

## Real Life Accident: First Mate Falls Into Cargo Hold While Operating Hatch Crane

While closing the hold a hatch fell out of the hatch crane and into the hold. This then caused the hatch crane to come off its rails on the starboard side. The first mate, who was operating the hatch crane alone from the operating platform, fell approximately eight metres into the hold; he was not wearing personal anti-fall protection (safety harness). He suffered serious injuries as a result of this fall and was admitted to hospital in a critical state.

The hatch crane and hatch arrangement are similar to those in many small ocean going and inland vessels. The hatch crane rides on both sides of the hold over rails which are fitted to the hatchway coaming. The crane consists of two vertical uprights and a yoke, placed athwartships [across the width of



The hatch crane with hatch in hooked position

the vessel] and fitted with hooks from which the hatches are hung during hatch movement. The hatches are fitted with attachment points, referred to as 'pockets'. There are markings on both the hatches and the hatch crane to indicate the correct position of a hooked-up hatch relative to the hooks of the hatch crane. The person who operates the crane stands on the hatch crane, either on one side or on top, and rides along with the hatch crane while the hatch is moved.

Because the hatch was being transported in a high position, not only was its centre of gravity higher than need be, but also there was little chance of it

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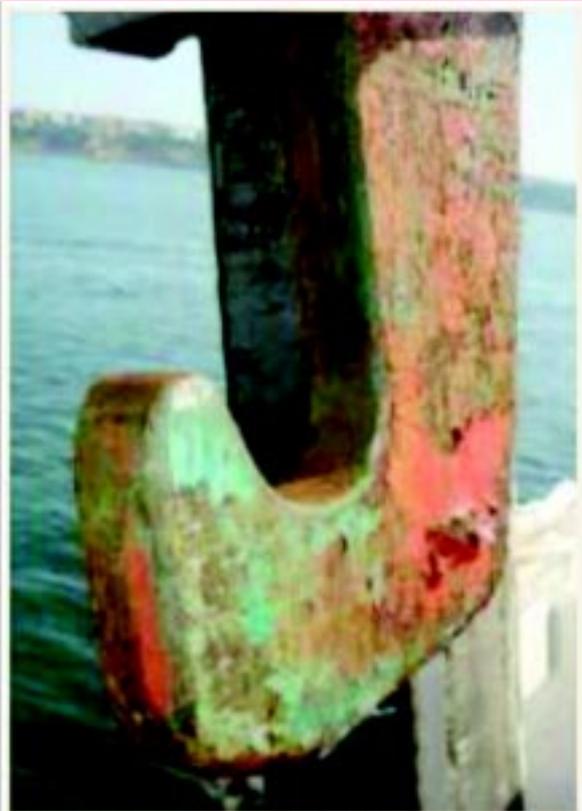
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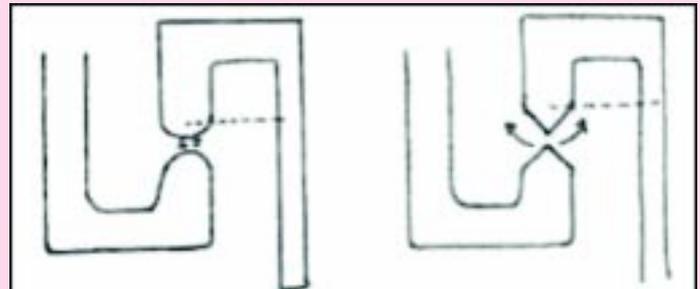


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**Hooks used with blunt end**



of incidents/accidents. On the one hand, many occurrences involved contacts between the crane and people on or near the rails. On the other hand, eight other occurrences involved hatches falling out of the crane hooks, potentially causing the hatch crane to topple or shift, and then the operator to fall. Dutch authorities made a number of recommendations to limit this type of accident. They can serve as a list of lessons learned.

#### **Recommendations**

- 1 Use claws on the hatch crane which grip the rails so that the crane cannot topple or shift off the rails.
- 2 Use sharp ended hooks and pockets, so that the hook cannot lift the hatch if it is not properly connected.
- 3 Operate the hatch crane only if there is a person on each side to check whether the hooks are connected properly.
- 4 Apply markings to the hatch crane and the hatches so that it is clear whether the crane is correctly positioned in relation to the hatch.
- 5 Move the hatch crane only when the pontoon is in the lowest possible position to keep the crane's centre of gravity as low as possible.
- 6 Use 'brushes' in front of the wheels, so that fingers can be pushed away instead of becoming trapped.
- 7 The installation and maintenance of audiovisual warning signals in order to warn bystanders of the driving crane.

coming to rest on the hatchway coaming when it fell. The investigation also determined that the hooks of the hatch crane yoke on the starboard side did not connect to the hatch attachment points but to the rounded (outer) side of the attachment points. Contrary to the vessel's procedures, this was not checked by a second person at the time of the manoeuvre.

Since 1992, a total of 15 incidents involving hatch cranes on board Dutch flagged ships have been reported to the authorities. These have resulted in three deaths and 13 serious injuries. Investigations have revealed two categories

## From the Editor's Desk



**"If you tell the truth, you don't have to remember anything."**

*Re-DGS Order No.22 released by the Office of the DIRECTOR GENERAL OF SHIPPING, dispensing the requirement of Indian CDC, for human employed on Indian coast engaged for harbour/coastal operations. Which is a hasty decision, against human rights of individual Indian-Seamen. If so, "Indian Seamen" unfairly treated/exploited in the present age of 21st Century.*

*Strongly protest with my apprehensions:-*

- *What is the substitute authenticated document to those venturing on coastal vessels ?*
- *If I remember right, earlier CDC were issued separately for Home Trade.*
- *If so, what is the control going to be exercised considering Safety & Security ?*
- *If so, would they be treated as non-seamen, while on coastal vessels?*
- *What about their signing ON/Off on Coastal/Home Trade vessels?*
- *How are the record of service going to be maintained ? for various reasons.*
- *Eligibility Rules for employment on Coastal vessels? Requirements?*
- *Would it not add on more loopholes, for bringing in administrative-lapses?*

*This is certainly not a fool-proof system. This will add on much FUTURE - complications with administrative lapses in the future, on manipulations and loop-holes in the system. It appears and known from above-said message that Maritime Board takes the responsibility, instead of the office of D.G.S., which is ultimately responsible, being our National Shipping Administration. If to go ahead, please have this duly endorsed by the ex-mariner, involving Capt. PVK Mohan, who is the Chairman of the National Shipping Board.*

*P.S. Holding life, as the most important aspect than anything else under Article 21 (Right to Life and liberty) of the seamen very close to my heart, who are out on the deep seas, on occupational- hazards, who really sacrifice their human-life for others, \* i.e. their own family dependents, to their own country of origin, and supporting the world-trade etc. PARTICULARLY KEEPING IN MIND, THE PRECAUTIONARY PRINCIPLE, TO DIRECT AND PASS INTERIM ORDERS FOR THE IMMEDIATE REVOKE OF THE ORDERS, which is my humble submission.*

***The need for precarious action, before any publication from office of the D.G.S.***

*\* Even after sixty six years of independence, our national maritime administration is in the application of trial and error methods of work. ARMED FORCES TRIBUNAL Chennai Regional Bench considers aggrieved ex-serviceman in RA16/2013 of OA7/2013 as a consumer product, for the Indian Army to use and throw-away into the dust- bin, without a thought on living compensation for displacement. It's a disgrace to furthering the eroding judiciary on account of such high placed personalities, who acts to their whims and fancies, without fear to their own conscience or the almighty God. Treating, as their personal property, while in a responsible, sensitive, committed and responsible public services, in the name of GOD, which is most touching and worst than Katta Panchayat. Case of further exploitation, victimization, vindication against human Rights, causing injury to its own countrymen, who came to sacrifice his life to the country as an adolescent, also being a son of an ex-serviceman who came forward during EMERGENCY i.e. China and Pakistan War, with the same and more spirit. to serve the country to protect from external threats. A Grave Injustice, to human mankind. It is an awakening to the apex court for the non-implementation of the existing orders of the Ministry of Defence, within the land of the country. Lacks respect to the laws of the country, in commitment, transparency, and basic responsibility. I am surprised for the present honourable Registrar being unmoved, to the situation, while the previous Registrar, who had been very active and committed to act when reported, speaks in the start of OA7/2013, by her addressing the subject*

**(contd. on page 4)**

(contd. from page 3)

to my paid counsel and copied to me, respecting equity and justice to citizen, enshrined in our Indian constitution. **TRUTH is higher than everything, concealing is falsifying yourself.**

**Put good Deeds above Bookish Creed – Guru Nanak.**

Witnessing un-ending quarrels over religious trifles and deviation from the true spirit of religion, being a non-sectarian, he said “God is neither Hindu nor Muslim”. Nanak observed that the human-mind follows either of the two directions - manmukh or gurumukh. Manmukh: is one who follows dictates of mind, could fall easy prey to self-pride or egoism associated with lust, anger, craving, jealousy, and delusive materialism. On the other hand, Gurumukh: is one who follows the teachings of the Guru lives life with deep, divine anchorage, free of the influences of delusive reality . Hence he stressed the need for Guru to help one navigate the ocean of delusion. Guru Nanak wanted his disciples to grow with the practice of japa or meditation of God. This involves the eightfold sadhana of purity, silence, concentration, realisation, patience, faith and Satsanga.

Delay and latches was caused on account of the poor record-keeping of Signal-Records, Indian Army. Injustice caused over entry in dismissal column, WITH WRONG CODE instead of the fact, being discharged on medical grounds, invalidated by a Medical Board constituted by the Indian Army, Govt. of India. Displacement by discharge on medical grounds caused, going without compensation, deprivation causing victimisation, violation to the promise to citizens, "JUSTICE and EQUALITY without discrimination", enshrined in our INDIAN CONSTITUTION. Honourable, learned Administrative- Member trying to conceal the real facts in support of his known men in the defence, and he has also employed an account officer of CDA Chennai, on his retirement, whom I alleged to have done harm, in sitting with my papers sent by Regd.Post with acknowledge card back to me, and claiming not received and the same also hushed up by the Addnl.CDA, Chennai, however through her forwarding letter, Signal Records were moved to reply me, which was the first letter as all my earlier letters went all of vain, an act of insubordination, neglecting to my low rank, for their dignity and prestige (ego).

I do also know that Lt.Gen(Administrative Member) not competent to issue a LEGAL ORDER, on his personal capacity, is not qualified even with a Basic degree in Law, as seen from his veracity available on-line, but for being backed with military-related studies, and more to be an executive in the SECURITY/VIGILANCE section/discipline. but please note, that he is backed circumstantially, by endorsement of honourable learned Judicial Member of the same Chennai Regional A.F.T. Bench, while the honourable Lt.Gen. has proved to be more CRUDE BY NATURE who cannot understand / realise the hurt sentiments of the already aggrieved ex-servicemen \* the human souls, who came forward to serve the nation with preparedness to sacrifice their young lives for their nation. Strongly, and personally suggest Anand Mohan Verma \* almost five years younger to me, to attend holy bhajans in Sathya Saibaba's "SUNDRAM TEMPLE" in Sundaram Road, Raja Annamalaipuram, Chennai, where many judicial officers in the State flag car comes and other high dignitaries or visit any holy shrines with purified heart in this retired age, for annealing his crude heart, and be pious, while he is placed with great responsibility to redress the grievances of the ex-servicemen, so that he stops causing further injury to the already aggrieved ex-servicemen who call at A.F.T.Chennai Regional Bench, for redress of their genuine grievances, instead of sprinkling chilly and salt on the already injured wound. of the aggrieved ex-servicemen's. I don't consider Lt. Gen. repeating my words in the Open Court Hall, as insult, for " my father who had slapped me, while advising me not to further waste time going to the DSS & A Welfare Board(Sainik Welfare Board) for ex-servicemen, instead value the precious time of the future, in work and study" which Please note, which very well worked in my life, to be enlightened. God is watching all deeds; I won't be surprised if the same Lt.Gen. gets slapped by his own wards, if his attitude remains without change, hence high time he attends holy shrines developing a good heart, as I believe almighty god truly exists.

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## Singapore's Keppel Says To Build First Drillship, But No Buyer Lined Up:

Singapore's Keppel Corporation Ltd, the world's top offshore drilling rig maker, said it plans to build its first drillship despite not having a buyer lined up, confident the design will be welcomed by the market.

It is the first time Keppel has built a rig without a contract in at least 14 years, an examination of company announcements showed.

A leading builder of jackup rigs, which work in water depths up to 500 feet (152 metres), Keppel has yet to build a drillship from scratch and has been trying to secure a contract for its own drillship design this year.

South Korea's shipbuilding giants, Samsung Heavy Industries Co Ltd, Daewoo Shipbuilding & Marine Engineering Co Ltd and Hyundai Heavy Industries Co Ltd, dominate the market for drillships, which are used to explore oil and gas in water up to 12,000-feet deep and cost at least \$500 million a piece to build.



Keppel said in a statement that its new design would overcome the constraints of limited deck space found in most drillships. Construction is expected to be completed in 2016. Keppel had expected to get the order for the drillship by the end of next year, Tong Chong Heong, chief executive officer of Keppel Offshore & Marine, said at a results briefing in October.

Keppel had bagged new orders of S\$6.8 billion by late November, and is on track to deliver a record number of rigs this year. But growing competition from Chinese shipyards have put a lot of pressure on the company's profit margins in recent years.

## How to Use Main Engine Performance Curve for Economical Fuel Consumption on Ships?:

After the building of the ship is complete and before handing over it to the owners, sea trials are done to test that the ship is able to deliver the contractually guaranteed speed. The primary purpose of the sea trial is to determine the speed of the ship with reference to the RPM and the power produced for the same.

Apart from the sea trial of the hull part of the ship, the important machinery of the engine room such as boilers, auxiliary engines and the main engine are also tested.

Machineries have a test record apart from the sea trial data, which is done in the manufacturing plant and is called as test bed data. It is normal to have main engine, generators, motors and pumps etc. having these test bed data.

This data pertaining to sea trials/machinery trials, shop trials/test bed trials and the obtained performance curves enables the Chief Engineer to run the ship safely and economically.

Under the charter party the speed and fuel consumption are fixed among other things. There is little margin for error and if the speed is not enough then there is a speed claim; moreover, if there is over consumption to maintain speed then too there is a fuel claim.

The main engine has to perform satisfactorily and give the rated power at the rated RPM within narrow but allowable limits of temperature and pressure and with correct specific fuel oil consumption.

In addition to all these the lubricating oil and cylinder oil consumption must be kept to minimum to keep the owners happy and the engine maintenance must be up-to-date to match the engine with the performance curves given in the shop trial.

### PERFORMANCE CURVES

During the test bed or shop trial the performance curves of the engine are plotted. The performance curves are the graphs of different parameters on x-axis plotted against engine power or load on the y-axis. These different plotted curves are as follows:

- **Engine RPM vs. Load:** This curve helps in ascertaining whether main engine is overloaded or not. A higher power generated at a lower RPM indicates an over loaded main engine.
- **Mean effective pressure vs. Load:** Mean effective pressure is used to calculate horse power hence these two values should co-relate. In case they don't then there may be some error in calculation or instrumentation.
- **Maximum pressure vs. Load:** This curve helps in knowing the condition of fuel injection equipment, injection timing and the compression in the cylinder etc.
- **Compression pressure vs. Load:** This curve indicates the condition of the parts maintaining compression like piston, piston rings and exhaust valves.
- **Scavenge air pressure vs. Load:** It indicates the condition of the turbocharger and associated equipment.
- **Exhaust gas temperature in receiver vs. Load:** It indicates the enthalpy of the exhaust gas prior to entry in turbocharger. This value compared with the value after the turbocharger gives the temperature drop across the turbocharger, is an indicator of turbocharger efficiency.
- **Exhaust gas temperature after exhaust valve vs. Load:** This curve sheds light on the combustion, fuel injection, timing and compression etc. A higher temperature may be caused due to after burning.
- **Exhaust gas temperature after turbocharger vs. Load:** This curve is very useful as it indicates the enthalpy

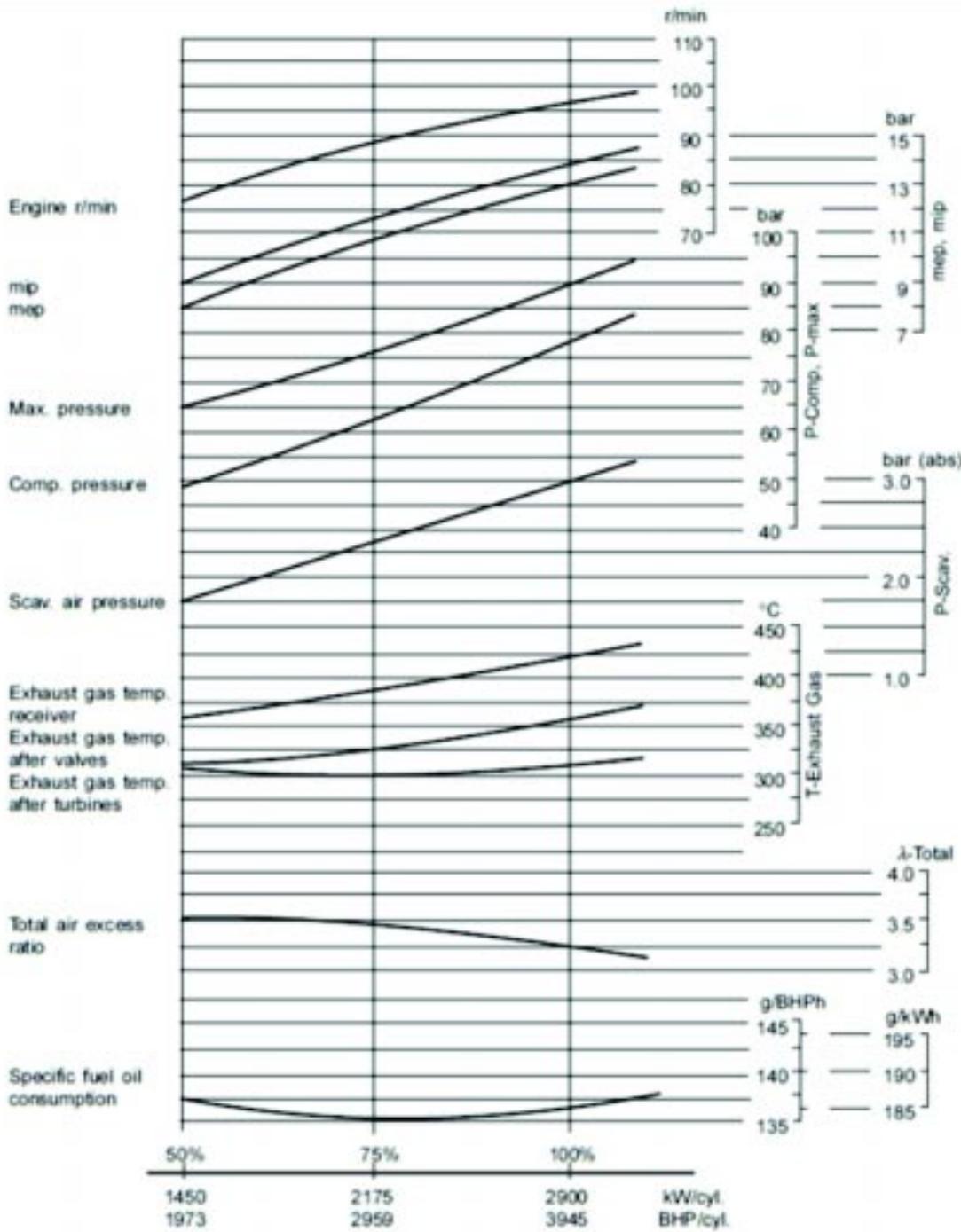
captured from the exhaust by the turbocharger and hence its condition. In case the receiver temperature is within range but the outlet temperature is higher it may indicate fouling of the turbocharger and hence the associated lower scavenge air pressure and high exhaust gas temperature.

- **Total excess air ratio vs. Load:** This curve is scarcely used by ship staff and is useful for design engineers. This curve sheds light on scavenging and the turbocharger capacity and condition. It shows that as the power increases the excess air decreases due to consumption.
- **Specific fuel oil consumption vs. Load:** This curve helps to counter check whether the engine is consuming fuel oil correctly as per the load.

There may be other parameters listed as per manufacturer. A typical performance curve for a slow speed two stroke marine diesel engine is given below.

**Economical Fuel Consumption**

The main engine will run economically if the engine is well maintained and is run at the rated economic rating where the Specific Fuel Oil Consumption is the least. An engine is said to be performing well or well maintained if it can be safely run at the rated RPM at the rated load. For example if an engine is having a continuous service rating of 15000 BHP at 104 RPM but cannot reach the rated RPM and is developing 15000 BHP prematurely at 98 RPM, there is a loss of ship's speed and a subsequent speed claim. It also tells that there is a problem, the ship cannot give speed, it is



over consuming fuel and that the engine is over loaded. It points to either hull fouling, damaged propeller or faulty prime mover etc.

In such cases the careful study of the sea trial data, engine shop trial data and the performance curves will help to determine the cause of the problem.

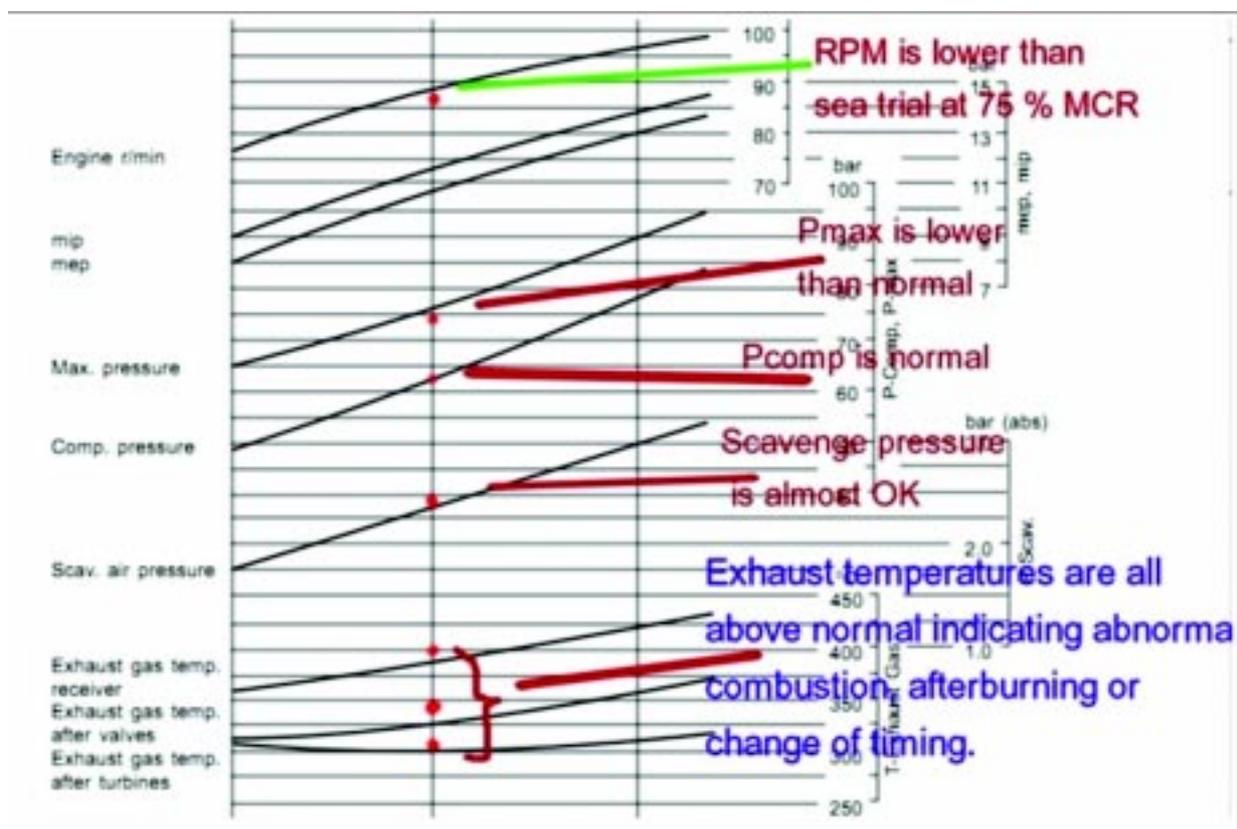
For trouble shooting first the main engine performance must be taken on a good weather day when the engine load is steady. The main engine must be run to its rated power. Thereafter the data found must be super imposed on the performance curves.

After superimposing the measured parameters on the performance curves, we come to know whether the parameters are normal or abnormal. A complete study of the parameters helps us to pin point the problem. An example of the performance data superimposed on the performance curve is given below.

The above example will help to understand the use of performance curves for a ship's engineer. After the main engine performance has been taken and plotted on the original performance curves from the sea trial data, the problem can be found out and SFOC restored to normal values. In this way at any stage during the life time of the ship, we can understand why she is not performing based on plotting her parameters on the performance curves.

**A Chief Engineer's Concern Regarding Slow Steaming of Ships:** Slow steaming has been adopted by majority of companies and ship owners in order to survive in these tough times of rising fuel prices and financial recession.

Originally started for Container Shipping by Maersk Lines and justified by the cost sheets and economics, the concept has been borrowed by other kinds of ships including the Dry Bulk



From above diagram the following points are inferred:

- " At 75% MCR the RPM attained is lower than the sea trial.
- " The average maximum cylinder pressure  $P_{max}$  is lower than the sea trial.
- " The compression pressure  $P_{comp}$  is almost same as sea trial confirming that the running gear like piston, piston rings and exhaust valves are ok.
- " The scavenging pressure is almost normal suggesting that the turbocharger is in satisfactory condition and the enthalpy of the exhaust gas is higher than normal for this RPM.
- " Exhaust temperatures are all increased suggesting abnormal combustion, after burning or change of timing. It may also indicate faulty fuel injection equipment.

ships, whose operating speeds are traditionally low.

Ship owners instruct their Chief Engineers to run the ship on economy speed also called Eco speed or slow steaming.

Long before other ship owners caught on with the concept, shipping companies like Maersk experimented with slow steaming and presented to its customers and ship owners the complete fact sheet of slow steaming along with the financial viabilities. They even requested all major engine builders to issue a no objection certificate that convinced reluctant Marine Engineers and ship owners that slow steaming is possible and if correctly done would not jeopardize the Main Engine.

In these series of well researched articles we will discuss the technical requirements to slow steaming, various modes of

slow steaming including super slow steaming, the retrofitting, modifications with the upgrade kits and the suitability of intelligent engines for slow steaming.

### Chief Engineer's Concern

In the transient times of changing standards, stricter regulations and new emerging technology it finally translates to the ship's Chief Engineer, along with his team of marine engineers in consultation with the technical management to implement the changes on the ship.

As slow steaming is not a regular affair for a marine engineer nor have they been trained for it, some efforts have to be made to remove the traditional mindset and reluctance of the engine staff and retrain them. In addition they have to be instructed about additional routines and inspections of the Main Engine, which is operating outside its designed optimal range.

Marine engineers have always been advised by engine manufacturers that low load operation must be avoided. The engines must be run close to its continuous rating for optimization of all its parameters and allowing the individual components to operate in their designed range.

A chief engineer has the following concerns with regards to slow steaming:

- Frequent and thorough scavenge and under piston inspections must be carried out.
- Over lubrication of the cylinder liners is as dangerous as under lubrication. Unless the engine has a load dependent cylinder lubrication system which is suited for slow steaming, the cylinder lubrication rate must be adjusted to optimal value as per manufacturer's advice.
- Slow steaming causes fouling of the turbochargers and loss of efficiency.
- Turbochargers operating outside their designed range produce less air flow leading to more deposits.
- Causes increased carbon deposits on the injectors compromising their performance.
- Causes fouling of the exhaust gas economizer resulting in reduction of capacity as well as increased danger of soot fire.
- Causes a reduction in scavenge air pressure resulting in improper combustion.
- Leads to improper atomization of the fuel as well as impingement.
- Causes increased carbon deposits and maintenance intervals have to be modified likewise.
- Causes low exhaust gas temperatures. Running the engine with exhaust gas temperatures below 250 deg C can cause low temperature corrosion.
- Causes reduced peak compression pressure.
- Damage occurs and becomes imminent when engine is run at full load after long period of slow steaming.
- Compromises the piston ring pack efficiency, leading to increased under piston and scavenge deposits.
- Increases the risk of scavenge fires and needs extra scavenge and under piston area draining.

- Cause loss of heat transfer due to carbon deposits and failure of components due to thermal stresses.
- Causes reduction in the efficiency of the economizer causing the need of oil fired boiler to operate and adding to extra cost and maintenance.

### 10 Most Common Life-Threatening Accidents On Board Ships:

No seafarer wants to get hurt or suffer injuries while working on ships. We all know it's a hostile working environment at the sea and no matter how many precautions are taken, accidents are bound to happen as a result of one main and common reason - human error.

A series of regulations has been introduced and implemented to ensure the safety and security of the seafarers working on ships. However, there are few types of life threatening accidents which still keep on taking place on board ships around the world. As seafarers working at sea, it is important that you are aware of them and take extra precautions to avoid them.

Mentioned below are ten such life threatening accidents that seafarers must be aware of:

#### 1. Man overboard

Man overboard situation is a common and one of the most dangerous situations wherein the person falls into water while working or as a result of some accident.

Though seafarers are trained to deal with such situations, bad weather and heavy sea can spoil the rescue operation. Areas with extremely water temperature can also cause hypothermia or other dangerous health issues, even death. Several people have lost their lives in past because of such accidents.

**2. Enclosed Space Accidents:** This is one of the most common type of accidents on board ships, which has been the result of several casualties and extreme injuries. Such accidents occur mainly when the ship's crew enter a confined



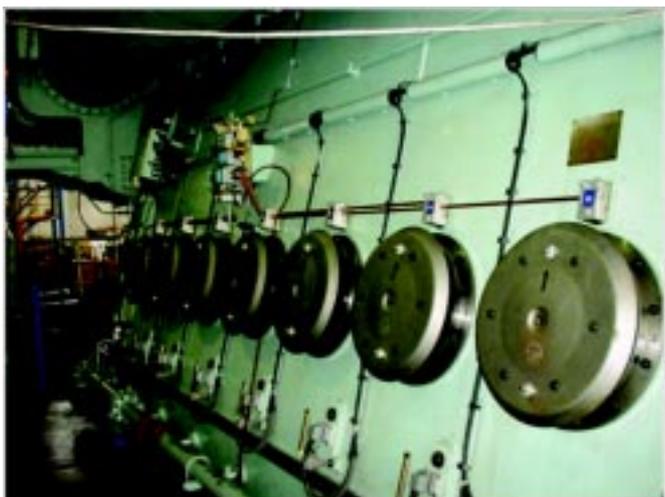
space which is not properly gas-freed and has several pockets of toxic/flammable gases. Many officers still neglect the enclosed space entry procedures, risking their and other crew member's lives. Seafarers must be extremely cautious while entering enclosed spaces.

**3. Electrical Shock Accidents:** Just like on land, electrical shocks have also taken several lives on board ships.

Unattended electrical connections, exposed wires, and failure in taking basic precautions while handling electrical equipment have led to many unfortunate incidents.



**4. Machinery Explosion - Generator, compressor, boiler blast etc.:** Improperly maintained machinery and systems sometimes leads to major blasts/explosions, destroying the ship's property and killing people working on and around them. Accidents such as compressor blasts, crankcase explosion, boiler blast etc. have caused serious injuries and even death in many cases in the past.



**5. Mooring Operations:** Yet another most common reason for serious injuries and deaths on board ships, mooring operations is considered an extremely dangerous task which needs proper skills and knowledge. Several officers and crew members lose their lives every year because of accidents related to mooring operations.



**6. Falling From Height:** On board ships, seafarers are often required to work at heights wearing safety harnesses and other important safety tools. However, in spite of taking all the necessary precautions, several crew members have lost their lives or suffered permanent injuries as a result of falling/slipping from heights, failure of safety devices, falling inside cargo hold during inspection, and also due to sheer negligence.



**7. Piracy Attacks:** Though this is not a real kind of accident on board ships, it is a situation which is extremely life threatening. Pirates use lethal weapons such as RPG and guns at ship's crew while trying to hijack the vessel. There have also been accidents wherein pirates have boarded the vessel, killed crew members and looted the vessel. They are least bothered of anyone's life and can shoot without giving a second thought.





**8. Lifeboat Testing Accidents:** It is said that lifeboats take more lives than they save. Lifeboat testing during drills is an important routine on board ships. However, several seafarers have lost their lives while performing such tests. Though new regulations have been introduced in order to ensure utmost safety while handling lifeboats, accidents involving severe injuries and deaths still occur as a result of lifeboats.

**9. Hot Work Accidents:** Accidents as a result of hot work can occur because of several reasons. One of the most common ones are when hot work is being carried out in enclosed space with flammable gases, when the adjacent tank has flammable material, as a result of flammable gas pockets etc. It is also seen that seafarers often fail to follow the basic hot work procedures while carrying out such procedures, leading to unfortunate, fatal accidents.



**10. Gangway Fall:** Accidents have occurred on many ships when the ship's gangway has failed while being used by ship's crew members or visitors. Gangway failure usually takes place as a result of lack of maintenance and failure of gangway wire rope.

Accidents on board ships can occur as a result of several reasons. The above mentioned ones are some of the most common life threatening accidents/situations on board ships which seafarers must be aware and careful of.



## 8 Signs That Indicate Your Ship's Auxiliary Engine Needs Overhauling:

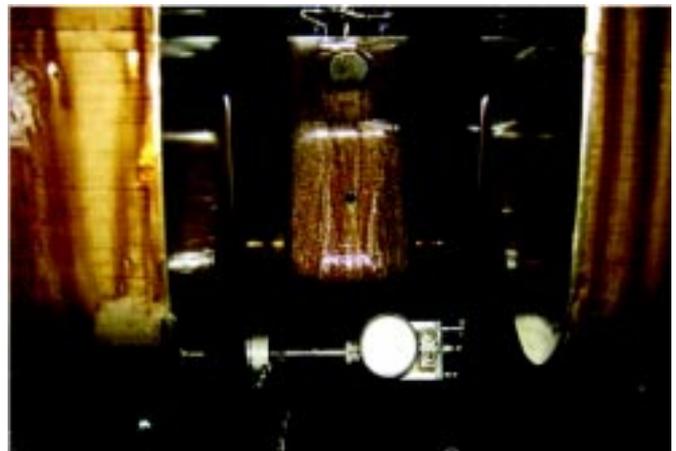
Ship's auxiliary engines are the most important supporting pillars that keep the ship going. As a marine engineer working on ships, understanding the ship's auxiliary engines is of prime importance in order to avoid sudden breakdowns or blackout situation.

However, ship's auxiliary engines are not easy to tame. They need constant monitoring and maintenance for running at all the times and for preventing them from bringing the ship to a stand still.

Though routine maintenance and checks of auxiliary engines is a must, there are times when they require serious overhauling. As marine engineers, it is important to know the time and signs which tell that the auxiliary engine needs overhauling.

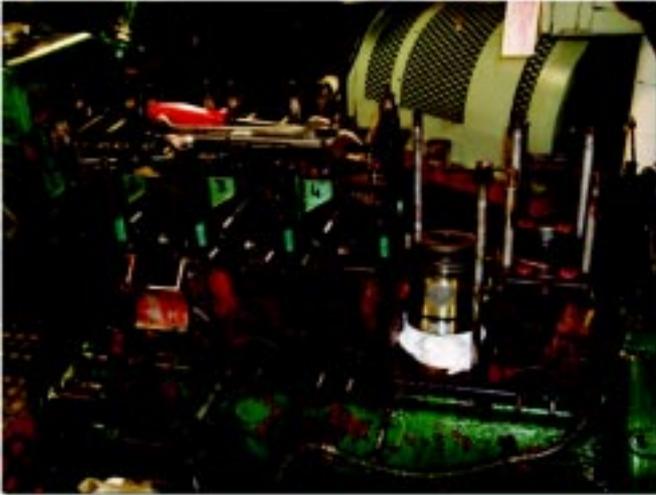
Mentioned below are eight signs to check in your auxiliary engine.

**1. Generator Not Taking Rated Load:** If the generator is not taking the rated load then there are chances that it is having some serious trouble. Signs like overall temperature of the engine going off-limit, important parameters showing



abnormal figures and unusual fluctuations etc. indicates that the generator needs some serious checking.

**2. Power Imbalance:** A ship's engineer must keep a close eye on all the parameters, especially while taking performance



readings of the auxiliary engine. If there is high peak pressure variation in any of the generator units as compared to the average pressure, it indicates that the combustion chamber needs immediate overhauling.

**3. Degradation of Lube Oil:** Examining the quality of the lube oil is yet another way to find out about the condition of the ship's auxiliary engine. If it is found that the lube oil is degrading and needs to be removed before its running hours limit due to sludge formation, it may indicate blow past of the units. Such condition would require finding out the faulty unit followed by major overhauling.

Degradation of lube oil would also lead to choking of filters, major reduction of oil pressure, and sudden increase in differential pressure. It is important to keep a track of these signs as well.

**4. White Metal Particles Found in Filters:** If any type of metal particles (small or large) are found in the filters, it indicates that major wear-down of bearings is taking place. This would require immediate overhauling of the faulty unit.

**5. Unusual Knocking Sound:** Sound of the auxiliary engine is also one of the best ways to identify a problem. As a marine engineer working on ships, you would be quite familiar with the usual working sound of the auxiliary engine. If the "working sound" is replaced by any unusual knocking sound, it indicates that there is some problem with your machinery system.

Observe the knocking sound closely, if the sound is increasing at a faster rate, it is better to rectify the faulty engine as soon as possible.

**6. Generator Over-Speeding:** Over-speeding of generator is a situation wherein uncontrolled acceleration of the engine takes place, leading to mechanical failure and serious accidents. Mostly, it occurs during the time of starting, but can also occur when it is running on load due to fuel pump getting stuck or problem in the fuel system. Check if your engine is over-speeding and take measures accordingly.

**7. Abnormal Crankshaft Deflection Readings:** A marine engineer has to take timely measurement of crankshaft i.e. crankshaft deflection with the help of dial gauge. If the readings are above the normal limit, it indicates problem in the main bearings or alignment of crankshaft, requiring immediate action.

**8. Running Hours:** Last but not the least, keeping a track of the running hours is extremely important to know when the engine would require next overhauling. Read the past records and carry out timely overhauling procedures.

These are some of the important points to figure out if your auxiliary engine requires complete overhauling. Do you any other ways to find out problem with auxiliary engines? Let us know in the comments below.

D'carb or major overhauling of a ship's generator is a very tedious task for marine engineers on board. Following a step-by-step procedure backed by systematic planning is the base of a successful generator overhauling procedure.

## **DNV GL Is Calling On The Industry To Step Forward And Support Its 'Walk To Work' JIP:**

The "Walk to Work" (W2W) approach, where offshore installations are manned from a ship via gangway is being increasingly considered and used in the North Sea and other oil and gas regions to replace or supplement traditional manning methods such as helicopter, flotel or barge. W2W manning can offer many significant benefits including: cost



reduction; increased productivity; greater and more flexible man-hour delivery; additional bed space; resource sharing; and, reduced worker major accident risk. The ability to use W2W also provides an alternative to helicopters should, for example, there are exceptional circumstances that impacts helicopter availability.

W2W can take many forms ranging from a simple crew ferry between land and an offshore facility, to an integrated large multi-role vessel with helideck, hotel, rescue and recovery, diving, ROV and crane facilities, servicing and providing a number of offshore facilities whilst simultaneously performing other field activities.

The goal of the JIP is to develop and release W2W industry guidance within six months of the project beginning.

The JIP aims to capture, collate and further develop existing experience and material from a number of parties including offshore installation and vessel operators, gangway suppliers, and regulators. The JIP will also seek experience transfer from the emerging offshore wind industry which is actively researching W2W solutions to meet their need. The JIP will develop guidance on all aspects of W2W, creating a

foundation reference source that supports delivery of safe, efficient and cost-effective W2W manning solutions. The guidance will assist regulatory compliance and adherence to existing industry guidance such as the Oil & Gas UK/Step Change "Marine Transfer of Personnel" Guidelines.

DNV GL has been involved in W2W projects as a ship classification society, marine consultant, safety and regulatory compliance advisor, and in a wider risk management role.

Hamish Holt, Principal Consultant with DNV GL said: "To successfully select and implement a W2W solution needs considerable time and effort to work through a wide range of aspects. During operation it requires effective alignment, integration and collaboration between the installation operator, a vessel operator and a gangway provider, on a 24 hour basis in a dynamic environment heavily influenced by operational need and sea conditions. Most importantly, it requires buy-in from the W2W workforce as well as from industry regulators.

"We know W2W manning of installations have been, and currently are being, undertaken to varying degrees of success and we do not want to re-invent the wheel. This JIP aims to bring together the most up to date feedback, experiences and lessons learnt, in order to assist those involved in a W2W project understand the issues and make appropriate decisions. The produced guidance will not be prescriptive; instead it will aim to give information and guidance to allow individual organisations to develop their own W2W solution."

**Wärtsilä Inaugurates New Propulsion Test Centre In Finland:** Wärtsilä, the marine industry's leading provider of innovative products, solutions and services, is today inaugurating its new test facility for future propulsion products and technology. The Wärtsilä Propulsion Test Centre has been established and funded by Wärtsilä with strong support from VTT Technical Research



Centre of Finland, who will provide the resources to operate the facility. The test centre is located in Tuusula, southern Finland, and will enhance the company's capabilities in product validation and research activities.

The new facility enables Wärtsilä to speed the development of new, high quality and environmentally sound propulsion products together with research institutes, universities and suppliers. It will have a central role in propulsion related research and development activities carried out by the company. In particular, the test centre will be used for functional and endurance testing with an emphasis on mechanical power transfer.

The test installation can accommodate thrusters up to slightly above 2 MW in power. The main components are a frequency converter with an electrical motor and generator, a specially designed gearbox, and a hydraulic loading system. Including all needed auxiliary systems such as cooling, controls and lubrication, the test centre covers an area of about 200 square meters and will be capable of running tests on a 24/7 basis.

"This investment in a full scale test facility for propulsion products is one of the key elements in our strategy for supporting and assisting our customers in lowering operating costs through higher propulsion efficiency and lower maintenance expenses. Having a technology development centre enables us to provide the best possible technical support for the propulsion needs of the entire marine sector," says Jaakko Eskola, President Ship Power and Senior Executive Vice President, Wärtsilä.

The extensive list of benefits offered by Wärtsilä Propulsion Test Centre includes the ability to stretch the limits of current propulsion products, and to validate future products and new technologies prior to market introduction. This includes the introduction of, for example, cost efficient components, new environmentally acceptable lubricants, and new propulsion diagnostic techniques. With the new test centre Wärtsilä will remain at the forefront of propulsion technology advancement as the demands of the marine industry evolve.

## **10 Safety Precautions To Take While Handling Inert Gas System On Ships:**

In November 2012, 5 officers on board an LPG tanker died when they "disassembled" a spectacle blind (also called spectacle flange or figure-8 blind used to prevent or start gas flow in a pipe system) without shutting off inert gas supply, leading to their asphyxiation.

The investigation report said that six officers on board the LPG carrier fainted in the compressor room because of failure to shut off inert gas supply and to ensure there was no inert gas in the pipe while removing the spectacle blind, leading to release of inert gas into the compressor room causing asphyxiation.

**"MARINE WAVES"** (International Maritime Newsletter)

**CHENNAI – 600 090, INDIA.**

**Ph: +91-44-42018982**

### **REGISTERED OFFICE**

Edited and Published at  
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29<sup>th</sup> Cross Street, Besant Nagar,  
Chennai - 600 090, INDIA.  
Ph : +91-44-42018982

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Inert gas (IG) system is an integral part of cargo operations on tanker ships which must be handled with utmost care considering the hazardous effects of the inert gas on humans. Officers handling IG system must consider certain precautions to ensure their safety on board ships.

**1. Ensure Proper Maintenance of Inert Gas Safety Devices is Carried Out:** Safety devices on IG systems are used to prevent the back flow of cargo gases to the machinery spaces. It is important that along with the non-return valve, a water seal and a vent is also fitted on the deck main for additional safety. Sometimes an additional water seal is fitted at the bottom of the scrubber. It is important that these devices are properly maintained at all times.

**2. Ensure Adequate Oxygen Level:** Oxygen deficiency is extremely hazardous to human body. It can not only damage the brain but can also lead to death easily. In case of oxygen deficiency, the mind is likely to become apathetic and complacent and if escape is attempted at this stage, physical exertion will aggravate the weakness of mind and body. For this reason it is necessary to ventilate the cargo tanks thoroughly to ensure that no pockets of oxygen deficiency remain and a steady reading of 21% is obtained at all times.

**3. Ensure There are no Combustible Gases:** An important point to note is that the inert gas does not affect the toxicity of hydrocarbon gases and thus the later can be extremely dangerous (as it is flammable). Gas freeing of tanks must be properly carried out to eliminate possible gas pockets. Any particular compartment must show a reading of Zero or 1% of lower flammable limit (LFL) with a reliable combustible gas indicator.



**4. Remove Toxic Components of Flue Gases:** An approved combustible gas indicator should be used to measure the presence of flue gases in the tank. Flue gases contain sulphur dioxide, carbon monoxide and nitrogen which need to be properly measured during the gas freeing process. After ventilation, the flue gases reading of the tank should be 1% or lower of the LFL along with oxygen reading of 21%. Ventilation should be continued until a steady reading of 21% oxygen is obtained before entering.

**5. Check Tank Pressure:** Check the tanker pressure before opening any tank lids, ullage plugs or tank washing openings. Inerted cargo tank pressure must be adequately reduced before opening any tank.

**6. Prevent Air From Entering the System:** In the event of inert gas system failing to deliver the required quality and quantity of inert gas, or is not able to maintain a positive pressure in the cargo tanks, action must be taken immediately to prevent air from being drawn into the tanks. All cargo and ballast discharge from inerted tanks must be stopped, the inert gas deck isolating valve closed, the vent valve between it and the gas pressure regulating valve (if provided) opened, and other immediate actions must be taken to repair the inert gas system.

**7. Take Measures to Prevent Electrostatic Ignition:** Presence of hydrocarbons in the tanks can be dangerous. If the tank atmosphere contains flue gas, which have small particulate matter containing small electrostatic charge, there is a possibility of an electrostatic ignition when the oxygen content of the tank rises due to ingress of air. Prevent any kind of ingress of air in the tanks.

**8. Don't Start Repair Work Without Gas Freeing:** As Inert gas is asphyxiating, a person can quickly become unconscious even if the leakage of the gas has taken in open air. Extra precaution is thus required while doing any maintenance/repair work on the IG plant. It is recommended that the I.G plant is completely gas freed before any work is started. Internal examination of any unit in the I.G. system should be done only after standard procedures for entry into enclosed spaces have been carried out.

**9. Beware of Hydrogen Sulphide:** When the oxygen content is reduced during the operation of I.G. system, pyrophoric deposits are formed in the tankers, especially in those carrying sour crude oil. These deposits along with crude form hydrogen sulphide, which is highly toxic in nature. Pyrophors and hydrogen sulphide formed during a loaded passage can persist even during subsequent ballast passage if they are not properly removed.

**10. Ensure Proper Functioning of Blowers:** Generally on oil tankers, blowers are used for gas freeing and hence an air inlet (suction from atmosphere) at suction side of the blower with blanking arrangement must be provided. At normal operation, blanking arrangement is to be secured. During gas freeing, it is to be opened and air is to be supplied by the blower to the tanks.

**How to do Intentional Grounding or Beaching of a Ship?:** The master of the ship is the overall in charge of the operations while trading in international waters. When it comes to safety of the crew and ship, he has to quickly decide the course of action keeping in mind the after effects of the same.



One kind of emergency situation which can really test skills and ability of a ship's captain is -Beaching of the ship.

### What is Beaching of the ship?

Beaching is a process wherein during an emergency situation a ship is intentionally taken towards shallow waters and at last grounded.

The word Beaching is used for such process because the type of emergency grounding is done only in those areas where the ground is of soft mud or sand (as in a Beach) in order to avoid damage to ship's hull, propeller, rudder etc.

### Why Beaching is done?

The three main reasons for which Beaching of ship is done are:

- To prevent loss of ship due to flooding when there is major damage below the water line of the ship
- To refloat the ship when satisfactory repair has been done and water tight integrity is restored
- In order to hand it over to the scrap yard

### Procedure to Perform Beaching of Ship:

- Ballast the ship to its maximum capacity
- Check where the damage is more-bow side or stern side. Head with the damage side for beaching with 90° to the tides
- Take all measure to avoid ship going parallel to the beach (throw weather anchor first)
- If approaching from astern due to stern damage, drop both the anchor at good distance so that they can assist the vessel in heaving when going water
- Sounding of all tanks must be done before and after beaching.

### Real Life Accident: Improper Bridge Procedures and ECDIS Use Causes Grounding of Ship:

A self-unloading bulk carrier sailed in the morning after loading a cargo of aggregates. The pilot disembarked soon after unberthing, and the vessel proceeded at Full Ahead (about 12 knots) with the Master, 3/O and a helmsman manning the bridge. Visibility was good with a moderate breeze. Besides the two radars, the bridge

team was using an ECDIS, on which, a safety contour of 10 metres (inappropriate, considering a sailing draught of 10.63 metres), a cross-track deviation limit of 0.2 mile and an anti-grounding warning zone that covered a narrow arc ahead to a range of about ten minutes' steaming had been set.

About an hour after departure, the vessel entered a narrow strait, where the Master instructed the helmsman to engage the autopilot on a heading of 290° and handed over the con to the 3/O. He then proceeded to the communications desk on the after port side of the bridge, increased the volume of a portable music system and busied himself with sending routine departure messages. A few minutes later, the vessel was approaching a planned waypoint requiring an alteration of 24° to starboard to 314°. At this time, the 3/O visually sighted an inbound sailing vessel about 3 NM on the starboard bow. After coming on to the new course on the autopilot, he decided to pass the sailing vessel to port and adjusted the course to 321°. Simultaneously, he observed another small vessel about a mile away, right ahead and coming head on, and altered more to starboard to 324°.

The ECDIS anti-grounding warning zone alarm then activated on the display, but no audible alarm sounded, a deficiency not known at the time. As a result, the 3/O, who was monitoring the situation from the forward console, did not realize that the vessel was heading towards shoal ground. He also sounded two long blasts on the ship's whistle to alert the nearest vessel, which soon passed clear to port.

Thereafter, the 3/O focussed his attention on the sailing vessel ahead, which was now about a mile away. Two minutes later, the vessel ran onto a charted shoal at full speed. The severe vibrations lasted several seconds. The Master ran to the ECDIS display and, recognizing that his vessel had run aground, instructed the helmsman to switch to manual steering and ordered the wheel to hard-a-port. The sailing vessel also altered course to port and the vessels narrowly avoided colliding. After he steadied the vessel on a heading to return her to the planned track, the Master discovered that there was water ingress in No 3(P) ballast deep tank. Further checks revealed no other damage, and a preliminary report was sent to the office.

Proceeding at reduced speed, tank soundings confirmed that the ship's pumps were able to cope with water ingress. Nevertheless, the Master ordered the breached compartment to be opened at sea and for a party consisting of the C/O, C/E and a seaman to internally inspect the damage. After they identified a 3-metre longitudinal fracture in the hull bottom plating, the inspection team safely vacated the tank and re-secured its access. With company's and class approval, the vessel continued on its short passage towards the discharge port, where, after unloading, she entered drydock to effect permanent repairs

### Findings of investigation

- 1 The vessel was fitted with two ECDIS units that were used as the primary means of navigation, thus removing the need for paper charts to be carried. All bridge officers, including the Master, had completed a generic ECDIS training course in their home country, but no training or familiarisation on the type of ECDIS fitted on board had been provided by the ship's management company;
- 2 Before reaching the waypoint, the 3/O wrongly assumed that risk of collision existed with the sailing vessel on the

- next planned heading and prematurely initiated a turn to starboard and then continued to alter course to starboard, illogically intending to pass between the sailing vessel and the steep-to shore;
- 3 After initiating the course alteration, the 3/O did not monitor the vessel's position and projected track on the ECDIS display, for over 15 minutes, and failed to notice that the visual grounding warning alarm had been activated;
  - 4 Both the present and past crews were unaware that the ECDIS antigrounding audible alarm had been disconnected in the past for unknown reasons;
  - 5 The vessel's ECDIS display was located some distance abaft the bridge front and orientated so that the OOW had to face to starboard to look at the screen. Had the ECDIS display been located on the forward console, the OOW would have been more likely to routinely consult it when monitoring the navigational situation and also been alerted by the visual grounding warning alarm;
  - 6 A safety contour setting of 10 metres was inappropriate for the voyage as the sailing draft of 10.63 metres meant that the vessel would have grounded at a charted depth of 10.13 metres, before crossing the safety contour;
  - 7 Despite having attended approved ECDIS training courses, the bridge watchkeepers lacked an understanding of the ECDIS equipment's safety features;
  - 8 The 3/O remained confident in functioning as the sole navigator in restricted waters, but soon after the multiple small alterations of course, he became sufficiently concerned about the intentions of the nearest vessel ahead to sound two long blasts on the ship's whistle. The Master failed to react to this inappropriate signal and did not leave the communications console at the rear of the bridge to assess the situation or challenge the 3/O's actions;
  - 9 Following the grounding, the bridge team failed to follow the company's emergency checklist or maintain a proper record of follow-up actions taken, as a result of which, some important responses were missed;
  - 10 No risk assessment or consideration of potential consequences was undertaken prior to opening up and ordering entry into the breached ballast tank with the ship at sea and proceeding at near full speed.
- 4 The Master placed undue trust in the 3/O's abilities, offering him no support despite the navigational demands of the passage;
  - 5 The Master should have delayed sending the routine departure messages until the vessel was clear of the narrow passage;
  - 6 Loud music can impair the keeping of a proper lookout as required by Rule 5 of the Colregs. Had the ECDIS audible alarm been functioning, it might still not have been heard by the 3/O due to the background noise pollution provided by the loud music;
  - 7 As it was established that the ballast pump was capable of stemming the inflow of water, the opening of a breached compartment and entry by personnel constituted an unacceptable and unnecessary risk.

#### Corrective/preventative actions

- 1 The ship operator implemented the following corrective actions in the drydock:
  - i. Repositioned the main ECDIS unit adjacent to the starboard radar, enabling its viewing while facing forward;
  - ii. Reconnected the ECDIS unit to the bridge alarm monitoring unit to provide a functioning audible alarm;
  - iii. Arranged for the vessel's bridge officers, and company's Designated Person (DPA) and marine / nautical superintendent to attend an equipment-specific training course on the ECDIS type fitted on board;
- 2 Arranged for the fleet's bridge officers to attend a bridge resource management course;
- 3 Arranged for the marine / nautical superintendent to provide on board ECDIS training to the fleet's other vessels fitted with ECDIS or electronic charts.

#### Recommendations

The ship operator was advised to issue written instructions and guidance to the fleet and carry out regular verification visits to its vessels to ensure that ship's staff:

- 1 Have a clear understanding of how ECDIS should be used;
- 2 Understand the vessel's emergency procedures,
- 3 Understand the need to properly evaluate routine operations after an accident to ensure that any new risks are identified and mitigated as appropriate.

#### Real Life Accident: Injury During Cargo Hose Pressure Test:

While doing pressure testing of cargo hoses on a tanker ship, the junior officer who was part of the testing team got seriously injured when the connection between the water hose and cargo hose got detached and the flailing hose coupling hit his left leg.

**Accident:** On some chemical tanker fleet, the annual pressure testing of cargo hoses is generally carried out by ship's crew, ideally when the cargo hoses are being used for tank cleaning. During such an operation, with the ship at a repair yard, the cargo hose pressure test was being conducted at a pressure of 12 kg/cm<sup>2</sup>. A junior officer was part of the testing team, and was involved in documenting data and taking photographs.

#### Lessons learnt

- 1 ECDIS provides the bridge team with an efficient and effective means of navigation. However, its ability to continuously provide the vessel's current position and projected track, and to warn of approaching dangers, can lead to over-reliance and complacency.
- 2 It is imperative that navigators be given equipment-specific training and onboard instructions and guidance to monitor the vessel's position and projected track at regular intervals and to fully understand the equipment's safety features in order to make best use of them;
- 3 The area where the accident occurred required careful navigation in view of the vessel's size, speed, restricted sea room and the likelihood of her encountering other traffic;

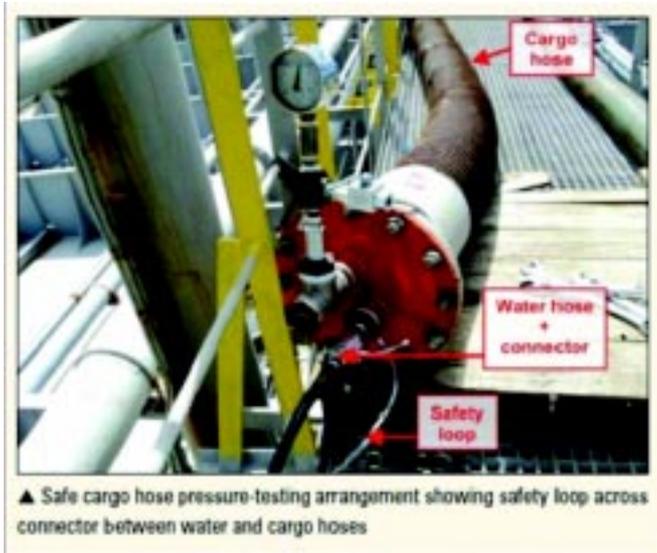
Suddenly, the connection between the water hose and cargo hose detached and the flailing hose coupling hit his left leg causing a serious fracture.

**Root cause/contributory factors:**

Worn and insufficient threads on the water hose coupling.

**Corrective/preventative actions**

The shipyard was given a letter of protest about the accident.



Alert issued to the fleet instructing the crew to:

- i. Inspect all tools and equipment which are used for the pressure test beforehand;
- ii. Attach a safety loop or lashing rope across every temporary connection in the hose and piping system to prevent them from snapping back;
- iii. Keep away from snap-back danger zones;
- iv. Locate and monitor devices such as pressure gauges which are within a safety zone.

**Real Life Accident: Sleeping During Watch Leads To Vessel Grounding:**

A small cargo vessel was on a coastal passage and proceeding at full sea speed. At midnight, the Master, one of the two watchkeepers on board, was relieved by the other officer. Soon after taking over the watch, the OOW, as was the common practice on this vessel, sent the duty lookout below.

It was later determined that the OOW fell asleep sometime after sending the lookout below. With the Bridge Navigational Watch Alarm System (BNWAS) turned off and other alarms not activated, available bridge resources that could have alerted the crew and/or awoken a sleeping OOW were silenced. As a result the vessel steamed at 11.5 knots with no-one in control on the bridge for over an hour before grounding.

All of the vessel's crew, with the exception of the OOW, were awoken by the vessel running aground. The Master ran to the bridge, where he found the OOW still asleep. He roused him and simultaneously placed the engine control to neutral. The OOW awoke confused and was shocked to find that the ship was aground.

In the days leading up to the accident, the OOW had maintained the 0000-0600 watch. However, for the 24-hour period preceding the accident this routine was reversed. While the vessel was alongside he was the duty night officer, but was expected to rest from midnight (when he would normally be on watch) and work through from 0700-1200, (when he would normally be asleep). It is likely that this change of routine impacted upon his quality of sleep during the night in port. He did have over four hours rest before taking over the watch from the Master at midnight and appeared to be fit and well at that time. However, within one hour of taking the watch the OOW failed to call the pilot station, despite specific instructions in the Master's night order book (which he had signed) and the Master's verbal reminder to him at the watch handover. This suggests that weariness was already affecting his cognitive ability.

**Findings of the report**

- \* The OOW fell asleep on watch as a result of insufficient stimulation and probable fatigue following a change of work and rest pattern.
- \* There was no lookout on the bridge, as required during the hours of darkness, allowing the OOW to fall asleep unnoticed. It was not unusual for lookouts to be dismissed from the bridge during the hours of darkness.
- \* By including the AB/cook on the look-out duty roster, there would have been sufficient manpower for a dedicated lookout to be maintained during the hours of darkness, whilst ensuring personnel did not work excessive hours.
- \* The Master did not exercise his overriding authority for the safety of the vessel to delay sailing until his watchkeepers and lookouts were adequately rested.
- \* Navigational aids were not used effectively to ensure a vigilant and effective watch was maintained at all times.
- \* The vessel was equipped with a BNWAS. However, neither the ship's managers nor the Master required that this equipment be used; it was seldom, if ever used by the bridge watchkeepers.

**Panama Freeing Most of North Korean Crew in Smuggled Arms Case:**

Panama is freeing most of the 35 North Korean crew members it detained more than four months ago for smuggling Cuban weapons aboard a ship, a senior government official said on Wednesday.



The munitions were hidden under thousands of bags of sugar aboard the North Korean-flagged ship

Tomas Cabal, head of the anti-terrorism section of Panama's Foreign Ministry, said 32 of the crew of the Chong Chon Gang would be freed and should leave the country by Thursday.

The three most senior members, including the captain, still face charges of threatening Panama's security by seeking to move undeclared weapons through the Panama Canal.

Cabal said the attorney general's office had informed him the paperwork to free the crew had been processed. However, the state prosecutor for organized crime, Nathaniel Murgas, later told reporters that his office was still analyzing the North Korean authorities' request to release the men.

The crew's return would end part of a bizarre case involving the three countries that provoked international controversy after the ship was seized in July for smuggling Soviet-era arms, including two MiG-21 aircraft, under 10,000 tons of sugar.

"The crew members have effectively been freed. They are drawing up the release order and will go to Havana. I understand they must leave by tomorrow," Cabal said.

Panamanian officials have said the 32 appeared to be ignorant of what was in the cargo.

It was still unclear what would happen to the ship, because a \$1 million fine the Panama Canal Authority imposed on the vessel has not yet been paid.

The U.N. Security Council has yet to decide on penalties against Cuba because of a 7-year-old ban against arms transfers to North Korea due to the country's nuclear weapons program.

However, the arms will likely be sold or given away, Panama's Foreign Minister Fernando Nunez Fabrega has said.

In July, the North Korean crew sabotaged its electrical system and bilge pumps after Panamanian investigators stopped the ship near the Atlantic entrance to the Panama Canal on suspicion it was carrying drugs after leaving Cuba.

## 15 Practical Tips For Bunkering and Storage of Fuel Oil On Ships:

Marine fuel oil is one of the most important aspects that control the overall efficiency of ships and the shipping industry. The high cost of marine fuel oil requires maritime professionals to bunker, store and use the Heavy Fuel Oil, Diesel Oil and Marine gas



oil very carefully and exercise due diligence in keeping track of the consumptions meticulously.

Mentioned below are few points that must be noted to ensure economic use and efficient storage and bunkering of fuel oil on board ships:

1. On many older vessels, the HFO flow meter does not function correctly (in many cases the return oil flow meter is either not provided or not functioning correctly) and is not being regularly serviced and calibrated. Maintenance of HFO flow meter should form a part of the PMS and Continuous machinery survey to underline its importance. Have you ever noticed a surveyor asking to find out how your flow meters are working and are you regularly cleaning fuel oil flow meter filters on main engine and generator fuel lines? In some cases in the past black out was caused because generator fuel oil filter ( smaller in size and by pass closed) was not at all cleaned.

2. Understanding the correct procedure for bunkering is extremely important for the safety of the vessel and for preventing oil spill. Companies and port authorities must also provide necessary training and guidance to ensure safe bunkering procedures. For e.g. Maritime and Port Authority of Singapore have issued good instructions and guidance notes for bunkering at Singapore and these should be studied and followed. Quality has rarely been an issue involving Singapore bunkers but at times we do come across disputes involving quantity largely due to Air blowing and what we commonly know as "cappuccino bunker".

On my last ship, we were taking most of the bunker in (double bottom) DB tanks but some 50-60 tonnes in the end in wing tank to eradicate air-blowing effect, if any. But such a tank arrangement may not be there on other ships

and in that case we can ask the barge to blow air after we have taken the soundings.

Marine Insight eBook - A Guide to Operating Procedures for Engine Room Machinery

3. Sounding pipes must be used properly to prevent errors in tank readings. In many cases we are not able to properly put the tape in the sounding pipes resulting in erroneous readings. If the sounding pipe is straight, using a rod (a nut welded to the end to fasten rope) is quite effective to take ullage especially in cold climates. Also, in some cases the calibration booklets are not very correct on certain trim conditions and thus the quantity cannot be gauged correctly. Ensure to avoid such problems. It is a good practice to put some diesel oil (1-2 liters) in the sounding pipe of HFO tanks 1 day prior to scheduled bunkering especially in cold region.

4. It is good to know the tank characteristic from experience of previous crew as well and record of regular soundings and quantity determination kept in computer, which normally convinces the off/on hire surveyors.

MPA Singapore are in the process of making bunker barges to install approved flow meters employing modern technology to ensure that ships get the correct quantity and there is no dispute. International Bunker Industry Association is also doing a good job in the matter of developing bunkering facilities at various ports around the world, both for HFO/LSFO, LSGO and LNG bunkering.

Singapore, Rotterdam, Fujairah and Houston are major bunkering ports for various quality of fuel oils while Rotterdam, Seinehaven, Port Fourchon in Louisiana and Shwinaouski in Poland are being developed for LNG bunkering.

5. Correct sampling and expeditious dispatch for fuel testing to laboratory must be done properly. Some disputes regarding quality have been reported in fuels picked up from a Ukraine port (water and total sediment potential) and some times from Houston areas. Ensure that the appropriate samples are sent to the shore lab for correct test results.

6. On bulk carriers, which carry powdery cargo, we must carefully examine the air pipes and sounding pipes which pass through the hatches (hidden behind structural protection) to see that there is no wastage and hole in them through which the cargo can find way to fuel in the tanks below. This aspect is commonly neglected these days.

7. It is also commonly found on many ships that tank cleaning on ships is not done at least once in five years (due largely to economic causes and dry dock availability). Moreover, it is also found that tank or tanks not being used on some ships are still carrying a remnant of about 15-18 tonnes. In many cases the heating coils are leaking and the sludge has been pumped into one of these tanks. Even the service and settling tanks are not being cleaned and internally examined once in five years. This is a grave issue and proper steps must be taken to ensure tank cleaning and inspection at regular intervals of time.

8. These days the quantity of diesel oil carried on board is quite less and if the vessel is in cold area for a long period, condensation of air in tank occurs. It is necessary to check D.O. tank drain and clean D.O. line filter to check the possibility of presence of water.

9. Indiscriminate mixing of fuels from various origins (Even

if the grade, say, 380Cst, is same) also causes problems in usage of the fuel. Correct purification and filtration ensures good burning resulting in saving of fuel. Purifiers and filters should be cleaned regularly with due attention from a senior engineer.

Marine Insight eBook - A Guide to Operating Deck Machinery Procedures and Operations

10. Maintaining correct temperature and viscosity at injector 13-15 Cst ( temperature about 135 DegC for 380 Cst Oil) will ensure good burning and savings of fuel. We must ensure availability of 0.1% sulphur content fuel at several locations. (IMO postponing Tier III requirements from 2016 to 2021 is a good move.)

11. By now, we have come to grips with problems associated with switching of fuel to Low Sulphur fuel and LSGO concerning lack of lubricity and leakages occurring at fuel oil supply and circulating pump shaft seals. The bacterial contamination of remnant LSFO (H<sub>2</sub>S formation) does occur if the fuel is held unconsumed for long and if the ship is not going to a SECA area any soon , it is justified to consume off this oil.

ISO 8217: 2010 is in force for fuel oil analysis and this takes into account the hydrogen sulphide, lubricity and oxygen stability. Lubricity and Oxygen stability tests will become more important after 2015, as we progressively use ultra-low-sulphur distillate fuels.

12. The air pipes and sounding pipes of F.O. tanks on decks should be checked to see that they are structurally sound and wire mesh on air pipes not damaged or clogged.



13. When we clean the exhaust gas economizer, the boiler pressure increases fast as we sail out. In such cases if our dump steam condenser is not kept clean, we tend to open too much steam into bunker tanks causing fuel oil tank high temperature alarms to sound. This may damage some cargo carried on other side of the bulkhead. Many times we do not operate or keep dump steam valve on auto because LT cooling water temperature rises (dump condenser LT cooled). We need to keep these possibilities in mind while carrying fuel oil.

14. Many a times we needlessly delay ships in trying to sort out the issue of quantity received. This also happens when the vessel is not able to determine correct trim and when she goes down by the head upon completion of bunkering. A balanced approach at such times helps to settle matter amicably. These issues will diminish in time as the suppliers (like WO bunkers and those supplying at Singapore) install technically sound flow meters on their barges as is reportedly being planned by MPA Singapore by the year 2014.

15. Lots of care is needed while bunkering and storage of fuel oil and we should realistically carry out pre-bunker meeting to discuss the bunker plan and safety aspects. The crew in the Deck department should also participate enthusiastically to tend mooring and to provide safe access to bunker man to board the ship, keeping a good watch on this arrangement ( like adjusting gangway, if being used) as the bunker progresses and the barge comes up.

Care and Re-checking are good habits in almost all operations and same is required for the bunker procedures. The role of Society of Gas As a Marine Fuel (SGMF) in encouraging safe supply and responsible operation of vessels using LNG as fuel is laudable.

International Bunker Industry Association (IBIA) is also doing a good job in involving itself in all aspects of fuel availability, fuel delivery to vessels and to its testing and use on board. If possible, shipping companies should become the members of IBIA to gain benefits by its research activities and useful publications.

**Foreign Shipowners Encourage China to Resolve VAT Problems:** The Chairman of the International Chamber of Shipping (ICS), Mr Masamichi Morooka, has written to the Chinese Minister of Finance, encouraging the Chinese Government to continue its efforts to find a solution to the problems created by the application of Value Added Tax (VAT), since 1 August, to the transport and logistics services provided by 'Wholly Foreign Owned Shipping Companies'.

The problems exist because it is much harder for foreign shipping lines - as opposed to Chinese companies - to reclaim the 6% VAT (and a 0.8% VAT surcharge on ocean freight) that is now collected by shipping agencies in China, and so avoid passing this on to their overseas customers. The unintended consequence is that foreign carriers are being placed at a competitive disadvantage to Chinese shipping companies.



One of the reported impacts is that hundreds of millions of dollars of shipping contracts with foreign shipowners that are normally concluded in China are now being concluded in other jurisdictions where the new VAT rules do not apply.

ICS - which represents the world's national shipowner's associations and over 80% of the world merchant fleet - has emphasised to the Ministry of Finance the great importance that is attached by the international shipping industry to the successful resolution of VAT issues that have been raised by foreign shipping companies which collectively transport a very significant proportion of China's international trade.

ICS Director of External Relations, Simon Bennett, explained "The Chinese Government is deeply conscious of its commitments towards the maintenance of a 'level playing field' in maritime services, and has no wish for the new arrangements concerning the application of VAT to international shipping services to have a negative impact on the competitiveness of Chinese exports, the vast majority of which is carried by ships. We have therefore welcomed the positive indications that have been given by the Chinese authorities during recent meetings with foreign shipping company representatives in Beijing that steps are being taken to address those concerns."

He added "However, these issues are very complex and we recognise the major challenge for the State Administration of Taxation in trying to find a solution for international shipping that will be consistent with China's broader objectives as it seeks to move towards a system of VAT in other parts of the Chinese economy."

**Notes:** The application of VAT to transport and logistics services provided by 'Wholly Foreign Owned Shipping Companies' was outlined in Chinese Circular 'Cai Shui No 37' on 24 May, with effect from 1 August 2013.

ICS is the principal global trade association for commercial shipowners and operators. Its membership comprises national shipowners' associations in 35 countries representing over 80% of the world merchant fleet at those international bodies which impact on shipping. This includes the United Nations International Maritime Organization (IMO) and the World Trade Organization (WTO).

**Antitrust: Commission Opens Proceedings Against Container Liner Shipping Companies:** The European Commission has opened formal antitrust proceedings against several container liner shipping companies to investigate whether they engaged in concerted practices, in breach of EU antitrust rules.

Container liner shipping is the transport of containers by ship at a fixed time schedule on a specific route between a range of ports at one end (e.g. Shanghai - Hong Kong - Singapore) and another range of ports at the other end (e.g., Rotterdam - Hamburg - Southampton). Opening of proceedings does not prejudice the outcome of the investigation.

Since 2009, these companies have been making regular public announcements of price increase intentions through press releases on their websites and in the specialised trade press. These announcements are made several times a year and contain the amount of increase and the date of implementation, which is generally similar for all announcing companies. The announcements are usually made by the

companies successively a few weeks before the announced implementation date.

The Commission has concerns that this practice may allow the companies to signal future price intentions to each other and may harm competition and customers by raising prices on the market for container liner shipping transport services on routes to and from Europe. The Commission will now investigate whether this behaviour amounts to a concerted practice in breach of Article 101 of the Treaty on the Functioning of the European Union (TFEU) and of Article 53 of the European Economic Area (EEA) Agreement.

### Background

Article 101 TFEU prohibits anticompetitive agreements and concerted practices.

Article 11(6) of the Antitrust Regulation provides that the initiation of proceedings by the Commission relieves the competition authorities of the Member States of their competence to also apply EU competition rules to the practices concerned. Article 16(1) further provides that national courts must avoid giving decisions, which would conflict with a decision contemplated by the Commission in proceedings that it has initiated.

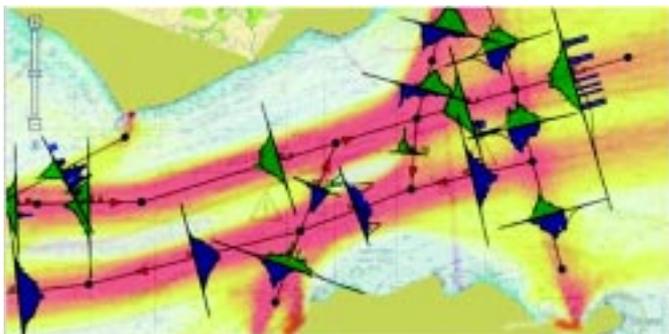
The Commission has informed the container liner shipping companies concerned and the competition authorities of the Member States that it has opened proceedings in this case.

There is no legal deadline for bringing an antitrust investigation to an end. The duration of an investigation depends on a number of factors, including the complexity of the case, the cooperation of the undertakings with the Commission and the exercise of the rights of defence.

**Safety of Navigation in the Strait of Gibraltar analysed by the Danish Maritime Authority:** How is safety of navigation affected if a shipping lane is changed? What is the risk of a collision in specific waters?

The Danish Maritime Authority uses risk analysis tools to assess this, and we have just taught colleagues from all over the world about their use.

This was the case when the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) held a seminar in Madrid last week on the use of risk analysis tools. 33 persons from all over the world attended the seminar, including several experts from the Danish Maritime Authority. The Danish Maritime Authority presented and taught the seminar participants how to use the Danish experiences gained with risk analysis tools in the very busy Strait of Gibraltar between Spain and Africa.



Among other things, the Danish Maritime Authority presented the use of the risk assessment tool IWRAP (IALA Waterway Risk Assessment Program). This has been developed in cooperation between the Danish Maritime Authority, IALA, the software company Gatehouse, the Technical University of Denmark and a number of foreign universities. The program can be used to calculate the actual probabilities of collisions and groundings in specific waters and to predict what will happen if shipping lanes are changed or if the ship traffic starts behaving differently than previously.

In Denmark, the program has inter alia been used to analyse the risk associated with replacing a light by floating aids to navigation, and we have analysed the effect of closing down and changing shipping lanes.

### Improved Port Accuracy and Safety through Novel Technology:

Galileo, the multi-billion euro global navigation satellite system funded by the EU, will soon provide highly accurate and precise position measurements on Europe's roads. But the primary mode of international trade - the maritime industry, responsible for nearly 90 percent of world trade - still relies on outdated technology with limited precision capacity at a high cost and with low efficiency.

Eight research institutions from six European countries are involved in the DOCKINGASSIST project, which set out to remove the guess work from the docking and maneuvering of container ships, bulk carriers and other large vessels through the development of a novel wireless network relying on a differential global navigation satellite system.

Maneuvering large vessels is not an easy task, particularly for SMEs that represent the majority of the maritime sector. With sea transport expected to double over the next 15-20 years, operators will be put under significant pressure to increase their capacity and freight with larger, more frequent vessels as companies try to achieve economies of scale.



Large vessels usually enter the port with the assistance of trained pilots who are specialised in navigating in a particular port. In most cases, the pilot will use onboard equipment for navigating the vessel into a port which is comprised of either an Electronic Chart Display Information System (ECDIS) or paper charts in conjunction with a GPS receiver. This leaves the vessel at a distinct disadvantage as the errors on such systems may not be known to the pilot.

DOCKINGASSIST's solution consists of two main parts: a Base Station (BS) installed at the harbour and a Portable Pilot

Unit (PPU) installed on the ship. The portable unit can be used by the pilot in charge of docking the vessels at the port without requiring any expensive berthing systems.

This system makes it possible to increase location and speed accuracy by means of a static base station that identifies errors and transmits them wirelessly to the receiver, permitting not only the ability to transmit the correction data but to also exchange other important information between the port and the vessels including weather information, position of other vessels and tidal levels.

DOCKINGASSIST's technology will result in a reduction of transit time, therefore improving port traffic management. The team assert this will lead to savings in time, fuel and operational expenses. Moreover, it will lead to a reduction in CO2 emissions consequently lowering the environmental impact of shipping.

The partners have so far successfully proved the principal idea behind DOCKINGASSIST and transferred the technology from research and development activities to the consortium SMEs. The project has been disseminated by all partners nationally and internationally through workshops, exhibitions and various media.

The EU committed EUR 1 122 633 to the project. Launched in November 2011, DOCKINGASSIST is funded under the programme 'Research for the benefit of SMEs'.

### **India's Essar Ship with China-bound Iron Ore arrested in Singapore:**

A vessel owned by India's Essar Shipping carrying iron ore bound for China was arrested in Singapore on Sunday due to a dispute with a bunker fuel supplier, according to sources and the city-state's Supreme Court website.

The 106,438-deadweight tonne vessel Kishore, which was on its way to China from Brazil, was arrested by the Supreme Court sheriff because of a dispute with Singapore-based Bunker House Petroleum, two sources said on Thursday.

An Essar Shipping source said Kishore "should sail out today".

Bunker House Petroleum and Singapore's Maritime and Port Authority declined to comment.



No further details were immediately available.

Ships carrying iron ore from Brazil and headed for China typically stop in Singapore to refuel. Kishore loaded iron ore at the Brazilian ports of Itaguaí and Sepetiba Bay on Oct. 11 and reached Singapore on Nov. 17, according to Reuters shipping tracking data.

China is the world's top market for iron ore and buys about two-thirds of the 1-billion-tonne-plus of the raw material that is shipped out every year, mainly from Australia and Brazil.

### **What are the Benefits of Container Security Initiative (CSI)?:**

Container security initiative, a bilateral informative transfer system started by US Coast Guard, aims to increase the level of security at US ports. The article -What is Container Security Initiative (CSI) and how does it Work, explains the working and important features of CSI. In this article, we enumerate the benefits of CSI to the marine world.

Container Security Initiative (CSI) is a system that offers benefits for all the parties involved.



Some of the major benefits of container shipping through CSI are:

- Additional and highest security offered.
- Since there is no delay in container shipping, the trade faces no setbacks
- This system allows the host countries to have access to containerized cargo leaving for their ports, ensuring more security of their own shores.
- This is an economical system with no hassles and only increased security
- The shipment of cargo containers can actually be increased through this system with no additional security checks conducted through rest of the US ports once they have been scanned under CSI
- It not only offers a greater global security for container shipping industry but to all facets of the shipping industry.

Container security initiative is a unique system which is bilateral in true sense. A country signing up for such system agrees not only to scan cargo containers but actually takes a major step towards overall global security.

### **Cargo Handling On Ships - 10 Tips That Can Save Your Life:**

Cargo handling as an activity has evolved from being purely manually driven to an activity that is performed using the latest materials handling equipment money can buy. But, humans still have an important role to play in cargo handling, which essentially throws the doors open for a diverse and serious range of safety concerns.

It's important that shipping personnel are well aware of the various considerations that need to be kept in mind to

perform cargo handling operations on ships with utmost safety. Knowing the essential safety features, and making appropriate use of materials handling equipment are just some of the ways you can make sure you're able to handle cargo safely on ships.

Let's take a look at some of the essential tips that need to be kept in mind while handling shipboard cargo. Knowing these tips can mean the difference between life and death:

**Tip 1: Protection Equipment**

Wearing the right kind of personal protective equipment is of paramount importance while moving cargo from one place to another. Equipment like safety harness, safety helmets,



safety shoes and various others must be used at all times while handling cargo on ships. Working without such equipment puts your life at grave risk. Also make sure you know the proper use of all protection equipment in order to optimize its use. Another aspect that must be considered is the maintenance of this equipment and checking it for damage prior to use.

**Tip 2: Do not Interfere with the use of a Safety Device and Understand all Safety Procedures**

Before handling the cargo, the crew should be told of the various on-site safety devices that will protect them in case of an untoward incident. Crew should in no way interfere with the working of such devices or alter their functioning in any way or form. Something else that is important is understanding all the safe methods and practices of cargo handling and making sure they are adopted without shortcuts.

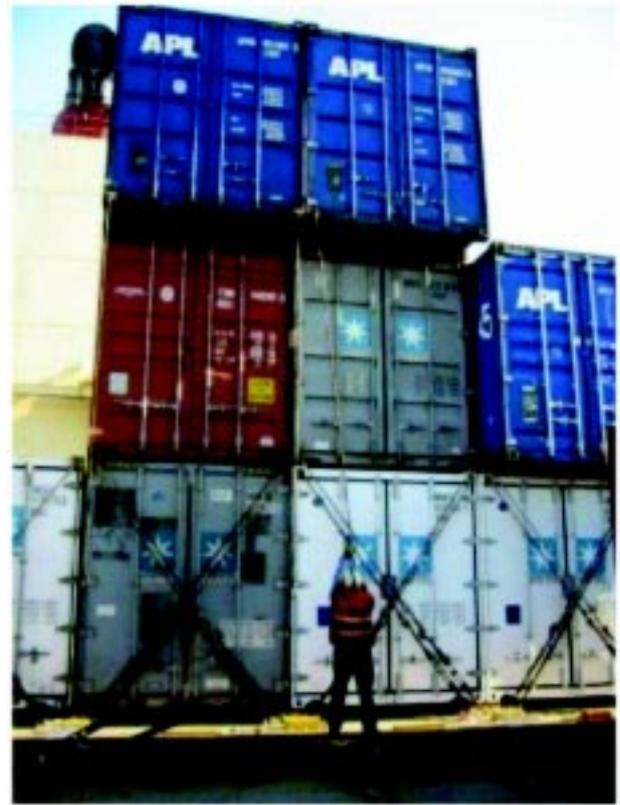
**Tip 3: Identify Shelter Positions**

If you're working on the open deck while handling cargo, it's important that you are well aware of the shelter options that will protect you in the case of falling cargo, or where

you can wait till the hoisted cargo has been placed on the deck or amidships.

**Tip 4: Securing the Cargo**

It's of paramount importance that all cargo is secured when it arrives on deck and not piggybacking cargo. A secure cargo is safe cargo and it needs to be secured as soon as it is placed



in the storage area. Loose items of cargo can prove to be dangerous and you don't want a situation from hell on your hands, where an unsecured cargo has gone on to seriously injure some on-board personnel. Something else that one must remember is that any and every cargo that is not in a containers should be properly secured at all times.

**Tip 5: The Right use of Lifting Equipment**

Cargo handling on ships requires the use of lifting equipment like wire ropes, wire rope slings, hooks, forklifts, cranes etc. As somebody working with such equipment, you need to be able to make sure that the equipment has been tested and maintained according to the relevant rules and regulations. More importantly, you must be able to use this equipment the way it is supposed to be used. Incorrect use of lifting equipment can put the lives of people working in and around this equipment in jeopardy.

**Tip 6: No standing under a hoisted cargo**

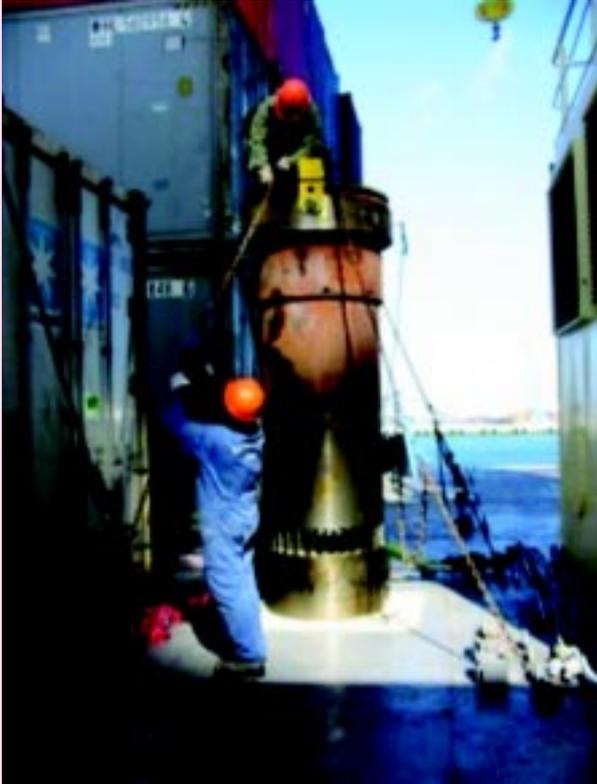
In an environment where cargo is being handled, there is always a danger of being hit by a load if you're standing in its path or under it. There have been some tragic accidents all because a person was standing under a hoisted load.

There are two facets to this particular safety aspect. Firstly, the crane operator must ensure a safe path for the hoisting of the cargo and secondly, the on-deck personnel must make

sure they are well aware of the loading path and stay clear of incoming cargo.

### Tip 7: Entering Enclosed Spaces

In many cases, the personnel in charge of handling cargo will need to enter an unventilated cargo hold. Not adhering to the proper safety procedures might result in them



entering oxygen deficient confined spaces or ones that are packed with toxic gases. As can be imagined this can lead to some serious problems. Therefore, such spaces must be checked for their oxygen content and thoroughly ventilated before entry. The use of special equipment allows one to check for oxygen content in such places.

### Tip 8: Importance of Proper Visibility

Do not handle cargo in poor visibility. If you feel visibility is getting affected due to certain reasons like a change in weather conditions amongst others, take the necessary steps to improve the lighting on work places. It's also important that the lighting does not dazzle the eyes and allows you to see each area of the workplace clearly. Working in improper lighting is a recipe for disaster and can lead to some serious accidents.

### Tip 9: Bulk Cargo

Close supervision is needed to ensure work safety while handling bulk cargoes. There are plenty of people involved in such operations who are usually in the hatch and are involved in the process of getting the cargo in and out of the hatch. Proper supervision ensures not only is this cargo handled safely, but there is also somebody (ideally stationed on the deck above the hatch) who is closely watching the people working in the hatch at all times. This is important because the people themselves cannot take good care of their safety, during this time.

### Tip 10: Contact the Supervisor in case of Problems

If you feel, at any point of time, that the safety of the workplace is compromised in any way or form, it is important to contact the supervisor. You might find that a hatch cover has come loose or that the load is not being positioned properly on the lifting equipment or you might find something else that you believe will impact the safety of the cargo handling process. In such cases, it's important that you discuss your findings with the concerned person.

These are just some of the many tips that should be kept in mind to improve safety of the cargo handling process. If you're a part of this process, it's important that you have a very clear idea of how to handle cargo safely on ships. This knowledge might help save your life someday.

### Italy Ratifies The ILO Maritime Labour Convention, 2006 (MLC, 2006):

The Government of Italy deposited with the International Labour Office the instrument of ratification of the Maritime Labour Convention, 2006 (MLC, 2006). Italy is the 52nd ILO Member State, and the 20th member State of the European Union, to ratify this Convention. As many as 1,650 ships representing more than 18 million gross tons are registered under the Italian flag. Italy is among the world's top 20 countries in container liner trade and also among the top three EU countries in containerized imports and exports.

In depositing the instrument of ratification of the MLC, 2006, the Italian Minister of Foreign Affairs, Ms Emma Bonino, stated: "Keeping in line with its ancient maritime tradition, Italy is happy to contribute to the improvement of working conditions onboard ships, including with regard to social security coverage of seafarers. Italy will continue



to offer full support to the ILO objectives and activities aimed at establishing international labour standards in such a sensitive field."

In receiving the instrument of ratification, Mr Guy Ryder, Director-General of the International Labour Office said: "I am particularly pleased to welcome Italy, a country with important maritime tradition and presence, among the States parties to the MLC, 2006 - a promising new global

standard for decent work for seafarers and fair competition for shipowners. The Italian Coast Guard has been taking a leading role, since the adoption of that Convention in 2006, in the development and delivery of training courses relating to maritime labour inspection and port State control, at the Maritime Labour Academy of the ILO's Training Centre in Turin, and in encouraging initiatives for the welfare of seafarers.

With Italy's ratification, approximately 80 per cent of the world gross tonnage of ships would be bound by the innovatory provisions of the MLC, 2006, whereas at the time the first 30 ratifications were registered in August 2012,

the respective coverage was 59 per cent. As Italy now turns from ratification to the effective implementation of the requirements of the MLC, 2006, I am sure that it will continue to set high standards and offer best practices for the maritime industry and that its example will soon be followed by many more countries in the region and around the world."

The MLC, 2006 entered into force on 20 August 2013 for the first 30 member States that had registered their ratification by 20 August 2012. The Convention will enter into force for Italy on 19 November 2014, that is one year after its ratification.

"Maritime Group" knows as to what we are, not forgetting that we are here to share our valued flow of thoughts, interchanged with quality of expression exchanged, is to arrive at a QUALITY consensus, since "MARINE NEEDS A MULTI-DISCIPLINARY APPROACH - Do something instead of killing time or else, time will be killing you."

For all practical purposes, my e-mail ID would be:- [chandranpechulli@gmail.com](mailto:chandranpechulli@gmail.com), OR [chandran.pechulli@yahoo.com](mailto:chandran.pechulli@yahoo.com)



### Attention Seafarers! TOLL FREE NUMBER

In case of Emergency seek Help, while in Indian waters / Indian EEZ, Contact: INDIAN COAST GUARD Dial City Code, followed by 1554.

*For example from Chennai, 044-1554*

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Service to active Seafarers out at Sea on top priority.

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