APPROVED ENGINE COURSE 1

30 HOURS COURSE

DAY 1

0900-1000 Registration and Course Introduction

1000-1315 Internal Combustion Engine

Lecturer will go through the Power Point Presentation on

The two and four stroke cycles of internal combustion engine, essential engine components and terminologies used with respect to engines. Various configurations of engine types and performance data interpretation will be explained.

After this session the candidate will be able to show fair knowledge of Engine types and its working cycles and how to interpret engine terminology and data.

1315-1400 LUNCH

1400-1630 The Fuel System

Lecturer will go through a power point presentation on the nature of diesel engine fuels and its origins. The importance of cleanliness and avoidance of water ingress will be stressed upon. Fuel arrangements including sealing of weather tight caps on deck will be discussed. Consequences that arise due to non-compliance of procedures will be discussed as a group discussion. Various fuel filter arrangements and fuel injection systems will be covered.

A practical session will be carried out in which a few faults on a running marine diesel engine fuel system will be introduced and the candidate will be asked for possible recognition of faults and remedies.

After the session the candidate will be able to show considerable knowledge on how to handle diesel fuels for marine engine use. Also general knowledge of fuel injection and its safety will be evident.

DAY 2

0900-1315 Role of Air in combustion systems

Lecturer will go through a power point presentation on the importance of air to fuel ratios and necessity for clean combustion. Difference between naturally aspirated and turbocharged engines will be covered.

A practical session will be carried out in which a few faults on a running marine diesel engine air system will be introduced and the candidate will be asked for possible recognition of faults and remedies.

After the session the candidate will be able to demonstrate considerable knowledge on the role of air in the process of internal combustion including turbocharging principles and the efficient exhaust systems.

1315-1400 LUNCH

1400-1630 The Cooling Systems

Lecturer will go through a power point presentation demonstrating the temperatures involved in the internal combustion process and subsequent need for cooling of the component involved. A typical cooling water circuit around a marine diesel engine will be illustrated. Related topics of heat exchangers, pumps and its functioning will also be projected.

A practical session will be carried out in which a few faults on a running marine diesel engine cooling system will be introduced and the candidate will be asked for possible recognition of faults and remedies.

After the session the candidate will be able to appreciate the need for efficient cooling of the engine and the proper maintenance to be carried out on the cooling systems of the marine diesel engine.

DAY 3

0900-1315 The Lubrication System

Lecturer will go through a power point presentation on the nature of friction, the composition of bearing materials and the role of lubricant in it. Also the lubricating oil circuit around the engine will be explained. Topics on different types of pumps and the maintenance of filters will be covered.

A practical session will be carried out in which a few faults on a running marine diesel engine lubricating system will be introduced and the candidate will be asked for possible recognition of faults and remedies.

After the session the candidate will be able to demonstrate fair knowledge on the lubricating oil systems for diesel engines and the requirements of maintenance on them.

1315-1400 LUNCH

1400-1630 Engine Electrical Systems

Lecturer will go through a power point presentation on the engine electrical system. Different kinds of batteries and their safe use will be discussed. Checking of battery ratings and the requirements of cold cranking ability will be covered. Basic appreciation of charging v/s discharging cycles and battery charging arrangements will be covered. Pre engaged starter motor and engine stopping arrangements will be discussed. Safety features on ships electrical system will be explained in detail.

A practical session will be carried out in which a few faults on a running marine diesel engine electrical system will be introduced and the candidate will be asked for possible recognition of faults and remedies.

After the session the candidate will be able to demonstrate fair knowledge on ships basic electrical system. Candidate will be able to locate the different sender units on the engine and any basic fault finding and rectification of simple electrical faults. Also knowledge of any high voltage precautions to be taken while working with electric circuits will be shown by the candidate.

DAY 4

0900-1215 Power Transmissions

Lecturer will go through a power point presentation on reduction gears and plate clutches mechanical and hydraulic operations. Function of control systems like Bowden cords and rods will be demonstrated. Propeller shafting and the importance of accurate alignment will be stressed upon. Stern tube bearings will be discussed. Basic principle of propeller matching to hull speed and engine will be explained.

After the session the candidate will be able to demonstrate fair knowledge of the various gear boxes on board ships and the control systems. Candidate will be able to understand the importance of shaft alignments and possible consequences to noncompliance to procedures. Also a fair knowledge on stern tube bearings and propeller choices will be displayed.

1215-1315 Hull Fittings

Lecturer will go through a power point presentation on the maintenance of sea cocks and the importance of annual inspections. Various hull protection method including Zinc anodes and cathodic protections will be discussed. Some fault finding and rectification of damages to sea cocks will be demonstrated.

After the session the candidate will be able to demonstrate the practical knowledge in how to maintain sea cocks. Candidate will also be able to understand why anodes and cathodic protection is so important.

1315-1400 LUNCH

1400-1500 General

Lecturer will go through a power point presentation on the MARPOL Annex I, IV, V and VI Regulations.

Code of Safe working practices including entry into enclosed spaces, safety consciousness and awareness of potential fire hazards will be stressed upon. Basic fixed fire extinguishing systems like CO2, High Fog and FM200 will be explained. Safety requirements on Bottled LPG installations will be covered.

After the session the candidate will be able to appreciate the MARPOL Regulations and its need in the marine industry today. Also COSWAP understanding and the dangers of entry into enclosed spaces will be demonstrated.

1500-1630 Course completion formalities will be carried out. Computer based testing for lessons learnt in the past 4 days.

Candidate feedback will be taken.