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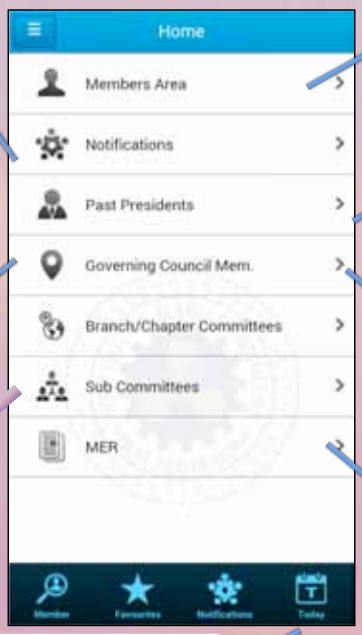

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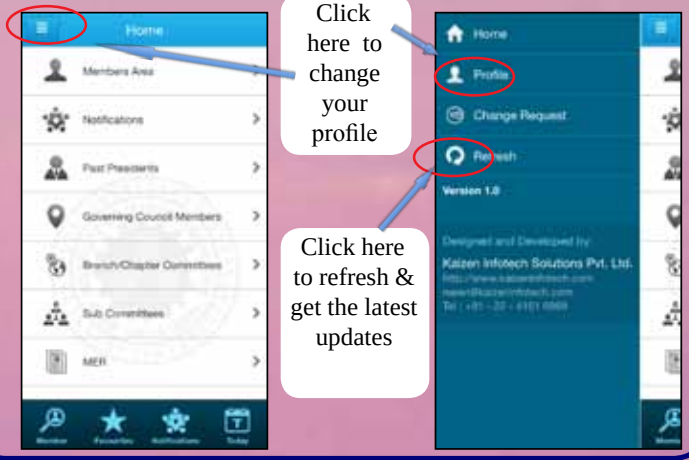

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The Great Eastern Institute of Maritime Studies
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Email: faculty@geims.in
Web Site: www.geinstitute.com

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Administration Office

IMEI House
Plot No. 94, Sector - 19, Nerul,
Navi Mumbai 400 706.
Tel. : +91 22 2770 16 64
Fax : +91 22 2771 16 63
E-mail : editormer@imare.in
Website : www.imare.in

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Inside

Cover*: IME House, NERUL Mumbai, the institutes head office, building cleared for extension & expansion to improve & enhance the facilities.*

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Editor's Desk

Dear Friends

The month gone by witnessed few historical & landmark moments of the year with far reaching affect & implications.

Independence Day as always was celebrated with usual vigour, fervour and patriotism all over the country and abroad too. Handsome tributes & gratitude were paid to all those who sacrificed their today's for our tomorrow's. Fresh promises and commitments were made to participate and take necessary paces to move forward.

The much debated Goods & Service Tax (GST) bill was finally passed by both houses of parliament and meant a "Great step towards transformation" which is expected to steer the long term economic benefits including in the maritime sector inducing a favourable growth. Aim is to iron out a multi-layered indirect tax system, subsume all other indirect taxes & usher in the uniform tax structure. It is also believed that GST implementation will reduce the shipping & logistic costs.

Other significant event, world has been transfixed on, has been the Rio Olympics. After much dismay & heart burns we managed to put our names on the winners tag, thanks to the intense labour & efforts put in by the representatives of the fairer sex. Lately the maritime sector has also succeeded in opening its door to them in a big way and it is a matter of pride that few of them are today commanding ships at high seas and taking charge of the arduous tasks in the ships engine room. More & more avenues and options are being provided to make merchant navy an equally attractive and well rewarded profession to them. Gender discrimination of any kind is unheard of and is a punishable offence.

In a rare honour & distinction an Indian, an official from the DGS has taken over the Chair of an IMO committee for 2017. (See IMO News).

The governing council of the institute is meeting this month to deliberate on several sensitive & critical path breaking issues. Plans are to strengthen the long ongoing e-governance and adopt the proposed e-voting system too. Admittedly the institute has come a long way and has made a mark for itself over the years as one of the most progressive professional body in the country. Time is now ripe to climb & take next steps with a vision to not only bolster & diversify the activities but make its presence felt in the corridors of power. Lot of debates are taking place about Indian flag not gaining the tonnage at required pace and dwindling share of Indian seafarers in the global market. People today are talking without any reservation about the eroding aura and charm the profession once enjoyed. Needless to subscribe, the industry as a whole has to take the challenges head-on for issues to become palatable.

Today the maritime fraternity is hankering for more; task is gripping & gruelling too, demanding strong measures and initiatives to take on the challenges.

Suggestions are welcome.

S. M. Rai
editormer@imare.in
smrai7@gmail.com

"Let us remember those who gave their lives so that we can breathe the air of freedom. It is vital for us to stand and act in unison to take the nation forward on the path of development".

-Narendra Modi

Optimization approach for ship design

Prabu Duplex

Practical exercise for "Erasmus Mundus European Masters program in Advanced Ship Design- Emship", conferred by University of Liege and Ecole Centrale de Nantes. www.emship.eu

Abstract: This work is aimed at bulbous bow design of a fishing vessel in commercial optimization software modeFrontier, coupled with a potential solver REVA developed by Ecole Centrale de Nantes. By applying suitable constraints and an appropriate hyperbolic equation the designed bulbous bow reduced wave resistance considerably. The work was performed at Ecole Centrale de Nantes in France, as a practical exercise during the second semester of Emship study program.

Keywords: *CFD, Reva, Mode Frontier, Optimization, Friendship frame work*.

1 INTRODUCTION

Improvements in the computational tools enabled the user to optimize and explore alternative solutions taking in to consideration mainly hydrodynamics, by means of multi objective software. Economic studies, parametric series of design and life cycle cost assessments are applied in the design optimization. Fore body optimization includes bulb design, waterline entrance, forward shoulder and to the turn of bilge [4]. Properly designed bulbous bow is very effective for reducing wave making resistance. Aft body optimization is done to mitigate stern waves, improve flow into the propeller and avoid eddy effects. Potential solvers are used to evaluate wave making effects through aft shoulders however viscous calculations are needed to evaluate aft body flow dominated viscous effects. This work is targeted to achieve energy efficiency by bulbous bow optimization.

2 METHODS TO IMPROVE ENERGY EFFICIENCY

Ship's energy efficiency can be improved by optimizing main and auxiliary engine performance, implementing efficient technologies, and optimizing transport work. This can be categorized into (i) Optimization approach, (ii) Energy saving devices (iii) Structural optimization and light weight construction (iv) Machinery technology (v)Fuel efficiency of ships in service [3]. As this work is based on optimization approach, this has been categorized as shown in table 1. Various energy efficiency milestones has been achieved through European union projects Efforts, Fastpod, Streamline, Optipod, Targets, Grip over these years.

2.1 Case study of an optimization work

The automated optimization for a mega-yacht exhaust funnel, was studied with regard to gas contamination on the upper deck while at anchor in calm weather, in an integrated CAD-CFD platform by Harris et.al. The fluid domain was discretized using ICEM while the simulations of the external thermo-fluid dynamic field were performed with ANSYS CFX (www.ansys.com). For details see (Harries and Vesting, 2010). The optimization code friendship frame work has a selection of variation (DoE) based on single and multi objective algorithm which selects the appropriate model by design constraints as input [2]. The selected models are automatically tested with external CFD codes and the results are evaluated with the inbuilt post processor tool.

Table 1: Optimization approach for ship design

Optimizing ship particulars	Minimizing Hull resistance and increasing propulsion efficiency	Added resistance (waves& winds)
Ship size- Capacity Service speed	Optimizing the hull form, appendage resistance.	Assessing with waves.
Principal dimensions	Manoeuvring considerations	Assessing with wind.

Fig.1 shows an impression of the yacht along with its plume as emitted from the auxiliary engines, close-ups of the grid and two representative designs. The parametric model within CAESES® allowed varying the length and angle of the exhaust pipes along with the size and shape of various deflectors. As an objective for minimization the volume fraction of exhaust gas integrated over a plane downstream of the funnel was considered. An overnight Sobol of 50 variants was run by CAESES® on a small cluster so as to identify unfavourable and favourable designs as needed for styling decisions. It can be seen in Fig.1 that longer and steeper funnel pipes in connection with extended and more strongly curved deflectors yield tangible reductions of exhaust gas (the best design being about 40% better than the worst).

3 DESCRIPTION OF WORK & SOFTWARE

REVA is an in-viscid potential solver developed by Ecole Centrale de Nantes with linear free surface boundary

Mr Prabu Duplex is a Marine Engineer with Masters in Naval Architecture & Applied Mechanics and is associated with Ship Designs & Research Centres.

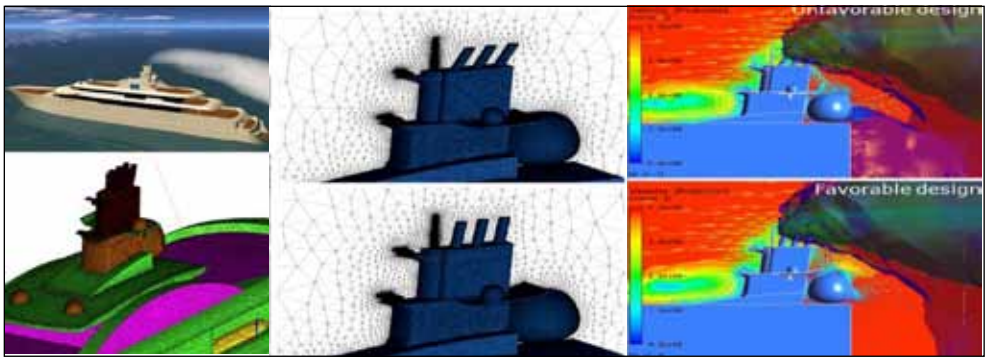

Figure 1: Funnel design study with un favorable and favorable designs from DoE [1].

conditions. The ship resistance can be estimated by a free-surface potential with the addition of a frictional resistance assessed by an ITTC'57 formulation if required. This software is capable of calculating both single-hull and multi-hulled ship drag wave field. Mode FRONTIER® is an integration platform for multi-objective optimization. It provides a coupling with third party engineering tools, enables the automation of the design simulation process, and determine the set of best possible solutions combining opposing objectives, and post-processing tools allows the user to perform sophisticated statistical analysis, data visualization and decision making.

3.1 Introduction to optimization

3.1.1 Single objective optimization with Simplex algorithm

To illustrate the function of Simplex algorithm, which then later utilized to design the bulbous bow shape, a 3D Function: f(x,y) = x2 +y2 was tested with an objective to find its global minimum value. By applying random values for DOE, the objective (0) is reached with 59 designs, with convergence 2e-6 as shown in Figure 2. From the results we can conclude that for a function with no local minimum, Simplex algorithm can be implemented due to its accuracy and convergence speed.

3.1.2 Multi objective optimization with Simplex algorithm

For illustrating multi objective optimization, 3D Functions f1 (x,y) = x2 +y2 and f2(x,y) = (x- 5)2 +(y-5)2 were tested as shown in figure 3, for its global minimum. In this case weight parameter 0.8 for the function f2 (output 2) and 0.2 for the function f1 (output 1) were introduced. As a result

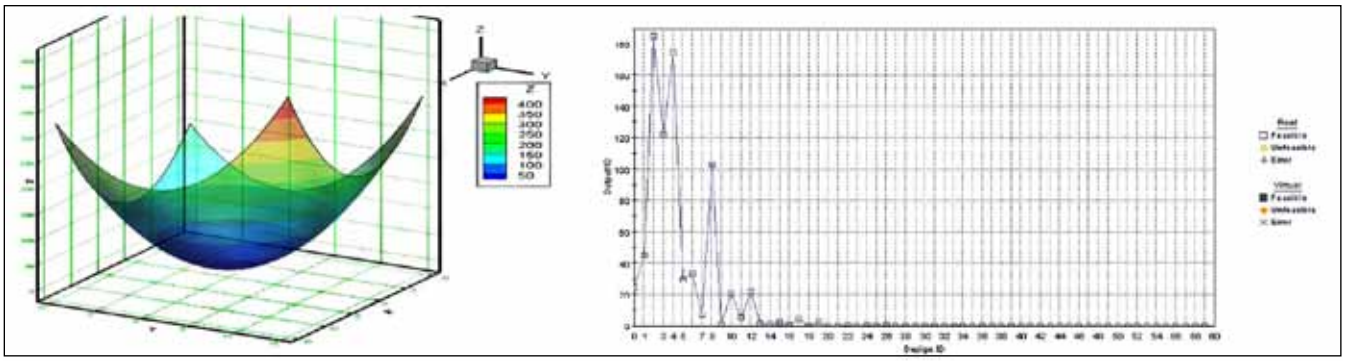

Figure 2: Tested function (L) Minimum value of the function (R) [6]

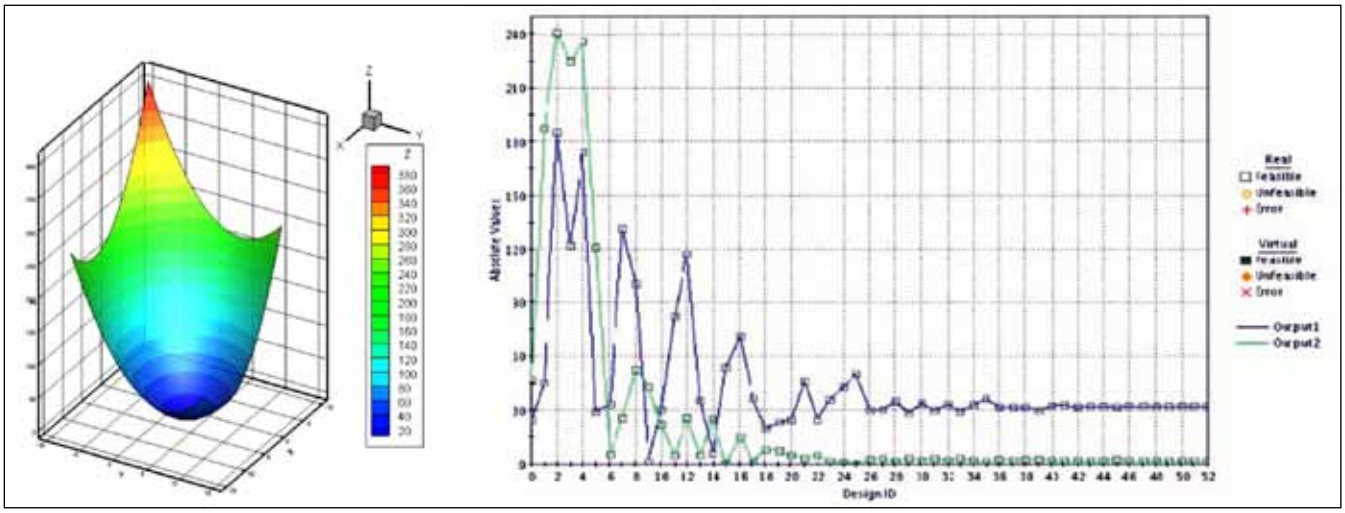

Figure 3: Multi objective optimization with SIMPLEX Algorithm: 0.2xOutput1 + 0.8x Output2 [6]

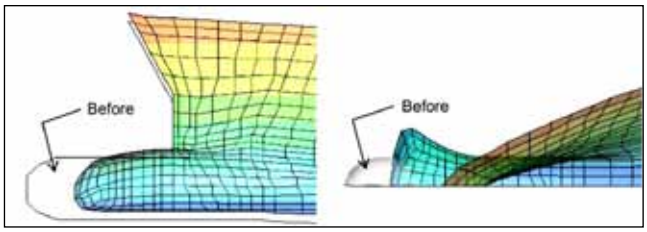

Figure 4: Initial bulbous bow shape [6]

output 2 was evaluated more dominantly than output 1 as seen in figure 3.

4 SHIP HULL OPTIMIZATION

4.1 Objective

The objective is to optimize the bulbous bow of a fishing vessel, for minimizing hull resistance at speeds 5 and 10 Knots respectively. The vessel has a displacement of 178 Tonnes, and draft 2.4m. Other specifications of the vessel were confidential and not disclosed. Constraints imposed to have minimum hull resistance at speeds 5 and 10 knots.

4.2 Initial values

Before running optimization in modeFRONTIER, resistance values were calculated in Reva for initial bulbous shape. It resulted in V5knots = 1344kN and V10knots = 7693kN and were noted as reference for final comparison.

4.3 Methodology

Mesh was generated with Fortran code with features to vary the mesh in X, Y, Z directions of the bulbous bow, thereby defining its shape. Later the code was compiled to create an executable file for mesh generation, which

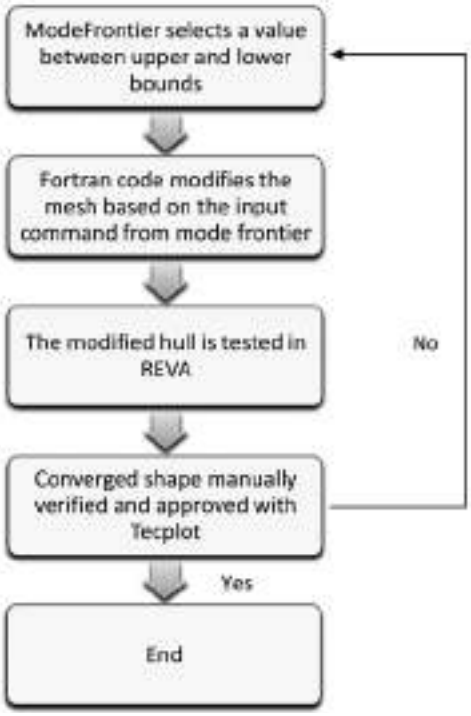

Figure 5: Workflow

was used by modeFRONTIER to vary the design within the specified range. Subsequent tests were done in Reva to evaluate the wave resistance of modified hull, coupled with modeFrontier. Tecplot was used to visualize the modified hull shape after convergence for its physical appearance.

4.4 Method to find a suitable function

The region to be modified has been non- dimensionalized to vary only the bulbous bow region and rest of the hull part will be free from any changes as in equation 1.

$$xtilt = \frac{Xi(i) - Xmin}{Xmax - Xmin} \quad (1)$$

4.4.1 Length function :

Bulbous bow length modification along x- axis was chosen to be linear as shown equation 2 and figure 6.

$$Xd(i) = Xi(i) + Param1 \times xtilt \times 0.5 \quad (2)$$

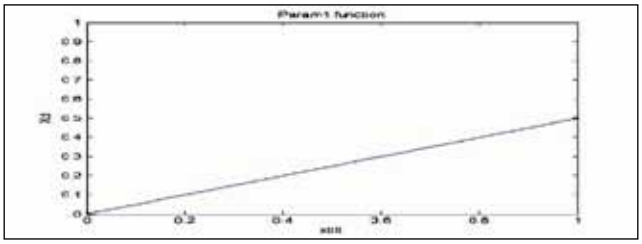

Figure 6: Length function

4.4.2 Breadth function:

A hyperbolic sin function has been chosen as it resembles the required shape. As seen in Figure 7 the beginning range has gentle slope, which makes the transition from hull to bulbous smooth. At the end of the range our function tends to zero. In this way extreme stretching of mesh elements at the end of bulbous bow has been avoided. Multiplication of initial coordinate is done for breadth modification, in order not to have modification of nodes on the centre line (y=0).

$$Yd(i) = Yi(i) \times (1 - Param2 \times (\sinh^2(xtilt) - (xtilt)^6)) \quad (3)$$

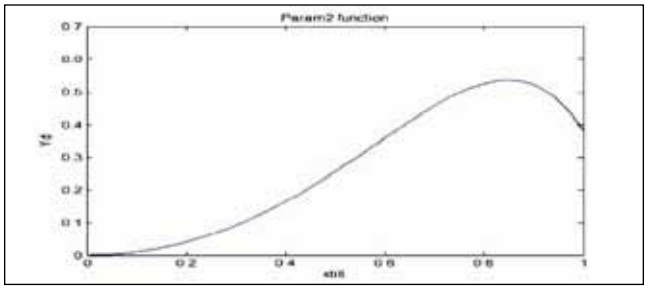

Figure 7: Breadth Function

4.4.3 Draft function:

The same function as for breadth to avoid extreme stretching of mesh elements at the end of bulbous bow is chosen. In addition, bow has been divided vertically on two equal upper (equation 4) and lower parts (equation 5). This

was done in order to have different node displacement. Upper part should have sufficient displacement to generate wave. On the other hand, same vertical displacement for lower part might generate significant lift and drag of bulbous bow, which may lead to friction resistance increase and slamming as seen in figure 8.

$$Zd(i) = Zi(i) + Param3 * (sinh^2(xtilt) - (xtilt)^4) \quad (4)$$

$$Zd(i) = Zi(i) + Param3 * (sinh^2(xtilt) - (xtilt)^4) * 0.5 \quad (5)$$

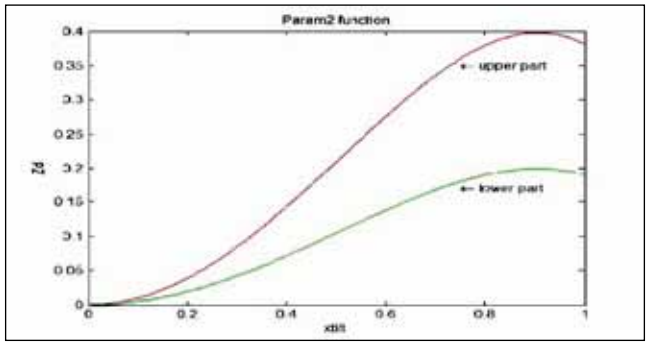

Figure 8: Draft function

4.4.4 Feasibility check in Tecplot

Before starting the simulation in modeFRONTIER, eight limiting combinations of defined parameters were tested between the extremity values for feasibility and visualized in Tec Plot. Once required shape was satisfied, these set of parameters as shown in table 2, were given as input variables for further optimization in modeFRONTIER to modify the mesh.

Table 2: Parameters at a glance

	Length Function Parameter 1	Breadth function Parameter 2	Draft function Parameter 3
Upper extremity	4	1.5	0
Lower extremity	0	-3	4

4.5 Simulation set up in mode frontier

For Simplex algorithm, only one objective is used, therefore a weighted function was used similar to section 3.1.2 with weighted parameter a = 0.5 as follows,

Resistance = Resistance at 5 knots x 0.5 + Resistance at 10 knots x 0.5

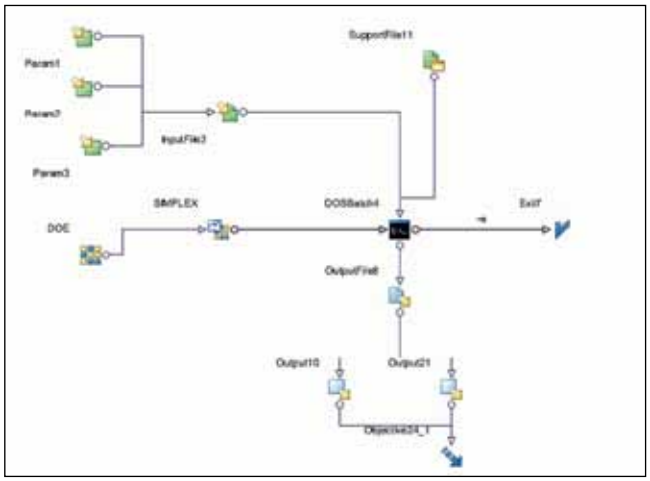

Figure 10: modeFrontier simulation setup

5 RESULTS

Simplex algorithm with standard range of parameters and random DOE resulted in good convergence of the

Table 3: Results

Converged parameters					
	Param1	Param2	Param3	Resistance in kN (5knots)	Resistance in kN (10 knots)
Before optimization	-	-	-	1334	7693
After optimization	3	-2.25	3	1227	550
Improvement	-	-	-	8.70%	29%

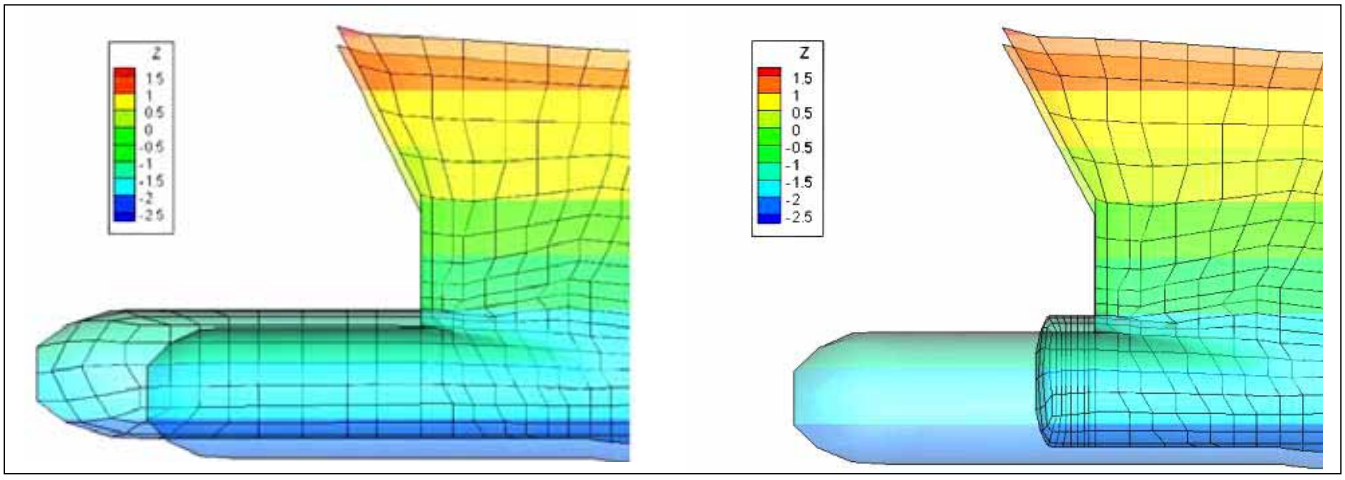

Figure 9: Visualization of length parameter between upper and lower bounds [6]

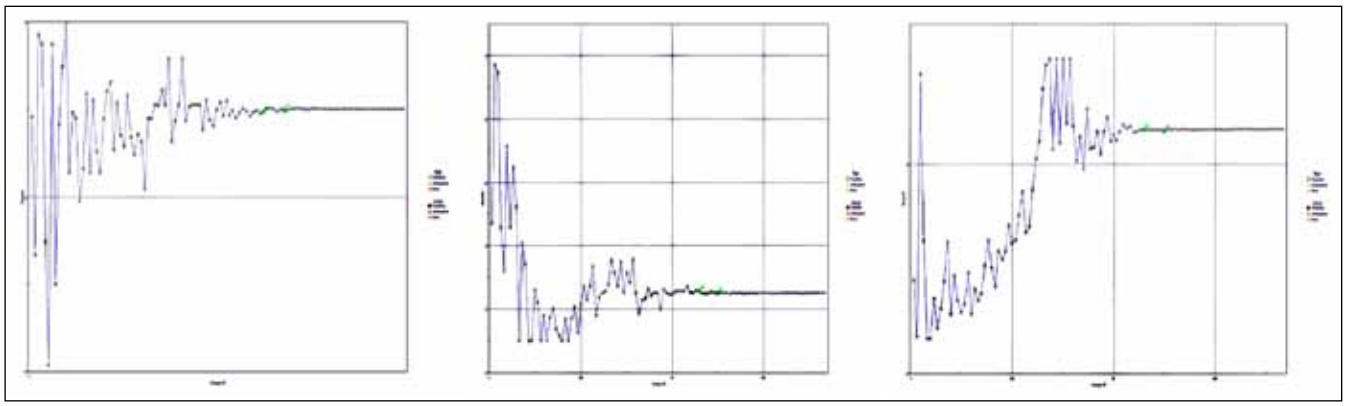

Figure 11: Converged parameters

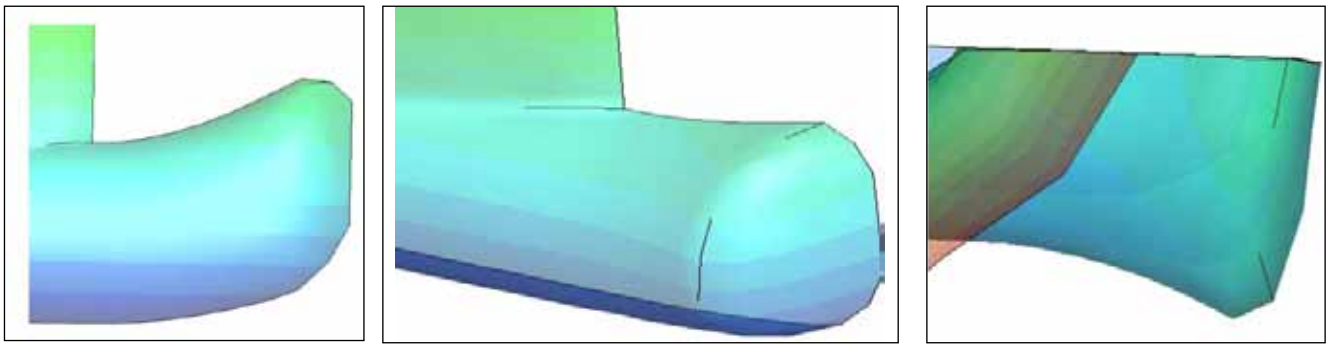

Figure 12: Final optimized bow shape

parameters as shown in figure 11. From convergence graphs we can see that none of the parameter reaches its bound values. That means that the parameter range selection is good and it does not limit optimization process for SIMPLEX algorithm. As an optimization result 9% resistance reduction for speed of 5 knots and 28% reduction for speed of 10 knots has been achieved. This is expected as bulbous bow aims to decrease wave resistance, which is more predominant at higher speed. For SIMPLEX algorithm parameter ranges selection is good and it does not limit optimization process. Selection of bound values of parameter range influence its convergence.

6 CONCLUSION

The bulbous bow has been modified successfully with reduction in significant wave resistance values. Bulbous breadth has been increased to an exaggerated value, which is not physical. However a method has established and can be continued till a good shape is achieved with appropriate selection of the equation to define the bow shape.

7 FUTURE WORK

The work can be continued with more objective algorithms in the software and new equations, till a bulbous bow has been designed with good aesthetics and with more constraints imposed.

8 ACKNOWLEDGEMENT

The formula that defines the bulbous bow, subsequent code modification in Fortran and the optimization set up in modeFrontier was carried out by colleague Andrii Pishchanskyi and I thank him for his valuable contribution. This work was developed in the frame of the European Master Course in “Integrated Advanced Ship Design” named “EMSHIP” for “European Education in Advanced Ship Design”.

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IMO REQUIREMENTS FROM JULY 2016 TO JULY 2018

This newsletter summarizes the most important IMO/ ILO requirements entering into force from 1st July 2016 to 1st July 2018 inclusive, the overview is obtained.

Courtsey DNV-GL.

CONVENTION / CODE	REGULATION	DATE OF ENTRY INTO FORCE	APPLICABLE TO	SUBJECT	IMO RES.
SOLAS	V/19.2.10.7 (new sub-para.10.7)	2016-07-01 First safety equipment survey after.	Bulk carriers and non-tanker/ -bulk cargo vessels, keel-laid <= 2013-06-30, GT >= 50000. (Non-tankers).	Electronic Chart Display and Information System (ECDIS) required, i.e. no longer only an option.	MSC.282(86)
SOLAS	VI/2.4, .5 & .6 (new para.s)	2016-07-01	All cargo vessels, HSC/ DSC and passenger ves- sels. Carriages of cargo.	New paragraphs 4 to 6 added to Cargo information which require mandatory verification of the gross mass of contain- ers by the shipper of the containers, and ensure that the gross mass is stated in the shipping document.	MSC.380(94)
SOLAS	XI-1/7 (new reg.)	2016-07-01	All cargo vessels, HSC/ DSC and passenger vessels.	New regulation requiring atmosphere testing instruments for enclosed spaces to be carried on board. The instrument shall as a minimum be capable of measuring concentrations of oxygen, flammable gases or vapours, hydrogen sulphide and carbon monoxide.	MSC.380(94)
SOLAS	Appendix	2016-07-01	All cargo vessels.	In the Record of Equipment (Form E and Form C respectively) in section 2, item 2.7 with sub-items are replaced with item 3 and sub-items. Sub-item 3.1 stating the number of persons accommodated by free-fall lifeboats is new. Previous item 3 and higher are renumbered accordingly.	MSC.380(94)

CONVENTION / CODE	REGULATION	DATE OF ENTRY INTO FORCE	APPLICABLE TO	SUBJECT	IMO RES.
2011 ESP Code		2016-07-01	All bulk carriers and oil tank- ers, GT >= 500. ESP Bulk Carrier and ESP Oil Tanker.	The parts are replaced and paragraphs added introducing hydraulic arm vehicles. Rescue and response equipment should be suitable for the space being surveyed.	MSC.381(94)
SOLAS	V/19.1.2.4 (new sub-para)	2017-01-01 (expected) First Safety Equipment survey after.	Cargo vessels, keel-laid <= 2002-06-30, GT >= 500, GT <= 2999.	Amended to clarify that BNWAS is applicable to all ships, also existing ships built before 1 July 2002.	MSC.350(92)
Polar Code		2017-01-01 (expected)	All cargo vessels, HSC/ DSC and passenger vessels. Ships operating in polar waters.	The Code for ships operating in polar waters (Polar code) has been made mandatory. See SOLAS XIV for application details.	MSC.385(94)/ MEPC.264(68)
SOLAS	XIV (new chapter)	2017-01-01 (expected)	Cargo vessels, HSC/ DSC and passenger vessels, keel-laid >= 2017-01-01. Ships operating in polar waters.	New chapter added to SOLAS making the Polar Code, as adopted by MSC.385(94), mandatory for vessels operating in Polar waters. The Polar Code contains safety and environmental requirements, and for new-buildings additional design requirements.	MSC.386(94)
MARPOL	Annex I, II, IV and V	2017-01-01 (expected)	All cargo vessels, HSC/ DSC and passenger vessels.	The Annexes are amended as a consequence of the implementation of the Polar Code by MEPC.264(68). New chapters referring to the Polar Code are added in the Annexes. IOPP Supplement, P & A Manual and Garbage Record Book are updated accordingly.	MEPC.265(68)
MARPOL	Annex I, Reg.12.4	2017-01-01 (expected) First IOPP renewal survey on or after	Cargo vessels, HSC/ DSC and passenger vessels, keel-laid <= 2017-01-01, GT >= 400.	Ships shall be arranged to comply with para. 3.3 in this regulation (oil residue (sludge) tank(s) and discharge connections)	MEPC.266(68)

CONVENTION / CODE	REGULATION	DATE OF ENTRY INTO FORCE	APPLICABLE TO	SUBJECT	IMO RES.
IGF Code		2017-01-01 (expected)	All cargo vessels and passenger vessels. Ships using low-flashpoint fuels.	The International Code of safety for ships using gases or other low-flashpoint fuels (IGF Code) has been made mandatory. At entry into force of this code, the Interim Guidelines as per MSC.285(86) becomes obsolete.	MSC.391(95)
SOLAS	II-1/2.29 & .30 (new para.s)	2017-01-01 (expected)	All cargo vessels and passenger vessels.	Definitions of IGF Code, as adopted by MSC.391(95,) and Low-flashpoint fuel added.	MSC.392(95)
SOLAS	II-1/55.1, .2 & .3	2017-01-01 (expected)	All cargo vessels and passenger vessels.	The possibility to use low-flashpoint fuels other than those specifically addressed in the IGF Code through alternative design is added.	MSC.392(95)
SOLAS	II-1/56.2 (new para)	2017-01-01 (expected)	All cargo vessels and passenger vessels.	Ships which convert to using low-flash- point fuels shall be treated as a ship using low-flashpoint fuels on the date on which such conversion commenced.	MSC.392(95)
SOLAS	II-1/56 & 57 (new Part G)	2017-01-01 (expected)	Cargo vessels and passenger vessels, contract date >= 2017-01-01. This regulation applies if building contract >= 2017-01-01, or in the absence of building contract, if keel-laid >= 2017-07-01 or if delivered >= 2021-01-01.	New part G added which applies to ships using low-flashpoint fuels. Gas carriers that comply with the IGC Code are ex- empted. Ships using low-flashpoint fuels shall comply with the requirements of the IGF Code.	
SOLAS	II-1/56 & 57 (new Part G)	2017-01-01 (expected)	Cargo vessels and passenger vessels, keel-laid >= 2017-07-01. This regulation applies if building contract >= 2017-01-01, or in the absence of building contract, if keel-laid >= 2017-07-01 or if delivered >= 2021-01-01.	New part G added which applies to ships using low-flashpoint fuels. Gas carriers that comply with the IGC Code are exempted. Ships using low-flashpoint fuels shall comply with the requirements of the IGF Code.	MSC.392(95)

CONVENTION / CODE	REGULATION	DATE OF ENTRY INTO FORCE	APPLICABLE TO	SUBJECT	IMO RES.
SOLAS	II-1/56 & 57 (new Part G)	2017-01-01 (expected)	Cargo vessels and passenger vessels, delivery date >= 2021-01-01. This regulation applies if building contract >= 2017-01-01, or in the absence of building contract, if keel-laid >= 2017-07-01 or if delivered >= 2021-01-01.	New part G added which applies to ships using low-flashpoint fuels. Gas carriers that comply with the IGC Code are exempted. Ships using low-flashpoint fuels shall comply with the requirements of the IGF Code.	MSC.392(95)
SOLAS	II-2/4.2.1.4 and .5 (new para.)	2017-01-01 (expected)	All cargo vessels, HSC/ DSC and passenger ves- sels. Ships using low-flashpoint fuels.	Clarifying that the use of oil fuel having a lower flashpoint than 60 °C, as specified in 2.1.1 is permitted for ships to which part G of Chapter II-1, as adopted by MSC.392(95) is applicable.	MSC.392(95)
SOLAS	II-2/4.5.3.2.2, 11.6.2 and 11.6.3.2	2017-01-01 (expected)	Chemical tankers, gas carriers and oil tankers, keel-laid >= 2017-01-01.	The added sentence to regulation 4.5.3.2.2 implies that pressure vacuum valves fitted to each cargo tank must have full capacity to permit the passage of large volumes of vapour, air or inert gas mixtures during cargo tank loading and ballasting, or dur- ing discharging. Reg 11.6.2 and 11.6.3.2 are updated accordingly.	MSC.392(95)
SOLAS	II-2/20.3.1.2 (replaced)	2017-01-01 (expected)	All cargo vessels and passenger vessels.	Para 20.3.1.2.4 is added introducing that where an air quality control system is pro- vided based on the guidelines developed by the Organization (MSC.1/ Circ.1515) the ventilation system may be operated at a decreased number of air changes and/or a decreased amount of ventilation. Reg 20.3.1.2.1 and 20.3.1.2.2 are updated accordingly.	MSC.392(95)
SOLAS	Appendix	2017-01-01 (expected)	All cargo vessels and passenger vessels. Cargo Ship Safety Construction Certificate and Passenger Ship Safety Certificate	The certificate forms are updated to give option for showing compliance with part G of Chapter II-1 of the convention for using gases or other low-flashpoint fuels. Other para's renumbered accordingly.	MSC.392(95)

CONVEN-TION / CODE	REGULATION	DATE OF ENTRY INTO FORCE	APPLICABLE TO	SUBJECT	IMO RES.
IMSBC Code		2017-01-01 (expected)	All cargo vessels, GT >= 500.	Text and paragraphs in the sections of the code have been improved and amended.	MSC.393(95)
SOLAS	Appendix	2017-01-01 (expected)	All cargo vessels. Cargo Ship Safety Construction Certificate	The certificate forms are updated to give option for showing compliance with part G of Chapter II-1 of the convention for using gases or other low-flashpoint fuels. Other para's renumbered accordingly.	MSC.394(95)
SOLAS	Appendix	2017-01-01 (expected)	All cargo vessels and passenger vessels. Cargo Ship Safety Construction Certificate, Cargo Ship Safety Certificate and Passenger Ship Safety Certificate.	The certificate forms are updated to give option for showing compliance with part G of Chapter II-1 of the convention for using gases or other low-flashpoint fuels. Other para's renumbered accordingly.	MSC.395(95)
STCW	V/3 (new reg.)	2017-01-01 (expected)	All cargo vessels, HSC/ DSC and passenger vessels.	New competence requirements for all seafarers on board ships to which the IGF Code (Code of Safety for Ships using Gases or other low-flashpoint Fuels) applies. Certificate of Proficiency required for Masters, Officers, Engineers and those with immediate responsibility for the care and use of fuels before 2017-01-01.	MSC.396(95)/ MSC.397(95)
SOLAS	V/19.2.10.8 (new sub-para.10.8)	2017-07-01 First safety equip- ment survey after.	Bulk carriers and non-tanker/ -bulk cargo vessels, keel-laid <= 2013-06-30, GT >= 20000, GT <= 49999. (Non-tankers).	Electronic Chart Display and Information System (ECDIS) required, i.e. no longer only an option.	MSC.282(86)
SOLAS	V/19.1.2.4 (new sub-para)	2018-01-01 (expected) First Safety Equipment survey after.	Cargo vessels, keel-laid <= 2002-06-30, GT >= 150, GT <= 499.	Amended to clarify that BNWAS is applicable to all ships, also existing ships built before 1 July 2002.	MSC.350(92)

CONVEN-TION / CODE	REGULATION	DATE OF ENTRY INTO FORCE	APPLICABLE TO	SUBJECT	IMO RES.
SOLAS	XIV (new chapter)	2018-01-01 (expected) First intermediate or renewal survey after.	Cargo vessels, HSC/ DSC and passenger vessels, keel-laid <= 2016-12-31. Ships operating in polar waters.	New chapter added to SOLAS making the Polar Code, as adopted by MSC.385(94), mandatory for vessels operating in Polar waters. The Polar Code contains safety and environmental requirements. Existing vessels which are to operate in Polar waters, shall comply with the Polar Code requirements applicable to existing vessels.	MSC.386(94)
SOLAS	V/19.2.10.9 (new sub-para.10.9)	2018-07-01 First safety equipment survey after.	Bulk carriers and non-tanker/ -bulk cargo vessels, keel-laid <= 2013-06- 30, GT >= 10000, GT <= 19999. (Non-tankers).	Electronic Chart Display and Information System (ECDIS) required, i.e. no longer only an option.	MSC.282(86)
SOLAS	II-2/10.10.4 (new para.)	2018-07-01 First safety equip- ment survey after.	Cargo vessels and passenger vessels, keel-laid <= 2014-06-30.	New requirement for carriage of two-way portable radiotelephone apparatus of explosion proof or intrinsically safe type for fire-fighter's communication.	MSC.338(91)

Indian Ship repair Sector - Challenges and Solutions from a Mariner's perspective

Dr. C. Janakiram

Ship repair, both locally and globally, is an evergreen industry. It provides an ideal environment for the growth of a vibrant and self-dependent ancillary industry, labour pool and acts as a nursery for the shipping industry in general. This valuable contribution of ship repairs as an engine of growth is not being given the due importance it deserves in India.

Historically India was the largest ship repairer in Asia. Over the years, the country lost this business to neighboring countries like Singapore, Sri Lanka, China, UAE, Bahrain and Turkey more due to the lethargy of the government.The global ship repair market is $ 12 Billion. If Singapore can have 20 % of the total market share, and if Middle East account for 15%, can't a country with 7500 Km coast line, comfortably positioned in the trade route and with talented work force, target at least 1% of the total projected Global Market share? Sadly, the country cannot even target the locally available business volume of $ 450 Million.

All the resources required for the ship repair units to function efficiently are available and there is a huge untapped potential. A long coast line with number of all weather ports which are not subjected to severe weather conditions and naturally protected is the primary advantage. With strategic location in the trade route of tanker/bulk carrier traffic on East & West and ready availability of trained workforce, there are tremendous opportunities for huge revenue generation.

The ship repair industry promises relatively continuous flow of revenue and significant growth in GDP. Industry will employ at least 55000 workmen directly and over 1,25,000 indirectly through support industries. Unlike shipbuilding where almost 70% of the equipment including steel in terms of value are imported, in repairs almost 100% work is done locally within the country. This means improvement in production of quality steel, aluminium electrical, electronic and other equipment, chemicals, paint etc.

I. The Challenges:

There are over 35 ship repair units (SRU's) registered with Director General of Shipping. Out of these, six are under Central Government, two are under State Government, nineteen are private shipyards and the rest are small repair units. Cochin Shipyard & Hooghly Dry Docks come under Ministry of Shipping and Mazagon Docks Ltd, Garden Reach Shipbuilders & Engineers, Goa Shipyard and Hindustan Shipyard Ltd, Visakhapatnam are Defence shipyards. Two yards- Alcock Ashdown & Shalimar Docks come under State Government.

All Indian shipyards are focussing on new construction (Except Naval Dockyards) encouraging ship owners to go oversees for repairs. The Indian ship owners particularly government owned Shipping Corporation of India sends vessels to China, Colombo, Oman, Bahrain, Dubai, Gibraltar and Turkey.

Those shipyards willing to take up repairs do not have the capacity for catering to special types of vessels. Also, no dry docks are available for dedicated ship repair activities. Though repair skills of Indian yards are compatible to foreign yards, Indian yards default on timely delivery. Tendering process of government owned yards for ship repair activity is too long and it is not commercially viable for the ship owners to keep their vessels waiting for that long. It takes more than double the time at times to complete repairs and union activities also add to the delay. There are also some exogenous factors like regulatory and severe competition from foreign counterparts acting against the overall growth of the industry.

Through a published document during the Maritime Summit 2016 held in Mumbai in April this year, the Government of India announced financial assistance of $ 600 Million for 10 years to local ship builders. Government also has given exemptions' from customs and central excise duties on inputs used in ship building. Also, institutional mechanism on infrastructure has recommended grant of infrastructure status to the shipbuilding industry which will help Indian shipyards avail flexible structuring of long term project loans, long term funding from infrastructure funds at lower rates of interest and for a longer tenure equivalent to the economic life of their assets.

Further these shipyards will have access to relaxed External Commercial Borrowing(ECB) norms, issuance of infrastructure bonds for meeting working capital requirements as well as benefits under the Income Tax Act, 1961.The government is also permitting 100% Foreign Direct Investment in shipbuilding.

However, Government is silent on extending similar benefits to ship

Dr. C.Janakiram is BE, PhD, MIMarE and has been serving the Marine, Oil and Gas sectors. He is now an independent Consultant.

repair companies except offering service tax exemption for repairs of foreign going vessels and reduction of central excise duty on capital goods, raw materials and spares for repair of ocean going vessels. Government should also consider giving easy loans, tax benefits, steel and bulk supply items like paint at subsidized rates etc. In China, ship repair is a government supported industry and they enjoy 40% of the total global business.

II. Solutions:

Government has to give equal importance to ship repair industry until such time it has a firm base and systems are well oiled.Ship repair industry can become a target oriented industry with assured returns and absolute clarity of the challenges involved.

As the first step, Government should make all existing shipyards accountable and ensure that the yards target a set business volume from ship repair as well and make provisions in their resources/ facilities to take up repair activities. There are not many dry docks in India for dedicated bottom cleaning and underwater repairs. Government should allot Port Trust dry docks and build more dry-docks and lease them to smaller ship repair companies.

Indian ship repair yards should gear themselves to become globally competitive. Instead of targeting only Indian ships, they should focus on international fleet. This would help them to improve their capabilities to international benchmarks. Indian shipyards also need to develop a holistic perspective towards their operations to become globally competitive.

Turnaround time of Indian ship yards should be improved as they take longer time to complete repair. This could to a large extent be met by improving logistics problems and procedural delays.

As the first and immediate action, government should separate ship repair from shipbuilding and give it industry status. This will encourage private companies to set up dedicated ship repair yards and ancillary units on their own or under joint venture.

For better control for ship repair industry and ensure target oriented progress, there are three areas where the government should immediately focus on.

1. Form a National Ship Repair Authority.
2. Establish uniform standards and "Code of Conduct" for Ship repair companies.
3. Establish a centralized training and skill development centre for all ship repair professionals and workmen.

1. National Ship repair Authority.

Ship repair companies in the past had to register with Director General of Shipping as they were the sanctioning authority. This has been done away with. However, there has to be a governing body under the government to approve, sanction, follow up, monitor and set targets/ standards. Let us call it Ship repair Authority of India (SRAI).

SRAI will consist of members from the government and also industry experts with the responsibility, authority and absolute clarity to focus on the following areas:

- Formulate rules, regulations and procedures for approval for ship repair companies.
- Grand permission within designated time frame through a single window clearance.
- Set targets to meet National goals.
- Formulate Health, Safety and Environmental requirements.
- Define a common Code of Conduct for all repair units.
- Formulate Shipyard workers training policy.
- Arrange institutional funds for Bill discounting for pending bills of shipping companies.
- Identify water front areas for development through State Maritime Boards.
- Invite foreign companies to set up SEZ or ship repair parks.
- Constantly monitor the progress, standards and short comings of repair units.
- Establish a Central Ship repair Training Institute with units in different states.

2. Uniform standards and "Code of Conduct" for Ship repair companies.

Setting uniform standards for ship repair yards is in the National interest. Without centralized control, disciplined and organized repair companies and well trained workforce, there can be no ship repair business in India. This will be the first thrust area of SRAI.

The aim should be to make the industry grow through a holistic approach and not to encourage players with shorter vision. When the government clearly indicates how it expects the industry to perform, gives directions, helps them set their own goals, makes them aware of the benefits, the seriousness will automatically set in. The path to follow:

- Take stock of all the companies registered as ship repairers.
- Get details of their performance since registration including investment made, turnover achieved and manpower employed.
- Meet all ship repair company heads thereafter and share the National Vision. Let them also experience Government's enthusiasm.
- Apprise the companies of the opportunities available and the benefits offered.

- Ship repair units must be ISO certified and also to be certified by the Bureau of Energy Efficiency Authority. Arrangements have to be in place for proper credits or otherwise for carbon foot print.
- Ensure all ship repair units are ISPS compliant so that ships with multinational colors' could call on them.
- Ensure all ship repair units are registered under IMO's company registration scheme (Lloyds Fair Play Group).
- Implement "O" tolerance safety violations for all categories of ship repair professional.
- Help those interested to expand facilities to acquire water front land for establishing repair yards with jetty, slipways, dry dock etc.
- Consider providing financial support, soft loans etc through government supported schemes.
- All dormant repair companies may either be asked to surrender their registration or help them stand up and perform within a defined timeframe.
- Those companies which acquired land for establishing ship building or repair yards but work not yet commenced be given ultimatum or ask them to surrender the land to the state governments or relevant authorities. Many reputed organizations have taken land in Gujarat, Maharashtra, West Bengal, Andhra, Tamilnadu etc and no activities commenced even after 10 years.
- Help companies to improve their global reach and marketing efforts.
- Look for foreign investors as joint venture or management/ technology partner.
- Explain the National Code of Conduct for ship repair companies and get the "Code of Conduct for Ship repair Units" signed as the first step of commitment. Strict adherence to ethical business practices should be made mandatory.

3. Centralized training and skill development centre.

Let us call it as National Centre for Ship repair Training (NCSRT). NCSRT will be under the direct control of SRAI. Financial assistance for establishment expenses etc can come from the Ministry of Skill development and Entrepreneurship through various skill development initiatives announced by the Government.

NCSRT will train all existing and new ship repair professionals and workmen. It will be mandatory to be certified by NCSRT for employment in ship repair yards.

Such training through a centralized training establishment will ensure better understanding of the repair activities involved and the roles/ responsibilities of each category of Managers, Engineers and Workmen. Periodic refresher courses will help them hone their skill and also re-validate their certificates.

The focus of NCSRT will be to train workmen from the interior parts of the country as the expertise should not be limited to people from the coastal areas. Even if the workmen are not working in India, the trained workmen can become the bread winners of their families as they are equipped with adequate skill.

The responsibility of NCSRT will be to:

- Prepare curriculum, syllabus, and training modules.
- Identify and employ trained instructors with Defence/Marine/ Heavy Industry experience.
- Schedule and conduct courses.
- Provide opportunities for the less privileged youth from interior parts of the country to learn a trade acceptable in all shipyards and issue certificates.
- Help placement of all trained personnel.
- Conduct refresher courses.
- Monitor performance of trained workforce.

A. Curriculum:

a. General:

- Ship building and Naval Architecture, stability, ship layout, hull survey, estimation, planning, documentation, billing, shipyard practice, dry docking, steel renewal, various fuels, tank cleaning, gas free certification, hot work permits, safety, safety meetings, HSE Implementation, erection of scaffolding, lifting operations, slings & shackles, transfer of ballast, oil/lubricating oils, handling of hazardous material, inerting of tanks, fire fighting systems, fire fighting, safety systems, Non Destructive Testing, testing of equipment, paint schemes etc.

b. Marine Machineries.

- Marine diesel engines, boilers, turbines, air conditioning system, compressors and compressed air systems, Marine batteries, cargo refrigeration, pumps, refrigerants, various coolers, emergency power supply, exhaust gas heat exchangers, feed system, fuel oil system, fuel oil treatment, gear boxes, governors, incinerators, condensers, separators, sewage treatment plant, steering gear, motors, cranes, etc.

B. Training pattern:

- Ship Managers, Project Superintendents & Engineers - Rigorous course on Repair yard Safety and Work Planning.
- The Proprietor or Director of the subcontracting company- Bizsafe certification and certificate course for supervisors.

- Supervisors - Course for working in ship repair yards.
- Safety inspectors - Rigorous course on yard Safety.
- Steel workers doing hot work- Course for hot work.
- Electricians - Course for electrical work on board ships.
- Riggers and Crane operators - Safe Lifting and Shifting.
- Scaffolders - Erecting and dismantling staging inside the ship and dry docks.
- General workers - Training for working in Ship repair yards as per their trade.
- Engineers, supervisors, inspectors and workmen shall undergo periodic refresher courses.

III. Conclusion:

Ship building and ship repair are very different in nature from each other in the type of work, although the basic infrastructure required may be almost identical. Indian shipbuilding industry can never come of age unless it has a robust ship repair industry. Where China has 176 dedicated repair yards there is only one dedicated yard in India and that too is not doing well.

Ship repair primarily depends upon the overall cost of repairs that ship-owner is likely to incur. The factors are, revenue loss, operational expenses, docking expenses, mobilisation and de-mobilisation. The ship repair industry is highly competitive and in the prevailing market scenario the level at which the time charter and freight earnings are set, the lay-up time for repairs are critical and completion of repairs on time is of paramount importance.

Indian Ship repair yards need to work on - Benchmarking, setting up expectations, improving logistics base, supply chains, resolving procedural issues, ensuring simultaneous availability of all factors of production involved like spares and engineers, providing training to the semiskilled workers and developing confidence in ship owners.

There is also need for developing strong supporting facilities and ancillary industries. India has a vibrant industrial base and can make anything that is required by the marine industry. The reason for lack of development in this front is primarily due to the existing limited market size.

The country has abundant supply of skilled and low cost labour. Large numbers of Indian labours are in Colombo, Dubai, China etc and domestic yards can bring them back. Ship repair industry provides an ideal environment for the growth of a vibrant economy and also creates a large pool of skilled manpower that can be asset to any heavy engineering industry as well. Wake up India! ■

Contact Details Of Branches & Chapters

CHENNAI
- Tel.: 044-28512733
- E-mail: imeichennai@gmail.com

DELHI
- Tel.: +91-11-40545397 / 41009760
- Fax: +91-11-26162857 E-mail: imeidelhi@gmail.com

GOA
- Tel.: 0832-2538500
- E-mail: imaregoa@gmail.com

GUJARAT
- Tel: 02836-232123 • Fax: 02836-231812
- E-mail: gujaratchapter@imare.in

HYDERABAD
- Tel.: 040-2307717, 2337 2118
- E-mail : hyderabadchapter@imare.in

KOCHI
- Tel: 0484 2302491 / 2306626 (1300 to 1830 hrs, weekdays)
- Email: imeikochi@gmail.com
- Email FC: fcimeikochi@gmail.com

KARNATAKA
- Cell: 9845081822 • E-mail: vivaeng@hotmail.com

KOLKATA
- Tel.: 91-33-24987805
- E-mail:imeikol@yahoo.co.in

MUMBAI
- Tel.: 022 - 2285 1195 • Fax : 2285 1195
- E-mail : mumbai@imare.in

NAVI MUMBAI
- Tel.: 022 - 022-27701664/022-27706749
- E-mail : navimumbaichapter@imare.in

NERUL TRAINING CENTRE
- Tel. 022-27711663 / 27701664 / 27706749
- E-mail : training@imare.in

PATNA
- Tel : 0612-2683186
- E-mail : imeipatna@gmail.com

PUNE
- Tel. : 020 3290 3233, 2426 1679, 2426 9783
- Fax : 020-56016304 • E-mail : pune@imare.in

VISAKHAPATNAM
- E-mail : visakhapatnam@imare.in
- Website. : https://sites.google.com/site/imevizag

Aji Vasudevan with Mr.Ki Tack Lim, Secretary General of IMO.

India elected as the Chairman of the IMO's III sub-committee for the year 2017

It is a matter of great pride and honour for India that Mr Aji Vasudevan, Dy. Chief Ship Surveyor-cum Senior Dy. Director General with the Directorate General of Shipping at Mumbai has been unanimously elected by the plenary session of IMO on 22 July 2016, as the Chairman of IMOs subcommittee on "Implementation of IMO Instrument" for the year 2017.

His election was based on nomination from Bahamas and seconded by the UK. His candidature was supported by Panama, Republic of Korea, Russia, Indonesia, Singapore, and Jamaica. A host of other countries too supported India's candidature. This election while acknowledging the contribution made by India at IMO, is expected to give a big boost to India's profile at international maritime scene.

Mr Vasudevan is a naval architect graduated from the Department of Ship Technology from Cochin University of Science & Technology and holds a Master of Science degree in Maritime Administration from the World Maritime University, Malmo, Sweden. He has been representing India at various meetings at IMO, London and is an audit Team Leader for IMO's audit of member States. He successfully & very effectively led one of the five teams constituted by IMO in 2014 for verification of IMO's Goal-Based standards (GBS).

Source: IMO ■

Free IMarEST Student Membership

The Institute of Marine Engineering, Science & Technology offers free Student Membership to all full time students (undergraduate and post graduate), full time cadets and apprentices.

Details and sign up form can be found here www.imarest.org/students

For all enquiries relating to IMarEST Student Membership please contactAggie.Hedley@imarest.org

The benefits of student membership include free access to:

- Marine Technical Notes
- The Marine Professional Magazine (digital monthly magazine)
- Awards, scholarships and intern programmes
- Special Interest Groups (SIGs)
- NEXUS – an online working environment for members only
- Use of post nominal 'SIMarEST'
- The Virtual Library
- e-Marine-bimonthly industry newsletter
- 25% off selected books

NOTICE

Members are hereby informed that the following persons are directly responsible for attending to any grievances from members and students:

Complaints / suggestions with respect to

Training - Mr Narendra Mathur - Director Training
Nmathur@imare.in - 9819891779

Library & IMEI Building - Mr Arunabha Kar
akar@imare.in - 9920608823

Facilitation Centre - Mr Manteshwar Kumar
fc@imare.in - 9833976633

Membership, General administration-Mr D K Shetkar
administration@imare.in - 9833250160

You should get a response within 3 working days. In case you do not get any response, please contact the Hon. General Secretary, Mr Uday Purohit. Contact details: hgs@imare.in

In case your complaint is not resolved please further escalate and contact President Dilip Mehrotra. Contact details: d.mehrotra@yahoo.com

Finally you may escalate the matter to the Chairman of the Grievance Committee, Mr CV Subba Rao, immediate past President. His contact details: cvsr1@sanmargroup.com

New UN rule on oil cargo transfer at sea come into force on Oct 1

The latest requirements of the MARPOL Annex I for the prevention of oil pollution come into effect October 1. According to the amendment regulation, oil residue tank for machinery space shall be provided with a designated pump for disposal of the sludge and the tank shall have no discharge connections to the bilge system, oily bilge water holding tank, tank top or oily water separators.

Under the amendment regulation, oil tankers of 150 gross tonnage and above engaged in the transfer of oil cargo at sea must have an approved ship to ship (STS) operation plan.

Annex 1 of the notice provides guidance to local oil tanker owners and operators for the preparation of an STS operation plan. All oil tankers are required to be fitted with a stability instrument comprising hardware and software capable of verifying compliance with the intact and damage stability requirements in any operational condition.

Annex 3 of the notice provides the details of the requirement and the waiving conditions for the installation of a stability instrument.

Shipowners who would like to apply for waiving of the stability instrument for their ships may submit an application (application form at Annex 4 of this Notice) to the Local Vessels Safety Section.

Shipowners, operators and coxswains of local oil tankers are required to observe and comply with the amendment regulation.

Source: Shipping Tribune ■

IMO Launches Energy Efficiency Technology Website

The International Maritime Organization (IMO) has launched an online portal that portal builds on the work undertaken by IMO's Marine Environment Protection Committee to promote technical cooperation and technology transfer relating to improving the energy efficiency of ships. A key feature of the glomeep.imo.org site is an information portal on energy efficiency technologies – covering areas such as machinery, propulsion and hull improvements, and energy recovery.

The website also provides important information and updates on the Global Maritime Energy Efficiency Partnerships (GloMEEP) project – a GEF-UNDP-IMO initiative that supports the uptake and implementation of energy efficiency measures for shipping, thereby reducing the industry's greenhouse gas emissions.

Source: IMO ■

Brief on the Meeting of Implementation of IMO Instruments (III-3)

The 3rd session of the IMO Sub-Committee on Implementation of IMO Instruments (III 3) was held from 18 to 22 July 2016, at the IMO headquarters in London. Major issues discussed were as under:

Decisions of other IMO Bodies (Agenda item 2):

III-3 was informed of relevant decisions made and action taken by MSCs 95 & 96, MEPC 69, Council, FAL 40 and other Sub-Committees (SDC 3, HTW 3, NCSR 3, SSE 3) as appropriate. These were discussed further under the relevant agenda items and included in this report under the same. In particular III 3 considered: – Lessons learned from Marine Casualties (Agenda item 4) – Guidance for port State control officers (Agenda item 5) – Acceptance of electronic certificates (Agenda item 5) – Guidelines for port State control officers on certification of seafarers, hours of rest and manning (Agenda item 5) – Exemption of UNSP barges from MARPOL survey and certification requirements (Agenda item 8).

Consideration and analysis of reports on alleged inadequacy of port reception facilities (Agenda item 3):

Compliance with the discharge requirements of MARPOL by ships depends largely on the availability of adequate port reception facilities, especially within Special Areas and the Government of each Party shall notify the Organization, for transmission to the Parties concerned, of all cases where the facilities are alleged to be inadequate.

The revisions to MARPOL Annex V that came into force 1 January 2013 decreased the types of garbage which could be discharged into the sea. This revision also made more explicit the Solid Cargo residues and/or wash water that is hazardous to the marine environment. The annual enforcement reports on port reception facilities for 2015 (III 3/3 Secretariat) show that for the reports received of facilities being inadequate for 2015, 73% of them were for MARPOL Annex V.

III 3 considered reports related to the availability of port reception facilities for Solid Cargo residues and/or wash water that is HME and proposals that the category for MARPOL Annex V is broken into two, one being for that relating to Solid Cargo residues and/or wash water that is HME.

After some discussion, III-3 acknowledged the issues and that Member States should be reminded of their obligations under MARPOL to respond to reports of inadequate facilities.

Draft amendments to MEPC.1/Circ.834 Consolidated guidance for port reception facility providers and users

To facilitate better reporting III 3 agreed to draft amendments to MEPC.1/Circ.834 so that item G in the table of Appendix 1 will be specifically for HME cargo residues and hold washings and consequently, the remaining three waste types that include cargo residues that are not HME are included as a separate category. The relevant module of GISIS will be likewise amended. The draft amendments will go to MEPC for approval.

Lessons learned and safety issues identified from the analysis of marine safety investigation reports (Agenda item 4):

III-3 noted the report of the Correspondence Group on Casualty Analysis and in addition considered: – Optimum use of casualty data.

III-3 discussed the use of accident data in IMO instruments and while they agreed with the merits of the proposed harmonisation of data entries the sub-committee did not agree to the proposal of adding a new summary outlining the main cause of the casualty without a clearer definition in the Casualty Investigation Code. However, they did agree that there could be some benefit in the reporting of less serious casualties and near misses.

III-3 also discussed the issue of enhancing watch keeping and lookout on bridges of ships transiting areas of high density traffic and acknowledged the complexity of the issue.

Measures to harmonize port State control (PSC) activities and procedures worldwide (Agenda Item 5):

III-3 reviewed the report of the Correspondence Group on Measures to Harmonize Port State Control (PSC) Activities and Procedures Worldwide and in particular the proposed draft amendments to resolution A.1052 (27) on the Procedures for Port State Control 2011, however, due to time constraints they were not able to complete this work which will be continued at III 4.

III-3 also considered proposed revisions to the 2009 Guidelines for Port State Control under the revised MARPOL Annex VI to include reference to the amendments to MARPOL Annex VI regarding regulations on energy efficiency for ships which is not included in the 2009 Guidelines. It was noted that the proposed draft amendments did not cover the full revision of MARPOL Annex VI and that they exceeded the scope of control contained in the provisions of MARPOL Annex VI and it was decided that they should be referred to MEPC.

III-3 also noted that MSC 96 and MEPC 69 agreed to defer a decision

on the draft MSC-MEPC.4 circular on Guidelines for Port State Control Officers on the ISM Code previously developed by III 1 pending further information from HTW.

III-3 also considered:

- Annual reports of the PSC regimes.
- Progress reports on regional PSC agreements.
- Outcome of concentrated inspection campaigns (CICs).
- Performance of flag Administrations and Recognised Organisations (ROs). With regard to this item III 3 also considered a proposal for a harmonised approach among the PSC regimes in collating and presenting the data on RO-related deficiencies, in a format to make it easier for the flag States and other stakeholders for comparison and assessment of the performance of ROs.
- Draft amendments to the Procedures for Port State Control, 2011 (resolution A.1052 (27)), aimed at promoting wider acceptance of electronic certificates.
- Amendments to the main body of the draft Guidelines for Port State Control Officers on certification of seafarers, hours of rest and manning developed by HTW 3 and made amendments and recommendations as necessary. The draft guidelines will now go to HTW for finalisation. III 3 also recommended that once complete the guidelines should be incorporated into the Revised Guidelines for PSC as Annex 11.

Updated Survey Guidelines under the Harmonized System of Survey and Certification (Agenda item 8)

The survey guidelines under the Harmonized System of Survey and Certificate (HSSC) were originally adopted as Assembly Resolution A.746(18). Since then, the guidelines have been constantly reviewed and updated to accommodate new regulatory requirements. The current work covers new requirements entering into force up to and including 31st December 2015. While these guidelines are not mandatory under IMO, the guidelines are mandatory for all European Recognised Organisations under EU Regulation 391/2009. III 3 considered the report of the Correspondence Group on the Review of the Survey Guidelines under HSSC and the Non-exhaustive list of obligations that was established at III 2 and in particular:

- Draft amendments to the annex to FAL.2/Circ.127-MEPC.1/ Circ.817 –MSC.1/Circ./1462 List of certificates and documents required to be carried on board ships. The list of new requirements that were adopted during the intersessional period including those adopted by MEPC 68 and MSC 95.
- Survey and certification matters under the requirements of the Polar Code.
- Draft MSC-MEPC.5 circular concerning the date of expiration assigned to statutory certificates, III-3 finalised the text of this circular taking into account the definition of "anniversary dates" contained in the conventions and "valid certificates" in the PSC Procedures (resolution A.1052 (27)). This circular will go to MEPC 70 and MSC 97 for approval.
- Draft amendments to the Survey Guidelines under the HSSC (resolution A.1104 (29)). III-3 agreed that the draft amendments need to be further developed to include the requirements deriving from amendments to IMO instruments up to and including 31st Dec 2017 with a view to submission to Assembly 30 (Dec 2017). These will be referred to the correspondence group to continue the work and report to III-4.

III 3 also considered the following issues under this agenda item:

- Early Implementation of SOLAS amendments. Since the adoption of the four year cycle for the entry into force of SOLAS amendments there appears to have been an increase in the number of circulars encouraging the early implementation of new regulations or amendments to existing regulations. Early implementation of SOLAS regulations is at the discretion of flag Administrations.

Due to the diverse views no clear recommendations could be agreed and the issue will be considered at MSC 97

Draft amendments to MARPOL Annexes I, IV, and VI and related guidelines for the exemption of UNSP barges from survey and certification requirements under the MARPOL Convention.

III-3 finalised the draft amendments for the exemption of UNSP barges from the survey and certification requirements of the MARPOL Convention noting that:

1. Any exemption should be limited to no more than 5 years.
2. Exemption certificates should be provided under individual MARPOL annexes.
3. MARPOL Annex IV should be included in the exemption from survey and certification requirements.
4. The reference to regulation 17.1 of MARPOL Annex 1 regarding the OIL Record Book should be retained.
5. The draft guidelines, once approved by the Committee, should be issued as an MEPC circular. The finalised amendments will go to MEPC 70 for approval pending adoption.

(Extract taken from Lloyds Register's III 3 Summary report. Full report is available at:www.lr.org/imo) ■

Renewable Power Infrastructure Planned for Major Indian Ports

The Ministry of Shipping of the Republic of India has made plans to install solar and wind based technology systems at all of the major ports across India in an attempt to promote the use of renewable energy and its infrastructure. The wind energy projects will be set up largely in the three major ports of Kandla, V.O Chidambaranar Port and Kamarajar Port, with a capacity of 70 MW, while 90.64 MW of solar energy capacity will be enabled at twelve major ports. These projects are part of the Green Port Initiative that has been launched by the Ministry of Shipping in order to help reduce carbon emissions via the use of renewable energy. The projects also aim to help reduce the cost of power purchased by using renewable energy for power generations.

The ports have so far begun to set up the projects from their profit earnings, with a total estimated cost of 407.7 crores. To date, a total of 6.94MW of solar projects has been commissioned with Vishakhapatnam Port leading the way with 6.25 MW, the other ports in which solar projects have been commissioned are Kolkata Port, New Manglore Port, V.O. Chidambaranar Port & Mumbai Port. The renewable energy projects are expected to be completed by 2017

Source: Ship Efficiency Review ■

First Guidelines on Cyber Security in Shipping Launched

The first ever Guidelines on Cyber Security On board Ships, was launched during August 1st week. It provides clear and comprehensive information on cyber security risks to ships. The guidelines have been developed by BIMCO and colleagues from CLIA, ICS, INTERCARGO and INTERTANKO, with expert support from a wide range of stakeholders. It is expected to enable ship-owners to take the right decisions to defend their vessels and organisations against attacks which could have serious consequences.

The guidelines identify the "enemy" represented by the activists, criminals, opportunists, terrorists and various state-sponsored elements who could mount a cyber-attack on the industry, both afloat and ashore. They provide an understanding of the nature of the potential threat and offers advice on how risks and vulnerabilities can be assessed, both in terms of individual companies, ships and third parties. It demonstrates how these risks might be reduced, how practical contingency plans can be developed and a lot else besides in hardening the security of cyber systems afloat and ashore. The guidelines are available to download from the website.

Source: BIMCO ■

Foundation Stone laid for Multi Modal Terminal

As part of ambitious plan to develop waterways and make the Ganga navigable, the Union Minister laid the foundation stone of Rs 211-crore multi-modal terminal on 12th August.

The phase 1 of the multi-modal terminal would be built at a cost of Rs 211 crore and would be ready by August 2018. The terminal is part of Rs 4,200-crore Jal Marg Vikas project to enable commercial navigation of vessels with capacity of 1,500-2,000 DWT Tonnage from Varanasi to Haldia. After completion of phase 1, the terminal's cargo handling capacity is estimated to be 1.2 million tonnes per annum (MTPA). The cargo that will be handled includes stone chips, cement, food grains, fertilizers, sugar, etc. The terminal will have road and rail connectivity with proposed links on NH-7 and Jeonathpur railway station, respectively. It will have facilities such as berthing space for two vessels simultaneously, storage area, transit shed, parking areas, among others. The terminal will also have a floating jetty for passenger transportation.

The National Waterway-1 (NW-1) is being developed under the Jal Marg Vikas Project, with assistance from the World Bank at an estimated cost of Rs. 4,200 crore. Phase-1 of the project covers the Haldia-Varanasi stretch. The Shipping Minister expects the cargo on Varanasi-Haldia stretch to reach 200 lakh tonnes by 2020 from 25 lakh tonne at present.

Source: The Hindu ■

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SHIP SECURITY OFFICER COURSE (SSO)	3 DAYS
REFRESHER SSO	1 DAY
ADVANCE FIRE FIGHTING (AFF)	6 DAYS
MEDICAL FIRST AID (MFA)	4 DAYS
REFRESHER MFA	3 HRS
REFRESHER MEDICAL CARE	3 HRS
FIRE PREVENTION AND FIRE FIGHTING (FPFF) **	3 DAYS
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ELEMENTARY FIRST AID (EFA) **	2 DAYS
REFRESHER FPFF **	3 HRS
REFRESHER PST **	2 HRS
AUGMENTATION FPFF (AUG FPFF) **	1 DAY
SPECIALIZED TRAINING ON OIL TANKERS (TASCO) *	10 DAYS
SPECIALIZED TRAINING ON GAS TANKERS (GASCO) *	10 DAYS
SPECIALIZED TRAINING ON CHEMICAL TANKERS (CHEMCO) *	10 DAYS
PROFICIENCY IN SURVIVAL CRAFT & RESCUE BOATS (PSCRB) *	5 DAYS
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IRClass receives recognition from European Union

IRClass Executive Chairman Mr Arun Sharma

On 1st August, 2016, the European Commission adopted a decision granting recognition to the Indian Register of Shipping (IRS) in accordance with Regulation (EC) No. 391/2009 of the European Parliament.

The Deputy Director General MOVE, Mr. Fotis Karamitsos in a letter dated 5th August, 2016 conveyed this decision and has extended his compliments to the Indian Register of Shipping.

With this, IRClass joins the elite group of classification societies recognized by the EU.

This recognition confirms IRClass meeting the stringent EU requirements and having a "performant and well-established quality system in place, certified as compliant with relevant statutory and industry standards, currently implemented throughout the organisation." The approval paves the way for IRClass to now access the very important European market. IRClass Executive Chairman Arun Sharma said today:" This is a significant step for IRClass in its long term goal of becoming one of the world's leading global classification societies.

The Institute of Marine Engineers extends its best wishes to Indian Register of Shipping on this remarkable achievement and wishes it good luck for its future endeavours. ■

India allows foreign cruise ships to operate along the coast till 2024

India has extended by five years an earlier relaxation from a so-called cabotage law granted to foreign-registered cruise lines to operate along the country's coast.

Only ships registered in India are allowed to ply on local routes for carrying cargo and passengers according to the cabotage rule, which is a sovereign right used to protect the local shipping industry from foreign competition and for the purpose of national security.

In February 2009, to encourage global luxury liners to run cruises in India, the government eased laws that had barred foreign-registered ships from carrying passengers between Indian ports, without a license from the director general of shipping, India's maritime regulator. The relaxation is valid for 10 years till February 2019.

A task force on cruise tourism led by tourism secretary had recommended extension of cabotage relaxation beyond February 2019 "for sending a good signal to the cruise community".

The recommendation of the task force has been examined and the ministry of shipping has decided to relax cabotage restrictions for foreign flag vessels carrying passengers by five years beyond 5 February 2019, according to a statement from the shipping ministry.

The decision comes in the backdrop of an announcement by Genoa, Italy-based Costa Crociere S.p.A and a unit of Carnival Corporation & plc, the world's largest cruise ship operator, to start a cruise line service from 16 December this year using Mumbai in India's financial capital as a home port where services begin and end.

Costa Crociere, Italy's largest travel group and Europe's top cruise company, which runs cruise service under the brand name Costa Cruises, plans to run a service between Mumbai and Maldives till 18 March 2017 when the cruise season typically ends.

Source: Live Mint ■

CIDCO to set up a major logistics hub at JNPT port

The City and Industrial Development Corporation (CIDCO) is mulling setting up a logistics hub in the periphery of the port as the neighborhood has witnessed unplanned expansion in activities that would result in massive traffic congestion in Navi Mumbai. The newly planned hub would be set up on a 414 hectare area in the Jawaharlal Nehru Port Trust Influence Area (JNPTIA).

The new hub would consist of 64 container freight stations (CFS) and warehouses. At present, an economic feasibility report is being prepared by CIDCO for acquiring the land for setting up the logistics hub. The decision was taken after a study conducted by CIDCO revealed that not only Navi Mumbai, but Uran taluka and the Navi Mumbai Airport Influence Notified Area (NAINA) would also see huge snarls. 10 petrol pumps and parking yard for the containers would also be set up under the logistics hub.

At present, the capacity of three container terminals at JNPT is 4.49

million TEU (Twenty Foot Equivalent Units, a measure for the containers). It has now planned to double its capacity by bringing the fourth container terminal bearing a capacity of 4.8 million TEU.

Source: Free Press Journal ■

Concentrated Inspection Campaigns

Further to the announcement in the last issue of MER when IOMOU notified a Concentrated Inspection campaign on “Cargo Securing Arrangements" the TOKYO Memorandum of Understanding countries have also announced that they too will check “cargo-securing arrangements” in a concentrated inspection campaign that will run throughout September and November. The notification has been received from the Britain’s Maritime and Coastguard Agency. The object of the CIC will be to see how far vessels are meeting existing regulations on this issue and to ensure the overall safety of ships and seafarers engaged in cargo-securing operations. It will also seek to raise awareness of the hazards associated with cargo securing and of safe

practices for such operations. “During the period of the CIC, member authorities of the Tokyo MoU will inspect cargo-securing arrangements during the normal port state control inspections,” it warned.

The Paris MOU meanwhile has announced that during the same period i.e. from 1st September to 30th November 2016 they will undertake CIC on issues related to "MLC -2006".

The Riyadh MoU too has announced a Concentrated Inspection Campaign (CIC) from 1 September 2016 to 30 November 2016 to ensure effective procedures and measures are in place towards compliance with SOLAS and related guidelines for “Pilot transfer arrangements on board ships". The purpose of the campaign is to ensure that ships comply with the requirements for pilot transfer arrangements detailed in the Annex to IMO Resolution A.1045(27); for example, the condition of the ladder and ropes and the familiarity of the ship’s master and crew with pilot transfer arrangements.

Source: Lloyds List and various ■

Crew Kidnapping Rising in Gulf of Guinea - Dryad

There have been 34 incidents of maritime crime and piracy reported across Southeast Asia during the second quarter of 2016, taking the total for the first half of the year to 49. This is a 66% reduction for the half yearly total when compared to the first six months of 2015.

However, despite the global downturn, maritime piracy in the Gulf of Guinea and Sulu Sea continues to give cause for concern with kidnap for ransom the main threat. The Gulf of Guinea is now widely regarded as the most dangerous region in the world for seafarers. The area has seen a continuation of high levels of piracy throughout the second quarter of the year. Indeed, April 2016 was the busiest month on record with 14 attacks occurring off the Niger Delta; resulting in the kidnap of 10 crew from three vessels as far as 110 NM from shore.

Source: Marine Link ■

Some Important Questions and Answers on Engineering Knowledge (G)

Q 1. Explain the working of a Centrifugal pump. Why a centrifugal pump does not require a relief valve and why it can be started with its discharge valve shut ?

A centrifugal pump converts rotational energy, from a motor, to energy in a moving fluid. A portion of the energy goes into kinetic energy of the fluid. Fluid enters axially through eye of the casing, is caught up in the impeller blades, and is whirled tangentially and radially outward until it leaves through all circumferential parts of the impeller into the diffuser part of the casing. The fluid gains both velocity and pressure while passing through the impeller. The doughnut-shaped diffuser or scroll section of the casing decelerates the flow and further increase the pressure. Fluid under pressure now leaves the impeller producing a drop in pressure behind it at the eye of the impeller. This causes fluid from the suction pipe to flow into pump due to atmospheric pressure and subsequently that fluid also gets discharged. This way fluid in the pump acts like a piston moving outwards and causing drop in the pressure behind. **THAT IS WHY A CENTRIFUGAL PUMP CAN BE STARTED WITH DISCHARGE VALVE SHUT AND ALSO IT DOES NOT NEED A RELIEF VALVE BECAUSE IF THERE IS NO DISCHARGE FLOW OF LIQUID THE PRESSURE WILL NOT DROP BEHIND AND IT WILL NOT DRAW ANY MORE WATER. SAME WATER WILL KEEP ON CHURNING INSIDE THE PUMP**.

However, if initially there is no liquid at the eye of impeller there will be no pumping action. Centrifugal pump therefore is not a self priming pump. If the level of water is below the eye of impeller, the pump will require priming.

Q 2. With reference to piping system explain

a) Various materials used for piping and type of deterioration likely to occur.

b) How corrosion is reduced ?

c) How erosion is minimised ?

Ans. Material for piping

For sea water piping following points to be considered.

1) **Resistance to corrosion.**

2) **Resistance to galvanic corrosion** or reaction because various metals are used and galvanic reaction takes place resulting in corrosion. Therefore piping metal should be compatible with other metal used in ship construction.

3) **Resistance to Pitting.** Galvanic reaction and uneven distribution of sludge or mud on piping surface lead to formation of cathodic anodic reaction, which will lead to pitting. Pitting may also be due to air bubbles in sea water.

4) **Resistance to Erosion**. Sea water contains foreign particles such as sand which will lead to erosion. Erosion is also due to velocity of water. Hence material should be resistant to erosion.

5) **Strength**. It should have high strength so that thickness of piping can be reduced and overall weight of the ship can be reduced.

6) **Weldability**. Piping material should be easy to weld and fabricate.

7) **Cost**. It should be cheap so that cost of production and subsequent maintenance is not high.

8) **Availability**. Should be easily available so that subsequent repairs do not suffer.

9) **If ship is designed to work under sub zero temperatures, it should have resistance to brittle fracture.**

Best possible material commonly used to satisfy all the above properties is MILD STEEL.

Cast Iron is brittle and will crack and difficult to repair. Stainless steel has low resistance to crevice corrosion apart from being expensive. Brass has less strength and is costly., Plastic has low strength and difficult to fabricate i.e. weld and bend .

(b) How corrosion is reduced.

Galvanic Corrosion :- It is reduced by putting zinc sacrificial anodes in sea chest, in filters, cooler end covers. Valve is made of brass and pipe is of steel.

Pitting Corrosion :- Caused due to entrapped air. Vents in sea chest, filters and cooler end covers are provided.

On some ships end covers of the coolers are made of brass. To avoid dezincification of brass, soft iron sacrificial pipe pieces are used in piping. Soft iron continuously dissolves in water and forms layer of iron oxide which prevents dezincification.

In piping, large bends should be given to prevent stress corrosion .

(c) How Erosion is reduced.

Erosion is due to friction between water flow and hard particles present in water. It is reduced by

Selecting material having sufficient resistance to erosion.

Providing filters to prevent entry of sand in sea water line.

Erosion is accelerated due to high flow rate. So velocity of water should be restricted to reduce erosion. Pipe

should be large enough in diameter so that velocity can be reduced without reducing capacity.

Sharp bend in pipe or abrupt change in direction to be avoided.

Q 3. With reference to Corrosion in Sea water systems, briefly describe ;

a) De zincification of brass. (b) Graphitisation . (c) Stress Corrosion.

Ans.

(a) Dezincification of brass.

This is the removal of zinc from brass alloy, leaving behind a porous weak spongy copper. Certain brasses can be inhibited by this attack by the addition of small amounts of arsenic. The addition of small amounts of tin (1%) also helps to retard this corrosion.

(b) Graphitisation.

The Iron matrix of cast iron can be selectively corroded away leaving behind a fragile shell, consisting largely of graphite. The galvanic effect of graphitisation can be serious on adjacent non-ferrous components. The layer of graphite remaining is more noble than any of the copper alloy components hence their corrosion can follow the graphitisation of cast iron.

(c) Stress Corrosion.

If a brass component is cold worked by being bent and shaped, the metal is unequally stressed. This stress can be enough to set up a galvanic couple between adjacent areas. The subsequent corrosion is caused by ammonia, which sets up a concentrated attack at the grain boundaries in the areas of unequal stress.

Q 4. What is STELLITE alloy?

- Stellite is the trade name of an Alloy containing cobalt, chrome, molybdenum, tungsten & iron.
- It resists loss of strength at high temperature.
- It is extremely hard and corrosion resistant
- It is often used for metal cutting tools . In diesel engines it is used to surface the valve faces and seats of exhaust valves.

Q 5. Name various Plastics used in engine equipments.

Plastics are polymers with carbon and hydrogen compounds as constituent molecules.

Their use is limited to instruments and electrical fittings, level gauges (not for high pressure and temperature systems).

1. TEFLON (Poly tetra fluro ethylene , PTFE):- Teflon is heat resistant , has good chemical resistance ,and has low coefficient of friction. It is used for gland packing or as a coating for conventional packing. Because of its low frictional resistance, it is used as packing for high speed pump shafts. It is also sometimes used as additive in some lub. Oils to reduce friction at start up.

2. PERSPEX (Poly methyl metha acrylete) :- Clear plastic commonly used for instrument glasses, level gauges, sight glasses etc.

3. NYLON . It is tough, with low coefficient of friction, machinable from a rod or plate. Used for small bushes , gearwheels in instruments.

4. TUFLON - It is a phenolic resin normally bonded with linen or other fibrous material. It is used for water lubricated bearings, and bearings in pumps.

Q 6. Discuss the Rules for Bilge Pumping System on cargo vessels.

1. An efficient bilge pumping system shall be provided, capable of pumping from and draining any water tight compartment other than a space permanently appropriated for carriage of fresh water, water ballast, oil fuel or liquid cargo and for which efficient means of pumping are provided. Efficient means shall be provided for draining water from insulated compartments/ holds.
2. Sanitary, ballast, and general service pumps may be accepted as independent power bilge pumps if fitted with the necessary connections to the bilge system.
3. At least two power pumps connected to the main bilge system shall be provided, one of which may be driven by the propulsion machinery.
4. Each pump should have a direct suction to the space in which situated, such suction should be at least same bore as the bilge main. In the machinery space such suctions should be arranged on either side.
4. All bilge pipes used in or under fuel storage tanks or in boiler or machinery spaces shall be of steel or other suitable material.
5. Bilge Valves should be of Non Return type to prevent the possibility of water passing from sea or other ballast spaces into cargo or machinery spaces or from one compartment to another.
6. The pumping arrangements required for cargo ships shall take into account the requirements of any fixed pressure water spraying fire extinguishing system.
7. Where the enclosed cargo space is protected by a CO2 fire Extinguishing system, deck scuppers are fitted with means to prevent escape of the smothering gas.
8. Emergency bilge pumping system in engine room shall be independent of the main pumping system and shall be connected to the highest capacity sea water pump in the engine room.
9. Emergency bilge suction valve in the engine room shall have extended spindle likely to remain above flooded water level , and clearly marked.
10. On UMS ships a 'bilge high level' alarm system is to be provided to

give timely warning of flooding. Automatic starting of bilge pump is acceptable provided a 'bilge pump long run' alarm is also provided, in the event of bilge pump unable to cope with the heavy ingress of water.

Q 7. Describe the test carried out Windlass to verify its efficiency .

This test is carried out in front of the Classification Surveyor.

As per classification rules the Windlass must be able to raise the anchor from 82.5 mtr depth to 27.5 mtr depth (two cable lengths) at a mean speed of 9 mtr/minute. If the depth of water is inadequate, a simulated condition is considered.

Q 8. With respect to Boiler discuss, Pitting, Corrosion fatigue, Caustic cracking, overheating of tubes and furnace distortion.

PITTING:- Produced by corrosive action usually in way of water line, caused by low alkaline conditions (produces localised deep pits) and Oxygen presence (produces rounded isolated pits).

CORROSION FATIGUE :- Resulting from alternating stresses caused by poor circulation, or mechanical bending due to pressure effects. The fatigue cracks produced are ag gravated by corrosion which increase fatigue cracking and cause corrosion fatigue.

CAUSTIC CRACKING or EMBRITTLEMENT :- This is a form of intercrystalline cracking caused by water of high caustic alkalinity coming in contact with steel which has not been stress relieved. This defect is more common in riveted boilers.

OVERHEATING :- If a boiler tube becomes overheated (reached temperature above 730 * C), either due to flame impingement or lack of circulating water, then the high wall temperatures will lower the mechanical properties of tubes. This causes tube rupture.

FURNACE DISTORTION :- Also due to overheating of the furnace caused by the faulty combustion or furnace wall being insulated from water by either scale, mud or oil. ■

Two Real Case Histories To Learn A Lesson From

(1) System Failure (2) Fatal Accident.

System Failure Due To Negligence

Some time back on one of the container vessel the Fuel oil Transfer pump auto cut off for the settling tank filling did not work. The float valve was stuck and the pump kept on happily pumping. The settling tank overflowed to the overflow tank which gave an alarm at 10 m3. This was ignored by the third engineer who PRESUMED (a key word in this episode) that this was again a false alarm as it had sounded once few days before due to some defect.

The overflow tank filled up and overflowed out from all the funnels in the engine room, which required two days of cleaning in the ER with deck and engine crew.

Lessons to be learned from above incident.

(A) Presumption is the mother of all accidents. This should be drilled into all ship staff specially juniors.

(B) Watch keepers have to be more alert.

(C) Carry out RISK ANALYSIS and cover all scenarios as to WHAT IF situation can occur . In this case " What if the transfer pump does not cut off " should have been considered.

(D) Fit an overflow alarm in the overflow line near the sight glass and also connect the same to the F.O. Transfer pump to trip the pump when the alarm is activated. ■

Fatal Accident While Cutting A Drum

An oiler was cutting the top of an empty Chemical drum using a disc grinder. The drum had not been properly drained and contained traces of inflammable chemical residues. During this process there was an explosion, which resulted in severe injuries to the oiler's fingers and third degree burns to his face and body. The oiler succumbed to his injuries / burns about six hours after this incident.

Lessons to be learned from above incident

When cutting of lub oil or chemical drums is necessary, they should be properly rinsed out and ventilated before attempting to cut them. If not ventilated the chemical fumes inside can cause an explosion when being cut. ■

Anglo-Eastern Maritime Training Centre

www.maritimetraining.in

AEMTC MUMBAI: 50, Karmayog Bldg., Parsi Panchayat Road,
Near Sona Udyog, Andheri (E), Mumbai - 69,
Tel : 91 22 6720 5600, 2683 7007 Fax : 91 22 2683 7008
Email : aetr.bom@angloeastern.com
Capt. K. N. Deboo / Mr. Francis Akkara / Mr. Ivor Wilson

AEMTC DELHI: A - 101, Dayanand Colony
Lajpat Nagar - 4, New Delhi - 110 024
Tel : 91 11 2642 6801 / 802 / 2647 2831 / 2647 1129
Email : aemtcdelhi@angloeastern.com
Capt. Prashant Gour / Ms. Sukhjeet Kaur

D. G. Approved Courses

High Voltage Safety and Switchgear Course

For Unlimited CoC as per STCW 2010 (C/E, 2/E & ETO)

Management Level : Every Monday - Saturday
Operational Level : Every Monday

Upgradation Course for Engineer Officer (Operational & Management Level)

As per STCW 2010 (All Engineers)

06 - 17 September2016

Advanced Training for Gas Tanker Cargo Operations (GASCO)

12 - 22 September 2016

Approved Courses

High Voltage

Operational + Management Level

06-10 September 2016

*For obtaining **"Unlimited"***
CoC for 2/E & C/E as per STCW 2010

Advanced Training for Chemical Tanker Cargo Operations (CHEMCO) [DELHI]

26-30 September 2016

Advanced Training for Oil Tanker Cargo Operations (TASCO) [DELHI]

06-10 September 2016

RT-FLEX TRAINING

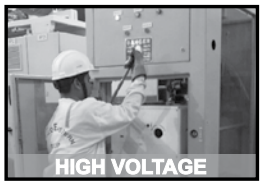
(ADVANCED)

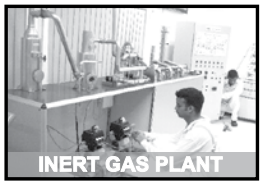
WÄRTSILÄ

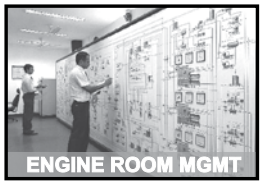
Conducted by Wartsila Land and Sea Academy, Switzerland

06 - 10 September 2016

	D. G. Approved Courses	Sept'16
1	Engine Room Simulator - Operational Level	01-03, 14-16, 19-21
2	Engine Room Simulator - Management Level	06-10







1st in India and 2nd in the world to receive distinction by DNV SeaSkill Benchmarking

Independence Day

Independence Day, 2016, was celebrated at IMEI House with the hoisting of the National Flag by Mr. Vijendra Kumar Jain, Vice President of our Institute.

The Mumbai Branch Chairman Mr Rajeev Nayyer, Mr B B Badwal, Mr Dipak Raut, CDR Gaurav Agarwal, Mr Pankaj Misra, Mr Subrat Mukherjee, the IME(I) Staff, Faculty Members, Students and many Institute Members along with their families attended the function. ■

IMEI Technical Meeting in Chennai on 26th July 2016.

The institute of Marine Engineers (India) Chennai Branch Convened a Technical Meeting at Lecture Hall in Seafarers Club, Chennai on Tuesday 26th July 2016 evening. Mr. A. Harikumar & Shri. Venkata Varaprasad – L &T Shipbuilding were the guest speakers.

Mr. A.Harikumar & Shri. Venkata Varaprasad made a presentation on "DESIGN AND INSTALLATION OF PROPELLER SHAFTING" The presentation was followed by an interactive question –answer session. Mr. V.Mohanan Chairman IMEI (I) Chennai Branch presented mementos to the speakers. ■

Annual General Meeting of Chennai Branch

The Annual General Meeting of The Institute of Marine Engineers (India) Chennai Branch for the financial year ending 31st March 2016 was Held on Saturday 09th July 2016 at TNCA Club, Triplicane, Chennai -600006.

Mr. Sanjeev Vakil (CEO, Hindustan Institute of Maritime Technology) who is the the first chief engineer member in the world to be elected as Fellow member of Nautical Institute –U.K was presented a memento by the Past president Mr. I.M. Rao. His contribution to IMEI was acknowledged. ■

IMEI Technical Meeting in Chennai on 16th August 2016

The institute of Marine Engineers (India), Chennai Branch Convened a Technical Meeting at Conference Hall in Seafarers club ,Chennai on Tuesday 16th August 2016 evening. Mr. V. Mohanan, Chairman, introduced the Guest Speaker Mr. Ryszard Chuchra, Technical Director, M/s Info Marine Company, Poland.

Mr. Ryszard Chuchra made a presentation on "Operational Diagnostics – The power of information in the modern fleet management" followed by interactive question –answer session. ■

Kolkata Branch Technical Meeting

A Lecture Meet was held on 28th July, 2016 at Kolkatta Branch premises and the lecture was delivered by Mr.Amitava Banerjee. The topic was "Travelogue of Conventions : Destination Merchant Shipping Act of India." It was attended by large number of members.

Mr.Banerjee had explained how IMO has six main bodies concerned with the adoption or implementation of conventions through the Assembly, Council, Committees, Sub-Committees etc. whereas to become an Act in India, it has to pass through both the Houses of Parliament. The process was time consuming. ■

Branch News from Kochi

Technical Paper presentation: IMEI MEO Class II preparatory course outgoing students presented a paper on 'B&W-ME series Engines' on 9th Aug 2016 at IMEI, Kochi.

Shifting of IMEI to rented location: AS per court orders and notice issued by Kochi Corporation, the Branch vacated the IMEI house and shifted to the first floor of a commercial building which was taken on rent in June.

Visit to Karnataka Chapter:- Chairman NMC Nair visited Karnataka chapter on 4th July and attended a get together with members of Karnataka branch. ■

INSTITUTE OF MARINE ENGINEERS (INDIA)

Intends to appoint

General Manager

Qualifications & Experience: The ideal candidate would be a Chief Engineer with 5-7 years work experience in a senior administrative position ashore. Candidates with proven track record in the Shipping Industry may also be considered. He/she should have headed an organisation or a business vertical with revenues of at least 7 crores, been responsible for the P&L of the division/ organization & interacted with Government agencies such as DG Shipping, MMD, Income Tax etc. Candidate should be fluent in computer skills

Preferred Age : Candidate should be in the mid to late forties and preferably be Mumbai based.

Remuneration: Negotiable for the right candidate

forward your application to :

The Hon. General Secretary,
The Institute of Marine Engineers (India)
IMEI House, Plot no. 94, Sector 19,
Nerul East, Navi Mumbai 400 706
hgs@imare.in administration@imare.in

PUNE BRANCH NOTICE

Authorization of Facilitation Centre

The Pune Branch of IMEI has now been authorized by the Directorate General of Shipping to issue Watch Keeping Certificates (WKC), CoP Able Seafarer Engine (ABE) to Engine Room Ratings and Tanker Endorsement (TE) to Engine Room Ratings, Engine Room Petty Officers, Engineer Officer Trainees, vide addendum to NT/ ENGG Circular No.12 of 2012 dated 16.4.2013 and NT/Eng Circ. 3 of 2015 dated 18th Nov. 2015.

For any further information please contact

Mrs Sucheta Pingle
The Institute of Marine Engineers (India)-Pune Branch
C/o TORINO
Plot No 34 Poona Small Scale Industrial Estates.
Gultekdi, Pune 411037
Near TMV Colony,
Opposite – Kataria High School
Contact – 91 20 24261679 / 24269783

Free Membership I Cards for ALL IMEI Members

All IMEI Members are requested to provide/ update their following data to enable us to start making Membership I cards for them:

1. **Full Name**
2. **Permanent Address with Pin Code**
3. **Landline Number (if any)**
4. **Mobile Number**
5. **Email Id**

Kindly also send a scanned copy of your recent Passport size photograph (Minimum 200dpi) to membershipdata@imare.in or write to The Membership Cell, The Institute of Marine Engineers (India), IMEI House, Plot no. 94, Sector 19, Nerul East, Navi Mumbai 400 706

Hon. General Secretary

Institute Ties and T-Shirts For Sale

Dear Member,

Newly made institute ties and tshirts are available for sale at the following attractive prices:

Ties @ Rs. 200/- Each

T-shirts @ Rs. 300/- Each

Courier charges if applicable, shall be extra on actuals.

The Institute of Marine Engineers (India)

33rd Annual General Meeting will be held on

Saturday, 17th September 2016 at 1800 hours

at Head office, IMEI House, Nerul, Navi Mumbai 400 706.

AGENDA

1. Welcome address by the Chairman.
2. To adopt the Minutes of the 32nd A.G.M. held on Saturday, 26th Sept, 2015 at IMEI House, Nerul, Navi Mumbai.
3. To adopt the audited accounts for the period 01 April 2015 to 31 March 2016.
4. To confirm appointment of Auditor with remuneration payable of Rs. 55000/- plus taxes for the financial year 2016-2017.
5. Governing Council Report for the period to 16th July, 2015 to 15th July, 2016.
6. Information regarding proposed amendments/ changes to the Operational Rules & Procedures (ORP) circulated in 32nd AGM.
7. Declaration of the "H. S. RAO MEMORIAL AWARD" for 2015-2016.
8. Address of the President IME (I).
9. Proposal of E / Paper Ballot voting along with selection/ nomination of the Electoral Officer for the forthcoming election.
10. Any other matter with the prior permission of the Chair.
11. Vote of thanks.

To facilitate arrangements, Please inform us by 10th September 2016, your intention to attend the meeting.

Our contact details are given below:-

Mr. Uday Shivram Purohit, Hon. Gen. Secretary :
E-mail : hgs@imare.in / administration@imare.in
Tel :022-2770 1664 / 2770 6749

Call for donations for IMEI Building Fund

We are pleased to announce that the Institute has received permission from the authorities to add the third floor to the existing two floors to the headquarter building in Nerul. This will give the Institute space to increase classrooms and labs for its Training and Learning activities. Construction activities will commence in October 2016 and be completed by December 2017.

It is a matter of great pride that the current building was built purely from contributions by its members. To fund the expansion we are once again reaching out to our members and Corporates. We seek your generous contributions. IT deductions can be claimed under section 80G.

Members who wish to contribute as Project Managers to oversee the construction activities may also contact the undersigned.

Any contribution in cash or kind will be gratefully acknowledged.

INSTITUTE OF MARINE ENGINEERS (I)

Seeks to appoint

1. Director Training
2. Dy: Director (Training)

The Institute of Marine Engineers (India) has vacancies for a full time Director (Training) and Dy Director (Training) for its facility in Navi Mumbai.

The ideal candidate shall be in their mid 40s holding a Class I Certificate of Competency and having a track record in training. Candidate must be fully conversant with requirements of ISM, SOLAS, MARPOL, STCW 95, and ISO 9001.

The IMEI seeks to appoint a candidate with proven leadership qualities and who can execute the Institute's vision of creating a World Class Training Facility.

The Dy Director will also be the nominated Management Representative and shall be responsible for maintaining the Quality Management Systems across all the Branches and Facilitation Centers.

Salary and benefits will be in line with Industry standards.

Forward your application to:

The Hon. General Secretary,
The Institute of Marine Engineers (India), "IMEI HOUSE"
Plot No: 94, Sector – 19, Nerul, Navi Mumbai - 400 706.
Fax: 27711663 email: hgs@imare.in / training@imare.in

Questions for MEO Class II and I students

The Institute of Marine Engineers (India) promotes the growth of Marine Engineering through various channels and avenues. It is our constant endeavor to keep pace with the latest developments in the Industry. The IMEI requests members to submit list of questions that are suitable to test the competency of candidates appearing for their Class II and Class I MEO examinations. The DG approved syllabus for these exams has been uploaded on the IMEI website (www.imare.in).

Members are requested to send their questions to Director, Training Mr. N. Mathur at: *nmathur@imare.in*

IMEI Goa House

This is to inform members that the newly constructed IMEI House, Located at D-27, Rangavi Estate, Dabolim, Goa 403 801, is open for occupation and enhance its usage, we are now throwing open the facility to all grades of IME Membership (including students members). Further, the charges for the room have been pegged at a reasonable Rs. 1,000/- per room/night. **Membership Number essential at the time of booking.**

In view of the impending holiday season, you are requested to avail of the subsidized facilities as mentioned below:

1. 6 fully furnished Air-Conditioned Bedrooms on double-occupancy basis.
2. Each Room contains a Fridge, TV, Cable connection, Tea/coffee making facilities etc.
3. Limited Common Pantry facilities available and well supported wrt home delivery from neighbouring eating joints of good / excellent quality.

Location: Approx. 3 Kms. From Goa Airport on the road to Bogmalo (Map attached)

For reservations: Kindly contact: IMEI house, Plot No. 94, Sector 19, Nerul East, Navi Mumbai 400706.

Email: administration@imare.in,
Tel: 022-27701664/27706749
PIC: Mr. D. Shetkar: 9833250160

The Institute of Marine Engineers (India)

Introduces

'SATURDAY UPDATE SESSIONS'

KNOWLEDGE SHARING SESSION ON RT FLEX ENGINE BASICS

Venue : IMEI House, Plot No. 94, Sector 19, Nerul, Navi Mumbai – 400 706.

Course is offered in 2 Modules:

MODULE 1: Basic concept of RT Flex Engines

MODULE 2: Practical Aspects of RT Flex Engines

Target Group : ***Faculty Members, Shipping Companies, Superintendents and Sailing Engineers, Surveyors, and other Members of the Marine fraternity.***

Faculty : Mr. B.N.Srivastava (Director Training - BSM) and Mr. Bhupendra Singh (Senior Technical Training Superintendent – BSM)

Date & Time : Saturday, 17th September 2016 from 1000 hrs to 1230 hrs.

Fees : Rs.1,150/- (Rs.1,000/- + Taxes) Payable to "The Institute of Marine Engineers (India)"

This knowledge sharing session will familiarize the participants with Basics and practical aspects of RT Flex engines

We request you to take advantage of this course and ensure that you and your Organisation continues to be abreast with the latest developments.

NMC Nair
Chairman, CD Sub-Committee

For Registrations: Please contact Mr. D. Shetkar : 022-27706749 / 9833250160
or drop a mail to - 'administration@imare.in'

The Institute of Marine Engineers (India), Kochi Branch

(An ISO 9001:2008 Certified Institute & Approved by DGS)

IME(I) House, No.29/427, South Janatha Road, Vyttila, Kochi-682019
Tel: 0484-2302491, 0484-2306626, e-mail:imeikochi@gmail.com, imcochin@sify.com

Registration opened for following course

MEO Class II (F.G.) - 4 months Preparatory Course commencing 15th of every month.

Engine Room Simulator - Operational / Management Level will be arranged at KM School of Marine Engineering, CUSAT, Cochin, Kerala.

Courses are conducted by highly experienced faculty.

For enquiries please contact:

Shri. Thomas Kurian, Course Co-ordinator. Tel : 0484 - 2302491, 0484 - 2306626

Fearnleys Weekly Report, August, 2016

TANKERS

Crude

A slightly more active week for the VLCC's as we are about to finish the August loading program in the Meg. Rates in the early part of the week took a serious dive both in the Meg and also in Wafr, with earnings falling to close to running cost levels. Owners started to build resistance and have managed on sheer stubbornness to turn things around , though only marginally. Rates therefore off the bottoms but further upside in rates is likely to be hard work. Simply inadequate demand and too many ships for all the major VLCC routes. Suezmaxes in West Africa did not see any change from last week with rates continuing to suffer at a year low. The list of available ships is still too big for any change to take place at time of writing, charterers have been picking ships quietly off market for the few cargoes working. If the current situation keeps up for long, it will be a question of time before we see owners start to slow steam to try change the market balance. At time of writing with both Nigeria and Libya not even close to producing at normal we don't see any rapid change to the prevailing market. In the Med / Bsea same scenario is evident, a surplus of ships in position for the few cargoes that is materializing which is keeping rates "hostage" at a suffering low. Aframax rates in the North Sea and Baltic softened even further compared to last week levels. Despite increased activity for both Nsea and Baltic rates are still at bottom levels. Until the abundance of available tonnage are mopped away, we don't expect any immediate recovery in rates, and that could take a while. Med and Bsea market keeps breaking records, not in the good way, but rather quite the opposite.

Tankers Activity Level

VLCC	Suezmax	Aframax	P.E. of Suez	P.W. of Suez
Firmer	Soft	Soft	Stable	Stable

	Last week	Prev.week
VLCCs fixed all areas last week:	42	47
VLCCs avail. in MEG next 30 days:	116	115

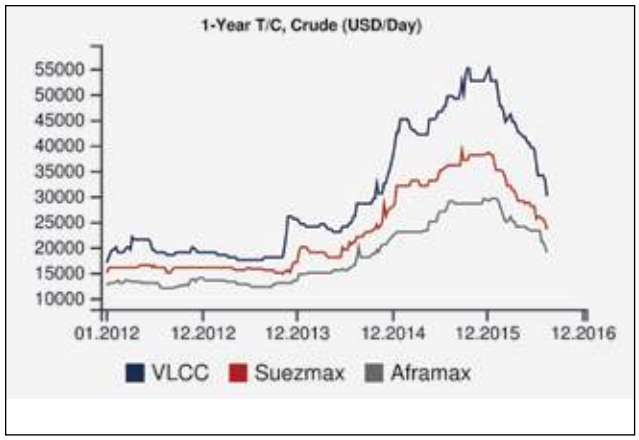
Rates

MEG / West	VLCC	24.00	21.00	21.00	63.00
MEG / Japan	VLCC	35.00	32.50	32.50	111.5
MEG / Singapore	VLCC	37.50	33.00	33.00	113.5
WAF / FEAST	260,000	42.50	41.50	41.50	113.0
WAF / USAC	130,000	35.00	40.00	35.00	115.0
Sidi Kerir / W Me	135,000	45.00	50.00	45.00	135.0
N. Afr / Euromed	80,000	65.00	70.00	65.00	122.5
UK / Cont	80,000	75.00	75.00	75.00	125.0
Caribs / USG	70,000	75.00	75.00	75.00	145.0

CLEAN (Spot WS)		This week	Last week	Low 2016	High 2016
MEG / Japan	75,000	105.0	105.0	80.00	160.0
MEG / Japan	55,000	107.5	105.0	90.00	150.0
MEG / Japan	30,000	110.0	110.0	100.0	135.0
Singapore / Japan	30,000	120.0	120.0	120.0	150.0
Baltic T/A	60,000	70.00	90.00	65.00	155.0
UKC-Med / States	37,000	95.00	82.00	82.00	152.5
USG / UKC-Med	38,000	55.00	55.00	55.00	125.0

1 YEAR T/C (usd/day)	(theoretical)	This week	Last week	Low 2016	High 2016
VLCC	(modern)	30 000	33 000	30 000	55 000
Suezmax	(modern)	23 500	24 750	23 500	38 500
Aframax	(modern)	19 000	20 000	19 000	29 500
LR2	105,000	19 000	19 000	19 000	29 500
LR1	80,000	18 000	18 000	18 000	24 750
MR	47,000	14 000	14 000	14 000	18 750

Courtesy Fearnleys



WS70 was the market number last week. This week mid WS60's has been fixed several times. For longer cross med voyages numbers go below WS60. Owners are frantically trying to hide their positions, but were brutally caught out when fifteen owners offered in on a Sidi Kerir/Portugal cargo.

Product

EAST OF SUEZ The market in the east has not changed noticeably since last week and for the LR1's and the LR2's the rate for east destinations remain the same as last week, i.e ws107,5 and ws105 respectively. For west destinations the market is also unchanged around the USD 2 mill mark for LR2's and USD 1,5 for LR1's. No big surprises in the MR segment either with the benchmark voyage from Sikka to Japan still fixing around ws105 level and Singapore to Japan at ws120. We feel a slight softening trend in the market so rates could come under pressure coming week. WEST OF SUEZ After a steady week for MR's trading trans-Atlantic with rates hoovering around the ws80 mark several charterers came into the market yesterday and suddenly the rate was up ws15 points, to ws 95 level, and the momentum is there for further improvement. Backhaul cargo ex U.S. gulf is unchanged from last week at around the ws55 mark. Contrary to MR's, owners of LR1's have had slow activity and rates for west Africa have dropped almost Ws 20 points since last week to ws70 today. LR2 fixing still slow and we still assess rate to USD 1.8 mill ex Cont for Japan, while rate is assessed at around USD 1,7 mill ex med. No big surprises in the handy market this week, cross Mediterranean still around 112,5 and cross UKC 107,5.

Dry Bulk Activity Level

Capesize	Panamax	Handysize
Increasing	Mixed	Stable

Rates	This week	Last week	Low 2016	High 2016
CAPESIZE (usd/day, usd/tonne)				
TCT Cont/Far East (180' dwt)	11 500	12 000	6 100	17 000
Tubarao / R.dam (Iron ore)	4.00	4.00	2.00	5.10
Richards Bay/R.dam	3.50	3.50	2.00	4.20
PANAMAX (usd/day, usd/tonne)				
Transatlantic RV	5 250	5 200	1 400	8 500
TCT Cont / F. East	10 500	9 100	5 000	11 500
TCT F. East / Cont	1 000	1 000	250.0	1 200
TCT F. East RV	5 250	5 000	1 925	6 900
Murmansk b.13-ARA 15/25,000 sc	4.80	4.70	3.60	6.10
SUPRAMAX (usd/day)				
Atlantic RV	6 000	8 700	2 510	10 000
Pacific RV	6 100	6 000	2 000	6 600
TCT Cont / F. East	9 750	9 500	1 100	11 000
1 YEAR T/C (usd/day)				
Capesize 180,000 dwt	7 500	7 500	5 000	8 550
Capesize 170,000 dwt	6 500	6 500	4 500	7 800
Panamax 75,000 dwt	5 800	5 800	4 250	6 200
Supramax 53,000 dwt	6 250	6 000	4 900	6 500
Baltic Dry Index (BDI):	638	641	n/a	n/a

DRY BULK

Capesize

The Pacific side is looking more positive, driven by Australian iron ore. The increased activity by the Australian miners has improved rates by 30 cents so far this week and owners are convinced the trend will continue. In the Atlantic however the situation remains as per last week with a surplus of spot ships and hardly any spot cargoes. The five tc average is presently USD 5500..

Panamax

The sluggish tendency from last week has been temporized by early week holidays in the East and muted activity. Fresh Atlantic requirements and increased USG fronthaul activity lifted the sentiment from mid week though. T/A rounds now paying above 5.000 on T/C, although voyage rates not showing same improved results yet. Fronthaul from Cont alt USG stand well above 10.000 bs Cont/Med delivery, and Owners are reluctant to move. ECSA fronthaul still alive and done above 7500 + 250 mid week. In the Eastern hemisphere rates have been more shaky, but rates seem to hold in a 5.000 market on average and moving north. Period activity a bit scarce with levels in the mid/ upper 5's for Panamax for short up to abt 1 year.

Supramax

Rates continue to be under pressure with index ending up with 639 points and average TC value at USD6,680. Supply of vessels within Continent/ Baltic has increased and although the preference is to stay in the Atlantic, there are more owners willing to rate to the Far East. Fertilizer business among 30,000dwt have seen rates around USD19 from Baltic to Brazil.. Rates out of ECSA are definitely softening while the USG is uncertain. In addition, slow start for the week in Asia with national holidays in Singapore and Japan. Rates in South East Asia are generally moving sideways, or softening. Most trades are concluded on a leg basis with owners absorbing the ballast. The period market is quiet for now.

GAS

Chartering Following up on last week's text the VLGC market freights are still under pressure although this week we have seen some more spot activity EOS but unfortunately not enough to turn the downward freight spiral. A couple of VLGC's are now confirmed around the

Gas Activity Level

COASTER	15-23,000 cbm	82,000 cbm
Soft	Moderate	Low

LPG Rates — * Excl. waiting time, if any

SPOT MARKET (usd/month)*	This week	Last week	Low 2016	High 2016
VLGC / 84,000	318 000	390 000	318 000	1 765 000
LGC / 60,000	318 000	390 000	318 000	1 500 000
MGC / 38,000	580 000	590 000	580 000	1 075 000
HDY / 22,000	580 000	590 000	580 000	920 000
ETH / 10,000	480 000	480 000	460 000	530 000
SR / 6,500	420 000	425 000	420 000	460 000
COASTER Asia	142 500	142 500	142 500	155 000
COASTER Europe	150 000	160 000	150 000	190 000

LPG/FOB prices (usd/tonne)	Propane	Butane	ISO
FOB North Sea / ANSI	247.5	243.5	
Saudi Arabia / CP	285.0	290.0	302.6
MT Belvieu (US Gulf)	227.3	274.6	
Sonatrach : Bethioua	252.0	262.0	

LNG

SPOT MARKET (usd/day)	This week	Last week	Low 2016	High 2016
East of Suez 155-165'cbm	34 000	30 000	29 000	34 000
West of Suez 155-165'cbm	41 000	37 000	29 000	41 000
1 yr TC 155-165'cbm	30 000	29 000	29 000	35 000

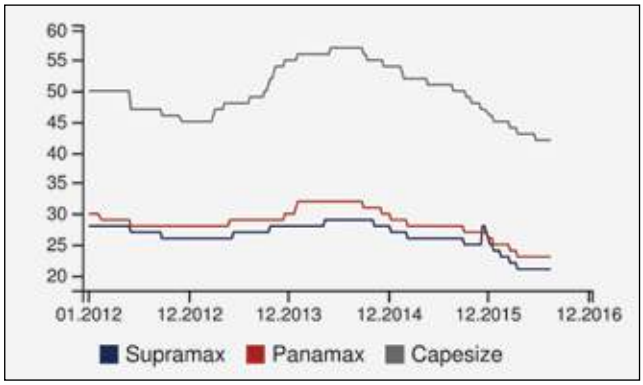
NEWBUILDING Activity Level

Tankers	Dry Bulkers	Others
Low	Low	Low

Prices

Average Far Eastern Prices

PRICES (mill usd)		This week	Last week	Low 2016	High 2016
VLCC	300'dwt	86.00	87.00	86.00	92.00
Suezmax	150'dwt	57.00	57.00	57.00	63.00
Aframax	110'dwt	47.00	47.00	47.00	51.00
Product	50'dwt	33.00	33.00	33.00	35.00
Capesize	180'dwt	42.00	42.00	42.00	46.00
Panamax	82'dwt	23.00	23.00	23.00	26.00
Supramax	64'dwt	21.00	21.00	21.00	24.50
LNGC	170'cbm - MEGI	187.0	187.0	187.0	203.0



Market brief

		This week	Last week	Low 2016	High 2016
Rate of exchange					
USD/JPY		101.1	101.3	100.7	118.6
USD/KRW		1 093	1 118	1 093	1 234
USD/NOK		8.30	8.44	8.08	8.96
EUR/USD		1.12	1.12	1.07	1.15
Interest rate					
LIBOR USD 6 mnths		1.19	1.13	0.85	1.19
NIBOR NOK 6 mnths		1.29	1.23	1.05	1.29
Commodity prices					
Brent spot (USD)		45.15	42.30	28.06	5
Bunker prices					
Singapore	380 CST	224.0	212.0	145.0	255.0
	180 CST	234.0	218.0	148.0	258.0
	Gasoil	390.0	365.0	265.0	460.0
Rotterdam	380 HSFO	215.0	206.0	107.0	236.0
	80 CST	239.0	235.0		263.0
	Diesel	369.0	346.0	245.0	452.0

USD 20 pmt mark (or even just below) basis RT / Chiba for 2nd Half Aug laycan(s). We hope we will soon see some bright lights in the end of the tunnel but as of now it's difficult to assess when potentially we will see a turning point. The arbitrage shows no signs of improvement and the cargo cancellations ex US Gulf continues. Sofar in August we count 9 VL cargo cancellations and Traders are willing to continue to cancel these cargoes unless they get freight that makes economics better than cancelling.

NEWBUILDING

Limited newbuilding activity over the past week with no new orders to report as we peak the summer season in Europe. However, as newbuilding prices continue the south trend, we do expect to see Tanker orders being placed in the short term, especially for VLCCs.

SALE AND PURCHASE TRANSACTIONS

Type	Vessel	Size	Built	Buyer	Price	Comm.
MT	Kaminesan	303 896	2003	Eurotankers	28,30	Ballast tanks require works
MT	Navig8 Solace	109 999	2016	BoC	40,50	10yr BBB with call option
MT	Navig8 Solidarity	109 999	2015		38,40	
MT	Navig8 Stability	109 999	2016		40,50	
MT	Oliphant	40 000	2004	Sea World Management	13,50	Incl. 2yr TC back
MT	Nord Mermaid	38 461	2006	Undisclosed	mid 13,00	
MT	North Contender	19 925	2005	Vietnamese	18,80	SUS 316L
MT	Showa Maru	5 676	2007	Uyeno Transtech	7,00	
BC	Rikke	81 582	2016	Nisshin Shipping	22,00	
BC	Tsuneishi Zhoushan SS-221	81 582	2016		22,00	
BC	JS Meuse	63 500	2012	Undosclosed	12,20	
BC	Dalian Cosco KHI DE031	61 000	2016	BW Group	18,30	
BC	Kilian S	56 793	2010	Wilmar International	6,90	On subs
BC	Maemi Pioneer	53 505	2007	Undisclosed	8,20	
BC	Kittiwake	53 146	2002	UK based	4,30	
BC	Triple Ever	52 454	2005	Singaporean	7,30	
BC	Newlead Castellano	35 542	2013	MTM	7,40	At auction
BC	Bulker Alessia	35 000	2010	Greek	9,20	
BC	Castle Island	28 759	1997	Undisclosed	low 2,00	
BC	San Nikolas	28 322	1996	Chinese	2,25	
BC	Quin Feng 318	27 120	2010	Chinese	2,70	

DEMOLITIONS

Sold for demolition

Vessel name	Size	Ldt	Built	Buyer	Price
OFFSH Federal I	149 235	24 550	1982	Pakistani	205
CONT Cap Stewart	51 046	16 054	2001	Bangladeshi	270
CONT Anke	42 200	14 900	2002	Bangladeshi	297
M/V Dream True	11 207	4 405	1983	Pakistani	246

QUIZ PAGE

Abhijit Banerjee

This is the story of an ancient puzzle centred on ships, ship repair and ship construction.

1. Which hero of Greek mythology is this puzzle named after?
2. Which Greek historian most famously recorded and described the paradox?
3. What is the name of the U.S. Navy ship which is the subject of the paradox in reverse?
4. In which city is this ship presently to be seen?
5. What is the full form of the government bureau under the U.S. Department of Justice known as BATF?

'The Ship of Theseus', also known as 'Theseus' paradox', is a thought experiment that raises the question of whether an object that has had all of its components replaced remains fundamentally the same object. The paradox is most notably recorded by the Greek historian and biographer Plutarch in his 'Life of Theseus' from the late first century.

According to Plutarch, a ship used by the Greek hero Theseus was preserved in Athens harbour as a memorial for several centuries, by removing the old planks from time to time as they decayed and replacing them with newer and stronger planks. It was, thus, unclear, at any point in time, to philosophers how much of the original ship actually remained, giving rise to the philosophical question whether it should be considered 'the same' ship or not. Taking it further, Plutarch asked whether any ship that had been restored by replacing every single wooden part remained the same ship.

The paradox has been discussed by other ancient philosophers such as Heraclitus and Plato prior to Plutarch's writings, and much later by Thomas Hobbes and John Locke. Several variants are known, including the 'grandfather's axe', which has had both head and handle replaced.

Now comes the story of a case in reverse – that of a ship totally dismantled part by part, and the very same parts used to assemble a similar ship and with the same name.

USS Constellation was a 38-gun frigate authorised for construction by the U.S. Naval Act of 1794. She was distinguished as the first U.S. Navy vessel to put to sea and the first U.S. Navy vessel to engage and defeat an enemy vessel. Constructed in 1797, she was decommissioned in 1853.

According to the U.S. Naval Registry, the frigate was struck and disassembled on 25 June 1853 at Gosport Navy Yard in Portsmouth, Virginia. At the same time, the keel was laid for what became known as the second USS Constellation (1854). USS Constellation, constructed in 1854, is a sloop-of-war / corvette and the second United States Navy ship to carry the name. This sloop-of-war / corvette was constructed in the same yard, using material salvaged from the earlier ship.

The sloop was launched on 26 August 1854 and commissioned on 28 July 1855. Decommissioned in 1933, Constellation was recommissioned as a national symbol in 1940 during World War II by President Franklin Roosevelt; by this time the ship had become widely confused with her famous predecessor of 1797. Remaining in Newport, she spent much of the Second World War as relief flagship for the U.S. Atlantic Fleet, but spent the first six months of 1942 as the flagship for Admiral Ernest J. King and Vice Admiral Royal E. Ingersoll. She remained in service for a century before finally being retired in 1955, and preserved as a museum ship in Baltimore, Maryland, where she remains today. She is the last existing intact naval vessel from the American Civil War.

Timeline of USS Constellation (1797)

Ordered: 27 March 1794

Launched: 7 September 1797

Broken up: 25 June 1853

Timeline of USS Constellation (1854)

Laid down: 25 June 1853

Launched: 26 August 1854

Commissioned: 28 July 1855

Decommissioned: 1933

Recommissioned: 1940

Decommissioned: 4 February 1955

Struck: 15 August 1955

Museum ship: Present status

Designated National Historic Landmark: 23 May 1963

Added to National Register of Historic Places: 15 October 1966

In the later part of the 20th century, starting shortly after World War II, a controversy arose over whether the 1854 sloop was a new ship or a rebuilt version of the 1797 frigate. The 1854 version was argued by some to be the 1797 version, as the city of Baltimore promoted the ship as the original, and some naval historians believed the Baltimore ship to be the rebuilt original.

Much of the controversy was created when the city of Baltimore promoted the ship and even rebuilt sections of the ship to resemble the 1797 frigate. Additionally, naval historians who favoured the theory that the ship was indeed the 1797 original relied on three main points:

1. Some of the funds used to build the sloop were originally allocated to rebuild the frigate.

2. Many timbers from the broken-up frigate were used in the construction of the sloop.

3. The frigate was never formally stricken from the Naval Vessel Register - a wooden, sailing man-of-war called Constellation was continuously listed from 1797 to 1955.

Naval architect Howard I. Chapelle, in a 1949 book, pointed out the differences in the hull dimensions of the 1797 Constellation and the 1854 Constellation, which led him to conclude they were two distinct ships. Also, supporting the position that they are different ships are the facts that the sloop was designed anew from the keel up - without reference to the original frigate - and was planned to have been built even if the frigate had not been in the yard during that period. In March 1989, researchers Dana M. Wegner and Colan Ratliff from the David Taylor Research Centre came upon the builder's half-hull model of Constellation in the U.S. Naval Academy Museum. This was important because half-hull models are only built for new designs, not rebuilds, and the use of half-hull models was not introduced until after 1797. The researchers also reviewed all the evidence used in the debate to date. With the help of FBI and BATF forensics investigators, they concluded that many of the documents supporting the ship being a rebuild were forgeries. In 1991, they published their findings and conclusion that the current Constellation and the original frigate are two different ships - that the present ship is a new ship built using the original parts of the 1797 vessel.

USS Constellation (1797) (left) and USS Constellation (1854) (right)

(Acknowledgement: wikipedia)

Answers to quiz:

1) Theseus.
2) Plutarch.
3) USS Constellation.
4) Baltimore, Maryland, USA.
5) Bureau of Alcohol, Tobacco, Firearms and Explosives. ■

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