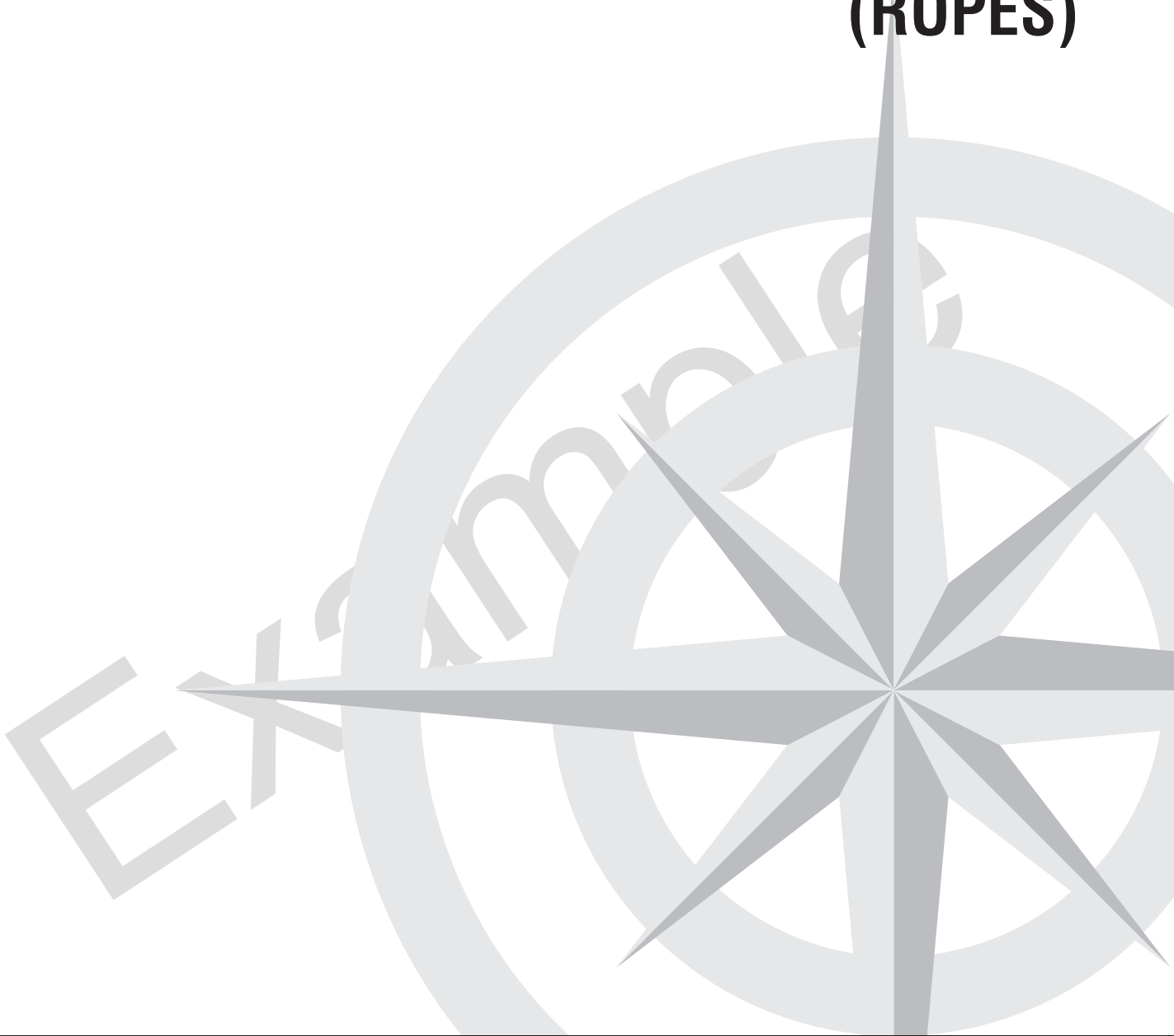


National Record of Practical Experience and Sea-Service (ROPES)



**A record book for candidates for the award of a Certificate
of Competency as a Marine Engine Driver Grade 3**

Edition 1 – January 2004

National Record of Practical Experience and Sea-Service (ROPES)

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This book does not provide occupational health and safety guidance for the tasks described. It is the responsibility of the candidate to seek permission from the master, engineer or other relevant supervisor before attempting any task. It is the responsibility of the candidate and supervisory personnel on the vessel or in the workplace to ensure that these tasks are conducted in a safe manner.

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The National Marine Safety Committee is an Intergovernmental Committee charged with achieving uniform marine safety practices throughout Australia. It is comprised of the Chief Executive of each of the marine safety agencies in Australia.

PERSONAL INFORMATION

Surname _____ Given name(s) _____

Date of birth _____ Place of birth _____

Height (cm) _____ Complexion _____

Hair colour _____ Eye colour _____

Personal marks
(i.e.: scars, tattoos, amputations – list below)



Signature

Contact Details

Address _____

Tel _____ Mobile _____

Address _____

Tel _____ Mobile _____

Address _____

Tel _____ Mobile _____

Address _____

Tel _____ Mobile _____

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Example

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Section 1 Introduction

Purpose of this record book

This book has been designed to allow a candidate for a Marine Engine Driver Grade 3 Certificate of Competency to gain relevant workplace experience and to record the details of their sea-service in a format that can be submitted to a marine authority for assessment.

The benefits of using ROPES

The tasks in ROPES cover the areas of skill and knowledge that you will need to acquire in order to gain your Marine Engine Driver Grade 3 Certificate of Competency. By undertaking the tasks in this record book you are demonstrating to the marine authority that you have gained relevant sea-service and onboard practical experience.

As a result, completion of this book may result in a remission of the amount of sea-service required, up to a maximum of 50%. Other systems of structured on-the-job training, such as those provided by an approved registered training provider, may, with the prior approval of the marine authority, also qualify you for similar reductions in sea-service.

Should you decide not to complete this ROPES book, or an equivalent approved system, you will be required to complete the full amount of sea-service normally required for the certificate.

Partial completion of ROPES may result in a pro-rata reduction in the amount of sea-service required.

General instructions to candidates

The aim of using the ROPES book is to increase the value of your practical experience at sea. Wherever possible and appropriate the tasks should be completed in a seagoing environment (rather than onshore or in port). Where the opportunities for completing a task on your vessel are limited, provision may be made for the task to be performed onshore.

Some of the tasks in this ROPES book require you to record, describe or sketch information. This can be done in an exercise book, or in Section 7 of this book on the blank pages provided. Copies of this information will need to be submitted with your ROPES book at the time of assessment.

Who can sign the book?

Each task in this book needs to be signed by a competent person who acts in a supervisory role and has witnessed that you have satisfactorily completed the task. Normally this will be the Master or Engineer onboard the vessel, but may also include the owner of the vessel, operations manager, or other person associated with the operations of that vessel and your employment.

Persons signing this book will also need to provide contact details and a sample signature in Section 4 of this book.

Other requirements to gain a Certificate of Competency

In addition to completing the requirements for sea-time, candidates for a Certificate of Competency are also required to complete an approved training program with a registered training provider. For more information regarding these requirements contact your local marine authority. See Section 8 of this book for contact details.

Assessment of this book

On completion of this book the marine authority, or a person delegated by the marine authority, will assess the ROPES book and determine if it is acceptable, and whether a reduction in sea-service will be granted.

It is important to remember a task is only considered to be complete when the task has been signed-off by an appropriate person in a supervisory role.

Candidates should note that the marine authority might seek to verify the information contained in this book and may call the signatories to this book to check its accuracy. It is an offence to provide false or misleading information in an application for a Certificate of Competency.

The marine authority may also use the information supplied by you in the ROPES book when conducting the oral examination prior to awarding a Certificate of Competency.

Warning

When undertaking any tasks listed in this book, first seek permission from the Master or Engineer before commencing, and make sure you are supervised appropriately.

This book does not provide occupational health and safety guidance on completing these tasks. It is the responsibility of the candidate and supervisory personnel on the vessel to ensure that all tasks are conducted safely.

Further information

For further information on using this book, contact your local marine authority. See Section 8 for contact details.

Signature of candidate

I have read and understood the above requirements.

Name

Signature

Date

Section 2 Marine Engine Driver Grade 3 tasks

Instruction to candidates

Read through the tasks listed in the tables below. There are six core tasks, and 14 engineering tasks to be completed in this Section of ROPES. In addition, four of the nine tasks in Section 3 of ROPES must also be completed.

Before attempting any of these tasks discuss how you will approach them with the Master, Engineer, or other appropriate supervisor onboard your vessel.

It is important to note that each task has a number of separate parts or components. When you have completed each part of the task, request that the person who supervised you sign the book to show that you have satisfactorily completed the task. Components of a task require a separate signature, and may be undertaken on more than one vessel. You should also note that these tasks do not have to be undertaken in the order they appear.

All persons signing the book must also provide their contact details in Section 4 of this book.

Core Task 1 — Radio operations		
Aim The aim of this task is to gain experience in transmitting and receiving information by marine radio. Specifically to communicate by radio with another vessel or coast radio station using correct procedures, frequencies, and appropriate messages; use a radio to obtain weather forecasts; and to understand how to seek assistance, including urgent medical advice while at sea.		
	Vessel	Signature & Date
Identify radio equipment 1. List the radio equipment onboard your vessel: <hr/> <hr/> <hr/> <hr/> <hr/>		
Radio frequencies 2. List the main working frequencies, or channels for each radio: <hr/> <hr/> <hr/> <hr/> <hr/> 3. Discuss the procedure for selecting these.		

<p>Radio controls</p> <p>4. Identify and select the controls for each of the onboard radio sets and explain what each control does.</p>		
<p>Making distress calls</p> <p>5. Demonstrate how to select the distress, urgency and safety frequencies or channels for each of the radios onboard. List these frequencies.</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>6. Demonstrate (not to be transmitted) the ability to make a distress, urgency or safety call.</p>		
<p>Operate a marine radio</p> <p>7. Obtain weather forecasts from the radio for your area using as many different services, sources or frequencies as are available.</p> <p>8. Operate each of the marine radios onboard to transmit and receive routine messages between other vessels and shore.</p>		
<p>Undertaking basic maintenance</p> <p>9. Perform basic maintenance checks on batteries and power supplies.</p> <p>10. Identify and replace fuses.</p> <p>11. Identify main parts of aerial and earth system and check cables and connections are secured and protected properly.</p>		
<p>Comments about completion of these tasks can be added here:</p>		

<p>Operating equipment and machinery</p> <p>4. Discuss how you would safely:</p> <ul style="list-style-type: none"> a) Operate a crane or lifting boom to lift and swing a heavy load. b) Retrieve fishing gear under tension with catch. 		
<p>Working on the deck</p> <p>5. Discuss how you would safely:</p> <ul style="list-style-type: none"> a) Work on deck / move around inside the vessel in heavy weather. b) Lash and secure a heavy movable item on a vessel rolling in a seaway. 		
<p>Working with other persons</p> <p>6. Discuss how you would safely:</p> <ul style="list-style-type: none"> a) Supervise passengers and other crewmembers and keep them safe. b) Control a passenger / crewman who is posing a threat to themselves or others onboard during a voyage. (Simulation or drill.) <p>7. Discuss appropriate clothing onboard for an emergency situation or drill.</p>		
<p>Comments about completion of these tasks can be added here:</p>		

Core Task 3 — Fire safety		
Aim		
To become familiar with aspects of fire safety onboard the vessel including fire readiness, minimising the risk of fires, fire protection systems and fighting and extinguishing fires.		
	Vessel	Signature & date
Familiarisation with fire systems <ol style="list-style-type: none"> 1. Identify the different types of fire extinguishers onboard and discuss their uses (i.e.: stored pressure water, foam type, CO2, dry chemical powder). 2. Demonstrate how you would check the fire extinguishers to make sure they are in good order and ready for use. 3. If your vessel has a fire detection system find out— <ol style="list-style-type: none"> a) what causes the detector system to activate the alarm (eg: heat, smoke, flame); _____ b) how you can check whether the detector is working; and c) whether you can hear the alarm in all parts of the vessel. 		
Minimising the risk of fire <ol style="list-style-type: none"> 4. Participate in inspecting the vessel for fire hazards and in minimising the risk of ignition. 5. Explain the preferred methods and locations for storing flammable materials onboard (i.e. petrol, bulk cleaning chemicals, paint). 6. Explain how you would minimise the risk of fire while repairs involving heat (eg welding) are being done onboard. Consider preparation for welding as well as safety after the welding has been completed. 		
Participating in a fire drill <ol style="list-style-type: none"> 7. Participate in a fire drill simulating a fire in the: <ol style="list-style-type: none"> a) Galley b) Accommodation space c) Machinery space 8. Where applicable to the vessel's operations, manage passengers in a fire emergency drill. 9. Wear appropriate clothing for a fire during the emergency drill. 10. Use the vessel pumping system to charge up a hose that could be used for fire fighting and boundary cooling. 		

<p>Fire planning</p> <p>11. Discuss the fire plan for each of the following compartments onboard the vessel:</p> <ul style="list-style-type: none"> a) Accommodation spaces and cabin area b) Galley c) Machinery space / engine room d) Store space <p>12. In discussing the fire plan consideration should be given to each of the following items:</p> <ul style="list-style-type: none"> a) The most likely type of fire for each area (i.e. fuel, paper, oil, etc). b) The most likely way fires would be detected. c) The immediate “first response” to the fire. d) The best type of equipment onboard to deal with the fire. e) How to control ventilation to the compartment, or how you would starve the fire of oxygen. f) The major problems that would arise from such a fire (i.e.: smoke, fumes, heat, loss of power, explosion, loss of vessel, etc). g) How to contain/limit the spread of fire. h) How to tell if a fire was out and how and when you would go about re-entry to the compartment. i) What to do in the event that the fire was out of control. j) What are the responsibilities of each crewmember, and passenger control procedures? 		
<p>Comments about completion of these tasks can be added here:</p>		

Core Task 4 — First aid		
Aim To become familiar with first aid facilities, equipment and protocols onboard the vessel.		
	Vessel	Signature & Date
<p>Familiarisation with first aid facilities and equipment</p> <ol style="list-style-type: none"> 1. Identify the location of onboard first aid facilities and equipment. 2. Identify the designated first aid officer. 3. Check the contents of the first aid kit and ensure that the contents are— <ol style="list-style-type: none"> a) in good condition; b) in date; and c) that the items and quantity match with the list of equipment to be carried onboard the vessel. 		
<p>First aid revision</p> <ol style="list-style-type: none"> 4. If you hold a current first aid qualification, review the first aid kit and discuss how you would treat the following onboard injuries: <ol style="list-style-type: none"> a) Fracture b) Fishing hook injury c) Cuts and abrasions d) Amputations e) Fall and crush injuries f) Electric shock g) Near drowning h) Heart attack 5. Consideration should be given to how you would seek help for such accidents, given the following issues: <ol style="list-style-type: none"> a) Area of operation b) Availability of other vessels c) Time to reach port d) Available rescue services 		
<p>Comments about completion of these tasks can be added here:</p>		

Core Task 5 — Survival		
Aim To become familiar with the location, deployment, use and care of all items of lifesaving equipment onboard the vessel.		
	Vessel	Signature & Date
Lifejackets 1. Locate where the lifejackets are stored and check to see if there are sufficient for your vessel. 2. Check the condition of the lifejackets. 3. Correctly put on and wear a lifejacket, and demonstrate how to enter the water wearing a lifejacket, and the use of the whistle and light (if fitted).		
Lifebuoys 4. Locate all lifebuoys and demonstrate the correct use of lifebuoys for both day and night situations.		
Liferafts 5. Demonstrate how to launch and inflate the liferaft or deploy other buoyant apparatus. 6. Demonstrate how a hydrostatic release is secured to liferaft and how it is released manually. Reassemble the release so that it is fully operational and ready for use.		
Distress signals 7. Locate the following lifesaving equipment: a) Pyrotechnics (hand-held flares, parachute flares and smoke floats). b) EPIRBs. 8. Explain when each would be used and precautions necessary to prevent accidental or inappropriate use.		
Abandon ship 9. Write down in your <u>exercise book</u> a list of things that need to be done before abandoning ship. 10. Find out for your vessel and area of operation, how long it would take for help to arrive.		
Person overboard 11. Discuss the person overboard procedure for your vessel with the other crew and participate in a person overboard drill.		
Comments about completion of these tasks can be added to your exercise book.		

Core Task 6 — Effective human relationships onboard a vessel

Aim

To observe the standards of work and behaviour expected onboard a commercial vessel, and to effectively operate as a member of the crew by practising effective communication, co-operation and teamwork, and by displaying respect for other crewmembers.

	Vessel	Signature & Date
<p>Observing occupational health and safety</p> <ol style="list-style-type: none"> 1. Obtain information from your state work cover authority and review requirements for OH&S for employers and employees. 2. Co-operate with senior personnel and other crewmembers in implementing safe work practices and complying with responsibilities under OH&S legislation. 3. Learn and observe the rules regarding onboard: <ol style="list-style-type: none"> a) Smoking — identify where, when and why smoking is banned. b) Drugs and alcohol — explain the safety issues that may occur from working or being onboard a vessel while under the influence of drugs and/or alcohol – consider the issues to yourself and other crew members. 4. Understand and follow orders given, seeking clarification as necessary. 		
<p>Emergency training</p> <ol style="list-style-type: none"> 5. Explain allocation of duties in an emergency. 6. Participate in emergency training drills onboard. 		
<p>Watchkeeping</p> <ol style="list-style-type: none"> 7. Where applicable perform watchkeeping duties as required, being on time and fully fit for duty. 		

Comments about completion of these tasks can be added here.

Engineering Task 1 — Fire prevention

Aim

To become familiar with the vessel's fire fighting equipment and procedures, as well as the care and maintenance of the equipment.

	Vessel	Signature & Date
<p>Fire in the machinery space</p> <ol style="list-style-type: none"> 1. Undertake a simulated process of closing down a machinery space as if a fire exists. Consider the following: <ol style="list-style-type: none"> a) Excluding all airflow. b) Isolating all fuel flow. c) Stopping any pumps. d) Stopping engines. e) Accounting for personnel. f) Boundary cooling. 2. Undertake boundary cooling of engine room deck-head in a fire-drill situation. 		
<p>Structural fire protection</p> <ol style="list-style-type: none"> 3. Identify all fire-resistant divisions (structural fire protection) in the vessel. Attach a sketch to this book identifying the divisions in the vessel. 		
<p>Fire extinguishers and buckets</p> <ol style="list-style-type: none"> 4. Locate all fire extinguishers on the vessel and check to ensure they are within service requirements and appear to be in serviceable condition. 5. Locate fire buckets on your vessel. 		
<p>Fire pumps and hoses</p> <ol style="list-style-type: none"> 6. Set up valves and operate pump(s) so that seawater is supplying the fire hydrant(s) / deck hose. 7. Connect a fire hose and nozzle / branch to a fire hydrant and test operate the system. 8. Inspect a fire hose / deck hose and ensure it is in good condition for fire fighting. 		

Comments about completion of these tasks can be added here.

<p>Gauge 5 _____(Type)</p> <p>Normal reading _____</p> <p>Gauge 6 _____(Type)</p> <p>Normal reading _____</p>		
<p>Regular checks</p> <p>4. Conduct regular checks of the machinery to ensure everything is functioning correctly whilst at sea.</p> <p>5. Write down below the things that will cause an alarm, reduced power or shutdown of your propulsion diesel engine.</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
<p>Manufacturer's instructions</p> <p>6. Check the engine manufacturer's manual and look for any maximum limits that cannot be exceeded before engine damage occurs. List the limits for the following, and any others relevant to your vessel.</p> <p>a) Engine rpm _____</p> <p>b) Cooling water temperature _____</p> <p>c) Lubricating oil pressure _____</p> <p>d) Exhaust temperature _____</p> <p>e) Turbocharger speed _____</p> <p>f) Other _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>7. Shut down and secure the machinery for leaving the vessel for a few days.</p>		
<p>Comments about completion of these tasks can be included in your exercise book.</p>		

Engineering Task 3 — Diesel engines – regular maintenance		
Aim		
To become familiar with the regular maintenance required by diesel engines.		
	Vessel	Signature & Date
<p>General checks</p> <ol style="list-style-type: none"> 1. Locate the position of the thermostat(s) on the engine. 2. Maintain a check of the engine's fresh water-cooling system and— <ol style="list-style-type: none"> a) Top-up or change water as required. b) Check the concentration of coolant additive present and dose as required. 3. Maintain a check of the primary: <ol style="list-style-type: none"> a) fuel filter; b) water separator; and c) fuel tank; and top up as required. 4. Check control linkages from wheelhouse to engine room. 		
<p>General maintenance</p> <ol style="list-style-type: none"> 5. Replace the engine cartridge fuel filter. 6. Replace the air filter or turbocharger filter medium. 7. Replace a V-belt on a pulley drive and set the correct tension. 8. Drain contents from a primary fuel filter, water separator and fuel tank. 9. Change engine coolant / cooling fresh water. 		
<p>Engine oil</p> <ol style="list-style-type: none"> 10. Refer to the manufacturer's engine manual and record the requirements for: <ol style="list-style-type: none"> a) The maximum hours allowed between oil changes: _____ _____ b) Types of oil allowed to be used in the engine: _____ _____ 11. Check the spare oil drum(s) on board the vessel and make sure the oil being used is allowed by the engine manufacturer. Record the oil type used: _____ _____ 12. Change the engine oil and oil filters. 		

Engineering Task 4 — Transmission system operation and maintenance		
Aim To become familiar with the operation and maintenance of the transmission system.		
	Vessel	Signature & Date
Gearbox 1. Replace the gearbox lubricating oil and filter. 2. Check the control linkages for controlling the gearbox (if fitted). 3. Identify the solenoid valves that control the gearbox (if fitted). 4. Locate the manufacturer’s tools on the vessel to manually engage a gearbox clutch pack (if carried).		
Stern tube bearing 5. Undertake a check of the stern tube bearing and sealing system to ensure it is satisfactory when the shaft is turning. 6. Select from the options below the type of system fitted: Bearing: oil lubricated / water lubricated Seals: gland packing / seals		
Operate a pump 7. Operate a pump that can be started from the wheelhouse that uses an electric clutch. Confirm in the engine room that the clutch engages when the pump is started.		
Comments about completion of these tasks can be added here:		

Engineering Task 5 — Cooling systems operation and maintenance

Aim

To become familiar with the operation and maintenance of cooling systems.

	Vessel	Signature & Date
<p>Engine cooling system</p> <p>1. In your exercise book draw the engine cooling system, showing all of the relevant components fitted including (where appropriate to your system):</p> <ul style="list-style-type: none"> a) Keel cooler b) Heat exchanger c) Pumps d) Seawater overboard e) Header tank f) Thermostat g) Temperature gauge h) Lubrication oil cooler i) Gearbox oil cooler <p>2. Record the normal temperature your propulsion diesel engine operates at: _____ Celsius</p>		
<p>Maintenance</p> <p>3. Isolate a sea strainer safely and clean. If no strainer is fitted, isolate the system for maintenance.</p> <p>4. Remove the faceplate and inspect the impeller in a flexible impeller water pump.</p>		

Comments about completion of these tasks can be added here:

Engineering Task 6 — Diesel fuel systems		
Aim		
To become familiar with the operation of diesel fuel systems		
	Vessel	Signature & Date
Fuel supply 1. Draw the fuel supply and return system from the tank(s) to the fuel injectors. Attach the sketch to this book. 2. Identify fuel tank breathers at deck level on the vessel.		
Fuel system valves 3. Use fuel system valves to ensure fuel in tanks is consumed in a specific order (or emptied fairly evenly) so the vessel trim, list and stability are not affected.		
Fuel capacity 4. Record the total fuel capacity of the vessel: _____ litres. 5. Record the rate of fuel consumption of the propulsion engine(s) at normal speed _____ litres per hour. 6. Record how long you can operate the engine at normal speed and still have a 20% fuel reserve _____ hours.		
Fuel shut-off 7. Locate the handles for activating fuel shut-off valves remotely. 8. Pull the handles and reset the valves. NOTE – Only do this with the Engine Driver's permission!		
Checks 9. Drain fuel from the base of the fuel system to check for water. 10. Check engine room fuel flexible hoses to ensure they are in good condition. 11. Use a sounding rod or tape or sounding glass to measure the contents of a fuel tank.		
Refuelling 12. Assist with the process of taking fuel onboard the vessel alongside a jetty or wharf.		
Comments about completion of these tasks can be recorded in your exercise book.		

Engineering Task 7 — Extra low voltage electrical systems		
Aim		
To become familiar with the extra low voltage electrical systems onboard the vessel.		
	Vessel	Signature & Date
Battery operation 1. Isolate (turn off) the battery power supply. 2. Change over supply between battery banks. 3. If the vessel operates a 24 V DC electrical system, connect two 12 V batteries in series to give 24 V.		
Battery maintenance 4. Clean battery terminals and apply anti-corrosion substance. 5. Remove a discharged battery from service and replace with one that is fully charged. 6. Inspect electrolyte level in battery.		
Battery charging 7. Record how you can tell whether the engine is charging the batteries when you are in the wheelhouse. _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		
Fuse / circuit breaker 8. Change a fuse or reset a tripped circuit breaker. 9. Locate the fuse / circuit breaker board. 10. Replace a fuse in a low voltage system.		
Starter motor 11. Identify the starter motor on the propulsion diesel engine.		
Navigation lights 12. Undertake a check of all navigation lights. 13. Replace a bulb in a navigation light.		

Electrical faults

14. Write down what will happen in each instance if an electrical fault occurred in a low voltage system (NOTE: All vessel systems should have a negative return wire – not the hull!):

a) Bare positive wire makes contact with vessel hull:

b) Bare negative wire makes contact with the vessel hull:

c) Bare positive wire makes contact with bare negative wire:

Comments about completion of these tasks can be added here:

Engineering Task 8 — Bilge systems		
Aim		
To become familiar with the operation and maintenance of the vessel's bilge systems.		
	Vessel	Signature & Date
Familiarisation with the bilge pump		
1. Sketch the bilge pumping system for the vessel and attach the sketch to this book.		
Checks		
2. Check a bilge strainer and see whether it is blocked.		
3. Check the engine room bilge level alarm(s) function properly.		
4. Conduct an inspection of a low voltage bilge pump and clean the suction grate.		
Operating the bilge pump		
5. Prime a bilge pump that is dry.		
6. Set up bilge pipe work valves correctly and pump clean water from an uncontaminated compartment over the side.		
7. Swap over from the primary bilge pump to a secondary bilge pump to achieve bilge pumping.		
Maintenance		
8. Overhaul a valve for the bilge system (a spare valve may be used). Ensure that either a screw down non-return valve is overhauled OR both an individual isolating valve and non-return valve.		
Comments about completion of these tasks can be added here:		

Engineering Task 9 — Deck equipment		
Aim To become familiar with the operation and maintenance of deck equipment.		
	Vessel	Signature & Date
Operate windlass and winches 1. Operate the anchor windlass to raise the anchor, walk out on windlass, lower cable on brake. 2. Operate deck winches safely.		
Secure the vessel anchor 3. Secure the vessel anchor for sea. Describe below what extra security is placed on the anchor when stowed.		
Inspect equipment 4. Make an inspection of deck cleats, bollards and fairleads to ensure they are in good condition for mooring. 5. Make an inspection of vessel handrails to ensure they are in good condition.		
Grease and lubricate equipment 6. Apply grease to deck equipment fittings using a grease gun. 7. Apply grease-impregnated tape (eg Denso tape) to deck fittings. 8. Lubricate wire ropes and conduct an inspection to ensure a wire rope is in satisfactory condition.		
Secure an outboard engine 9. Check that an outboard engine is secured correctly to a dinghy, including a safety chain / back up connection.		
Outboard fuel 10. Write down below, general safe practices for outboard petrol on your vessel. _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		

Engineering Task 11 — Steering system		
Aim To become familiar with the operation and maintenance of the vessel's steering system.		
	Vessel	Signature & Date
Maintenance 1. Grease the steering system. 2. Check and top up oil levels in the power hydraulic system and the hand / helm steering system. 3. Bleed air from a hydraulic steering system.		
Operating the steering system 4. Operate steering in all normal modes fitted on the vessel including (if possible)— a) helm wheel; b) joystick; c) autopilot; and d) wing stations.		
Emergency steering 5. Set up and operate the vessel's emergency steering.		
Comments about completion of these tasks can be added here.		

Engineering Task 12 — Slipway operations		
Aim		
To become familiar with the tasks required to be undertaken prior to, during, and after slipping.		
	Vessel	Signature & Date
Prepare the vessel for slipping 1. Prepare a vessel for slipping by minimising tank free surface.		
Inspections while slipped 2. Remove a skin-fitting valve and disassemble it for inspection. Reassemble and fit the valve to the vessel. 3. Inspect seawater gratings. 4. Inspect hull anodes and replace as necessary. 5. Inspect hull for deterioration or damage. 6. Inspect rudder in position for security and correct operation. 7. Inspect propeller and shaft for security, lack of damage, condition of rope cutter, shaft bearings (i.e. cutlass bearing) etc. 8. Check the wear in the propeller shaft stern bearing. This can be done by lifting the propeller and either using a feeler gauge or dial indicator to measure the clearance at the shaft. If you do not have measuring equipment, move the shaft and take note of the amount of movement. Record the following: a) Stern bearing material is: _____ b) Stern bearing maximum clearance allowed is: _____		
Return the vessel to the water 9. Undertake checks of a vessel to ensure it is ready to go back in the water. List the things checked: _____ _____ _____ _____ _____ _____ _____		

<p>Emergency stop switch</p> <p>16. Prove the operation of the emergency stop switch for the engine.</p>		
<p>Faults</p> <p>17. Write down below what faults will cause the engine warning buzzer to sound:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>18. Write down below what faults will cause your engine to be automatically power limited by the engine management system:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
<p>Comments about completion of these tasks can be added here:</p>		

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Example

Section 3 Additional engineering tasks for MED 3 candidates

Instruction to candidates

In addition to completing each of the tasks in Section 2 of this book, candidates are instructed to pick four of the tasks from this section to complete onboard their vessel.

Additional Engineering Task 1 — Heat exchanger overhaul		
Aim		
To become familiar with the operation of the heat exchanger		
	Vessel	Signature & Date
1. Isolate the heat exchanger safely so it can be disassembled without risk of flooding vessel.		
2. Disassemble heat exchanger.		
3. Clean heat exchanger.		
4. Reassemble heat exchanger.		
5. Vent and test operate heat exchanger satisfactorily.		
6. In your exercise book make a simple sketch of the internals of the heat exchanger.		
7. Check and if necessary replace the zinc anodes in the heat exchanger and adjacent pipe work.		
Comments about completion of these tasks can be added here:		

Additional Engineering Task 2 — LPG, explosives and dangerous goods		
Aim To become familiar with precautions for the use of LPG onboard the vessel.		
	Vessel	Signature & Date
Test certificate 1. Sight the vessel test certificate from a licensed gas fitter.		
LPG cylinder and pipes 2. Change a used LPG cylinder with a full cylinder safely and check for leaks at completion. 3. Leak test the pipe work in an LPG system using soapy water.		
Operational checks 4. Check the operation of flame fail devices fitted to gas appliances. 5. Check the operation of the gas detector alarm. 6. Check the operation of the gas bottle automatic closing valve if the gas detector activates (if fitted).		
Explosive materials 7. List all explosive and dangerous goods onboard (i.e. flares, paint, lubricants, cleaning chemicals, spare fuel, LPG). _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ 8. Discuss the following considerations for each of the items listed above: a) The hazard associated with each item. b) Safest spot to be stowed, and reasons this is the case. c) What safety precautions are required to be taken in the stowage areas?		
Comments about completion of these tasks can be added to your exercise book:		

Additional Engineering Task 4 — Set diesel engine valve tappets		
Aim To become familiar with setting the engine valve tappets.		
	Vessel	Signature & Date
Isolate engines 1. Isolate engine safely and remove rocker cover(s) etc.		
Tappet clearance 2. Determine the tappet clearance from manufacturer's manual. 3. Record the clearance set at the tappet. _____		
Set tappet clearances 4. Correctly set tappet clearances with pistons at TDC of firing stroke.		
Test engine 5. Replace rocker cover(s) and test operate engine.		
Comments about completion of these tasks can be added below:		

Additional Engineering Task 5 — Pumping system – brine or ballast		
Aim To become familiar with the vessel's pumping system.		
	Vessel	Signature & Date
Familiarisation 1. In your exercise book draw a sketch of the piping circuit.		
Operation 2. Circulate fluid in a tank using the pumping system. 3. Empty a tank using the pumping system. 4. Fill a tank using the pumping system. 5. Prime a pump with seawater.		
Stability 6. Explain how the tank pumping system may affect stability. _____ _____ _____ _____ _____ _____ _____ _____ _____		
Emergency bilge pumping 7. Write down below how you could use the ballast / circulating pump for emergency bilge pumping. _____ _____ _____ _____ _____ _____ _____ _____ _____		
Comments about completion of these tasks can be added to your exercise book.		

Additional Engineering Task 6 — Shafting disassembly		
Aim To become familiar with shafting disassembly.		
	Vessel	Signature & Date
Rudderstock 1. Inspect a rudderstock disassembled. In your exercise book sketch the arrangement of where the rudderstock enters the hull.		
Propeller shaft 2. Inspect a propeller shaft withdrawn. In your exercise book draw a sketch of the bearing and sealing arrangement where the shaft enters the hull.		
3. Undertake “blueing” of a component to a taper to ensure correct fit.		
4. Assist with alignment checks when reassembling a shaft.		
5. Measure the clearance at a rudder pintle bearing with a feeler gauge.		
Comments about completion of these tasks can be added below:		
<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); opacity: 0.1; font-size: 100px; pointer-events: none;"> Example </div>		

Additional Engineering Task 8 — 240 V and shore power connections

Aim

To become familiar with 240 V and shore power connections

	Vessel	Signature & Date
<p>Alternators</p> <p>1. Start an AC alternator and supply vessel electrical loads from the alternator.</p> <p>2. Write down below the maximum load you can place on the alternator(s).</p> <p>_____ (Amps / kW)</p>		
<p>Power supply</p> <p>3. Swap over from:</p> <p>a) Shore power to the vessel's own power supply.</p> <p>b) Vessel's own power to shore power.</p> <p>4. State how you would isolate the power from a power point in the galley on your boat:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
<p>5. How would you prevent someone from activating power while you were working on the power point (i.e.: describe the tag-out procedure):</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
<p>6. Change a fuse or reset a tripped circuit breaker (depending on vessel).</p>		

<p>7. Write down below how you can tell whether your electrical system has earth faults:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
<p>8. Locate the circuit breaker board(s) on the vessel.</p>		
<p>RCD</p> <p>9. Undertake a “test” of the Residual Current Device on the vessel using the RCD test button.</p> <p>10. Record the purpose of the RCD:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
<p>Comments about completion of these tasks can be added to your exercise book.</p>		

Section 4 Supervisor's details

Instructions to supervisors

Masters and Engineers of vessels who are supervising the tasks in this book must provide the following details so as to allow verification of the service claimed.

Tasks can only be accepted where there are adequate identification and contact details provided for the person who signed the task off.

The marine authority may contact signatories to ask for verification.

Name:	<i>Harry Signoffski</i>	Position:	<i>Master and Owner</i>
Vessel/s:	<i>MV Buttercup & MV Bluebell</i>		
Contact address:	<i>c/- Sunny's Charters Shop 2, Pier 3, Sunny Point, NSW</i>		
Phone:	<i>(02) 9322 4958</i>	Mobile:	<i>(0410) 344 911</i>
Fax:	<i>(02) 9322 5946</i>	Email:	<i>harry@sea.com</i>
Qualification/s held:	<i>Master V / MED 3</i>	State of issue and #:	<i>NSW 8395 & 56780</i>
Other details:			
Signature:	<i>Harry Signoffski</i>		

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Name:	Position:
Vessel/s:	
Contact address:	
Phone:	Mobile:
Fax:	Email:
Qualification/s held:	State of issue and #:
Other details:	
Signature:	

Section 5 Details of vessels served on

Introduction

As part of your sea-service you are expected to obtain a thorough knowledge of the vessels that you serve on. It is likely that questions relating to your experience on each vessel will be put to you during your assessment for a Certificate of Competency.

Instructions to candidates

The following tables are to be completed for each vessel for which you are claiming sea-service. The tables provide you with the opportunity to record specific details about the vessel and its machinery and equipment.

As an aid to training you may also find it useful to record in your exercise book diagrams of the vessel's layout noting any special features; pumping plans (piping diagram); electrical diagrams and the location of fire safety equipment.

When completing these sections you should consult appropriate documentation such as the vessel's Certificate of Survey or Class, manufacturer's documentation, manuals, or vessel handbook.

There are two pages of information per vessel, and both should be completed where applicable. If you require additional pages for the vessels served on, please photocopy these pages and attach them to this book.

Vessel details		
Name of vessel	State & registered #	
Type of vessel (description/class)		
Length	Max. speed	Service speed

Navigation equipment carried — state type / model
Compass
Radio (VHF)
Radio (HF or other)
Auto Pilot
Radar
Sounder
GPS
Plotter
ARPA
ECDIS
Other

Nature of operations
Main operating location of this vessel
Other operating areas
Voyages beyond sheltered waters
Position on the vessel
Duties you were employed for
Briefly describe any other activities you experienced on this vessel
% of time spent on hospitality / recreational activities
Period of service claimed (months/days)
<i>Record details of your service in Section 6</i>

Engine details	<u>Main Engine/s</u>	<u>Auxiliary</u>
Manufacturer		
No. of cylinders		
Power rating (kW)		
RPM (working)		
Stroke		

Engineering systems – provide a brief description of the following
Fuel system
Lubrication system
Propulsion / transmission system
Steering system
Refrigeration system
Bilge pumping system

Engineering duties — briefly describe the engineering duties you performed onboard
Prior to departure
During the voyage
At completion of the voyage

Engineering maintenance – briefly describe the maintenance duties you performed
Routine maintenance
Breakdown maintenance
Slipway maintenance
Other

Vessel details

Name of vessel	State & registered #	
Type of vessel (description/class)		
Length	Max. speed	Service speed

Navigation equipment carried — state type / model

Compass
Radio (VHF)
Radio (HF or other)
Auto Pilot
Radar
Sounder
GPS
Plotter
ARPA
ECDIS
Other

Nature of operations

Main operating location of this vessel
Other operating areas
Voyages beyond sheltered waters
Position on the vessel
Duties you were employed for
Briefly describe any other activities you experienced on this vessel
% of time spent on hospitality / recreational activities
Period of service claimed (months/days)

Record details of your service in Section 6

Engine details	<u>Main Engine/s</u>	<u>Auxiliary</u>
Manufacturer		
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Power rating (kW)		
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Other

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Type of vessel (description/class)		
Length	Max. speed	Service speed

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Compass
Radio (VHF)
Radio (HF or other)
Auto Pilot
Radar
Sounder
GPS
Plotter
ARPA
ECDIS
Other

Nature of operations
Main operating location of this vessel
Other operating areas
Voyages beyond sheltered waters
Position on the vessel
Duties you were employed for
Briefly describe any other activities you experienced on this vessel
% of time spent on hospitality / recreational activities
Period of service claimed (months/days)
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Radio (HF or other)
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Radar
Sounder
GPS
Plotter
ARPA
ECDIS
Other

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Other operating areas
Voyages beyond sheltered waters
Position on the vessel
Duties you were employed for
Briefly describe any other activities you experienced on this vessel
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Length	Max. speed	Service speed

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Radio (HF or other)
Auto Pilot
Radar
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GPS
Plotter
ARPA
ECDIS
Other

Nature of operations

Main operating location of this vessel
Other operating areas
Voyages beyond sheltered waters
Position on the vessel
Duties you were employed for
Briefly describe any other activities you experienced on this vessel
% of time spent on hospitality / recreational activities
Period of service claimed (months/days)

Record details of your service in Section 6

Engine details	<u>Main Engine/s</u>	<u>Auxiliary</u>
Manufacturer		
No. of cylinders		
Power rating (kW)		
RPM (working)		
Stroke		

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Prior to departure
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Slipway maintenance
Other

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Length	Max. speed	Service speed

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Radio (HF or other)
Auto Pilot
Radar
Sounder
GPS
Plotter
ARPA
ECDIS
Other

Nature of operations

Main operating location of this vessel
Other operating areas
Voyages beyond sheltered waters
Position on the vessel
Duties you were employed for
Briefly describe any other activities you experienced on this vessel
% of time spent on hospitality / recreational activities
Period of service claimed (months/days)

Record details of your service in Section 6

Engine details	<u>Main Engine/s</u>	<u>Auxiliary</u>
Manufacturer		
No. of cylinders		
Power rating (kW)		
RPM (working)		
Stroke		

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During the voyage
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Engineering maintenance – briefly describe the maintenance duties you performed
Routine maintenance
Breakdown maintenance
Slipway maintenance
Other

Vessel details

Name of vessel	State & registered #	
Type of vessel (description/class)		
Length	Max. speed	Service speed

Navigation equipment carried — state type / model

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Radio (VHF)
Radio (HF or other)
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Radar
Sounder
GPS
Plotter
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ECDIS
Other

Nature of operations

Main operating location of this vessel
Other operating areas
Voyages beyond sheltered waters
Position on the vessel
Duties you were employed for
Briefly describe any other activities you experienced on this vessel
% of time spent on hospitality / recreational activities
Period of service claimed (months/days)

Record details of your service in Section 6

Engine details	<u>Main Engine/s</u>	<u>Auxiliary</u>
Manufacturer		
No. of cylinders		
Power rating (kW)		
RPM (working)		
Stroke		

Engineering systems – provide a brief description of the following
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Breakdown maintenance
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Other

Vessel details		
Name of vessel	State & registered #	
Type of vessel (description/class)		
Length	Max. speed	Service speed

Navigation equipment carried — state type / model
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Radio (VHF)
Radio (HF or other)
Auto Pilot
Radar
Sounder
GPS
Plotter
ARPA
ECDIS
Other

Nature of operations
Main operating location of this vessel
Other operating areas
Voyages beyond sheltered waters
Position on the vessel
Duties you were employed for
Briefly describe any other activities you experienced on this vessel
% of time spent on hospitality / recreational activities
Period of service claimed (months/days)
<i>Record details of your service in Section 6</i>

Engine details	<u>Main Engine/s</u>	<u>Auxiliary</u>
Manufacturer		
No. of cylinders		
Power rating (kW)		
RPM (working)		
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Steering system
Refrigeration system
Bilge pumping system

Engineering duties — briefly describe the engineering duties you performed onboard
Prior to departure
During the voyage
At completion of the voyage

Engineering maintenance – briefly describe the maintenance duties you performed
Routine maintenance
Breakdown maintenance
Slipway maintenance
Other

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Example

Section 6 Summary of sea-service

Introduction

To be eligible for the award of a Certificate of Competency as a Marine Engine Driver Grade 3 you are required to have a minimum of 6 months of sea-service. Satisfactory completion of this ROPES book (or equivalent program) makes you eligible for a 50% reduction in sea-service, i.e. a minimum of 3 months sea-service is required.

Holders of other marine, or marine trade certificates (i.e. qualifications as a marine fitter, diesel or motor mechanic) may be eligible for further reductions in their sea-service. Applicants are advised to check with their local marine authority for a determination. In all instances however, sea-service will not be reduced below 3 months for this Certificate of Competency.

Instructions to candidates

Use the following table to summarise the amount of sea-service you have undertaken. Each entry should represent a block of time served on one vessel, and should be signed by the Master or Engine Driver of that vessel, or any other person in a supervisory role who can verify your period of service.

The person signing your sea-service in this section must also provide their details in Section 4 of this book.

You should check that—

- a) you have supplied the vessel details required in Section 5 of this book for each vessel that you are claiming sea-service onboard; and
- b) that the supervisor signing off on this sea-service has provided the details required in Section 4 of this book.

Calculation of sea-service

The basic unit for measuring sea-service is a month. This has been defined as a minimum of 150 hours of work over a period of at least 20 days.

Restricted Certificates of Competency may be granted in certain circumstances. Candidates are advised to discuss the requirements for a restricted certificate with their marine authority prior to commencing this book as the sea-service requirements may be varied, both in terms of time and nature of service to the type of restriction being sought.

In addition, certain non-traditional, but relevant experiences may be credited towards sea-service. For example:

- Experience in non-marine engineering or similar trade i.e.: car mechanic, etc.
- Experience on recreational vessels i.e.: operating a powerboat, crewing on racing yachts, ocean cruising or racing, etc.
- Experience as hospitality staff, scientists, divers, special personnel, military staff, hydrographers, etc. serving onboard a vessel.

Claims for non-traditional service will need to be discussed with your marine authority.

Summary of Sea-Service				Marine Authority's verification	
Vessel Name and Class	Employed:		Period of service claimed	Summary of voyage and operations	Supervisor's name and signature
	From	To			
MV Buttercup Class 1 D	12/01/02	18/04/02	3 months	working as deckhand on charter boat operating in Southerly Quays Harbour. Carrying up to 60 passengers per trip (2 hours duration) - 3 trips per day, 1 per night.	Harry Signoffski <i>Harry Signoffski</i>

Vessel Name and Class			Employed:		Period of service claimed	Summary of voyage and operations	Supervisor's name and signature	Marine Authority's verification
			From	To				

Summary of Sea-Service			Period of service claimed	Summary of voyage and operations	Supervisor's name and signature	Marine Authority's verification
Vessel Name and Class						

Vessel Name and Class			Employed:		Period of service claimed	Summary of voyage and operations	Supervisor's name and signature	Marine Authority's verification
			From	To				

Section 7 Notes

The following pages have been left blank for you to record your answers to some of the tasks. These may be recorded here or in a separate exercise book to be submitted with this book for assessment by the marine authority.

Example

NOTES

Example

NOTES

Example

NOTES

Example

NOTES

Example

NOTES

Example

Section 8 Further information

For more information please contact your local marine authority.

Queensland

Manager (Policy Implementation & Support)
Maritime Safety Branch
Maritime Safety Queensland
Floor 22, Mineral House, 41 George Street
Brisbane QLD 4000
GPO Box 2595, Brisbane QLD 4001

Tel: (07) 3224 8195
Fax: (07) 3224 8718
Email: maritime.safety@msq.qld.gov.au
Web: www.transport.qld.gov.au/maritime

New South Wales

Waterways Authority
Commercial Operations Branch
James Craig Road
Rozelle Bay NSW 2039
PO Box R228, Royal Exchange NSW 1223

Tel: (02) 9563 8769
Web: www.waterways.nsw.gov.au

Victoria

Marine Safety Victoria
Level 11, Nauru House
80 Collins Street
Melbourne, VIC 3000
PO Box 2797Y, Melbourne VIC 3001.

Tel: (03) 9655 3399
Fax: (03) 9655 6611
Email: marinesafety@doi.vic.gov.au
Web: www.marinesafety.vic.gov.au

Northern Territory

Transport Division - Marine Safety Branch
1st Floor Minerals House
66 The Esplanade
Darwin NT 0800
PO Box 2520 Darwin NT 0801

Tel: (08) 8999 5285
Fax: (08) 8999 5300
Web: <http://www.nt.gov.au/ipe/dtw/aboutus/branches/transport/marine/>

Western Australia

Marine Examiner
Department for Planning and Infrastructure
1 Essex Street
Fremantle WA 6160
PO Box 402, Fremantle 6959

Tel: (08) 9216 8275
Fax: (08) 9216 8977
Web: www.dpi.wa.gov.au/imagine/comm_vessels/certificates.html

South Australia

Transport SA
1st Floor, 64 Dale Street,
Port Adelaide SA 5015

Tel: (08) 83475028.
Fax: (08) 83475088.
Email: Lisa.Curnow@transport.sa.gov.au
Web: www.transport.sa.gov.au

Tasmania

Manager Marine Operations
Marine & Safety Tasmania (MAST)
Level 1, 7-9 Franklin Wharf
Hobart TAS 7000
PO Box 607, Hobart TAS 7001

Tel: (03) 6233 5661
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