STEAMSHIP FRESHSPRING MAGAZINE

Preserving the past to inspire knowledge for the future

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STEAMSHIP FRESHSPRING TRUST

Registered charity, No.1151907.

Objects of the Charity

To advance the education of the public through the preservation and operation of a historic steamship, and the promotion of maritime studies particularly amongst young people for the public benefit.

Key Contacts

Keep up to date with progress/news via the Trust's website or Facebook page:

www.ssfreshspring.co.uk

www.facebook.com/SSFreshspringTrust

Membership Enquiries:
You can easily join online by visiting:
https://ssfreshspring.co.uk/register/annual-membership or send an s.a.e. for a form to: Steamship Freshspring Trust, c/o Little Cleave, Lower Cleave, Northam, Devon, EX39 2RH.

Volunteering on the ship:
If you would like to volunteer to help on the ship, please call Peter Gillett, our Ship Manager, on 01237 237 183. peter.gillett@ssfreshspring.co.uk.

Registered Office:
Little Cleave, Lower Cleave, Northam, Devon, EX39 2RH

Heritage Fund

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FRONT COVER: Wednesday 19th June saw the preserved paddle steamer *Waverley* call at Bideford for only the second time in 40 years. Here she is approaching the quay. *Brian Gooding*

From the Chair

I am struggling to cope with the heat while I write this piece. It has been a very hectic summer so far with a range of events attended and more to come.

As a part of our community commitment, we are part of the Arts, Culture & Heritage movement locally. This group has grown significantly in the past year and is part of our local Regeneration Board. I, of course, represent Heritage. We have also made great progress with our River Torridge Heritage Group, which has now grown to cover the whole navigable Torridge. We must thank Mike Teare, a Trustee and colleague for achieving so much in a year.

I believe local organisations are much more collaboratively connected now and this is very good for all as we have a much stronger voice within our area.

At the end of May, we had our first PS *Waverley* visit to Bideford for 40 years. This was a popular event, and our engineers managed to get the siren on SS *Freshspring* working on compressed air. It sounded very good and was answered by *Waverley* several times. Our ship's decks were lined with people wanting a good view of *Waverley* and we even had a brass band on board. My job was to escort *Waverley* up river from Appledore in SL *Duet*. I failed rather miserably as I underestimated the minimum speed of the ship (7 knots) and was soon left behind (6 knots) However, I made lots of noise using the whistle. PS *Waverley* made two visits this year and we hope she will be back again next year.

On the 8th June we attended Bideford Fair. This was a great event, and our Arts Culture & Heritage group put on a fine show. We had a range of children's workshops, aerial performances, steam engine rides and even a giant five a side chess set. Our plan is to build on this and create more events in the future. We engaged with over 800 people.

16th June was our Water Festival Day. I was out in SL *Duet* providing steamboat rides, which kept me busy until the tide stopped play. It was one of the best days of the year for ship visitors which was a challenge for our Stewards. This is always a very popular local event with cardboard boat racing and many other attractions.

Our last event in July was The Rosemoor Vintage Weekend at the RHS gardens at Rosemoor. This was a first for us and we provided steam rides, VR, rope making and Morse code experiences. As usual, I was very busy with the steam engine and provided rides for around 300 people over the weekend. I am now going through the engine to make sure it is ready for this weekend, which is the Tarka Railway gala. Just as well, as I found the flywheel gib key was working loose!

I recently attended the Bristol Water Festival, which is a major event in the city. I took *Duet* and we steamed noisily around for the benefit of the crowds.

We were provided with free fuel by the harbour, and this was an eco fuel, apparently made up of renewable products. I found this to be very good with no clinker and minimal ash. So there might be a future for us coal burners!

Our volunteers have been busy on the ship and have now completed most routine engineering projects. One interesting job has been to prepare the steam anchor windlass for operation. We plan to operate this on compressed air quite soon and then progressively get other machinery working. A team have built a structure on the boat deck. This is very temporary and will provide the workshop for building our skiff. This is a project both for our team and engaging young people in boat building activity. Once the skiff is complete, we will remove the structure. Interestingly, all the materials were recycled packaging from a nearby playground overhaul.

We are still working with Rio and this has now reached an interesting phase, which is business planning. We are forecasting a future for the Trust with the options of a static and operational ship.

In terms of operation, we are still investigating fuelling for the future. Our aim is not to use fossil fuels and, as a result, some interesting scenarios are emerging. One is to install a heat cell store system using blocks of composite of recycled aluminium and volcanic rocks. This 'supermaterial' has a high energy density and is conductive, durable, and affordable. Heat cell cores are heated using standard electric elements. Thanks to their high conductivity, heat spreads evenly throughout the core. A closed steam loop runs through each heat cell to maintain ultra-high purity and prevent eventual degradation from the build up of solids. Water is passed through a coil within the core where it turns to steam. This steam extracts stored energy from the heat cell, and varying the volume of water controls the power output.

Using this system, we will, of course, need a high-capacity power supply. The system would give us the ability to steam the ship for several hours, enough to offer three hour trips in the River Torridge. Long journeys at sea would not be possible but, at least we could operate the ship using renewable steam power.

We have by no means reached the final system yet as things seem to change very quickly in propulsion fuelling. However, we are lucky to have a highly competent engineering team who are researching options for the future. Obviously, we would like the ship to be capable of long journeys if that is possible within our green agenda.

Don't forget, our in person AGM is on 26th October in Bideford. I really hope we might see you there. In the meantime, enjoy the rest of the summer.
John

Update from Community Development Managers Sadie Green and Bracken Jelier

*"**Excellent** experience. Lovely staff. Very informative." (Ship visitor)*

"I appreciate the hard work we (you) are doing and keeping the heritage alive and looking after the public and trying on the jackets. Customer interaction great." (Ship visitor)

It's been an extremely busy and action-packed season so far and we can't stop smiling! The ship is open to the public on Sundays from 11-4. We have also hosted group visits, ship events and attended and promoted ourselves at off-site events.

Visitors from Germany with new volunteer Steward.

Since 7th April we have welcomed over 1,800 visitors – locals and International – who have enjoyed exploring the ship, trying our VR headsets, talking to volunteers and asking lots of questions. They have also been willing to complete visitor forms and give us invaluable feedback.

We have received new donations of photographs, uniform (from Bideford's Mayor) and a hand-crocheted Teddy from a visitor from Plymouth.

Some groups have visited us, including U3As, Sunrise Diversity

Donation of a Commander's jacket from Bideford Mayor Rachel Clarke.

Donation of a handmade crocheted bear by Angela from Plymouth.

LGBQT+ group and the Amber Foundation. We also hosted a Torridge Business Networking Breakfast.

Over the May Bank Holiday weekend we had a great time at Northam May Fair, Merton Rally Around and Kingsley School Fun Day offering steam engine rides and VR. There was a mix of sunshine and rain but all in all it was an enjoyable three days. Later in May Bideford Bike Show was popular, and volunteers ran children's games.

We were very excited about the arrival of the PS *Waverley*– she visited Bideford on 31st May and was the first time she had been to Bideford for 40 years. *Freshspring* was open as a viewing deck for the public to watch and wave flags. John Puddy also took passengers on his steamboat to accompany the PS *Waverley* in.

Welcoming PS *Waverley* to Bideford on 31st May 2024.

In June we were part of the Arts, Culture & Heritage group who collectively offered activities to experience Bideford's heritage at Bideford Fair. This was a first for us and opened up new possibilities, working collaboratively with other groups and individuals.

We also offered steamboat rides at the Bideford Water Festival.

Rosemoor Vintage Weekend ran on 27th & 28th July. We were very excited to be there as this was the first time for *Freshspring*. It was a resounding success thanks to all the hard working and dedicated team of Trustees, volunteers and staff. Visitors enjoyed steam engine rides, VR, rope making, Morse code and finding out about us – we hope to be there again next year!

Freshspring presence at Rosemoor Gardens in July 2024. *Dave Green*

John and miniature steam engine at Bideford Fair. *Dave Green*

Morse code children.

August and September will still be busy. We are looking forward to our next set of events on and off the ship and continuing to recruit much needed volunteers to support us and help in any way they can.

Come and see us at the Shanty Day on board on 8th September, Appledore Book Festival, 14th & 18th September and Lynton & Lynmouth Autumn Gala 28th September.

New members

We welcome the following new members of the Trust:

Mr David Harris	*Minsterworth, Glos*
Mr Barry Reardon Smith	*Broad Hinton, Wiltshire*

Meet Dan Webb, Skipper of a Sailing Ship and one of Freshspring's Volunteers

Daniel Webb is one of this season's newest volunteers on SS Freshspring. Bracken Jelier, one of our Community Engagement Officers, interviewed him about his daytime job – one that certainly has some parallels with the steamship.

Dan, what is your daytime job and what does it involve?

I am the skipper of the topsail schooner *Johanna Lucretia* which is a traditional wooden sailing vessel, the only commercially operated topsail schooner in Europe. The ship is run and operated by The Island Trust and runs sail training trips out of Plymouth where we take young people from disadvantaged backgrounds for a week at a time and teach them all the skills necessary to complete their Competent Crew or Start Yachting qualifications. We also do other day sail trips that help to raise money to further the Trust's work.

What does sailing give these young people? How do they benefit from the experience?

The trips give them an opportunity to get out on the water. Many of them wouldn't have ever had that experience as they cannot financially afford to do any form of sailing. So The Island Trust and other organisations that support or partner with us will fully or partially fund a trip for a young person. We hope that this gives them a whole range of skills; the main thing being learning to work together towards a common goal. These interpersonal skills are invaluable not only on the water but also in school, work, and personal relationships. Like the work that The Freshspring Trust does, we also aim to give them an opportunity to experience what it's like to be on the water in the hope that they may decide to pursue a career in the Maritime industry.

What is the role of a skipper and is it similar to that of a master on Freshspring?

The primary role of a Skipper, Master or a Captain on a vessel is safety. They are the main person responsible for the safety of all crew or passengers. They will also take the lead in organising the crew and supervising them in the designated or delegated duties, there is generally a ranking system on a vessel, so the skipper will make a decision as to where they would be going for the day, such as in my situation on *Johanna Lucretia*, and will assess the conditions, but it then falls to the 1st Mate (who can also be known as the First Officer) to then organise the rest of the crew to get those tasks accomplished in an efficient and safe manner. The Skipper is also responsible for all of the legal framework on a vessel to ensure that it has all of the correct safety equipment and paperwork involved in running a vessel; from anything as simple as filling in the daily log to ensuring that the vessel has a suitable garbage management plan or is obeying regulations laid out by the Maritime Coastguard Agency or the Marine Pollution Guidance.

Is there any difference between the job you do and the job that the master would have done on Freshspring?

They will be very little difference between the roles and responsibilities between skipper on a Topsail Schooner and the Captain or Master on *Freshspring*.

What interested you in Freshspring and what excited you about volunteering for her?

I've always had a passionate interest in all things maritime, especially historical vessels. I think it's wonderful that *Freshspring*, being the only one of its kind left in existence, has such a dedicated team working to save her. The idea of getting *Freshspring* running under her own steam again – well, it's something that I would very much like to be involved with and would really like to see happen one day. I believe I bring additional skills to my volunteering role; I am great with people, I have a depth of knowledge about the maritime sector and I have a drive to get young people interested in it and in careers that relate to her.

What do you think is so important about preserving ships like this and how do you think the teams of volunteers benefit from being part of the project?

I think it's very important to preserve our history. It's very important for the local community to understand or learn about the history and the involvement a vessel such as *Freshspring* had in supporting the Royal Navy. Without volunteer organisations like this, vessels like SSF would not exist. There are many volunteers bringing their own individual knowledge and expertise to the project. Volunteering also expands their own knowledge by learning from others working on *Freshspring* and it gives people who want to be involved in the maritime industry, but can't necessarily work at sea, an opportunity to have some involvement in keeping history alive.

- *To find out more about Dan's work with The Island Trust or to recommend their sailing experiences to young people, head to www.theislandtrust.org.uk*

Seaweed

Mike Teare

Later this summer we are expecting an unusual delivery to arrive at Bideford Quay. Unusual because it is a harvest from the sea that hasn't been landed here previously. But if this first production is a success, then it will only be the start. What is it?

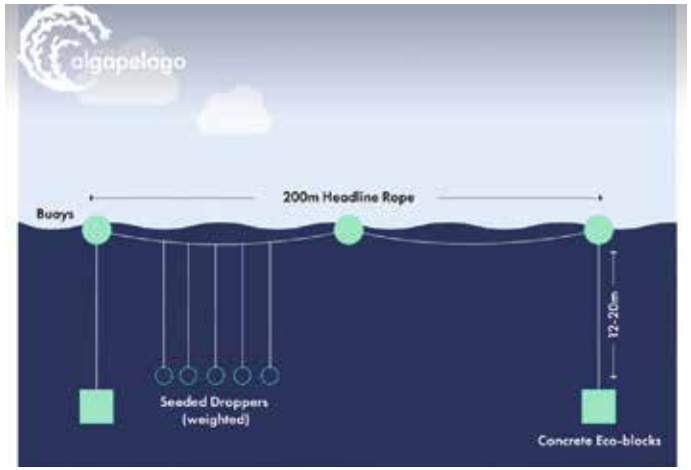
Seaweed, grown in Bideford Bay. This first harvest is an initial, small contribution from North Devon to an international market valued at billions of pounds. A 2023 World Bank report estimates that emerging global seaweed markets along with seaweed's ability to sink carbon, sustain marine biodiversity, employ women, and unlock value chains, have a potential growth of up to $11.8 billion by 2030.

Algapelago Marine Limited are running the Bideford Bay seaweed farm and have the ambition to become the largest primary producer of sustainably grown seaweed in Europe.

The farm is located about four miles offshore, in Bideford Bay and the shadow of Lundy Island. The location was chosen for its optimal marine conditions for growing seaweeds – nutrient rich, cold, clean water, plenty of sunshine and naturally occurring kelp beds.

The farm is made up of a series of submerged 220m ropes anchored to the sea floor. The ropes are marked by yellow buoys and 300 litre floats which carry the submerged backbone with the cultivation ropes lying between two and eight metres below the surface.

The brown seaweed is 'seeded' onto fine filaments in the laboratory. These filaments are then wound around the growing ropes. These are suspended in the sea and the seaweed is left to grow. In these ideal conditions, warm and with good light, brown seaweed can grow quickly and several metres of long brown fronds are produced in just months. At harvest time the growing lines are lifted, the seaweed stripped off, removing as much water as possible before the crop is landed. The seaweed is then sent for processing to extract the alginate – a long chain sugar which gives seaweed its structure.



Why does that matter? You don't see seaweed in the supermarket. Well, you might be surprised at the everyday uses for alginate in a large range of consumer products including foods and cosmetics. It is added to soups and pasta, helps form the head on your beer and the texture of ice cream. It is also used in cosmetics like lipstick, medical products like antacid tablets and specialist wound dressings for diabetic wounds.

And recent research has shown that adding seaweed to feedstuff for cattle can help reduce their production of methane, a consequence of their digestion process. Agriculture is one of the largest contributors worldwide of this important greenhouse gas.

Despite the natural advantages for growing seaweed around the UK, the market for seaweed supply is dominated by south-east Asian countries. So, let's hope for a super, salty, bumper seaweed crop and a seaweed harvest festival to celebrate Bideford's new seaweed farm.

Much more about cultivating seaweed in Bideford Bay at https://www.algapelago.com

North Devon Memories from 60 Years Ago

Jon Honeysett

In August 1960, I was posted to RAF Chivenor as a young airman, and my memories are of a North Devon from an era since when the region has changed, as indeed readers will know, has much of Britain.

I alighted from a steam-hauled train at the Southern Region BR Wrafton station, which has long since gone, along with the double track railway line from Barnstaple Junction to Ilfracombe, and the single track bridge that crossed the Taw to Barnstaple Town with a coastal freighter tied up to the wharf; that railway route, later operated by Western Region, closed in 1970.

As I walked down the gravel road between the airfield perimeter track and the railway, the sunny afternoon revealed the beauty of the county, east to the hills beyond Barnstaple, south to the patchwork quilt of hill farmlands beyond the Taw, stretching to Torrington, then west to Bideford, the Torridge estuary, and the marram grass tufted heights of Saunton Sands, while immediately north, the grey stones of Heanton Punchardon church looked over the green landscape of past centuries.

1960, represented by a huge West Country Class steam locomotive that rumbled past with two carriages, headboarded Ilfracombe-Waterloo, a Mk.4 Hawker Hunter single engine jet fighter that roared overhead, and an RAF fuel bowser alongside a twin jet Mk.11 Gloster Meteor just one hundred feet away, brought the reality of that Cold War era home.

My hut accommodation was adequate, as unpopular National Service ‘wound down’; I was the sole occupant of a four person room, with a stove and a coal-filled scuttle, a metal frame bed and mattress accompanied by a small bedside cabinet, a table, chair, and a wardrobe for my clothing, and the communications loudspeaker near the door lintel.

“The time is 06.00 hours” crackled out every morning before I walked round to the wash/shower rooms to wash, shave, put on my light blue shirt, black clip on tie, olive-green overalls, black boots, sweep and shine the brown lino floor and walk past the parade ground, saluting the RAF flag, to the Airman’s Mess for 07.00 for breakfast, meeting airmen from two brick-built blocks, then walk to one of three workplaces with other armourers.

The roar of the Meteorology Flight taking off to check weather conditions over the Atlantic Western Approaches would determine the day’s duties; if fine, the motor transport ‘tugs’ would haul serviceable aircraft out of the hangars to line them up on the hardstanding by the Flightline huts ready for the pilots and ground crews. If wet, armourers walked to the hangars to work on the aircraft, to check Martin Baker ejector seats or harmonise the 30mm ADEN (an acronym for Armament Development, Enfield) cannon, each aircraft carrying four in the fuselage gun pack, or to the armoury to remove the electric firing terminals, then strip guns and their barrels down for servicing, or attend to the small arms held in a secure workshop room.

If the weather was fine, I might be sent out to the Flightline as ground crew; every aircraft trade – airframe, engine, instrument, radar, radio, armourer, electrician – would provide airmen in the Flightline hut to accompany a pilot checking around the aircraft, removing the airspeed pitot tube cover, before the pilot climbed up the detachable alloy ladder to strap himself into the ejector seat; the airman would then climb up, connect the pilot’s intercom leads between his helmet and the cockpit terminals, remove the ejector seat and drogue safety pins*, show the pilot, and stow them in the metal ‘pocket’ rivetted to the seat side, then climb down, remove and place the ladder away from the aircraft, next to the wheeled fire appliance.

The aircraft was now ready to start up. Single-seat Hunters used an Avgas variant to fire up the Rolls Royce Avon turbine starter motor, requiring the ground crew to have an asbestos glove in the event of the flame extending

00 scale model unrebuilt Southern Region BR steam locomotive, No.34051 *Winston Churchill* on my layout, similar to the loco I mention passing me as I walked down to Chivenor on my first day.

beyond the small exit vent onto the underside of the fuselage; the twin-seat side-by-side Hunter Mk.7s used a cartridge starter, while the Meteor used the old, wheeled trolley-acc., as did the Westland Whirlwind helicopters at the east end of Chivenor, No.22 Squadron providing air-sea rescue service.

With high noise levels, and up to four aircraft moving near to each other, ground crew had to be alert, and once the space was clear, the airman gave the 'Thumbs Up' to the pilot, the chock was pulled clear of the nosewheel and placed alongside the ladder, and marshal the aircraft out onto the perimeter track heading for the runway and 'Take Off'. *T*he ejection sequence commenced with cockpit jacks ejecting the canopy clear of the aircraft before parachute drogue, then the seat ejected*.

The Flightline was a potentially dangerous environment, and everyone had to be careful – in the proximity of moving aircraft I always removed my beret, fearful of it being drawn into the air intakes – we envied Royal Navy Fleet Air Arm crews with their ear defenders and high visibility vests. If the Hunters were armed and tasked with air firing or ground attack exercises at a range over the Irish Sea, or the Welsh Castle Martin range, armourers had to 'arm' the aircraft by inserting a twelve pin plug into its socket beneath the port wing root, screw and tighten it and push the airframe cover closed.

At 11.00 and 15.00, a NAAFI van would drive into the area, dispensing tea and currant buns to the ground crews – in good weather, we could sit and wait for our aircraft to return and enjoy the lovely views in the fresh air – flocks of peewits rose from the grass airfield away from the runway. Various seabirds and waders moved down a creek behind the bomb dump, and we could sometimes hear the surf pounding Saunton Sands beach.

Off duty, as a single man, I would walk to the A361 bus stop and buy a ticket for a Western National bus ride to Ilfracombe or changing at Barnstaple for a bus to Lynton or Bideford and Appledore, to appreciate the 'holiday atmosphere' in the summer months. Although I always dressed smartly, being tone deaf, and with no musical abilities, being socially dull made it difficult to meet women. Many airmen were married, even buying their own houses, although I worked with a pal who lived in St Budeaux, Plymouth, who was taking weekend private flying lessons at Roborough Airfield and asked me to help him navigate a little hired single engine Auster around West Country skies, filling his logbook with experience.

He remained in the RAF, and became a pilot – on retirement, he kindly researched my father's First World War history, Dad being born in 1899; sadly, Terry died in 2022, one of the only pals who, with his young family stayed in contact with me. If I changed at Exeter, there was a daily through train

from Plymouth Friary to Brighton that called at Southampton, but having no girlfriend there, I travelled home only occasionally to see dear old Dad, Mum, brother Richard, and sister Hazel. I met a divorcee in 1974, and we married in 1976; we had a son and daughter, but divorced in 1987, after which I met Sarah in 1988, and we have been happily married since, my daughter and son-in-law have two sons, my lovely grandsons.

I am glad to say that I used my time at Chivenor, and despite being 'a loner' I took GCE exams in Geography, History, and English Literature, to focus on achieving something for my future. I considered the RAF to be egalitarian and took advantage of the many courses that were placed on the Mess notice board, open to all ranks and requiring attendees to wear civilian clothing in the large, quiet residential locations that they were held in.

Walking around the little North Devon villages and towns, sometimes seeing the wattle and daub cottages, inspired me to read about English social history, and the 19th and 20th century struggles of working people for political and economic emancipation, and mourn the loss of industrial heritage, for example, the Lynton & Barnstaple Railway and shipbuilding expertise around our coasts, though I watched the fishing vessels and coastal freighters in Bideford Bay and rejoiced in the tranquillity around me.

The world in the 1960s lived under the threat of nuclear annihilation, and in October 1962, the Commanding Officer at Chivenor advised all ranks that the Soviet leader, Nikita Khruschev, had sent IRBMs (Intermediate Range Ballistic Missiles) to Cuba – everyone waited to hear, and see on TV, whether US President John F Kennedy's response to the threat would be heeded, and when the missile carrying freighters turned back before entering the Caribbean, our world breathed a sigh of relief. Similarly, in 1982, the Soviet forces in Eastern Europe, withdrew their SS20 solid fuel IRBMs; the US withdrew "Tomahawk" systems from Greenham Common as Peace Women cheered, resulting in President Reagan meeting President Gorbachev in Reykjavik and "Glasnost".

That Cold War ended in 1989 as the Communist system collapsed, but the present Russian leadership under President Putin lends his ear to Russian Orthodox Church advisers who want to see 18th century Imperial borders restored, that included independent Poland, the Baltic states, and Ukraine, whose population since February 2022 has stubbornly refused to bow to a Russian war, enduring an appalling toll of death, injury, and destruction.

Sixty years ago in Devon I saw Peace – my memories of those years sustain me today, and I am proud to have supported the wonderful *Freshspring* project – Good Luck to all the people who have made it possible.

Waverley alongside at Bideford on Wednesday 19th June.

Paddling to Ilfracombe

Brian Gooding

Friday 31st May was a special day in the history of Bideford, for it was the first time for many years that the historic paddle steamer *Waverley* called at the Town Quay at lunchtime, leaving over an hour later to resume her cruise back to Ilfracombe and along the Exmoor coast.

I was due to visit several places in Cornwall in mid-June but I also had a meeting planned with John Puddy, which necessitated an overnight stop in Bideford. However, Wednesday 19th June was the second time that the *Waverley* was to visit the town as part of her Bristol Channel season with a short trip to Ilfracombe as part of a longer trip from Clevedon and back.

This was too good an opportunity to miss, especially as the weather was superb, so I joined numerous others to enjoy a trip along the north-west Devon coast to Ilfracombe though the return to Bideford would be by coach.

The timing for *Waverley's* visits to Bideford were very dependent on the high tide as ships can only arrive and depart within an hour of high tide, and they need the services of a river pilot. In this case, she was due to arrive at 4pm.

With her arrival being a very rare occurrence, there were hundreds of people gathered along the quayside to see her arrive and depart.

While waiting for her to arrive, I met up with Mike Teare and Lou Boulter from the Freshspring Trust, who were going to hand out Heritage Harbour leaflets, which was an opportunity for a good catch up. We were able to stand near the point at which *Waverley* would tie up, and had a very good view of the ship arriving and we could see her approach from quite a distance away. She arrived close to time and tied up and took on fuel and domestic water while some passengers disembarked to have a look around town or to go home. With only an hour planned for the turnaround, it was hectic on the quayside but no one was allowed to board until the refuelling had finished, after which there was a mad rush to get on board. This was going to be a very full trip! Once on board, I found an outside seat on the starboard side so I could have a landward view as we sailed along the coast towards Ilfracombe.

Passengers disembarking at Bideford were each given a leaflet about the Heritage Harbour, in this case by Lou Boulter.

Leaving Bideford, *Waverley* is turned by the Pilot boat. The town's famous medieval bridge is in the background.

With the ship facing upriver, she needed to be turned in a fairly confined space, so the diminutive river Pilot boat was positioned by the bow to push her around, the stern being tucked hard against the quay.

With *Waverley* now facing down river, with three long blasts on her hooter, she slowly set off on a slightly meandering course under the control of the Pilot, the meanders being caused by the deeper channel in the river. As she passed the *Freshspring*, the two exchanged hooter blasts in salute, though the *Freshspring's* one was air-powered.

Waverley soon passed Instow, and sailed very close to Appledore before turning into the estuary and out into the open sea, but still passing the extensive sand dunes at Saunton Sands.

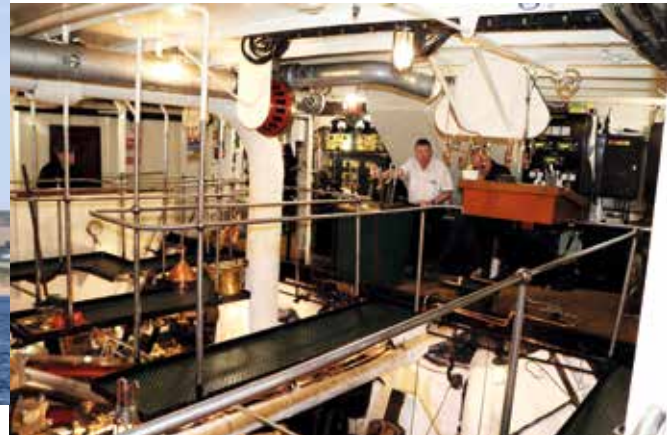
The Saunton Sands Hotel is the white building above the beach.

It was time to have a look around the ship and to see the magnificent 2,100hp diagonal triple expansion steam engine which is fully on view to passengers. For steam lovers, this must be the highlight of any trip on the *Waverley* and it is always a popular area. Watching and listening to the engine turning, albeit at a fairly slow speed, is certainly mesmerising and it is not easy to drag oneself away from the spectacle of all this shiny machinery going round. Another highlight is to stand at the side of the ship and look out over the rear of the sponsons and watch the frothy wake from the paddle wheels as the ship speeds forwards.

In front of the engine is the boiler room, not accessible of course, but now housing a modern automatic oil-fired boiler. On this deck is a dining saloon and refreshment lounge, while on lower deck is the bar. A tea bar is located on the promenade deck, so there is plenty of choice.

Back outside, we were steaming north, about a mile off shore. A large white building caught the eye, the impressive Saunton Sands Hotel, before we continue past Croyde and the National Trust's Baggy Point, just one of the rocky outcrops that line this coast.

Watching the wake from the starboard paddle with Saunton Sands in the distance.



The engine of the *Waverley* is on full view. This shows the Engineer's driving position.

The gauges and telegraph in the engine room.

Next we sail off Woolacombe with its sandy beach and holiday parks before we give Morte Point (also National Trust) a wide berth as the rocks here extend way out just under the surface of the sea, a buoy marking the safe channel.

Next we turn towards the east as we round the point, passing Bull Point Lighthouse (now automatic), then Lee Bay before the approach to Ilfracombe,

The crankshaft end of *Waverley's* engine. Note the shiny oil cans and brass funnel.

Morte Point has to be given a wide berth due to a line of rocks which stick out from the shore.

looking impressive as houses rise up the hillside inland. Apparently the best beach at Ilfracombe has to be reached via a tunnel through a cliff!

Before turning into Ilfracombe, we pass St Nicholas Chapel on Lantern Hill. Dating from 1321, the chapel was built as a place of worship for the seafarers of Ilfracombe. From the 15th century, the chapel maintained a beacon to guide shipping into the harbour. It is still a working lighthouse today and is believed to be the oldest in the country. It ceased to be a chapel in 1540 on the dissolution of the monasteries by Henry VIII. Today it is Grade I Listed.

We slowed and swung in to dock on the end of the pier. Docking took a while as the throwing ropes to pull the mooring ropes ashore either weren't caught, or came adrift which caused some fun, but we were soon docked and

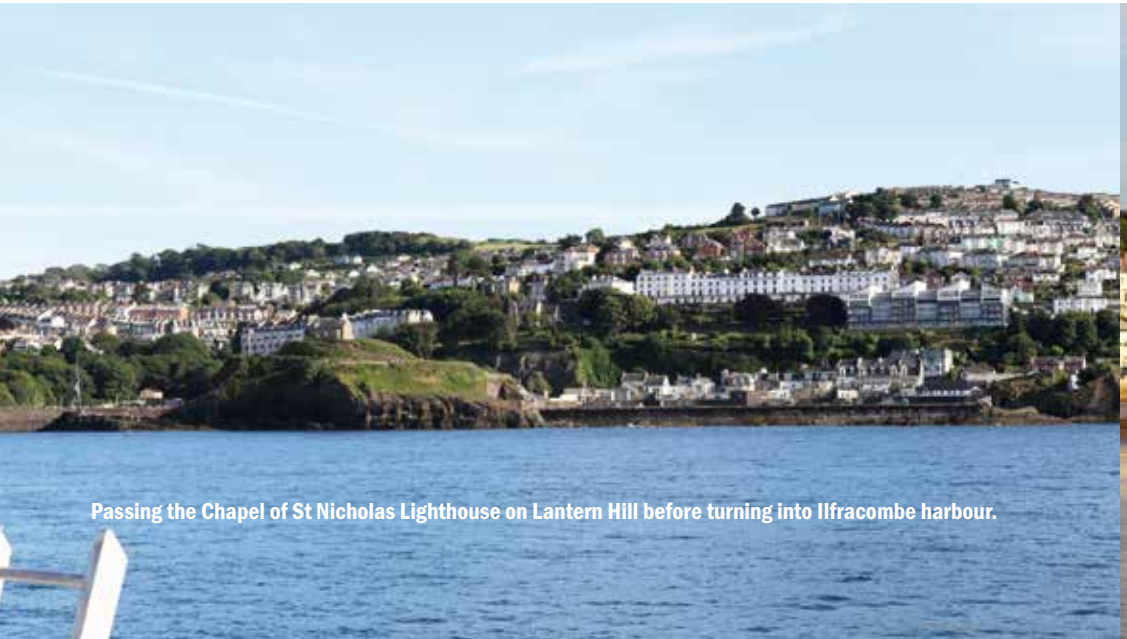
Finally docked at Ilfracombe and passengers leave the ship.

Moored in front of Waverley was the Lundy ferry the MS *Oldenburg*.

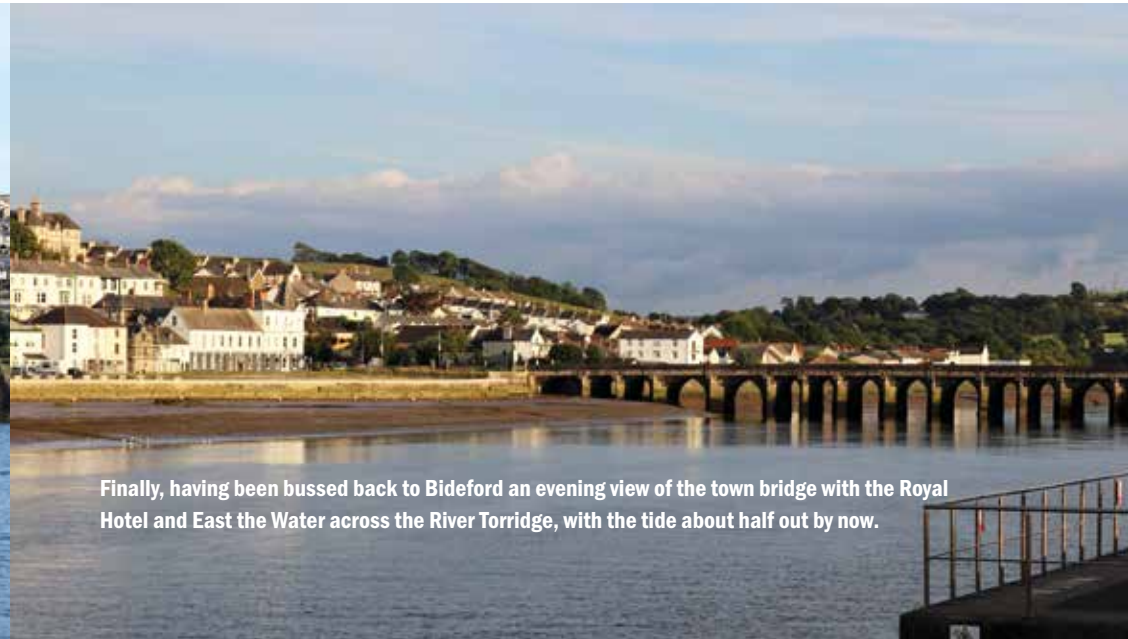
disembarking before the ship sailed on up the Bristol Channel to Clevedon.

For those who boarded at Bideford, we had a walk into town to catch the coaches to take us back, arriving around 8.30pm, the end of a superb afternoon.

• *This article is abridged from one which first appeared in the August 2024 edition of Vintage Spirit magazine.*



Passing the Chapel of St Nicholas Lighthouse on Lantern Hill before turning into Ilfracombe harbour.



Finally, having been bussed back to Bideford an evening view of the town bridge with the Royal Hotel and East the Water across the River Torridge, with the tide about half out by now.

How Should We Power Freshspring While Considering the Environment?

Richard Slack CEng FIMechE

1. Introduction

The final aim of the SS *Freshspring* it to get her sailing under her own power, so how is this going to be achieved? There are a number of factors holding us back from achieving this goal. The dream would be for someone very rich to pay for us to put it into Appledore shipyard and then a number of months later it comes out gleaming, certified for passengers and ready to sail. But this is just as likely as seeing a flying pig.

Funds may be available from charities and National Lotteries but these may come in spurts and all spending would need to be justified with specific plans and aims.

A study has been completed by the naval architect BMT to see if *Freshspring* could meet the latest safety specifications and ever be put back to sea with passengers. It is currently looking as if this would be achievable but at some cost.

Meanwhile we continue to scrape away rust, repaint the hull. Machinery is systematically being dismantled and inspected, condition recorded and lightly reassembled. It is worth noting that disassembled items will still need work in the future to replace gaskets, seal packing and resolution of any other problems found.

2. What Are the Goals?

So what could be a plan with limited funds, the engineering skills we have and how long to achieve our ultimate goal?

Firstly the hull needs to be in a watertight structurally sound condition. When the ship was last in dry dock plates were welded over suspect plating which is sufficient for now while the ship is moored but any corroded hull plates will ultimately need replacement if the ship is to go to sea.

Other safety issues need to be resolved as per the BMT survey report. There is also the major issue of getting a certification authority to class the ship as seaworthy and able to take passengers.

The current design of the ship means that everything operates on steam produced by an oil-fired Scotch boiler. This hasn't been fired in many years and currently has no boiler safety certificate. It has been inspected and the condition indicates minimal corrosion so it could be possible to eventually use it to produce steam.

One concern is the environmental impact of operating the ship with its oil-fired boiler. Although steam has no environmental impact the exhaust from the fired boiler which did use heavy oil can be significant. There is also the problem that because of the volume of water in the boiler it can take a significant amount of energy and time (days) to heat it up to produce the 180psig normal steam pressure. When the ship was in operation oil fuel was the standard fuel and readily available. As the ship was on standby duty the boiler was kept running day and night.

3. Factors to Consider

So how can we operate the ship safely, with minimal environmental impact, be commercially viable and give people the experience of a ship operating on steam?

There are a number of possible ways to do this but with a varying factors, here are some of them:

- Safety
- Installation cost
- Ease of modification
- Running costs
- Effect on ship stability
- Effect on ship manoeuvrability
- Risk as to whether it will work
- Ease of final operation
- Effect on the ship's heritage and visitor experience
- Environmental emissions
- Cruising range
- Fuel availability

Some of these factors are more important than others. For example safety is top importance, nobody will travel on the ship or fund it if it is unsafe and may sink or explode.

4. Possible Solutions

So what ideas are there to try and satisfy all these criteria? A chart has been produced with some possible engineering solutions. These have been scored against the above criteria with each criteria having a weighting from 1 to 10. 1 being unimportant, 10 being most important. A score of 1 to 3 is then given for each suggestion in each criteria. The scores multiplied by the criteria weighting are then added up to give a total score for the suggestion.

Below is a summary of each suggestion, there are probably others.

4.1. Replace Boiler with More Efficient Boiler Fired with Fuel Oil.

The existing boiler is a standard 1946 Scotch boiler with fired tubes. It takes a lot of heating up and is very inefficient. Only about 7% of the energy in the fuel is converted to power. The boiler could be replaced with a modern lower volume,

better insulated boiler which is more efficient. The main issue with this is the removal and replacement of the existing boiler which could be difficult. Emissions would be reduced but not drastically.

4.2. Replace Existing Boiler with a Hybrid Boiler

Boilers are available that can use electricity, gas or oil or a combination of these. A possible solution is to use shore supplied (renewable) electricity to preheat the boiler up to pressure then use oil for cruising. As per the above item the installation would be difficult and a shore electrical connection would be required but overall emissions would be reduced by the usage of renewable electricity for some of the time.

4.3. Use an Electric Motor Powered by a Diesel Generator

Many modern ships use variable speed electric motor drives. *Freshspring* could install a diesel generator in one of the empty water tanks and drive the propeller via an electric motor located amidships or in the stern area. Installation cost would be high. Would people want to travel on a steamship with no steam and the engine stationary and a noisy diesel rumbling? Remove the Steam Engine and Boiler and fit an Electric Motor and Diesel Generator.

It would be relatively easy to take out the steam engine and replace with an electric motor on the existing prop shaft. The boiler could also be removed and a diesel generator installed in its place. While this would be a fairly well proven arrangement it absolutely ruins the ship's heritage and should be dismissed.

4.4. Electric Motor Powered By Batteries

The trend is for cars to be powered by batteries so why not a ship? Batteries could be installed in the empty water tank spaces with an electric motor say at the stern. Batteries could be charged from a shore supply. The cruising range would probably be very limited. The current ship's engine is rated at 450hp (335kW).

A typical electric car battery is rated at 70kWh. So 5 fully charged car batteries would give us maybe one hour operation at sea with no margin. Although environmentally friendly if charged using renewable electric and relatively easy to engineer it would not give paying passengers the steam ship experience.

A further development of this system could be to fit a new small electric powered steam boiler also running off batteries when sailing to provide enough steam to turn the steam engine. Passengers would see the steam engine working but most of the drive would be by the efficient electric motor.

4.5. Replace Some Boiler Tubes With Electric Heater Elements.

It currently takes days to heat up the existing boiler to operating temperature and pressure. Boilers are normally designed with an excess of tubes to allow for leakage and subsequent plugging. The suggestion is to replace a number of tubes with electric elements fed from a renewable electric shore supply and used for preheating the boiler. A typical 18kW element is readily available on-line and is about £374. Maybe 5 or 6 elements (equivalent to one burner) would be enough to raise steam. These could easily be fed from a shore supply and be switched using simple switchgear. Modifications to the boiler would be relatively simple and although there may be some impact on the boiler when operated on fuel oil this may be marginal. However, special elements may be required with remote heads to cater for the high temperature and pressure. The existing steam system would be retained with minimal effect on the ship's heritage. Further study required especially as regards boiler certification. See also 4.16

4.6. Fit Electric Heater Elements in the Base of the Boiler

There are inspection panels in the bottom of the boiler. Similar to the suggestion above elements could be located in or through these panels in the bottom of the boiler making installation simple and only minor changes to the boiler. Elements may need to be specially made. Further study required.

4.7. Use an Electric Powered Hot Oil System to Preheat the Boiler.

In exchangers for flammable liquids where electric heaters cannot be used to directly heat a fluid, to prevent overheating and hot spots a hot oil system is used. This comprises of a remote heater either electric or gas fired and circulation of thermal oil through a system to a heat exchanger to heat a fluid. A similar system could be used here by connecting a number of boiler tubes up to a hot oil system located in an empty water tank and powered by shore electricity. A reduction in emissions as preheat is by renewable electric power.

4.8. An Electric Powered Hot Oil System with Dedicated Exchanger

A variation on the above hot oil system could be to use a separate hot oil to water exchanger. This could be located in the water circuit of the boiler. Relatively simple to engineer, but more costly it may mean no changes to the existing boiler. This would be used with an onshore electric supply for boiler preheat. Limited steam could be raised for in port public steam days.

4.9. Keep the Existing System but Use a More Environmentally Friendly Fuel

The aircraft industry is developing aviation fuel that is a bio-fuel or made from the breakdown of recycled plastics. One bio-fuel made from plant waste is called Sustainable Aviation Fuel (SAF). The existing boiler burner with minor modification could use this fuel. Some disadvantages are it will still create emissions, but much less than the current very low sulphur fuel oil (VLSFO) and it will be about 3 times more expensive than VLSFO and has limited availability.

4.10. Use LPG as a Fuel

LPG produces less emissions than fuel oil and burners could be made to replace the existing ones. Using LPG would require the installation of a heavy pressurised

tank, changes to piping and electrics and safety control systems. There may also be a need for a vapouriser exchanger to change the liquid to gas to ensure there is enough gas to feed the burners at full load. There are significant safety issues in the use of LPG especially in confined spaces as it is heavier than air. Gas detectors in a number of locations would be needed with appropriate interlocked ventilation.

4.11. Use Hydrogen as a Fuel

The biggest advantage of this is there would be zero emissions at the burners, only water vapour. However, this has the same risks as using LPG and more. The gas is lighter than air and more sophisticated detectors and ventilation would be required. Hydrogen burns without a visible flame so the burner system is more complex. The storage tank would need to be at a very high pressure. The amount of energy in hydrogen is less than a carbon based fuel so it is likely the cruising range will be limited. Hydrogen is not yet readily available in large quantities.

Burning hydrogen in the existing boiler would not be very efficient and hence costly. Per kW Green Hydrogen (made using renewable power) is about 8 times the price of VLSFO. An alternative is to use fuel cells that convert the hydrogen efficiently to electric with no emissions. The electric would power a motor. This is a new technology, requires hydrogen to be stored in 7,000 barg (over 1,000 psig) tanks, it is very costly to do this. There would also be major problems with certification.

4.12. Fit Thruster Pods underneath the Ship Powered by a Diesel Generator

It may be possible to fit a couple of thruster pods underneath the ship to provide thrust and steering however this would mean major design work, modifications and cost.

4.13. Use Wood Pellets as Fuel

When the ship was built it used coal as fuel. It may be possible to convert the boilers to burn wood pellets which some claim are environmentally friendly and renewable. Wood pellets (considered environmentally friendly!) are used in the Drax power station as fuel and they can also sell them to other users. This would need a study into the storage and feed system for the pellets plus ash removal.

4.14. Use a Gearbox allowing Dual drive of Diesel Engine and Steam Engine

Dual drive gearboxes are available. It may be possible to use one of these gearboxes and a diesel engine so that normal motive power is via the diesel engine but for special occasions the steam engine could be used. This is a major modification and would only be of benefit if short cruises are required and people are not interested in seeing the steam engine work.

4.15. Replace all Boiler tubes with Electric Elements and use EV batteries and Shore supply

It may be relatively easy to replace all the fire tubes in the boiler with electric heater elements controlled by using simple switchgear. The power could be supplied initially from an onshore hook up to get the boiler up to temperature then by electric vehicle batteries located in the current empty water tanks. A typical EV battery would supply 70 kWh so a number of these would need to be chained together to provide enough power for a reasonable range. A diesel generator could also be fitted in one of the tanks as an emergency power supply. EV batteries are readily available along with the charging systems and are coming down in cost. The major disadvantage of this system is the very limited range because the existing boiler is very inefficient (only about 7%). Major advantages are zero emissions (if using renewable power), it retains the existing steam system and heritage.

5. How and When Could These Be Implemented?

Wouldn't it be nice if a multi-millionaire came along and offered to pay for the renovation and ongoing running costs, unfortunately this is unlikely?

The ship could continue as a static exhibition / museum with no working equipment but good displays and interactive devices. It could also be a static display but have special days where the ship and engine could be seen steamed although not sailing. If the engine could be steamed but as now not connected to the prop shaft people could see it running along with some other equipment. Enthusiasts may pay for the privilege of helping getting it into steam and operating equipment and the engine even though the ship isn't sailing.

The experience of operating the equipment while not sailing would give the opportunity to demonstrate the equipment works, is reliable and train future operators for when we get it to sea. This operation and training may help with the regulators when we come to apply for a passenger carrying cruising licence. The cost for getting the ship into steam but not cruising will be far less than going for a full sailing ship. Modifications to enable it to sail could be ongoing as funds become available.

If this looks attractive a few of the solutions above lend themselves to this. For instance raising steam using a shore electric supply in a new efficient boiler may be a possibility. If only enough steam is required to run the engine unloaded the full engine rated steam capacity will not be required, in fact probably not very much.

6. The Analysis of Possible Solutions.

The solutions listed above have been put into a table (see next page) and ranked as described above, there could be many more options not considered, suggestions welcome.

The top ranked solutions are:

1. Use Sustainable Aviation Fuel (SAF) in the existing boiler. This comes out top as it is easy and low cost to implement and doesn't affect the ship's

heritage. Per kW at the moment this is cheaper than renewable electricity. It's a renewable fuel but does still produce emissions. However, it's not the most efficient system as it uses the existing boiler.

2. Second is to fit and electric motor in the ship aft and power the ship with batteries charged by renewable electricity. There are no emissions. If funds are available I would like to see the option of a new electric boiler added so the steam engine could also be operated in parallel. Without this we don't have a steamship and the number of visitors will be limited.

3. In third place is the option to replace the existing boiler with a more efficient one firing on VLSFO or diesel. The paddle steamer Waverley did this and now runs on diesel fired boilers. This still however produces significant emissions.

The ratings are only my opinion. It would be good to get feedback on the options, criteria and relative weightings used. What is important to one person may not be as important to another. Most things are possible with money and time, the former being the most important.

		Install Cost	Ease of Mod	Running Cost	Safety	Stability	Manouverability	Proven	Ease of Operation	Effect on Heritage	Emissions	Cruising Range	Fuel Availability		
	Weighting 1-10	8	8	8	10	7	5	7	5	10	8	5	5		
		1 - High 2- Medium 3 - Low	1 - Hard 2 - Medium 3 - Easy	1 - Higher 2 - Same 3 - Lower	1 - Less Safe 2 - Same 3 - Safer	1 - Less stable 2 - No change 3 - More stable	1 - Less 2 - Same 3 - More	1 - Unproven 2 - Could be proven 3 - Proven technigy	1 - Detailed training reqd 2 - Minor training reqd 3 - Easy to operate	1 - Major change 2 - Minor change 3 - No change	1 - Lower 2 - Very low 3 - None	1- Shorter range 2 - As existing 3 - Long range	1 - Hard to get and costly 2 - Hard to get 3 - Readily available	Score	Rank
1	Replace boiler with more efficient boiler using fuel oil	1	1	3	2	2	2	3	3	2	1	2	3	173	3
2	Replace with hybrid boiler using oil and electric	1	1	1	2	2	2	2	2	2	1	2	3	145	12
3	Electric motor drive with diesel generator	1	1	1	3	1	2	3	3	1	1	2	3	150	10
4	Diesel engine drive through a gearbox (remove steam engine)	1	1	1	3	1	2	3	3	1	1	3	3	155	9
5a	Electric motor powered by rechargeable batteries (motor in stern driven via gearbox)	1	1	1	3	2	3	2	3	2	3	1	3	176	2
5b	Electric motor powered by rechargeable batteries plus small electric boiler for steam engine	1	1	1	3	2	3	2	2	2	3	1	3	171	4
6	Replace some boiler tubes with electric heater elements for preheat	2	2	1	2	2	2	2	3	2	1	2	2	161	6
7	Fit electric heater elements in base of boiler for preheat use	2	2	1	2	2	2	2	3	2	1	2	2	161	6
8	Use an electric powered hot oil circuit with some of the existing boiler tubes	1	1	1	2	2	2	1	2	2	1	1	2	128	16
9	Use an electric powered hot oil circuit with new exchanger in bottom of boiler or water circuit	2	2	1	2	2	2	1	2	2	1	1	2	144	13
10	Use SAF Aviation fuel (a bio fuel)	3	3	1	2	2	2	2	3	3	1	2	1	182	1
11	Use LPG as fuel, fit LPG tank and vaporiser	2	1	1	1	2	2	2	3	2	1	2	3	148	11
12a	Use hydrogen as fuel. Fit H2 tank. Burn in the boiler	2	1	1	1	2	2	1	2	2	3	1	1	137	15
12b	Use hydrogen as fuel. Fit H2 tank. Use a fuel cell and electric motor	1	1	1	1	2	3	1	1	1	3	1	1	119	17
13	Fit thruster pods powered by diesel generator	1	1	3	3	1	3	1	3	1	1	2	3	157	8
14	Use wood pellets as fuel	2	2	1	2	2	2	1	2	2	1	1	1	139	14
15	Dual drive of steam engine and diesel engine via gearbox	1	1	1	2	1	2	1	2	1	1	2	2	116	18
16	Replace all boiler tubes with electric elements & use EV batteries & shore supply	1	1	1	3	2	2	2	3	2	3	1	3	171	4

Rock the Torridge

Lou Boulter

An orderly queue formed on Bideford Quay. There was a buzz of excitement, it was a balmy evening, however most people clutched a raincoat as they waited to board the MS *Oldenburg*.

Her usual sailings are scheduled trips to the island of Lundy, but on this evening, Sunday 7th July, she would be the venue for a charity cruise organised by the Bideford Bike Show Team featuring live music from the fantastic '9 Yards' with a fully licensed bar on board… Rock the Torridge.

With the skies still blue we boarded *Oldenburg*; the band had set up, passengers selected seating, lines were thrown on board to the smartly dressed crew, the band kicked off with their first number and we set off slowly down river towards Appledore.

A party atmosphere soon evolved, dancing and singing along to the strains of Tina Turner, raincoats forgotten.

As we crossed 'The Bar' (not to be confused with the bar below deck, but in fact the narrow passage out of the estuary) the captain enhanced the festive feel by suddenly increasing speed as we entered the Bristol Channel. Without going too far, he then made a wide turn heading back to the river, cruising a little way into The Taw then slowly turning once more back to the quay in Bideford.

This was a joyous well organised, successful event; however, extremely special for the Freshspring Trust as along with Children's Hospice South West, the Freshspring Trust was one of the chosen charities to benefit and Chairman John Puddy was later presented with a cheque for a magnificent £700.

Children's Hospice South West and Steamship Freshspring Trust.

Leaving a legacy to the SS Freshspring Trust

The Steamship Freshspring Trust has benefited greatly from the generosity of its members and friends who have left or given money to the Trust.
Legacies provide very necessary financial support in helping the Trust to meet its stated objectives of preserving the past and inspiring knowledge for the future.
If you would like to think of giving the SS Freshspring Trust a legacy, it could not be easier: The following codicil can be completed by you, witnessed, and kept with your Will.

CODICIL
I (full name).....

of (full address).....,.....

.....,.....
declare this to be the (1st/2nd/other.....) codicil to my Will dated.....

I give, free of Inheritance Tax, the sum of

£..... (.....pounds)
to the SS Freshspring Trust of Little Cleave, Lower Cleave, Northam, Devon EX39 2RH (Registered Charity Number 1151907), absolutely for its general charitable purposes.
In all other respects I confirm my said Will.

Testator's signature:.....Date.....

Signed in the presence of:

First witness	Second Witness
Signature	Signature
.....	.....
Full name	Full name
.....	.....
Address	Address
.....	.....
.....	.....
Occupation	Occupation
.....	.....

Note: The witnesses must not be your executor, your executor's spouse or a beneficiary of your Will.

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