

# LIGHTHOUSE

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**R.L. INSTITUTE OF NAUTICAL SCIENCES**

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## Hydrographic Surveys and Nautical Charting in India

Hemant Attreya -B.Tech-III



Indian Naval Hydrographic Department is the nodal agency for hydrographic surveys and nautical charting in India.

A nautical mile is based on the circumference of the earth, and is equal to **one minute of latitude**, according to National Oceanic and Atmospheric Administration (NOAA).

- It is slightly more than a statute (land measured) mile (1 nautical mile = 1.1508 statute miles)
- Nautical miles are used for **charting and navigating in waters**

### How is a knot different from a nautical mile?

- A knot is one nautical mile per hour (1 knot = 1.15 miles per hour), as per NOAA
- The term knot dates from the 17th century, when

sailors measured the speed of their ship by using a device called a **'common log'**

- This device was a coil of rope with uniformly spaced knots, attached to a piece of wood shaped like a slice of pie
- The piece of wood was lowered from the back of the ship and allowed to float behind it
- The line was allowed to pay out freely from the coil as the piece of wood fell behind the ship for a specific amount of time
- When the specified time had passed, the line was pulled in and the number of knots on the rope between the ship and the wood were counted
- The speed of the ship was said to be the **number of knots** counted  
(Bowditch, 1984)

### Nautical charts

- We use a nautical chart to find places and objects on water
- A nautical chart is a **special map** that shows what is under, in, on, and around water
- It helps a ship travel safely on the water
- Chart symbols point out objects on the **water**, or near **land**

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# Security Drill at our premises



Security Drill is in progress with all cadets, faculty members and staff participating in it.



Our principal Mr.Bhaskar Agnihotri addresses the gathering after taking the roll call reported by respective class incharges during the session.The Security Drill takes place periodically without prior intimation by the long bell which makes them to muster near the main entrance of the college.

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# Hydrographic Surveys and Nautical... Continued From Page 1

- We can paint lines on a road to show where the cars are supposed to go, but we cannot draw lines on the water

- We can tell a ship to stay within channels, but ship captains have to look at their nautical charts to see where those lines would be

- Nautical charts are key to **safe navigation**

A nautical chart is one of the most fundamental tools available to the mariner: they use charts to plan voyages and navigate ships safely and economically

- The map that depicts the configuration of the **shoreline and seafloor**

- It provides water depths, locations of dangers to navigation, locations and characteristics of aids to navigation, anchorages, and other features

- Federal regulations require most **commercial**

**vessels** to carry nautical charts while they transit US waters

## Nautical charting in India

- The Indian Naval Hydrographic Department (INHD) functions under the Chief Hydrographer to the Government of India

- The department, being the nodal agency for **hydrographic surveys** and **nautical charting** in India, has a very well established organizational setup

- Surveys are conducted in strict compliance with the International Hydrographic Organization (IHO) standards for hydrographic surveying (Section-44)

- The department also pioneered in making official **Electronic Navigational Charts (ENCs)** for Indian waters

Courtesy :education.intoday

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## Marine Auxiliary Diesel Engine Starting problems

Anupam Singh - B Tech - IV

### Marine Auxiliary Diesel Engines

You come on your watch and find that the Chief Engineer has written a note instructing you to change over the generators because the 250 hour routine of the running generator is due. You have a cup of coffee to start your “day” (or night as your watch timing may be) but till feel sleepy , you take a round, check the various parameters of the running machineries and then go to the generator platform. After checking the level of the oil and opening all the valves you blow through the engine and then close the indicator cocks. Now you give it an air kick and open the fuel... but the engine does not pick up and stops. You try again and the result is the same. Wide alert, with

a thousand dreaded causes floating in your subconscious, you are now awake. So you wear your thinking hat and start troubleshooting.

Sounds familiar! I bet it does. Every marine engineer will face such situations. In addition to having all tricks up his sleeve, the marine engineer must be good in troubleshooting. It is not worthwhile to open the pump just because there was air in the system and you could not diagnose it correctly.

Marine auxiliary diesel engines are used for the production of electricity on board merchant ships. They are called auxiliary because the main diesel engines are used for the propulsion of the ship. The auxiliary

engines are generally four stroke diesel engines.

This article briefly tries to explain the various causes of engine problems. It is hoped it will benefit junior engineers as well as practicing marine engineers.

### Yanmar Auxiliary Engine



You have lined up the valves and opened the indicator cocks as you want to do an air blow through. It is to check if any incompressible fluid has leaked into the combustion spaces. You press the starting air button and hear the sound of air escaping but the tachometer does not move. Suspecting that the tachometer wire is broken, you check the flywheel only to find it is not rotating either. What could go wrong? The following are a list of suspected reasons for the fault:

1. The air receiver pressure is low. Please check the pressure of the air receiver and start the compressors.
2. In case the air receiver pressure is satisfactory, check the starting air valve on the air bottle and the valves in the line.
3. Check for any leakage in the starting air piping.
4. The individual air starting valves on the cylinder heads might be stuck or sticky.
5. The air distributor might be faulty and not allowing air into the cylinders. Try rotating the engine with the turning gear and restart.

### **The engine turns on air but does not run on fuel**

In this case the engine is turning on air, but does not pick up on fuel. You try giving a longer kick and put the fuel lever at a higher notch, but still the generator stops. The starting air pressure is now low and the air low pressure alarm is sounding. All the compressors have started automatically and are running continuously. You are waiting for the pressure to build up and try yet again. Well if such is the case you need to stop and investigate the reasons for the failure to start. They could be one of the following:

1. Fuel does not reach the fuel

injection pump because there is air in the system.

2. The fuel oil filters are choked.
3. The fuel line valve is not open.
4. The trips have been not reset after the last stopping.
5. Fuel oil service tank is at low level. Beware the other generator is also going to stop.
6. There is water in the line.
7. The fuel valves are faulty and not giving proper atomization or are choked.
8. The fuel pump timing is wrong.
9. Leaking fuel injection pipes.
10. Seized plungers of the fuel pumps.
11. Fuel rack linkage stuck in position.
12. Seized delivery valves or broken plunger springs in injection pump.
13. The engine is cold.

### **Choked Fuel Filters Hunting of the engine**



The engine has started but there is a fluctuation in the RPM. You think that the tachometer cable might have broken but you hear the sounds of acceleration and de-acceleration. The governor linkages are moving like crazy sometimes increasing the RPM and sometimes decreasing it. The auxiliary engines have an Isochronous governor, which means

that the engine has to operate at a constant speed after starting. “Iso” means same and “chronus” means speed and thus it is supposed to be a constant speed governor, unlike the main engine governor, which you can run at various speeds. The hunting of the engine can be due to the following reasons:

1. The tachometer or its wire may be out of order. They may be rubbing, or the pin might have turned round and is about to give in. Try lubricating the wire, or changing the tachometer. But if you can hear the hunting by sound do not touch it as it might be working after all.
2. The fuel line may be having air. Yes!, now you remember you had changed the filter but had forgotten to purge the air and prime the system. This is a good time to do it.
3. The engine is cold and leads to uneven combustion. This can be caused by forgetting to put the engine on pre-heating after stopping last time.
4. Faulty governor. The governor oil is supposed to be removed and spaces flushed with clean kerosene, before filling up with oil again. Sometimes the pilot valves have some sludge stuck and hence the hunting.

5. Some fuel injectors getting stuck and firing intermittently. This might happen in engines which are run on Heavy fuel oil. These engines are supposed to be changed over to diesel oil for approximately half an hour before stopping. The half an hour figure is only a rough guide line, practically the purpose is to flush the pipe lines.



## Engine Control Stand



## Conclusion

This article tried to discuss in brief the various starting problems that can be encountered in the operation of auxiliary engines. It will also give the reader a clear understanding on the troubleshooting of marine auxiliary diesel engines.

Courtesy: Mohit Sanguri / Marine Engineer

# Know Your Oceans - The Coral Reefs

Meenakshi Sundaram B - AO / FACULTY

**Coral reefs** are underwater structures made from calcium carbonate secreted by corals. Coral reefs are colonies of tiny living animals found in marine waters that contain few nutrients. Most coral reefs are built from stony corals, which in turn consist of polyps that cluster in groups. The polyps are like tiny sea anemones, to which they are closely related. But unlike sea anemones, coral polyps secrete hard carbonate exoskeletons which support and protect their bodies. Reefs grow best in warm, shallow, clear, sunny and agitated waters

Coral reefs occupy less than one tenth of one percent of the world's ocean surface, and provide a home for twenty-five percent of all marine species, including fish, molluscs, worms, crustaceans, echinoderms, sponges, tunicates and other cnidarians. Paradoxically, coral reefs flourish even though they are surrounded by ocean waters that provide few nutrients.

Coral reefs deliver ecosystem services to tourism, fisheries and shoreline protection. The annual global economic value of coral reefs has been estimated at \$US375 billion.

However, coral reefs are fragile ecosystems, partly because they are very sensitive to water temperature. They are under threat from climate change, ocean acidification, blast fishing, cyanide fishing for aquarium fish, overuse of reef resources, and harmful land-use practices..

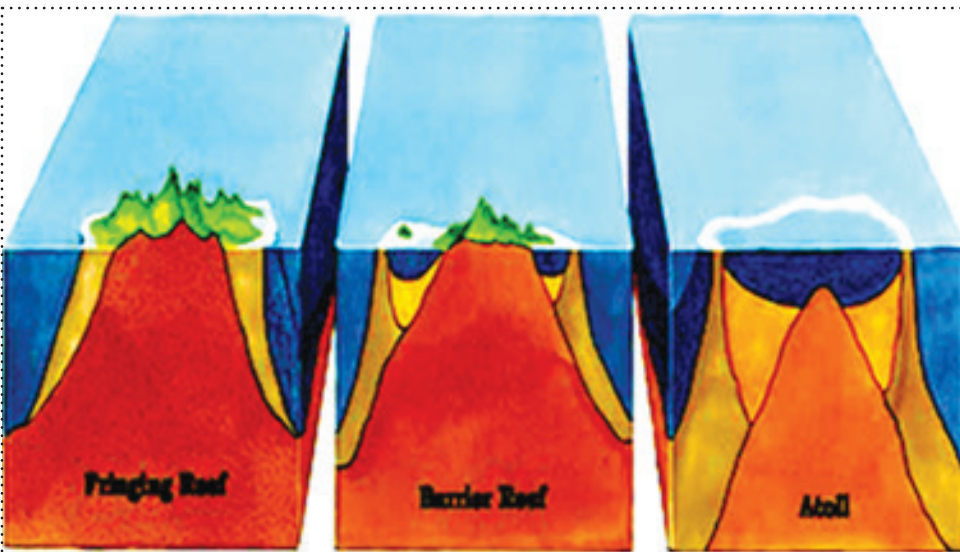
## Formation

Most coral reefs were formed after the last glacial period when melting ice caused the sea level to rise and flood the continental shelves. This means that most coral reefs are less than 10,000 years old.

As communities established themselves on the shelves, the reefs grew upwards, pacing rising sea levels. Reefs that rose too slowly could become drowned reefs, covered by so much water that there was insufficient light. Coral reefs are found in the deep sea away from continental shelves, around oceanic islands and as atolls. The vast majority of these islands are volcanic in origin. The few exceptions have tectonic origins where plate movements have lifted the deep ocean floor on the surface.

## Types of Coral Reef

It starts with a fringing reef forming around an extinct volcanic island as the island and ocean floor subsides. As the subsidence continues, the fringing reef becomes a barrier reef, and ultimately an atoll reef. Darwin's theory starts with a volcanic island which becomes extinct. As the island and ocean floor subside, coral growth builds a fringing reef, often including a shallow lagoon between the land and the main reef. As the subsidence continues, the fringing reef becomes a larger barrier reef further from the shore with a bigger and deeper lagoon inside. Ultimately, the island



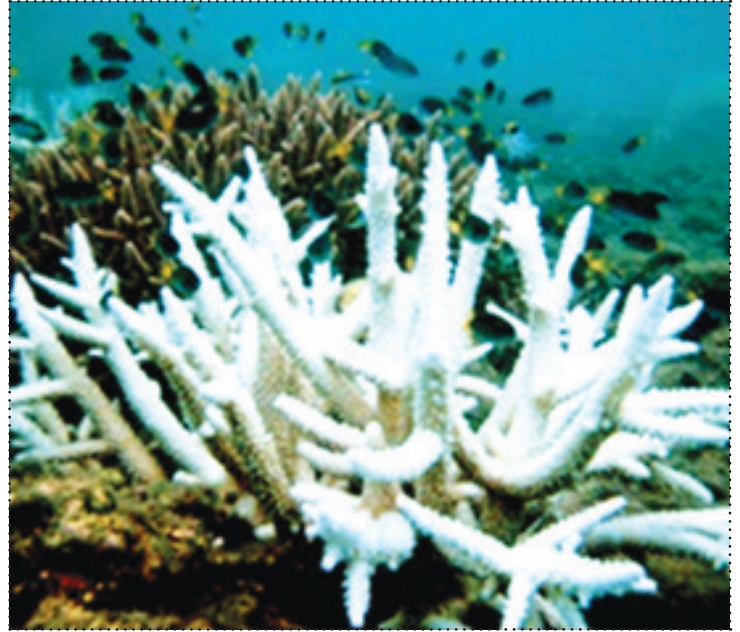


sinks below the sea, and the barrier reef becomes an atoll enclosing an open lagoon.

### Coral Bleaching

Coral bleaching is the loss of intracellular endosymbionts (zooxanthellae) through either expulsion or loss of algal pigmentation. The corals that form the structure of the great reef ecosystems of tropical seas depend upon a symbiotic relationship with unicellular flagellate protozoa, called zooxanthellae, that are photosynthetic and live within their tissues.

Zooxanthellae give coral its coloration, with the specific color. Under stress, corals may expel their zooxanthellae, which leads to a lighter or completely white appearance, hence the term “bleached”. Bleaching occurs when the conditions necessary to sustain the coral’s zooxanthellae cannot be maintained



## Blood Donation camp conducted by Meenakshi Mission Hospital, Madurai.



▶▶ Mr. Bhaskar Agnihotri, Principal supervises the camp. Along with him are faculty members, OICs of the institute and representative of Meenakshi Mission Hospital.

Many cadets participated in the blood donation camp. 101 cadets donated blood. ◀◀



# Five Indians who made it to the Booker Prize

S.Thiagarajan - Faculty - RLINS

The Man Booker Prize or simply the Booker Prize is a literary prize awarded every year for the best original novel, published in the UK and written in the English language.

## History behind Booker Prize

The Booker Prize was initially known as the Booker-McConnell Prize, but when the company Booker-McConnell began sponsoring the event in 1968; it became commonly known as the “Booker Prize” or simply “the Booker.”

The administration of the prize was transferred to the Booker Prize Foundation in 2002, wherein the title sponsor became the investment company Man Group, which opted to retain “Booker” as part of the official title of the prize.

It should be noted that, in 1970, Bernice Rubens became the first woman to win the Booker Prize, for *The Elected Member*, wherein from the next year the rules of the Booker changed.

In 1971, the year of eligibility was changed to the same as the year of the award; the consequence was that the books published in 1970 were not considered for the Booker in either year.

The Booker Prize Foundation announced, in January 2010, the design of a special award called the “Lost Man Booker Prize,” with the winner chosen from a long list of 22 novels published in 1970.

Here is a list of 5 Indian novelists who were shortlisted or have won

the Booker prize in different years:

## Rohinton Mistry

Rohinton Mistry is an Indo-Canadian novelist who has written three novels and has been shortlisted for the Booker Prize three times.

His first novel ‘Such a Long Journey’, made it to the list in 1991, and gathered more headlines when Bal Thackeray’s complaints got it removed from University of Mumbai’s syllabus.

His second book ‘A Fine Balance’ (1996) has been successfully adapted on stage. The third and final novel by Mistry is ‘Family Matters’ (2002)

## Indra Sinha

Indra Sinha is a British-Indian writer who had been in the finalists’ list for his novel on the Bhopal gas tragedy - ‘Animal’s People’ in 2007.

He is also an ardent campaigner for justice to the victims of the incident and has made an advertisement, given many interviews and written many articles regarding the same. He holds the distinction of being in the list of the top 10 British copywriters of all time.

Sinha also writes non-fiction and translates ancient Sanskrit texts into English.

## Amitav Ghosh

Well known Bengali author, Amitav Ghosh, was shortlisted for his 6th novel, ‘Sea of Poppies’, in the year 2008 making it the only year two Indians made it together to the Booker shortlist. The other was Aravind Adiga.

The book is the first of his Ibis trilogy, which is set before the Opium Wars in the 1830s. His latest novel, ‘River of Smoke’ (2011) is the second volume, and the third is yet to be published. It should be noted that he was awarded the Padma Shri by the Indian government in 2007.

## Jeet Thayil

Jeet Thayil is a novelist, with several talents. He is a poet and musician as well. He is the latest Indian to have been shortlisted for the Man Booker Prize in 2012 for his debut and only work of fiction - ‘Narcopolis’.

The novel deals with the Bombay of 1970’s and is a tale of a man’s journey in and out of the intoxication of opium. It took him five years to write the novel and is actually about his own experiences as a drug addict.

## Aravind Adiga

Aravind Adiga is an Indian-Australian writer and journalist. His debut novel, *The White Tiger*, won the 2008 Man Booker Prize. 2008 was actually the third year in a row for Indian novelists to have been nominated for the Booker Prize - and it saw Chennai-born Aravind Adiga taking away the Booker for his debut novel.

*White Tiger* is a dark, humorous perspective of India’s class struggle in a globalized world - this novel made Adiga the second youngest author to win the award. It should be noted that he is also the fourth author to win the Booker for the debut novel.





# Congratulations Cadets



Anupam Singh - ID 1559608004 - B.Tech (ME) got placed in Pacific International Lines (PIL), Pacific Manning Agency (PMA) Chennai.



Shreyas Arunkumar Kargaonkar - ID 2018RG029 - GME got placed in Pacific International Lines (PIL), Pacific Manning Agency (PMA) Chennai.



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T.V.R. Nagar. Aruppukottai Road, MADURAI -625022 Tamil Nadu.  
Phone : 0452-391 8615 / 391 8614 email : [admission@rlins.in](mailto:admission@rlins.in) / [rlins@rlins.in](mailto:rlins@rlins.in)

