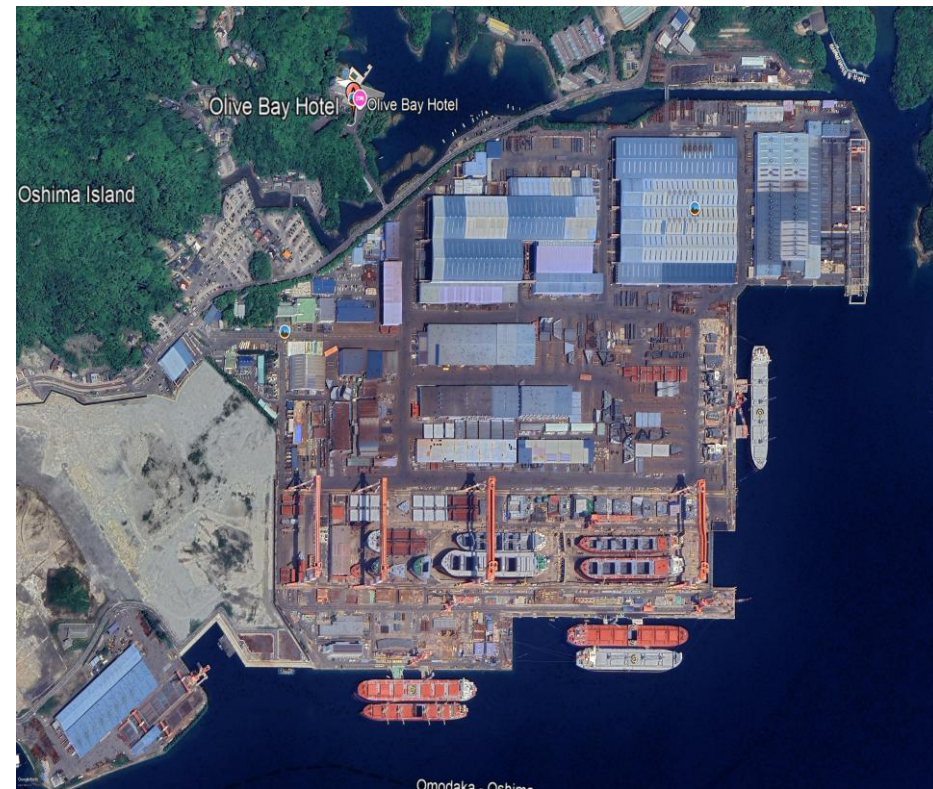
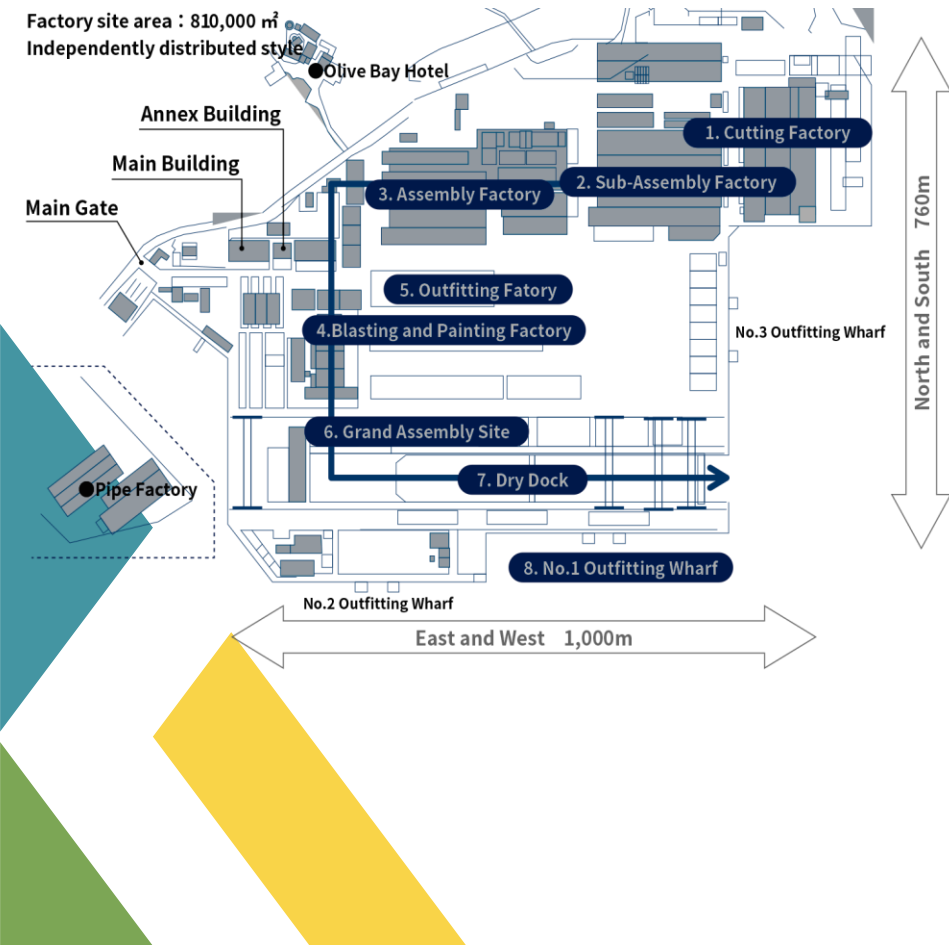


Types of Shipyards

- Shipbuilding Yard
 - Build entire commercial vessels or warships from raw steel to sea trial.
- Ship Repair Yard
 - Service, convert, and overhaul existing ships using dry docks, wet basins, or marine railways.
- Ship Breaking Yard
 - Dismantled end-of life marine structures to recycle steel and components
- Offshore Fabrication Yard
 - Specialized coastal or waterfront industrial facility where massive steel structures, modules, and components for the oil, gas, and renewable energy industries are engineered, constructed, assembled, and tested.



Types of Shipyards



- **Cutting factory**
- Unloaded steel plates and profiles are cut into parts here. The maximum size of steel plate is 22.5m in length and 4.5m in width. Steel plates are cut with a NC plasma or laser cutting machines. Each ship has about 50,000 parts.



- **Blasting and painting factory**
- At blasting and painting factory, blocks are blasted and painted. Blasting is the work of spraying small iron powders called grit by compressed air to clean the plate surface. Because control of temperature and humidity is important in painting, painting factory building has sliding doors and dehumidifiers.



- **Sub-assembly line**
- At sub-assembly line, small and middle sized blocks are assembled by combining cut parts. The blocks are categorized and assembled on a designated assembly line. The manufactured blocks are transported to the next process by carrier. In addition to block assembly, we also work on bending plates by press machines and burners.



- **Outfitting factory**
- At outfitting factory, pipes and electric cable are installed to blocks such as engine room. We carry in blocks and install pipes and cable in advance where possible. Some blocks are inverted to improve posture at work.

- **Assembly line**
- At Assembly line, small and middle sized blocks are connected and large sized blocks are built. The blocks are categorized as in the sub assembly line and each line manufactures blocks with similar shapes. Bogie conveyors are use in this line, so large blocks are built on straight line. The largest block may weigh more than 400 tons. The blocks are transported by carriers to the next process.



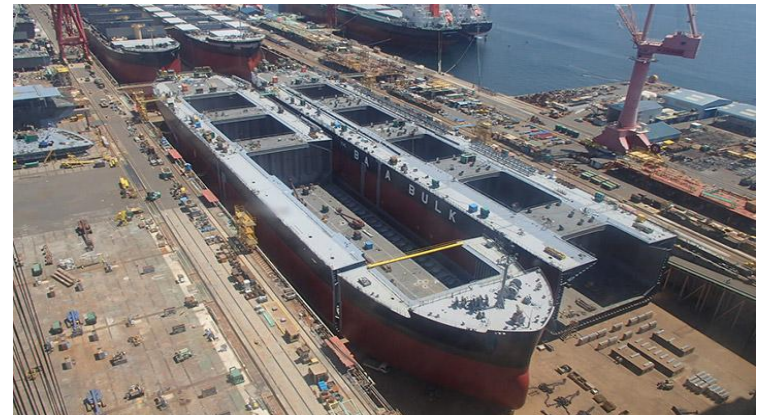
- **Grand Assembly Site**

- This is the place where the grand assembly blocks are built by connecting large blocks from assembly line. There are two 1,200 tons and 350 tons Goliath cranes in this site. Two sets of Goliath cranes are used to hoist the grand assembly block into the dock. The maximum weight of grand assembly block can be about 2,000 tons.



- **Dry Dock**

- The dry dock is where the hulls are constructed from grand assembly blocks and launched. The dock is 535m long, 80m wide and 13m deep. We construct four ships, a set of 2 ships is built in parallel, and another set is placed longitudinally for simultaneous construction. Two ships in a set launch at the same time.



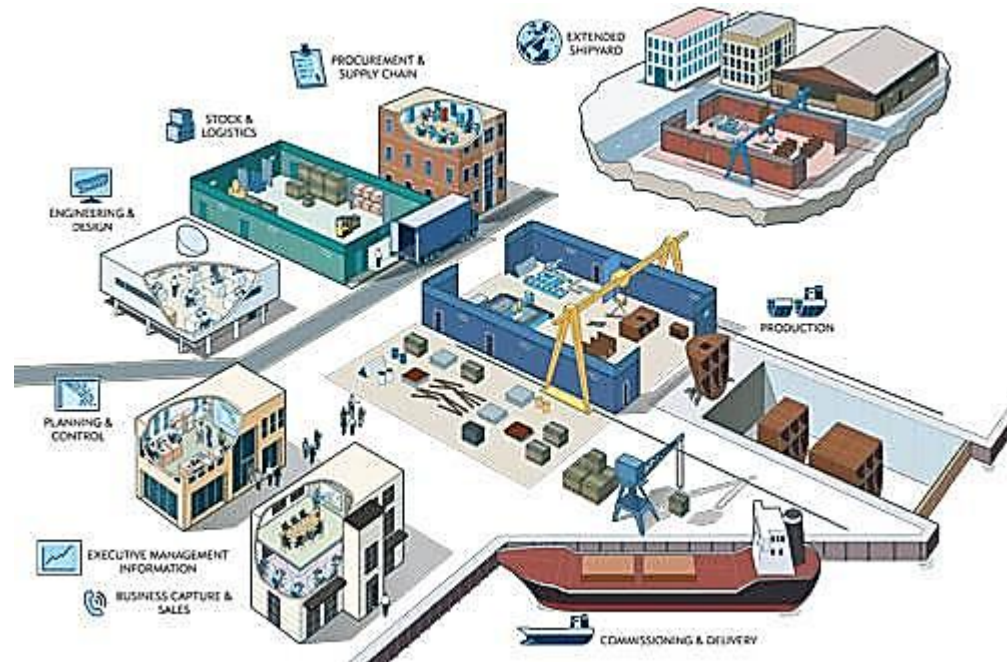
- **Outfitting wharf**

- At outfitting wharf, the equipment on launched ship is operationally adjusted and the final painting of the deck is done. After the adjustment of the equipment, a sea trial is performed to confirm that the equipment operates as designed and satisfies performance in the specification. After completion, a naming ceremony is held at No.1 Wharf and delivered to the ship owner.



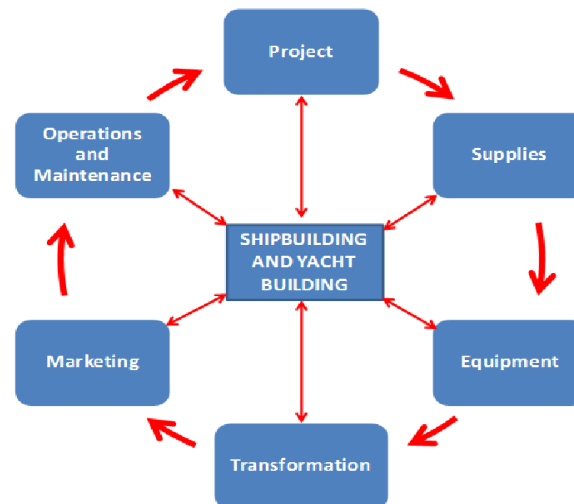
Marine Departments

- Production
- Planning
- Engineering
- QA/QC
- Safety
- Procurement
- HR
- Finance



Production Department

- Execute shipbuilding, ship repair, fabrication, and maintenance activities.
- Manage workforce, equipment, and daily production schedules.
- Ensure productivity, workmanship, and timely project completion.
- Coordinate with Planning, Engineering, QA/QC, and Safety departments.



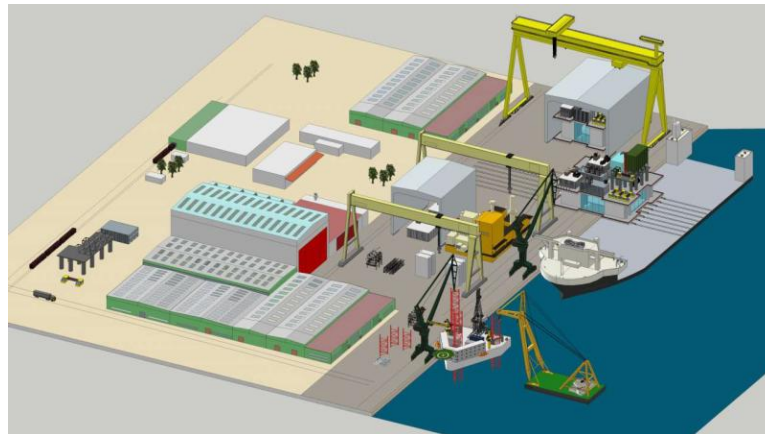
Planning Department

- Prepare project schedules and work breakdown structures (WBS).
- Allocate manpower, materials, and equipment.
- Monitor project progress and production performance.
- Coordinate between all departments to meet project deadlines.



Engineering Department

- Prepare technical drawings and engineering calculations.
- Develop construction methods and repair procedures.
- Provide technical support to production teams.
- Ensure compliance with classification society and client specifications.



Quality Assurance / Quality Control (QA/QC)

- Develop and maintain quality management systems.
- Conduct inspections and testing.
- Verify compliance with drawings, specifications, and standards.
- Record non-conformities and monitor corrective actions.

HULL QC INSPECTION REPORT

Project: 76M Multipurpose General Cargo Coastal Landing Craft

Hull Area: DB Tank / Bottom Plate / Side Shell / Frames / Welded Joints

Standard Reference: IACS Rec. No. 47, as applicable to hull fabrication, surface condition, alignment, and weld repair.

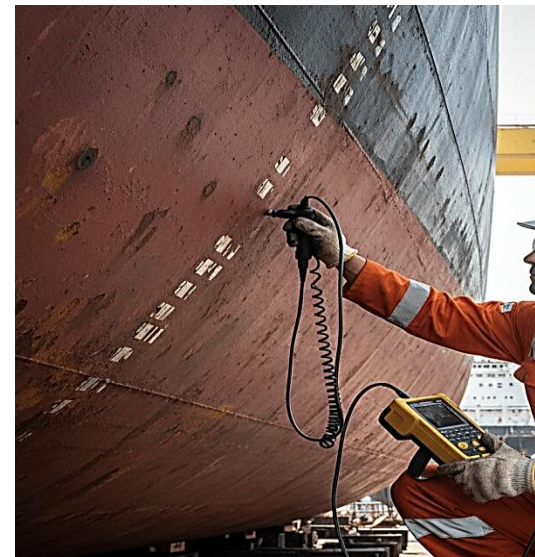
Report No.: HQC-DB-001

Inspection Stage: In-process ☐ / Final Close-out ☐

Date: _____

Block No.: _____

No.	Location	Defects	Remedy Action	Acceptable Y/N	Remark
1	DB Tank / Fr 32-33 / Bottom Plate / P	Local dent / indentation on plate surface	Grind smooth; verify no reduction beyond allowable limit per IACS Rec. 47	N	Re-inspect after repair
2	DB Tank / Fr 32-33 / Bottom Plate / P	Pitting on plate surface	Clean, grind if needed; confirm remaining thickness acceptable	N	Record thickness check
3	DB Tank / Fr 32-33 / Bottom Plate / P	Sharp edge / burr at cut edge	Edge grinding and chamfering	N	No sharp edges permitted



Safety Department (HSE)

- Implement Occupational Safety and Health (OSH) programs.
- Conduct safety inspections and risk assessments.
- Administer Permit to Work (PTW) systems.
- Investigate incidents and promote safety awareness.
- Ensure compliance with safety and environmental regulations.



HOT WORK PERMIT	
1. Project Information: (To be filled by initiator/originator)	
Project Name:	Permit No.:
Project Location:	
Requesting Contractor/Company:	
2. Permit Issuance Details: (To be filled by initiator/originator)	
THIS PERMIT IS ONLY FOR ONE SHIFT AND NOT EXTENDABLE	
Description of Task:	
Detail of Surroundings:	
Permit Validity: Time (Start): Hrs. Time (End): Hrs. Date:	
3. Hot Work Details: (To be filled by initiator/originator)	
Hot Work Operator:	Contact:
Fire Watcher:	Contact:
Type of Hot Work:	
☐ Welding ☐ Gas Cutting ☐ One Acetylene ☐ Electric Arc ☐ One Acetylene ☐ LPG	☐ Grinding ☐ Hot Cutting ☐ Other:
Fire Fighting Equipment Required:	
☐ Fire Extinguisher ☐ Hose Reel ☐ Fire Blanket:	☐ Water ☐ Sand ☐ Other(s):

Procurement Department

- Purchase materials, equipment, and services.
- Manage suppliers and vendor relationships.
- Control inventory and warehouse operations.
- Ensure timely delivery of materials to support production.



Human Resources (HR) Department

- Recruit, train, and develop employees.
- Manage payroll, attendance, and employee welfare.
- Administer performance appraisal systems.
- Maintain employee records and ensure compliance with labor laws.



Finance Department

- Manage budgeting and financial planning.
- Process payments and payroll.
- Prepare financial reports and monitor project costs.
- Ensure compliance with accounting standards and internal controls.



Main Activities

- Steel Fabrication
- Hull Construction
- Welding
- Pipe and Valve Installation
- Machinery Installation
- Electrical Works
- Blasting and Painting
- Testing
- Sea Trial



Steel Fabrication

Steel fabrication is the first stage of ship construction. Steel plates and structural sections are cut, bent, shaped, and assembled into individual components according to approved engineering drawings.

- Material identification
- Plate cutting (CNC, plasma, or oxy-fuel)
- Bending and forming
- Marking and fitting
- Sub-assembly fabrication



Hull Construction

Hull construction involves assembling fabricated steel blocks to form the ship's main structure, including the bottom, sides, decks, bulkheads, and superstructure.

- Block erection
- Alignment and leveling
- Structural fitting
- Deck installation
- Bulkhead installation



Welding

Welding permanently joins steel components together to create a strong and reliable ship structure.

Common Welding Processes

- SMAW (Shielded Metal Arc Welding)
- FCAW (Flux-Cored Arc Welding)
- GMAW (MIG/MAG)
- GTAW (TIG)

Safety Points

- Wear appropriate PPE.
- Use welding screens.
- Ensure adequate ventilation.
- Follow Hot Work Permit procedures.



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Pipe and Valve Installation

Piping systems transport liquids and gases throughout the vessel.

Typical Systems

- Fuel oil , Fresh water , Seawater cooling, Fire main, Bilge and ballast, Hydraulic systems, Compressed air

Activities

- Pipe fabrication
- Pipe fitting
- Flange alignment
- Pressure testing
- Support installation



Machinery Installation

Major mechanical equipment is installed after the hull is sufficiently completed.

Typical Equipment

- Main engine , Auxiliary engines , Gearbox , Pumps , Compressors , Steering, gear , Propeller shaft , Rudder system

Activities

- Positioning
- Alignment
- Grouting
- Coupling
- Operational checks



Electrical Works

- Electrical installation supplies power, control, communication, and navigation systems.

Activities

- Cable routing
- Cable termination
- Switchboard installation
- Lighting installation
- Instrument installation
- Automation systems
- Equipment testing



Painting

- Protective coatings prevent corrosion and improve the ship's appearance.

Typical Areas

- Hull , Ballast tanks, Cargo holds, Decks, Machinery spaces , Accommodation

Painting Process

- Surface preparation
- Blasting
- Primer application
- Intermediate coating
- Final coating
- Thickness inspection



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Testing and Commissioning

A solid green horizontal bar.

- Before delivery, every system must be inspected and tested to verify that it performs according to design specifications.

Typical Tests

- Hydrostatic tests
 - Pressure tests
 - Electrical insulation tests
 - Machinery operational tests
 - Alarm testing
 - Navigation equipment tests
 - Firefighting system tests
- 
- Abstract geometric shapes in teal, yellow, and green in the bottom-left corner.

Sea Trial



- The sea trial is the vessel's final performance test conducted in open water before acceptance by the owner.

Typical Sea Trial Activities

- Main engine performance, Speed trial, Steering test, Crash stop test, Turning circle test, Navigation equipment verification, Communication system test, Safety equipment verification

Participants

- Shipyard team
- Ship owner
- Classification surveyor
- Equipment manufacturers
- Sea trial engineers

Ship Repair Process

Decorative elements on the left side of the slide include a teal triangle, a green triangle, and a yellow arrow pointing upwards.

- Customer Request
- Inspection
- Quotation
- Docking
- Repair
- Inspection
- Seal Trial
- Delivery

Customer Request

A solid green horizontal bar.

- The ship repair process begins when the ship owner or operator submits a repair request to the shipyard.

Main Activities

- Receive repair inquiry
 - Review vessel information
 - Identify repair scope
 - Collect drawings and technical documents
 - Arrange an initial meeting with the customer
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- Abstract geometric shapes in teal, yellow, and green on the bottom left corner.

Inspection (Pre-Repair Survey)



- A joint inspection is conducted to assess the vessel's condition and identify the repairs required.

Main Activities

- Inspect hull and structures
- Examine machinery and equipment
- Check piping and electrical systems
- Identify damaged or worn components
- Record findings with photographs and reports

Participants

- Shipyard engineers , Ship owner's representatives , Classification surveyor (if required)

Quotation



- Based on the inspection results, the shipyard prepares a detailed quotation for the customer.

Main Activities

- Estimate labor hours
- Calculate material costs
- Determine equipment and crane requirements
- Prepare repair schedule
- Submit commercial quotation

Quotation Includes

- Scope of work , Estimated cost , Project duration , Terms and conditions

Docking



- After the quotation is accepted, the vessel is brought into the dry dock or repair berth.

Main Activities

- Docking plan preparation
- Position vessel safely
- Install keel and bilge blocks
- Dewater the dock
- Secure vessel for repair

Safety Considerations

- Docking checklist
- Communication between dock master and tug operators , Stability monitoring
- Permit to Work (PTW) implementation

Ship Repair



- This is the main production stage where all approved repair work is carried out.

Typical Repair Activities

- Steel renewal /Hull repairs
- Welding and cutting
- Pipe replacement & Valve servicing
- Machinery overhaul
- Electrical repairs
- Blasting & Painting
- Propeller and rudder repairs

Supporting Departments

- Production , Engineering , QA/QC , Safety , Planning , Procurement

Inspection (Final Quality Inspection)



- After repairs are completed, inspections are carried out to verify that all work meets the required standards.

Main Activities

- Visual inspection
- Dimensional checks
- Non-Destructive Testing (NDT), if required
- Pressure testing
- Function testing
- Review repair records

Participants

- QA/QC inspectors , Ship owner's representatives , Classification surveyor,
- Regulatory authorities (when applicable)

Sea Trial



- After satisfactory inspection, the vessel undergoes a sea trial to verify its operational performance under actual operating conditions.

Typical Tests

- Main engine performance
- Steering system test
- Speed trial
- Crash stop test
- Navigation equipment test
- Communication system test
- Machinery performance monitoring
- Alarm and safety system verification

Dry Dock Operations

A solid green horizontal bar.

- Dock Preparation
 - Ship Positioning
 - Docking
 - Repair and Maintenance
 - Inspection and Testing
 - Undocking
- 
- Abstract geometric shapes in teal, green, and yellow in the bottom-left corner.

Dock Preparation



- Before the vessel arrives, the dock is prepared to ensure safe docking.

Activities

- Clean the dock floor
- Arrange keel blocks and side blocks
- Inspect dock equipment
- Prepare docking plan
- Conduct safety briefing

Ship Positioning



- The vessel enters the dock under the guidance of the Dock Master.

Activities

- Tug assistance (if required)
- Mooring the vessel
- Aligning the ship with the dock centerline
- Confirming keel block alignment

Docking



- The dock gate is closed and water is gradually pumped out.

Activities

- Close dock gate/caisson
- Dewater the dock
- Monitor vessel stability
- Ensure the ship settles correctly on the keel blocks
- Inspect block contact

Repair and Maintenance

A solid green horizontal bar.

- Once the dock is dry, repair work begins.

Typical Work

- Hull inspection, Thickness measurement
 - Hull blasting and painting
 - Steel renewal , Welding , Propeller repair ,
 - Rudder maintenance
 - Sea chest cleaning
 - Pipe replacement and Valve overhaul
- 
- Abstract geometric shapes in teal, green, and yellow in the bottom-left corner.

Inspection and Testing



- Completed work is inspected before undocking.

Activities

- QA/QC inspection
- Classification survey
- NDT (if required)
- Pressure testing
- Coating inspection
- Final customer inspection

Undocking



- After all work is completed and approved, the dock is flooded and the vessel is refloated.

Activities

- Flood the dock slowly
- Check for leaks
- Remove mooring arrangements
- Open dock gate
- Tow the vessel safely out of the dock

Main Task of Dry Dock

Hull Work	Hull cleaning , Steel plate replacement , Welding repairs , Structural renewal
Machinery Work	Propeller polishing or replacement , Shaft inspection Rudder maintenance, Sea valve overhaul , Stern tube inspection
Piping Work	Ballast piping repair, Fire line maintenance, Bilge piping repair, Cooling water system inspection
Electrical Work	Underwater lighting, Cable inspection, Cathodic protection system checks, Electrical equipment maintenance
Surface Protection	Grit blasting, Surface preparation, Primer application, Anti-fouling painting , Final coating inspection

Functions of Dry Dock



Hull Inspection	Allows complete inspection of the underwater hull.
Structural Repairs	Repairs damaged or corroded hull structures.
Machinery Maintenance	Provides access to propellers, rudders, shafts, and sea valves.
Corrosion Protection	Enables blasting and painting to protect the hull from corrosion.
Classification Surveys	Supports mandatory inspections required by Classification Societies and Flag Administrations.
Regulatory Compliance	Ensures compliance with international maritime regulations and class requirements.
Performance Improvement	A clean hull and polished propeller reduce resistance, improve fuel efficiency, and enhance vessel performance.

Slipway

- A **Slipway** (also called a **Marine Railway**) is an inclined ramp with rails extending from land into the water. A **cradle or trolley** travels on the rails to **launch newly built vessels** into the water or **haul vessels ashore** for repair and maintenance.
- Slipways are commonly used for:
 - Small and medium-sized ships
 - Tugboats
 - Fishing vessels
 - Patrol boats
 - Barges
 - Passenger ferries
 - Workboats

Functions of a Slipway



Vessel Launching

- Launches newly constructed vessels safely into the water.

Vessel Hauling

- Pulls vessels out of the water for inspection, repair, or maintenance.

Ship Construction, Ship Repair and Maintenance

- Provides access to the underwater hull for repair work.
- Supports routine maintenance such as hull cleaning, painting, and machinery servicing.

Inspection

- Allows class surveys, thickness measurements, and underwater inspections.

Slipway Operation Process

- Preparation
- Vessel Positioning
- Hauling Operation
- New Construction, Repair, Maintenance and Inspection
- Launching Operation

Preparation



- Before launching or hauling, the slipway and equipment are inspected.

Activities

- Inspect rails and cradle
- Check winches and wire ropes
- Prepare lifting equipment
- Review docking/launching plan
- Conduct toolbox talk and safety briefing

Vessel Positioning

A solid green horizontal bar.

- The vessel is accurately positioned on the cradle.

Activities

- Align the vessel with the centerline
 - Position keel blocks and side supports
 - Secure the vessel using chains and supports
 - Verify stability and balance
- 
- Abstract geometric shapes in teal, green, and yellow in the bottom-left corner.

Hauling Operation

- The winch pulls the cradle carrying the vessel up the rails.

Activities

- Operate winch at controlled speed
- Monitor wire rope tension
- Check vessel alignment continuously
- Stop at designated repair position
- Secure the cradle with locking devices

Launching Operation

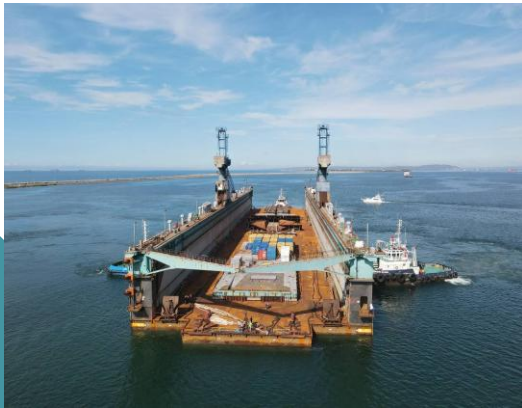


- The repaired or newly built vessel is returned safely to the water.

Activities

- Remove supports
- Release locking devices
- Lower the cradle gradually using the winch
- Float the vessel
- Disconnect the cradle
- Move the vessel to the outfitting berth or operational berth

Floating Dock Operation, Functions and Tasks



- A **Floating Dock** is a floating U-shaped structure that can be submerged by filling ballast tanks with water and raised by pumping the water out. This allows vessels to be lifted completely out of the water for inspection, maintenance, repair, or construction work.
- Floating docks are widely used because they can accommodate different vessel sizes and can be relocated if required.

Typical Vessels

- Cargo ships, Tankers, Tugboats
- Passenger ferries, Fishing vessels, Barges
- Naval vessels
- Offshore support vessels

Functions of Floating Dock



- **Dry Docking Vessels** Lifts vessels above the waterline to provide access to underwater structures.
- **Ship Repair** Supports structural, mechanical, electrical, and coating repairs.
- **Vessel Maintenance** Provides facilities for scheduled maintenance and inspections.
- **Classification Surveys** Allows underwater inspections required by Classification Societies and Flag Administrations.
- **Emergency Repairs** Enables rapid repair of damaged vessels without requiring a permanent graving dock.

Floating Dock Operation Process



Dock Preparation

Ballasting (Submerging the dock)

Vessel Positioning

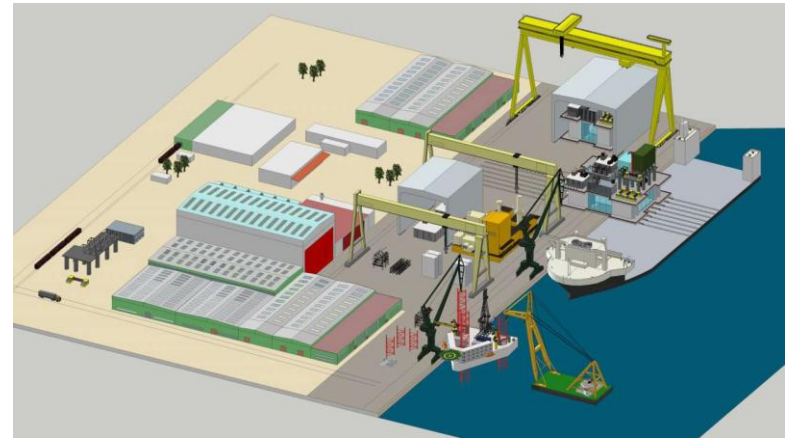
De-ballasting (Lifting the vessel)

Repair, Maintenance, Inspection and Testing

Undocking

Workshops

- Shipbuilding/ Hull Shop
- Machine Shop
- Fitting Shop
- Electrical Shop
- Carpentry Shop
- Blasting and Painting Shop
- Foundry Shop



Shipbuilding/Hull Shop

- The **Steel Workshop** is where steel materials are processed into structural components for ship construction and repair. It is the starting point of most shipbuilding projects.

Main Activities

- Steel plate cutting
- Plate bending and rolling
- Section cutting
- Marking and layout
- Fabrication of panels and blocks
- Assembly of structural components



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Major Equipment

- CNC Plasma Cutting Machine , Oxy-fuel Cutting Machine , Hydraulic Press , Plate Rolling Machine , Overhead Crane

Machine Shop

- The **Machine Shop** manufactures, repairs, and refurbishes mechanical components using precision machining equipment.

Main Activities

- Turning shafts , Milling machine parts, Drilling
- Grinding, Thread cutting
- Component repair

Major Equipment

- Lathe Machine , Milling Machine , Drilling Machine , Surface Grinder , CNC Machine

Typical Components

- Propeller shafts, Bushes, Bearings, Couplings, Flanges, Pins



Fitting Shop

- The **Fitting Shop** assembles, installs, and repairs mechanical equipment and ship machinery.

Main Activities

- Equipment fitting
- Pump installation
- Valve assembly
- Shaft alignment
- Machinery maintenance
- Mechanical repairs

Typical Equipment Installed

- Main engine , Auxiliary engine , Pumps , Compressors, Steering gear , Gearboxes



Electrical Shop



- The **Electrical Shop** installs and maintains the ship's electrical and electronic systems.
- **Main Activities**
 - Cable installation
 - Cable termination
 - Electrical panel assembly
 - Lighting installation
 - Motor installation
 - Instrument calibration
 - Troubleshooting
- **Equipment**
 - Switchboards, Electrical Motors , Generators, Distribution Panels , Testing Instruments, Test Bench

Carpentry Shop



- The **Carpentry Shop** manufactures and repairs wooden and interior components used on board ships.

Main Activities

- Furniture fabrication
- Cabin outfitting
- Door installation
- Ceiling panels
- Flooring installation
- Wooden mould fabrication

Equipment

- Circular Saw, Band Saw, Planer, Router, Sanding Machine

Blasting and Painting Shop



- The **Painting Shop** prepares surfaces and applies protective coatings to prevent corrosion and improve appearance.

Main Activities

- Surface cleaning
- Sand blasting
- Primer application
- Painting
- Coating inspection
- Touch-up painting

Coating Types

- Anti-corrosion coating, Epoxy coating, Anti-fouling paint, Finish coat

Foundry Shop



- The **Foundry Shop** produces metal castings used for manufacturing and repairing ship components.

Main Activities

- Pattern making , Sand mould preparation, Metal melting
- Casting, Heat treatment
- Finishing and machining

Typical Products

- Pump casings , Valve bodies , Propellers (for some applications), Bearing housings , Machine parts

Equipment

- Melting Furnace , Sand Moulding Equipment , Ladles , Shot Blasting Machine

Shipyards Hazards



- Shipyards hazards are dangerous conditions or activities that can cause injuries, illnesses, damage to equipment, environmental pollution, or loss of life during shipbuilding, ship repair, and ship maintenance operations.

Common Hazard Categories

- Physical Hazards
- Mechanical Hazards
- Electrical Hazards
- Fire and Explosion Hazards
- Chemical Hazards
- Working at Height Hazards
- Confined Space Hazards
- Lifting and Rigging Hazards
- Slip, Trip and Fall Hazards
- Environmental Hazards

Physical Hazards



Causes

- Excessive noise from machinery and welding
- Poor lighting
- High temperatures
- Flying particles during grinding
- Vibration from power tools

Prevention

- Wear hearing protection.
- Use safety goggles or face shields.
- Ensure adequate lighting.
- Wear gloves and appropriate PPE.
- Maintain equipment properly.

Mechanical Hazards



Causes

- Rotating machinery
- Moving cranes
- Conveyor systems
- Unguarded machine parts
- Improper use of power tools

Prevention

- Install machine guards.
- Never remove safety guards.
- Follow Lock-Out/Tag-Out (LOTO).
- Keep hands away from moving parts.
- Only trained personnel should operate machinery.

Electrical Hazards



Causes

- Damaged electrical cables
- Wet working conditions
- Improper grounding
- Overloaded circuits
- Faulty electrical equipment

Prevention

- Inspect cables before use.
- Use Ground Fault Circuit Interrupters (GFCI).
- Keep electrical equipment dry.
- Isolate power before repairs.
- Only qualified electricians perform electrical work.

Fire and Explosion Hazards



Causes

- Welding sparks
- Gas cutting
- Flammable liquids
- Fuel leaks
- Improper storage of chemicals

Prevention

- Obtain Hot Work Permit.
- Remove combustible materials.
- Keep fire extinguishers nearby.
- Maintain proper ventilation.
- Inspect gas hoses regularly.

Chemical Hazards



Causes

- Paints
- Solvents
- Cleaning chemicals
- Fuel oil
- Welding fumes

Prevention

- Read Safety Data Sheets (SDS).
- Wear chemical-resistant gloves.
- Use respirators when required.
- Store chemicals properly.
- Ensure adequate ventilation.

Working at Height Hazards



Causes

- Working on scaffolds
- Ship mast work
- Crane maintenance
- Working on elevated platforms

Prevention

- Wear full-body harness.
- Inspect scaffolding.
- Use secure ladders.
- Install guardrails.
- Follow Fall Protection Procedures.

Confined Space Hazards



Causes

- Cargo tanks
- Ballast tanks
- Double-bottom tanks
- Engine rooms
- Fuel tanks

Prevention

- Obtain Confined Space Entry Permit.
- Test atmosphere before entry.
- Continuous gas monitoring.
- Provide ventilation.
- Standby attendant outside.

Lifting and Rigging Hazards



Causes

- Overloaded cranes
- Defective lifting slings
- Improper rigging
- Unstable loads
- Poor communication

Prevention

- Inspect lifting gear.
- Follow Safe Working Load (SWL).
- Use certified lifting equipment.
- Keep clear of suspended loads.
- Use trained signalmen.

Slip, Trip and Fall Hazards



Causes

- Oil spills
- Wet floors
- Loose cables
- Poor housekeeping
- Uneven surfaces

Prevention

- Clean spills immediately.
- Keep walkways clear.
- Secure cables.
- Wear anti-slip safety shoes.
- Maintain good housekeeping.

Personal Protective Equipment (PPE)



Required PPE

- Safety Helmet
- Safety Shoes
- Safety Glasses
- Face Shield
- Hearing Protection
- Gloves
- Respirator
- Safety Harness
- Reflective Vest

Remember

- PPE is the last line of defense.
- PPE must fit properly.
- Replace damaged PPE immediately.

Daily Toolbox Meeting



- A **Daily Toolbox Meeting (Toolbox Talk)** is a short safety meeting conducted **before the start of each work shift**. It reminds workers of job-specific hazards, safe work procedures, and safety precautions to ensure everyone works safely throughout the day.

Objectives

- Review the day's work activities.
- Identify potential hazards and risks.
- Discuss safe work procedures.
- Confirm required Personal Protective Equipment (PPE).
- Improve communication among team members.
- Prevent accidents, injuries, and near misses.

Daily Toolbox Meeting



When

- Before the start of each work shift.
- Before beginning a new or high-risk task.
- After changes in work conditions or weather.
- Following an incident or near miss.

Topics Covered

- Daily work plan and responsibilities.
- Hazard identification and risk assessment.
- Permit to Work (PTW) requirements.
- Required PPE.
- Tools and equipment inspection.

Daily Toolbox Meeting



Topics Covered

- Emergency procedures and escape routes.
- Housekeeping requirements.
- Environmental protection measures.
- Lessons learned from previous incidents.

Responsibilities



Supervisor

- Lead the Toolbox Meeting.
- Explain work activities and hazards.
- Ensure all workers understand the safety requirements.
- Answer questions and verify attendance.

Workers

- Attend the meeting on time.
- Participate actively.
- Ask questions if unsure.
- Follow all agreed safety procedures.
- Report hazards and unsafe conditions.

Benefits



- Reduces workplace accidents.
- Improves hazard awareness.
- Enhances teamwork and communication.
- Reinforces safe working practices.
- Ensures compliance with safety regulations.
- Promotes a positive safety culture.

General Safety Rules



Always

- Follow Permit to Work (PTW) System.
- Conduct Risk Assessment.
- Attend Toolbox Meetings.
- Follow Standard Operating Procedures (SOP).
- Report Near Misses.
- Keep work areas clean.
- Follow emergency procedures.

Never

- Remove safety guards.
- Ignore warning signs.
- Work without PPE.
- Bypass safety procedures.
- Operate equipment without authorization.

Remember the Golden Rules



- Safety is everyone's responsibility.
- Think before you act.
- Identify hazards before starting work.
- Use the correct PPE.
- Follow permits and procedures.
- Report unsafe conditions immediately.
- Stop work if it is unsafe.
- Protect yourself and your coworkers.
- Never take shortcuts.
- Everyone goes home safely every day.



Thank you

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