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Samundra Spirit

QUARTERLY IN-HOUSE MAGAZINE FOR SAMUNDRA INSTITUTE OF MARITIME STUDIES (SIMS), MUMBAI & LONAVALA

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Academic	**Results must be obtained at 1st attempt** • **All Approved Board (Class XII):** Aggregate percentage - 60%, PCM Min - 60% • **B.Sc**: Physics/ Chemistry/ Maths/ Electronics with min 55% in final year along with min 55% in PCM during Class XII • **B.E/B.Tech** - Degree from an AICTE/UGC/DEC approved institute with min 55% in final year	**All Approved Board (Class XII):** Aggregate percentage - 60% PCM Min - 60%	Graduation in **B.E. (Mechanical) Engineering/ Naval Architecture** from an **AICTE** approved institute with a min mark of 55% in final year
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Background of cover picture:
Ship-in-Campus braving the full blast of monsoon deluge in Lonavala.

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Samundra Spirit is a quarterly in-house magazine produced by Samundra Institute of Maritime Studies (SIMS) for private circulation.

Our Editorial Team wants to hear from you!

If you wish to submit any feedbacks and/or contributions, feel free to write to the Editor at: samundraspirit@samundra.com

**Please note we reserve the right to publish your letters/articles or an edited version of it in all print & electronic media.*

Editorial Note

"There is a harmony in autumn, and a luster in its sky, which through the summer is not heard or seen, as if it could not be, as if it had not been!"

- Percy Bysshe Shelley

The autumn breeze has blown away the monsoon clouds from the Lonavala sky. The rain and thunder showers have quieted down to bring the calmness and serenity of the Fall. The leaves of the tall mango trees scattered over the lawns around bring the autumn to the campus. However, the harmony in the campus does not need the autumn as indicated by the sweet story by a cadet of the Parsi community. The cadets coming from all frontiers of the vast country of India merge to become future professional mariner groomed to represent the global maritime industry- that's what a SIMS cadet is.

This issue is as much meant to represent the elegance of the autumn as to celebrate the monsoon that is so famous in India - more so in Mumbai and Lonavala. While monsoon story in Mumbai is mostly associated with the road blocks and congestion, the picture from Lonavala is a perfect monsoon of gushing waterfalls down the rocky and rugged hillside, grey clouds hanging over the hill tops and lush green vegetation to soothe the eyes, whichever direction you look. We are happy to present a spread of special photo album from our amateur photographers from the Lonavala campus.

This October issue is yet another attempt to open the veritable coffer of experience and expertise of ESM and SIMS combined in the field of shipping and maritime training. Over a period of time, we have realised with much satisfaction that the articles included in the magazine continue to interest not just the cadets learning the ropes for their future career, but even those who have interest in the related shipping fields and ones who are keen to learn how the ships are being run and what goes behind running these multi-million dollars worth cargo ships around the globe.

We continue with our regular series on sharing knowledge which contains the second and final part on Container ships in the "Know Your Ships" by Capt. Arun Sundaram, Head of ESM, Operations; "Navigating by Ocean Currents" which remain one of the most critical areas of concern and interest is covered in the second part of the article by Capt. Vikash Singh, faculty of SIMS, Mumbai. We have adopted a simple language so that these will attract the attention of even those readers who may be unfamiliar with the intricacies of the subjects. Same logic has been applied to writing about the normal dry subject of shipboard surveys by engineering faculty Mr. Jims Andrews, which will definitely keep interests of all shipboard engineer readers kindled all through.

We have been particularly successful in capturing the memories of our seasoned chief engineers in this issue as indicated by the stories of dry docking in floating docks, importance of taking care of small tasks and others which make a magazine like Samundra Spirit interesting and worth reading.

We were honoured by the visits from the dignitaries of the maritime world like the new Vice-Chancellor and Director of Indian Maritime University to SIMS during the last quarter. The reports on their visits and the encouraging words and appreciation they expressed are included in our regular campus news section. Indeed, this issue reflects another harmonious combined production of ESM and SIMS knowledge and expertise.

We will be back with the Winter issue by next quarter.

Till then, to quote noted Victorian writer and painter John Ruskin:
"Sunshine is delicious, rain is refreshing, wind braces us up, snow is exhilarating, there is really no such thing as bad weather, only different kinds of good weather."

Enjoy Autumn, enjoy reading this issue, enjoy sailing and most importantly be safe and be happy no matter wherever you are …

Sikha Singh

An Excerpt from Amazon CEO Jeff Bezos

An excerpt from Amazon CEO Jeff Bezos commencement speech at Princeton University, delivered on May 30, 2010.

What I want to talk to you about today is the difference between gifts and choices. Cleverness is a gift, kindness is a choice. Gifts are easy -- they're given after all. Choices can be hard. You can seduce yourself with your gifts if you're not careful, and if you do, it'll probably be to the detriment of your choices.

Your smarts will come in handy because you will travel in a land of marvels. We humans -- plodding as we are -- will astonish ourselves. We'll invent ways to generate clean energy and a lot of it. Atom by atom, we'll assemble tiny machines that will enter cell walls and make repairs. This month comes the extraordinary but also inevitable news that we've synthesized life. In the coming years, we'll not only synthesize it, but we'll engineer it to specifications. I believe you'll even see us understand the human brain. Jules Verne, Mark Twain, Galileo, Newton -- all the curious from the ages would have wanted to be alive most of all right now. As a civilization, we will have so many gifts, just as you as individuals have so many individual gifts as you sit before me.

How will you use these gifts? And will you take pride in your gifts or pride in your choices?
I was working at a financial firm in New York City with a bunch of very smart people, and I had a brilliant boss that I much admired. I went to my boss and told him I wanted to start a company selling books on the Internet. He took me on a long walk in Central Park, listened carefully to me, and finally said, "That sounds like a really good idea, but it would be an even better idea for someone who didn't already have a good job." That logic made some sense to me, and he convinced me to think about it for 48 hours before making a final decision. Seen in that light, it really was a difficult choice, but ultimately, I decided I had to give it a shot. I didn't think I'd regret trying and failing. And I suspected I would always be haunted by a decision to not try at all. After much consideration, I took the less safe path to follow my passion, and I'm proud of that choice.

Tomorrow, in a very real sense, your life - the life you author from scratch on your own - begins.

How will you use your gifts? What choices will you make?
Will inertia be your guide, or will you follow your passions?
Will you follow dogma, or will you be original?
Will you choose a life of ease, or a life of service and adventure?
Will you wilt under criticism, or will you follow your convictions?
Will you bluff it out when you're wrong, or will you apologize?
Will you guard your heart against rejection, or will you act when you fall in love?
Will you play it safe, or will you be a little bit swashbuckling?
When it's tough, will you give up, or will you be relentless?
Will you be a cynic, or will you be a builder?
Will you be clever at the expense of others, or will you be kind?

I will hazard a prediction. When you are 80 years old, and in a quiet moment of reflection narrating for only yourself the most personal version of your life story, the telling that will be most compact and meaningful will be the series of choices you have made. In the end, we are our choices. Build yourself a great story. Thank you and good luck!

- Jeff Bezos

SEEMP

Ship Energy Efficiency Management Plan

An Overview

Abhijit Nalwade
Research Associate
SIMS, Lonavala

Ship Energy Efficiency Management Plan (SEEMP) is a systematic plan for a ship to improve the energy efficiency of its operation. SEEMP seeks to improve a ship's energy efficiency through four steps: planning, implementation, monitoring and self-evaluation & improvement.

SEEMP should be categorised under ship-specific plan and company-specific plan. The ship-specific plan depends upon the ship managers for improving the individual ship's operation efficiency. Ship-specific plan varies as per ship type, cargoes, routes, etc. On the other hand, company-specific plan depends upon many stakeholders such as ship repair yards, ship-owners, operators, charterers, cargo owners, ports and traffic management services. The better the coordination among such stakeholders, the higher the energy efficiency of the vessels would be.

This article emphasises on the best practices proposed in MEPC.1/ Circ.683 for fuel efficient operation of the ships.

SEEMP not only indentifies energy saving measures that have to be undertaken but also determines how effective these measures are in terms of improving energy efficiency. It is not necessary that all the measures are applied to all ships, or even to the same ship but under different operating conditions. Below are some examples:

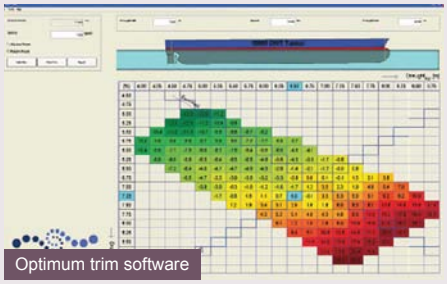
A. Better Voyage planning and weather routing:
The ship energy efficiency can be improved by better voyage planning. Optimum route can be improved through careful planning and execution of voyages. IMO resolution A.893 (21) provided a guideline for voyage planning for ship's officers and voyage planners.

However, a number of different software tools are available which provide the master with high-quality and updated weather forecasts to plan a route with minimum fuel consumption, and at the same time avoid unacceptable weather conditions and ship motion.

B. Just in Time:
Good early communications with the next port in order to give maximum notice of berth availability improves the ship's operation efficiency.

C. Speed Optimization:
Speed optimization can produce significant savings. Optimum speed does not mean minimum speed, but a speed at which the fuel used per tonne mile is at a minimum level for that voyage. References from the engine manufacturer's power/consumption curve and the ship's propeller curve are very vital for obtaining the optimum speed.

D. Optimum trim:
Loaded or unloaded, trim has a significant influence on the resistance of the ship through the water. For any given draft, there is a trim condition, which gives minimum resistance. There are computational software tools in the market, which provide the optimum trim condition to the master and ultimately helps in enhancing the efficiency of the ship.



Optimum trim software

E. Optimum ballast:
Ballast should be adjusted to meet the optimum trim and steering conditions. This can be achieved through good cargo planning. SEEMP seeks for optimum ballast condition plans for higher efficiency.

F. Optimum propeller and propeller inflow considerations:
It's a great practise in the current scenario of maritime industry to retrofit fins and/ or nozzles, guided vanes, ducts for improvement to the water inflow to the propeller to increase propulsion efficiency power and consequently reduction of fuel consumption. SEEMP should take consideration of such energy saving devices for enhancing the ship efficiency.

Ducted propeller

G. Optimum use of rudder and heading control systems (autopilots):
An integrated Navigation and Command System can achieve significant fuel savings by simply reducing the distance sailed "off track." This system provides better course control through fewer corrections with less frequency to minimize rudder resistance losses. Retrofitting of efficient autopilot to existing ships can enhance the effectiveness of the ship performance. Retrofitting of improved rudder blade design such as "twist-flow" rudder can also increase the efficiency of the vessel.

H. Hull maintenance:
The smoother the hull and propeller, the better the fuel efficiency. Hence, strategies such as docking interval for hull and propeller cleaning, implementation of new technology-coating systems, under water hull cleaning should be considered while developing SEEMP by the ship operator.

I. Propulsion system maintenance:
Ship operator should follow the engine maintenance as per manufacturer's instructions. Use of engine condition monitoring can be a useful tool to maintain high efficiency. SEEMP can also consider other options, such as use of fuel additives, fuel injector valve improvements and torque analysis tool for improving engine efficiency. SIMS R&D Team at Lonavala has developed software for monitoring and analysing the main engine performance as well as for predicting hull fouling of the vessels under ESM fleet.

While developing SEEMP, ship managers (would) also consider the realm of waste heat recovery, cargo handling, energy management, alternative fuels, renewable energy sources (wind energy, solar cell technology), and lot many other options, which lead to the improvement of energy efficiency of the ship and/or fleet.

Thus, with the guidelines provided by IMO under MEPC.1/ Circ.683, every ship operator has to develop a plan to improve the efficiency of the ships under their wing. This plan is nothing but SEEMP (Ship Energy Efficiency Management Plan). The pathway to the most efficient combination of measures will be unique to each vessel within each shipping company.

SEEMP should be monitored with any suitable recognised method such as EEOI (Energy efficiency Operational Indicator, which was elaborated in Samundra Spirit 18th edition). SEEMP will become mandatory from Jan 2013, however, EEOI and declaration of results are not currently envisaged as mandatory. These would also NOT be subject to external regulatory inspections.

Emergency in a Floating Dock

Syed Mohamadullah
Technical Support Manager
ESM, Singapore

A floating dock Source: commons.wikimedia.org

Ship's repair works are regular routine jobs for the ship's staff under the Planned Maintenance System and even some emergency repair work may constitute part of the day-to-day affair on board a much older vessel. However, there are moments when the emergency requires a ship to veer towards outside assistance, which if not carefully chosen could not only lead to hair-raising moments but may prove disastrous for the ship as well as the environment and the trade. Our Technical Support Manager Mr. M. Syed recalls such an incident that took place over a decade back, while managing a small semi refrigerated LPG vessel. Here's his story…

The concerned vessel was on a regular trade between Houston and the South American ports including Honduras and Guatemala. The old lady of over 20 years, although not naturally enjoying pink of her health, did manage the regular run with some cajoling and prodding from the sailing staff and of course, from the technical managers ashore.

One such occasion was when she developed a leak in the Controllable Pitch Propeller- an emergency that needed immediate attendance to rectify the problem and to prevent her from being accused of polluting the sea!

The nearest repair dock available was near Lake Charles, the facility equipped with only a Mooring Floating Dock. This required the floating dock to be towed to the deepest part of the Calcasieu River and ballasted. The ship to be docked then steamed into the Mooring floating dock and when in position; the floating dock was de-ballasted. On completion of de-ballasting, the floating dock with the ship on the blocks were towed back to the repair berth.

The interesting part of this operation is that all river traffic up stream and down stream had to be stopped while this operation was being carried out. Hence, it required utmost precision, calculation, planning and execution of the jobs on the part of the repair yard as well as the ship staff.

It was 13th of April, 2000 morning, around 0830-900 hrs. I was in the dockyard along with the ship's staff – all Spanish senior officers ready for the vessel to move to the dock. We watched in fascination when all river traffic up and down the Calcasieu river was stopped, the 3401 MT Dwt mooring Floating dock of size was slowly towed to the centre of the river and ballasted to float to the sea level.

I was onboard when our vessel slowly moved to a position at a location aft of the floating dock, all ready and set to move into the ballasted floating dry dock. It was rather a smooth though tricky manoeuvre to place the vessel in the right position i.e. centre of the floating dock.

Once in place, de-ballasting of the floating dock was commenced. I was on the Bridge with the master when slowly, the floating dock started rising and made contact with the bottom of our vessel and gradually, the floating dock and our vessel started rising in unison. We all sighed with relief and looked forward to the next phase of the propeller repair.

All seemed well for a short while until suddenly, both our vessel and the floating dock started taking a list to port. Within no time, to our horror, list aggravated as both the ship and the repair dock started lifting up together. Panic broke out as our ship was listed to 7 degrees in a very short time. The floating dry dock staff were seen running helter skelter and trying to correct the list. In the prevailing pandemonium and shouting matches in Spanish, none of the dockyard staff seemed to be in control of the situation and obviously, no assurance was forthcoming that it would, in fact, be corrected any time soon.

Hence, it was not a very difficult decision for me to call for aborting the operation and instruct the floating dock personnel to stop the floating operation immediately! I instructed the master and the chief engineer to prepare and move out of the floating dry dock as soon as it was possible. The ballasting of the floating dry dock was finally re-started and this resulted in the dock separating from the ship's bottom and eventually sinking to rest on the river bed.

We then moved out of the floating dock and within an hour, we were back at the repair berth, leaving behind the sunken floating dock in the middle of the river.

Later, we learnt that the incident took place because of a breach in the mooring floating dock structure ostensibly due to corrosion and lack of maintenance and repair!

Next hurdle was of course sitting at the repair berth for 10-11 days to wait for the congestion in the riverway to ease, as traffic was blocked by the sunken dock. The incident obviously disrupted the entire trading route via the Calcasieu river, with scores of ships waiting for the dock to be salvaged and removed from the underwater. Understand eventually three dredgers were involved in dredging round the site of the incident and within a week's time traffic was started but with a draft restriction of 32 feet.

This incident was in the US network news channels, with the USCG involved as the incident prevented vessels from either going up or down river for days till the investigation was over. Being the Superintendent of the vessel that was being docked, I was called for several meetings with the USCG before finally being allowed to sail the vessel out. We sailed straight to Mobile, Alabama- which had another floating dock yard meant mostly for the US navy and completed our repair successfully.

Apart from some nerve-wracking experience, lessons learnt were of tremendous value. Before docking anywhere, it is essential that thorough HSSE check-ups are done after asking the facility to properly fill up the company HSE form. In fact, after experiencing such an incident, I would deem it preferable that the site and the floating docks are pre-inspected prior such docking. Preventive measures are always better than the remedial measures.

Planning and Preparing for Shipboard Surveys

Jims Andrews
Engineering Faculty
SIMS, Lonavala

"Give me six hours to chop down a tree and I will spend the first four sharpening the axe"

- Abraham Lincoln

Nowhere is the above quote more relevant than in the case of shipboard surveys, with the complexities and immense stakes involved. Sharpen the axe by meticulously planning and preparing for the surveys, and we will invariably find that the actual execution is only a logical conclusion.

This article, set in a question and answer format, discusses the various aspects of a boiler survey, with an intention of applying the same underlying principles to all shipboard surveys in general.

Planning for a boiler survey

Q: Are you aware of the window period?
Almost all of the periodical surveys carried out onboard are assigned with a window period (for example, anniversary date + or – 3 months). It is absolutely essential that the person involved has a thorough understanding of this window period, as it gives the ship flexibility in planning and executing a particular survey.

Q: How could the window period be relevant in case of a boiler survey?
A boiler survey requires the boiler to be shut down at least a couple of days prior to the proposed survey date and also during the course of the actual execution of the survey. The information about the window period and the ship's schedule could be very effectively used for planning and deciding on the survey date in a manner which is least affecting the ship's commercial activities. Deferring the boiler surveys to the fag end of the window period might result in the same being conducted in a discharge port where it is most inconvenient.

Q: What about the scope of the survey?
It is of utmost importance that the responsible person is knowledgeable about the scope of the survey. Take for example the survey of the boilers on board. A classification society during the course of the annual survey is most likely to be content with an overall examination and a review of the following records since the last boiler survey,

1. Operation
2. Maintenance
3. Repair history
4. Feed water chemistry

Although it is understood that the machineries on board are supposed to be in ship shape whether there is a survey or not, it still does not make much sense for the officers to prepare for an elaborate inspection if the scope does not call for one.

Q: Do you know what items are going to be inspected in case of a boiler survey involving internal and external examinations (normally at 2.5 year intervals)? What would be the key components the surveyor will be concentrating on?
Boiler surveys are carried out to ensure that the boiler is in a safe working condition and likely to remain so until the next planned survey. It would simplify matter a lot if the person responsible puts himself in the surveyor's shoes and thinks from his point of view. Once the boiler is surveyed satisfactorily and certified, the surveyor is answerable (either to the administration or the classification society) if something seriously goes wrong with the machinery till the next scheduled inspection. It goes without saying that he will be concentrating on all the key components which have a bearing on the safe operation of the boiler. With his expertise in the subject and the competence gained from vast experience, it would not be prudent from the ship staff's part to hope that the surveyor will be overlooking some possible defects.

Ideally, the boiler survey constitutes the inspection of the boiler from the burner front to the funnel top, including all pressure containment parts, valves and fittings. The following is a list of some of the key components the inspection will be focusing on.

- The furnace – the inspection would be concentrating on the condition of the refractory, water wall tubes and screen tubes.
- Economizer and air heater – Examined internally and externally as far as practicable. All accessible welded joints are visually examined for cracks.
- Pressure parts – Where it is considered necessary by the surveyor, pressure parts might be required to be hydraulically tested. It is always advisable to have the ship's crew to make a thorough check of the above items prior to the survey and arrange for repairs/renewals if necessary. The records of such checking and maintenance done prior to the survey may have such benefits that the items or extent of survey maybe reduced at the discretion of the surveyor, resulting in considerable saving of the ship's time.
- Collision chocks, rolling stays and boiler stools.
- Water level indicators, automatic water level controller and automatic combustion control system – inspected for proper operation.
- Boiler safety valve and its relieving gear – Examined and tested to verify the satisfactory operation. Adjustment of the safety valve lifting pressure needs to be verified.
- Principal boiler mountings, including the safety valves- opened up and examined. The remaining mountings are to be opened up if considered necessary by the surveyor. It is important for the ship staff to prepare these mountings thoroughly for inspection.
- Manhole doors and hand hole doors – inspected to verify that the joining faces are in good condition and the clearances at the spigot are satisfactory.
- The oil fuel burning system – including the fuel tank valves, pipe and discharge pipes between the pump and burners.
- Safety devices, alarms and pressure indicators – Performance test and the calibration records of pressure gauges.

Q: Having an understanding of the scope of the survey, have you planned for the special requirements of this survey?
Each survey will have some special requirements to be met depending on its scope. It will be useful to have a check on the following,

- Confirm the time available, time required, manpower available and the manpower required.
- Check for the availability of spares and boiler water treatment chemicals. If found lacking, procure them prior to the survey.
- Check and arrange for the tools needed.
- Check the manufacturer's manual for special instructions.
- Brief the other engineer's about the scope and nature of work involved.
- Lighting and accessibility

Q: Have you prepared a survey procedure?

A convenient survey procedure, taking into account the layout of the boiler should be decided and subsequently agreed by attending surveyor. Previous records should be inspected beforehand and note taken of the previous defects/repairs, so that these can be given special attention. It will be worthwhile to remember that the surveyor also would have gone through the previous records before embarking on the survey.

Q: Have you thought about the safety aspects?

Safety is a habit we have been developing right since our pre-sea days and the phrase "safety first" has a very strong bearing on our life on board. It is only natural that we plan and execute each and every task with safety in the backdrop. It is worthwhile to ponder about the safety aspects right from the planning stage itself. Some of the points to be considered are the following:

- Boiler furnace and the pressure vessels are considered to be confined spaces with every chance of encountering an inflammable atmosphere, an oxygen deficient atmosphere or a toxic atmosphere. It goes without saying that an enclosed space entry permit has to be issued before anyone can make the entry. The gas meters to be used for this purpose need to have proper calibration records. It has to be born in mind that the "space has to be safe for the person making the entry", and not that the "person be made safe for the space to be entered."
- Proper personal protection equipment like the boiler suit, helmets, safety shoes, hand gloves etc. should be arranged beforehand.
- Internals need to be checked for foot holds and hand holds.
- Depending on the layout, one might need to arrange for a long rope, wooden planks, safety lamps and torches of the approved type.

To summarize, please remember that each minute the young Abraham Lincoln spent in sharpening his axe reaped him rich rewards. On a similar note, the time and energy you spend in planning and preparing for a shipboard survey would go a long way in ensuring the smooth and brisk conduct of the survey.

Don't hold yourself back by thinking that "I will cross the bridge when it comes." Think logically, plan ahead and lead from the front.

Auxiliary Diesel Engine Bottom End Bearing Maintenance

S.Viswanathan
Principal
SIMS, Lonavala

During de-carbonisation of an Auxiliary Diesel Engine, it is imperative that the Bottom End (B.E.) bearing is dismantled to facilitate withdrawing the piston for cleaning and gauging. B.E.bearing is one of the most critical components in the running gear of an auxiliary engine that requires special attention during overhauls. It is always advisable to read and understand the construction, working and maintenance procedures to be followed from the manufacture's service manual before attempting to dismantle them. This will not only result in trouble free performance of the engine but will also help the engineers to become proficient in quality maintenance. This article deals with con-rods having serrations.

Construction:

Con-rods have the two halves, usually split at an angle for facilitating lifting the piston through the liner and the palms are serrated to increase the area of contact. The piston rod is made of forged steel; the rod cross section is in the form of an 'I' beam to resist bending stress due to centrifugal stress, when the engine is running. The rod is also provided with a drilled central hole to carry the lubricating oil to the piston pin bush. The bolts are made of high tensile steel; the shank diameter is less than the thread diameter to prevent threaded portion from elongating from overstress.

Tightening procedure:

During overhaul, the serrations have to be inspected for cracks using crack detection kit. The con-rod and the cap, without the bearing shells can be tightened to required torque in the workshop to check the ovality. The recommendation of the manufacturer for allowable ovality is maximum 0.10 mm or as per service manual. Usually, the excess ovality is caused by the wear of the serrations and they can be re-conditioned. Usually the con-rod can be re-conditioned about three times before discarding.

The manufacturer's guidelines must be followed at the time of re-tightening after the overhaul. Usually a torque spanner, with the additional confirmation of angle turned by the bolt, is used to give a pre-determined tensile stress on the rod to minimize the fluctuating

stress and thereby the fatigue stress. This pre-tension can be inadvertently lowered if the serrations and the threads are not cleaned properly before assembly. Dirt or foreign matter from the surrounding can prevent proper contact between the mating surfaces. It is advised not to apply lubricating oil or grease as this will always reduce pre-tension applied after few hours of operation. Most of the manufacturers recommend a light application of anti-seizing spray, typically Molykote spray.

Checks after assembly:

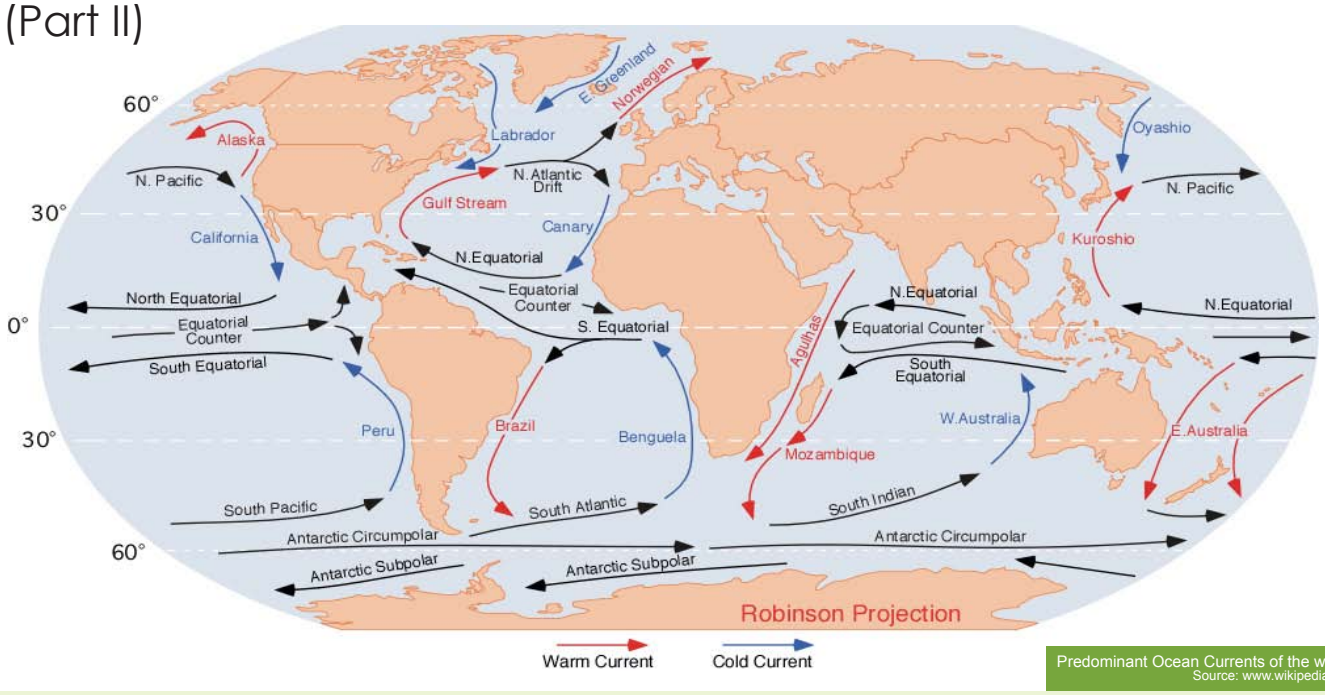
The con-rod is checked for free –float on the crank pin by trying to move the big end freely with a spanner. The bearing clearance is checked by feelers at the bottom when the pin is at BDC and verified as per manual. The locking plates are fitted for the con-rod bolts finally. After the assembly, oil flow through the bearing is checked while cranking the engine by hand. Bearing temperature is also monitored during the initial 'no-load' trial by feeling crankcase door and reading the lub oil temperature.

Precautions:

Bolt threads are fine threads and while handling the bolts, care must be taken to prevent thread damage by sheathing the threads with plastic caps. Bearing bolts are always tightened with torque spanners or hydraulic tools with a set pressure to ensure designed pre-tension is maintained on the bolts. Marking of angular position of the bolt heads must not be relied upon, as the wear of the serrations or bolt threads will reduce the tension. Sequence of tightening the bolts have to be followed lest uneven tightening will cause early failure of the bearing. After the assembly process is completed, clearance of the bearing and free rotation of the shaft must be ensured.

Navigating by Ocean Currents

(Part II)



Predominant Ocean Currents of the world
Source: www.wikipedia.org

Time and Tide wait for no man but favourable tidal stream can get ship to berth quickly. This is what is amply explained in the second and final part of this article by our expert navigator from SIMS, Mumbai Capt. Vikas Kumar Singh.

Tide and Current

The rise and fall of tide is accompanied by horizontal movement of the water, called tidal current (also referred to as "tidal streams"). It is necessary to distinguish clearly between tide and tidal current, for the relation between them is complex and variable. For the sake of clarity, mariners have adopted the following definitions:

Tide is the vertical rise and fall of the water, and tidal current is the horizontal flow. The tide rises and falls, the tidal current floods and ebbs. The navigator is concerned with the amount and time of the tide, as it affects access to shallow ports. The navigator is concerned with the time, speed, and direction of the tidal current, as it will affect his ship's position, speed, and course.

General features

At most places, the tidal change occurs twice daily. The tide rises until it reaches a maximum height, called high tide or high water, and then falls to a minimum level called low tide or low water.

The rate of rise and fall is not uniform. From low water, the tide begins to rise slowly at first, but at an increasing rate until it is about halfway to high water. The rate of rise then decreases until high water is reached, and the rise ceases.

The falling tide behaves in a similar manner. The period at high or low water during which there is no apparent change of level is called stand. The difference in height between consecutive high and low waters is the range.

The principal tidal forces are generated by the moon and sun. The moon is the main tide-generating body. Due to its greater distance, the sun's effect is only 46 percent of the moon's. When the moon and sun are in line and pulling together, as at new and full moon, spring tides occur (the term spring has nothing to do with the season of year); when the moon's and sun's gravitational force vectors act in quadrature (the position of the moon is 90° from the sun as viewed from the earth), the smaller neap tides occur. Correspondingly, we have the spring and the neap tidal ranges.

Tidal and non-tidal currents

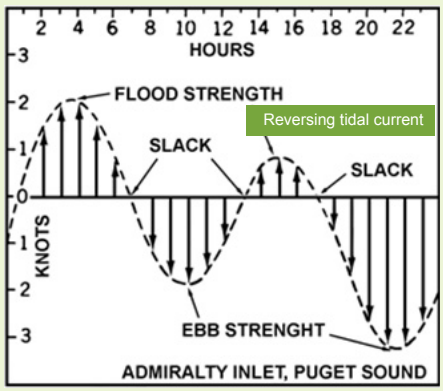
The horizontal movement of water is called current. It may be either "tidal" and "non-tidal." Tidal current is the periodic horizontal flow of water accompanying the rise and fall of the tide.

In rivers or straits, or where the direction of flow is more or less restricted to certain channels, the tidal current is reversing; that is, it flows alternately in approximately opposite directions with an instant or short period of little or no current, called slack water, at each reversal of the current. During the flow in each direction, the speed varies from zero at the time of slack water to a maximum, called strength of flood or ebb, about midway between the slacks.

The current direction, or set, is the direction toward which the current flows. The speed is sometimes called the drift.

The movement toward shore or upstream is the flood, the movement away from shore or downstream is the ebb. In a purely semidiurnal current unaffected by nontidal flow, the flood and ebb each last about 6 hours and 13 minutes. But if there is either diurnal inequality or nontidal flow, the durations of flood and ebb may be quite unequal.

It is extremely important to understand that the currents in the middle of a channel or a strait, which is significantly deep, is fairly predictable but those very close to the shore may be very erratic and unpredictable.



Prediction of tides and tidal currents tides

Prediction of tides is fairly simple and is well explained in the Admiralty Tide Tables and which the mariners are well-versed. From using tidal and standard curves to simple harmonic motion methods of prediction for standard and

secondary ports, one can estimate the height and time of high or low water.

Tidal currents

1. **By using paper publications**

Admiralty tide tables (ATT): Printed annually, the ATT particularly Vol 3 & 4 along with height and time of HW and LW also provide tidal stream tables for many ports covered in the respective volumes. The tidal stream tables provides information on maximum rates and the times at which these occur, together with the times of slack water. The direction of the current is provided on the top of the page. Unless otherwise stated at the footnote, the tidal stream prediction do not include any steady current present in the port.

Admiralty tidal stream atlases: A series of 22 tidal stream atlases show the direction and strength of tidal streams in parts of NW Europe at hourly intervals in diagrammatic form. Each diagram is referenced to the time of HW at a specified standard port, and a method is included for assessing the rate of the stream depending upon the range of the specific tide in question.

Typical admiralty tidal stream atlas

Admiralty charts: General information on charts regarding flooding, ebbing and general current is provided by arrow symbols. The details of the symbols are given the Chart 5011.

Tidal diamond: These are set and rate prediction for specified location on a chart, which is marked by symbols consisting of a letter of the roman alphabet in a rhombus, printed in purple ink. Tidal diamond table contains a grid of thirteen rows and three columns for each diamond. The rows are the hours of the tidal cycle showing the six hours before high water, high water itself and the six hours after high water. The columns show the bearing of the tidal stream and its speed, in knots, at both spring tide and neap tide. The times on the table are related to the high water of the port displayed on the table.

		A 50 42'.3N 0 26'.5E		B 50 53'.0N 1 00'.0E		C 51 01'.0N 1 10'.0E	
Hours		Dir	Sp Np	Dir	Sp Np	Dir	Sp Np
Before HW	6	248	0.8 0.4	213	1.6 0.9	224	0.9 0.5
	5	067	0.5 0.3	214	2.1 1.2	239	1.0 0.6
	4	068	1.9 1.0	215	1.8 1.1	235	1.1 0.6
	3	071	2.6 1.5	213	0.9 0.5	242	0.6 0.4
	2	069	2.3 1.3		*Slack*		*Slack*
	1	068	1.2 0.6	033	0.8 0.5	052	0.6 0.3
HW		067	0.1 0.1	032	1.5		

Tidal diamond chart

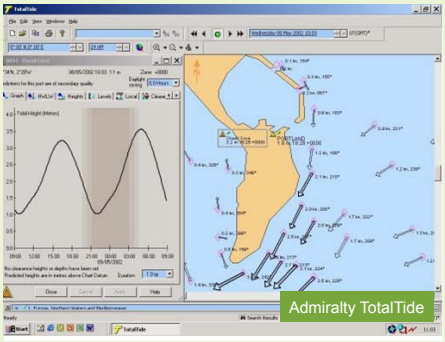
The set and rate at a particular time for that 'diamond' is predicted by interpolating the time before or after high water time at the reference standard port mentioned at the following table. This would provide the direction of the current at that time. The problem is selecting the rate, which would depend upon the spring or neap tidal period. If the tidal curve is provided at the first page of the port as in ATT Vol 1 & 2, the mean spring and mean neap range values provided adjacent to the curve can assist a mariner to select if the period is of spring or neap tide. Other way to verify the spring and neap tides is to see if the tidal range falls close to the new and full moon as denoted by symbols on certain days, signifying the existence of spring tide.

The uses of tidal diamonds are very essential as the mariners are able to predict current at various convenient locations on a chart.

2. **By using softwares**

Admiralty TotalTide: The Admiralty TotalTide is a PC-based tidal prediction program, which has been designed to meet SOLAS carriage requirements. Tidal heights for both standard and secondary ports are displayed in graphical and tabular form.

TotalTide permits the mariner to select and simultaneously calculate tidal heights for multiple ports for up to seven days. Springs and neaps are also indicated. Underkeel and overhead clearances can be displayed in a graphic form to aid passage planning. Permits of various user areas need to be applied for accessing tidal information.



Admiralty TotalTide

SHM for Windows (DP560): a simple Window-based tidal prediction programme using the Simplified Harmonic Method of Tidal

Capt. Vikash Kumar Singh
Nautical Faculty &
Quality Co-ordinator
SIMS, Mumbai

Prediction, which is very user-friendly. A mariner has to input data from the Admiralty Tide Tables and prediction are displayed as a graph of height against time for 24 hours and upto 7 days. Data for any number of ports can be stored.

3. **By using RADAR/ARPA**

When a stationary object like navigational mark, buoy, beacon or a small island is acquired on the ARPA on 'ground-stabilized mode', i.e., speed input is from GPS and not log speed, it shows a vector with speed and course made good. The speed made good may be taken as the rate of the current in that area and the set of the current is 180 degrees opposite to the target vector direction. Only caution here is that the target must be positively identified and stationary.

Some Radar/ARPA and ECDIS will calculate and provide the set and rate values of the current to the mariner.

4. **By visual observation of Objects to evaluate the set/drift**

Transit and clearing bearing lines: These are good pilotage techniques which keeps the master aware of the current drift, but also provide the navigators with the overall situational awareness.

Watching the heading of anchored vessels: Though this is not very accurate but the set obtained this way is an age-old practice by Shipmasters. It must be cautioned that due to erratic currents near shoreline and slack water period, the headings of anchored vessel may be misleading.

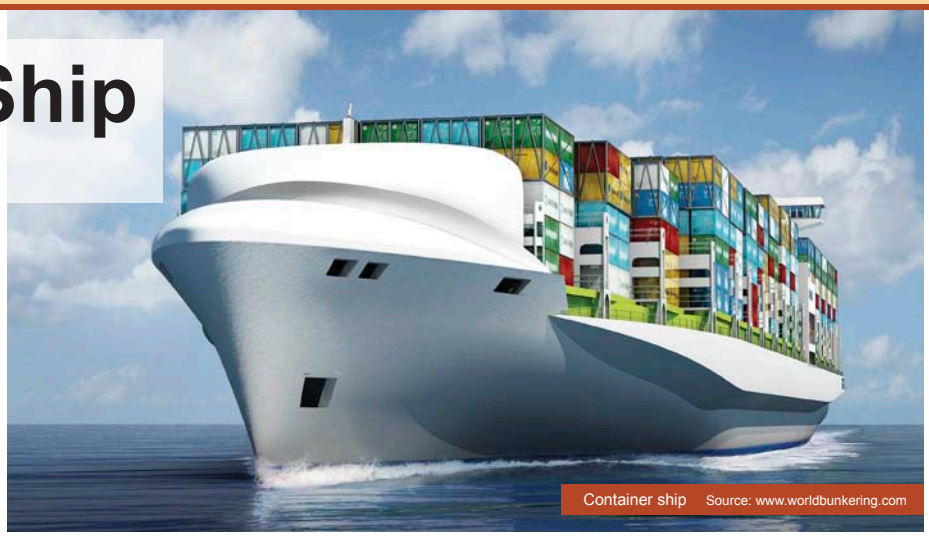
Watching floating objects: like SBM hose direction when freely floating or the wake of a buoy of fixed navigational mark.

In conclusion, while today's mariners have far better information available of coastal and tidal currents, it is equally important to heed the age old practices of prediction. The one task, which all masters appreciate is the knowledge where the ship is drifting so that appropriate counter-measure can be taken and dangers avoided. It is hoped that the two parts of the paper on ocean and tidal currents will be of benefit to fellow marines. We wish all of them 'fair weather and following seas.'

Know Your Ship

Container Ship (Part II)

Capt. Arun Sundaram
Director, Operations
ESM, Singapore



Container ship Source: www.worldbunkering.com

Cell guides in a Container ship?

Virtually, every all-container ship is provided with cell guides with vertical guide rails as securing means for hold cargoes. The container gripped in the container spreader is slid through the insertion guides into the cell guides and released at its assigned location. The greatest stress the containers are exposed to stems from stack pressure. Since the containers are not connected together vertically, lateral stress is transmitted by each individual container to the cell guides. When positioned in such cell guides, individual containers are not usually able to shift. If the corner posts of one of the containers at the bottom of a stack collapse under excessive pressure, containers stowed above it generally suffer only slight damage. The risk of damage to containers in adjacent stacks is kept within tight limits.

Particular attention needs to be paid to the hydro-dynamic design of container ships, which operate at high cruising speeds. The tall, heavy deck loads cause problems with vessel stability and righting capacity (in case the vessel is heeled). In order to ensure adequate stability, most all-container ships thus have to carry special solid or liquid ballast and/or be broader amidships. The capsize risk of the vessels can be kept within acceptable limits by high values of the roll moment of inertia. Large ballast capacities and high power pumps are absolutely essential, both for trimming the ships and for offsetting longitudinal bending moments. Shipbuilders can tailor characteristics by selecting appropriate ratios between length, beam, moulded depth, draft and other dimensions.

My container ship is bigger than yours

All-container ships are divided into generations depending upon their container capacity. Roughly speaking, the generations can be divided as follows:

1st Generation	up to	1000 Teu
2nd Generation	up to	2000 Teu
3rd Generation	up to	3000 Teu
4th Generation	more than	4000 Teu
5th Generation	more than	5000 Teu
6th Generation	more than	6000 Teu

While the classification as per the generations may not be very widespread, the other more common type of classifications are as follows:

PanaMax

The hull dimensions of the largest container ships, the so-called Panamax-size vessels, were limited by the length and breadth of the lock chambers of the Panama Canal, i.e. a max. ship breadth (beam) of 32.3 m, a max. overall ship length of 294.1 m (965 ft), and a max. draught of 12.0 m (39.5 ft). Panama Canal Lock chambers are 305 m long and 33.5 m wide, and the largest depth of the canal is 12.5-13.7 m. The canal is about 86 km long, and passage takes eight hours. The corresponding cargo capacity was between 4,500 and 5,000 teu.

At present, the canal has two lanes, but ongoing work from September 2007 on a third lane with an increased chamber size will enable Panama Canal to capture the next generation of container ships of up to about 12,000 teu.

Post-PanaMax

APL developed a new transportation net without using the Panama Canal. This marked the creation of the new 'Post-Panmax' type. In 1996 the Regina Maersk exceeded this limit, with an official capacity of 6,400 teu, and started a new development in the container ship market. Since 1996, the maximum size of container ships rapidly increased from 6,600 teu in 1997 to 7,200 teu in 1998, and up to 8,700 teu in ships delivered in 1999. The vessels delivered or on order with a capacity of approx. 9,000 teu have exceeded the Panamax beam by approx. 10 m. The development of the post-panamax fleet had been dramatic; today 30% of the world's fleet, by capacity, is post-panamax.

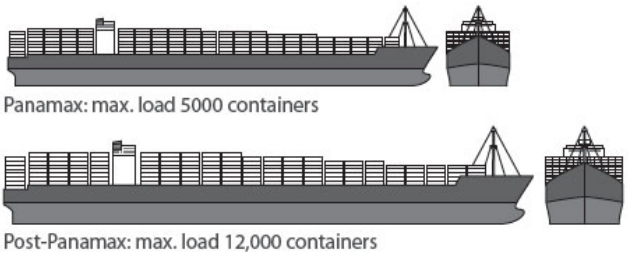
Suez-Max Ultra Large Container Ships (ULCS)/ Post Suez - Max

The Suez Canal is about 163 km long and 80-135 m wide, and has no lock chambers. Most of the canal has only a single traffic lane with several passing bays. The depth of the canal were increased in 2009 to 20.1 metre in order to capture the largest container ships to be built. The current size restrictions are as follows:

Maximum Length: No restrictions, Maximum Beam: 254 ft, 3 in and Maximum Air Draft: 68 m. The Maximum Draught: Varies from 40' 00"to 54' 08" for loaded ships, depending on the beam of the ship. Similarly for ships in ballast the draft is 40' or less.

A Suez-Max passing through the Suez canal
Source: maritime-connector.com

The new generation of containers to be in the market by 2013 - with capacity up to 18,000 TEU called the 'Triple-E' vessels (Economy of scale, Efficiency, Environment) are expected to set new standards for size, fuel and cost efficiency as well as reduction of CO2 emissions. These ships will be able to use the Suez Canal.



Panamax: max. load 5000 containers

Post-Panamax: max. load 12,000 containers

Post-Malacca-Max

Malacca-max reflects the fact that a draft of 21 m is the maximum permissible draught through the Malacca Strait.

With the increase of the cross-section breadth and

depth of the Suez Canal over the coming years, the 18,000 Teu container ships are expected to be able to pass the Suez Canal. On the other hand, a future container ship with a draft of 21 m would require existing harbours to be dredged. Today, only the harbours of Singapore and Rotterdam are deep enough.

Economies of scale

Meanwhile, economies of scale pushing the advantages of larger containerships remain compelling, and in every size sector, cargo carriage capacities are increasing. Other features of the latest designs of containerships include improved safety and anti-pollution features, a need for less ballast to be carried, lower harmful emissions and fuel tanks installed well clear of the bottom and ship's side. Operational improvements include better designed hulls offering lower resistance.

Cargo stowage

The containers are stacked on the ship with up to 8 containers on top of each other on deck. Below the deck a ship can stack up to 11 containers on top of each other.

To make sure that the containers stay in place during the voyage, twist locks are used to join the containers. A twist lock is a device used for connecting two containers at the corner posts through an interlocking mechanism.

Securing on deck using stacked stowage securing method is the one used most frequently. Cargo handling flexibility is its key advantage. The containers are stacked one on top of the other, connected with twist locks and lashed vertically. No stack is connected with any other stack. The container lashings do not cross over the lashings from other stacks, except for the "wind lashings" on the outer sides of the ship.

The final word

Containerization has lowered shipping expense and decreased shipping time, and this has in turn helped the growth of international trade. Cargo that once arrived in cartons, crates, bales, barrels or bags now comes in factory-sealed containers, with no indication to the human eye of their contents, except for a product code that computerised machines can scan and trace. This system of tracking has been so exact that a two-week-long voyage can be timed for arrival with an accuracy of under fifteen minutes.

SIMS Ex-cadets Joined ESM Managed Fleet During the Last Quarter


3O Rishabh N Sharma
DNS-06


3O Banit K Thakur
DNS-06


3O Bharaduaj C
DNS-06


3O Pradyut Shukla
DNS-06


3O Ganesha Ram
DNS-05


3O Krishnadas P S
DNS-05


3O Amal Raj
DNS-05


3O Goraksha Lahu
DNS-05


3O Munish Gautam
DNS-06


3O Sandeep Singh
DNS-06


3O Suraj Pandey
DNS-06


3O Sumit Shah
DNS-05


3O Rishabh Sharma
DNS-05


3O Jayakrishnan E
DNS-05


3O Anuprem Kumar
DNS-06


3O Saurabh Shashi
DNS-05


3O Manish Khanna
DNS-06


4E Arif Siddique
GME-07


4E Navjeet Singh
GME-08


4E Guruprasad K
GME-08


4E Parminder Singh
GME-08


4E Vipul Verma
GME-08


4E Nithin K Mathew
GME-06


4E Sarin S Nair
GME-07


4E Deepak K S
GME-08


4E Arun Suresh
GME-07


4E Sukesh Vadassery
GME-08


4E Suresh Kumar
GME-07


4E Rajat Bishnoi
GME-08


4E Akhilesh K Ojha
GME-07


4E Mohankumar G
GME-08


4E Midhun Raveendran
GME-07


4E Prashant Kumar
GME-08


4E Venkatesan Selvam
GME-08


4E Gaurav Kashyap
GME-07


4E Michael Mathew
GME-08


4E Sreejit Somanathan
GME-07


4E Akhil Kharate
GME-07


4E Anuj Chaudhary
GME-08


4E Venkata Vinod k
GME-05

4E Jaswinder Singh
GME-07

4E Dinesh Babu M
GME-08

Passing Out

GME-12 Batch

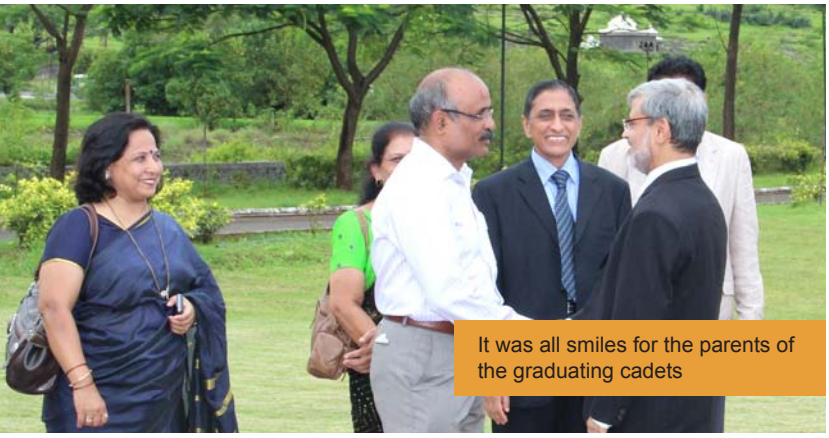
12th batch of graduate marine engineering students at the open amphitheatre

Chief Guest Mr. JK Dhar, inspecting the parade consisting of over 260 SIMS cadets

Mr. JK Dhar, Director, IMU, Mumbai was given the guard of honor

Chief Guest, Mr. JK Dhar, Director, IMU, Mumbai (1st Row, 8th from left) with SIMS staff, ESM representative and graduating cadets

Mr. JK Dhar with the prize winners



It was all smiles for the parents of the graduating cadets

"Be creative, loyal and maintain a healthy mind" - Mr. JK Dhar

Mr. JK Dhar receiving a token of appreciation from Mr. S.M. Iyer, Residential Director, ESM

GME-12 batch cadets taking their oath

"Be Creative, Loyal and Maintain a Healthy Mind"

IMU Mumbai Director to GME-12 Cadets

The 12th batch of Graduate Marine Engineering students passed out on 1st September 2012, following their completion of one year training at Samundra Institute of Maritime Studies, Lonavala.

Seventy eight (78) cadets marched their ways to the next level of their career in a simple yet memorable passing out ceremony that was held in-campus. The graduates will soon undergo a six-month training onboard ESM-managed ships.

The occasion was graced by its Chief Guest, Mr JK Dhar, the Director of Indian Maritime University in Mumbai, who was given a guard of honour at the parade ground. Speaking in front of the graduates and guests, Mr Dhar challenged the cadets to be creative, innovative and not only rely on what they have learned at the Institute. "Be free to think out of the box and create situations which will be very nice for your mind and soul," he said. Without undermining the benefits of computers and automated programs in ship operations, he stressed the importance of human intervention onboard. "You are the living soul in the ship – you should be the one to think for it."

As a piece of advice for soon-to-be mariners, Mr Dhar also stressed the value of loyalty and work ethics. "Be loyal to the shipping company where you belong to – that is very important. It works, and it is the only thing that works for your career. They will hone you with the skills where the shipping company specializes on," he said further. He went on citing an example where the captain of a passenger ship that ran aground last year went first to abandon the craft as a "definitely no no for Indian culture, no no for Indian training, no no for Indians no matter which field they are. You don't run away from a sinking ship."

Towards the end, he discussed the importance of having a healthy mind. "Exercise your mind. Maintain mental hygiene - take the good and do not accept bad things. Do a little for your body and mind and be the best in the ship, be loyal to the company and produce the best for the ship," he further added.

During the ceremony, cadets with exemplary performances were awarded, as follows:

Best Cadet	-	Cdt. Sujay Suresh
First Best in Academics	-	Cdt. Shailesh Kiran
Second Best in academics	-	Cdt. Vimal Vijayan
Best Hands on Training	-	Cdt. Bhupinder Singh
Best Sportsman	-	Cdt. Reyas Youseff
Best Cadet Captains	-	Cdt. Aryan Rajagopalan & Cdt. Manmeet Singh Syan
Best in HSSE	-	Cdt. Jagat Narayan Singh
Best in Marine IC Engines	-	Cdt. Reyas Youseff
Best in Marine Auxiliary	-	Cdt. Sarbjit Singh
Best in Automation & Control	-	Cdt. Aswin T
Best in Music	-	Cdt. Karan Vir Singh Jaffal
Best Orator	-	Cdt. Kavi Vijay
Most Popular Cadet	-	Cdt. Vignesh Suresh

The Future of Shipping

Un-manned patrol vessel tested by the Royal Canadian Navy

Capt. Prabhat Kumar Bajpai
Nautical Faculty
SIMS, Lonavala

The shipbuilding technology has undergone sea changes, particularly during the last century or so basis growing requirement of saving fuel, manpower and finally, the environment. The manpower on board is a dwindling number and in fact, work is in progress to check if that could be further reduced to zero for some ships! In such cases, how would a ship in not too distant future be manoeuvred?

The vessel shown above is an un-manned patrol vessel in test mode for the Royal Canadian Navy. Israeli navy is also reportedly working on some of these prototypes which can be used for both combat and non-combat operations.

How does it operate?

Operated through a satellite link or radio link, the ship looks like an armoured pleasure boat. It carries a suite of sensors and, like its aerial cousin (Unmanned Aerial Vehicle or UAV), has the potential of providing real-time video feeds through cameras fitted on board. In fact, presently there are also un-manned vehicles working for the defence industry which can dive underwater and send videos through a link.

The first generation of unmanned merchant ships were unsuccessful because they, to some extent, were like the first generation of mobile phones; whereas you could only talk and not even text i.e. very weak on technology side. Cost and reliability is one of most important factors in service industry. Technology some 20 years back was not as reliable and as cheap as today. Think about satellite phone rates through Sat A at 6-10 US$ per minute to today's rate of about 50 ~ 70 US cents with Mini M and Fleet 77 types of ship at speeds much higher than Sat A. Ships are also being installed with VSAT enabling data transfer speeds of more than 256 kbps.

Running a ship reliably and cost-effectively is the requirement here and how these can be achieved is most important question.

Precursors to modern test naval vessels have been UAV (commonly known as drones). These drones are operated with help of a Satellite Control Room having sensors.

A drone is controlled and operated from the ground with the help of a satellite to link signals with drone.This tested technology is now being brought in to operate naval vessels. Present system of development has been something like this:

First, a prototype is developed by aerospace industry for the defence sector, then it is transferred to civilian aerospace sector and then finds its way to other industries. To operate a ship remotely, we will need a similar environment like that of operating a UAV i.e.

- A control Room
- A Ship
- An operator
- A Satellite Link
- A Virtual Reality Scenario operated Robot

Additional factor which has been included in ship scenario is a virtual reality (VR) robot.

Virtual reality can be defined as being present in an environment without being present there. VR may be required to control scenarios like

- Checking lashing or tank conditions
- Carrying out repairs on board ships
- Assisting in berthing and unberthing and preparing vessel for cargo operations
- Sending additional data which may not be accessible by sensor fitted on board

To understand how this can be achieved, let us go into the future and assume that a remotely-operated vessel is already in usage and she is on voyage from the Port of Rotterdam to Tampa in USA. Passage includes passing through traffic of English Channel and North Sea crossing traffic. It's a winter weather voyage, so we are likely to get rough weather in Bay of Biscay and Atlantic Ocean. Unfortunately, her main engine breaks down, while approaching discharge port. At load port she loads machinery.

Let us see how our ship of the future operates.

Vessel Name MV RBT 1
Crew on Board: Humans – 0 / Robots – 05 with wifi link and having Artificial Intelligence (AI)

Crew Ashore: 03 with Virtual Reality Tools

Communications: 03 independent line with Very High Bandwidth for data transfer. Each sensor backed up and additional sensors kept on board to be fitted if both primary and backup sensors fail.

Means of Collecting Ship Data: Sensors, Real time cameras in AV mode, Robots with AI

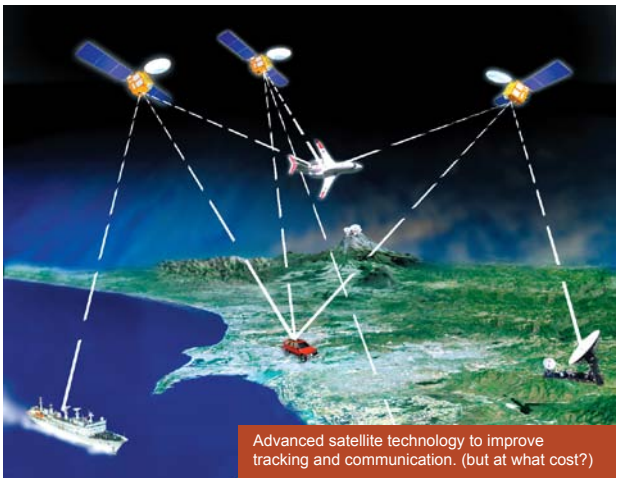
Load Port: Vessel Alongside

Opening of Hatch Cover: Remote operation by numerical commands to Robots

Crane Operation: Numerical Control Handed Over to Shore operator

After one day: Loading complete, Robots go down the hatch, take visual 3D picture of cargo, check strain on lashings and send it to ROS (Remote operating Station). Document Okayed, Papers digitally signed.

Vessel ready for sail, numerical control of Robots and crane handed over to ROS. Pilot boards the vessel, ROS switches to virtual reality and takes control of two of robots to operated bridge machinery.



Advanced satellite technology to improve tracking and communication. (but at what cost?)

Vessel reaches pilot disembarkation point, pilot confirms and disembarks. ROS docks the robots, vessel is switched over to Auto Manoeuvring. Vessel comes to high traffic density area, ROS takes over control and is controlled in auto mode by ROS giving manual command, as and when required.

While navigating in English Channel, a weather bulletin for bad weather area is received from MET dept for Bay of Biscay and Atlantic Ocean at ROS.

ROS gives command to two of the robots to check cargo lashings inside the cargo holds and secure as required. Cameras with sensors activated in cargo holds for four hours frequency to check condition of cargo lashing. R1 is stand-by in cargo area for any eventuality.

Vessel is navigated in Bay of Biscay and Atlantic Ocean with help of Two Controllers who are monitoring sensors.

Most of the voyage in the Atlantic goes without any event, vessel while one day away from port gets a problem in her engine and had to stop for repairs.

ROS activates robots in 3D mode and gives control to technical team, which goes through details and rectifies the problem and hands over controls to ROS, which takes ship inside the docks and berths her after giving control to ROS.

After berthing, ROS again activates Robots to open hatch cover and in 3D mode unloading is started. After completion of voyage, the vessel is scheduled to go to the next port of loading. The voyage completes without any technical or human error.

Indeed a perfect run any ship owner would prefer to any other mode of operation!

Is it feasible?

To have this kind of a ship in near future may not be possible due to fact that communication costs are still high and sensor reliability is yet to be proven in marine environment. Hence, none of the regulatory authorities are likely to provide an open license for operating a ship such as this.

At present, apart from drones being used in spyware, submarines are in test stage to be operated remotely. Certain advanced countries have successfully tried out flying a helicopter in remote mode in combat zone in Afghanistan without any hitch for transfer of material. While in case of ships, such option is being explored only for naval patrol boats by the Royal Canadian Navy.

Traversing a circle from "Success" to "Excellence"

A Journey from SIMS to ESM

Ex-Cdt. Yatendra Jain
Third Engineer Officer
M.T. Pacific Oasis

Hindu philosophy has always emphasized that life is nothing but a continuous circle of change and how we need to have our inner observation to understand that beginning and end are nothing but exactly the same point as in a circle or just two sides of the same coin.

My journey into the shipping world has made me understand its true meaning, and here's how I interpret the beginning and end of my journey.

I started my journey at point "s" which stands for SIMS (Samundra Institute of Maritime Studies) and when I ended in point "E", I had the direct entry into ESM (Executive Ship Management). Isn't that great that both are the same but both are equally different. To give an example, pick a race where both start and end points are same, it doesn't matter how much ahead you were from others in the middle of the race, until you finish the race with the same potential. What I am trying to convey is that, by joining SIMS, you already got a good start, now don't spoil it by wavering in between, finish it with pride and honour by making your entry into ESM - where you are bound to feel equally at ease and welcomed as I had myself felt.

That's the story of start to end – sounds absolutely simple nevertheless could be difficult if you are without focus and determination. Please remember, the path laid for you is simple and straight forward as long as you are clear about following the path with dedication and sincerity. The faculty, staff and the entire environment within the circle is geared towards making you reach your goal- the excellence. However, please avoid getting derailed with your own lack of initiative and involvement.

Now, after saying that, I sense you might have a question for me, why is it called circle, why not any other shape - a square, or a polygon? Let's retrace my path now. I joined the point "S" - SIMS due to my "success" at the entrance test to this glorious institute. The journey continued as we studied and sailed as cadets to complete our full training at SIMS.

We came to an end of the studying and sailing as cadets to achieve our "Excellence" as we arrive at an entry point to "ESM." What a proud moment to be accepted as "Executive" ESM officer on board! So ESM, as the name suggests, in your life what ever you do, just be we are expected to be Excellent (E), successful (S) and at the same time modest (M).

Looking back, we were more like scattered seeds before joining SIMS. We were sowed again in a fertilized and well-prepared ground, nurtured, taken good care to make our foundation well-rounded, healthy and strong.

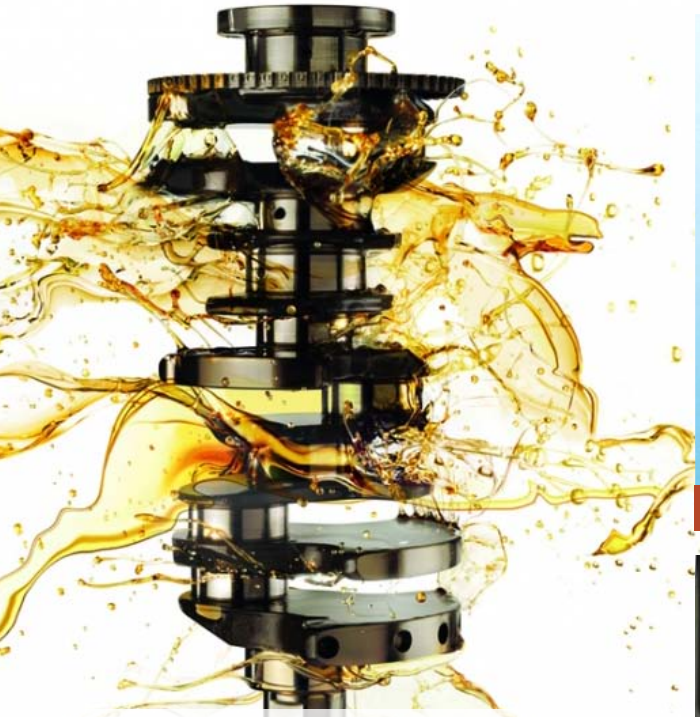
As you arrive at ESM, I can assure you, life will be more exciting and interesting with the whole wide world open in front of you, even if you see through the peep hole of a ship. Of course there are ups and down and there will be obstacles, but I would say life indeed would be dull if there were no such difficulties. Even a budding plant has to face rough monsoons but if the roots are sturdy, it just faces the tough time and stands strong. And once it has grown enough, it fulfills some of our needs, may it be fruits, shade and many more, and on top of that, it gives life for us to print an article like this on the paper for us to read. So save paper, save trees. Be "environment friendly", which is the first motto of ESM.

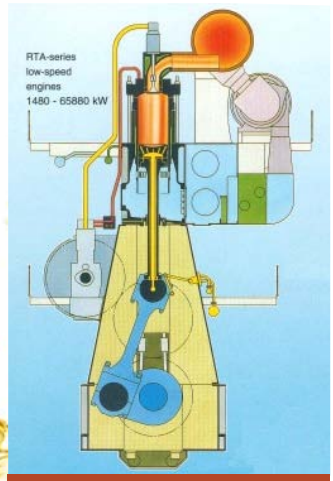
I know what you are thinking at this point: that should we stop writing. But, that's not intended. Please continue to express your thoughts and share them because our thoughts and imagination are the only real limits to our possibilities. But consider your environmental responsibility before printing or tearing any paper, so that more trees could be saved.

Obstacles are those frightful situations we encounter when we fail to focus on our goal, and sometimes in these situations we try to take shortcuts or we bypass necessary safety precautions to achieve the goal or to finish the task. With my experience by going through this full circle and sailing smoothly as an engineer officer on board, let me give you a nice piece of advice: never bypass safeties to finish the task.

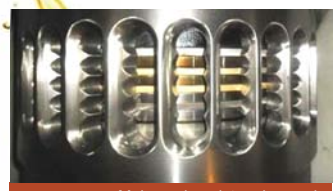
Basic principle about safety on board every ship in ESM is "take five". Now, take a pause at this moment and recall the daily emphasis in the SIMS campus, Ensure you and your team continue to focus on the path laid by SIMS so earnestly so that we all go home safe and healthy no matter how far away we move along with our ship across the globe. If you do, I have no doubt we will always be safe as the motto of ESM declares, "safe always".

There are two ways of meeting the difficulties: alter the difficulties or alter yourself to meet them. And the final thought I want to share with you all that I gathered being in ESM, "A man can succeed at almost anything for which he has unlimited enthusiasm".





The lubricating oil system
Source: www.marinediesels.co.uk



Main engine piston ring pack

In Search for Future Lubricant (Part II)

Shirish Kumar
Dean
SIMS, Mumbai

The oil companies are equally divided on this issue and are taking diverse positions, further confusing the ship owners/ operators. Some lube oil suppliers have launched single solution cylinder oils that they claim will perform well under a wide range of marine fuels. While others, are quite emphatic that different grades are necessary for use with high and low sulphur heavy fuel and distillates.

One oil company argues that TBN is simply not enough to guarantee the neutralization performance of a lubricant. What counts is the 'dynamics of neutralization', which evaluates the acid neutralizing capabilities of the alkaline additives in the cylinder oil in terms of speed of reaction. Steeper the Neutralization Temperature (T°) curve, faster will be the neutralization reaction. The oil will fight acids rapidly, irrespective of its TBN.

If you have a single lubricant, it will simplify on-board operations, as only one cylinder oil has to be managed. There will not be any refit cost for the owners to provide for the extra storage and transfer facility as well. This in turn will also improve safety because there will be no risk of mismatching the cylinder oil while changing bunker fuel with a different sulphur content. Many ship-owners are finding this 'one fit all' solution potentially attractive and feel that mid-range cylinder oil will require only feed rate adjustments during fuel switching operations. At least one oil company has taken a distinct position on this single oil solution and cautions that the strategy is fraught with danger and the operators who adopt this should be mindful of the compromises they are making and the risk from such an approach.

Using mid-range cylinder oil has its own problem. The alkalinity of the oil will be insufficient when the engine is operating on high sulphur fuel and will be excessive when it is operating on low sulphur fuel. Low TBN oil with relatively high sulphur content will lead to incidences of high corrosive wear. This will also require increased feed rate to compensate for the low alkalinity. The consequence of using 60 TBN oil instead of 70 TBN oil will lead to an increase in annual cylinder oil consumption. It is estimated that the increased consumption could be in the order of 5-10%, depending on the engine type.

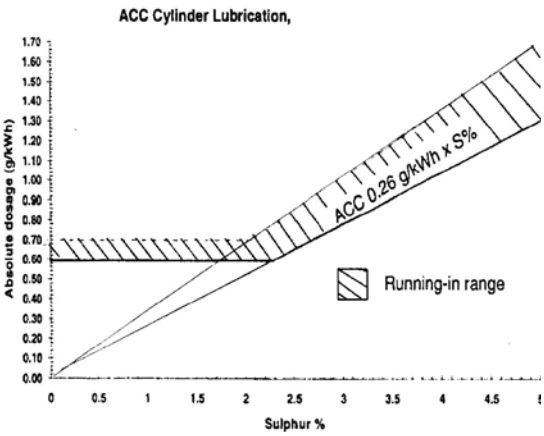
Similarly, when burning low sulphur fuel, the excess alkalinity will lead to a build-up of deposits, especially on the piston crown, top lands and rings due to prolonged mismatch between the low sulphur levels and cylinder oil with too high TBN. These will further disrupt the effective lubrication of the liner and may ultimately lead to cylinder liner damage, bore polishing and scuffing.

In general, Engine Maker MAN Diesel recommends that operation on fuel oil having around 1.5% sulphur should preferably be done in combination with low-TBN cylinder oil. The alkalinity shall match the sulphur content in the fuel. Lower-TBN oil should be chosen for low-sulphur fuel and high-TBN oil for high-sulphur fuels, as follows:

TBN	Sulphur
40-50	< 2.5%
50-60	2.5-3.5%

While 0.1 sulphur is already mandated for Generators in EU territories, it will come into force in Jan-2015 for main engines at sea, and will further reduce the TBN requirement. This matching is particularly crucial when operating on extremely low-sulphur fuels (0.1%) for extended periods and B&W clearly recommends using low-TBN oil beyond 14 days operations. However, continuing to use TBN70 cylinder oil is allowed for a limited period without any serious risk of over-alkalinity.

Once a particular TBN is selected, one needs to adjust the oil feed rate as per the above graph (B&W recommendation), based on the sulphur content. MAN Diesel also recommends minimum oil feed rate of 0.60 gm / kwh for any lubricating oil (irrespective of the TBN value) for hydrodynamic purposes. A look at the above graph will indicate that this minimum feed rate approximately matches with the feed rates based on S%, as follows:



TBN	S%
70	3%
60	2.6%
50	2.1%
40	1.7%

This then means that for low sulphur fuel the recommended minimum feed rate becomes the guiding factor and as a result of this, surplus alkaline additives cannot be avoided. Higher the TBN of the cylinder oil, higher will be the residual alkalinity which will result in increased wear and subsequent damage to the liner. If you switch over to lower-TBN oil for low sulphur operations, this surplus alkalinity will be less and will not have any serious impact on the liner performance. Mid-range oils also result in substantial build-up of alkaline deposits and may not be suitable.

Ideally we would prefer only having single cylinder oil that would work with a variety of different sulphur fuels. But recent engine inspections suggest that the desire for simplicity by having mid-range (50-60 TBN) cylinder oil as a solution for a range of fuel types may be damaging the engine and compromising reliability. The compromise involved in opting for mid-range lubricant will not achieve optimal engine operations particularly under low load conditions once the 0.1% sulphur SECA legislation kicks in Jan 2015 for main engines at Sea. If a mismatch occurs now between current sulphur level (1 to 3.5%) and TBN, the problems will be slow to develop and will manifest only after few weeks and the Original Equipment Manufacturer (OEM) will be able to respond. However, if the mismatch were to occur in the case of fuels ranging from 0.1 to 3.5% sulphur, the operational troubles could emerge quite quickly.

The exact level at which two cylinder oils will be required is not clear as yet because the research is still being conducted on large two stroke engines running continuously on extremely low sulphur. But, the desire for simplicity may compromise reliability with a consequent effect on overall costs.

In conclusions, perhaps the last word has not been said on this issue. We will have to wait and watch how these claims and counter claims are resolved, before going for a single or multiple cylinder oil solution. Our future strategy shall be flexible enough to achieve optimal cylinder lubrication as the impending legislation approaches in 2015. In the mean time, we as a professional ship manager must continue to educate the ship owners so that they are ready to invest in creating extra cylinder oil storage and transfer facility while ordering new ships and retrofitting their existing ones, if the need arises.

For Want of a Nail - a Battle was Lost

Importance of Taking Care of Small Tasks

Decarbonization of maine engine unit

As we all know, Engine Room, excluding the Engine Control Room is a very noisy place to conduct normal verbal communication,. In addition, all persons in the Engine Room wear ear-defenders as a part of the stipulated PPE. Many a time, we have to depend on other ways of communications to carry out our duties. It needs to be ensured that irrespective of the method, communications must be effectively conducted to prevent mistakes, which can prove costly.

In this article, I shall narrate an actual incident onboard a vessel during routine decarbonisation of a Main Engine unit. This ship's manning consisted of a mix of European, Filipinos, and Indian crews. Decarbonisation of one of the main engine units was being carried out. The job began at around 0500hrs in port as sailing was scheduled for late afternoon. The time at hand was short, hence Chief Engineer (C/E) had decided to use the spare piston. Same was made ready in all respect beforehand. As soon as the running piston was taken out, necessary cleaning and calibration work was undertaken and completed. The aim was to put the spare piston in the unit before lunch.

The spare piston was fitted with a special tool at the bottom of the piston rod for locating the stuffing box in appropriate position. This particular special tool was fixed to the piston rod and stuffing box by a number of M-10 bolts. The lowering of piston in the liner from cylinder head platform was being done by C/E himself assisted by the Third Engineer (3/E). Second Engineer (2/E) was looking after the relevant assembly in crank case assisted by Fourth Engineer (4/E). Appropriate signals for communication were agreed and slowly piston was lowered into the cylinder. At the end of lowering the piston, the stuffing box had to be aligned in the crankcase. Final alignment of the stuffing box was being done by 2/E in crank case. For some reason, this took longer than expected till final completion during this period (approx 15-20 mins.), there was no communication with C/E (on the cylinder head platform).

After this alignment was completed, 4/E proceeded to remove the special tool fitted to bottom of piston rod and stuffing box. 4/E positioned himself on the cross-head and started to remove the bolts connected to piston rod. After removing the first bolt, second bolt seemed very tight, which was not the case when the tool was fitted earlier. He reported the status to 2/E who was available in the vicinity. 2/E asked 4/E to move away from cross-head and took a more convenient position himself by standing on guide-shoe. Now it was found convenient to remove the bolt. The bolt was really coming tight but moved when more force was applied. As 2/E slackened the bolt further, suddenly the bolt snapped and with a very loud thud, the piston rod dropped on crosshead perfectly in place. For a moment 2/E didn't realize as to actually what happened.

Due to the delay in crankcase job, the C/E had removed the crane assuming the job in crankcase was completed and the piston rod was resting on crosshead. This meant the piston was held hanging on the special tool at stuffing box. The complete load of piston and the rod was on those small bolts and the last bolt snapped due to overload.

Fortunately and miraculously nobody was hurt as well as there was no damage to the engine. This incident highlights the importance of good communication and proper feedback from persons involved which are a pre-requisite to complete a major job safely.

Abhiram Wakankar
Engineering Faculty
SIMS, Lonavala

Boiler Feed Pump Bearing Failure

S.Viswanathan, Principal
SIMS, Lonavala

* We invite responses from our learned readers as to the causes and lessons learnt through this case study. Please send your responses to samundraspirit@samundra.com.

Not checking the maintenance manual before starting a machinery overhaul is not a common textbook practice yet in reality there's always a tendency even from the most experienced staff whose over confidence spurs them to indulge in short cuts thinking their experience will successfully carry them through. Yet more often than not, the end result turns out unfavourable. One such incident is being narrated by Mr. S. Viswanathan, former Chief Engineer and current Principal of SIMS, Lonavala.

This incident of boiler feed pump bearing failure took place when he was sailing as Chief Engineer on a VLCC. The vessel had just departed from the un-loading port and was underway with tank cleaning in progress. Auxiliary boiler was steaming and the operational main boiler feed pump (electrically driven multistage centrifugal pump) tripped on over load for the second time in two days. This was in spite of maintenance work having been carried out on the same feed pump two days earlier.

Events leading to the incident:

The auxiliary boiler was rated at 24 bars, 165 tons/hr steaming capacity (the boiler power rating was higher than main propulsion engine!). The steam generated was used in steam turbines driving cargo pumps, turbo-alternator, deck machineries and heating requirements in engine room and accommodation. The vessel

Pump assembly

was at an un-loading port and cargo discharging was in progress, when the running main feed pump tripped on overload. Stand-by feed pump started automatically, giving an audible and visual alarm cautioning the Watchkeeping engineer (WKE). The WKE rushed to the spot and found the bearing housing at the free end smoking and hot. The Second Engineer was called for assistance and the pump was dismantled completely. The damaged ball bearing was replaced with a spare new bearing as a routine and the pump was assembled, tried out and kept as standby. On departure, during the ballast voyage, the repaired pump was used for tank cleaning work and within a few hours of operation, the new bearing also gave in, and the pump tripped on overload. A new ball bearing fitted was found damaged within a few hours of operation!

Investigation:

Engineers were puzzled as to the cause of failure of a new ball-bearing within a short period of operation. Upon closer scrutiny and analysis, the cause was narrowed down to incorrect assembly of the pump. The engineers started scrutinising the assembly area and searching for clues amongst the small spare parts lying around. They picked up one metallic ring discarded at the pump side and identified the ring as an oil flinger. On questioning the engineer involved in overhauling of the pump, It was clear that he could not identify the part and had discarded it during assembly. Obviously the concerned engineer did not bother to consult the assembly drawing from the maintenance manual before assembling such a large and critical pump.

Extent of damage:

1. A brand new ball bearing was damaged after just a few hours of operation.
2. Unnecessary and additional work was incurred by the ship's engineers.
3. Cargo discharging and tank cleaning had to be carried out without a standby feed pump. Engineers were on the edge until both the pumps were in operation.

From the details provided and your knowledge about the feed pumps, please provide answers to the following regarding this case study:

1. What is the primary cause for a ball bearing in service to fail?
2. What is the purpose of an Oil flinger in the bearing assembly?
3. What is the Root cause of the bearing failure for the second time in a short period of service in this case?

Responses for Decarb Completed but Piston Seized - What Went Wrong? Issue 18 (Jul 2012)

Based on the positive number of feedback and responses from our readers on the previous case study, here's a compilation of the answers received:

1. **What are the causes for the incident and can you identify the root cause in this case?**
   - The makers' instructions/ manuals not followed. Prior any major overhaul or any maintenance work, reading the makers' instructions and understanding the guidelines are of utmost importance. Drawings and engine manuals help in understanding the correct procedure.
   - Senior officers' supervision was absent during the critical part of the assembly like fitting of piston cooling telescopic and stand pipes.
   - Unawareness of the purpose of dowel pin. Dowel pins are used for locating the machineries and it ensures correct alignment while fitting the mating parts.
   - Management-level meeting to discuss the complete procedure amongst the engineers before any major overhaul.
2. **Why did the piston seize in a short duration?**
   - The lack of cooling of piston causes overheating and it eventually lead to failure of lubrication and seizure of piston rings
3. **Why should the carbon guide bushes require replacement?**
   - Carbon bush is acting as a centering guide to prevent rubbing of telescopic pipe and stand pipe .
   - Over a period of time, the carbon bush/ guide ring will wear out and has to be replaced.
4. **Can you name few shipboard equipment using locating pins for various purpose?**
   - Piston rod palm and cross head
   - In fuel injector between nozzle body and injector body, dowel pin for nozzle to fit correctly
   - In chemical tanker, manifold vapor return line
   - In pump & motor foundations.

Effect of Power Factor on Generator Operations (Part I)

Deepak Hargude
Electrical Instructor
SIMS, Lonavala

In this article, we shall delve into the requirements concerning AVR (Automatic voltage regulators) and speed governors. Before we begin, it will be necessary to have an understanding of what is active and reactive power. Such an understanding by the operator is essential for satisfactory parallel operation of ac generators.

All alternating current diesel generators undergo two types of loads. These are called KW (kilowatt) active load and KVAR (Kilovolt ampere) - Reactive load. Their resultant load is called KVA load (Kilovolt Ampere load).

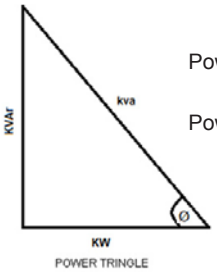
1. While connecting a KW load on generator active power will be consumed and it can be observed on individual KW meter of a generator. On the KW load reverse pull of stator field will cause mechanical load on rotor of a generator, which causes a fall in the rotor speed. To overcome this, the governor will adjust the throttle valve to increase speed to set point.
2. While connecting a KVAR load on generator; reactive power will flow from load to source and source to load which will cause of opposing flux production in stator and it will not pull stator field back as in the case of active power. The reductions of flux results in reduction of voltage. To overcome this effect the AVR (automatic voltage regulator) will adjust field excitation and increase voltage up to the set point.

In the parallel operation of alternator KW load sharing of an individual generator will be same but KVAR or reactive load can be different. This results in the current consumption of individual generator to be different. Because if this the excitation power will be different in individual generator; which causes different winding temperatures.

It is to be observed and kept in mind that if AVR setting is different in each generator while operating in parallel, it will not share equal KVAR. Therefore by adjusting the AVR we can reduce current consumption on same KW loading.

The power generated on board for marine electrical services in a ship is used for-

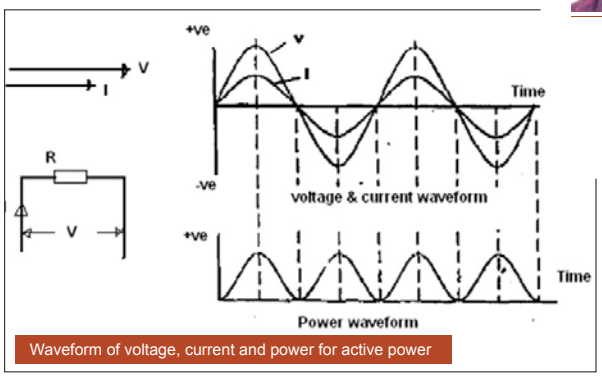
1. Electric motors load (KW and KVAR)
2. Lighting load (KW and KVAR) and
3. Heating load and Lamps (KW)



Power factor = KW / KVA
= VI cos Ø / VI
Power factor = cos Ø

KW = Active power
KVAR = Reactive power
KVA = Apparent power resultant power

KW - Active Power (P)



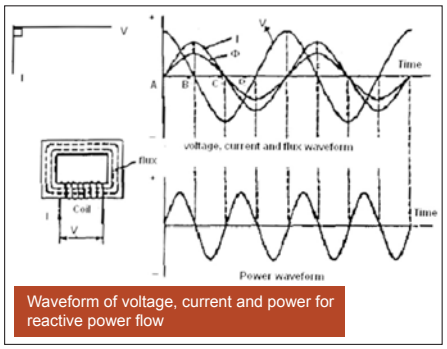
Waveform of voltage, current and power for active power

Phenomenon of active power is as illustrated in waveform with a simple single phase circuit connected to a resistive load. The resister will take a current "I" and will take electrical energy from the supply and convert it in to heat. The waveform of voltage and current are in phase as indicated in voltage and current wave form.

The power waveform is obtained by multiplying the voltage and current P = V x I together as shown in Power waveform.

When V and I are both -ve (negative) the power waveform will be +ve in fact the power flow always is positive (positive flow means that power is taken from the supply and converted by the Resister) in to a power out put. This type of power flow is called Active Power (P) and it's obtained when V and I are in phase

KVAR - Reactive Power (Q)



Waveform of voltage, current and power for reactive power flow

Phenomenon of reactive power is as illustrated in waveform with a simple single phase circuit connected zero resistance coil wound around a steel core.

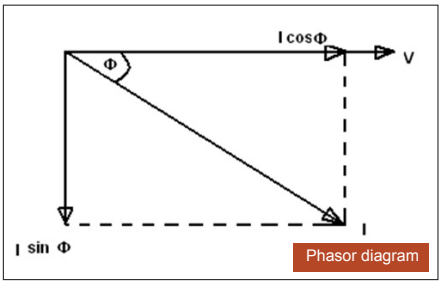
As shown in waveform of voltage, current and flux; consider the current waveform. At instant 'A' the current is zero, as the current start to increase it will create a magnetic field Φ in the steel core The strength of this field increases as the current build up.

During the quarter cycle between **A** and **B** the electric current transfers energy from the supply and stores it in the magnetic field.

In the next quarter cycle B to C, the current falls to zero and the magnetic field, along its store energy disappears. In case there is no power output, the only way it can go back in is to the supply.

In the next Quarter cycle C and D the current builds up again. and power flow is supply to device and process repeat itself. When V and I are 90 deg to each other the reactive power reverses every quarter cycle.

Power is alternately positive and negative as energy is stored and discharged.



Phasor diagram

KVA - Apparent Power (S)

We can notice from phaser diagram that there are three volt-ampere products.

A) V x I cos Φ the active power(P)
B) V x I sin Φ the reactive power (Q)
C) V x I the volts times the actual current, a power but not a new type. It is just the combination of P & Q and its called apparent power (S)

Apparent Power = Volts x Circuit amperes

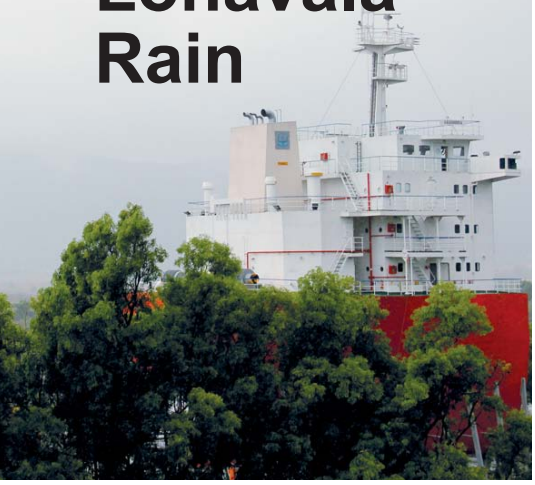
Cos Φ - Power Factor

This power factor indicates in total KVA of a system how much it consist of KW.

$$\text{Power factor} = \frac{KW}{KVA} = \frac{V\,I\cos\Phi}{VI} = \cos\Phi$$

The article to be continued in the next issue will include Effect of kW Load on generator, Parallel Operation of AC generator as well as how to do load sharing.

The Lonavala Rain



After the dust and heat, In the broad and fiery street,
In the narrow lane, How beautiful is the rain!
How it clatters along the roofs, Like the tramp of hoofs!
How it gushes and struggles out, From the throat of the overflowing spout!
Across the window-pane, It pours and pours;
And swift and wide, With a muddy tide,
Like a river down the gutter roars, The rain, the welcome rain!

- Henry Wadsworth Longfellow

Lonavala is known as the "Jewel of the Sahyadri ranges of the Western Ghats". A place of serenity and tranquillity; wakes up to the gushing and gurgling of the monsoon streams falling down the surrounding misty hills. Lonavala is said to be at its grandest splendour from June to September - when the south-west monsoon brings the rain for the parched land after hot summers, torrential and unrelenting downpour at times. During such times it offers breathtaking views of waterfalls, beautiful valleys and hills, lush greenery spread out as far eyes can see, and pleasant cool winds. The scenic view provides not only food for the hungry eyes but soothes the soul as well.

For our readers, we had wished to capture the timeless beauty of Monsoon in Lonavala as seen from the SIMS campus. The rain brings the freshly washed trees, verdant grass and emerald peaks of Sahyadri ranges playing hide and seek with the thick rain clouds; into full bloom

Shadow of Mine

Your eyes, mischievous and saline,
Your laugh, an airy insolence,
Your hair, waves undone and shine.

I will not forget … your memory rife,
Until I breathe this life,
Until I breathe this life.

Your hand slipping from mine,
Your shadow turning its craze,
Walking away ...

Without turning … into a haze,
I will not forgive … the memory rife,
Until I breathe this life,
Until I breathe this life …

Cdt. Abhay Sehgal
GME-14
SIMS, Lonavala

and makes the visitor to SIMS thankful to the Almighty for such a soothing sight to behold and cherish!

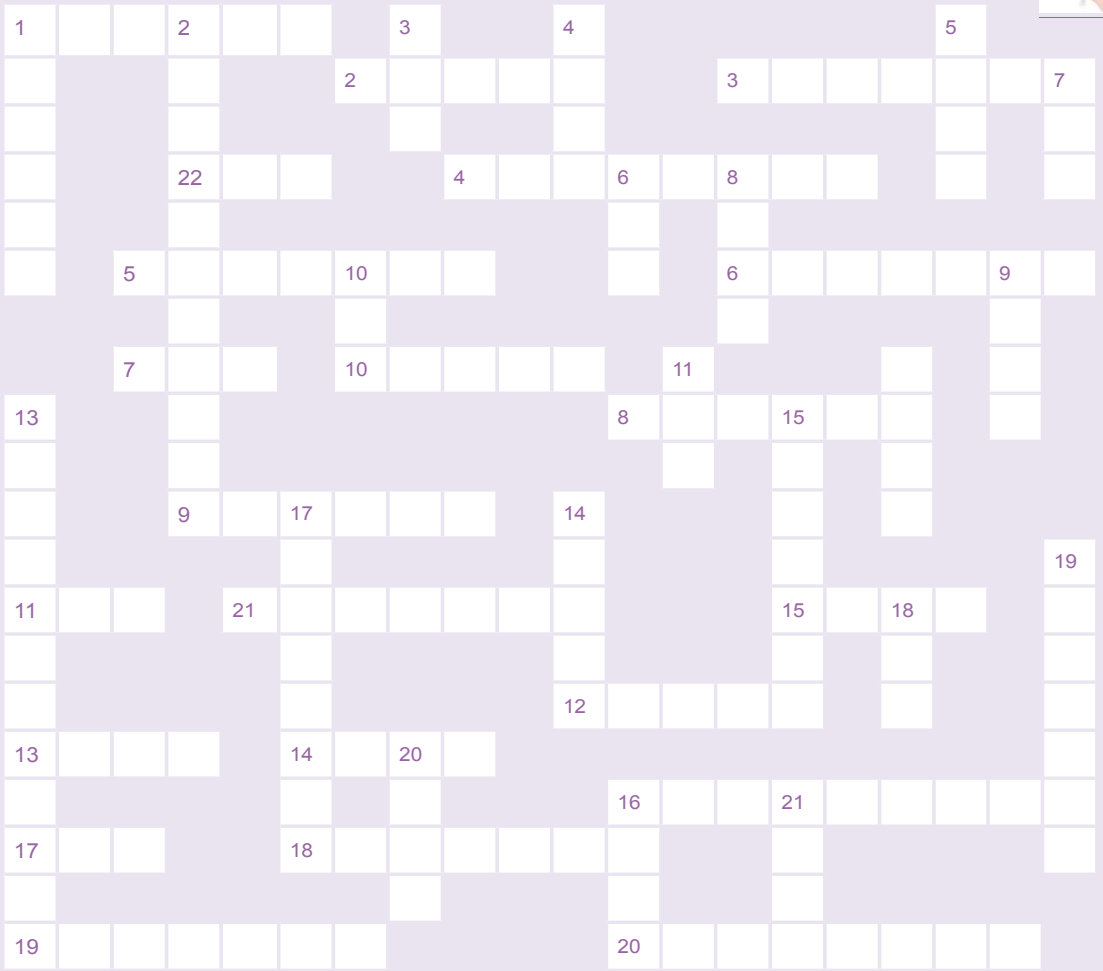
As the pictures depict, the gardens at SIMS turn lush and green, bursting with a vast variety of flowers of all hues and colours. The paths leading to various buildings and Ship in Campus are lined up with plants vying with each other to display colours from a wide and amazing spectrum, adding allure to the freshly washed roads. The roads look so fresh, clean and shiny that one can see his face reflected sufficiently well to comb his hair!

The river Indrayani close to the Southern end of SIMS campus is bursting with rainwater gushing in from the mountain ranges with furious sounds and flows on with swelling pride. Green vegetations at its banks welcome the rain water, thriving and swaying in the cool breeze blowing during this season.

That's Monsoon in Lonavala, a season to celebrate, enjoy and of course live with harmony for all of us…

Crossword Puzzle

Cdt. Shailesh Kira
GME-12
SIMS, Lonavala



Across

1. Defines empty space in a tank
2. A plan without which no operation involving oil can be carried out
3. If GPS fails
4. Popular soap brand
5. Operation to hold her (ship) right and tie her tight
6. Forward to aft; I am the safest path
7. Call the DPA when in doubt
8. The skipper's den
9. I wear a crown, I got a skirt
10. I prevent fretting corrosion
11. The value of this on the KNOCK NEVIS was 458.45
12. Being acted upon by currents
13: I am present in every cabin, emergency exit and control rooms
14. MARPOL ANNEX 1 cerificate
15. To find the true north
16. Guides the anchor chain
17.This makes you a doctor onboard
18. Chief Officer's record book
19. She gave birth to SOLAS
20. Enclosed space with special status
21. Hose rests on me
22. Water vapour is mixed in combustion air to control this

Down

1. When on the side of wind
2. Do not scoot till the master calls for it
3. March out of training
4. STCW-fire fighting
5. I put you on the radar
6. Defy this time and your company pays
7. To neutralize sulphur
8. I have the biggest bottom in the industry
9. Tilt sideways
10. Code to carry chemicals in bulk
11. Ever mess with me and your chief goes to jail
12. Kneel without an 'en
13. Shortest distance between two points (physics)
14. to your front
15. Immersed under water
16. To make strong ropes
17. When metals rub…
18. We calculate this every night
19. Panic room
20. Shanghai is the busiest_____
21. Engine LO bucket

Answers:

Across:
1. ULLAGE
2. SOPEP
3. SEXTANT
4. LIFEBUOY
5. MOORING
6. CATWALK
7. ISM
8. BRIDGE
9. PISTON
10. CHOCK
11.LOA
12.DRIFT
13.EEBD
14.IOPP
15.GYRO
16. HAWSEPIPE
17.EFA
18.GARBAGE
19. TITANIC
20. PUMPROOM
21. GUNWALE
22.NOX

Down:
1. UPWIND
2. ABANDONSHIP
3. POP
4. FPFF
5. SART
6. ETA
7.TBN
8.ULCC
9.LIST
10.IBC
11.ORB
12.KEEL
13.DISPLACEMENT
14.AHEAD
15.DRAUGHT
16.HEMP
17. SCUFFING
18. ROB
19.CITADEL
20. PORT
21. SUMP

Meet the Parsi

Sailing the high seas is all about meeting and interacting with people of different cultures, castes and creeds. Fortunately, my experience in the campus of SIMS, Lonavala is no less interesting and exciting from the very first day of my life as a GME cadet here. I have experienced this rich influx of diversity in Samundra and coming from a small community called the Parsis from Mumbai I am almost overwhelmed by the cultural richness of our country. I had never interacted with a Keralite (from the southernmost state of India) and a Haryanvi (from the state of Haryana adjacent to the capital city of Delhi). In fact both of them happened to be my roommates - one speaking Malayalam and the other Haryanvi...

In the due course of our introduction to my fellow batch mates, I constantly faced the question "Who are Parsis? Which state they belong to and which language they speak, etc." So for the benefit of my batch mates let me familiarize you with the Parsi clan…

Parsis are the original natives of Persia and one of the major sect of the religion Zoroastrionism (the other being Iranians). In the 10th century AD, the Arabs attacked Persia and finally conquered Persia successfully. The Parsis were then asked to convert to Islam by the Arabs. In order to preserve their ethnicity, the parsis fled by ships to several countries like India, Canada, Africa etc…

Parsis arrived by sea on the coast of Gujarat in the early 13th century AD. Then the King of Gujarat sent the Parsi head priest a glass of milk. The head priest dissolved some sugar in the milk and returned the glass back to the king. The king understood the underlying message of the head priest that the Pasri community wanted to blend in with the local Indian people, like sugar dissolved in milk. The king nevertheless put certain conditions before offering refuge to the Parsis. The conditions were such as the Parsis should not convert any Indian into Zoroastrian religion. They would lay down their weapons and adopt Indian traditions to merge with the local community.

The Parsis are basically fire worshippers and believe in the God named Ahura. Their temples of worships are called Ayyaris and the main place of pilgrim in India for the Parsi community is the Atash Behran in Gujarat. The holy text of the Parsis is called the Avesta. The holy wear of the Parsis is called the Sadra (a type of Inner wear) and finally, the Kusti - a holy thread tied around the waist of a male Parsi.

Food forms an important part of any Parsi's life. Parsis are predominantly non-vegetarian and whenever they are forced to eat a vegetarian dish they invariably end up breaking an egg on top (like egg on lady finger, egg on Tomato, Egg on banana being some of the classics.) The core cuisine of the Parsis consists of the famous Mutton Dhansak, Patra ni Macchi (fish cooked in green sauce wrapped in banana leaves) and mutton cooked in a gravy of apricots served with potato fingers called Sali bati.

Overall, the Parsis are fun-loving, philanthropists and closed knit community. Even though there are just a lakh or so are left in the world, they still count themselves as Indians first and add to the rich diversity of Our Mother Land India.

Cdt. Dhanesh Khampata
GME-14
SIMS, Lonavala

Indoor Championship at SIMS Lonavala

Come monsoons and SIMS Lonavala gears up for various indoor sports. The year 2012 was no different and the indoor championships final was held on 24th august amidst an atmosphere of fierce competitive spirit. Even the stretched rains this season failed to dampen the spirit of young sportsmen who fiercely faught for every point to win the Championship trophy for their respective House.

The events contested in the championship were table tennis, rapid chess and Carrom. The following is the list of cadets who emerged victorious at the end of the day.

TT Doubles	**Winners:** Cdt. Abhiret Kharyal & Cdt. Dhanraj Gokal Shravan **Runners up:** Cdt.Vijay Kumar Pandey & Cdt. Anuj Pratap Singh
TT Singles	**Winner:** Cdt. Prasadh P Pai **Runner up:** Cdt. Vaibhav Kambaj
Carrom	**Winners:** Cdt. Vivek Yadav & Cdt. Rahul P Shukla **Runners up:** Cdt. Samarth H & Cdt. Shankar C Patange
Chess	**Winner:** Cdt. Prasanth Prabhakaran **Runner up:** Cdt. Praveesh V

Kaveri House with 20 points lifted the overall indoor championship for the year 2012 while Tapti finished a close second with 18 points. Capt. Krishnan partnering with Mr. Biju Baben finished as the winners of the TT doubles competition for the staff.

IMU Vice Chancellor is Keen to Establish Partnership with SIMS

Chief Guests, Dr. Raghuram (right) and Mr. JK Dhar (middle) on the deck of the Ship-in-Campus

The Chief Guests were brought around by Mr. Viswanathan, Principal, SIMS, Lonavala

In-house learning tool, the blended learning was introduced to the guests

The new Vice Chancellor of Indian Maritime University (IMU), Dr. Raghuram made his maiden visit to SIMS, Lonavala campus on Friday, 14th September, 2012 and paid compliments to the vision and the keen eye to detail in developing the institute.

He started his address saying he was “bowled over” by what he saw during his short tour of the campus and the facilities. He further elaborated on the awe-inspiring campus and how he got impressed with the infra-structure at the very first sight. Dr. Raghuram emphasized on the word infra-structure and reiterated that it is not only the buildings which constitute the infra-structure, contrary to the popular perception; rather it is the facilities and the vision which had gone into creating such a beautiful environment for learning. He could imagine the passion and keen eyes for detail of the people who have created this beautiful campus. With an infrastructure like SIMS, he would suggest Samundra to start conducting post graduate studies and pursue research activities.

Dr. Raghuram spoke about the plans he have in mind for fostering maritime research and education in the country and added that the activities could be envisaged in two streams. One is IMU as an individual entity and the other is in partnership with institutes who have the infra-structure and the vision like Samundra. He enthusiastically added that now having witnessed the potential of a well set up institute like the Samundra, his brain is exploding with possibilities.

He was accorded a guard of honour by the cadets in the parade ground and later addressed the gathering of cadets and the staff in the auditorium. He briefly touched upon his prior teaching experience in IIM Ahmedabad and how, he thought of doing something different, and perhaps more meaningful after around 25 years in that profession.

Dr. Raghuram recollected his days in New Orleans where he had an opportunity to interact with the port and at the same time observe the hustle bustle of passenger ships ferrying up and down the Mississippi. He did mention that he had a fascination for the concept and potential of water ways and navigation and transportation activity which was being carried out.
In spite of his time constraints, Dr. Raghuram spent some exclusive time interacting with the cadets and the faculty. One of the cadets brought out the issue of the syllabus for B tech being very generic. The VC, with able assistance from Mr. J K Dhar, addressed the issue and conveyed to the faculty and the staff the steps being taken to alleviate the issue. Dr. Raghuram mentioned about the new controller of exams in IMU and expressed hope that the system will improve once the system is set rolling.

Dr. Raghuram talked about the plans of IMU Chennai to shift into the new spacious campus, of which 100 acres are now being developed. He emphasized that IMU is pan-India, since it has campuses in key locations of the country.

Visitors' Comments
Third Quarter, 2012

True Institution Building! Samundra has done a wonderful job of creating a learning environment.
I would encourage more research and higher education. You are well set. A great experience for me.

Dr. G. Raghuram
Vice Chancellor
Indian Maritime University, Chennai

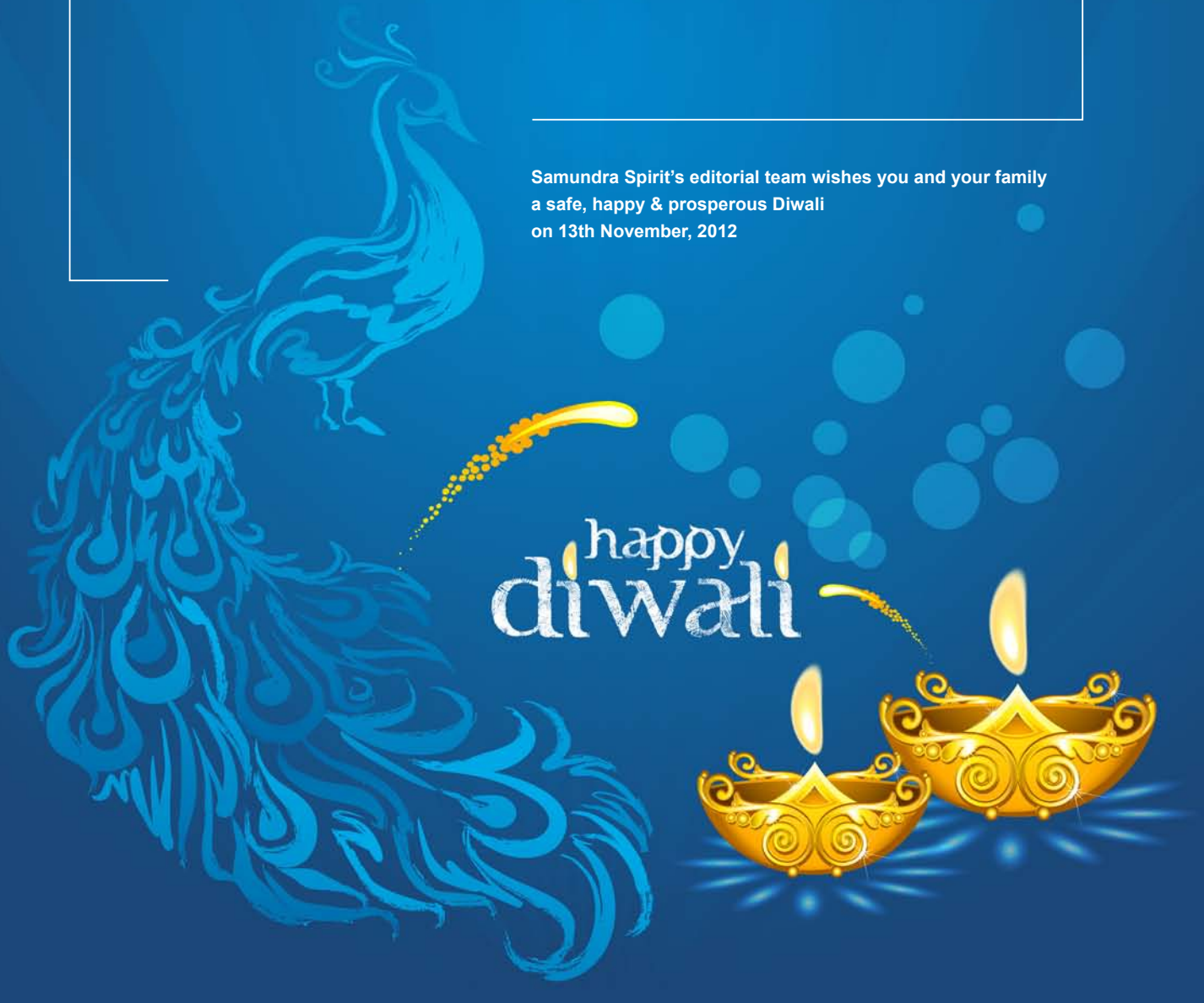
Excellent facilities, ever improving, vibrant faculty and ever ready, open-minded administration.
Wish the students who pass out from this institute the very best.
Me and IMU brings in on this day for the institution cheer and success.
Imparting education remains the noblest work and the institution is doing it to its best ability.

Mr. K.K,Dhar
Director
Indian Maritime University, Mumbai

We were given a comprehensive exposure to all the academic and training procedures at the Mumbai Campus of SIMS to enable us to perform the audit to the UGC Sri Lanka standards.
The impressions we have received are valuable and fulfilled our expectations.
We thank the Vice Principal and his colleagues for enabling a very productive visit.

Professor Colin Peiris
Director
UGC Sri Lanka of Quality Assurance and Review

Samundra Spirit's editorial team wishes you and your family
a safe, happy & prosperous Diwali
on 13th November, 2012



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▲ A part view of SIMS, Lonavala pre-sea campus

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