



Shipsape Heritage Training Partnership Project



COMPETENCY UNITS:
Traditional Seamanship & Maintenance



Working aloft requires skill, confidence and care. Photograph by Granville Davies.





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Thames barge Reminder, operated by SHTP partner Sea-Change Sailing Trust. Photograph by Paul Brown.

INTRODUCTION

National Historic Ships UK (NHS-UK) is the government funded, independent organisation set up to give objective advice to UK governments and local authorities, funding bodies, and the historic ships sector on all matters relating to historic vessels in the UK. It maintains the *National Register of Historic Vessels* listing over 1,200 craft in need of ongoing conservation and published the guidance manual *Conserving Historic Vessels* in 2010, setting down the principles behind caring for these vessels.

Conservation work is costly and the *Heritage Lottery Fund* has now awarded more than £155 million to over 180 projects involving over 120 individual ships and boats. It is vital that the skills are kept alive to maintain and handle those craft being conserved for operational use in a manner which is in keeping with their original design and enhances rather than detracts from their significance. Many historic vessels remain in operation, yet these traditional skills are in danger of being lost as those with the knowledge age and modern technology evolves into more common usage.





Fifie Reaper, operated by SHTP partner, Scottish Fisheries Museum. Photograph by Linda Fitzpatrick.



Lowestoft smack Excelsior, operated by SHTP partner Excelsior Trust. Photograph by the Excelsior Trust.

SHIPSHAPE HERITAGE

In 2014, NHS-UK, in partnership with a range of traditional vessel operators launched a Heritage Lottery funded project under the title *Shipspace Heritage Training Partnership* (SHTP) to help arrest the decline of these traditional seamanship skills. NHS-UK was partnered on this project by:



Brixham trawler Leader, operated by SHTP partner Trinity Sailing. Photograph by John Cadd.



Pilot cutter Jolie Brise, operated by SHTP partner Dauntseys School. Photograph by Dauntseys School.

TRAINING PARTNERSHIP

- Scottish Fisheries Museum : Vessel *Reaper*, fife herring drifter (lug rig)
- Excelsior Trust : Vessel *Excelsior*, Lowestoft sailing smack (gaff rig)
- Trinity Sailing : Vessel, *Leader*, Brixham Trawler (gaff rig)
- Sea Change Sailing Trust : Vessel *Reminder*, Thames sailing barge (sprit rig)
- Dauntseys School : Vessel *Jolie Brise*, pilot cutter (gaff rig)



Over the two years of the scheme, each of the partner organisations hosted a number of trainees giving them the opportunity to learn the skills needed to sail and maintain each of the historic vessels listed above, as well as learning and understanding the features of their different specialist rigs. During this time, research was undertaken to identify the specific skills that these trainees needed to develop in order to operate and maintain the vessels. This included examining the sailing skills whilst at sea and the practical skills needed when laying up and maintaining the vessels over the winter months.

It is acknowledged that a good number of these skills are in common with those needed to sail or operate modern vessels. This includes understanding the principles of navigation, how diesel engines should be maintained, how VHF radios should be operated etc. However, there are a number of aspects where the specifics of the rig structure, weight of gear and the shape of the hull have a direct impact on how the boat is handled. To ensure that traditional vessels are sailed safely and effectively in a way that reflects how they were originally operated, specific heritage skills need to be preserved. This includes essential understanding of issues such as how sails and spars can be hoisted without the use of self-tailing winches and lines leading back to a cockpit.



*Caulking the deck using traditional methods.
Photograph by Rodrick Rigden.*



*Foredeck work on the Brixham trawler Vigilance.
Photograph by Philippe Saudreau.*

To describe these unique competencies, a set of assessment units has been developed and the sector was given the opportunity to comment on these in a consultation run in spring 2016. The units are designed to highlight the specialist skills associated with sailing traditional vessels and are intended to complement existing marine qualifications such as those produced by the Royal Yachting Association, the Maritime & Coastguard Agency and the Association of Bargemen. They are freely available for use by all those offering or wanting to learn traditional seamanship skills and are intended to help make future training more consistent across the sector, although it is recognised that certain skills are peculiar to a particular vessel or type and so there will always be some variation in learning. The units do not have any current means of accreditation, but NHS-UK is exploring opportunities for using them as some form of assessment framework in the future.

The units set out in this document have been aimed at individuals working under supervision and are pitched at the level of those aspiring to become a 'mate'. However, this does not mean that any

individual who can complete all the elements described here is automatically ready to serve as mate on a traditional vessel. Real knowledge will only be fully developed over time and the units are designed to ensure that individuals in the industry are exposed to a wide range of traditional skills which will help them in their future career, once they are considered sufficiently experienced to take up a suitable post. Units may be used as a full set or individually, allowing learners to focus on skills that interest them particularly or techniques about which they would like to know more. In using the units, it is assumed that individuals will be able to make decisions and recommendations for action. In regards to maintenance, it is assumed that major repair work will be implemented by specialists. Therefore the units reflect skills and knowledge associated with rudimentary and regular repair/maintenance work.

Whilst every effort has been made to cover the key skills associated with handling, maintaining and operating traditional sailing vessels with gaff, lug and sprit rigs, there may be techniques or parts of the vessel and rig which are not documented here or other terminology which better describes a way of doing something. A list of further reading has been included and NHS-UK continues to welcome feedback on these units, any additional skills which should be included and how they are being used in practise. The units are published online at: www.nationalhistoricships.org.uk from where they can be downloaded for regular use. Please contact info@nationalhistoricships.org.uk to let us know of any amendments to the online version or to share your experiences.

Please contact
info@nationalhistoricships.org.uk
to share your experiences.

The Shipshape Competency Units are:

- designed to record specialist skills particular to traditional vessels with gaff, lug or sprit rigs
- not definitive in the terminology they use or the breadth of skills they cover
- intended to promote traditional seamanship skills and make training more consistent
- not a quick way to become a mate (real knowledge can only be gained over time)
- designed to complement existing sailing qualifications
- not yet accredited or comprising any formal qualification
- available for use as a full set of assessment units or individually
- downloadable online at www.nationalhistoricships.org.uk



The use of hand tools is an essential part of maintaining a traditional vessel. Photograph by Mark Grocock.



The crew on fife Reaper adjust and inspect the rig before sailing. Photograph by Alastair Ramsay.



Over the gunnels. Photograph by Chrissie Westgate.

UNIT TITLE:

1. Prepare the vessel for sailing

What this unit is about:

Traditional sailing vessels require careful attention prior to sailing to ensure that the rig and other operating systems are ready for use and are fully understood by those about to handle them. This might be as simple as visually inspecting the condition of the sails or checking that inexperienced crew members are familiar with how to adjust running back stays.

This unit is designed to reflect the processes and procedures that a mate or first mate needs to do before the vessel gets under way. This will be in response to and in conjunction with the vessel's skipper. Activities include using sources of information, including the skipper, to be able to select and prepare a suitable rig/sail configuration for the intended activities. This may include preparing for a passage under sail, a day sail or charter, a fishing or load transportation activity. It might also include preparing the vessel for racing.

The individual will need to demonstrate that they can make suitable decisions about the equipment, rig and sails that they prepare to reflect the planned activity. They will also need to be able to communicate effectively with both experienced and inexperienced sailors, some of whom may never have sailed before.

Skills to be learnt and practised before being assessed:

Prior to formal assessment, individuals should be trained in, and be given the opportunity to practice and develop the following skills:

- Using sources of information relating to weather, sea state, safety.
- Understanding the needs and capabilities of crew members.
- Understanding the history of the vessel, her original function and the way this has affected her rig and hull form.
- Inspecting the rig and other systems prior to use.
- Understanding how different rigs and systems work.
- Understanding the differing sail combinations that can be used on the vessel and which conditions/activities they are used for
- Briefing the crew in a way that is clear and easy to understand.
- Communication techniques.

How these skills might be developed:

These skills may be developed either as part of a formal course on board a traditional vessel or through learning on the job.

UNIT TITLE:

1. Prepare the vessel for sailing

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Identify requirements of sailing activity

1. Consult with skipper to obtain information that will influence the choice of sails and the proposed nature of the trip.

2. Assess the sail requirements for the vessel to take account of weather and sea state.

3. Assess how proposed sailing activities can be accommodated based on weather conditions.

4. Check that all crew members are safely on board.

5. Check that all equipment and personal items are stowed.

6. Check the bilge and pump as necessary.

7. Check that rig and other systems are working effectively.

8. Check that sufficient stores are on board for the planned activity.

Check that the vessel is safe for the intended activity

1. Inspect the state of the rig and other systems to ensure that it is safe for use.

2. Check that safety equipment to be issued to crew members meets organisational standards.

3. Report to the responsible individual any faults or damage that may impact on the operation of the vessel.

4. Put any equipment that does not meet organizational standards out of use.

5. Remove sail covers and other items that protect the vessel when not in use.

UNIT TITLE:

1. Prepare the vessel for sailing

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Brief crew members as to activities

1. Gather crew and other participants together and ensure that their attention is gained.

2. Notify individuals as to parts of the vessel that present a possible danger.

3. Explain the history of the vessel, its properties and how these may affect its use.

4. Outline the planned activities for the day.

5. Allocate roles and tasks to individuals.

6. Check that individuals understand what is required of them.

7. Provide clarification for points where further information or guidance is needed.

NOTES:

UNIT TITLE:

1. Prepare the vessel for sailing – SCOPE OF ITEMS COVERED:

Information:

- Detailed weather forecast
- Names and capabilities of crew members
- Intended group activities

Inspection:

- Physical observation
- Examination
- Report from crew/participants

Stores:

- Fuel
- Food
- Spares

Responsible individual:

- Skipper
- Other senior member of the crew

Rig and other systems:

- Standing rigging
- Running rigging
- Sails
- Engine
- Navigation equipment
- Sea cocks
- Safety equipment
- Bilge pump

Parts of the vessel/activities that present a possible danger:

- Traveler
- Low slung blocks
- Boom
- Areas around mainsheet
- Going aloft
- Out on bowsprit
- Not leaning on guard/safety rails
- Safe boarding of the tender

The learner has demonstrated that they can prepare the vessel for sailing:

Signed:

Name of assessor:

Date:



UNIT TITLE:

1. Prepare the vessel for sailing

Knowledge demonstrated:

- The parameters that impact on the choice of activity the vessel can be used for.
- The different types of rig that can be found on traditional vessels, the vessel history and the impact that this has upon the choice of activity.
- How different sail formations can be selected.
- The range of safety systems and items of equipment on board the vessel, where they are stowed and how they should be operated.
- Where up to date and reliable information about weather can be obtained from.
- Why it is important for equipment and personal items to be safely stowed.
- The parts of the vessel that may present a hazard to participants.
- Why participants should be informed as to the potential areas of danger on board the vessel.

Correct response provided by learner:

Signed by assessor



Working as a team to set the right sail for the weather conditions. Photograph by Gerhard Standop.



Gaff rigged replica pilot cutter Agnes under sail. Photograph by Christian Topf.

UNIT TITLE:

2. Set and control sails

What this unit is about:

One of the reasons why traditional sailing vessels are so interesting and engaging is the way in which different sailing rigs operate and the range of sail configurations that they use. When sailing a vessel with a traditional rig (e.g. gaff, sprit, lug), care must be taken to ensure that the right sails are selected, that they are hoisted correctly and that the set is constantly monitored and trimmed. A good understanding of how this can be achieved ensures that the traditional vessel not only looks right, but that it is being sailed to best effect and operated in a way which reflects the vessel's heritage and which is sensitive to its age and type of gear.

This unit is designed to assess the skills and knowledge required to be able to set and control the sails of one of three traditional sailing rigs. This includes demonstrating an understanding of how the rig effectively works, how the sails are hoisted and controlled and how they can be set to gain a good level of performance. This unit assumes a basic knowledge of how sails generate drive, different points of sailing and what the various manoeuvres can achieve.

The individual will need to demonstrate that they can inspect the condition of the sails, halyards and sheets and then hoist the correct ones for the planned activity. They also need to be able to judge when sails need to be trimmed to ensure that they perform effectively.

Skills to be learnt and practised before being assessed:

Prior to formal assessment, individuals should be trained in, and be given the opportunity to practice and develop the following skills:

- How the rig actually works – its features, controls, halyards, sheets etc.
- The components of the sails and how they are attached, hoisted and controlled.
- How the components of the sails can be assessed for damage.
- The ideal set of sail for different wind conditions and activities.
- The hazards that may arise when setting and trimming the sails.
- The visual indicators that highlight when trim needs to be adjusted.

How these skills might be developed:

These skills may be developed as part of a formal course on board a traditional vessel, or through learning on the job.

UNIT TITLE:

2. Set and control sails

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Set sails

1. Check that sails selected for hoisting are correct and in workable condition.
2. Check that halyards and sheets are in a workable condition.
3. Attach sails to correct halyards, sheets and other sail controls.
4. Check that the best possible lead has been achieved in each case.
5. Ensure that selected crew members have space to haul on halyards and apply safe technique for hoisting.
6. Demonstrate to participants how sails should be hoisted safely and effectively.
7. Hoist sails in an order that enables control of the vessel to be maintained.
8. Confirm that sails are hoisted.
9. Tension halyards and/or sheets and purchases to obtain the correct shape.
10. Secure halyards and/or sheets and purchases using suitable method.
11. Adjust other vessel controls in accordance with the point of sail.
12. Coil and stow lines.

UNIT TITLE:

2. Set and control sails

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Assess the effectiveness of the sail set

1. Observe the shape of the sails.
2. Assess how effectively the set of the sail(s) takes best advantage of weather conditions and the activity.
3. Recommend alterations to the sail choice to colleagues.

Trim sails

1. Observe the effectiveness of the sail trim and adjust where necessary.
2. Handle loaded sheets, stays and halyards in a safe manner which maintains control at all times.
3. Adjust sheets, and other sail controls to produce sail trim required.

NOTES:

UNIT TITLE:

2. Set and control sails – SCOPE OF ITEMS COVERED:

Sails include:

- Sails set from mast or other spar
- Lug sails
- Brailed sails
- Flying sails
- Staysails

Attachment of sails:

- Secured through cringle/eye
- Attached via hook/hank

Suitable method for fastening halyards/sheets:

- Made off on cleat/bollard/cavel/bit
- Made off on a pin / remaining rope hung neatly
- Made off round a winch

Sail controls such as:

- Outhaul
- Downhaul
- Reefing lines/pennants
- Peak halyard
- Throat halyard
- Jib/staysail/topsail/mizzen halyard
- Topping lift
- Purchases
- Headsail/topsail/main/mizzen sheet
- Stays
- Preventer
- Leech line
- Tricing line
- Brails
- Clew lines
- Rolling vang

Other vessel controls such as:

- Backstays
- Vangs
- Leeboards
- Winches and brakes

The learner has demonstrated that they can set and control the sails:

Signed:

Name of assessor:

Date:



UNIT TITLE:

2. Set and control sails

Knowledge demonstrated:

- The different sails that may be used on board traditional sailing vessels with:
 - Gaff rig
 - Sprit rig
 - Lug rig
- The different parts of sails used on board traditional vessels.
- The different rigs that may be found on traditional vessels.
- The impact that the combination of different sails has upon the balance and power.
- The methods used to hoist and secure sails.
- How halyards and sheets should be hoisted/hardened effectively in a way that protects the health and safety of the crew member (sweating & tailing, use of purchases etc).
- The transfer of load using stoppers between winches, cleats and bollards.
- The controls used to adjust the shape of the different sails.
- How sail shape and trim can be adjusted.
- How sail trim can impact on the stability of the vessel.
- How the sail plan can be effectively de-powered.

Correct response provided by learner:

Signed by assessor

Blank response area for learner input, consisting of 12 horizontal grey bars corresponding to the list items.



*Deckhands work together to adjust the rig.
Photograph by Chrissie Westgate.*



*Care needs to be taken when using heavy
gear. Photograph by Lesley Everatt.*

UNIT TITLE:

3. Manoeuvre vessel under sail

What this unit is about:

It is assumed that individuals completing this unit will already be familiar, both theoretically and practically with the rudiments of sailing, the points of sail and the manoeuvres used to go from one point to another. This unit has been developed to assess the individual's ability to apply these principles when sailing a traditional vessel with either a gaff, sprit or lug rig.

The individual will be required to demonstrate that they can operate the sail controls in a safe and organised manner and in the correct order to complete the required manoeuvre. This will require them to show that they can communicate effectively with the skipper, identify potential hazards and co-ordinate the activities of other crew members to assist with the manoeuvre.

The individual will also need to demonstrate that they understand how the rig can be set to achieve an effective level of performance in all weather conditions.

Skills to be learnt and practised before being assessed:

Prior to formal assessment, individuals should be trained in, and be given the opportunity to practice and develop the following skills:

- How the rig actually works – its features, controls, halyards, sheets etc.
- The verbal or visual commands used on board the vessel to co-ordinate manoeuvres.
- The hazards that may be encountered when manoeuvring the vessel.
- Understanding the rules of the road in the context of collision regulations.
- The order in which sails and other control surfaces need to be moved/set during the manoeuvre.
- Understanding the different roles of other crew members and how they can be effectively organised.
- The indicators showing that the sails have been set effectively.

How these skills might be developed:

These skills may be developed either as part of a formal course on board a traditional vessel or through learning on the job.

UNIT TITLE:

3. Manoeuvre vessel under sail

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Prepare to manoeuvre vessel

1. Gain confirmation from the skipper as to the intended manoeuvre.

2. Brief crew members as to the planned action to be taken.

3. Confirm with crew members who has responsibility for which activity.

4. Check that sheets/guys and other sail controls are free to be used.

5. Check that the intended direction of the manoeuvre is clear of obstacles.

6. Confirm that each individual is ready to implement the manoeuvre.

Manoeuvre vessel

1. Release sheets and other sail controls whilst maintaining control.

2. Observe the movement of the vessel through the manoeuvre.

3. Back headsails to help push bow through wind if necessary.

4. Re-set sheets/guys when vessel is fixed on new course.

5. Secure sheets and other sail controls.

6. Adjust and re-set other vessel controls.

UNIT TITLE:

3. Manoeuvre vessel under sail

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Check trim of sails

1. Assess the effectiveness of the set of the sails and other vessel controls.

2. Adjust to ensure that the performance of the vessel is optimised.

NOTES:



UNIT TITLE:

3. Manoeuvre vessel under sail – SCOPE OF ITEMS COVERED:

Manoeuvre:	Obstacles such as:
<ul style="list-style-type: none"> • Tacking • Gibing • Changing course • Heaving to • Reducing speed of vessel • Luffing 	<ul style="list-style-type: none"> • Other sailing vessels • Other vessels • Shallow water or other obstructions • Buoys/navigational marks
Sails:	Vessel controls such as:
<ul style="list-style-type: none"> • Mainsail • Mizzen • Stay sail • Jib(s) • Topsails • Running sails 	<ul style="list-style-type: none"> • Running backstays • Backstays • Lee boards • Preventers • Vangs • Rolling vangs

The learner has demonstrated that they can manoeuvre the vessel under sail:

Signed: Name of assessor: Date:

Knowledge demonstrated:	Correct response provided by learner:
<ul style="list-style-type: none"> • The different sails that may be used on board traditional sailing vessels with: <ul style="list-style-type: none"> – Gaff rig – Sprit rig – Lug rig. • The terminology used to describe different parts of the sails and rig specific to the vessel which is relevant to manoeuvring the vessel 	<p><i>Signed by assessor</i></p> <div style="background-color: #e0e0e0; height: 60px; width: 100%;"></div>

UNIT TITLE:

3. Manoeuvre vessel under sail

Knowledge demonstrated:

- The location of different halyards, sheets and guys used to control different sails.
- How sheets/guys and halyards should be made fast.
- The role of running back stays and preventers in the security of the vessel's rig.
- The role that leeboards play in the effectiveness of flat bottomed vessels.
- How lee boards should be safely hoisted and lowered.
- The order that sails should be set when tacking and gibing.
- Why traditional vessels may require headsails to be backed during tacking manoeuvres.
- Luffing to allow crew members to achieve a better trim.
- How bowlines are used to assist with the securing of headsails.
- Why it is important to brief crew members as to the order of actions.
- The hazards that can be encountered when moving and setting sails and vessel controls.
- The verbal or visual commands that are used when manoeuvring the vessel.
- The potential obstacles that may not be visible to the skipper and need to be identified prior to the completion of the manoeuvre.
- How the sails should be set to bring the vessel to hove to position and the possible reason for heaving to.
- How sails can be controlled to reduce the speed of the vessel as part of docking/mooring anchoring manoeuvres.
- Scandalising the rig to reduce speed or power.
- Handling of loose-footed or flying sails on certain types of vessel.
- How collision regulations impact on planned manoeuvres.

Correct response provided by learner:

Signed by assessor



Ratlines provide a quick way aloft to deal with any issues when hoisting, reducing or stowing sails. Photograph by Alistair Sommerlad.



Early morning departure with the sails still neatly stowed. Photograph by Catherine Dines.

UNIT TITLE:

4. Reduce and stow sails

What this unit is about:

Traditional sailing vessels frequently set a large amount of sail canvas. Being prepared for this and knowing when and how to control this amount of power is essential to ensure that the vessel can be sailed effectively and safely. This unit is designed to assess an individual's ability to be able to reduce sail area safely and stow sails in a way that ensures they retain their condition. They will need to be able to communicate with the skipper and other crew members to co-ordinate the reduction of sail. They will also need to be able to stow sails using suitable methods. This may include rolling, flaking, hanging, putting into stops, or brailing up onto a sprit.

Skills to be learnt and practised before being assessed:

Prior to formal assessment, individuals should be trained in, and given the opportunity to practice and develop the following skills:

- How the rig works – its features, controls, halyards, sheets etc.
- Which sails should be reduced/dropped to most effectively reduce power whilst maintaining way and control.
- The verbal or visual commands used on board the vessel to co-ordinate the reduction of sails.
- The roles that other crew members have when reducing sail.
- How different sails should be stowed.
- How sails should be stored, either on board or on shore to prolong their effective life.
- Identifying sail wear issues.

How these skills might be developed:

These skills may be developed either as part of a formal course on board a traditional vessel or through learning on the job.

UNIT TITLE:

4. Reduce and stow sails

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Reduce sail when under way

1. Agree with skipper the level of sail reduction required to achieve the vessel action.

2. Brief crew members as to the planned method of sail reduction.

3. Check that crew members understand the controls and order of actions needed to reduce sail.

4. Communicate with the skipper to commence sail reduction.

5. Control halyards and sheets to lower sails to the required level.

6. Secure lines to hold sail in position.

7. Secure reefing lines and tie points.

8. Confirm to skipper that sails are secure.

NOTES:

UNIT TITLE:

4. Reduce and stow sails

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Drop and stow sails

1. Confirm with the skipper the sails to be dropped.

2. Brief crew members as to the planned method of dropping sails.

3. Check purchases, topping lifts, set jackstays as appropriate.

4. Release halyards and sheets and control the drop of the sail, flaking if necessary.

5. Set gaffs and booms to ensure sails that remain bent on do not collect water.

6. Gather sails for stowage.

7. Secure sail with sail ties or other lines.

Store sails

1. Spread sail on deck or other surface which does not damage it.

2. Note and report any damage to sails.

3. Flake and/or roll/hang sails according to operational methods.

4. Tie sails securely.

5. Store sails in a location which prevents damage.

UNIT TITLE:

4. Reduce and stow sails – SCOPE OF ITEMS COVERED:

Vessel action::

- Slowing the vessel down
- Putting the vessel into a hove to position
- Coming to anchor, alongside or when picking up a buoy

Sail control lines including:

- Halyard
- Sheets
- Reefing lines
- Downhauls
- Brails

Stowage:

- Flake over boom
- Roll and tie on boom
- Brail
- Flake on deck
- Hoist and hang
- Put into stops
- Bag
- Stow aloft
- Stow on deck/down below/or ashore

Damage:

- Tear
- Wear
- Bolt ropes coming loose
- Cringles loose

The learner has demonstrated that they can reduce and stow sails:

Signed:

Name of assessor:

Date:



UNIT TITLE:

4. Reduce and stow sails

Knowledge demonstrated:

- The different sails that may be used on board traditional sailing vessels with:
 - Gaff rig
 - Sprit rig
 - Lug rig
- The terminology used to describe different parts of the sails, including luff, clew, head, foot etc.
- The location of different halyards and sheets used to control sails on board the vessel.
- The verbal and visual commands used on the vessel to communicate different actions.
- The methods and systems used to reef sails.
- The methods and systems used to stow sails on different types of historic vessel, including brailing onto sprit, flaking/rolling onto boom.
- How sails can be secured and neatly stowed.
- The common indicators of wear to sails.

Correct response provided by learner:

Signed by assessor



When anchoring, the windlass and chain need to be fully prepared to ensure free-flow. Photograph by Gabriel Clarke.



Tamar barge Shamrock alongside in her mud berth. Photograph by Christian Topf.

UNIT TITLE:

5. Dock, moor and anchor vessel

What this unit is about:

One of the benefits of modern sailing craft is their ability to be manoeuvred in small spaces frequently with the assistance of an engine and maybe even a bow thruster. Traditional sailing vessels do not have these modern conveniences or do not manoeuvre in the same way, and therefore rely on the planning and skills of the skipper and crew to be able to moor on a buoy, tie alongside a dock or pile, or lay an anchor. These are the times when a good crew can really show their skill.

This unit is designed to assess an individual's ability to be able to work under the direction of a skipper and with other crew members to moor, dock or anchor a traditional vessel under sail or power, and leave again safely. Due to the importance of each of these actions, all three should be covered both practically and theoretically by the individual.

The individual will need to demonstrate that they understand the preparations that need to be made, including preparing lines, chain, lights etc., and that they know the order in which tasks should be completed. They should also know how to check that the vessel has moored/docked or anchored securely.

Skills to be learnt and practised before being assessed:

Prior to formal assessment, individuals should be trained in, and given the opportunity to practice and develop the following skills:

- The different lines that need to be used.
- How a buoy can be grappled – use of a boat hook.
- Recognising the different types of anchor that might be used and for which situations they should be applied.
- How fenders can be used to protect the vessel from damage.
- Surging or easing a rope safely under load.
- The different commands that may be used by the skipper.
- How to estimate the amount of anchor chain required.
- How to check if the vessel is dragging its anchor.
- How the vessel's anchor can be safely recovered.
- How the anchor should be stowed securely.
- Preparedness for approaching under sail or power.

How these skills might be developed:

These skills may be developed either as part of a formal course on board a traditional vessel or through learning on the job. In particular, the individual should practice all three of the different methods.

UNIT TITLE:

5. Dock, moor and anchor vessel

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Secure vessel to a dock, harbour wall, pile or other vessel:

1. Prepare mooring lines and warps.

2. Secure mooring lines and warps on suitable parts of the vessel.

3. Secure fenders at the right height to protect vulnerable parts of the vessel from rubbing against the dock side or make a fender board if necessary.

4. Check with the skipper the planned approach, whether under sail or power, and the location for securing.

5. Prepare lines to enable them to be thrown under control or with a heaving line.

6. Communicate intentions to personnel who may assist ashore.

7. Where appropriate, use a tender to help control the movement of the boat or to take a pile/shore line.

8. Secure lines on appropriate fixing points both ashore and on the vessel.

9. Check leads for all lines and fit chafing gear where appropriate.

10. Apply springs and breast lines if necessary to take account of tidal and wind conditions.

11. Apply shore or pile lines where necessary taking into account the tidal range and applying a masthead line if appropriate.

12. Secure all lines in a way that enables them to be released or slipped easily when required.

UNIT TITLE:

5. Dock, moor and anchor vessel

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Secure vessel on a mooring:

1. Prepare mooring lines and equipment for grasping pick up buoy or mooring.

2. Secure mooring line on suitable part of the vessel.

3. Communicate with skipper to advise on the distance and direction to mooring using signals where necessary.

4. Grasp pick up buoy/mooring/line using a boat hook or grab shackle where necessary.

5. Pass mooring lines through buoy loops.

6. Ensure mooring lines are protected from excessive wear.

7. Pay out sufficient mooring line to allow for tide and wind conditions.

8. Secure mooring line to vessel.

9. Inform skipper that the mooring is secure.

10. Apply fender material to prevent rubbing and damage to vessel.

11. Ensure that other parts of the vessel are clear from fouling the mooring line.

UNIT TITLE:

5. Dock, moor and anchor vessel

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Anchor Vessel:

1. Release lashings or equipment used to secure anchor.

2. Prepare windlass used to control the deployment of the anchor.

3. Assess the depth of water (using lead line or modern equipment) and prepare a sufficient amount of cable.

4. Flake out the cable on the deck in a way that prevents snagging or have crew member stationed below to ensure free-flow from the chain locker.

5. Warn other crew members as to the dangers of being caught in anchor cable and chain when released.

6. Control the release of the anchor when informed by the skipper.

7. Control the pay out of the cable to the required length.

8. Snub the cable when desired length is reached.

9. Use a dog to ensure safe deployment of anchor cable.

10. Row out a stern anchor if necessary.

11. Take a transit on points on shore to check that the anchor is not dragging.

12. Hoist anchor day shape or light in the rigging to indicate that the vessel is anchored.

UNIT TITLE:

5. Dock, moor and anchor vessel

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Getting underway:

1. Prepare vessel for sailing.

2. Shorten cable using winch or by hand.

3. Wash and clean chain across the barrel of the winch or as it comes on board.

4. Assess when sufficient cable is raised prior to getting underway by sail or by power.

5. Inform helm that vessel is ready to get underway.

6. Recover anchor.

7. Cat anchor securely or hoist on board using appropriate halyard.

8. Stow cable neatly in a way which ensures it will run freely or assist stowage into chain locker if windlass feeds directly there.

NOTES:



UNIT TITLE:

5. Dock, moor and anchor vessel – SCOPE OF ITEMS COVERED:

Mooring lines:

- Bow lines
- Stern lines
- Springs
- Shore lines/pile lines
- Breast lines

Attachment of mooring lines/springs/breasts to the vessel:

- Attached to cleats/cavels
- Attached to other hard points
- Attached to bitts/Samson posts
- Use of fairleads

Fixing points ashore, such as:

- Bollards
- Rings
- Rails
- Cleats

Parts of the vessel to keep clear of mooring lines:

- Bobstay
- Bowsprit
- Bumpkin
- Shroud lanyards chafing on spring lines

The learner has demonstrated that they can dock, moor and anchor the vessel safely:

Signed:

Name of assessor:

Date:

Knowledge demonstrated:

- The impact that different weather conditions have upon how the vessel is moored/anchored.
- How the vessel can be controlled when coming alongside.
- The different mooring lines that should be used and their individual functions.
- The impact that adjustment of different mooring lines can have on each other.
- The different fixing points that can be used on the vessel and ashore to moor/anchor a vessel securely.

Correct response provided by learner:

Signed by assessor

UNIT TITLE:

5. Dock, moor and anchor vessel

Knowledge demonstrated:

- The advantages and disadvantages of using the different fixing points.
- How mooring lines can be secured to rings, cleats and posts.
- The types of fender that may be used on the vessel and how they should be secured.
- How a tricing line can be applied to the bobstay to keep it clear from mooring lines.
- How a bull rope uses a bowsprit to protect the hull.
- How a bowsprit/bumpkin may be retracted and housed when moored.
- How the hull and rig can be protected if moored alongside other vessels.
- Why it is important to brief other vessel owners as to your approach to mooring/protecting the vessel when moored up alongside other vessels – both modern and traditional.
- The types of anchor that may be used on traditional vessels and their varying characteristics.
- How anchors should be stowed.
- How to work the windlass in a safe and efficient manner.
- When and how a 'dog' should be used when retrieving and deploying an anchor chain.
- Why a 'dog' should not be applied when under way.
- How to assess the amount of chain and/or warp needed to ensure the anchor holds effectively.
- When a second anchor may need to be set
- How an anchor may be used to break the speed of a vessel in conjunction with the tidal flow.
- How to flake cable out on deck.
- The safety risks that may be encountered when deploying an anchor.
- The importance of clear communication with the skipper and other crew members when deploying anchors or when mooring the vessel.
- How a transit can be established to see if the vessel is dragging whilst at anchor.
- How the anchor can be safely recovered.

Correct response provided by learner:

Signed by assessor

[Blank area for learner response]



Assessing maintenance requirements for standing and running rigging. Photograph by Christian Topf.



Repairs can be carried out on the vessel or in a workshop or boatyard setting. Photograph by Granville Davies.

UNIT TITLE:

6. Assess vessel to identify maintenance requirements

What this unit is about:

Traditional vessels are primarily made from natural materials; wood, natural fibre, metal. Expose these to the weather and the vessel instantly starts to deteriorate. The condition of the vessel must therefore be constantly monitored to ensure that it is kept in a good state and retains as much of its original fabric as is possible. For operational craft, this inspection and assessment process is also important to ensure that the vessel remains safe.

This unit is designed to assess an individual's ability to be able to assess and make judgements about the condition of different components of a traditional vessel. Based on this assessment, they should be able to make recommendations and plans for work to be carried out. This may include simple repairs to paint work, or identifying more significant repairs needed to the vessel's rig or main structure.

The individual will need to demonstrate that they know how to implement an effective assessment of their vessel and understand and can recognise the indicators that suggest action should be taken. They should also be able to record their assessment in a manner that can then be passed on to other people for decisions to be made.

Skills to be learnt and practised before being assessed:

Prior to formal assessment, individuals should be trained in, and given the opportunity to practice and develop the following skills:

- How to inspect the vessel effectively and items that should be checked.
- The frequency with which inspections should take place.
- The nature of the different materials that make up the vessel.
- What indicates 'wear and tear' and what indicates something which presents a danger to the vessel or crew.
- How maintenance requirements should be recorded.

How these skills might be developed:

These skills may be developed either as part of a formal course or through learning on the job. This may include periods working with different materials to understand their properties, for example, working with rope and sailcloth, working with paint and varnish, cutting, shaping and finishing wooden items.

UNIT TITLE:

6. Assess vessel to identify maintenance requirements

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Inspect vessel:

1. Inspect vessel components to identify condition.

2. Test the operation of the component.

3. Seek opinions and comments from colleagues as to the condition and operation of the component.

4. Assess the maintenance requirement of the component.

5. Assess the regularity of maintenance.

6. Record outcomes of inspection.

7. Report on action required to relevant person.

Develop a maintenance plan:

1. Agree on the priorities for maintenance.

2. Identify suitable methods for implementing maintenance.

3. Identify sources of materials to implement maintenance.

4. Produce a plan for implementing maintenance activities.

5. Seek feedback on the suitability of the plan and the methods for the maintenance activities.

UNIT TITLE:

6. Assess vessel to identify maintenance requirements

LEARNER'S NAME:

DATE:

NOTES:

UNIT TITLE:

6. Assess vessel to identify maintenance requirements – SCOPE OF ITEMS COVERED:

Vessel components:

- Sails
- Standing and running rigging
- Hull
- Deck and deck fittings
- Paint and bright-work
- Navigation equipment
- Safety equipment
- Engine
- Steering gear
- Through deck fittings – e.g. mast apron/deck lights/deck prisms
- Through hull fittings – e.g. seacocks/propeller shaft
- Galley and interior fittings

Maintenance requirement:

- Immediately put out of use
- Replacement
- Temporary repair
- Substantial repair

Regularity:

- Daily
- At the end of each season
- As and when required

Priorities based on:

- Present a danger to users if not repaired/maintained
- Impacts on the operation of the vessel
- Impacts on the historical significance of the vessel

Methods for implementing maintenance:

- Implement maintenance yourself
- Use experienced supplier/professional

The learner has demonstrated that they can assess vessel to identify maintenance requirements:

Signed:

Name of assessor:

Date:



UNIT TITLE:

6. Assess vessel to identify maintenance requirements

Knowledge demonstrated:

- What indicates wear and damage on a range of different vessel components including sails, running and standing rigging, hull, deck and deck fittings, paint and bright-work, engine, steering gear, through hull fittings and galley and interior fittings.
- Why it is important to ensure that navigation and safety equipment are frequently checked and maintained.
- Who is responsible for checking the operation of safety equipment.
- The methods that should be used for implementing temporary/short term repairs to components.
- Who the organisation uses to implement more substantial repairs/maintenance tasks.
- The benefits of developing a maintenance plan.
- Who should be involved in developing a maintenance plan.

Correct response provided by learner:

Signed by assessor



It's important to have the right tools when caulking the deck. Photograph by Bryony Stokes.



Caulking the hull. Photograph by Kyle Abingdon.

UNIT TITLE:

7. Implement basic repairs to vessel structure

What this unit is about:

A traditional sailing vessel is manufactured from a range of different materials, techniques and systems. This includes wood, metal, coatings and rigging components. Damage and wear to any one of these items might cause further decay or even lead to the vessel being unable to be used. Damage may also occur when a vessel is far from her home port or specialist facilities, so it is important that professional crew have the skills to be able to implement emergency or temporary repairs. Keeping the vessel in good condition also helps the conservation of what is an important historical item. To avoid decay, any crew member should be able to monitor and implement basic repairs to vessel components, which also helps develop good seamanship.

This unit is designed to assess an individual's ability to be able to implement a range of different repair and maintenance activities. In particular, this relates to the main structure and fabric of the vessel. Individuals should be assessed implementing as many of the different activities as is possible, depending on what maintenance tasks are required by the vessel during the assessment period.

The individual will need to demonstrate that they can apply a methodical approach to implementing basic repairs and that they understand the impact that repair work can have on retaining the historical authenticity of the vessel. They should be able to use a range of hand and mechanical tools safely and effectively.

Skills to be learnt and practised before being assessed:

Prior to formal assessment, individuals should be trained in, and be given the opportunity to practice and develop the following skills:

- How to plan maintenance activities.
- Understanding the different materials that may be used to repair the vessel, and their pros and cons.
- How to safely use a range of hand tools and mechanical tools.
- How to measure, cut and shape simple timber components.
- How to remove, prepare and apply hull/deck caulking.
- How to repair and service wooden blocks.
- How to make and repair spars and effect a jury rig.
- How to estimate the amount of time needed to complete repair work.
- How to spot the signs of rot or decay in components.

How these skills might be developed:

These skills may be developed either as part of a formal course or through learning on the job.

UNIT TITLE:

7. Implement basic repairs to vessel structure

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Plan to implement basic repairs:

1. Assess the nature of the work needing to be implemented.

2. Identify the resources needed to implement the repair.

3. Inform relevant individuals as to the time and resources needed to complete the work.

4. Specify and order materials needed to complete the work.

5. Check that sufficient time is available to carry out the work.

NOTES:

UNIT TITLE:

7. Implement basic repairs to vessel structure

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Implement basic repairs:

1. Ensure that work areas and equipment are safe.
2. Inform relevant people of the nature of the work to be implemented.
3. Brief colleagues as to the work to be implemented.
4. Remove damaged material ensuring that further damage is avoided.
5. Retain damaged material for inspection and/or repair.
6. Carry out repairs within agreed timescale using approved materials and components, methods and procedures.
7. Ensure that the repair is tested and the item is suitable for its intended use.
8. Clear work areas, disposing of waste material correctly.
9. Record the nature of the work completed.

Review and evaluate basic repair work

1. Assess the quality of the work completed.
2. Apply additional repair work to ensure quality standards are achieved.
3. Make recommendations to relevant people as to when further work may be required.



UNIT TITLE:

7. Implement basic repairs to vessel structure – SCOPE OF ITEMS COVERED:

Scope of items covered:

- Wood
- Metal
- Fixings
- Hand tools
- Machinery

Repairs such as:

- Correcting cosmetic damage – paint and bright-work
- Repairing mechanical/electrical systems
- Repairing structural components of deck
- Caulking of hull planking or deck
- Repairing rig, spars, blocks and rigging components

Work areas including:

- On board the vessel
- Workshop
- Slipway/dry dock
- Public hard/beach
- Boatyard

Quality:

- Correct surface finish
- Operates correctly
- Provides correct support/structure

The learner has demonstrated that they can implement basic repairs to the vessel structure:

Signed:

Name of assessor:

Date:

UNIT TITLE:

7. Implement basic repairs to vessel structure

Knowledge demonstrated:

- The health and safety precautions to be taken and procedures to be used when working with composite materials, consumables, tools and equipment in the work area.
- The hazards associated with working with the various materials and equipment used to implement the repairs.
- How repair work needs to be planned to avoid damage to historical fabric of the vessel.
- Where information can be sought in regards to safe and effective repair methods.
- Why it is important to ensure that repairs are completed in a manner that preserves the historical integrity of the vessel.
- The qualities and nature of the different materials used to make short and longer term repairs – wood, paint, metal items
- The common construction methods used in the build of traditional vessels.
- The hand and power tools that should be used to complete different repair tasks.
- How chemically based materials and other waste should be disposed of safely.
- The quality standards expected by the organisation in regards to repair work.
- How the quality of repairs can be assessed.
- Why repairs should be recorded and documented.

Correct response provided by learner:

Signed by assessor



*Replacing the hanks helps the sail to last.
Photograph by Henry Faire.*



*Undertaking running repairs. Photograph
by Oona James-Millis.*

UNIT TITLE:

8. Implement basic repairs to sails

What this unit is about:

A major cost for a historic vessel owner is the purchase of a new suit of sails. Depending on the size and type of rig, the cost of sails can run into thousands of pounds. The suit of sails therefore represents an area that requires constant care and attention to ensure that it is operating at its best and lasts as long as possible. Crew members should be able to spot when repair work is needed and be able to complete a number of different types of repair themselves. This should include checking the seizings on mast hoops, making sure the clews are secure, re-attaching bolt ropes and applying coatings to the sails.

This unit is designed to assess an individual's ability to spot simple repairs that need to be implemented on sails and apply regular maintenance activities. This type of work should be carried out on a weekly and/or seasonal basis.

The individual will need to demonstrate that they understand the different parts of the sails and the nature of the materials used in their manufacture. They should also be able to spot when repairs require the specialist skills of a professional sailmaker.

Skills to be learnt and practised before being assessed:

Prior to formal assessment, individuals should be trained in, and be given the opportunity to practice and develop the following skills and knowledge:

- The different materials used in the manufacture of traditional sails and their varying properties.
- The materials and tools used to stitch and tie items to sails.
- The common areas where sails can become worn and damaged.
- How to apply sail cloth patches.
- The materials used to coat/proof sails.
- How to assess whether a sail needs to be repaired by a sailmaker.
- How to check sail covers to make sure they are fitting correctly or are in need of repair.

How these skills might be developed:

These skills may be developed either as part of a formal course or through learning on the job. This may include time spent working within a sail loft or a sail making masterclass where learners can see and understand the different materials and methods used to construct traditional style sails.

UNIT TITLE:

8. Implement basic repairs to sails

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

*Signed by qualified
individual:*

Plan to implement basic repairs:

1. Assess the nature of the work needing to be carried out.

2. Identify the resources needed to implement the repair.

3. Inform relevant individuals as to the time and resources needed to complete the work.

4. Specify and order materials needed to complete the work.

5. Check that sufficient time is available to carry out the work.

NOTES:

UNIT TITLE:

8. Implement basic repairs to sails

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Implement basic repairs:

1. Ensure that work areas and equipment are safe.

2. Inform relevant people of the nature of the work to be implemented.

3. Brief colleagues as to the work to be implemented.

4. Remove damaged material ensuring that further damage is avoided.

5. Retain damaged material for inspection and/or repair.

6. Carry out repair work within agreed timescale using approved materials and components, methods and procedures.

7. Ensure that the repair is tested and the item is suitable for its intended use.

8. Clear work areas, disposing of waste material correctly.

9. Record the nature of the work completed.

Review and evaluate basic repair work

1. Assess the quality of the work completed.

2. Make recommendations to relevant people as to when further work may be required.



UNIT TITLE:

8. Implement basic repairs to sails

Nature of the work:

- Applying a repair patch
- Repair to stitching
- Replacing cringles/eyes
- Attaching sail to mast hoops
- Re-proofing sails

Resources/equipment:

- Fabric
- Rope
- Stitching thread
- Coatings for sails
- Sail hook
- Palm
- Set of needles

Work areas:

- On board the vessel
- Workshop/sail loft

Quality:

- Correct surface finish
- Stitching and patches strong enough

The learner has demonstrated that they can implement basic repairs to sails:

Signed:

Name of assessor:

Date:

UNIT TITLE:

8. Implement basic repairs to sails

Knowledge demonstrated:

- The health and safety precautions to be taken and procedures to be used when working with sail repair and maintenance materials.
- The hazards associated with working with the various materials and equipment used to repair sails.
- How repair work needs to be planned to avoid potential damage to historical fabric of the vessel.
- The different types of natural and synthetic sail cloths and materials that may be used on traditional vessels.
- The different stitches and stitching equipment that can be used.
- The methods that can be used for patching tears and wear points on sails.
- How the sizes of patches can be estimated.
- Why sails need to be re-proofed on a regular basis.
- The types of material that can be used to re-proof sails.

Correct response provided by learner:

Signed by assessor



Rope-work of any kind requires close attention to detail. Photograph by Oona James-Millis.



Teamwork aloft. Photograph by Signe-Holst Larsen.

UNIT TITLE:

9. Implement basic repairs to a vessel's rig

What this unit is about:

The rig on board a traditional vessel may to most sailors look complex and unfamiliar. Not only does it look different from a modern sailing yacht, but the materials used to construct it and the maintenance requirements are also very different. The rig of a traditional vessel will require constant maintenance and repair to ensure that it works effectively and remains safe. Therefore, crew members need to understand how the rig is structured, its properties, and how it can be maintained and repaired.

This unit is designed to assess an individual's ability to implement common repairs and maintenance to a traditional vessel's rig. The unit has been developed to ensure that it can be applied to any vessel that does not rely on modern high tech materials to make it work. This includes gaff, sprit and lug rigs.

The individual will need to demonstrate that they understand the different components of the rig and their varying maintenance requirements. They will also need to be able to monitor the tension of the standing rigging and be able to tension the rig components, as well as help de-rig a vessel and set the rig up. It is likely that to implement work on the rig, individuals will need to be able to work at heights using a bosun's chair or other form of hoist. It is essential that individuals understand how to do this and can work safely at heights using secure safety lines and equipment.

Skills to be learnt and practised before being assessed:

Prior to formal assessment, individuals should be trained in, and be given the opportunity to practice and develop the following skills and knowledge:

- Different types of vessels and their rigs.
- The different materials used in the manufacture of traditional rig components.
- How to whip and seize three strand and braided rope.
- How to mouse hooks.
- How the rig can be tensioned and how the tension can be measured.
- How wire rope and other standing rigging components can be treated to prevent deterioration.
- How to undertake wire splicing.
- The materials and tools used to maintain rig components.
- The common areas where running rigging, spars and other rig components can become worn and damaged.
- How to de-rig a vessel prior to lifting a mast.
- How to set up a rig once the mast has been put back in.
- How to work safely at a height.
- What the organisational requirements and procedures are when working at heights

How these skills might be developed:

These skills may be developed either as part of a formal course or through learning on the job. This may include time spent working with a professional rigger who can demonstrate how wire rigging is prepared and maintained.

UNIT TITLE:

9. Implement basic repairs to a vessel's rig

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Plan to implement basic repairs & maintenance:

1. Assess the nature of the work needing to be implemented to the rigging components.

2. Identify the resources needed to implement the repair.

3. Inform relevant individuals as to the time and resources needed to complete the work.

4. Specify and order materials to complete the work.

5. Check that sufficient time is available to carry out the work.

NOTES:

UNIT TITLE:

9. Implement basic repairs to a vessel's rig

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Implement basic repairs & maintenance:

1. Ensure that work areas and equipment are safe.
2. Inform relevant people of the nature of the work to be implemented.
3. Brief colleagues as to the work to be implemented.
4. Check that safety procedures are followed when working at heights.
5. Carry out repair and maintenance activities within agreed timescale using approved materials and components, methods and procedures.
6. Ensure that the repair or maintenance is tested and that the item is suitable for its intended use.
7. Clear work areas, disposing of waste material correctly.
8. Record the nature of the work completed.

Review and evaluate basic repair work

1. Assess the quality of the work completed.
2. Make recommendations to relevant people as to when further work may be required.



UNIT TITLE:

9. Implement basic repairs to a vessel's rig

Rigging components including:

- Deadeyes
- Blocks
- Wire standing rigging
- Rope standing and running rigging
- Metal components
- Leather components
- Chain components
- Spars
- Mechanical winches
- Hooks

Nature of the work:

- Tensioning or slackening the rig
- Replacing running rigging
- Replacing standing rigging
- Applying seizings and whippings to standing and running rigging
- Maintaining blocks
- Treating the wire rigging
- Rigging and de-rigging a vessel

Resources/equipment such as:

- Tensioning tools
- Seizing line
- Wire
- Rope
- Pitch/tar
- Wax
- Tallow
- Marlin spike

Work areas:

- On board the vessel
- Workshop/boatyard

Quality

- Correct tension
- Whipping, splicing and seizing is secure and neat
- Deck and other vessel parts are free from waste material

The learner has demonstrated that they can implement basic repairs to the vessel's rig:

Signed:

Name of assessor:

Date:

UNIT TITLE:

9. Implement basic repairs to a vessel's rig

Knowledge demonstrated:	Correct response provided by learner:
<ul style="list-style-type: none">• The health and safety precautions to be taken and procedures to be used when working with a vessel's rig and maintenance materials.	<i>Signed by assessor</i> <input type="text"/>
<ul style="list-style-type: none">• The hazards associated with working with the various materials and equipment used to maintain and repair the rig.	<input type="text"/>
<ul style="list-style-type: none">• How safe working at heights requirements can be achieved on a traditional vessel.	<input type="text"/>
<ul style="list-style-type: none">• How repair work needs to be planned to avoid potential damage to historical fabric of the vessel.	<input type="text"/>
<ul style="list-style-type: none">• The different types of natural and synthetic materials that can form part of a traditional vessel's rig.	<input type="text"/>
<ul style="list-style-type: none">• How the rig operates and how it is structured/organised.	<input type="text"/>
<ul style="list-style-type: none">• Different types of vessel and their rigs.	<input type="text"/>
<ul style="list-style-type: none">• How different types of seizing and treatments can be applied.	<input type="text"/>
<ul style="list-style-type: none">• How the rig tension can be adjusted safely.	<input type="text"/>
<ul style="list-style-type: none">• How the rig is set-up and taken down.	<input type="text"/>
<ul style="list-style-type: none">• The regular and periodic maintenance work that should be applied to rig components.	<input type="text"/>



*Lying down on the job, antifouling.
Photograph by Christian Topf.*



*A traditional hull requires regular painting and
varnishing. Photograph by Philippe Saudreau.*

UNIT TITLE:

10. Maintain and perform repairs to paintwork

What this unit is about:

Traditional vessels are constructed from materials that, when exposed to air and water, deteriorate. Paints, varnishes and other coatings are therefore applied to prevent deterioration. Applied carefully, the paint and varnish finish of a vessel is also a clear indicator that it is well maintained and managed.

This unit is designed to assess an individual's ability to work with a range of different coatings and be able to maintain and repair the painted surfaces of the vessel with appropriate personal protective equipment (PPE) in place. This includes applying anti-foul to the hull, working with varnish to produce a high level of finish on bright-work or applying paints to other surfaces either on deck or down below. The individual needs to be able to understand how these different coatings should be applied, including the preparation of surfaces and the different tools used to apply them. Many surface coatings contain potentially toxic compounds so the individual should be able to demonstrate what the risks are and how they can be managed.

Skills to be learnt and practised before being assessed:

Prior to formal assessment, individuals should be trained in, and be given the opportunity to practice and develop the following skills and knowledge:

- How to prepare different surfaces for paint/varnish application.
- Understanding and recognising different types of coating.
- How coatings should be applied.
- How a good surface finish can be achieved.
- How waste material should be controlled and safely disposed of.

How these skills might be developed:

These skills may be developed either as part of a formal course or through learning on the job. This is likely to include implementing a number of paint/coating repairs on a historic vessel.

UNIT TITLE:

10. Maintain and perform repairs to paintwork

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Plan to implement basic repairs & maintenance:

1. Identify the material on to which paint or other coating is to be applied.

2. Assess the nature of the repair/application work needing to be carried out.

3. Identify the resources needed to implement the paint or bright-work repair/application.

4. Inform relevant individuals as to the time and resources needed to complete the work.

5. Specify and order materials needed to complete the work.

6. Check that sufficient time is available to carry out the work.

NOTES:

UNIT TITLE:

10. Maintain and perform repairs to paintwork

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Implement basic repairs & maintenance:

1. Ensure that work areas and equipment are safe.
2. Inform relevant people of the nature of the work to be implemented.
3. Brief colleagues as to the work to be implemented.
4. Check that safety precautions are followed when working with different types of coating.
5. Carry out activities within agreed timescale using approved materials, methods and procedures.
6. Ensure that the repair/application is protected from damage and dust whilst coatings are drying.
7. Clear work areas, disposing of waste material correctly.
8. Record the nature of the work completed.

Review and evaluate basic repair work

1. Assess the quality of the work completed.
2. Make recommendations to relevant people as to when further work may be required.

UNIT TITLE:

10. Maintain and perform repairs to paintwork

Material onto which repair will be applied:

- Wood
- Metal

Nature of the repair work:

- Removing damaged paint/varnish
- Patching paint on low use areas
- Patching paint on high wear areas
- Applying anti-foul
- Applying varnish
- Applying pitch
- Using filler
- The length of time needed for the repair to be completed
- Whether provision has been made for the weather

Types of coating such as:

- Antifoul
- Rust prevention paint
- Single pack paint
- Two pack paint
- Single pack varnish
- Two pack varnish
- Wood oils (various)
- Filler

Resources/equipment such as:

- Sand paper (light and heavy)
- Scraper
- Power sander
- Fluids for thinning
- Heat gun
- Brushes/rollers

Safety precautions such as:

- Wearing suitable personal protective equipment (PPE)
- Ensuring adequate extraction
- Checking that coatings are stored, mixed and applied in accordance with manufacturers' instructions
- Disposing of waste material in accordance with environmental protection requirements

Work areas

- On board the vessel
- Workshop
- Slipway/dry dock
- Public Hard/Beach
- Boatyard

Quality

- Base coat effectively applied
- Correct colour and surface finish
- Deck and other vessel parts are free from excess paint

The learner has demonstrated that they can implement basic maintenance & repairs to paintwork & bright-work:

Signed:

Name of assessor:

Date:

UNIT TITLE:

10. Maintain and perform repairs to paintwork

Knowledge demonstrated:

- The health and safety precautions to be taken and procedures to be used when working with paints and other coatings used on boats.
- The hazards associated with working with the various materials and equipment used to paint boats.
- The properties associated with different coatings used on boats, including anti-foul, varnishes, paint, filler and tar based coverings.
- How different coatings should be prepared prior to application, including burning off, scraping and sanding, and their compatibility with each other.
- How surfaces should be prepared prior to coating including the removal of loose/ existing paint/coverings.
- How different coatings should be applied, cutting-in techniques, painting sealed joints and the use of brushes, rollers, spraying equipment.
- What the impact of air temperature and moisture is upon the effectiveness of coating application.
- The indicators that can be observed which suggest that the application has not been successful.

Correct response provided by learner:

Signed by assessor



A beautifully maintained steam engine in an Edwardian launch Photograph by Christian Topf.



The Chief Engineer on Paddle Steamer Waverley. Photograph by Graeme Phanco.

UNIT TITLE:

11. Implement maintenance to engines and ancillary equipment

What this unit is about:

Traditional vessels which are primarily powered by sail often also contain a whole host of systems and equipment to help the modern sailor. This can include engines, steering gear, electronic navigation equipment, generators, toilets and cookers. Whilst at sea, these systems represent a challenge to crew members to ensure that they work effectively and are protected from damage. Each system requires constant monitoring and maintenance to ensure it can be relied upon.

This unit is designed to assess an individual's ability to be able to implement regular maintenance work on the range of engines and ancillary equipment used on board a vessel. This may include a main diesel engine, generators, electrical systems, fuel and water systems etc. The individual should be able to show that they know how the systems work and which points require monitoring and maintenance. Assessment will likely need to take place across a 6-month period which combines maintenance tasks at sea, together with more complex tasks when the vessel is laid up/decommissioned over the winter months.

Skills to be learnt and practised before being assessed:

Prior to formal assessment, individuals should be trained in, and be given the opportunity to practice and develop the following skills and knowledge:

- How different systems operate.
- The different components that make up the engine and other ancillary systems.
- The order in which maintenance tasks should be completed.
- How to spot damage, and areas where repair/replacement work is needed.
- The different tools that should be used to complete the tasks.
- How spillage of fuel and other fluids can be avoided.
- How to winterise an engine system.

How these skills might be developed:

These skills may be developed either as part of a formal course or through learning on the job. This is likely to include a formal diesel engine maintenance course or at least some training related to safe working with electrical equipment.

UNIT TITLE:

11. Implement maintenance to engines and ancillary equipment

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Plan to implement basic maintenance:

1. Identify the engines and ancillary equipment/ systems which need maintenance.

2. Assess the nature of the maintenance work to be carried out.

3. Identify the resources needed to implement maintenance activities.

4. Inform relevant individuals as to the time and resources needed to complete the work.

5. Order/obtain materials needed to complete the work.

6. Check that sufficient time is available to carry out the work.

NOTES:

UNIT TITLE:

11. Implement maintenance to engines and ancillary equipment

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Implement maintenance activities:

1. Ensure that work areas and equipment are safe.
2. Inform relevant people of the nature of the work to be implemented.
3. Brief colleagues as to the work to be implemented.
4. Check that safety precautions are followed when working with different equipment and materials.
5. Carry out activities within agreed timescale using approved materials, methods and procedures.
6. Clear work areas, disposing of waste material correctly.
7. Record the nature of the work completed.

Review and evaluate basic repair work

1. Assess the quality of the work completed.
2. Make recommendations to relevant people as to when further work may be required.

UNIT TITLE:

11. Implement maintenance to engines and ancillary equipment



Engines:

- In-board diesel engines
- Outboard motor – petrol/diesel
- Outboard motor - electric

Ancillary equipment/systems including:

- Generators
- Steering gear
- Anchor windlass
- Winches
- Fuel system
- Electrical equipment
- Heads
- Cooking gas system
- Electrical navigation equipment
- Bilge pumps

Nature of the maintenance work:

- Inspecting equipment for wear
- Replacement of simple components
- Cleaning
- Winterising

Resources/equipment:

- Components
- Hand tools
- Electrical tools
- Other crew members to assist with the maintenance activity

Safety precautions:

- Wearing suitable personal protective equipment (PPE)
- Ensuring engines and electrical equipment are turned off
- Disposing of waste material in accordance with environmental protection requirements
- Ensuring warning notices are posted near control points when machines are inoperative

Work areas:

- On board the vessel
- Workshop

Quality:

- Systems work effectively and are fully tested
- Work areas are left clean and tidy

The learner has demonstrated that they can implement maintenance to engines and ancillary equipment:

Signed:

Name of assessor:

Date:

UNIT TITLE:

11. Implement maintenance to engines and ancillary equipment

Knowledge demonstrated:

- The health and safety precautions to be taken and procedures to be used when working with mechanical and electrical systems.
- The health and safety precautions to be taken and procedures to be used when working with fluids, adhesives and fuels.
- How the primary systems on the vessel work.
- The frequency and check points that are required for different systems on board the vessel.
- How systems should be shut down prior to maintenance to ensure work is implemented safely.
- How different maintenance activities should be implemented.
- Where information about different systems and components can be sought.
- Where replacement components can be obtained from.
- Who needs to provide approval prior to ordering components.
- How systems can be safely tested.

Correct response provided by learner:

Signed by assessor

Blank response area for the learner's correct response, consisting of ten horizontal grey bars corresponding to the ten items in the knowledge demonstrated list.



*Launching the tender. Photograph by
National Historic Ships UK.*



*Tender stowed on the deck of replica pilot
cutter Agnes. Photograph by Christian Topf.*

UNIT TITLE:

12. Operate tender

What this unit is about:

Whether it be transporting people to and from a larger boat, rowing a line to a pile, buoy or the shore, or taking the opportunity to teach someone how to row or scull, handling a tender is an essential skill for someone who works as a crew on board a traditional vessel. Before the development of marinas, sailing vessels would typically moor or anchor in deeper water. This required crew members to be able to transport stores, people and material to and from the vessel from shore. The tender may also be used to assist with laying the anchor, mooring, checking lines or even helping to move the host vessel in a confined space. Traditionally, tenders were powered by either sail or oar, although nowadays an outboard engine is often used.

This unit is designed to assess the capability of an individual when preparing, operating and stowing a tender. This includes their ability to operate the tender safely and in a way that is suitable for the intended purpose. Individuals should be able to operate the tender using traditional methods such as rowing, sculling or sailing, as well as with an outboard engine.

The individual should also be able to demonstrate that they can deploy and recover the tender efficiently and safely. This may include the use of davits, a derrick or halyard to lift the tender onto the deck of the host vessel.

The individual will also need to demonstrate that they understand how the tender can be used and

stowed safely. They should demonstrate that they understand the value of using a tender with traditional methods of propulsion to accurately present the heritage and traditions associated with the host vessel.

Skills to be learnt and practised before being assessed:

Prior to formal assessment, individuals should be trained in, and be given the opportunity to practice and develop the following skills:

- Rowing, sculling and sailing a small dinghy.
- Starting, operating and maintaining an outboard engine – electric or engine powered.
- Securing and deploying a tender using davits.
- Securing and deploying a tender using a mast mounted derrick or halyard– including effective methods of sweating lines.
- Lashing tenders securely to the deck.

How these skills might be developed:

These skills may be developed either as part of a formal course using a traditional tender or through learning on the job.

UNIT TITLE:

12. Operate tender

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Prepare tender for operation:

1. Confirm the intended use of the tender.

2. Check that means of power are working effectively.

3. Deploy the tender in a manner that takes account of tide and weather conditions.

Prepare tender for operation:

1. Load the tender ensuring that it remains stable and safe to operate.

2. Operate the tender taking care to ensure it is balanced.

3. Manoeuvre the tender to keep clear of obstacles or hazards.

4. Communicate clearly with crew members on board main vessel when coming alongside or assisting with other intended uses.

NOTES:

UNIT TITLE:

12. Operate tender

LEARNER'S NAME:

DATE:

The learner needs to show that they can execute the following tasks:

*When demonstrated:
(add comments if required)*

Signed by qualified individual:

Stow tender:

1. Remove contents of tender prior to stowing.

2. Connect tender to vessel dependent on the method of recovery.

3. Communicate with colleagues to ensure that tender recovery is coordinated.

4. Operate recovery equipment according to common working practices.

5. Hoist tender using safe and efficient technique of sweating.

6. Ensure that the tender is stowed in a way which keeps it secure and does not impede the operation of the main vessel.

NOTES:

UNIT TITLE:

12. Operate tender



Intended uses of tender including:

- Transporting people or materials
- Helping to move main vessel
- Helping to moor main vessel including running out a line under oars
- Lay out or recover a kedge under oars
- Sailing activity for crew members

Means of power:

- Rowing
- Sculling
- Sailing
- Outboard engine

Deployment/recovery:

- Stowed on davits
- Stowed on deck
- Towed behind main vessel
- Tied onto a mooring or pontoon

Contents of tender:

- People
- Equipment (oars/outboard engine)
- Stores

The learner has demonstrated that they can operate a tender:

Signed:

Name of assessor:

Date:

UNIT TITLE:

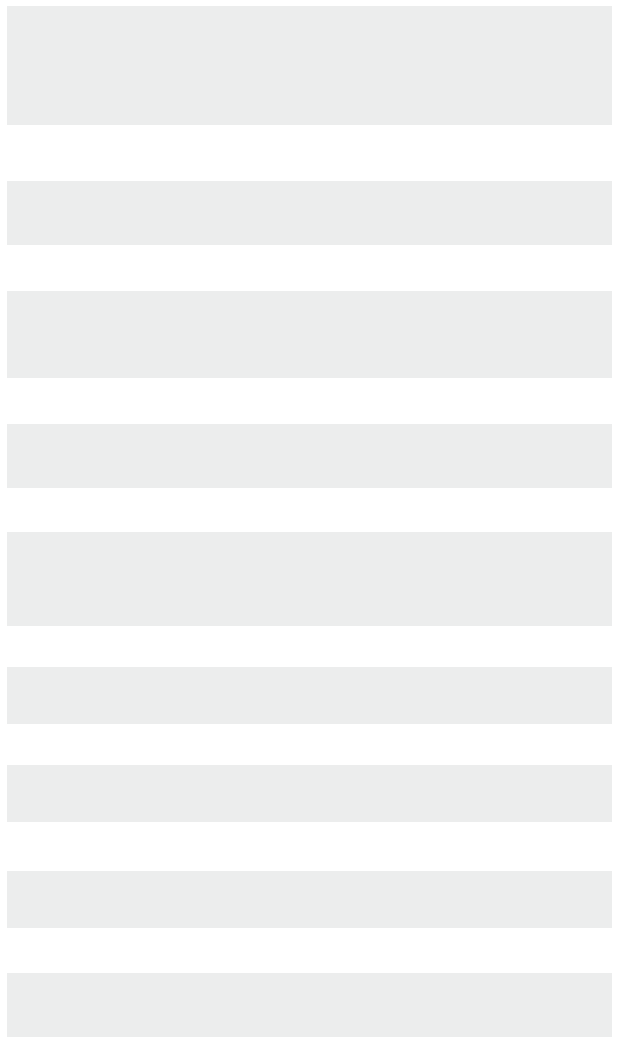
12. Operate tender

Knowledge demonstrated:

- The types of tender that may be used on traditional vessels – wooden tender, GRP tender, inflatable – and how these differ in ability and operation.
- How tenders can be used to assist with the operation of the vessel.
- The different methods of propulsion that may be used – including sculling, rowing, sailing and the use of outboard engines.
- How outboard engines should be prepared, stowed and used safely.
- The different materials and methods that can be used to act as fenders and to protect the tender and the host vessel.
- How davits should be used.
- How tenders can be safely stowed and deployed.
- How tenders should be lashed and supported when stowed on deck.
- What risks and hazards can be encountered when stowing and deploying a tender.

Correct response provided by learner:

Signed by assessor





Further reading

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- Underhill, Harold A, *Sailing Ship Rigs and Rigging* (The Nautical Press, Glasgow 1938)



Traditional shipwrights used a range of hand tools including the adze. Photograph by Andy Murray.



Above: Brixham trawler Vigilance dries out to make ready for the season. Photograph by Peter Hunt.

Front cover: Gibing on lug-rigged pilchard driver Happy Return. Photograph by Philippe Saudreau.



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