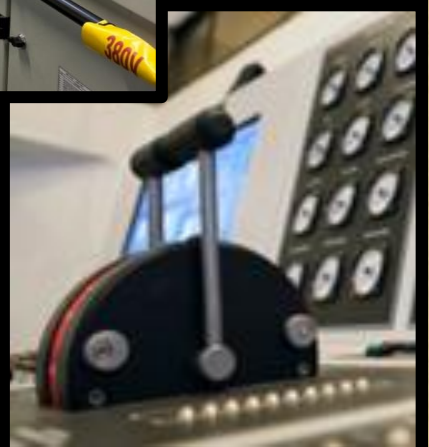
ENGINE CADET ON BOARD

Training Workbook



university of cebu

METC

ON BOARD TRAINING WORKBOOK

FOR ENGINE CADET ON BOARD SHIPS 750KW OR MORE

In Compliance of the required output of the Training Record Book & Task and Sea Projects

CADET PERSONAL INFORMATION

Name: _____

Home: _____

_____

Birth (date): _____ (Place): _____

Email: _____ **Mobile**: _____

CADET SCHOOL INFORMATON

MHEI: **UNIVERSITY OF CEBU** - **Maritime Education and Training Center**

Address: Alumnus Mambaling, Cebu City 600, Philippines

ON BOARD TRB CN: _____ TRBJ CN: _____SIRB No.: _____

School ID No.: _____Passport Number: _____SRC Number: _____

Date Recognized: _____Batch (Year): _____ (Name) _____

CADET ON BOARD TRAINING INFORMATION

VSL	VESSEL NAME	FLAG	Y ²0	COMPANY/AGENCY	SIGN ON	SIGN OFF	NAME OF MASTER
1st							
2nd							
3rd							
4th							
5th							
6th							

ON BOARD TRAINING WORKBOOK

FOR ENGINE CADET ON BOARD SHIPS 750KW OR MORE

INTRODUCTION

PURPOSE

The purpose of this On Board Training Workbook for Engine Cadets is to ensure that cadets On Board Training Record Books data, are properly documented by means of outputs on this Workbook, in conjunction with the records written on Training Record Book Journal, as outputs completed this workbook shall also be reflected on the journal.

Given that this Workbook should be subject to close scrutiny by the Masters/Chief engineers of the ships on which the cadet serves, by the cadet's designated on board training officers and the shipping company.

This WORKBOOK WILL evaluated by the UNIVERSITY OF CEBU, Maritime Education and Training Center as one of the documentary evidence in accomplishing the requirements of the On Board Training Record Book, issued by the School.

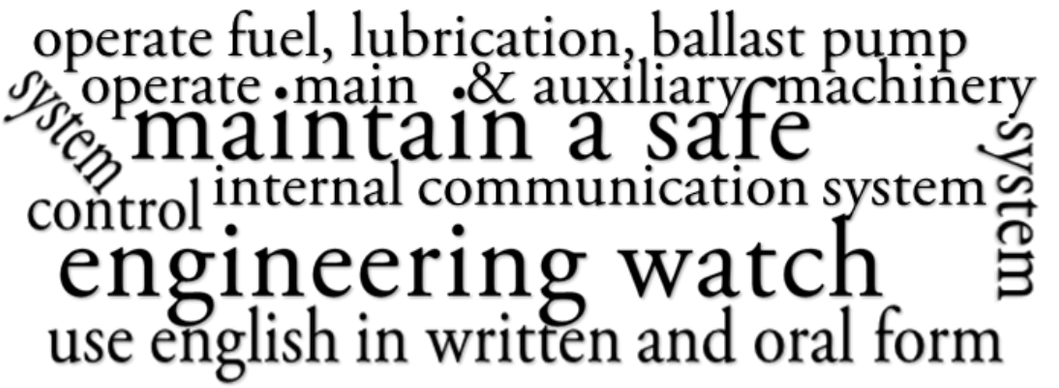
ON BOARD TRAINING WORKBOOK CONTENTS

ON BOARD TRAINING

WORKBOOK

FOR OFFICERS IN CHARGE OF AN ENGINEERING WATCH
(ENGINE CADETS)

FUNCTION: MARINE ENGINEERING
AT THE OPERATIONAL LEVEL



OUTPUTS

UNIVERSITY OF CEBU, MARITIME EDUCATION & TRAINING CENTER
1ST EDITION 2015

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.1	**Relieve and hand over a watch**
TRB Reference	**1.1.1, 1.2.1, 1.3.1, 1.4.1, 1.5.1, 1.6.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Follow the correct procedure for handing over a watch at sea and in port.
2. Follow the correct procedures for taking over and accepting a watch at sea and in port.

Instructions:

1. Read STCW Code, as amended: Part A, Chapter VIII – Standards regarding watchkeeping
2. Write a procedure for handing over a watch at sea and in port, based on your experience on board ship
3. Write a report of your duty experience that are carried out with accepted principles, procedures and ship specific instructions.

Outputs Standards:

1. Written report of duties that are carried out in accordance with accepted principles, procedures and ship specific instruction.
2. Personal Reflection

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.1	Written Report
TRB Reference	1.1.1, 1.2.1, 1.3.1, 1.4.1, 1.5.1, 1.6.1

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.1	Reflection
TRB Reference	1.1.1, 1.2.1, 1.3.1, 1.4.1, 1.5.1, 1.6.1

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.2	**Conduct the watch**
TRB Reference	

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Assist with the duties of an engineer officer on:
   Seagoing watches
   Port watches
2. Carry out all routine watchkeeping duties, checking the correct functioning of all automatic control and monitoring system.
3. Apply effective watchkeeping involves managing watch duties, including supervision, as well as maintaining the safe operation of propulsion plant and other machinery.

Instructions:

1. Written report for monitoring machinery, equipment and systems conform to manufacturers' recommendations and accepted principles and procedures.
2. Describe any parameters in the machinery that needs attention.

Outputs Standards:

1. Make a report for monitoring machinery, equipment and systems.
2. Reflection on operational errors and fault condition.

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.2	Reflection on operational errors and fault condition
TRB Reference	1.1.1, 1.2.1, 1.3.1, 1.4.1, 1.5.1, 1.6.1

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.3	**Response to black-out and emergency situation**
TRB Reference	

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Apply knowledge how to reset machinery following failure and how to restart plant.
2. Apply knowledge of emergency steering operation.

Instructions:

1. Explain how to start emergency generator based on the manufacturers' recommendations and accepted principles and procedures.
2. Write some immediate actions that are executed during black-out and emergency situations.
3. Write a reflection on responding black-out and emergency situations

Outputs Standards:

1. Procedure for starting emergency generator in response to emergency situation.
2. Actions that are executed during emergency situations

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.3	Written Report
TRB Reference	1.1.1, 1.2.1, 1.3.1, 1.4.1, 1.5.1, 1.6.1

1. **Write your written procedure for starting emergency generator**

2. **Written report for emergency situation**

3. **Reflection**

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.4	**Change-over of remote-automatic and local control system**
TRB Reference	**1.1.1, 1.2.1, 1.3.1, 1.4.1, 1.5.1, 1.6.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Change-over to the stand by system for:
   Main engine
   Generators
   Main engine system pumps
   Steering gear
2. Prepare for stand by engine

Instructions:

1. Describe how main and auxiliary machinery change to remote-automatic and local control system.
2. Write all preparation in changing machinery to remote control

Outputs Standards:

1. Written report, of change-over from remote-automatic to local.
2. Procedure in changing over from local to remote-automatic control system.

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.4	Written Report
TRB Reference	1.1.1, 1.2.1, 1.3.1, 1.4.1, 1.5.1, 1.6.1

1. **Change-over from remote-automatic to local**

2. **Procedure in changing over**

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.5	**Complete the engine room log book and other records**
TRB Reference	

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Complete the engine room log book and record books
2. Record the complete engine movements in the log during period of manoeuvring
3. Observe and note normal operating temperatures/pressures
4. Observe and note performance and condition of machinery using condition monitoring equipment, where appropriate

Instructions:

1. Fill-up Engine log book completely (refer to journal) and evaluate record entries.
2. Explain the purpose of the alarm record book.

Outputs Standards:

1. Complete filled up engine log book and record books
2. Written report, the purpose of the alarm record book

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.5	Written Report
TRB Reference	1.1.1, 1.2.1, 1.3.1, 1.4.1, 1.5.1, 1.6.1
Fill-up Engine log book completely (refer to journal)	

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.6	**Knowledge of engine room resource management principles**
TRB Reference	**1.1.1, 1.2.1, 1.3.1, 1.4.1, 1.5.1, 1.6.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Plan for allocation and use of engine room resources
2. Plan task to achieve timely outcome
3. Lead progress review with team members to ensure task is attainable within the plan set
4. Lead task review on completion giving credit where due and noting areas where things may be done differently on other occasion

Instructions:

1. Make a written report of how engine room resource management principles is establish on board ship.

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.6	**Knowledge of engine room resource management principles**
TRB Reference	**1.1.1, 1.2.1, 1.3.1, 1.4.1, 1.5.1, 1.6.1**

Outputs Standards:

1. Resources are allocated and assigned as needed in the correct priority to perform necessary task

COMPETENCY 1	MAINTAIN A SAFE ENGINEERING WATCH
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 1.6	Knowledge of engine room resource management principles
TRB Reference	1.1.1, 1.2.1, 1.3.1, 1.4.1, 1.5.1, 1.6.1

COMPETENCY 2	USE ENGLISH IN WRITTEN AND ORAL FORM
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 2.1	**Use English engineering publications, operational manuals and fault finding instruction**
TRB Reference	**2.1, 2.2.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Assist with completion of ship's planned Maintenance System records in English
2. List English language publications or manuals used

Instructions:

1. List publication and manuals on board relevant to the engineering duties are correctly interpreted

Outputs Standards:

1. Written report of completion of ship's planned Maintenance system records in English

COMPETENCY 2	USE ENGLISH IN WRITTEN AND ORAL FORM
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 2.1	Written Report
TRB Reference	2.1.1, 2.2.1

COMPETENCY 2.2	USE ENGLISH IN WRITTEN AND ORAL FORM
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 2.2	**Communicate with others in English language, as appropriate**
TRB Reference	**2.1.1, 2.2.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Correct use of terms used in the engine room and names of machinery, equipment and tools
2. Ensure that others have understood orders correctly
3. Give and take orders in English concerning:
   Routine operations
   Emergency drills
4. Communicate instructions effectively in the English language to a multi-lingual crew

Instructions:

1. Write a scenario of communication taking orders in English concerning:

   Routine operation
   Emergency drill

Outputs Standards:

1. Communication scenario of routine operation using English language

COMPETENCY 2	USE ENGLISH IN WRITTEN AND ORAL FORM
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 2.2	Written Report
TRB Reference	2.1.1, 2.2.1

COMPETENCY 3.	USE INTERNAL COMMUNICATION SYSTEM
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 3.1	**Operate of all internal communication systems on board**
TRB Reference	**3.1.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Use internal message system to send and receive information or instruction
2. Complete records accurately and in a timely way when recording information received by telephone or hand held transceivers (portable radios)
3. Operate of the ship's internal phone system

Instructions:

1. Write a written report on internal message system to send and received information or instruction.

Outputs Standards:

1. Written Report of internal messages system

COMPETENCY 3	USE INTERNAL COMMUNICATION SYSTEM
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 3.1	Written Report
TRB Reference	3.1.1

COMPETENCY 4.	OPERATE MAIN AND AUXILIARY MACHINERY AND ASSOCIATED CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 4.1	**Prepare machinery for departure from port**
TRB Reference	**4.1.1, 4.2.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Draw a schematic arrangement of the engine system, using blocks to indicate the main components
2. Prepare and test the steering gear and telegraphs
3. Confirm bridge and ER communications
4. Check starting air compressor and prepare starting air system
5. Prepare main and auxiliary for departure
6. Prepare main and auxiliary machinery for the sea passage
7. Use of high level and low level sea suction

Instructions:

1. Sketch schematic arrangement of the engine system (refer to your sea project)
2. Make a written report of testing of steering gear and telegraphs
3. Write record s of preparation for the main and auxiliary, for the departure and sea passage

Outputs Standards:

1. Schematic diagram of engine system (sea project)
2. Records of steering gear and telegraphs testing
3. Records of the main and auxiliary preparation

COMPETENCY 4	OPERATE MAIN AND AUXILIARY MACHINERY AND ASSOCIATED CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 4.1	Written Report
TRB Reference	4.1.1, 4.2.1

1. **Schematic diagram of engine system (sea project)**

2. **Records of steering gear and telegraphs testing**

3. **Records of the main and auxiliary preparation**

COMPETENCY 4.	OPERATE MAIN AND AUXILIARY MACHINERY AND ASSOCIATED CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 4.2	**Operate main and auxiliary machinery**
TRB Reference	**4.1.1, 4.2.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Sketch diagrammatic , for the main system s as appropriate for the ship:
   Auxiliary engine
   Boiler
2. Start main engine from local and remote control positions
3. Carry out post start-up checks of main engine and shafting
4. Manually operate main compressor change over to normal automatic running mode

Instructions:

1. Make a diagrammatic of auxiliary engine (refer to sea project)
2. Written report of how to start main engine from local and remote control position
3. Write a procedure on how to operate main compressor change over to normal automatic running mode

Outputs Standards:

1. Diagrammatic drawing for the auxiliary and boiler system (sea project)
2. A written report for main engine changing local to remote control system
3. Procedure of main compressor to change over to normal automatic running mode

COMPETENCY 4	OPERATE MAIN AND AUXILIARY MACHINERY AND ASSOCIATED CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 4.2	Written Report
TRB Reference	4.1.1, 4.2.1

1. **Diagrammatic drawing for the auxiliary and boiler system (refer to sea project)**

2. **Report for main engine changing local to remote control system**

3. **Procedure of main compressor to change over to normal automatic running mode**

COMPETENCY 5.	OPERATE FUEL, LUBRICATION, BALLAST AND OTHER PUMPING SYSTEMS AND ASSOCIATED CONTROL SYSTEM
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 5.2	**Operate the systems for fuel oil, lube oil, ballast, bilge, MARPOL equipment and cargo pumping**
TRB Reference	**5.1.1, 5.2.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Transfer fuel from bunkers to service tanks, observing all safety, ship stability and pollution prevention requirements
2. Start , operate and monitor lube oil purifier
3. Perform routine checks and top ups to maintain lube oil system tanks at the correct level
4. Operate and oil discharge monitor in compliance with MARPOL
5. Perform emergency arrangements for emptying engine room bilges in the event of flooding

Instructions:

1. Make report and records about fuel transfer in the machinery space
2. Write a procedure for starting and monitoring of lube oil purifier
3. Make report of monitoring top ups to maintain lube oil system tanks at the correct level
4. Write a procedure for emergency emptying engine room bilges in the event of flooding

Outputs Standards:

1. Written report and records of fuel transfer
2. Procedure for starting and monitoring of lube oil purifier
3. Report of monitoring top ups of tanks correct level
4. Written procedure of emergency emptying engine room bilges in the event of flooding

COMPETENCY 5	OPERATE FUEL, LUBRICATION, BALLAST AND OTHER PUMPING SYSTEMS AND ASSOCIATED CONTROL SYSTEM
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 5.2	Written Report
TRB Reference	5.1.1, 5.2.1

1. **Report and records of fuel transfer**

2. **Procedure for starting and monitoring of lube oil purifier**

3. **Report of monitoring top ups of tanks correct level**

4. **Written procedure of emergency emptying engine room bilges**

ON BOARD TRAINING

WORKBOOK

FOR OFFICERS IN CHARGE OF AN ENGINEERING WATCH
(ENGINE CADETS)

FUNCTION: ELECTRICAL, ELECTRONIC & CONTROL ENGINEERING

AT THE OPERATIONAL LEVEL

OUTPUTS

UNIVERSITY OF CEBU, MARITIME EDUCATION & TRAINING CENTER

1ST EDITION 2015

COMPETENCY 6.	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.2	**Prepare and start alternators or generators**
TRB Reference	**6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Pre start-up checks and test on electrical equipment and control system
2. Start in manual and remote modes
3. Carry out post start-up checks
4. Reset trios of the following;
   Over current
   Reverse power
   Low frequency

Instructions:

1. Make a procedure to start-up the alternator or generator.
2. Explain the steps in checking and testing the electrical equipments and control systems.

Outputs Standards:

1. The operations are planned and carried out in accordance with operating manuals and procedures to ensure safety of operations
2. Correct steps in checking and testing electrical equipment

COMPETENCY 6	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.2	Written Report
TRB Reference	6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1

1. Procedure to start-up the alternator or generator

2. Steps in checking and testing electrical equipment

COMPETENCY 6	**OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS**
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.2	**Written Report**
TRB Reference	**6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1**
COMPETENCY 6.	**OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS**
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.3	**Parallel and change-over alternators or generators**
TRB Reference	**6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Use paralleling procedures and put on load, including shaft generators and emergency generators
2. Adjust the load share of machine running in parallel
3. Remove the load from a machine running in parallel, stop and shut down
4. Describe the safety features in the power distribution system which protect alternators in case of a major fault

Instructions:

1. Discuss the procedure to start-up the alternator or generator including shaft generators and emergency generators
2. Explain safety precaution in the power distribution system to protect the generator in case of major fault

Outputs Standards:

1. Start-up procedure for alternator or generator
2. Safety precaution for power system

COMPETENCY 6	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.3	Written Report
TRB Reference	6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1

1. Start-up procedure

2. Safety precaution for power system

COMPETENCY 6.	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.4	**Start electric motors including high voltage installations, where appropriate**
TRB Reference	**6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Explain the starting methods for electric motors
2. Start up and operate a high capacity pump
3. Explain protective switch gear associated with high voltage installations
4. Explain the ship's permit to work system concerning electrical equipment

Instructions:

1. Discuss the starting methods of electric motor
2. Describe operation of high capacity pump and protective switch gear
3. Give a sample of ship's permit to work

Outputs Standards:

1. Starting method for electric motor
2. Operation procedure for high capacity pump
3. Ship's permit to work for electrical equipment

COMPETENCY 6	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.4	Written Report
TRB Reference	6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1

1. Starting method for electric motor

2. Operation procedure

3.Ship's permit to work

COMPETENCY 6.	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.5	**Basic configuration and operating principles of electronic equipment: Characteristics of basic electronic circuit elements**
TRB Reference	**6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Sketch a component providing electronic equipment control
2. Perform routine checks and test on electrical equipment
3. Explain electronic circuit symbols
4. Describe the characteristics of basic electronic circuit elements

Instructions:

1. Draw an electronic component equipment control
2. Make a written report of routine checks and test of electrical equipment
3. Give the basic circuit elements

Outputs Standards:

1. Drawing of electronic component
2. Written report of routine checks and test for electrical equipment
3. Basic circuit elements

COMPETENCY 6	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.5	Written Report
TRB Reference	6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1

COMPETENCY 6.	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.6	**Flow chart for automatic and control system**
TRB Reference	**6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Explain process signal symbols and terminology commonly used with control system diagrams
2. Sketch a part of the ship's electrical distribution system that uses sequential control circuits
3. Interpret flow charts for automatic and control system for electronic equipment operation
4. Check and test electronic control system

Instructions:

1. Make a process signal symbols and terminology commonly used
2. Draw a ship's electrical distribution system
3. Make a flow charts for automatic and control system
4. Make reflection

Outputs Standards:

1. Terminology and process symbols commonly used
2. Electrical distribution
3. Flow charts for automatic and control system

COMPETENCY 6	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.6	Written Report
TRB Reference	6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1

1. **Process symbols**

2. **Electrical distribution**

3. **Flow charts**

4. **Reflection**

COMPETENCY 6.	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.7	**Functions, characteristics and features of control systems for machinery**
TRB Reference	**6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Sketch a system of electronic control
2. Explain the functions, characteristics and features of the control system for:
   Main propulsion engine
   Steam boiler
   Steering gear

Instructions:

1. Draw an electronic control system
2. Discuss the function and features of the control system

Outputs Standards:

1. Written report of a system of electronic control used in main propulsion engine, steam boiler and steering gear.

COMPETENCY 6	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.7	Written Report
TRB Reference	6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1

System of electronic control used

COMPETENCY 6.	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.8	**Basic configuration and operating principles of electrical and electronic control systems: Automatic control methodologies and characteristics**
TRB Reference	**6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Explain the term 'high gain' in a control system
2. Explain how instability in a control system can occur
3. Sketch a diagrammatic arrangement of an automatic control system you have worked on showing the control elements
4. Give examples of Proportional-Integral-Derivative (PID) controllers that may be adjusted to achieve improved results/stability
5. List tuning methods commonly used on board
6. List software applications used in PID loop turning
7. Explain the fundamental difference in control system for heating, ventilation and air-conditioning system
8. Give an example of a system where 'droop' has to be controlled
9. Describe the function of a PLC-based controller, identifying pre-set and adjustable parameters

Instructions:

1. Explain the following terminology in a control system
   High Gain
   PID
   PLC

Outputs Standards:

1. Written explanation of the following:
   High Gain
   PID
   PLC

COMPETENCY 6	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.8	Written Report
TRB Reference	6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1

COMPETENCY 6.	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.9	**Proportional-Integral-Derivative(PID) control characteristics**
TRB Reference	**6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Explain the basic principle of three term control
2. Explain a PID control characteristics and associated system devices for process control

Instructions:

1. Describe the basic principle of three term control
2. Explain a PID Control

Outputs Standards:

1. Three term control
2. Written explanation of a PID Control

COMPETENCY 6	OPERATE ELECTRECAL, ELECTRONIC AND CONTROL SYSTEMS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 6.9	Written Report
TRB Reference	6.1.1, 6.21, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, 6.9.1

COMPETENCY 7.	MAINTENANCE AND REPAIR OF ELECTRICAL AND ELECTRONIC EQUIPMENT
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 7.5	**Detect and repair electrical faults and malfunctions and take measures to prevent damage**
TRB Reference	**7.1.1, 7.2.1, 7.3.1, 7.4.1, 7.5.1, 7.6.1, 7.7.1, 7.8.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Sketch the circuit diagram for the earth indicator lamps on the main switch board
2. Carry out Megger Sketch the circuit diagram for the earth indicator lamps
3. Assist with fault finding on electrical equipment control systems

Instructions:

1. Sketch the circuit diagram for the earth indicator lamps
2. Carry out Megger testing
3. Assist with fault finding on electrical equipment control systems

Outputs Standards:

1. Circuit diagram of earth indicator lamp
2. Performance on megger testing
3. Fault finding performance on electrical

COMPETENCY 7	MAINTENANCE AND REPAIR OF ELECTRICAL AND ELECTRONIC EQUIPMENT
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 7.5	Written Report
TRB Reference	7.1.1, 7.2.1, 7.3.1, 7.4.1, 7.5.1, 7.6.1, 7.7.1, 7.8.1

COMPETENCY 7.	MAINTENANCE AND REPAIR OF ELECTRICAL AND ELECTRONIC EQUIPMENT
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 7.7	**Detection of electric malfunction, location of faults and measures to prevent damage**
TRB Reference	**7.1.1, 7.2.1, 7.3.1, 7.4.1, 7.5.1, 7.6.1, 7.7.1, 7.8.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Assist in tracing and correcting earth faults
2. Isolate and lock out associated equipment when engaged in repair or maintenance work
3. Carry out routine testing and maintenance on alarm systems, ensuring that the circuits are isolated, lock out and protected by notices and that appropriate permit to work is issued
4. Assist with fault finding of ship's lighting circuits and component testing

Instructions:

1. Carry-out tracing and correcting earth faults
2. Engage repair and maintenance work
3. Carry out testing and alarm systems

Outputs Standards:

1. Performance report of tracing and correcting earth faults
2. Experience report for repair and maintenance work

COMPETENCY 7	MAINTENANCE AND REPAIR OF ELECTRICAL AND ELECTRONIC EQUIPMENT
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 7.7	Written Report
TRB Reference	7.1.1, 7.2.1, 7.3.1, 7.4.1, 7.5.1, 7.6.1, 7.7.1, 7.8.1

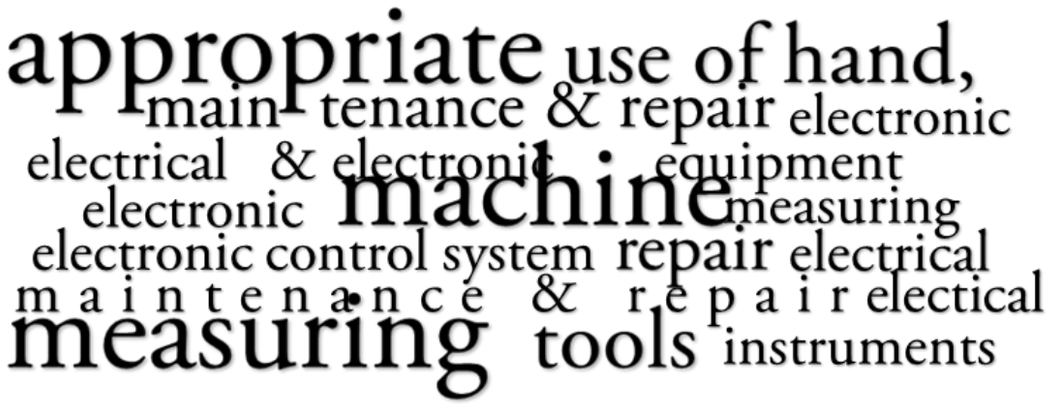
ON BOARD TRAINING

WORKBOOK

FOR OFFICERS IN CHARGE OF AN ENGINEERING WATCH
(ENGINE CADETS)

FUNCTION: M A I N T A I N & R E P A I R

AT THE OPERATIONAL LEVEL



OUTPUTS

UNIVERSITY OF CEBU, MARITIME EDUCATION & TRAINING CENTER

1ST EDITION 2015

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.4	**Safety measures to be taken to ensure a safe working environment and for using hand tools, machine tools and measuring instruments**
TRB Reference	**8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Write the safe working practices for the use of the following:
    - Power operated tool
    - Machine tool
    - Welding equipment
2. Identify and use the appropriate PPE while using the above mentioned tools.
3. Write your reflection on this activity

Instructions:

1. Write the safe working practices for the use of the following:
    - Power operated tool
    - Machine tool
    - Welding equipment
2. Identify and write the purpose of the appropriate PPE used while performing fabrication and repair.
3. Write your reflection on this activity

Outputs Standards:

1. Write the safe working practices for the use of the following:
    - Power operated tool
    - Machine tool
    - Welding equipment
2. Write the purpose of the appropriate PPE used while performing fabrication and repair.
3. Write your reflection on this activity.

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.4	Safety measures to be taken to ensure a safe working environment and for using hand tools, machine tools and measuring instruments
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1

The safe working practices for the use of the following:

Power operated tool:

Machine tool:

Welding equipment:

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.4	Safety measures to be taken to ensure a safe working environment and for using hand tools, machine tools and measuring instruments
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1
The purpose of the appropriate PPE used	

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.4	Safety measures to be taken to ensure a safe working environment and for using hand tools, machine tools and measuring instruments
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1
Reflection	

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.5	**Use of hand tools and machine tools**
TRB Reference	**8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Identify hand tools commonly found in the machine shop tool room.
2. Select appropriate hand tools carried out in doing inspection, dismantle, repair and re-assembly
3. Use correctly in safe and effective manner the hand tools carried out for the work.
4. Accomplish the task for identification of tools as being illustrated.
5. Make a brief description on the tools not found in the tools illustrated in the task sheet but commonly carried out in doing inspection, dismantle, repair and re-assembly
6. Write your reflection on the this activity

Instructions:

1. Familiarize yourself on the tools found in the machine shop tool room from your vessel;
2. Be oriented on the selection on the appropriate hand tools, correct usage in safe and effective manner.
3. Accomplish the task for identification of tools as being illustrated.
4. Make a brief description on the tools not found in the tools illustrated in the task sheet.
5. Write your reflection on the this activity

Outputs Standards:

1. Identify hand tools commonly found in the machine shop tool room.
2. Select appropriate hand tools carried out in doing inspection, dismantle, repair and re-assembly
3. Use correctly in safe and effective manner the hand tools carried out for the work.
4. Accomplish the task for identification of tools as being illustrated.
5. Make a brief description on the tools not found in the tools illustrated in the task sheet but commonly carried out in doing inspection, dismantle, repair and re-assembly.
   Note: Output for objective 5, Write your answer in the worksheet provided in this activity.
6. Write your reflection on this activity.
   Note: In accomplishing this task, NOT less than five hundred words HANDWRITTEN. Use the worksheet provided in this activity

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.5	Safety measures to be taken to ensure a safe working environment and for using hand tools, machine tools and measuring instruments
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1

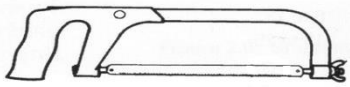
Tools identification (illustrated) Write your answer below each figure.

_____

_____

_____

_____

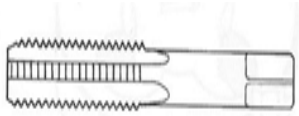


_____

_____

_____

_____



_____

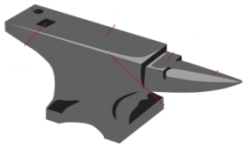
_____

_____

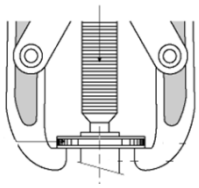
_____

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.5	Safety measures to be taken to ensure a safe working environment and for using hand tools, machine tools and measuring instruments
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1

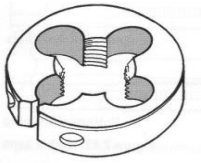
_____



_____



_____

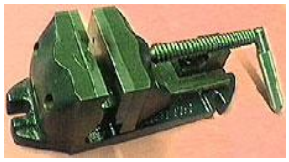


_____

_____

_____

_____



_____

_____

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.5	Safety measures to be taken to ensure a safe working environment and for using hand tools, machine tools and measuring instruments
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1

Use this sheet for your output in objective no. 5

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.5	Safety measures to be taken to ensure a safe working environment and for using hand tools, machine tools and measuring instruments
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1

Use this sheet for your output in objective no. 6

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.6	**Use of measuring tools**
TRB Reference	**8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Identify measuring instruments commonly found in the machine shop tool room.
2. Select appropriate measuring instruments carried out in doing inspection, dismantle, repair and re-assembly.
3. Use correctly in safe and effective manner on measuring instruments carried out for the work for obtaining a precise measurement.
4. Write your reflection on this activity.

Instructions:

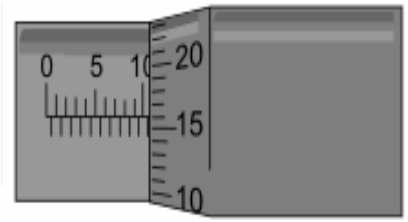
1. Familiarize yourself on measuring instruments found in the machine shop tool room from your vessel;
2. Be oriented on the selection on the appropriate measuring instruments, correct usage in safe and effective manner.
3. Use correctly in safe and effective manner on measuring instruments carried out for the work.
4. Write your reflection on this activity.

Outputs Standards:

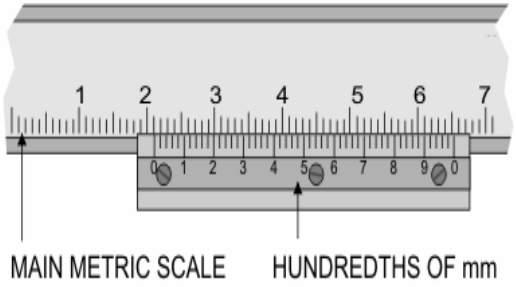
1. Identify measuring instruments commonly found in the machine shop tool room.
2. Select appropriate measuring instruments carried out in doing inspection, dismantle, repair and re-assembly.
3. Use correctly in safe and effective manner on measuring instruments carried out for the work for obtaining a precise measurement. Obtain reading from vernier calliper and micrometer.
4. Make a brief description on measuring instruments carried out in doing inspection, dismantle, repair and re-assembly.
Note: Output for objective 4, Write your answer in the worksheet provided in this activity.
5. Write your reflection on this activity.
Note: In accomplishing this task, NOT less than five hundred words HANDWRITTEN. Use the worksheet provided in this activity.

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.6	Use of measuring tools
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1

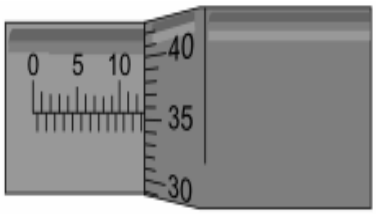
For objective no. 3, Obtained reading from vernier and micrometer. Use vernier scale 0.02 mm, micrometer 0 – 25 x 0.01 mm



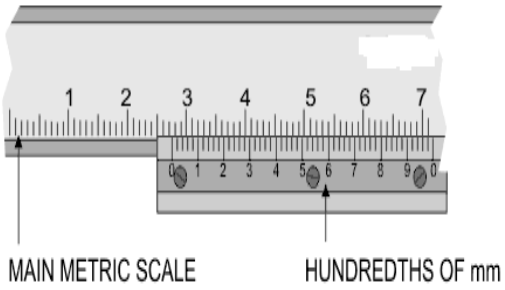
Reading: _____



Reading: _____



Reading: _____



Reading: _____

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.6	Use of measuring tools
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1
Use this sheet for your output in objective no. 4	

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.6	Use of measuring tools
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1
Use this sheet for your output in objective no. 5	

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.8	**Use of special tools for fabrication and repair work on board**
TRB Reference	**8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Lists item fabricated or repaired with the use of the following special tools:
    - Hydraulic tools
    - Bearing pullers
    - Torque wrench
2. Lists the tools used for dismantling, inspection, repair and assembly of the following:
    - Steering gear
    - Engine room pumps and fans
    - Deck winches and windlass
    - Galley and catering equipments
    - Air conditioning
3. Write your reflection on this activity

Instructions:

1. Lists item fabricated or repaired with the use of the following special tools:
    - Hydraulic tools
    - Bearing pullers
    - Torque wrench
2. Lists the tools used for dismantling, inspection, repair and assembly of the following:
    - Steering gear
    - Engine room pumps and fans
    - Deck winches and windlass
    - Galley and catering equipments
    - Air conditioning
3. Write your reflection on this activity

Outputs Standards:

1. Lists item fabricated or repaired with the use of the following special tools:
    - Hydraulic tools
    - Bearing pullers
    - Torque wrench
2. Lists the tools used for dismantling, inspection, repair and assembly of the following:
    - Steering gear
    - Engine room pumps and fans
    - Deck winches and windlass
    - Galley and catering equipments
    - Air conditioning
3. Write your reflection on this activity

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.8	Use of special tools for fabrication and repair work on board
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1
Use this sheet for your output in objective no. 1	

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.8	Use of special tools for fabrication and repair work on board
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1
Use this sheet for your output in objective no. 2	

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.8	Use of special tools for fabrication and repair work on board
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1
Use this sheet for your output in objective no. 3	

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.9	**Use of machine tools and welding equipment for fabrication and repair**
TRB Reference	**8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Lists item fabricated with the use of the following equipments:
    - Centre lathes
    - Drill press
    - Gas welding/brazing equipment
    - Gas cutting equipment
2. Lists the safe working practices used when using the above mentioned equipment.
3. Write your reflection on this activity

Instructions:

1. Lists item fabricated with the use of the following equipments:
    - Centre lathes
    - Drill press
    - Gas welding/brazing equipment
    - Gas cutting equipment
2. Lists the safe working practices used when using the above mentioned equipment.
3. Write your reflection on this activity

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.9	**Use of machine tools and welding equipment for fabrication and repair**
TRB Reference	**8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1**

Outputs Standards:

1. Lists item fabricated with the use of the following equipments:
    - Centre lathes
    - Drill press
    - Gas welding/brazing equipment
    - Gas cutting equipment
2. Lists the safe working practices used when using the above mentioned equipment.
3. Write your reflection on this activity

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.9	Use of special tools for fabrication and repair work on board
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1
Use this sheet for your output in objective no. 1	

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.9	Use of special tools for fabrication and repair work on board
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1
Use this sheet for your output in objective no. 2	

COMPETENCY 8.	APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 8.9	Use of special tools for fabrication and repair work on board
TRB Reference	8.1.1, 8.2.1, 8.3.1, 8.4.1, 8.5.1, 8.6.1, 8.7.1, 8.9.1
Use this sheet for your output in objective no. 3	

COMPETENCY 9.	MAINTENANCE AND REPAIR OF SHIPBOARD MACHINERY AND EQUIPMENT
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 9.1	**Locate and use relevant data sources, manuals and drawings**
TRB Reference	**9.1.1, 9.2.1, 9.3.1, 9.4.1, 9.5.1, 9.6.1, 9.7.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Explain what is required in a Planned Maintenance system
2. Explain manufacturers' instructions and drawings for use in maintenance System
3. Retrieve reports from a computer-based maintenance system
4. Participate in a survey of running machinery using condition monitoring equipment
5. Describe how items if spare gear are stored and maintained in good condition

Instructions:

1. Make a Planned Maintenance system of your ship machinery
2. Describe how items if spare gear are stored and maintained in good condition

Outputs Standards:

1. Maintenance Plan system
2. Written report of spare gear stored

COMPETENCY 9.	MAINTENANCE AND REPAIR OF SHIPBOARD MACHINERY AND EQUIPMENT
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 9.1	**Written report**
TRB Reference	**9.1.1, 9.2.1, 9.3.1, 9.4.1, 9.5.1, 9.6.1, 9.7.1**

1. **Maintenance Plan system**

2. **Written report of spare gear stored**

COMPETENCY 9.	MAINTENANCE AND REPAIR OF SHIPBOARD MACHINERY AND EQUIPMENT
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 9.2	**Ensure safety of all personnel working on plant or equipment**
TRB Reference	**9.1.1, 9.2.1, 9.3.1, 9.4.1, 9.5.1, 9.6.1, 9.7.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Explain special precautions to taken for repair and maintenance work in hazardous areas
2. Explain safe working practices and procedures

Instructions:

1. Make a written report about precautions for repairing and maintenance work in hazardous areas
2. Give safe working practices and procedures

Outputs Standards:

1. Precautions for repair and maintenance work in hazardous areas
2. Safe working practice and procedures

COMPETENCY 9.	MAINTENANCE AND REPAIR OF SHIPBOARD MACHINERY AND EQUIPMENT
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 9.2	**Written report**
TRB Reference	**9.1.1, 9.2.1, 9.3.1, 9.4.1, 9.5.1, 9.6.1, 9.7.1**

1. Precautions for repair and maintenance work in hazardous areas

2. Safe working practice and procedures

COMPETENCY 9.	MAINTENANCE AND REPAIR OF SHIPBOARD MACHINERY AND EQUIPMENT
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 9.4	**Undertake maintenance and repair to the auxiliary engine**
TRB Reference	**9.1.1, 9.2.1, 9.3.1, 9.4.1, 9.5.1, 9.6.1, 9.7.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Take and log readings of crankshaft deflections
2. Change, inspect, check condition, wear and clearance, overhaul and test

Instructions:

1. Have a log readings of crankshaft deflection
2. Keep records of overhaul and test of wear and clearance

Outputs Standards:

1. Crankshaft deflection
2. Records of overhaul and test of wear and clearance

COMPETENCY 9.	MAINTENANCE AND REPAIR OF SHIPBOARD MACHINERY AND EQUIPMENT
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 9.4	Written report
TRB Reference	9.1.1, 9.2.1, 9.3.1, 9.4.1, 9.5.1, 9.6.1, 9.7.1

1. **Crankshaft deflection**

2. **Overhaul and test of wear and clearance**

COMPETENCY 9.	MAINTENANCE AND REPAIR OF SHIPBOARD MACHINERY AND EQUIPMENT
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 9.5	**Undertake maintenance and repair to the auxiliary boiler**
TRB Reference	**9.1.1, 9.2.1, 9.3.1, 9.4.1, 9.5.1, 9.6.1, 9.7.1**

Output Objectives

After the completion of this activity, YOU WILL be able to:

1. Take boiler out of service
2. Examine boiler, reporting on its condition
3. Overhaul and test water gauge glass and check that passages, cocks and valves are clear
4. Change and overhaul burner

Instructions:

1. Take records of boiler out of service
2. Carry out inspection and records its condition
3. Conduct test of water gauge glass, passages, cocks and valves
4. Take records of burner maintenance

Outputs Standards:

1. Records of boiler maintenance
2. Records burner maintenance
3. Gage glass test records

COMPETENCY 9.	MAINTENANCE AND REPAIR OF SHIPBOARD MACHINERY AND EQUIPMENT
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY 9.5	**Written report**
TRB Reference	**9.1.1, 9.2.1, 9.3.1, 9.4.1, 9.5.1, 9.6.1, 9.7.1**

1. **Records of boiler maintenance**

2. **Records burner maintenance**

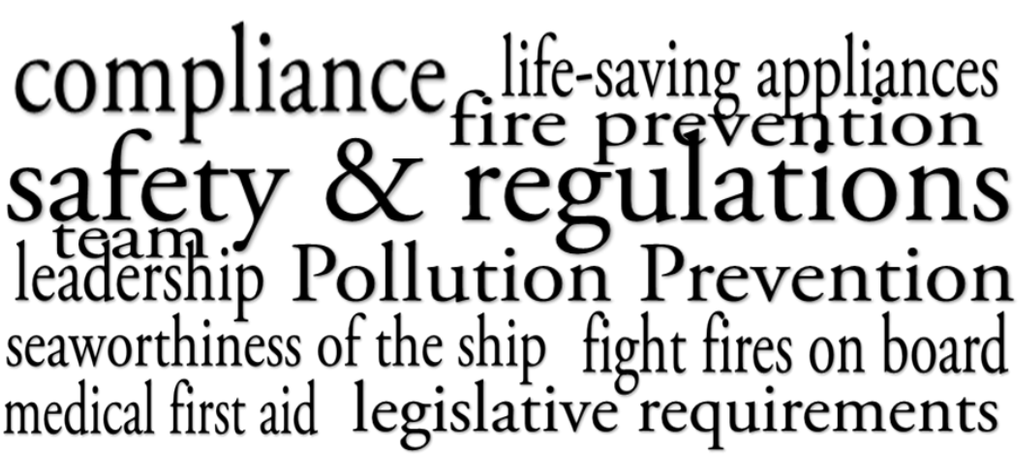
3. **Gage glass test records**

ON BOARD TRAINING WORKBOOK

FOR OFFICERS IN CHARGE OF AN ENGINEERING WATCH
(ENGINE CADETS)

FUNCTION: CONTROLLING THE OPERATION OF SHIP & CARE FOR PERSONS ONBOARD

AT THE OPERATIONAL LEVEL



OUTPUTS

UNIVERSITY OF CEBU, MARITIME EDUCATION & TRAINING CENTER

1ST EDITION 2015

COMPETENCY 10	APPLICATION OF LEADERSHIP & TEAMWORKING SKILLS
ACTIVITY, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY	**WRITTEN REPORT**
TRB Reference	**F4- C10**

Output Standards

After the completion of this activity, YOU WILL be able to:

1. Outline the procedures and measures onboard will ensure leadership & team workings skills will be a culture onboard;
2. Include sample activity, measures or procedures.

Instructions:

1. Read the SMS, Safety Manuals and relevant manual of your vessel;
2. Write your answers on the space provided:
3. Pictures of the activity, drills and other information can be included on the answers.

Answer:

COMPETENCY 11	ENSURE COMPLIANCE WITH THE POLLUTION PEREVENTION REQUIREMENTS
ACTIVITY, MARPOL , INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY	**WRITTEN REPORT**
TRB Reference	**F4- 11**

Output Standards

After the completion of this activity, YOU WILL be able to:

1. Outline the "proactive measures" that is implemented on board your vessel to ensure protection of the marine environment;
2. Write a brief description of each "proactive measures";

Instructions:

1. Read the SMS, Safety Manuals and relevant manual of your vessel;
2. Write your answers on the space provided:
3. Pictures of the MARPOL activity, drills and other information can be included on the answers.

Answer:

COMPETENCY 12	MAINTAIN SEAWORTHINESS OF THE SHIP
ACTIVITY, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY	**WRITTEN REPORT**
TRB Reference	**F4- C12**

Output Standards

After the completion of this activity, YOU WILL be able to:

1. Describe the practical application in how to maintain the seaworthiness of the ship;
2. **Include sample activity, measures or procedures.**

Instructions:

1. Read the SMS, Safety Manuals and relevant manual of your vessel;
2. Write your answers on the space provided:
3. Pictures of the activity, drills and other information can be included on the answers.

Answer:

COMPETENCY 13	PREVENT, CONTROL & FIGHT FIRES ON BOARD
ACTIVITY, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY	**WRITTEN REPORT**
TRB Reference	**F4- C13**

Output Standards

After the completion of this activity, YOU WILL be able to:

1. Outline the procedures or measure onboard use, to prevent, control & fight fires on board;
2. Include sample activity, measures or procedures.

Instructions:

1. Read the SMS, Safety Manuals and relevant manual of your vessel;
2. Write your answers on the space provided:
3. Pictures of the activity, drills and other information can be included on the answers.

Answer:

COMPETENCY 1п	OPERATE LIFE SAVING APPLIANCE
ACTIVITY, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY	**WRITTEN REPORT**
TRB Reference	**F4- C14**

Output Standards

After the completion of this activity, YOU WILL be able to:

1. Outline the procedures how to operate a lifesaving appliance on board;
2. Include sample activity, firefighting appliance only, measures or procedures.

Instructions:

1. Read the SMS, Safety Manuals and relevant manual of your vessel;
2. Write your answers on the space provided:
3. Pictures of the activity, drills and other information can be included on the answers.

Answer:

COMPETENCY 15	APPLY MEDICAL FIRST AID ON-BOARD SHIP
ACTIVITY, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY	**WRITTEN REPORT**
TRB Reference	**F4- C15**

Output Standards

After the completion of this activity, YOU WILL be able to:

1. Outline the procedures how to apply medical first aid onboard;
2. Include sample activity, measures or procedures.

Instructions:

1. Read the SMS, Safety Manuals and relevant manual of your vessel;
2. Write your answers on the space provided:
3. Pictures of the activity, drills and other information can be included on the answers.

Answer:

COMPETENCY 16	MONITOR COMPLIANCE OF LEGISLATIVE REQUIREMENTS
ACTIVITY, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY	**WRITTEN REPORT**
TRB Reference	**F4- C16**

Output Standards

After the completion of this activity, YOU WILL be able to:

1. Outline the procedures and measures to monitor ship's compliance of legislative requirements onboard;
2. Include sample activity, measures or procedures.

Instructions:

1. Read the SMS, Safety Manuals and relevant manual of your vessel;
2. Write your answers on the space provided:
3. Pictures of the activity, drills and other information can be included on the answers.

Answer:

ON BOARD TRAINING

WORKBOOK

FOR OFFICERS IN CHARGE OF AN ENGINEERING WATCH
(ENGINE CADETS)

SEA PROJECT OUTPUTS

UNIVERSITY OF CEBU, MARITIME EDUCATION & TRAINING CENTER

1ST EDITION 2015

Date Started		**TITLE SEA PROJECT**	**PIPELINE SYSTEMS:** *Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements:* "**MAIN SEA WATER"**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.1**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** *Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements:"* ***BILGE, INCLUDING OWS AND EMERGENCY BILGE PUMPING ARRANGEMENTS"***
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.2**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: "**FIRE MAIN"**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.3**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: "**BALLAST"**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.4**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: "**DOMESTIC FRESH WATER (HIGH TEMPERATURE, LOW TEMPERATURE)"**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.5**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: "**FUEL-TRANSFER SYSTEM, (HFO AND MDO)"**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.6**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: "**MAIN STEAM"**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.7**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: "**FEED-WATER**"
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.8**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: ”**AUXILIARY STEAM”**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.9**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: ” **MAIN ENGINE FUEL OIL SYSTEM”**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.10**

Date Started		**TITLE**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: ” **AUXILIARY ENGINE FUEL OIL SYSTEM”**
Completed		**SEA PROJECT**	
Name and Signature of the Training Officer:			**Ref: Sea Project 1.11**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: ” **MAIN ENGINE LUBE OIL SERVICE”**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.12**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: ” **SEWAGE SYSTEM”**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.13**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: ” **COMPRESSED AIR SYSTEMS FOR ENGINE ROOM AND DECK SERVICES”**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.14**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: ” **DRAIN VALVES”**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.15**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: ” **AIR COCKS”**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.16**

Date Started		**TITLE** **SEA PROJECT**	**PIPELINE SYSTEMS:** Pipe Systems Trace and make line diagrams of the following pipe systems. Use the correct symbols to show on the appropriate diagrams: valves (NRV, SDNR, etc.), remote or emergency controls and other arrangements: ” **DOMESTIC REFRIGERATION SYSTEM”**
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 1.17**

Requirements: Identify pressure relief valves, bursting discs, drains, air cocks, filter units, sounding arrangements and vent pipes.

Date Started		**TITLE**	**SCALE DRAWINGS:** "**A LONGITUDINAL SECTION THROUGH THE CENTRE LINE OF YOUR SHIP"** (showing and
Completed		**SEA PROJECT**	naming cargo holds (tanks), bunker, ballast and all other compartments/spaces)
Name and Signature of the Training Officer:			**Ref: Sea Project 2.A**

Date Started		**TITLE** **SEA PROJECT**	**SCALE DRAWINGS: "A PLAN OF EACH OF THE DECKS"** (showing and naming accommodation, store rooms etc.)
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 2.B**

Date Started		**TITLE** **SEA PROJECT**	**SAFETY ON THE PLAN OF MACHINERY SPACES DRAWN IN SEA PROJECT 2.B** (Show the position by key letters of each type of life-saving and fire-fighting equipment)
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 3.A**

Date Started		**TITLE**	**SAFETY ON THE PLAN OF MACHINERY SPACES DRAWN IN SEA PROJECT 2.B (**List the key letters used in (Sea Project 3.A) and alongside each one give a brief description of each item**)**
Completed		**SEA PROJECT**	
Name and Signature of the Training Officer:			**Ref: Sea Project 3.B**

Date Started		**TITLE** **SEA PROJECT**	**PROTECTION OF THE MARINE ENVIRONMENT:** Summarise the company's policy on environmental protection, What measures are taken aboard your ship to minimise the risk of pollution. This includes the disposal of plastics, galley waste, noise, smoke, oil, sludge, sewage, grey water etc. Investigate and list the **MARPOL regulations** that aim to control and protect the marine environment.
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 4**

Date Started		**TITLE** **SEA PROJECT**	**MAIN ENGINE:** Make a line diagram of the lubricating system for the main engine. Indicate the types of valves, pumps and filters fitted. Show, with the aid of a diagram, the general lube oil distribution.
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 5**

Date Started		**TITLE**	**MAIN ENGINE (cont.):** What is the average lube oil consumption of cylinder and crankcase oil? Why does this loss occur?
Completed		**SEA PROJECT**	
Name and Signature of the Training Officer:			**Ref: Sea Project 5 (cont.)**

Date Started		**TITLE**	**STEERING GEAR:** Describe the emergency operation of the steering gear
Completed		**SEA PROJECT**	
Name and Signature of the Training Officer:			**Ref: Sea Project 6**

Date Started		**TITLE**	**ELECTRICAL SYSTEMS**: Describe the procedure for paralleling the ship's alternators or generators. Explain how load sharing is achieved.	
Completed		**SEA PROJECT**		
Name and Signature of the Training Officer:				**Ref: Sea Project 7**

Date Started		**TITLE** **SEA PROJECT**	**BUNKERING:** Describe the procedures for taking bunkers. State clearly the sequence of events and the precautions taken. Evaluate the results of any tests taken at the time or from analysis made by a laboratory ashore.	
Completed				
Name and Signature of the Training Officer:				**Ref: Sea Project 8**

(Describe how orders are given, confirmed and executed and the interactions with the engine room and other parts of the vessel)	
(A) ENTERING PORT	**(B) LEAVING PORT**

Date Started		**TITLE** **SEA PROJECT**	**BRIDGE WATCHES:** Describe very briefly the purpose and functions of the main items of bridge equipment. Observe procedures and assist on the bridge during manoeuvring operations
Completed			
Name and Signature of the Training Officer:			**Ref: Sea Project 9: A & B**

(Describe how orders are given, confirmed and executed and the interactions with the engine room and other parts of the vessel)	
(C) WHEN ANCHORING OR WEIGHING ANCHOR	**(D) DURING ONE WATCH AT SEA.**

Date Started		**TITLE**	**BRIDGE WATCHES:** Describe very briefly the purpose and functions of the main items of bridge equipment.
Completed		**SEA PROJECT**	Observe procedures and assist on the bridge during manoeuvring operations

Name and Signature of the Training Officer:	**Ref: Sea Project 9: C &D**

ON BOARD TRAINING

WORKBOOK

FOR OFFICERS IN CHARGE OF AN ENGINEERING WATCH
(ENGINE CADETS)

EMERGENCY PROCEDURES GUIDES

UNIVERSITY OF CEBU, MARITIME EDUCATION & TRAINING CENTER

1ST EDITION 2015

SECTION 7	ENGINE ROOM EMERGENCY PROCEDURES & TRAININGS
ACTIVITY, TRB REFERENCE, INSTRUCTIONS & OUTPUTS OBJECTIVES & STANDARDS	
ACTIVITY	**ENGINE ROOM EMERGENCY PROCEDURES**
Reference	**SHIP'S SAFETEY MANAGEMENT MANUAL**

Output Standard

After the completion of this activity, YOU WILL be able to:

Write the following Engine Room Emergency Procedures and Training on Board Ship on the assigned page of this workbook:

- Engine Room Fire
- Engine Room Flooding
- Enclosed Space
- Scavenge Fire
- Crankcase Explosion
- Uptake Fire
- Oil Spill
- Bunker Training
- Pollution Prevention Appliances Training
- Blackout Training

Instructions:

1. Read your ships Engine Room Safety Manuals;
2. Outline each of the Emergency Procedures and Trainings, include an account of the drills and trainings that you had already participated ;
3. Show it to your Training Officer onboard
4. Request your Officer to sign each of every output that you have completed.

SECTION 7 ENGINE ROOM EMERGENCY PROCEDURES & TRAININGS

Drills and Training on board ships play an important role in preparing the crew for emergency situations. The ship's engine room is a hazardous place where a variety of accidents can take place. Engine room crew members are therefore required to carry out all important drills and training procedures on regular basis to ensure safety of the ship and its crew

In this Section, write the following Engine Room Emergency Drills/Trainings/Procedures on the designated page including an account on Drill/Trainings that you had already participated and on the table below, insert your responsibilities and dates on each drills/trainings. NOTE: DOCUMENT THIS SECTION 7 OUTPUT ON A SEPARATE A4 BOND PAPER

DRILLS	**Your Duties Responsibilities**	**Date of Drills & Trainings**
Engine Room Fire		
Engine Room Flooding		
Enclosed Space		
Scavenge Fire		
Crankcase Explosion		
Uptake Fire		
Oil Spill		
Bunker Training		
Pollution Prevention Appliances Training		
Blackout Training		