WHY INSPECTING YOUR SECONDHAND SHIP IS A MUST BEFORE BUYING
Every shipowner - past, present and future will always need to choose between buying an existing ship or building a new vessel. The former allows one to get hold of a deployable asset immediately while the latter enables a ship built to one’s specifications with the latest technology.

However, a secondhand ship comprises of many moving parts, machinery and equipment that have undergone some degree of wear and tear; a single loose nut or bolt could lead to a prolonged period of repair that incurs more expense on top of lost operating time and hence, revenue. This holds true especially for vessels that are more than 10 years old.

In theory, buying a pre-owned item comes with risks and the potential new owner making the secondhand purchase on “as-is” value could be met with defective parts inside the vessel. Pre-purchase inspections target these unknown issues and reduce information asymmetry in such transactions by giving potential buyers of older ships more details about the vessel’s condition.

Such inspections enable owners to make better asset purchase decisions that protect their outlay along with peace of mind.

While this is non-exhaustive, this overview aims to provide an indication to owners of the key considerations that are important when buying a secondhand ship.
A pre-purchase inspection is an extensive, intense process that could take up to a few days and it is a thorough inspection of the vessel’s structural and watertight integrity, installed machinery and equipment, operating condition, as well as an assessment of its condition.

A maritime expert who works on behalf of the buyer will check the ship in phases including afloat with all systems operating but not under load, and ashore with full access to the vessel’s submerged areas. Through this series of inspections, the inspector will check that the ship’s engines, systems and components are working under actual sea conditions, verify the integrity of sea valves and hull penetration sealants, as well as determine the vessel’s structural integrity respectively.

After the inspection is done, a comprehensive and detailed report is produced. The report should provide an accurate picture of the vessel’s condition and highlights areas of concern that would require future capital expenditure.

The report assessment should be accompanied with corresponding pictures that supports it’s findings. A typical report structure will cover the following parts of the ship:

- Hull
- Decks
- Accommodation
- Cargo Tanks/Holds
- Ballast tanks
- Void Spaces
- Engine Room
- Navigation equipment
- Life saving and Fire Fighting equipment
- Control Systems
How can a Pre-Purchase Marine Survey REALLY help buyers?

Buyers can utilize their pre-purchase inspection reports to decide whether or not to proceed with the deal. Before the transaction is executed, they can also use it to negotiate for specific repairs or price adjustments with sellers. The document gives a clear and realistic assessment of the ship, giving the new owner the essential facts to make informed, balanced decisions regarding the vessel and to evaluate its general condition, past history and overall operation before purchase. The report also highlights areas where the buyer may need to invest in the future, translating into capital expenditure that forms part of their business case investment analysis.
Using the example of a 50,000 metric ton bulk carrier that was delivered in 2012, a Pre-Purchase Inspection revealed the following areas that called for action by the new owner and the associated costs:

1. **US$200,000**
   Hull fouled and requires attention in the docks such as blasting its surface before coating, could typically cost above US$200,000.

2. **US$50,000**
   Vessel not outfitted with an air seal. Will require to be outfitted at coming docking with recommended air type seal installation with a spend of almost US$50,000.

3. **US$90,000**
   Cargo holds need to be upgraded for grain & hospital clean standard as required. Expenditure estimated at nearly US$90,000 at economical yard with adequate time frame.

4. **US$10,000**
   Additional set of mooring ropes to be supplied at a recommended cost of US$10,000.
Ship location that are inspected

- Main Engine
- Lifesaving
- Firefighting
- Lifting Gear
- Hull
- Deck, Outfittings
- Superstructure, Accommodation
- Main Engine
- Galley, Provision Stores
- Navigation, Communication
- Steering Gear, Maneuvering
- Ship Survey, Certificates, & Maintenance Record
- Anchor, Mooring System
- Electrical Systems
- Exhaust Gas, Boiler System
- Fuel & Lube Oil Handling
- Compressed Air
- Common Areas
- Auxiliary Engine, Generator
- Cargo Holds
- Oily Water, Sewage
- Ventilation, Air Conditioning
- Tanks, Void Spaces
- Compressed Air
- Electrical Systems
How extensive is a typical inspection?

From the complement of its crew to the last cargo carried, a pre-purchase survey aims to provide comprehensive, detailed information about any pre-owned ship that’s about to change hands.

A typical inspection onboard is exhaustive and usually takes 1 to 2 days onboard. Areas of typical inspection onboard are as in Table 1.

The following section provides an overview of selected key aspects of a bulk carrier vessel that will be checked and examined by maritime experts during the course of an inspection.
The general condition of the ship’s tanks and void spaces are surveyed; in addition, the inspector will look out for anode protection and structural integrity.

This helps provide an indication of the quality of maintenance. It also provides input to buyers for estimating the CAPEX (capital expenditure) required to upgrade or restore the condition.

Below are examples taken in forepeak tank:

- Paint structure at bow section intact and not much sedimentation.
- Anode protection present. All anodes in excellent conditions.
- Condition in Tank Valve is satisfactory. Pipes in good condition. Air vents had minor rust staining. Manhole covers in satisfactory condition with gasket in order.
- Bell mouth areas clear. Striking plates in good condition.
Cargo Holds and Cargoes

The ship’s cargo holds will be examined for structural integrity and cleanliness, if they are weather tight, as well as seamless opening & closing.

The operational condition of its bilge pumps, if applicable, will be checked along with its hatch opening systems, rubber packings and cleats.

It is very important to evaluate the cargo hold structural strength to ensure the condition is suitable to protect cargo within parameters.

This defines how the vessel can trade and what she is capable of carrying.

Below are examples taken in Cargo Holds of a bulk carrier

**Cargo Hold No. 1**
Cargo holds inspected, found in satisfactory condition. Tank top was clean but rust staining was observed. Holds reported to be weather tight. Opening and closing was observed to be satisfactory with no leakage observed. Holds required to be upgraded for grain and hospital clean cargoes.

**Cargo Hold No. 3**
Heavy weather ballast hold and pontoon is strengthened for helicopter landing. Vessel cargo holds can be operated with emergency pump which is available on board. Hatch opening systems are in good order. Rubber packings and cleats found in satisfactory condition.
Lifting Gear

This is a crucial area that determines a vessel's trade ability

Lifting gear must comply with classification society regulations since newbuild stage and are inspected on an annual basis. In addition to the visual inspection of the equipment, inspectors will access the general conditions including motor and wires by sighting the record book. Evaluation here will indicate the future investment required in the coming years.

Physical condition of the gears should be inspected. For a geared bulker, lifting gear is the critical equipment. A good working gear is critical to its operation. Cranes and grabs on vessel are checked for operational condition, sighting, maintenance and leakage.

Condition of the installed wire rope should be inspected for signs of crushing, bending, fatigue and abrasion.

Remotes for lifting gears inspected to ensure in good working order. Spares for lifting gears such as hoisting and luffing wires, if available, are examined.

Below are examples of lifting gears and surrounding areas

- Operational and Well maintained IHI Cranes – 30 MT SWL.
- Inside Crane housing that is operational and well maintained.
- Grab working satisfactorily and last used date observed. All remotes working satisfactorily.
- Gangway in good condition and well maintained.
Life Saving Systems

The number of life boats in accordance to flag requirements, type, and engine are inspected for operational purposes and SOLAS compliance.

Check for lifeboats, type and quantity.

Lifesaving equipment such as rafts, buoys, immersion suits and buoys should be present and adequately marked.

This ensures the ship meets safety requirements and compliance.

Below are examples of lifesaving systems

2 life raft for 35 person located on side A deck.

Rescue boat for 6 person on starboard side reported to be operational.

A 30 person free fall lifeboat, enclosed type, diesel engine propelled. Reported to be trouble free.

Life raft for 6 persons located on forward deck.
Fire Fighting Systems

Vessel areas are checked if they are each equipped with dedicated firefighting systems and for SOLAS compliance.

The emergency fire pump is inspected for its working condition.

Emergency power plant, if available, is examined for its operability and power output.

This ensures the ship meets safety and compliance assurance.

Below are examples of fire fighting systems

- High Expansion Foam Fixed Type for Engine room, Hyper mist system for Machinery spaces and spray system for paint store.
- Emergency fire pump located in aft near steering gear room found to be in satisfactory condition. Does not have a non-return valve on the suction line.
Main Propulsion System

The ship’s main engine is examined for leakages, assessment of cylinder and turbocharger overhaul records and observed for technical off-hire and operational delay.

Last overhaul and due dates are good indication of maintenance. Any signs of leakages and stains are indicative of poor maintenance.

The main engine’s cylinder cover/jacket is checked for abnormality as well as cleanliness.

Performance reports should indicate that all performance parameters are within normal conditions.

Main engine’s spare parts are inspected to ensure that minimum quantities required are maintained and are in satisfactory condition.

Below are examples of a Main engine: Mitsui-MAN B & W 6S50MC-C (Mark 7)
Auxiliary Engines and Generators

Vessel’s auxiliary engines and generators are inspected for total running hours, maintenance status, number of running hours since last overhaul of pistons, turbochargers, governors, as well as list of major spare parts available on board.

In this area, inspector will try to access the generator’s condition including the load that they have been carrying recently. Updated maintenance dates are checked and also if overhauling is needed on turbochargers.

MAKER: YANMAR
Type: 6EY18AL
550kW x 900RPM x 3SET x Bore 180mm x Stroke 280mm
ALTERNATOR AC 450V x 60HZ x 480KW x 3PHASE

Auxiliary engine: Yanmar Type 6EY18AL
All three engines well maintained and in good condition.

3 Sets generator condition satisfaction with Yanmar NZ61plus governor.
Survey, Certificates & Maintenance Record Plans

The ship’s Survey, Certificates and Plans are inspected for anything that’s overdue or outstanding.

This indicates vessel compliance and what survey cycles are due, which will translate into cost basis outstanding items.

Historical data are also accessed to gauge if there is any previous issues encountered.
In Conclusion...

The pre-purchase inspection of an existing vessel is an exacting, thorough and rigorous process that every owner should be aware of if they are keen to buy their assets. It is also imperative that the inspection should be done in consideration to comply with the upcoming regulation that will be enforced such as Ballast Water Management System and IMO 2020 Sulfur Cap.

Buying and selling a ship in the secondhand market is a two-way street and pre-purchase surveys give the trade credibility and objectivity while ensuring the interests of all parties are protected. Not every potential ship owner can afford to buy a new ship or wait for a newbuilding to be completed; hence, pre-purchase checks can help the secondhand trade thrive and stay relevant. Nobody likes to buy a defective product and the inspection goes a long way to eliminate any possible information asymmetry, as well as any potential sourness in such transactions.
Ship Inspection Service division - Ship Management

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Contact us for an accurate and professional assessment of your potential asset:

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