THE DELIVERY OF M.T. HANGZHOU

M. T. Hangzhou is built by Jinhai Heavy Industry Co., located on Daishan Island. Vessel was delivered on the 28th of June 2016.

NEWSLETTER CONTENTS

SEPTEMBER 2016 EDITION

LUBE OIL CAVITATION

A SILENT KILLER OF THE JOURNAL BEARINGS IN INTERNAL COMBUSTION ENGINES

Introduction:

A. **Cavitation is the** formation of an air or vapour pocket (or bubble) due to lowering of pressure in a liquid, moving through the liquid; also, the pitting or wearing away of a solid surface as a result of the collapse of a vapor bubble.

B. Cavitation can occur in Internal combustion lube oil system, as a result of low fluid levels that draw air into the system, producing tiny bubbles that expand explosively at the bearing oil supply outlet, causing metal erosion and eventual bearing damage.

C. This is a particular form of fatigue caused by rapid fluctuation of pressure in the bearing oil film. When the pressure is low, bubbles of vapour or dissolved gas are formed and then collapse as they go into a high pressure region.

D. Vaporous cavitation, where the bubble collapse is much more violent, results in shock waves in the lubricant film that cause fatigue failure in the white metal surface. This differs from normal fatigue in that small pits are formed rather than loose pieces.

Explanation

A. HOW CAVITATION ORIGINATES: The cavitation is normally negligible at good operation and good lube oil running conditions. However, the following situations promote the bubble formation to dangerous levels.

1. Noxious acids in the oil.
2. Extreme flow of gases caused by blow-by
3. Fuel pump leaking fuel into the crankcase,
4. Oil contamination by coolant

B. OPERATING PARAMETERS PROMOTING CAVITATION: Even at normal running conditions, some of these defects occurred are leading to generate bearing failures.

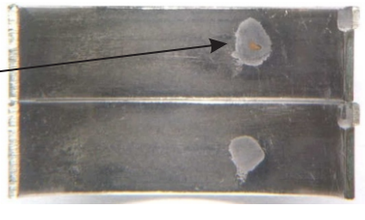
1. Lower limit running of lube oil pressure frequently.
2. Lube oil filters differential alarms and pressure fluctuations.
3. High oil temperature due to oil coolers chocking or temperature controllers operating erratic.

Irregularly shaped babbit voids occurred and can appear as localized erosion. The location of the damage is the criteria to asses the cause of damage.Often called cavitation erosion, cavitation damage is caused by the formation and implosion of vapor bubbles in areas of rapid pressure change.(Filter changeover/ frequent backflushing)

C. CAVITATION DUE TO VIBRATIONS: At connecting rod and main bearings due vibrations lance shaped erosion occurs.

1. Due to excessive bearing clearances
2. Vibration of cycle rapid motion of pin
3. Turbulence of oil or impingement of oil at groove to bearing surface.

Vibration of the cycle rapid motion of pin / bearings causes local erosion and cavities



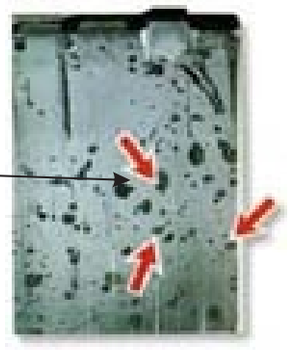
This is "Cavitation Erosion", on the unloaded half of insert. Vibrations and pressure fluctuations, "Entrained" air bubbles in oil may cause additional lubrication problems

D. CAVITATION PROMOTED BY WATER / MOISTURE PRESENCE:

- **Vaporous Cavitation** - If the vapor pressure of moisture is reached in the low-pressure regions of a machine, such as the suction line of a pump, the pre-load region of a journal bearing, etc., the vapour bubbles expand.
- Should the vapor bubble be subsequently exposed to sudden high pressure, such as in a pump or the load zone of a journal bearing, the water vapor bubbles quickly contract (implode) and simultaneously condense back to the liquid phase.
- The water droplet impacts a small area of the machine's surface with great force in the form of a needle-like micro-jet, which causes localized surface fatigue and erosion.
- Water contamination also increases the oil's ability to entrain air, thus increasing gaseous cavitation.
- Vaporous cavitation associated with the implosion of water vapor can form honeycomb-like pitting on bearing surfaces. A variety of chemical and electrochemical forms of surface failure have been reported to be caused by moisture in journal bearing lubricants.
- Moisture ingress in the lube oil system is identified with following routes-

  a) Absorption, b) Condensation, c) Heat exchangers, d) Combustion/ Oxidation/Neutralization, e) Free water entry etc.

Cavitation Erosion (round flaked portion) caused by entrained air bubbles, moisture along with embedded hard debris, NEEDED a close examination for failure analysis.



CONCLUSION AND COUNTER MEASURES TO AVOID CAVITATION FAILURES:

1) Observe correct operating bearing clearances.

2) Maintain supply oil pressure on higher side of the limits,

3) Filters high differential pressures to be avoided.

4) Oil coolers to be kept clean and high temperatures are not allowed.

5) Oil temperature controllers to be maintained.

6) Prevent moisture entry and treat oil.

7) Eliminate oil flow restrictions (downstream)

8) Maintain correct oil viscosity.

9) Lower the bearing temperature.

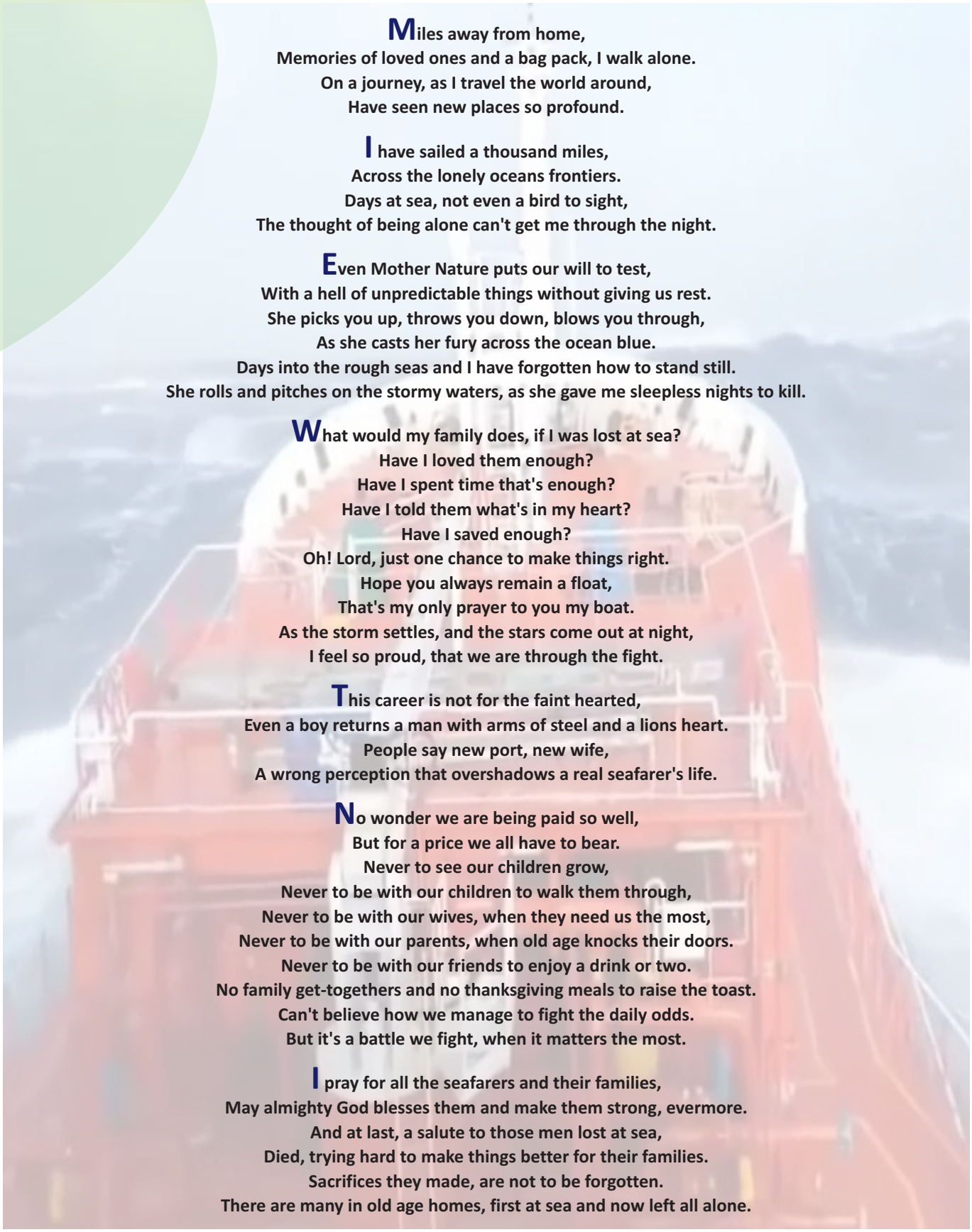
10) Observe local vibrations and induced vibrations.

11) Maintain good lube oil pressure at stand by or non-running conditions.

12) Limit low load running to prevent gas blow back/ low scavenge pressure.

Compiled by : Goodwood Technical Department

LIFE AT SEA



Miles away from home,
Memories of loved ones and a bag pack, I walk alone.
On a journey, as I travel the world around,
Have seen new places so profound.

I have sailed a thousand miles,
Across the lonely oceans frontiers.
Days at sea, not even a bird to sight,
The thought of being alone can't get me through the night.

Even Mother Nature puts our will to test,
With a hell of unpredictable things without giving us rest.
She picks you up, throws you down, blows you through,
As she casts her fury across the ocean blue.
Days into the rough seas and I have forgotten how to stand still.
She rolls and pitches on the stormy waters, as she gave me sleepless nights to kill.

What would my family does, if I was lost at sea?
Have I loved them enough?
Have I spent time that's enough?
Have I told them what's in my heart?
Have I saved enough?
Oh! Lord, just one chance to make things right.
Hope you always remain a float,
That's my only prayer to you my boat.
As the storm settles, and the stars come out at night,
I feel so proud, that we are through the fight.

This career is not for the faint hearted,
Even a boy returns a man with arms of steel and a lions heart.
People say new port, new wife,
A wrong perception that overshadows a real seafarer's life.

No wonder we are being paid so well,
But for a price we all have to bear.
Never to see our children grow,
Never to be with our children to walk them through,
Never to be with our wives, when they need us the most,
Never to be with our parents, when old age knocks their doors.
Never to be with our friends to enjoy a drink or two.
No family get-togethers and no thanksgiving meals to raise the toast.
Can't believe how we manage to fight the daily odds.
But it's a battle we fight, when it matters the most.

I pray for all the seafarers and their families,
May almighty God blesses them and make them strong, evermore.
And at last, a salute to those men lost at sea,
Died, trying hard to make things better for their families.
Sacrifices they made, are not to be forgotten.
There are many in old age homes, first at sea and now left all alone.

Contributed by a Goodwood Seafarer

CAN THE GREEN AWARD SCHEME BE A SOLUTION TO THE CURRENT MARKET CHALLENGES?

Goodwood's experience with Green Award

The markets are bad. Ship managers, owners, charterers and port authorities - everyone suffers, everyone has to cut costs. Concepts of cost control, cost efficiency systems and cost reduction determine operations and strategies. A growing concern on cost reduction which poses threat to the safety of operations and the environment has been voiced by the maritime industry.

Green Award is a platform for ship managers, owners, ports and maritime service providers committed to reducing their environmental footprint and implementing the highest standards of safety and quality. Ship managers – certificate holders – have their offices and ships inspected in accordance with the Green Award requirements that go beyond the statutory industry regulations. Their efforts are awarded through incentives by ports and maritime service companies. Green Award makes investments in safe and clean high quality ships economically sound.

Why we chose Green Award?

The core purpose of Goodwood Ship Management is to be a quality driven ship management organisation for the ships under its care allowing ship owners to secure and service very long term contracts with the most demanding charterers. The Green Award Foundation main objective is " to promote safe and environmentally friendly operation of ships" which assists us to comply with our vision.

How did Goodwood Ship management benefit from its participation?

- Using the Green Award Survey Tool
  The Green Award Office and ship ranking checklist acts as a good self assessment work book and has been used to great advantage when we were preparing for our annual Office ISO 14001 audits.

- A win–win situation
  With the outreach and adding numerous incentive providers (extending to more ports, spare parts and other vendors) to the Green Award Foundation base – we hope to offset the annual fees we spend for registration & annual audits.

- Researches and statistics based on detention data out of PSC deficiencies, show that Green Award certified vessels have significantly less deficiencies than seagoing vessels overall. Moreover, data from Paris MOU, Tokyo MOU, Indian Ocean MOU and USCG for 2005-2014 shows that the detention percentage of Green Award ships per year, is either zero or very close to zero.

Our positive experience with Green Award.

- Green Award Foundation requires that our ships register with ESI (Environmental Ship Index) Recently a Goodwood Green Award ship that berthed at Ulsan (Korea) was approached by the port agent who asked the Master if the ESI Score was more than 30 and hence was eligible for 10% reduction in port dues.

- When Goodwood ships were vetted by Rightships – the ships possessing a Green Award Certificate were eligible for and were given one full star upgrade in their five star rating system. This was a positive benefit to the ship owners and managers, and the shippers and charterers who use our vessels.

GREEN AWARD

Compiled by : HSQE Department

CURRENT SHIPPING REGULATION CHANGES

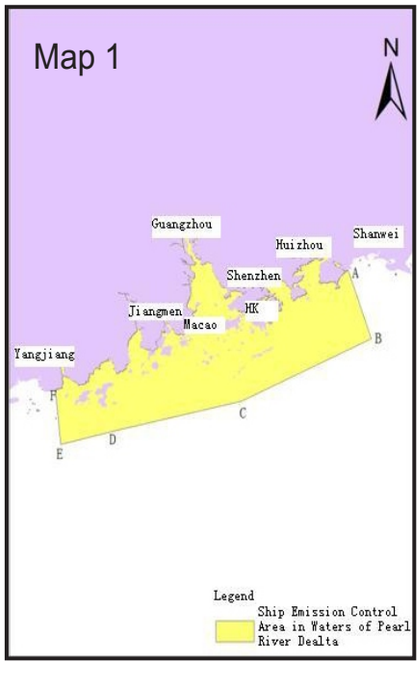
Regulation	Reference Document	Ship Type	Entry into Force
SOLAS CH V Regulation 19 Para 2.10: Cargo ships other than tankers of 50,000 GRT and upwards constructed before 1 July 2013, not later that the first survey on or after 1 July 2016 must be fitted with an ECDIS if engaged in international voyages.	MSC 282(86)	Cargo ships >50,000 GRT	1 July 2016
ECA at Chinese Ports (refer to appended Maps 1,2,3): All ships will have to use 0.5% Sulphur LSMGO when alongside the berth. Eleven harbours are Guangzhou, Shenzhen, Zhujiang, Shanghai, Ningbo-Zhoushan, Suzhou, Nantong, Tianjin, Qinhuangdao, Tangshan and Huanghua.	Chinese Ministry of Transport	All ships	1 April 2016
Manila Amendments to the STCW Convention and Code: Full implementation comes into force after 1 Jan 2017. All standards including certificate renewal and revalidation must be compiled with.	STCW Convention	All ships	1 Jan 2017

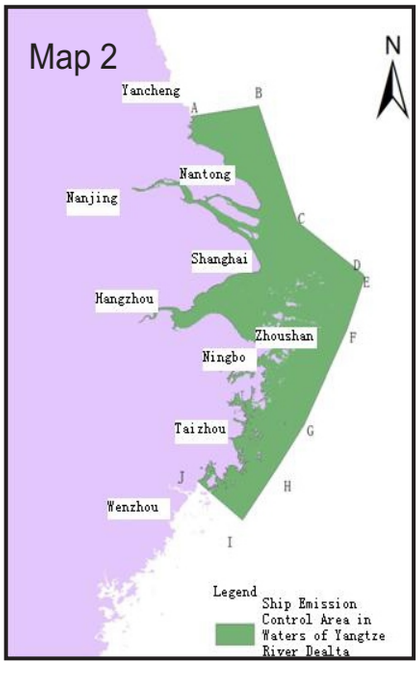
A new regulation for ships at emission control areas of the Pearl river delta, the Yangtze river delta and the Bohai sea waters was issued by the Ministry of Transport of People's Republic of China.

As from 1st October 2016, ships calling Shenzhen port (including Yantian, Shekou, Chiwan, Mawan, Dachan Bay) are required to use fuel with sulphur content ⩽0.5%m/m when staying at berth (from one hour after getting berthed till one hour before departure from berth) . According to the Notice, “berthing time” is defined as the period of time when first line fastened till all the lines of the ship are untied.

From 1 Jan 2017, all ships berthing at the core ports shall use the fuel with sulphur content ⩽0.5% m/m. (excluding an hour after getting alongside and an hour before departure).

From 1 Jan 2018, all ships shall use the fuel with sulphur content ⩽0.5% m/m during berthing terminal of core ports.





MEDICAL FRAUD ON MARINE INSURER'S RADAR

Fraud has long been one of the biggest issues for the marine insurance industry in recent years. The question is how do underwriters strike a balance between prompt and full payment of valid claims against the need to ensure that there are robust measures in place to detect fraud.

However, there is a growing view that there are increasing numbers of seafarers who are making fraudulent medical claims, a problem that has only risen as the economic downturn continues to hurt the maritime sector.

Not surprisingly, the P&I sector is not keen in sharing data on exactly how much clubs have paid out to claims that have been found to be fraudulent or estimate just how many of the medical claims they receive have been refused.

The UK P&I Club estimated that in the course of the past decade, slips, trips, and falls had cost it USD 15 5 million and the figure was not seen as being hugely out of step with its P&I club peers.

There has been some talk in the market that crews are looking to hide existing medical conditions until they get on board and once taken, ill or suffering from an accident because of their limitations they can rest assured they will be repatriated if needed and offered medical treatment under the terms of the Maritime Labour Convention (MLC).

Owner's liabilities

The MLC is clear that when it comes to medical illnesses and accidents, a shipowner is not liable when an injury is not related to a seafarer's duties, when it is caused by wilful misconduct, or when a seafarer intentionally hides an illness or disability.

Since fraudulent claims are part and parcel of the insurance industry, there will always be those who will look to take an opportunity to make some money from a claim. It is why claims departments have systems in place to red flag claims they believe may be suspect."

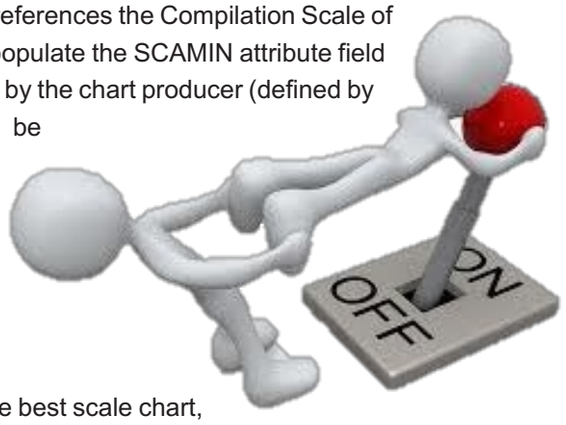
In an effort to drive risk prevention, clubs have been keen to ensure seafarers are undergoing more thorough pre-employment medical examinations (PEME).

Proactive approach

Ship owners are now taking a more proactive approach to crew fitness. There has been an increase in cardio vascular problems due to rising obesity coupled with older crews and hence the PEME will become more stringent. If an illness has been identified, it may mean the crew member was not able to work. If it were undiagnosed, it may also cost them their life.

Source: Swedish Club

Scale Minimum - ON or OFF?



SCAMIN is an abbreviation of Scale Minimum. The SCAMIN tool references the Compilation Scale of data (also called COMP SCALE) attribute value to automatically populate the SCAMIN attribute field on the applicable feature records. SCAMIN is an optional attribute by the chart producer (defined by IHO S57) that can be used to label ENC chart features to be suppressed above a certain display scale. The SCAMIN value of an object determines the display scale below which the object is no longer visible on an Electronic Chart Display and Information System (ECDIS). The main function of SCAMIN is to de-clutter the chart display, enabling the user to focus on the most useful navigational information for the display scale in use.

The system auto-filter means that unless you are navigating on the best scale chart, you will not see all the information available for display. Therefore, when zooming out the system will automatically deselect certain features from display such as Soundings, Lights and Topographical detail.

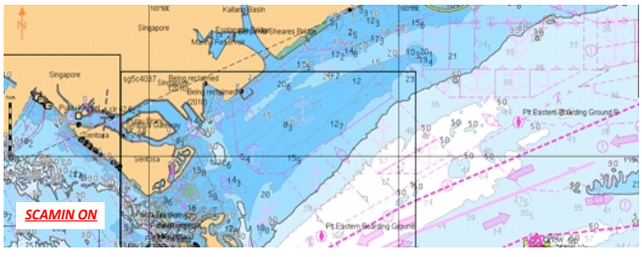
Navigators should always check the passage plans at "compilation scale" before use at the planning and verification stage and during route monitoring. Zoom in/out function should only be used for short periods of time. When in use in a few ECDIS types, this feature provides "SCAMIN filter" warning to the users. The only way to ensure that your display is not affected by SCAMIN is to always ensure you are navigating on the best scale chart. It is therefore essential that the operator knows how to select the best scale chart on their system.

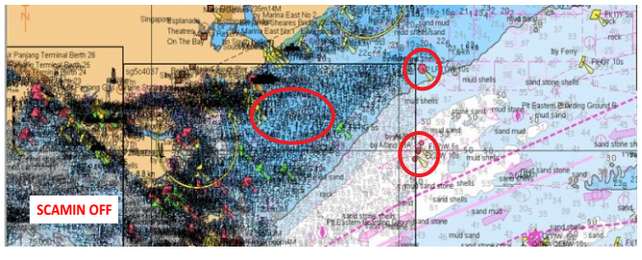
A few ECDIS models have "1:1" options available, which allow the operator to display the ENC at the compilation scale at the press of a button. This option is NOT mandatory, therefore a few ECDIS manufacturers do not allow for this feature. Once the passage plan is verified and approved in accordance with elements 5.6, 5.7 and 5.8 of the procedures 12.01.91 the SCAMIN function can be kept "ON" for the monitoring phase of the passage.

The operator should be aware of the dangers of Zoom in/out function during monitoring phase, especially with the SCAMIN kept "ON".

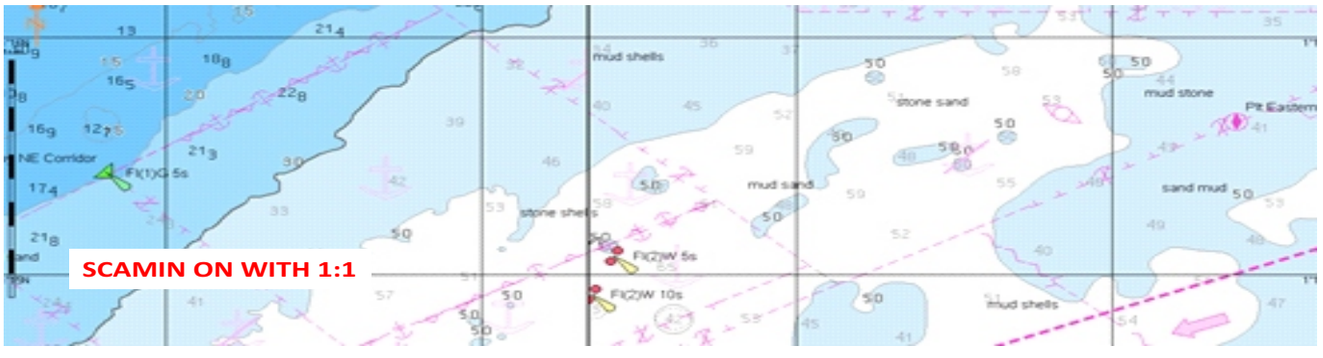
If the "1:1" feature is not provided by the manufacturers, the SCAMIN should be switched off at the time of planning and verification of the passage plan.

Effects of Scamin





The Correct procedure where 1:1 feature is available, SCAMIN ON with 1:1 display option.



Compiled by : Capt. S. S. Shanbhag

LPG Compressors and Plant maintenance

LPG is an abbreviation for "**Liquefied Petroleum Gas**" and encompasses several products in the hydrocarbon family. Propane and butane are the two best known hydrocarbons that are used as fuel in homes, businesses and industries. In the international markets, LPG predominantly refers to a propane-butane mixture. Butane and propane can be transported and stored as a liquid but when released it will vaporize and burn as a gas. Also, LPG can easily be changed to either liquid state or gas state. No other commercial fuel has these characteristics.

When liquefied, LPG is always at its boiling point at normal temperature. The slightest drop in pressure or the least addition of heat will cause it to boil and give off vapor or gas. The fluid in a tank is in state of equilibrium with the gas vapours on top of the liquid providing the tank pressure to keep the liquid from boiling

On LPG tankers the primary purpose of the Gas plants is to reduce the temperature and maintain the pressures inside the LPG tanks. This is done by extraction of vapour from the vapour space of the tank, reliquifying the vapour and pushing condensate back to the tanks.

Cargo compressors generally used on LPG vessels are piston type 2 stage compressors classified as reciprocating positive displacement compressors. Other positive displacement compressor types are screw, sliding vane, wobble plate, diaphragm or lobe.

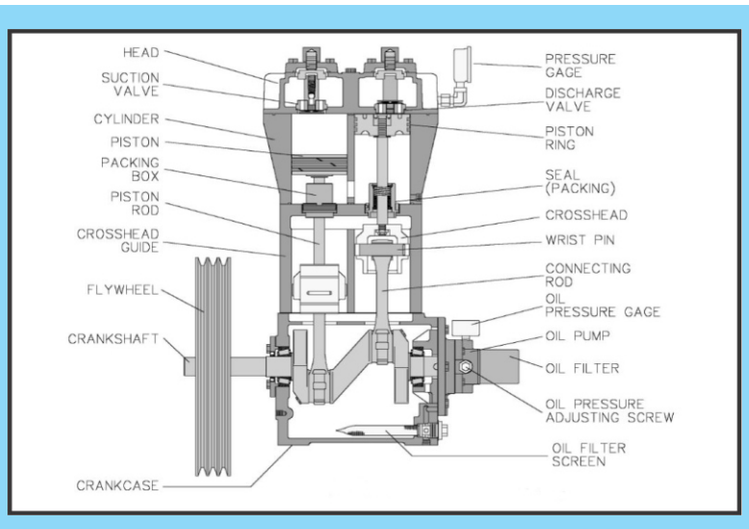
Maintenance of Gas plants onboard the ships is an extremely important aspect. Planned preventive maintenance must be carried out on the systems so that the efficiency of the systems can be kept to optimum at all times and breakdowns / failures can be eliminated or minimized.

Individuals performing maintenance on the LPG systems must be trained in the hazards of the system. Maintenance personnel also must be trained in the maintenance and testing procedures applicable to the systems.

Compressors must be externally free of corrosion or any mechanical damage to the casing, drive Assembly, suction and discharge piping, liquid trap, strainer and motor. Jacket cooling system must be tested and should be free of leaks. Compressor foundation bolts must be physically examined for its tightness and condition.

Lubrication could vary depending on the compressor design and manufacturer. Check the equipment manufacturer's instructions for specific lubricants and frequency of lubrication. Before starting the compressor, check the crankcase for leaks, especially around the flywheel-end of the crankshaft. If any leaks are noticed, same must be rectified. Check the oil level in the crankcase before each operation. If the oil level is low, check the manufacturer's instructions for the type of oil to use and the amount to add. Check the oil pressure gauge frequently during every compressor operation. If the oil pressure is unusually high or low, shut down the compressor and investigate the cause. The condition of oil filter should be examined and should be changed as per the manufacturers recommendations. Compressor strainers usually have coarser screens and they must be opened and cleaned on a regular basis to prevent them from being clogged and restricting flow to the compressor. Fly wheel should be turned several times before starting the compressor to ensure free movement.

The discharge line of compressors is equipped with a relief valve to protect the compressor system from damage due to excessively high pressure. Check the relief valve regularly for leaks and be sure the inside of the valve is free from corrosion and debris that would prevent the valve from opening and closing properly. Check the piping and fittings using a gas detector calibrated for LP-Gas or a leak testing (soap) solution. Listen and smell for possible leaks. All the compressor driving components must be checked for alignment and same must be within the permissible range. All pressure gauges must be readable, functional and leak free. All associated manual shut off valves must be operational and in good condition. Flow indicators, sight glasses and gauge glasses must be in good condition should be clean and visible. All piping must be well supported with u clamps, brackets to minimize vibrations. Check sections of liquid lines between shut-off valves for the presence of relief valves. These valves must be checked regularly for leaks and should be free from corrosion and debris. All associated piping should be examined for its condition regularly. Condition of insulation should be checked and damaged insulation should be renewed.



Simplified Cross section diagram of a piston type LPG Compressor

ESD must be checked to ensure its proper operation. Especially after closing its opening again must be verified. Control air supplied for all automations must be of good quality and dry. Hence the control air dryers should be checked for its efficiency. Control air pressure as required should be maintained and system should not have leaks.

Cargo condensers periodic cleaning must be carried out and should be free of leaks. Vapourizers must be leak free and should also be periodically cleaned. Condensate lines should be free of blockages.

To get most reliable service out of the compressor, it is important that log sheet of all parameters is maintained. Pressures and temperatures at each position should be recorded at regular intervals. This will help to detect any deviation of the compressor from its normal operation at an early stage so that appropriate steps can be taken to rectify the fault immediately. Prior starting the compressor suction pressure should be throttled to a low positive pressure to avoid condensation within piping and compressor. Suction stop valve should be opened fully only after having reached the normal operating temperatures.

Parameters which are monitored during cargo operation are as follows:

1) Discharge temperature of 2nd stage
2) Discharge pressure of 2nd stage
3) Brine discharge pressure
4) Mechanical ventilation fans stop
5) Brine pump stop
6) Suction pressure of 1st stage
7) Pressure at expansion valve, outlet side
8) Level of liquid in the receiver
9) Level of liquid in the knockout drum
10) Level of liquid in the intercooler
11) Current on compressor motors
12) Instrument air pressure
13) Cargo tanks pressures
14) Level of shaft seal oil tank
15) Sea water pressures

Monitoring of the parameters is the key to diagnose abnormality in the system. If detected at an early stage same can be corrected and breakdowns can be restricted. All deck Officers and Engine Officers must find time to familiarize themselves with the gas plant. Proper training must be carried out of all onboard and importance of checking and monitoring these parameters should be explained.

Compiled by : Capt. Rohan Sabnis

LIQUID KNOCK DUE TO GAS CARGOES CONDENSING AT LOW PRESSURE

One of the important aspect with cargoes like butane, butadiene, C4 and VCM which condense at low pressure is to make sure that the cargo vapour entering in compressor suction side is not condensed in the reciprocating piston compressor. There is no safety cutout for such cargoes but suction pressure may be restricted for such cargoes. Most of the operation manual advises to restrict suction pressure to 0.5 bars. The crankcase pressure is not allowed to exceed beyond 1.0 bars to avoid condensation in crankcase which will cause L.O. to loose it's properties and viscosity. The liquid seperator or knockout drum on suction side will not be able to detect any liquid. The vapour enters the suction side and when it is exposed to cold compressor jacket temperature and high compressor pressure; it condenses and forms liquid in 1st stage suction. The liquid being incompressible, it can damage compressor body, pistons, connecting rod, crosshead and many more parts. If somebody is physically attending and stops the compressor then damage may be avoided. Unlike highly volatile cargoes like ethylene, ethane, propylene, propane and ammonia with low boiling point the above cargoes are not volatile and remain in liquid form when trapped between piston and cylinder. It is extremely important especially in cold regions to understand the effect of condensation in compressor body. Even when compressor is stopped, the condensation will take place in compressor and crankcase. It is important that compressor and crankcase is brought to atmospheric pressure after stopping of compressor and precaution are taken before re-starting to make sure that liquid does not exists above piston crown and in crankcase. The Gycol or other cooling medium for compressor jacket and crankcase must be kept running even when compressor is stopped. Normally the operating range of cooling medium is from +34 to +47°C. While dealing with cargoes mentioned above, the cooling medium temperature could be kept at higher limit, i.e. close to 45-47°C. It is Important that Glycol cooling system works efficiently and cut in/cutout switches are operational. The flow switches and proper flow is also essential.

Common Combustible Gas LEL's and UEL's

		LEL	UEL
Acetone	(CH3)2CO	2.15%	13.0%
Acetylene	C2H2	2.5%	100%
Benzene	C6H6	1.2%	8.0%
Butadiene	C4H6	1.1%	12.5%
Ethane	C2H6	3.0%	15.5%
Ethyl Alcohol	CH2H5OH	3.3%	19.0%
Ethyl Ether	(C2H5)2O	1.7%	36.0%
Ethylene	C2H4	2.7%	36.0%
Hexane	C6H14	1.1%	7.5%
Hydrogen	H2	4.0%	75.6
IsoButane	C4H10	1.8%	8.5%
Isopropyl Alcohol (IPA)	(CH3)2CHOH	2.0%	12.7%
Methane	CH4	5.0%	15.0%
Methanol	CH3OH	6.0%	36.0%
Pentane	C5H12	1.5%	7.8%
Propylene	C3H6	2.0%	11.1%
Toluene	C7H8	1.2%	7.0%

Due to low pressure condensing property of cargo like butane, it is always a problem while liquid freeing cargo tanks. When tank pressure is increased above 0.5 bars, it has been observed that more liquid is formed in tank and purpose of liquid freeing is not served. It is important to keep releasing pressure time to time while puddle heating to avoid condensation. If the compressors are used for puddle heating and higher pressure is maintained on discharge side then all the pipeline will have liquid with condensation and same will go back in tanks.

During the cooling plant direct cooling operation, the liquid formation in cargo condenser is also high and even after expansion valve fully open, liquid level can rise above condenser level and if non-return valve on discharge side of compressor is not holding then liquid can go back into compressor when compressor is stopped. All the ships should take note of above problem. Normally precaution required to be taken for cargoes like butane, will be written in cargo operation manual.

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