



Wooden Deck Survey February 2019

Vessel name	Custodian	Type of vessel	Operational / Static	Location	Type of Deck	Timber	Caulking method	Year laid	Laid By	Timber source and ease of procurement	Previous deck type (if applicable)	Maintenance routine	Problems identified	Other comments
Ann Letitia Russell	The Ann Letitia Russell Rescue Group	41ft Watson Class Motor Lifeboat	Static Display / Conservation	Fleetwood, Lancashire	Traditional	Honduras Mahogany	Best boat cotton and payed with Jeffrey's Seamflex	1938	Groves & Guttridge Boat Builders, Cowes, Isle of Wight.	Unobtainable	n/a			The deck is made up of Honduras Mahogany in two thicknesses, the upper deck timber thickness is 1/2inch and width 4inch, the lower deck timber thickness is 3/8inch and width 6inch. Between the upper and lower deck timber there is a sheet of white Lead and Calico fixed to the lower deck with copper tacks. The lower deck timber is laid diagonally on the deck beams bedded on a thick white lead and fasted with 1 1/4 inch. No.12 gauge copper nails 3inch apart. Before the upper deck timbers fitted the seams at the Gunwale and carlings are lightly caulked with cotton and stopped with Jeffrey's Seamflex. The upper deck timber is laid fore and aft. Each plank is tapered at the ends where it is checked in to the next plank, the upper deck is fastened to the gunwale, Carlings and beams with 2 1/2inch No.11 gauge copper nails 3inch apart with the nail heads slightly below the timber surface and stopped with Linseed Oil Putty. All seams are caulked with cotton and stopped with Jeffrey's Seamflex. All deck timbers are brush coated with Cuprinol Wood preserver. The upper deck timber outer surface is painted with two coats of tinted lead priming paint, two coats of grey marine paint and finished with a grey rough finishing paint. The lower deck timber under surface is painted with two coats of Griffiths petrol proof grey priming paint and one coat of Griffiths petrol proof finishing paint.
Cutty Sark	Royal Museums Greenwich	Clipper	Static museum ship	Greenwich	Composite	Teak with ply sub deck		2011-12					Water ingress and degradation to sections of the sub straights.	
Dolphin	Private owner	Bristol Channel Pilot Cutter (1909)	Operational	Gloucester	Hemlock laid in the 1960's with sikaflex	Hemlock	1/4 deep square rebate, thin film at bottom with Sikaflex	1960s	Unknown	Hemlock was the cheapest timber available at the time	Unknown	The deck since I have owned her has leaked. The replacement of the deck has been desirable but not possible because of costs.	In order to prolong the life of the deck I have regularly treated the deck (3 or 4 times a year) with a mixture of Linseed oil, Stockholm tar, wood preserver, white spirit sometimes with some creosote. This would be applied with a brush and would be slippery for a day or so but soon not so. It has darkened the deck, (depending how much Stockholm tar was tipped in. This application would stop the leaks although not the internal rot. I have used the boat for over ten years, sailing her hard in the Arctic and have been able to do so by applying this stop gap. When a particular plank proved over rotten this would be taken out. I have now replaced about 60% of the deck and this year all the Sikaflex was removed, which I believe is a major source of the problem, (given the poor quality of the timber) I believe the dissolution of this type of caulking was not as a result of poor application, it seemed always to have the thin film at the base and seemed to stick to the sides of the 1/4 inch rebate, the problem was the stuff had broken down (after thirty years). Also the rebate instead of being a v formation was flat based. When applying the Jeffries this flat rebate was altered to a v groove with a router.	Individual leaks to traditional caulking can be repaired whilst at sea if necessary with a hot iron and a tin of bitumen. The longevity of the ship relies on the simplicity of the maintenance, and of course continual applications and SALT water.
Espanola	Private owner	Edwardian Yacht (1902)	Operational	Preston Marina, PR2 2YP	Traditional	1/4" teak laid deck on 3/8 + 5/8" plywood sub-deck (epoxy bonded, screws)	Epoxy mixed with graphite powder	2003-4	Waterfront Marine, Port Penrhyn, Bangor North Wales 01248 352513	Unknown	1" iroko laid deck with pitch, later "Sikaflex", seams.	Scrubbing, preferably with salt water	None	The method is effectively maintenance free. The use of epoxy for both bonding and seams means that the deck is "locked" in place and cannot move with changing temperature and humidity. There is no water ingress which prolongs the life of the deck. The teak planking eventually wears slightly causing the seams to protrude a little. This results in better grip for deck shoes, which gives a safety advantage. After 15 years of use the deck is in excellent condition, with no noticeable deterioration.
Ex Penlee RNLI Watson Class Lifeboat	Private owner	Watson Class Lifeboat	Undergoing conservation	Harwich, Essex	Original (1930) planking	Oak	Caulking cotton - restoration has used caulking cotton topped with Sikaflex 290 DC pro	1930	Samuel White boatyard, Cowes	n/a	n/a	The original caulking cotton had rotted in situ and in many places wasted away allowing rain to drain through to the lower decks/engine space. Some old cotton raked out but in the main new caulking cotton inserted for the depth of the planking and sealed with an internationally recognised deck sealant to ensure weather proofing	None, other than awaiting a suitable weather window to continue the works. The oak planks need to be totally dry in order to caulk.	Did not get all the works completed during the 2017/18 summers. Some deck timbers may need additional works so expect this restoration work to continue well into 2019 and possibly 2020, all weather dependant.
Faite	Private owner	Auxiliary ketch	Operational	Loch Fyne, Argyll	Ply, canvas sheathed	Marine Ply	Canvas sheath and non-slip deck paint	Original - 1964	Original builders - unknown, off A Myline design by Ian Nicolson	Original unknown - easily sourced today	n/a	Clean frequently, repaint regularly	Water accretion at joints	Safe underfoot, easily maintained, easily sourced material for replacement. Unknown - but surely labour intensive to replace.
HMS Caroline	National Museum of the Royal Navy	Light Cruiser	Static Museum ship	Alexandra Dock, Queen's Island, Belfast	Modern - iroko deck planks secured to steel sub deck by hilti fixing.	Iroko	Marine Flex	2016	BluMarine	Best quality, British Columbia., good tight grain. UK, construction grade. More open grain.	iroko Deck, laid traditionally. Previously teak.	Quarterly wash with Boracol. Maintenance checks on the caulking are done once a year in a full sweep.	Deck performs reasonably well at present.	
HMS Gannet	Chatham Historic Dockyard	Sloop	Static Museum ship	Dry Dock, Chatham Historic Dockyard	Traditional	Douglas Fir	Pitch	2003	T. Neilsen & Co			Routine ironing of seams, wetting of deck. Can be repaired by volunteers in traditional manner.	Water ingress through incorrectly fitted bolt plugs can lead to localised rot. Caulked seams must have regular inspection and maintenance.	
HMS Trincomalee	National Museum of the Royal Navy	Frigate	Static museum ship	Jackson Dock - NMRN Hartlepool	Traditional	Opepe	Pitch	Early 1990s	The Trincomalee Trust			Monthly wash with Boracol. Maintenance checks on the caulking are done once a year in a full sweep. Caulking typically requires 100-hrs of maintenance per annum	Deck fully re-caulked in 2017. No issues identified as yet.	
HMS Victory	National Museum of the Royal Navy	Ship of the Line	Static museum ship	Portsmouth Historic Dockyard	Traditional (poop has a ply sub-deck)	Teak (poop has marine ply sub-deck)	Pitch (poop has Sikaflex)	1978 (Poop 1989)	Upper Deck: Portsmouth Dockyard (1922-28 restoration) Poop Deck: Portsmouth Dockyard: 1970 Poop Re-caulked with Sikaflex in 2005. Upper deck re-caulked using traditional materials 2012-2013			Monthly wash with Boracol. Maintenance checks on the caulking are done once a year in a full sweep. Caulking typically requires 150-hrs of maintenance per annum	Poop leaks and because of the false ceiling it is difficult to trace the source of leaks. The Sikaflex doesn't look authentic and can't be readily repaired, so it's necessary to remove and start afresh if it leaks.	
HMS Warrior	National Museum of the Royal Navy	Iron Clad	Static museum ship floating	Portsmouth Historic Dockyard	Iron (with steel repairs) sub deck with teak planking. Sub deck has a resin screed for protection	Teak	Sikaflex	2004	Maritime Workshop	Myanmar. Difficult. Source is no longer available.	Douglas Fir laid traditionally over iron sub-deck.	Maintenance is difficult. Caulking material has failed and is not easily repaired.	• Caulking has failed (as with all ships in NMRN's collection, historic decks have been found not to suit modern caulking materials). Re-caulking with traditional materials unlikely to be effective due to profile of seam. • Water has penetrated the resin screed laid over the iron/steel sub deck, which has seen corrosion taking place at plate seams. This is impossible to repair without lifting the deck. • Construction of the deck makes replacement of individual planks extremely difficult.	We would not advise other owners to employ this deck design.
LV 50	Royal Northumberland Yacht Club	Light vessel	Static moored clubhouse	South Harbour, Blyth, Northumberland	Traditional (weatherdeck)	Straight laid teak bolted to iron sub-deck plates on hardwood beams	Originally oakum paid with pitch	LV 50 was constructed in 1879 but substantially refitted in 1935	Original deck: Fletcher, Son & Fearnall, Union Dock, London. Refitted deck: Philip & Son, Dartmouth	Unknown	n/a	Exposed only at the foredeck, remainder now enclosed by club accommodation. Foredeck regularly painted.	Leaking water tracking into accommodation below remains a problem.	
Medway Queen	New Medway Steam Packet Co Ltd	Paddle steamer	Static	Gillingham, Kent	Traditional	BC Pine	Silicone Sealant	2012/13	Abel's Shipbuilding, Bristol	unknown (overseas) - not easy as certification was asked for.	Same, but with hemp and tar caulking	Tried keeping wet / damp but not easy with only volunteer maintenance crew. i.e. only there some days a week. Now trying to re-caulk areas that leak	Deck leaks, wood dries and contracts, ship steel contracts, we were advised this would happen, wanted sealed steel deck with perhaps wooden overlay but were told to go with planks, screwed from below through deck frames and caulked seams. Traditional hemp and tar caulking may have worked better, but no funds to do this hence modern silicone sealant.	As above, we knew such a deck would leak and it did but the traditional deck was a requirement of the Heritage Lottery who funded the project.
Nellie	Private owner	Sailing barge (1901)			Traditional	decks 3 inch thick pitch pine		1991			Covering boards were English oak (laid 1991) now iroko (2017)			
Pommern	Town of Mariehamn / Aland Maritime Museum Trust		Static museum ship	Mariehamn, Aland Islands	Traditional	Oregon pine	Pitch	2016-17	Henrik Engblom, Lars Hagstrom, Lars-Erik Karlsson, Thomas Lindholm, Jonas Lindvik, Petter Mellberg, Madeleine Harms. Consultant: Morten Hesthammer	Simons Tra (local timber supplier), Canadian Oregon Pine.	Originally pitch pine	Daily washing of deck. Regular caulking repairs. Oiling of deck.		The deck is very recently replaced and from 1st April we will employ a curator to oversee our preservation plans and routines. This will affect how we set up our maintenance routines in the future.
Raybel	Raybel Charters CIC Ltd	Thames Sailing Barge	Undergoing conservation for return to operational use	Heybridge, Essex		Pitch pine	Oakum & pitch	1920 (year of build)	Wills & Packham - Sittingbourne, Kent	Unknown	n/a	Very regular checks, daily in summer. Where seams are leaking or show any cracks they can be repaired by remelting the pitch if identified swiftly. If the oakum has got wet the seam is raked out and re-caulked. When the barge has periods not at sea the decks are kept scrubbed with salt. Even, as now, with Raybel under cover awaiting restoration we have found it good practice to keep the deck salted.	Raybel is nearing 100 years old and much of the original deck is in need of replacement. It is likely that we will have to opt for opepe as replacement timber. This is not our ideal state of affairs but as a sailing barge's decks are traditionally painted the alternative timber is at least not seen directly.	The plans are 3" thick by 5" wide - heavier on the mast deck. In trade, the decks would have been regularly awash with salt water or scrubbed round by the crew. In hot summer spells some crews covered the deck with straw or hay and kept this wetted with salt water. We have found that constant small amounts of attention is, in the long run, the least time consuming method of preserving the decks.

Rosa & Ada	Private owner	Oyster smack (1908)	Operational	Troon Yacht Haven	Traditional	Until mid 80s fir, doubled. Replaced with larch.	Present, cotton caulked, mastic paying.		A Danish shipwright, Peter Jensen 1980s and owner	Local sawmill. I had to accept larch to get the job done while shipwright was in Scotland	Fir, doubled, early 1920s, oakum/pitch	Regular maintenance to stop some regular or chronic leaks, taking out paying and replacing or tightening up cotton as required.	Larch, as I found out moves with variations in temperature and humidity.	Worst area for leaks was in stern. Area was lifted and replaced with marine ply bonded to iroko deck planks to provided watertight seal. Work done by West Coast Marine, Troon. Jan/Feb 2019
RRS Discovery	Dundee Heritage Trust	Scientific Research Vessel (1901)	Static in water	Dundee	Traditional	Teak and opepe	Oakum and pitch. Very routed deck seams	1924/5 - all weather decks re-laid with teak by Vospers. Any repairs/jupkeeps since then up to 1980 have been in-house using teak (Sea Cadets / Admiralty). Some work was done at St Catharine's Dock Dundee 1980/85 on foredeck using teak - contract labour. 1997/8 - a large section of the deck between main and mizzen masts was renewed by Mackay Boatbuilders, Arbroath using opepe.	Vospers, Admiralty, Mackay Boatbuilders Arbroath	Via contractor. Teak pretty unavailable. Opepe available.	n/a	Annual caulking contract with local contractor	UV light breaks down pitch. Without constant care and attention pitch breaks down. Particularly difficult last year due to the prolonged hot and dry weather. Washing the deck daily helps to manage the drying of the timbers and leaks. Deck also suffers from green algae so washed with mild detergent to kill it.	Manpower heavy to keep on top of work and costly.
sb Centaur	Thames Sailing Barge Trust	Thames Spritsail Sailing Barge	Operational: Sailing/Charters/Sail Training/Skills Training/Public Education	The Hythe, Maldon Essex	Traditional: Timber planking/close grained knot free hardwood 5" x 3" thick shaped with a caulking seam.	restored/re-laid in pitch pine reclaimed from piles removed from the Thames at time of docks redevelopment.	Traditional oakum and Jeffries Marine Glue	At build in 1895 Restored 1992 as above	Builder - J.H. Cann, Gashouse Creek, Harwich 1895. Restored/re-laid - TSBT - 1992 Timber source	Good quality, reclaimed pitch pine was available in 1992. Similar good quality timber is becoming increasingly difficult to find and expensive.	n/a	Regular and ongoing. Any leak through the deck is chalk marked immediately and at the first dry opportunity the section of seam is raked out and repaired by a trained volunteer worker. Annually decks are scraped, primed, undercoated and completely top coated with anti-slip deck paint.	Movement of the hull in heavy sea conditions can cause cracking in seams in small areas. This needs to be dealt with soonest. Shrinkage of planking in very hot weather - regular dousing with sea water alleviates this.	The Thames Sailing Barge Trust's aim is to keep their barges in line with conservation principles and as close to the original as possible in use of materials, methods etc.
sb Pudge	Thames Sailing Barge Trust	Thames Spritsail Sailing Barge	Operational: Sailing/Charters/Sail Training/Skills Training/Public Education.	The Hythe, Maldon Essex	Traditional: Timber planking/close grained knot free hardwood 5" x 3" thick shaped with a caulking seam.	Original deck Oregon Pine. Douglas Fir used for repairs in areas.	Traditional oakum and Jeffries Marine Glue.	1922	Builder - London & Rochester Trading Company, Finsbury, Rochester, Kent.	All suitable timber of good quality is increasingly difficult to find and expensive.	n/a	Regular and ongoing. Any leak through the deck is chalk marked immediately and at the first dry opportunity the section of seam is raked out and repaired by a trained volunteer worker. Annually decks are scraped, primed, undercoated and completely top coated with anti-slip deck paint.	Movement of the hull in heavy sea conditions etc. can cause cracking in deck seams. This is always dealt with soonest. Shrinkage of planking in very hot weather - regular dousing with sea water alleviates this.	The aim of the Thames Sailing Barge Trust is to keep and maintain their barges in line with conservation principles, as close to the original as possible in the use of materials, methods, etc. Pudge has recently been awarded a HLF Grant to replace all her decks and coamings. This work will commence in 2019. At present no decision has been taken as to the timber to be used as this will depend on supply. However we will be using traditional caulking.
SS Explorer	SS Explorer Preservation Society	Fishery research vessel	Static	Edinburgh Dock, Port of Leith	Working decks were Douglas Pine but partly removed due to rot. Forward accommodation deck is unknown wood.	Douglas Pine	Hemp and Pitch	1954	Alexander Hall & Co	n/a	n/a	n/a	Most of the working decks are rotten or have been lifted for this reason as they were a safety hazard	It is hoped that when funding is available, the decks can be re-installed.
ss Great Britain	ss Great Britain Trust	Passenger vessel	Static	Bristol	Traditional style wooden deck laid over 2" air gap, over steel lining that drains to the scuppers and sumps	Jarra	Various modern compounds e.g. Sikaflex for wood	1995	In-house and local contractor	W Australia - not really available now and each piece is too short	Traditional caulked pine	Scrubbing, occasional caulking		Virtually no leaks and very good longevity. Intending to renew deck when it reaches circa 30 years old as it looks a little tired now.
SV Glenlee	The Clyde Maritime Trust	Barque	Static Museum Ship	Pointhouse Quay on River Clyde, Glasgow adjacent to the Riverside Museum.	Traditional	Opepe (<i>nauclea diderrichii</i>) grown in Central Africa, and obtainable from certain sustainable sources	Oakum followed by Jeffery's No. 2 Black marine glue	1998-1999	Local shipwrights and joiners employed by the Trust	Gilmour & Aitken, timber merchants, Glasgow. Material readily available at the time.	Thought to be Pitch Pine (<i>pinus rigida</i>).	<ul style="list-style-type: none"> Wash deck daily with fresh water. Cleaned with buffing machine and detergent when required. Recaulking frequently required, due to leaks. 7 year maintenance plan to recaulk weather deck overall, part completed each year 	The deck is secured using coach screws passed through the beams and stringers from underneath. No deck plugs were needed which reduced galvanic corrosion and the acid effect between timber on steel.	Opepe is considered a very hard-wearing, rot resistant timber suitable for decking. Fixing method on SV Glenlee thought to be problematic and non-traditional. Regular assessment of deck condition and maintenance.
TS Queen Mary	Friends of TS Queen Mary	Clyde steamer	Static	Plantation Quay, Glasgow Science Centre	Traditional	Burma teak	Cotton /tar, original, Bostik current refurb	1933	Wm Denny & Bros shipyard, Dumbarton	Rangoon, probably through Irrawaddy Flotilla Co. (half owned)	n/a	Unknown	Just the usual leaking passed the caulking	The teak would have been very good quality

The above information has been submitted by the key contacts of the individual vessels and confirmed by them as correct. This data has been reproduced as given for reference purposes only and NHS-UK does not undertake to verify any of the techniques or methods stated above. For further details, to add your vessel to the survey, amend your entry or to contact any of the above, please email: info@nationalhistoricalships.org.uk. Dated: 26 February 2019