CNOA
Chatham Naval Officers' Association

The CNOA Newsletter for September 2020

Email: contact@cnoa.org.uk
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Contents

NA Sophie Levy © Crown Copyright MoD Navy 2020

1700 NAS onboard RFA ARGUS

AB Sophie Levy is part of 1700 Naval Air Squadron, who are currently deployed on RFA ARGUS in the Caribbean.

Sophie is a Naval Airman (Aircraft Handler). As part of her role, she is trained to operate the NMATT, a tractor for moving helicopters around the flight deck. She is also ready as a firesuitman, the first on scene to respond in the event of a crash on deck or a fire near the aircraft.

Here her team is moving a Merlin Mk4 helicopter on the flight deck of RFA ARGUS.

1700 Naval Air Squadron is deployed to support flying that will be needed to offer humanitarian assistance in the coming hurricane season.

Chairman's Flag Hoist:

Dear Fellow members,

I hope you are all keeping well; it looks like we may face further restrictions on movement over the next few weeks to try and avoid a second wave.

We are waiting to see if we will be allowed by the Army to start meeting face-to-face, but even if we are, I am sure many of you would still want to avoid social contact. As such we tested a virtual meeting via Zoom in July, with a lecture on Concorde given by Guy Bartlett. It was a delight to see some of our members and, as such, we will be holding more virtual meetings, which I encourage you to try.

We continue to maintain the monthly newsletter with a range of articles to keep those restricted in movement entertained and we would be delighted to receive any contributions.

On 15 August the nation marks the 75th anniversary of VJ Day; whilst VE Day marked the end of the war in Europe, thousands of military personnel were involved in bitter fighting in the Far East, including an uncle of mine who was serving with the Royal Hampshire Regiment. The Fourteenth Army, made up of British and Commonwealth forces, was one of the most diverse in history with over 40 languages being used.

Last month's newsletter included two articles on Exercise Dynamic Mongoose off the coast of Iceland. HMS Kent joined NATO warships on this cold-water submarine exercise, joined by HMS Westminster and RAF P-8A Poseidon aircraft and, below the water, HMS Trenchant. The combination made this the largest UK anti-submarine warfare input for many years. There has been an increase in submarine activity in the Atlantic in the past few years; meanwhile, HMS Kent is earmarked to accompany HMS Queen Elizabeth on her maiden deployment next year.

Technology continues to move at pace across the UK military, with the Royal Marines, with Army Commandos, forming the Vanguard Strike Company to test equipment, structural and tactical experimentation; meanwhile the Royal Navy is testing the first crewless boat and heavy lift drone.

Yours Aye,

Jon

Jon Vanns
Lt Cdr (SCC) RNR
CNOA Chairman

2020 Future Speakers & Events: Subject to revision

11 September: Guy Bartlett – Stealth Aircraft, State of Art War Machines
9 October: Vanessa Nicholls – Dementia Friends
23 October: Trafalgar Night Dinner – **UPDATE**

After much deliberation, the Committee has regretfully unanimously decided, under the current circumstances, to cancel the above event for this year.

With restrictions on large gatherings changing daily and RSME's own new, very strict regulations on entering the barracks, it was felt that a decision should be made sooner rather than later.

We are making plans for members who have access to either the internet or a smart phone to hold a virtual meeting to propose the 'Immortal Memory' toast; details of this will be forthcoming shortly.

13 November: Derek Goodwin – Reflections of Marine Engineering Sales
11 December: Cdre Bryant – President's Address
16 January 2021: New Year's Luncheon, Bearsted Golf Club

Additional events will be included as details become available.

As always, we are most grateful to those who send items for this Newsletter. **All such contributions by the 5th of each month please.** Please email contact@cnoa.org.uk with articles, news items and photographs.

Derek Ireland (Hon. Secretary) and Suzanne Wood (Newsletter Editor)

Could other CNOA members also provide short presentations based on their own service-related experiences for the CNOA meetings? **Yes, of course they could!** Please let Jon Vanns know or email contact@cnoa.org.uk

Annual subscriptions
Important reminder from the Treasurer

Members are reminded to please update their Standing Order instruction to reflect the current membership fee of £20 per year.

Currently we are £345 behind in income due to members still paying £15. This in turn reduces our cash flow to assist in organising functions (when we are able to meet again) and the amount that we can donate to our chosen charities.

There is a Standing Order form at the end of this newsletter. Please use this method of payment, as we will find it increasingly difficult to process cash and cheques in the future.

Memories of Gordon Warren
By Cdre Barry Bryant

Incredibly sad to hear the news about Gordon – I well remember him and June inviting me to supper in Limehouse, where I was 'interviewed' by Derek the Elder and Roy as to whether I might consider becoming President of CNOA. Another fine mess he got me into!

In later years he helped raise money for Seafarers UK during his Saga cruises, and we had occasional telephone catch-ups when he was back in Ramsgate.

We'll raise a glass to him when appropriate.

HMS Enterprise to deploy to Beirut in UK support to Lebanon

From MOD Navy

Royal Navy survey ship HMS Enterprise will sail to Lebanon as part of a wide-ranging package of military support made available on 6 August by Defence Secretary Ben Wallace.

The ship will travel to Lebanon to assess the damage of Beirut's port, following the explosion on Tuesday 4 August, and help return it to normal operations. The deployment of HMS Enterprise will complement an immediate package of military and civilian support and £5m worth of aid.

HMS Enterprise. © Crown Copyright MoD Navy 2020

Defence Secretary Ben Wallace said: "At the request of the Lebanese Government I have authorised the sending of HMS Enterprise to help survey the Port of Beirut, assessing the damage and supporting Lebanon rebuild this vital piece of national infrastructure.

"We have a close and enduring friendship with the Lebanese people; our military is ready to support them in their time of need."

The Port of Beirut is crucially important for the economic stability of Lebanon and receives the majority of the country's imports.

HMS Enterprise is currently docked in Limassol and will make her way to Lebanon in due course. The UK is working with the Lebanese authorities to determine the optimum time for the ship's deployment.

The UK armed forces are also deploying a small team to the UK Embassy in Beirut to help identify requirements and coordinate the package of wider support to the Lebanese armed forces. This includes the offer of tailored medical support, military air transport assistance and engineering and communications capabilities.

The UK's Chief of Defence Staff, General Sir Nick Carter, called General Joseph Aoun, Commander of Lebanon's Armed Forces, on Tuesday evening to offer his condolences.

HMS Enterprise is a survey vessel, manned by experts in examining and mapping the seafloor. She also acts as a floating base for mine countermeasures activities.

Merchant Navy Day
From Seafarers UK

Since 2000, Merchant Navy Day on 3rd September has honoured the brave men and women who kept our 'island nation' afloat during both World Wars, and celebrated our dependence on modern day merchant seafarers, who are responsible for over 90% of the UK's imports, including almost half the food we eat, plenty of the fuel we rely on and virtually all the products and goods we tend to take for granted!

Seafarers UK runs annual campaigns to raise awareness of our island nation's ongoing dependence on professional seafarers, all those men and women who work at sea, wherever they may be on the world's oceans.

Every year Seafarers UK promotes the Red Ensign, the UK Merchant Navy's official flag, to be flown on 3rd September on civic buildings and landmark flagpoles. Parish, community, town, city, district and borough councils were all invited to take part, along with higher-tier local authorities and governments.

Across the UK there are many locations where the Red Ensign can be freely flown ashore: civic centres, town halls, public libraries, village greens, churches, sports venues, historic buildings, tourist attractions, ports, etc. In Scotland, Merchant Navy Day is included on the government's national list of flag-flying days.

Last year hundreds of local flag-hoisting ceremonies were organised, involving VIPs, civic dignitaries, Merchant Navy veterans, naval cadets, etc. A message of support from HRH The Earl of Wessex & Forfar was read out at many participating locations 'to remember the sacrifices, salute the courage and support the future of the often-unsung personnel of our Merchant Navy.'

As a result of campaigning by Seafarers UK and the active participation of Merchant Navy Association members and other retired Merchant Navy seamen, a Red Ensign was flown ashore at more than one thousand places around the UK.

To get involved on or around Merchant Navy Day, 3rd September 2020, please complete our online registration form. Note: this is a free service provided by Seafarers UK but donations to the charity's Merchant Navy Fund are always appreciated.

Dasher and Pursuer take over in Gibraltar as £10m is spent on new boats for the Rock
From MOD Navy

Her Majesty's Ships Dasher and Pursuer are the new guardians of the Rock, assuming responsibility for safeguarding its waters.

The P2000 patrol boats took over as the backbone of the Royal Navy Gibraltar Squadron from 24 July 2020 – as the MOD announced a £10m investment in two new fast craft for the waters around the British territory.

The crews of Dasher and Pursuer have spent five weeks learning how to handle, operate and maintain the Archer-class craft, which are far larger and more complex than HMS Sabre and Scimitar that have protected Gibraltar's waters for the past 17 years.

Royal Navy Gibraltar Squadron at sea. © Crown Copyright MoD Navy 2020

The latter are earmarked for replacement (they spent a decade in Northern Ireland before being transferred to the Mediterranean), with the two P2000s plugging the gap until the new boats arrive. Those will come, Whitehall announced, in the winter/spring of 2021-22 after it placed a £9.9m order with Merseyside-based Marine Specialised Technology.

For that the RN will not merely get two 19-metre boats – capable of speeds up to 40kts and armed with three machine-guns, carrying a crew of six plus up to half a dozen passengers – but four years of support on the Rock as well. That is for the future. For now, the right of the line is held by Dasher and Pursuer, which previously served Bristol and Glasgow universities, giving students a flavour of life in the Royal Navy, as well as supporting front-line training and operations.

They offer much more than their predecessors: the ability to sail in worse seas, improved quarters (heads, shower, galley, mess) and a greater range if required; Sabre and Scimitar rarely left Gibraltar waters, and if they did it was normally to visit Tangier, just 35 miles away across the Strait.

HMS Sabre & HMS Pursuer in Gibraltar © Crown Copyright MoD Navy 2020

Lt Vyrnwy Rainbird and her team have shown Lt James Young and his crew the ropes on Pursuer, whilst Lt Cameron Walters did the same for the Gibraltar Squadron CO Lt Cdr Lloyd Cardy and his crew on Dasher.

"The arrival of the two P2000s to the Squadron is of great benefit to our personnel and the mission," Lt Cdr Cardy said.

“We are suitably equipped to counter the challenges of the local environmental conditions and the added size of the craft offers an increase to our physical presence on the water. We are very proud to welcome the two units to the Squadron as an interim replacement until the newly-designed craft arrive.”

As for Scimitar and Sabre, no longer operational, they are being returned to the UK for the first time since 2003.

Virtual Lecture: Concorde, an icon of the sky
Review by Lt Cdr Jon Vanns

On Wednesday 22 July, Chatham Naval Officers’ Association held a virtual lecture across the video conferencing platform Zoom, a first for the association.

The lecture was delivered by Guy Bartlett, who had also never before delivered a virtual lecture but turned this around for us in ten days. Guy is due to talk to us again in September.

Guy’s story began with the birth of Concorde and its first flights, with both BA and Air France flights taking off at exactly the same time. He showed some footage of the cockpit in flight (demonstrating the hundreds of levers, dials and buttons) and of the plane from take-off to traveling at supersonic speeds.

He pointed out that the sonic boom was not heard in the plane as it was travelling faster than the speed of sound, and in the clip the plane was travelling faster than a bullet! Guy shared his personal experience of flying in Concorde on a chartered flight, to the Bay of Biscay and home again.

Finally, he talked about Concorde’s last flight – after the fire on an Air France plane and then lower passenger numbers post-9/11 – into Filton airfield near Bristol.

We had fifteen members sign-in to the meeting and it was delightful to see old friends. It is our intention to run more virtual lectures until we can start meeting again; please watch out for details from our Hon Sec.

The next virtual lecture (which will pre-date receipt of this newsletter) is titled, “Richborough – the Secret Port” and will be delivered by Dr Martin Watts at 1930 on 12 August. The lecture will tell the story of the first Ro-Ro in operation in 1918, which was vital to the western front and built in secret.

Hair today…
From Lt Cdr Steve Small

Three locks of Admiral Lord Nelson’s hair are due to go under the hammer at an auction later this month. Auctioneers Keys, in Aylsham, Norfolk, said the rare items were part of a Nelson collection belonging to the late historian Ron Fiske. Mr Fiske was an inaugural member of the Nelson Society and its chairman for nine years.

David Broom, from Keys, said there was interest in Nelson “despite recent controversy about historical figures”.

The locks are kept in paper packets, with the first packet inscribed in ink, “The hair of Horatio Lord Nelson, given me by Horatia, 22 May 1818”. The second packet, which contains two locks, says, “The great Lord Nelson hair cut off when he left off tying his hair”.

The pre-sale estimate of the three locks of hair is £2,000 to £3,000.

Horatia was, of course, the daughter of Admiral Lord Nelson and Lady Emma Hamilton. There is a local connection to Kent in that Horatia married a clergyman and for many years her husband had the living at Tenterden.

Chatham Historic Dockyard Trust appoints new Chief Executive

From Chatham Historic Dockyard Trust

Chatham Historic Dockyard Trust is pleased to announce the appointment of Richard Morsley as its new Chief Executive.

Richard succeeds Bill Ferris OBE DL, who has held the position since 2000.

The result of a comprehensive interview process, Richard has worked for the Trust since September 2019, most recently holding the position of Special Projects Manager and Assistant Chief Executive. Prior to this, he was Director at Betteshanger Parks. He also held the position of Deputy Director at Turner Contemporary and is a Trustee of Open School East, Margate.

Richard said: "I am delighted and feel incredibly privileged to have been selected to take forward the ambitions of the Trust. Navigating the last four months of the unplanned Covid-19 crisis has been difficult and managing the long-term future of the Trust and The Historic Dockyard into a somewhat uncharted future will certainly be demanding. I look forward to working with the Board of Trustees, our highly committed, professional team and our dedicated volunteers as we approach the future with confidence.

"The Historic Dockyard is a unique place: a world-class heritage environment and Museum, a thriving business community, place of learning, and residential community. The strong business model developed over many years provides a great foundation to rebuild our ambitions. I am thrilled to be taking on the role of Chief Executive at such an important moment in this organisation's development."

Admiral Sir Trevor Soar, Chairman, Chatham Historic Dockyard Trust, said: "The appointment process for our new Chief Executive commenced earlier this year but, due to the current Covid-19 crisis, the Trustees and I felt it appropriate to suspend this until the situation became clearer. Although the pandemic impacts are ongoing, the immediate crisis has been negotiated and we believe that we understand the risks, uncertainties and potential longer-term opportunities better now. Although we continue to find ourselves in exceptional circumstances, we have a number of medium- to long-term plans in place to make this an appropriate time to enable new leadership to take these forward.

"We very much look forward to working with Richard. We believe that he has exactly the right set of skills to see the Trust and the Historic Dockyard through the next stage of its journey as an exemplar of well-managed heritage which lies at the heart of the place and the community, as well as a significant economic powerhouse for the recovery phase ahead. Richard will bring energy, new thinking and experience to lead the team through the challenges and potential opportunities ahead."

Sir Trevor continued: "I would also like to take this opportunity to thank Bill for his long service to the Trust. Bill has achieved much during his career and helped build the multi-award-winning Trust we are so proud of today. Through spearheading his "preservation through re-use" strategy, Bill has taken the Trust from a charity facing significant financial challenges to one in a more resilient position despite the impacts of Covid-19. We are grateful to Bill for staying longer than anticipated, to lead the team through the crisis period. We wish him well in his retirement."

After nineteen years at the helm, Bill Ferris will retire on 31 August and Richard Morsley will take up the position on 1 September.

Could India blockade Chinese trade in the Indian Ocean?

From The Maritime Executive

The clash in June between Indian and Chinese troops in Ladakh was the most significant conflict between the two countries since 1967. Despite signs of a partial tactical pullback in some places, there is considerable risk of further confrontations and even escalation along the disputed border. Some have been urging the Indian government to respond to China's moves in the Himalayas by placing pressure on Beijing in the Indian Ocean. What are India's options and how likely is it to take such actions?

File image courtesy Indian Navy

The Indian Ocean holds a particular place in the India-China strategic relationship. In almost every dimension, whether it be economic, nuclear or the conventional strategic balance along the Line of Actual Control in the Himalayas, India is probably at a considerable strategic disadvantage against China. Only in the Indian Ocean, which includes China's vital energy routes from the Persian Gulf and Africa, does India have the upper hand.

This has important implications for the strategy dynamic. Decades ago, prominent US sinologist John Garver argued that in the event of a conflict between the two countries, India might be tempted to escalate from the land dimension, where it may suffer reverses, to the maritime dimension, where it enjoys substantial advantages, and employ those advantages to restrict China's vital Indian Ocean trade.

In strategic jargon, the Indian Ocean represents "interior lines" for India – where the Indian Navy is close to its own bases and logistics – and "exterior lines" for China, where its navy is operating with limited logistical support, away from home. Strategists tell us that you should meet your adversary in your own interior lines and their exterior lines. (That is the reason the Indian Navy is far from keen to get into any confrontation with China in the South China Sea.)

This vulnerability gives the maritime dimension of the relationship a special significance. For example, the 2012 Non-Alignment 2.0 report by leading Indian strategic thinkers advocates that India should leverage "potential opportunities that flow from peninsular India's location in the Indian Ocean" as part of an asymmetric strategy towards China.

Sailors aboard aircraft carrier USS Carl Vinson greet the Indian navy guided-missile destroyer INS Ranvijay during Exercise Malabar 2012 (US Navy/Flickr)

These considerations have driven the Indian Navy to adopt a strategy of building its naval capabilities near the Indian Ocean chokepoints, particularly around the Malacca Strait, to create an implicit threat of interdiction of China's sea lines of communication. The Indian navy considers that its threats of blockade made against Pakistan in several previous conflicts had a significant impact.

Indeed, in the aftermath of the Ladakh clashes in June, the Indian Navy was placed in a heightened state of alert and reportedly deployed additional ships to sea, although it is not clear precisely where. In recent weeks, Indian naval commentators have suggested that, while India would have a difficult time imposing a blockade on Chinese shipping, it should nevertheless consider interdicting Chinese tankers as they pass near India's Andaman and Nicobar Islands, or otherwise deter, delay or divert shipping traffic to and from China.

Others have also noted the potential for Washington to move its carrier USS Theodore Roosevelt into the Malacca Straits/Bay of Bengal area to deter any serious escalation of

conflict in the Himalayas (which, incidentally, would be an interesting replay of President John F. Kennedy's decision to send the carrier USS Kitty Hawk to support India during the 1962 Sino-Indian war).

This has not gone unnoticed in Beijing. According to China's Global Times, the People's Liberation Army (PLA) Navy's Southern Theatre Command (which has responsibility for China's operations in the Indian Ocean) responded with naval drills in the South China Sea on 18 June.

Putting aside all this sabre-rattling, what are the realistic options for India (or others) to pressure China's trading routes in the Indian Ocean?

In fact, some naval analysts are deeply sceptical of the ability of any navy to impose a distant blockade of China in the Indian Ocean. Short of inspecting every ship – which would be a huge task – how could a blockade identify those that are actually headed to Chinese ports? What is to stop ships being rerouted in transit, a common event even in normal times?

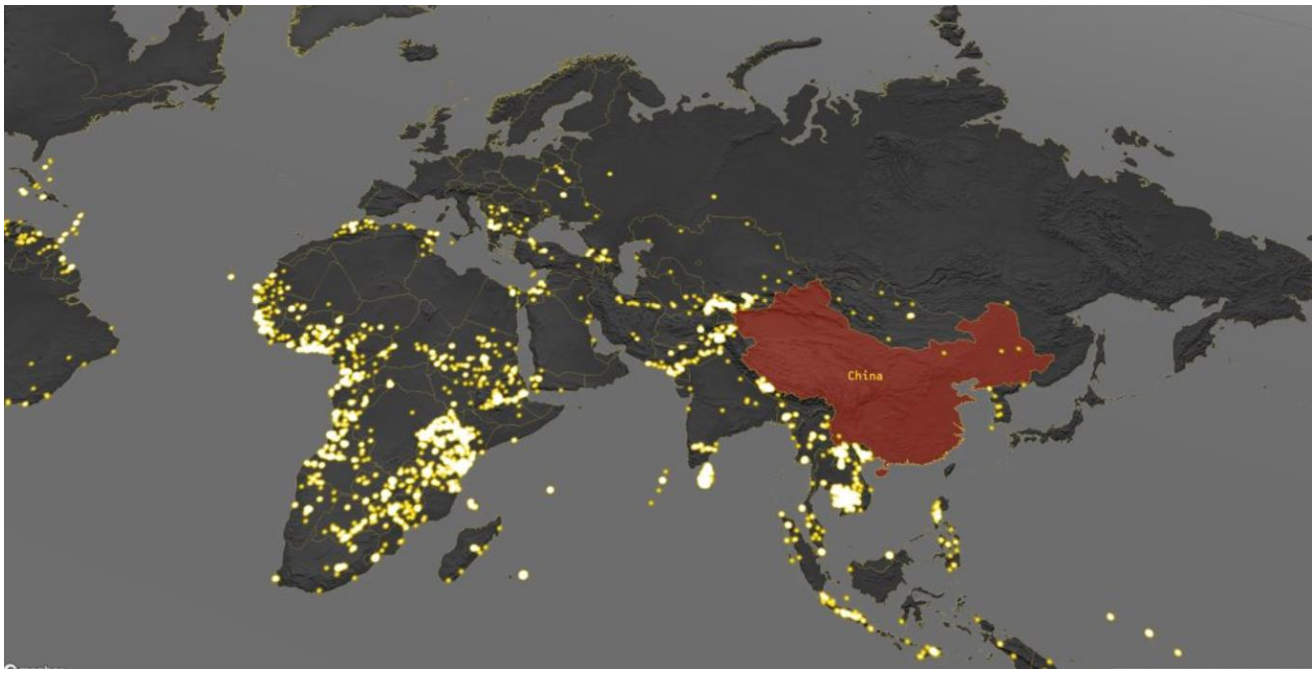
Even if a blockade could be successfully imposed, could China obtain sufficient energy supplies from other sources (which currently includes an “epic” 73 million barrels of oil reserves floating off the coast of China)? Just as importantly, what is to stop China retaliating with its own blockade or interdictions?

Even more important than these practical considerations, the political and diplomatic costs to India would be enormous. Short of all-out war, or perhaps an Indian Ocean equivalent of the Cuban Missile crisis, any attempt to interfere with trade would be subject to massive pushback from countries around the world – including from India’s most important strategic partners.

In short, the Indian Navy might (or might not) have the capability to block Chinese trade through the Indian Ocean, but would Beijing take the threat seriously?

The contributor, Dr David Brewster, is with the National Security College at the Australian National University, where he specializes in South Asian and Indian Ocean strategic affairs. He is also a Distinguished Research Fellow with the Australia India Institute.

Editor’s note: I recently saw the chart below, which demonstrates China’s Belt and Road Initiative investment activity in Asia, Africa and beyond. I thought it a fitting addition to the above article, showing how important Chinese investment is to many countries that enable ready access to the Indian Ocean.



Chinese investment activity. Data source: www.aiddata.org

How tide predictions made D-Day possible
By NOAA National Ocean Service

D-Day, codenamed Operation Neptune, was the largest amphibious landing not only in World War II, but in history. It marked the start of the liberation of German-occupied France (and later western Europe) and laid the foundations of the Allied victory on the Western Front.

But what most people do not know is that ocean tides played a key role in this historic day. In this interview – transcribed and adapted from an edition of NOAA's Ocean Podcast series – NOAA managing editor Troy Kitch spoke with Greg Dusek, a physical oceanographer and senior scientist at the Center for Operational Oceanographic Products and Services, about the critical role that tide predictions played in the landings.

Kitch: D-Day, codenamed Operation Neptune, was a massive, complex amphibious landing along the Normandy coast of France that began on June 6, 1944. Within ten days there

were half a million troops ashore, and within three weeks there were two million. All told, D-Day laid the foundations of the Allied victory on the Western Front. But most people don't know how ocean tides played a crucial role in the initial phase of the invasion. Joining us is Greg Dusek, a physical oceanographer and senior scientist at the Center for Operational Oceanographic Products and Services, the tides and currents office of the National Ocean Service. Greg, what sort of conditions were the Allies looking for as they planned the invasion of Normandy?

Dusek: So, the Allies were planning an amphibious assault. They were going to cross the English Channel to the French coastline, near Normandy. Because they were going over the ocean, they needed good weather, so they needed to find a time where the waves were going to be minimal and the winds were going to be minimal, and obviously that's something they really can't plan ahead of time. But they knew that, in the summer months, you were more likely to have good weather, so they wanted to plan a time in the summer for the assault.

They also wanted to have a time period where you had a full moon or close to a full moon the night before the assault, and the reason for that was, they were going to have airborne infantry sent behind enemy lines the night before, and to do that, you needed some sort of lights for them to be able to figure out where they were going. So, they wanted close to a full moon the night before.

And then, lastly, they were looking for a time with low tide shortly after dawn. And the reason they needed it shortly after dawn, was because they needed a couple hours of time for the amphibious assault groups to travel across the English Channel in darkness, but then enable the naval bombardment to have daylight to be able to target initial areas of interest to bombard, before the amphibious assault began. Those criteria, you know, didn't have a lot of times to work with, and June 5th, 6th, and 7th of 1944 were the three days that were identified.

Kitch: That is a lot of environmental factors to have all fall into place. That last part, looking for a time with low tide shortly after dawn, is where we get to the science of predicting the tide for a particular location.

Dusek: So tide predictions were top secret during WWII, and the reason for that was you wanted to limit the axis information about allied-held coasts, you didn't want to divulge any information that they might not already have about the tide or our own coastlines, so they couldn't plan their own attacks. And then the other important part was that, if we were generating predictions for positions, we were likely to attack; if the enemy found those predictions, it might tip them off as to where we were thinking about attacking next. So, all of the work done relating to tide predictions was really secretive and it was a lot of work to make sure that none of that information escaped and was available to the enemy.

Kitch: And this was of course well before computers. Can you tell us a bit about the basics of what tides are and how people predicted tides in the past, leading up to WWII?

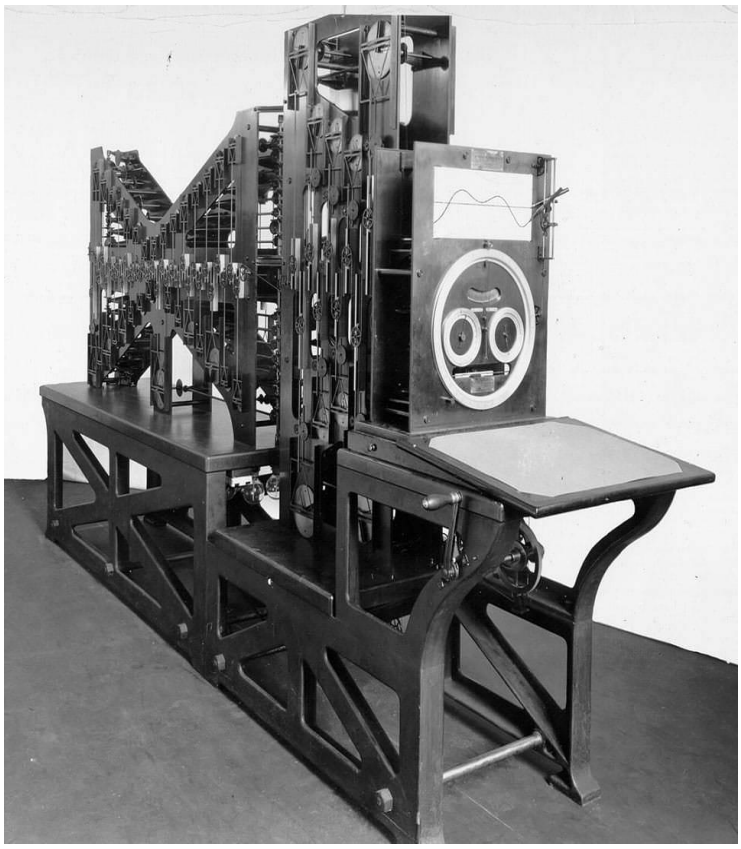
Dusek: Tide predictions enable us to tell when is high and low tide, and what time is high and low tide going to occur at different coastal locations. The tide is related to the position of the sun and the moon relative to the Earth, and so going back even to the mid-1700s, people understood that when you had high tide every day, and how high the tide was, relates to, in particular, the phase of the moon. And so, even in the mid-1700s in colonial America there were tide predictions of the timing of the tides at various harbours. They weren't terribly accurate, but they did provide some information which would be useful to mariners and to citizens.

But it wasn't really until the late 1800s that a few folks – Sir William Thompson, who later became known as Lord Kelvin in England, and William Farrell of the US, who was at the US Coast Survey - they were the first ones to figure out if we go and collect the observations,

go measure the water level for a month at a time at a certain location, you could then figure out what frequencies make up the tide, what are known as tidal constituents. And if you knew those tidal constituents at a particular location, then you could use that information to generate tide predictions, or very specific water levels and times of the tide at a certain location even months or years into the future.

Kitch: So how were tide predictions calculated once this was figured out in the late 1800s?

Dusek: Understanding that there were these specific frequencies that related to the tides, these tidal constituents, you could recreate those mechanically. So, you could have these different gears and pulleys represent specific frequencies and then use what's known as a tide machine. Basically, you put in those constituents, and that tide machine would spit out a tidal curve telling you exactly the times and water levels associated with certain tidal constituents.



Some of the first tide machines were created in the late 1800s, and in the US, the best tide machine that was really ever created was finished in about 1912. If you ever visit NOAA, you can find it right in one of our buildings. We still have it there today. It was called Old Brass Brains, and it was this metal machine about eleven feet long, about as tall as a person, and people would operate that all the time, generating tide predictions from tidal constituents – and you could generate those predictions for anywhere in the world, as long as you had the information about the constituents.

The US Coast and Geodetic Survey used tide prediction machine No. 2, fondly referred to as Old Brass Brains, to predict tides from 1912-1965. It was the first machine made to simultaneously compute the height of the tide and the times of high and low waters. (NOAA)

And the big thing with this machine is that this used to be a process that was done by hand. There was a quote in a New York Times article when the machine was first put out, where they say, "the machine turns out in ten to 15 hours the work that would keep a mere human calculator busy for six months." So, you know, we used to have human calculators, and it would take about six months for them to do one set of tide predictions, and now we could do it in maybe a day or so.

Kitch: I'm still not clear on the idea of tidal constituents.

Dusek: So tidal constituents are specific frequencies that represent the position of the moon and the sun relative to the Earth, and how that influences water level. You can calculate the tide with not too many tidal constituents, maybe 20 or 30. The tide machines of the time

could solve for about 37 tide constituents, which is usually more than enough to get a really accurate prediction, but there are several hundred known constituents that we can solve for today if needed.

Kitch: How many of these mechanical tide machines did the Allies have during the war?

Dusek: There were a number of these tide machines by the time WWII rolled around. We had one in the United States, there were two in the United Kingdom. Pretty much every maritime nation at that point had some sort of tide machine to enable them to generate tide predictions. But because we had only three primary machines within the allied nations, it was really important to keep them safe.

So in the UK, for instance, they had these two machines in two different locations, because they were really afraid of the Germans figuring out where the machines were and then firebombing them to destroy them, because they would've been high value targets. So, the location was a closely held secret and the really tried to keep them hidden. If they lost both of them, that could be a huge implication on the war effort, so it was really important to keep the machines safe.

Kitch: And this leads us back to planning for the D-Day invasion. What were some of the challenges of predicting the tides along the Normandy coast where the Allies planned to land?

Dusek: So the tide range around the Normandy beaches was around 20 feet, and because you have this really large tidal range, the beach you're going to have to traverse is going to be wildly different depending on if you're at low tide or high tide. At low tide, you might have 200-300 yards more of beach to cover during an amphibious assault than at high tide. So, because of that, you really want to minimize your exposure. The other important part about the tide range is that the water level is changing very rapidly. So, you could be gaining or losing about a foot of water every 15 minutes.

On top of that, the Normandy coastline is kind of complex, and that influences the tides fairly substantially as you go along the coast. So, the Allies had five locations they wanted to land at. Utah and Sword were the two furthest apart, about 100 kilometers apart, and the tide could vary by more than hour between those two locations, and so knowing the precise time of low tide was going to be really important.

Kitch: So how did the Allies get the information they needed to do their calculations for these extreme tide conditions?

Dusek: At this time in history, there was tidal information at lots of the major coastal cities. There were tide constituents generated from water level observations at nearby cities – Cherbourg to the West and Le Havre to the East – but now both of these locations were about 100 kilometres away from the landing beaches, and so the predictions that you generated at those locations would probably not be very accurate for where the landings were going to occur.

And so, in the tide tables at the time, there was some information closer to the landing zones, but it wasn't nearly as detailed and there was even a note in the tide tables that said, "these predictions may not be accurate." So, they really didn't have much to go on for the exact landing locations. Apparently, the Allies actually sent in some special forces, night reconnaissance, ahead of the attack, to look at the bathymetry (the shape of the bottom), the type of sand that was there, and to even collect a little bit of information about the tides, which could then support calculating new predictions for those specific landing zones.

Kitch: And why was it so important to stage the invasion at low tide?

Dusek: They knew they wanted to land at low tide, so that they could send their initial forces to clear out the number of objects on the beach, but if you can imagine that they got tides just a little bit wrong, say they were off by 30 minutes, 45 minutes, and they landed just before low tide. Well, because of the tide range, water's dropping about a foot every hour right before low tide, and so your amphibious craft would've arrived, unloaded the troops, the tides would've dropped, and all the craft would've been stuck on the beach – and then, you know, you'd be gumming up the whole operation, you wouldn't be able to have reinforcements come in, and it would have been a disaster. And so they needed to arrive

just after low tide, so that water levels are rising about a foot an hour, and it would enable their crafts to drop the troops and then get back out of the way for the next round of troops to arrive.

Kitch: At the time, German forces knew that the Allies would likely try an invasion of the French coast from across the English Channel. Can you talk about how the Germans were planning for this?

Dusek: The Germans and Gen. Rommel were really expecting the Allies to attack at high tide, because at low tide there would be maybe 200-300 yards of beach that the amphibious forces would have to traverse, leaving them exposed for an extended period of time. Because of that, Rommel had all of these obstacles placed along the beach – millions of obstacles along the French and Belgian coastlines – and so, they were convinced that an attack would happen at high tide. Now, the Allies saw these obstacles and decided that a high tide attack wouldn't be possible, and instead they would have to plan their attack at low tide, giving their initial troops a chance to move obstacles out of the way, blow up obstacles, and clear a path for the heavy infantry and tanks and things like that, that would follow the initial attack.

Kitch: So you said that all the conditions that needed to fall in place – the moon, the weather, the tides – meant that the small window between the 5th and 7th of June were the best dates for the Allies to launch the invasion. How did the Allies settle on June 6th to commence operations?

Dusek: On June 4th, the weather was going to be too bad, so they didn't attack. They waited until June 6th. The weather was still not great and it was very questionable, but Eisenhower made the decision to attack because he was worried that, if it failed here, they'd have to wait at least two weeks and maybe a month or more to go forward with the assault, and then it could've been figured out. They didn't want to wait that long, because they were losing lives like crazy.

Even though the weather was rough getting across the Channel, it actually worked in our favour because Rommel – because the weather wasn't any good and because it was low tide at first light and he was anticipating a high-tide assault – he was actually not even in Berlin, he was visiting his wife for her birthday somewhere else, and so wasn't prepared even for the assault at all. So, we actually caught them off guard by choosing to attack that day.

Kitch: Well the invasion of course succeeded, so among all of the factors that led to this success, I guess that means that the Allies got the tide predictions right for the Normandy coast on June 6th, 1944?

Dusek: Later on, people went back and using computers and using hydrodynamic models re-ran a simulation to look at how accurate the predictions were around the Normandy coastline for the assault and found them to be really quite accurate, you know, using a mechanical machine and data collected from a few hours in a midget submarine or something, was almost as accurate as we can determine today.

I would say anecdotally, in our office, we've looked at a lot of historical predictions going back to the late 1800s, early 1900s, and compared them to what we can find today with modern instruments and modern computers and are always amazed at just how accurate, you know, what people were able to figure out with really minimal amounts of information and technology, and could get pretty darned close to what we can measure today with all of the technology we have.

Royal Marines Commando unit created to shape the Future Commando Force

From MOD Navy

A select group of commandos will form a new Vanguard Strike Company to shape how the Royal Marines Commandos of the future will operate around the globe.These trailblazers will have access to game-changing technology and weaponry as they head on their first deployment next year.

The Royal Marines are currently undergoing a bold modernisation project – known as the Future Commando Force programme – which will overhaul how the world-famous Green Berets operate.

As part of this restructuring, more than 150 Royal Marines and Army Commandos will come together this autumn to form the Vanguard Strike Company.

A Royal Marines Commando uses the new ATAC tablet system for battlefield analysis during Future Commando Force experimentation.
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The company will head on its maiden deployment in mid-2021 after further trials later this year and ongoing equipment, structural and tactical experimentation associated with the Future Commando Force.

Commandant General Royal Marines, Major General Matt Holmes, said: “The Vanguard Strike Company will lead and inform how the Royal Marines and Army Commandos will operate and fight in a dynamic, technological era of warfare.

“We envisage several of these networked sub-units persistently forward deployed around the globe, with an array of sophisticated enabling capabilities, to present dilemmas to adversaries whilst supporting partners. These will all be at high-readiness, as a capable forward contingency force at the core of the Royal Navy’s Littoral Response Groups.”

The deployment next year will see the first practical demonstration of kit, equipment, training and organisational change necessary to shape the concept further and bring it quickly to the forefront of the Royal Navy's contribution to national security.

The elite commandos will work in small, versatile teams that will be tailored for the respective missions they will be facing – calling on areas of expertise and skills necessary to bring an advantage on that type of operation.

This will give the UK a more agile and lethal capability, ready for missions anywhere in the world at a moment's notice, whether for warfighting, specific combat missions such as commando raids, or providing humanitarian assistance.

This is about returning commando forces to their roots: to operate at reach and in all theatres, including the Arctic, as the spearhead of operations.

It has already been announced that Royal Marines Commandos will have a new uniform as part of the bold transformation. The Vanguard Strike Company will wear this uniform on their first deployment.

Going to Sea – Part 4
By Martin Watts

The busy routine of watchkeeping, schooling, seamanship, soogying, chipping, painting and holystoning, the last four activities known euphemistically as maintenance, continued as we headed through tropical waters, changing from blues to whites. Soogie was an awful amalgam of various chemicals based on Teepol, which was responsible for more stripping than Paul Raymond. We knew it was bad from the smile on Lampie's face as he dished out the stuff from his hideaway in the aft lazarette. Scrubbing and stripping was strenuous in the heat but the relentless pursuit of deck sport continued.

On the 9th November, one day after our stunning Deck Football win against another team of cadets, the Deck Hockey tournament commenced. The addition of wooden sticks to the game added an element of risk and assault that had not been present before; the narrow confines of the pitch combined with the long radius of the swinging sticks to produce a gladiatorial contest, favouring those of a more robust and less athletic disposition. Our cadet team of four, with myself in goal (again avoiding running whenever possible), consisted of Andy in defence, Tim in the middle and Ray upfront, and we were introduced as the 'First Trippers'. We should have known what was coming when Sid the PTI and referee introduced the crew team we were drawn against as 'Murder Incorporated', a distinct understatement. They were at least 2-3 times our size, with many years of experience in the dark arts of tripping, elbowing, pinning against the rail and making sure that Sid knew who his mates were. In goal, or rather filling it (for which purpose the goal had to be widened) was the most important person on Otaio, the cadet mess pantryman, Big Bob from Birmingham. Some might think that the captain was important, but Bob was responsible for feeding cadets, a formidable and never-ending challenge. Bob was able to keep order at the counter by dishing up with one hand and keeping a cleaver in the other, ensuring that none of our fingers ever touched the servery. As first trippers, we had already noted that both the chief and second cook had some fingertips missing, and learned that this was due to the macho practice of young cooks declining to use mechanical tin openers, preferring the corner of a cleaver blade to pierce the large tins containing formerly fresh vegetables. The inevitable result in a pitching and rolling galley was the partial loss of digits; this may have provided street cred, but at the price of very early retirement from darts.

In defence was Tom the greaser with Adrian, asst steward, in midfield and Paul, the powerful ex-boxing baker upfront. The match was a foregone conclusion, which I summarised in the ship's newspaper, this time written from a participant's viewpoint:

‘They outplayed us by the crafty use of their weight and an unexpected skilful display by Paul, who scored all of their five goals. We did manage to score one but I am told Bob was obstructed with a stick round his kneecap (we thought of the loss of cadet calories that this might have caused). Sid was, as usual, blowing up for the fouls committed by small players and letting the larger members of Murder Incorporated off with just a slight nod.’ Sid represented official British fair play through a superb combination of self-preservation, short sightedness and the holding of IOUs.

There had been a brief interruption to the game when the cargo lights failed; during the darkness a fellow cadet was caught trying to tie Sid’s plimsolls together. Not a bad idea, especially given that, with Sid’s bandy legs, there was plenty of room to work in but, unfortunately, not enough time. The quick restoration of light and power was testament to the frequency of such events and the well-practised ingenuity of our electrical officers. It must be remembered that the Otaio was an old DC ship, with busbars, and the regular use of hefty six-inch nails in place of fuses was essential to the maintenance of the domestic power supply. The captain, chief engineer, chief electrician and chief steward were very aware that failure to maintain a supply of cold Tennent’s was a career-threatening matter, whilst Stan the Chippy pondered on the frequent disappearance of nails from his store.

Coming alongside Curaçao

Another vintage electrical feature of Otaio was the presence of a degaussing ring around the entire ship; we used to joke about this until reminded by several of the senior officers and crew that magnetic mining was not a suitable subject for levity. NZS lost the bulk of its fleet in both world wars, with most losses being experienced when sailing alone on long voyages to and from the Antipodes. As fast cargo liners, they did not generally link up with convoys until the final leg of their journey and, until then, if spotted, were defenceless against U-boat attack. Two of our shipmates had been torpedoed and had subsequently survived harrowing and lengthy periods adrift in open boats. Our respect for them was without bounds and we noticed that shoreside management, the officers and crew had an unwritten rule that these men were to be looked after, so that they could enjoy a full pension and well-earned retirement. I realised how lucky I was to have been born eight years after the war, and all my adult life I have been grateful to those who served to keep their families and friends free from oppression.

We turned in after the match and found it difficult to sleep as, in the following forenoon, we were due to go alongside at Curaçao for bunkers. We were told that Otaio would be alongside for 12 hours, and that my watch (Port) would have the first six as shore leave. This would be the first place I stepped ashore outside the United Kingdom and my enthusiasm was only slightly dampened by realising that we were calling at an oil refinery – another first. As we arrived, I saw that two passenger ships were alongside ahead of us, and one of the senior cadets mentioned that we could save a taxi fare into Willemstad by boarding one of the coaches taking tourists from the quayside to the town. Unfortunately, we fell for this, as our shore-going gear of blazer, grey flannels, white shirt with company tie and blazer badge was not enough to convince port security that we were barber shop quartets accompanying the middle aged American passengers heading for souvenirs. We were returned to the ship and so my first foreign venture ashore consisted of a stroll around the outlying parts of the Shell refinery, absorbing the heady fumes of heavy fuel oil under a tropical sun.

One discovery was made, however, when we were approached by bumboat men selling a pale green liquid in a clear glass bottle, which the older cadets called Penguin Piss because of the jolly penguin painted on the front. The idea behind this product, which mainly consisted of alcohol, was to douse it over the body and let the evaporating liquid deliver a cooling sensation all over. Not thinking this a sensible idea, several of us decided to drink it instead (remember we were still underage), which resulted in attention from the ship's surgeon, withdrawal of remaining shore leave in Curaçao, and a severe reprimand. The surgeon demonstrated how stupid we had been by pouring a capful of vintage Penguin into a very heavy and thick ship's ashtray and dropping a match into it. A foot-high flame was followed by a loud crack as the glass fractured and melted in about 3 seconds, destroying the ashtray and so damaging the table that it had to be re-varnished. Lesson learned - we should have put a mixer in it!

Approaching Gatun Locks

After leaving Curaçao, the Otaio sailed for three days to Cristobal, the Atlantic entrance to the Panama Canal, the 50-mile manmade waterway across the Central American Isthmus. The prospect of transiting the canal was very exciting and we eagerly anticipated the passage of the ship through the Gatun Locks, Gatun Lake, Gaillard Cut, Pedro Miguel Lock and Miraflores Locks out through the port of Balboa and into the Pacific. Otaio was scheduled for a day passage through the canal and required to slow down in its approach to the forming up anchorage at Cristobal.

This slow passage provided an opportunity for first trip cadets to swing the leadline, and we duly assembled, in denim shorts, gloves and skidlids, by the starboard chains for instruction. Angus the Bosun gave several demonstrations of the technique for swinging, which involved letting the line out whilst swinging it overhead at an increasing rate, until letting go at the moment that would propel the weight ahead of the ship. Keeping hold of the line we could sense the weight touching bottom as the foc'sle passed level with the line, and were able to call out the depth measured by the different strips of material cloth on the line. By examining what was stuck in the tallow at the bottom of the weight we were also able to report on the nature of the bottom, eg sand. For most of us this task was soon accomplished and we could compare our results with the chart, thereby allowing our Navigating Cadet's Record Book to have yet another nautical box ticked. One cadet, however, had a shocking experience when, on his third or fourth attempt and in mounting excitement, he forgot to release the line and it turned around his neck as he leant far out of the chains. Defying his age, Angus the Bosun leapt forward and managed to get his heavily gloved hand over the first turn around the cadet's neck, and the remaining turns settled around the back of his hand, slowing down as the momentum lessened. There is no doubt in my mind that this brave and swift action undoubtedly saved a life and, once more, we received a salutary lesson in understanding the difference between youthful enthusiasm and downright recklessness – the difference serving as an early definition of seamanship.

The initial lift through the three Gatun Locks raised the ship by 90 feet, and Schoolie told us that passage through the locks was assisted by mules. Four cadets were then selected, with the aid no doubt of Sid's black book, for the responsibility of feeding the mules. They were supplied with large buckets of bread, vegetables and mouldy scraps from the galley.

As Otaio tied up to the lock entrance the four cadets emerged from the galley hatch and proceeded dutifully towards the foc'sle, where Sid told them to start throwing the effing bread onto the effing towpath before the effing ship was effing delayed. This they did, only to find themselves on the receiving end of abuse and threats of physical violence from the enraged Panamanian dockers below, who were attaching towing lines to the 20-ton electric locomotives or 'mules' that would assist Otaio into the lock.


Panama Mule

As final preparations for entering the canal proceeded, we learned that all first trippers would be allowed to remain on deck for the transit, the sights and sounds of which created an experience that I will never, ever forget.

Next time – Panama, Pacific, and Pitcairn interspersed with Board of Trade Sports, cricket and Sunday Divisions…

November Release for Veterans Railcard
From Forces Net

A new railcard for British military veterans is on track for release in November. Cardholders will be able to save a third off most train tickets, although certain restrictions will apply. The railcard is due to be made available from 11 November, extending cheaper train travel to more than 830,000 veterans who do not qualify for existing discounts.

The railcard will cost £21 for an introductory period, before an increase to £30.The railcard can be used at any time – peak or off-peak – although during peak times a minimum fare of £12 applies.

It can only be used in England initially, but the Government hopes to eventually extend it to Scotland and Wales. You can read more here.

HMS Trent departs on her first deployment
From MOD Navy

The most important day in HMS Trent's short service career, 3 August, has seen her receive her Commissioning Order in a ceremony at Portsmouth Naval Base before departing on her first operational deployment the same afternoon.

She has sailed for the Mediterranean to add her weight to NATO's ongoing maritime security operation there. Operation Sea Guardian deters international crime and terrorism and develops a picture of daily maritime activity by using a range of vessels and maritime patrol aircraft, all under the operational control of NATO's Maritime Command at Northwood in Middlesex.

HMS Trent was built on the Clyde by BAE Systems and delivered to the Royal Navy in December. She hoisted the White Ensign immediately after arriving at her home base in Portsmouth and has since been through Operational Sea Training and a variety of workouts to prepare her for this deployment.

She will train and patrol with NATO forces in the task group, work with other partners in the region to develop closer ties and provide a vehicle for the UK's international engagement.

HMS Trent's Commanding Officer, Lt Cdr James Wallington-Smith, said: "It's my honour and privilege to take HMS Trent from the start of her career in the Royal Navy to her first operational deployment as part of a key NATO mission in the Mediterranean.

“The entire Ship’s Company have worked tirelessly in difficult circumstances during the Covid-19 pandemic to prepare HMS Trent for this day. As we hold the commissioning ceremony and depart for operations, I could not be prouder of them and everyone within Portsmouth Naval Base and beyond who has helped us reach this point.

“We would normally have welcomed our families and friends from our affiliated communities and organisations to witness the ceremony today; sadly, we haven’t been able to, but all of us appreciate the unwavering support they give us.”

The commissioning ceremony was witnessed by HMS Trent’s Lady Sponsor, Pamela Potts, Vice Admiral Chris Gardner, Rear Admiral Martin Connell and a small number of guests.

The band of the Royal Marines School of Music played, and the ceremony was conducted by Deputy Chaplain of the Fleet, Reverend Martin Evans, alongside Lt Cdr Wallington-Smith. The ceremony was sponsored by the Royal Navy Royal Marines Charity and the Soldiers, Sailors, Airmen and Families Association.

Commanding Officer, Lt Cdr James Wallington-Smith speaking at the commissioning ceremony © Crown Copyright MoD Navy 2020

HMS Trent is the third of five River Class offshore patrol vessels to be built for the Royal Navy, within a second batch which has been provided with upgraded capabilities. They are faster, are more heavily armed, can accommodate more personnel and can crucially conduct helicopter operations with aircraft up to the size of Merlin, operated by the Royal Navy and other NATO allies.

The Ship’s Company has 65 ratings and officers with about two-thirds of them crewing the vessel at any time in a three-watch system. While two watches are on board the third watch can take leave or conduct personal and collective training and courses.

Watch rotations will take place within ports visited by HMS Trent, in common with the Royal Navy’s other offshore patrol vessels, which helps to keep them available at sea for about 320 days of the year.

Royal Navy shows commitment to drone technology for future operations

From MOD Navy

The Royal Navy has shown its clear intent for the greater use of autonomous and crewless technology in future operations.

HMS Prince of Wales provided an impressive setting for the Future Maritime Aviation Force Accelerator Day in late July, bringing together experts from the navy, MOD and industry to meet and discuss the vision for drone operations.

It comes as the navy seeks to develop and invest in the latest technology, bringing new, world-beating equipment to the frontline quicker.

Autonomous and crewless technology was on show on board HMS Prince of Wales. © Crown Copyright MoD Navy 2020

Brigadier Dan Cheesman, Chief Technology Officer for the Royal Navy, co-hosted the event with Commodore Nick Walker, Deputy Director Naval Aviation, calling on attendees to consider how technology and innovation could transform the way the navy operates in the skies now and into the future.

The Future Maritime Aviation Force, Brig Cheesman said, was also about seeing how the Royal Navy could build on, and gain advantage from, the pace of technological development already underway in the commercial sector.

“The aim is to transition rapidly from what we have now to whatever we want in the future.

“We live in an exponential world of technological change and if we can integrate the latest and get it on operations, it will deliver battle-winning advantage. Specifically, getting that technology onto ships like HMS Prince of Wales would be a game-changer.

“We are working in collaboration with companies like the ones here today to understand how they can help us move faster.”

Brig Cheesman added it should be the Royal Navy’s goal that these new capabilities should be delivered in weeks and months, not years and decades as is currently accepted.

The work of the Royal Navy’s NELSON digital acceleration lab supports this idea. They have continued the development the “plug in and play” MAPLE system that, when integrated onto Royal Navy ships, will simplify the process of accessing and using autonomous and un-crewed technology.

Trials earlier this year in Norway saw this system used on HMS Albion and last year on HMS Argyll. Going forward, all Royal Navy ships will possess open architecture, fully networked, organic crewless aviation systems with Prince of Wales being at the forefront of a series of trials.

As previously announced by First Sea Lord, Admiral Tony Radakin, this will see the aircraft carrier being used as a testbed for un-crewed aerial vehicles.

Commodore Nick Walker, Deputy Director of Navy Aviation, supported the importance of the speed of introducing new technology. Speaking onboard HMS Prince of Wales, he said:

“When we have drones and other equipment routinely embarked on ships, that’s when we really start to understand what they can do and get an idea of what we can achieve.

“We have to do it safely, in the right way and coherently, but I want to see the type of kit on display today on frontline operations within the year.”

75th Anniversary of the last RN ship lost in WW2

From MOD Navy

Night falls rapidly off the Malay Peninsula.

The sun was already setting on the 4th and 7th Minesweeping Flotillas at the end of a third day of clearing the waters off the island of Phuket in Siam – today Thailand.

The four-day sweep – Operation Livery – was intended to pave the way for an invasion which never came; it was a feint to trick the Japanese.

Ruse de guerre or not, it was still a dangerous mission. Japan still possessed air power and, despite potent cover from the Fleet Air Arm – carrier-based aircraft flew nearly 160 sorties and knocked out at least 30 enemy aircraft on the ground – the kamikaze was a constant threat.

These suicidal pilots – brainchild of Vice Admiral Takijiro Ohnishi, who was convinced that only by crashing his aircraft into enemy ships could the Allied onslaught be halted – had first appeared in the skies over the Philippines in October 1944.

The men, initially volunteers, were left in no doubt about the importance of their mission.

“Your mission involves certain death. Your bodies will be dead, but not your spirits. The death of just one of you will give birth to a million others.”

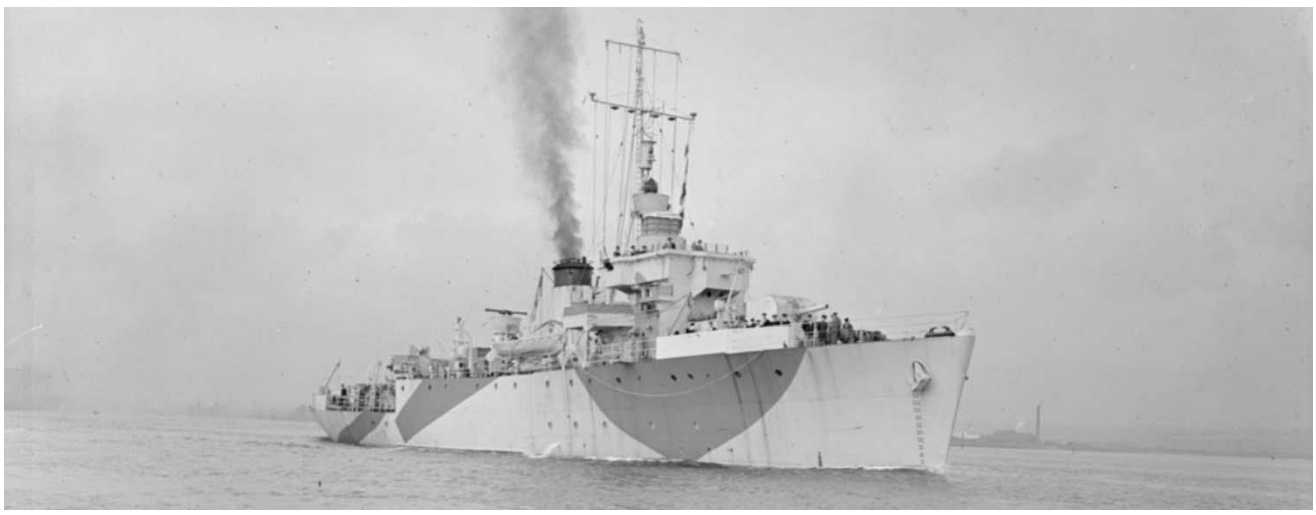
They wore distinctive uniforms – seven buttons adorned with three cherry blossom petals on the tunic and a naval anchor on the sleeve – and their families enjoyed preferential treatment as ‘very honourable’ members of Japanese society.

They wrought havoc among the naval forces mustered to deliver Japan the *coup de grace* – more than 30 ships sunk, in excess of 360 damaged, nearly 5,000 Allied sailors killed at a similar cost in lives to the kamikazes.

Success against the Royal Navy had largely evaded them; in early May, the carriers of the British Pacific Fleet had become the focus of Japanese attention. Outstanding gunnery, fighter screens, armoured flight decks and superb damage control ensured that, even when hit, the ship was fit for operations again in minutes.

Another two months had passed and still no kamikaze had sunk a Royal Navy vessel.

Off Phuket, obsolete Mitsubishi Ki-51 bombers (known by the Allies as ‘Sonias’ and now the backbone of the kamikaze force) attacked the Royal Navy task group in the last light of day.



HMS Vestal

HMS Ameer brought one kamikaze down with her ack-ack – the bomber disintegrated in the sea just 500 yards from the escort carrier.

Three focused on veteran cruiser HMS Sussex only to be thwarted by concerted anti-aircraft fire; two plunged into the Andaman Sea, the third turned away… and spied HMS Vestal.

The Algerine-class minesweeper threw up a wall of fire and lead, but it was too late; the kamikaze struck the Vestal. The damage the 1,000-tonne vessel sustained was too much. The order was given to abandon ship. The crew transferred to HMS Plucky, leaving 20 fallen comrades behind.

Vestal remained afloat. Destroyer HMS Rotherham sent several torpedoes into the wreck to send her to the bottom, which is where she remains today, sitting upright on the seabed.

HMS Vestal is the only British warship to be lost to a kamikaze. She was also the last Royal Navy warship lost in action in World War 2.

The toll of war with the Axis Powers was fearful: five battleships/battlecruisers; eight carriers; 28 cruisers; 132 destroyers; 74 submarines; 40 minelayers and sweepers; 42 frigates, corvettes and sloops; and well over 1,000 smaller vessels – all sunk.

The human cost was over 50,000 sailors and Royal Marines dead. And the bloodletting was not over yet.

There was no sign that Japan was willing to surrender. The Allied powers were gearing up for a final onslaught against the home islands – Operation Downfall – planned for November 1945.

One million Britons were earmarked to take part in the invasion of Japan, alongside five million Americans; the scale of the operation dwarfed Normandy. The Japanese recognised they could hurl three million men at arms against them, plus a fanatical populace.

Planners reckoned the invaders could suffer as many as one million dead.

Thankfully, they would never have to make that sacrifice. Two atomic bombs would persuade Tokyo's reluctant leaders to sue for peace. But until they did, the Royal Navy would press home the fight – right to the moment of surrender.

HMS Mersey assists with stricken yacht
From MOD Navy

Within five minutes of an urgent call over radio from a yacht heading into difficulties on the afternoon of 26 July, HMS Mersey put a sea-boat into the Solent – where she had been training at anchor – to assist.

By working with the crew of another yacht, the occupants of the Elizabeth Star were towed into Gosport Marina having lost steering around the Spithead anchorages and being set down onto Gilkicker Point.

The sea-boat crew helped the crew of the Elizabeth Star set up a tow by the aptly named Sailing Grace which also responded to the pan-pan radio signal. They then made sure the tow was holding as the yachts got underway towards the safety of the harbour.

HMS Mersey's sea-boat assists in the rescue
© Crown Copyright MoD Navy 2020

HMS Mersey Commanding Officer, Lieutenant Commander Will Edwards-Bannon, said: "I am very proud of my team's response to this situation. Although we train hard to deal with situations like this as part of our routine maritime security operations around the UK, it is still always impressive to see just how swiftly and smoothly the teamwork kicks in when an unalerted emergency scenario occurs.

"As is so often the case, it was a collective effort from various mariners to ensure that this particular situation did not develop into anything more serious and all of us in Mersey are certainly pleased to have been able to play our part in helping achieve this positive result."

AB Orin Mann, the sea-boat coxswain, said: "We got the relevant equipment and managed to launch the sea-boat in less than five minutes from hearing the pipe. We got to the Elizabeth Star to assist with setting-up a tow between her and the Sailing Grace, which then did a great job of towing her into Gosport Marina. If it wasn't for the teamwork of Mersey's ship's company and the crew of Sailing Grace then things could have been a lot worse."

Operation Pedestal, August 1942
By Commodore Angus Menzies RN, Clerk to the HCMM

2nd Aug 1942

This day 77 years ago, at 1800 BST, a small 14-ship convoy of fast cargo liners and one super tanker weighed anchor off the Tail o' the Bank on the Clyde bound for Grand Harbour, Valletta, Malta. Earlier that afternoon, the Masters of all the ships had mustered their crews and read aloud a personal letter from the First Lord of the Admiralty:

> "Before you start on this Operation, the First Sea Lord and I are anxious that you should know how grateful the Board of Admiralty are to you for undertaking this difficult task. Malta has for some time been in great danger. It is imperative that she should be kept supplied. These are her critical months and we cannot fail her. She has stood up to the most violent attack from the air that has ever been made and now she needs our help in continuing the battle. Her courage is worthy of yours. We know that Admiral Syfret will do all he can to complete the operation with success, and that you will stand by him accordingly to the splendid traditions of the Merchant Navy. We wish you all Godspeed and good luck."

Convoy WS21S (Winston Special 21 Southbound, a wrong designator for security), the Operation PEDESTAL convoy, was on its way, against all odds, to re-supply Malta and its people in their desperate hour of need. The ships formed up into four columns, with the tanker OHIO in her station at the end of the starboard column, worked their way up to the alarming speed of 16 knots and in close formation – amazing in those days – and prepared to be joined by the Navy escort in readiness for the running battle to gain some supplies through to Malta. Of such importance was PEDESTAL that the Royal Navy scoured the globe to provide escorts for the Merchant ships – indeed in all a total of two 16" gun Battleships, five Fleet Aircraft Carriers (with their embarked Fleet Air Arm Fighter Air Groups), seven Cruisers, thirty-six Destroyers, six Sloops and three Fleet Oilers. The mightiest individual RN Fleet ever to leave UK waters since WWI and never again to be repeated.

The gallant Merchant ships, also gathered from across the Empire, at high speed and surrounded by their escort, rounded Ireland and raced southwards for the Straits of Gibraltar.

Traditionally, on the anniversary from the time OHIO and PEDESTAL sailed, until OHIO was fought into Grand Harbour at 0900 on 15 August 1942, the flag of Malta GC is flown continuously on the starboard outer yard of WELLINGTON – it was hoisted this morning.

9th August 1942

This day, the PEDESTAL Convoy, still at 16 knots in its four columns, was nearing Gibraltar and preparing for the night-time passage of the Straits into the Mediterranean.

During the passage southwards from UK, the convoy was exercised in anti-air gunnery, emergency turns and changing from one cruising disposition to another using signal flags and short-range WT (all the Merchant ships carried an RN signals team). This was a pre-cursor for avoiding submarines and air-dropped mines later and for the re-deployment of the convoy needed to eventually transit the narrow Skerki Channel south of Sicily. The Merchant ships reached such a level of proficiency in manoeuvring that Vice-Admiral Syfret, commanding the heavy escort, was moved to record that "the convoy was comparable to that of a Fleet Unit".

The convoy had now been at sea for a week and had transited through large concentrations of U-boats without incident. Otherwise, the passage southwards had generally been uneventful. The aircraft carriers had detached to practise combined flying operations with their large fighter aircraft groups. It was the first time in history that a large group of

aircraft carriers had operated together as one force in an air defence role (Taranto and Pearl Harbour were bombing/strike actions) and much was learnt and to be used to great effect later in the war in the Pacific theatre.

All the individual elements of the PEDESTAL Convoy were now fully worked up and ready for the dash eastwards to Malta.

10th August 1942

Today, the PEDESTAL Convoy entered the western Mediterranean. Overnight, the ships had passed through the Straits without mishap and, still at 16 knots, were steering due east for Malta.

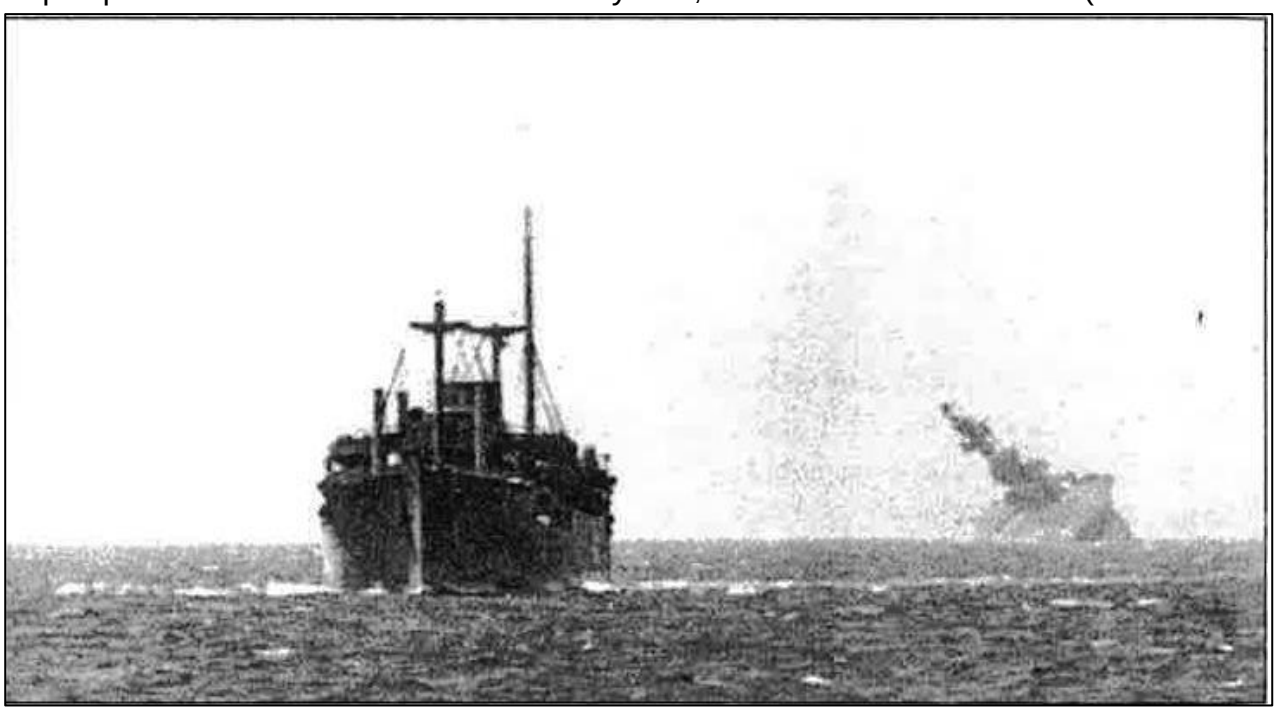
Overnight and in the forenoon, the smaller escorts had detached to refuel in Gibraltar, and later, from the two Fleet Oilers DINGLEDALE and BROWN RANGER stationed just southwest of Majorca. By lunchtime, the Convoy was 70 miles south of Cape Salinas, Majorca, with 560 miles left to go to Grand Harbour, Valletta.

The Merchant ships were in their four columns: the anti-submarine and anti-aircraft Destroyers were in a tight screen around the Convoy with the larger Cruisers intermingled. The Carrier Battle Group was astern on the starboard wing of the Convoy giving themselves sea room to manoeuvre to turn into wind to launch and recover aircraft for flying operations. Each carrier had its own Air Defence Cruiser assigned. The Combat Air Patrol fighter aircraft were in the skies above the ships, comprising Sea Hurricanes, Fulmars and US built Martlets. The Battleships due to their enormous anti-aircraft capabilities, unusually were placed within the Convoy, at the rear of the two centre columns - PEDESTAL was in fighting formation and ready in all respects for the running anti-air and anti-submarine battle to come.

11th August 1042

Today, the PEDESTAL convoy was steering a course midway between the Spanish Coast and the coast of Morocco.

At lunchtime, the Carrier HMS FURIOUS detached from the convoy, turned into wind and began to fly off her air group of 38 RAF Spitfire fighter aircraft; they were the resupply aircraft for Malta and they set off to the east. At 1300, in the middle of this operation, a loud explosion was heard. The Fleet Carrier HMS EAGLE had been stuck by 4 torpedoes – the ship capsized and sank within 6 minutes. By luck, most of the crew survived (767 out of 927)



Fleet Carrier HMS EAGLE stuck by 4 torpedoes – the ship capsized and sank within 6 minutes

and were rescued by the escorts. It was a cruel blow; the sinking of EAGLE deprived the Convoy of 25% of its fighter aircraft strength (see below). Her aircraft airborne at the time were safely recovered to the carriers HMS INDOMITABLE and HMS VICTORIOUS.

FURIOUS completed her flying operations and 37 of the much-needed Spitfires made it through to Malta; she then turned for Gibraltar to embark more aircraft and successfully repeated the operation with 23 more RAF Spitfires for Malta on the 17th August.

In the late afternoon, axis reconnaissance aircraft were sighted at a great height and at around 2030, just after sunset, the first attack by dive-bombers and torpedo-bombers struck the Convoy. Three aircraft were shot down and, encouragingly for the ships' crews, no damage was done to the Convoy Merchant Ships. It was now dark and the gun crews could relax for the moment.

12th August 1042

On this day, the PEDESTAL Convoy was on its third day in the Mediterranean, dashing eastwards, drawing ever closer to enemy axis air and submarine bases in Sardinia and Sicily, which barred the way to Malta. The submarine and air threat must increase and a particular submarine concentration was expected near the Galite islands, 90 miles south of Sardinia.

At first light, axis reconnaissance aircraft were sighted and driven off by the Convoy's carrier aircraft, but at 0900 the first air attack of the day began with high level bombers, which dropped their bombs but peeled off after six minutes. No damage was done. The second air attack arrived at noon with many aircraft dropping parachute mines ahead of the Convoy – all ships altered course in a by now well-practised manoeuvre to avoid. Next came the torpedo bombers running in from all points of the compass, but none penetrated the destroyer screen, and again no damage to the Merchant ships. Another attack followed almost immediately by JU88 dive-bombers and mv DEUCALION (Ocean Steam Ship Co/Blue Funnel – twin screw cargo liner 7,700 GRT), lead ship of the port column, was struck by a bomb which scored a direct hit aft and penetrated the deck and exited the ship's side before exploding on hitting the sea. Three simultaneous near misses heeled the ship on her beam ends and caused significant internal damage. She was severely disabled and could steam thereafter at only 8 knots. She could not keep up with the Convoy and was detached to try her luck on the inshore route to Malta through the Tunisian narrows and shoals escorted by the Destroyer HMS BRAMHAM. Both ships were detected later that evening and despite BRAMHAM's best efforts, DEUCALION was straddled by bombs from four axis aircraft, was overwhelmed and eventually blew up. She was the first Merchant ship in the Convoy to be lost.

At 1400, the next air attack targeted the carrier HMS VICTORIOUS, the bombs fortunately bouncing off her armoured flight deck.

Towards evening, the crews of the PEDESTAL ships were feeling confident of their abilities to make way onwards to Malta and to keep the enemy at bay – the Merchant ships kept good tight formation, their gunners were scoring hits on the enemy aircraft, and the Navy screen and the air groups were holding back the massed air assaults.

On the approach to the Skerki Channel (the Sicilian Narrows), the narrow route between the southern tip of Sicily and the Tunisian coast at Cap Bon, at around 1830, the Convoy was attacked by 120 axis torpedo-bombers, high level bombers and dive-bombers – a mass attack. The Convoy had 26 fighters in the air harassing the attackers. The carrier INDOMITABLE was the centre of attention this time and was heavily bombed on the after flightdeck causing a huge fire in the aircraft hangar deck, putting her out of operation but still able to steam.

Her aircraft had to be recovered to VICTORIOUS with a number of serviceable aircraft ditched overboard to make room.

Aircraft Carrier HMS INDOMITABLE attacked and heavily bombed on the after flight deck causing a huge fire in the aircraft hangar deck 12th August 1942

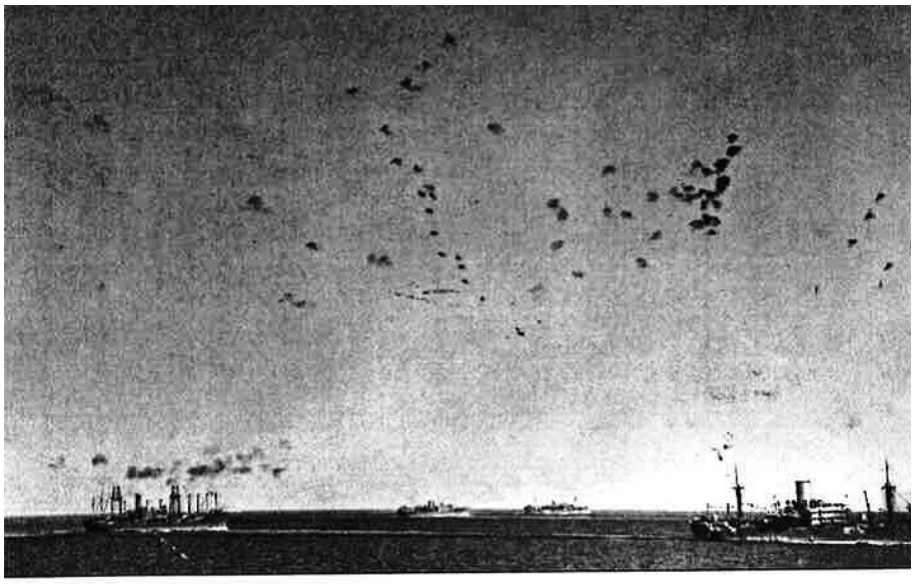
At around 1900, PEDESTAL arrived at the entrance to the Skerki Channel, which was known to be heavily mined. It was also too confined for the heavy escorts to manoeuvre to counter air attack and any possible surface attack. And so, the battleships and the carriers with their own escorts turned to the west and steamed slowly along the Algerian coast, remaining as long as possible within fighter aircraft range of the Convoy to counter a suspected surface attack by the Italian Navy. Due to the scale and weight of the previous air attack it was thought improbable that another large-scale attack on the Convoy could be mounted before dark.

An hour later, at 2000, an Italian submarine launched four torpedoes and hit the cruisers HMS NIGERIA and HMS CAIRO and, fatefully, ss OHIO (Texas Oil Company/Eagle Oil Company - single screw (super) tanker 9,264 GRT). The Master was Captain Dudley W Mason, Eagle Oil's youngest and best Master and, Freeman of the Honourable Company of Master Mariners at the time. NIGERIA was badly damaged, down by the bow and unable to maintain position with the Convoy and had to withdraw to the west. CAIRO, a specialist anti-aircraft ship, was severely damaged and was lost. The timing of the successful attack was absolutely critical and far-reaching for PEDESTAL, for the Convoy was at that very moment changing its disposition from four columns to two in order to form up behind the two minesweeping destroyers and to pass through the mined channel. The torpedoing of the cruisers deprived the escort ships of their Commander (R Adm Burroughs) and his staff embarked in NIGERIA, who had to transfer to the destroyer HMS ASHANTI and were therefore out of communication during this calamitous period.

The convoy lost its cohesion, as Merchant ships had to take avoiding action around the damaged cruisers, and as the escort also repositioned.

At 2030 PEDESTAL was subjected to a severe dusk air attack by dive-bombers and torpedo-bombers. HMS ASHANTI and HMS PENN laid a smokescreen to darken the western horizon but this did not deter a very effective attack. MV EMPIRE HOPE (Shaw Savill & Albion Co - twin-screw refrigerated cargo liner 12,680GRT) was straddled by near misses which stove in the engine-room plating, stopping any propulsion. When lying dead in the water, she received two bombs in No 4 hold, which set off the ammunition and canned fuel, and was soon ablaze and sunk. At about the same time, mv BRISBANE STAR (Union Cold Storage/Blue Star – twin screw refrigerated Cargo Liner 11,076GRT) received an aerial torpedo, which hit her stem ripping a huge hole in her and blowing in the forward bulkheads and she came to a full stop. Her crew shored her up and she was able to make way but at

no more than 6 knots. She detached from the Convoy and, like DEUCALION, made for the inshore route to Malta along the Tunisian coast, but with no escort.



Santa Elisa, Waimarama, Empire Hope, Glenorchy

Just after 2100, mv CLAN FERGUSON (Clan Line Steamers Ltd – twin screw cargo liner 7,347GRT), now on her third convoy to Malta, also received an aerial torpedo which scored a direct hit amidships. Her cargo was solely ammunition and canned fuel on the weather deck. There was an immense explosion, which towered thousands of feet into the air; amazingly 63 members of the crews survived. At 2130, the cruiser HMS KENYA was torpedoed under her forefoot but was able to remain with the Convoy. Darkness fell and all crews were hopeful of an uneventful night and some rest – that was not to be.

Meanwhile, back to the west, OHIO was fighting for her life. She had been torpedoed amidships, just abaft the bridge superstructure in the main pump room, to a loud explosion that blew a large jagged hole in her side on the waterline, extinguished the boilers and set her ablaze. It also destroyed the hydraulic steering gear between the bridge and the rudder controls and the ship's compasses. The only tanker in the Convoy was now dead in the water and ablaze; the Convoy carried on south eastwards into the Skerki Channel. The Destroyer HMS LEDBURY was detailed to stand by. OHIO's crew put out the blaze and carried out some repairs and managed to get her underway, steering from aft with her emergency wheel. LEDBURY led her into and through the Skerki Channel overnight as OHIO worked back up to 16 knots, with a great hole in her starboard side and on emergency steering only.

13th August 1942

Today, 77 years ago, the PEDESTAL Convoy was entering day four in the Mediterranean.

Just after midnight, the main body of the Convoy had passed through the mined Skerki Channel and ran straight into the expected attacks from German and Italian motor torpedo boats (MTBs). The Convoy had been scattered by the events and air attacks of the previous evening but had more or less re-grouped and were heading slightly north of east towards Malta. However, with the loss and damage to the escorts and the delayed transfer of the command team to ASHANTI, cohesion in the defence of the Convoy suffered. This provided excellent opportunities for the MTBs in the darkness. At 0100 the attacks began with the torpedoing of the cruiser HMS MANCHESTER by two Italian MTBs, leaving her dead in the water and listing heavily. She was subsequently scuttled off Cap Bon.

Although the escorts could often hear and catch glimpses of the MTBs in the darkness, they did not use their powerful searchlights as this would give away their positions and ruin the night vision of all the Convoy's ships' gunners. Also Cap Bon and Point Kehliba Lighthouses were burning brightly under (Neutral) Vichy French control and were constantly illuminating the ships. At 0200, an Italian MTB torpedoed mv GLENORCHY (Glen Line/Blue Funnel Group – twin screw Cargo Liner 8,982GRT); it struck the engine room port side, which flooded. The ship listed heavily to port and eventually burst into flames and slowly sank. Nearly all of the crew survived.

An hour and a half later mv WAIRANGI (Shaw, Savill & Albion Co Ltd – twin-screw Refrigerated Cargo Liner 12,462GRT) was torpedoed at the after end of No 3 Hold; that and the engine room flooded rapidly. With the engines now stopped, the pumps could not operate and the decision was taken to abandon her. She sank slowly and was eventually despatched by an air attack later in the day.

At 0330, mv ROCHESTER CASTLE (Union Castle Mail Steamship Co – single screw Motorship 7,795GRT) was struck by two torpedoes in No 3 Hold but was able to continue at 13 knots. After dawn, the air attacks resumed and the ship was severely shaken by some near misses. At 1000 she was near missed again, this time close to the bow, which reportedly lifted the ship bodily out of the water, stopped the engine and started small fires throughout the ship. These were extinguished but leaks in the shell plating meant that she took on around 4000 tons of seawater. She remained with the Convoy.

Shortly afterwards ss ALMERIA LYKES (Lykes Bros Steamship Company, New Orleans – twin screw Cargo Liner 7,736GRT) was torpedoed by first an Italian MTB and, 15 minutes later, by a German MTB, which was in turn sunk by gunfire from the ship. The ship had No 1 Hold flooded, the crew abandoned ship and she was subsequently sunk by dive-bombers later that day. As dawn broke, ss SANTA ELISA (Grace Line, New York – twin screw Cargo Liner 8,380GRT) was struck by a torpedo in No 1 Hold, which was loaded with canned aviation fuel. This immediately exploded and the ship was consumed in flame, abandoned and subsequently sank.

By dawn, morale in the PEDESTAL crews was low; it was a cruel blow to suddenly suffer such large casualties, after the Convoy had come so far with such success. The Convoy was now in the final run in to Malta, which was almost in sight. Shortly after 0800 a fleet of dive-bombers attacked and struck at mv WAIMARAMA (Shaw, Savill & Albion Co Ltd – twin screw Refrigerated Cargo Liner 12,900GRT). Direct hits were received on No 4 Hold on the after deck and No 3 Hold just abaft the bridge. There was a great explosion as the canned aviation fuel covering the weather decks and the ammunition in No 3 Hold blew up. Through the smoke the ship's masts were seen to collapse inwards towards the explosion. Other attacking bombers were seen to disappear into the ball of flame and debris. It was thought that no-one could possibly survive, but the nearby LEDBURY spotted some rafts and men clinging to wreckage and went into the flames. HMS LEDBURY had joined PEDESTAL virtually straight after escorting the infamous Convoy PQ17 in the Arctic and her CO, Commander R P Hill RN, had been so ashamed at the abandonment by the Navy of the merchant ships, that when joining PEDESTAL he had briefed his Ship's Company that "such an event should never happen again" and that he and the ship "would stand by the Merchant ships even if there was only one left, regardless of any other orders". Many men from LEDBURY jumped into the burning sea to help survivors but could only rescue 18 men from the original crew of 105.

At lunchtime, mv DORSET (Federal Steam Navigation Co/P&O Group – twin screw Refrigerated Cargo Liner 10,650GRT) was dive-bombed and struck in No 4 Hold, which also flooded the engine room. She was disabled and on fire; the crew abandoned ship. Desperate efforts were made to try to bring DORSET under tow to nearby Malta but she was sunk by yet another dive-bomber attack.

By now fighter aircraft from Malta were providing some air cover for the battered Convoy, but even then at 1120 mv PORT CHALMERS (Commonwealth & Dominion Line/Port Line – twin screw Refrigerated Cargo Liner 8,505GRT) caught an aerial torpedo in her port mine clearing paravane on the port bow. The crew were able to cut it free, but the explosion, when the torpedo hit the seabed, badly shook the ship.

At 1600, the PEDESTAL Convoy or what was mainly left of it, met with the escort from Malta at the head of the swept channel to Grand Harbour, and so ROCHESTER CASTLE, PORT CHALMERS and MELBOURNE STAR entered Grand Harbour 1800 on 13 August 1942.

And so, three ships out of fourteen, but without the vital oil tanker; even this achievement would be almost valueless. The Navy close escort turned to the west, heading for Gibraltar.

But what of ss OHIO? With her gallant watchdog LEDBURY, she had overnight caught up with the Convoy at 16 knots, at first light having safely transited the Skerki Channel and the MTB attacks through the night and at 0600 took up her old station on the starboard column. At 0900 a near miss opened up plates on both sides of the bow and the forepeak tank flooded; meanwhile a torpedo-bomber attack was broken up by OHIO's own gun crews. HMS ASHANTI, providing air cover, shot down a dive-bomber attacking OHIO which crash-landed on the poop deck immediately next to Chief Officer Wylde who was steering the ship on the emergency wheel. Almost immediately a torpedo-bomber was shot down by OHIO; the aircraft bounced off the sea and smashed into the foredeck and upperworks of the bridge island and exploded. Half a wing slammed into the starboard side of the bridge and a rain of aircraft parts showered the tanker from stem to stern. Less than a minute later, in his official report, Captain Mason understates the situation:

> "About this time Chief Officer Wylde phoned from aft saying that a Stuka had just landed on the poop deck next to him, I replied that was nothing; here we have the considerable part of a torpedo-bomber on the foredeck and in the Bridge, steer 085 for Malta."

At 1000 OHIO was straddled by two sticks of bombs, three on each side, all exceptionally near misses. The ship lifted clear out of the water, shuddered violently and then crashed back down again. At 1030 she suffered yet another near miss but this time she did not escape damage. The boiler fires were blown out and it was a race against time to restore them before steam pressure dropped too low to work the fuel pumps. The engineers persevered, and within 20 minutes OHIO was steaming once more. And after all this, OHIO, like a wet dog, shook herself off and drove on at 16 knots for Grand Harbour, still under continuous air attack, with a gaping hole in her side and her upper decks covered in German aircraft parts.

Then, finally, at 1100 another stick of bombs near missed and shook every plate; and once more the engines slowed and stopped with the fuel pumps broken by the concussion. Once again, the only tanker in the Convoy was dead in the water, now completely disabled and still under continuous air attack. LEDBURY, which had been with the ship since the torpedo attack the previous day, had to depart. 30 minutes later the Destroyer HMS PENN arrived on the scene and attempted a tow of OHIO. This proved impossible for the small PENN and Captain Mason asked that PENN take off his crew as the ship was becoming an obvious target for the constant air attacks.

It was now 1800 and help began to arrive from Malta, enticingly only 40 miles away. Captain Mason mustered his crew and returned to OHIO to make best preparations for a tow, during the darkness hours, to Grand Harbour. Just as wires were attached, the next raid struck OHIO and a bomb entered the engine room, which immediately flooded. To save lives, Captain Mason again ordered OHIO to be abandoned and the exhausted crew re-boarded PENN for their first night's sleep for some time.

Later, PENN assisted by HMS BRAMHAM and the minesweeper HMS RYE (from Malta) attempted to get OHIO under tow, but conventional methods would not work with these small warships; she was a "super tanker" and the great hole in her side with bent protruding plating made her unmanageable. By now it was dark and the constant air attacks on the ship and her two dutiful escorts had ceased for the moment. The crew of OHIO slept at their guns and awaited the dawn – and the hope that they could get their ship through the last 40 miles.

14th August 1942

Today, it was the fifth day for the remnants of the PEDESTAL Convoy in the Mediterranean.

At 1515, BRISBANE STAR entered Grand Harbour having completed an epic voyage alone (and a story in its own right) along the Tunisian coast. encountering a U Boat, Vichy French forces and other hazards. to make her sole entrance. And much needed was her cargo. Four ships of the original 14 had now made it to Malta.

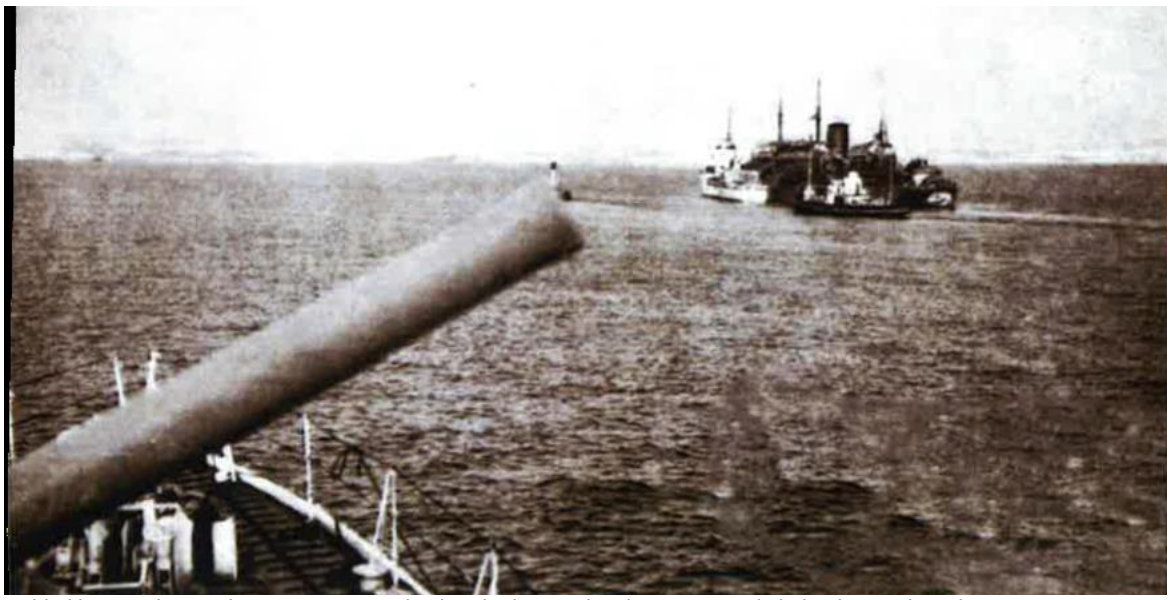
OHIO was still dead in the water. At first light that day her crew and other Merchant ships' survivors onboard PENN and BRAMHAM re-manned OHIO and prepared her once again for a tow. Many attempts were made to get the ship underway but these were constantly thwarted by heavy air attacks, forcing the destroyers to break away to clear arcs for their guns. At 0900 another near miss carried away OHIO's rudder and opened up more shell plating. OHIO was encased in wires and cables but would not be towed; much frustration and confusion ensued, all under heavy air attack. Finally, with RYE towing ahead, with PENN lashed to the starboard side and BRAMHAM on the port side, and with the indomitable LEDBURY astern to steer, OHIO began to crawl towards Grand Harbour at 6 knots. PENN was pumping compressed air into OHIO's tanks and at the same time pumping out her continuously flooding engine room; all of this under constant heavy air attack.

The tow (or drag) continued into the enveloping and eventually peaceful darkness. Still twenty miles to go.

15th August 1942

Today, 77 years ago, it was the sixth day in the Mediterranean for the last PEDESTAL ship still at sea.

At 0200 OHIO arrived at the entrance to the swept channel to Grand Harbour still under tow by RYE, BRAMHAM, PENN and LEDBURY. The night tow had been uneventful apart from many acts of blatant seamanship to keep OHIO moving – and the ships together – without parting any of the multitude of towing wires and cables. OHIO was becoming increasingly difficult to steer, her freeboard was reduced to just 18 inches on the port side and LEDBURY was cast off on two occasions in order to push OHIO's bow round the two very sharp turns in the swept channel. (see below).

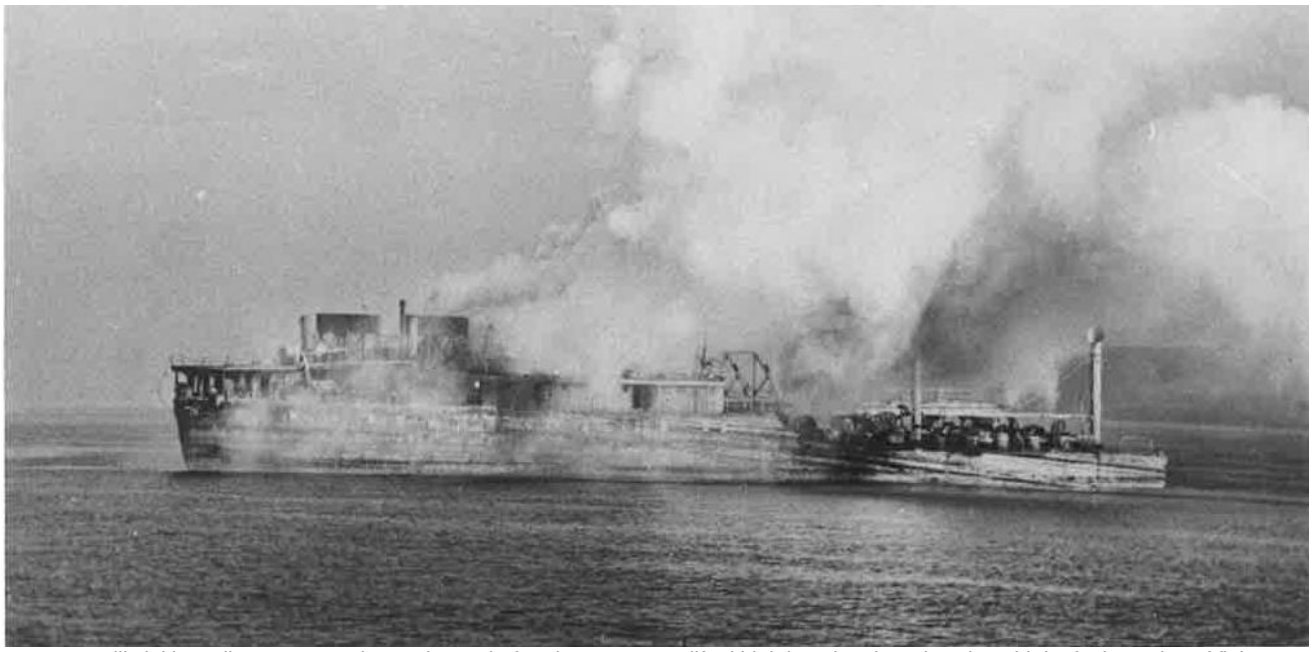


Guided by Royal Navy destroyers strapped to her the battered tanker SS OHIO is helped towards Malta

The ships were joined by harbour tugs from Valletta at 0600 and at last, at 0800 on 15 August, the Maltese feast day of Santa Marija, the broken-backed, smoke-blackened almost derelict hulk of OHIO, still with large parts of German aircraft littering her decks and upperworks, made the tight turn inside the mole, rounded Ricasoli Point, and headed up Grand Harbour. The by now stupefied, exhausted men onboard were greeted by cheering crowds lining the ramparts of Grand Harbour. OHIO was towed into Grand Harbour at 09:30, to cheering crowds and a band playing Rule Britannia. The crowd fell silent as the ships entered harbour, men removed their hats, women crossed themselves and a bugle sounded "Still".

Commander R P Hill of LEDBURY summed up the arrival in his official ship's log: "It was a sublime moment". Operation PEDESTAL was over.

OHIO was discharged alongside into two RFAs delivering 87 percent of her cargo to Malta. As the final tank was pumped, OHIO broke her back where the torpedo had struck and sank in two halves into Grand Harbour. OHIO never sailed again; the two halves were re-floated and used alternatively as storage and a prisoner of war camp. On 19 September 1946, the bow section was towed out of Grand Harbour and sunk by naval gunfire not far from the east breakwater. Two weeks later on 4 October 1946, the stern section was towed out to the same spot and also sunk by naval gunfire (see below).



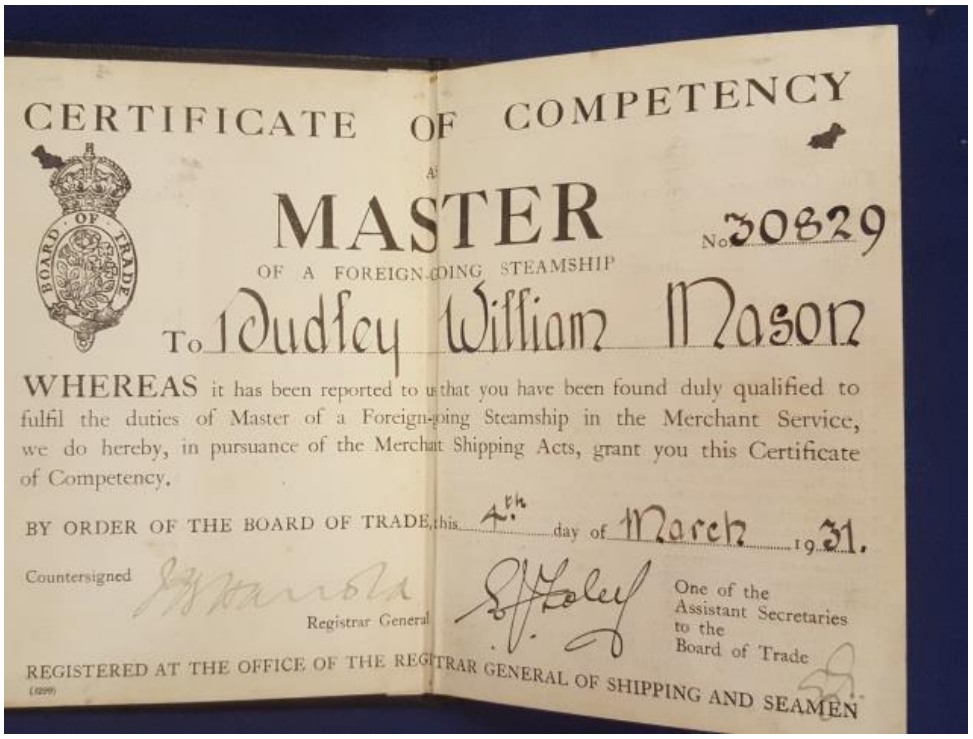
SS OHIO still sinking, all was over under 7 minutes before her stern was lifted high into the air and sunk amid deafening noise of fittings falling inside the ship and fire being put out.

So went to the bottom a famous ship, to find her grave near the bows sunk two weeks previously.

Captain Dudley Mason was awarded the George Cross and Lloyd's War Medal for his determination to get his ship and its priceless cargo to Malta and the Honourable Company is privileged and honoured to be the custodian of his George Cross and Captain Mason's other medals, together with the bell and emergency after steering wheel of OHIO, all of which are on display onboard WELLINGTON.

George Cross

OHIO's Bell and Aft Emergency Steering Wheel



CERTIFICATE OF COMPETENCY

AS

MASTER

No. 30829

OF A FOREIGN-GOING STEAMSHIP

To Dudley William Mason

WHEREAS it has been reported to us that you have been found duly qualified to fulfil the duties of Master of a Foreign-going Steamship in the Merchant Service, we do hereby, in pursuance of the Merchant Shipping Acts, grant you this Certificate of Competency.

BY ORDER OF THE BOARD OF TRADE, this 4th day of March 1931.

Countersigned

Registrar General

One of the Assistant Secretaries to the Board of Trade

REGISTERED AT THE OFFICE OF THE REGISTRAR GENERAL OF SHIPPING AND SEAMEN

Captain Dudley Mason GC

The Company is also delighted to be the recipient of Captain Mason's Master's Certificate, and possibly the only surviving copy of his official report log of the PEDESTAL Convoy action, prepared by him for the Admiralty. The Chief Officer, who had spent most of the last three days of the Convoy at the emergency wheel through all the air attacks, received the Distinguished Service Order.

The Aftermath

The arrival of the four Merchant ships and the survival of the tanker OHIO with their valuable cargoes provided the materials to maintain the island, but it did not break the siege. For the high price of nine Merchantmen, one fleet aircraft carrier, two cruisers and a destroyer sunk, and a severely damaged fleet aircraft carrier and two cruisers effectively out of the war for six months, the Merchant Navy and the Royal Navy had saved Malta. The delivery of around 30,000 tons of general cargo had reached Valletta, together with petrol, oil fuel, kerosene and diesel fuel – enough to give the island another ten weeks beyond the existing stocks on the island of only two weeks. Merchant ship and Royal Navy gunners and the Fleet Air Arm shot down forty-two of the approximately 330 attacking aircraft.

The far-reaching effects of the Convoy were not appreciated at the time. Operation PEDESTAL was a tactical disaster. The defeat, however, was turned into a strategic victory. In August 1942, with Malta still besieged, 35 percent of Axis convoys to North Africa did not get through. A revived Malta went immediately from defensive to the offensive and allied forces from Malta sank over 100,000 tons of Axis shipping, including 24,000 tons of fuel destined for General Rommel's tank armies. The land Battle of Alam el Halfa was launched on the night of 30/31 August 1942, with the two German Panzer Divisions holding only 20 percent of their necessary supplies of fuel. By the morning of 2 September, Rommel's offensive had been paralysed by shortage of petrol. This was Rommel's final throw of the dice to penetrate the last 50 miles to the Suez Canal.

And so, it can legitimately be said that the British Eighth Army did not defeat Rommel at Alam el Halfa and begin the turn round of the Second World War in Europe; it was an oil tanker called OHIO.

The final Aftermath

Admiral Weicholdt, commanding German Naval Forces Mediterranean in 1942 recorded in his War Diary that:

> "…to the Continental observer British losses [in PEDESTAL] seemed to represent a big victory for the Axis, and they were accordingly exploited for propaganda purposes. But in reality, the facts were quite different since, in spite of these successes, the Air Forces had not been able to prevent the British forces, among which were five

Merchant vessels, from reaching Valletta. Thereby the enemy gained the strategic end of his operation in spite of what it may have cost him. The British operation was not a defeat but a strategic failure of the first ohioorder by the Axis, the repercussions of which one day will be felt."

Vice-Admiral SYFRETT, commanding the heavy escort of PEDESTAL recorded:

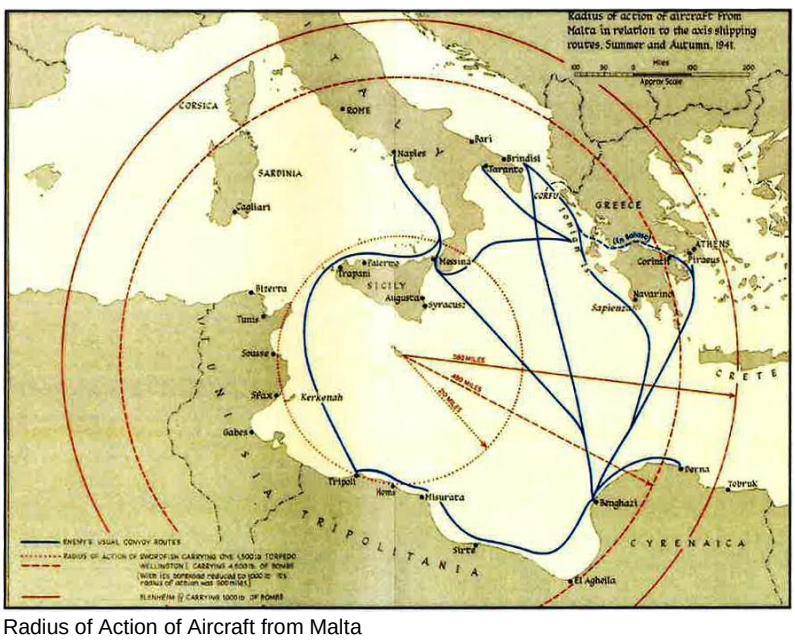
"…the task of the Close Escort was always to be difficult and hazardous. Unhappily, a serious disaster befell them almost at once and heavily tipped the scales in favour of the enemy. Nonetheless, they continued undaunted and determined, and fighting their way through many and heavy attacks by aircraft, U-boats and E-boats, they delivered five of their charges to Malta and then fought their way back to Gibraltar. But all those officers and men will desire to give first place to the conduct, courage and determination of the Masters, officers and men of the Merchant ships. The steadfast manner in which these ships pressed on their way to Malta through all attacks, answering every manoeuvring order like a well-trained fleet unit, was a most inspiring sight. Many of these fine men and their ships were lost but the memory of their conduct will remain an inspiration to us all who were privileged to serve with them."

On 7 September, a message was sent from the Deputy Chief of the German Naval Command in Italy to the Chief of the Naval Staff:

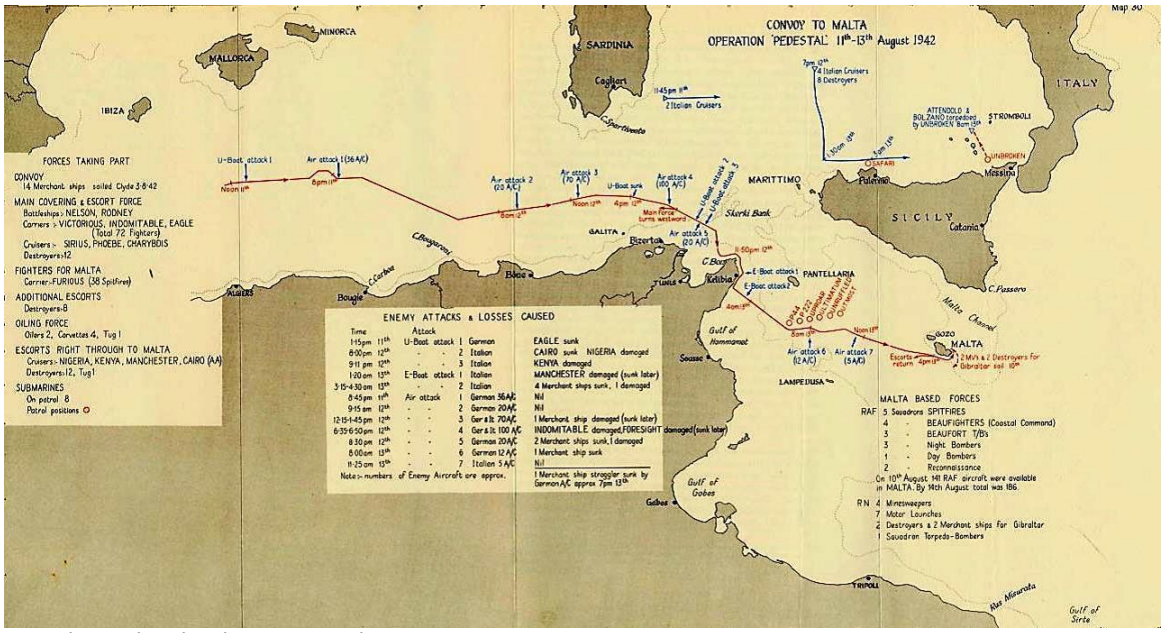
"There is no doubt that, towards the end, continuation of the offensive in North Africa collapsed because of inadequate supply services. The fear that this would happen has unfortunately been realised. After the offensive had been broken off, it depends on the supply question whether the Panzer Army will be capable of holding their own, even on the defensive, in the face of the ever-increasing enemy... The supply problem must therefore be solved at all costs... Even if we can increase the defences against submarines, we have no means at our disposal at present to meet the far-superior abilities of the RAF in night operations at sea. This last danger has grown to such an extent that it must lead to a catastrophe if no relief is found. I see today, more clearly than ever before, that there can be only one possibility and that is by a strategic offensive. The RAF in the Mediterranean, i.e. in Malta, must be eliminated. Fresh operations must be launched immediately in this area."

The Italian Marine Militaries' Official War Diary on the war in the Mediterranean concluded:

"Malta was the rock on which our hopes in the Mediterranean foundered," and all this is surely the vindication of all the men who died fighting through the 'Santa Marija' convoy, WS21S, PEDESTAL.



Radius of Action of Aircraft from Malta



Operation Pedestal 2nd August to 15th August 1942

Strength

United Kingdom	**German & Italian**
4 Aircraft Carriers	3 Heavy Cruisers
2 Battleships	3 Light Cruisers
7 Light Cruisers	12 Destroyers
32 Destroyers	23 Motor torpedo boats
4 Corvettes	21 Submarines
4 Minesweepers	285 Bombers
11 Submarines	304 Fighters
7 Motor Launches	
14 Merchant Ships	
2 Fleet Oilers	
74 Fighters	
28 Torpedo Bombers	
And land-based RAF aircraft	

Casualties and losses

United Kingdom		**German & Italian**	
1 Aircraft Carrier	Sunk	2 Submarines	Sunk
2 Light Cruisers	Sunk	1 Heavy Cruiser	Damaged
1 Destroyer	Sunk	1 Light Cruiser	Damaged
9 Merchant ships	Sunk	1 Submarine	Damaged
1 Aircraft Carrier	Damaged	48–60 Aircraft	Destroyed
2 Light Cruisers	Damaged	c. 100 Personnel	Killed or missing
3 Merchant Ships	Damaged		
34 Aircraft	Destroyed		
350–550+ Personnel	Killed		

RAF Typhoons intercept Russian military formation over the Baltic Sea

From MOD RAF

Royal Air Force Typhoon fighter jets currently operating from Lithuania have intercepted a Russian military formation operating over the Baltic Sea.

The Typhoons, from 6 Squadron, RAF Lossiemouth, approached the Russian formation to identify its composition and established it was an IL-38 ‘MAY’ Maritime Patrol Aircraft, being escorted by two SU-27 Flanker B Fighters.

This was the first time in recent years that the RAF has seen and intercepted a ‘MAY’, which was operating alongside a Russian OSCAR class submarine (below). The Typhoons photographed the submarine on the surface as it transited towards the west across the Baltic Sea.

OSCAR class submarine photographed in the Baltic Sea. © Crown Copyright MoD RAF 2020

The Russian formation was then monitored as it flew through the Lithuanian Flight Information Region (international airspace), to ensure the safety of other airspace users as Russian Military aircraft do not file flight plans in accordance with standard international practice.

This intercept follows an earlier interception at the start of the week when the Typhoons were again airborne to monitor Russian SU-27 Flankers as they transited through Lithuanian controlled international airspace.

These intercepts have come during a busy week for 135 Expeditionary Air Wing, the RAF Unit that is deployed in Lithuania as the UK contribution to the NATO Baltic Air Policing mission. The EAW has also been conducting NATO Air Policing interoperability training with a detachment of German Eurofighters that have been embedded into 135 EAW. RAF personnel also hosted the Lithuanian president when he visited the airbase and were invited to take part in some national Lithuanian events, which they were delighted to accept.

Wing Commander Stu Gwinnutt, 135 EAW Commanding Officer, said: “Our operations this week have demonstrated what the RAF is all about; we had just completed a really productive Typhoon interoperability exercise with the Luftwaffe and shortly thereafter, we scrambled on a live intercept, showing the whole team’s professionalism and flexibility.”

135 EAW is currently operating from Siauliai Air Base Lithuania, alongside a Spanish Air Force EF-18 Hornet Detachment and a French Airforce detachment based in Estonia to deliver the NATO Baltic Air Policing Mission.

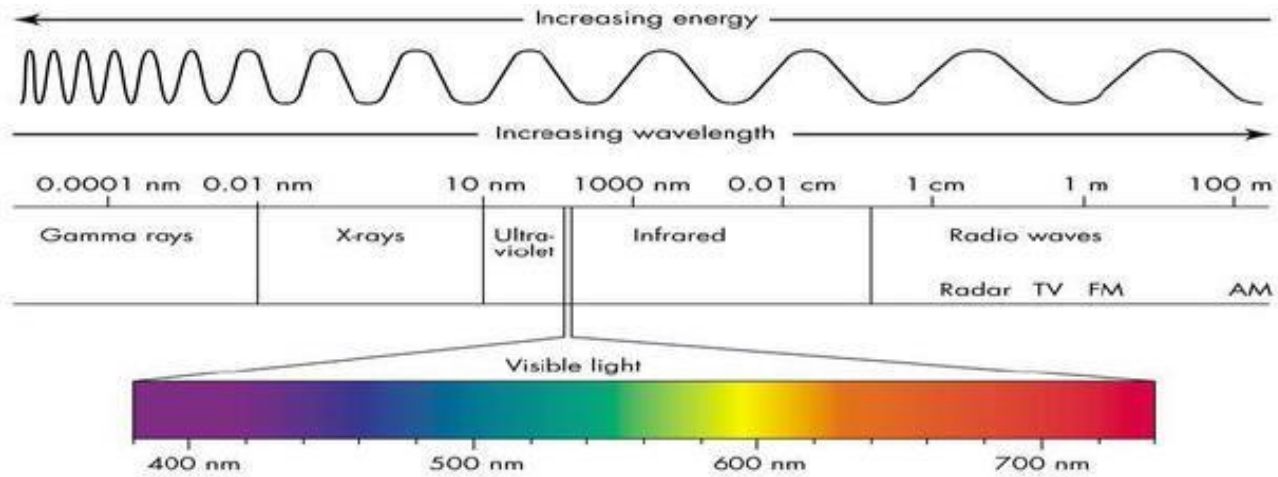
Ultraviolet rays
By Lt Cdr Derek Ireland

There are many different types of rays present in sunlight. The rays that are most damaging to our skin are called ultraviolet (UV) rays. There are three basic types of ultraviolet rays two of which reach the earth's surface, UV-B and UV-A, and a third, UV-C, which is almost all blocked by the Troposphere. UV-B rays are responsible for producing sunburn. The UV-B rays also play the greatest role in causing skin cancers, including the deadly black mole form of skin cancer (malignant melanoma).

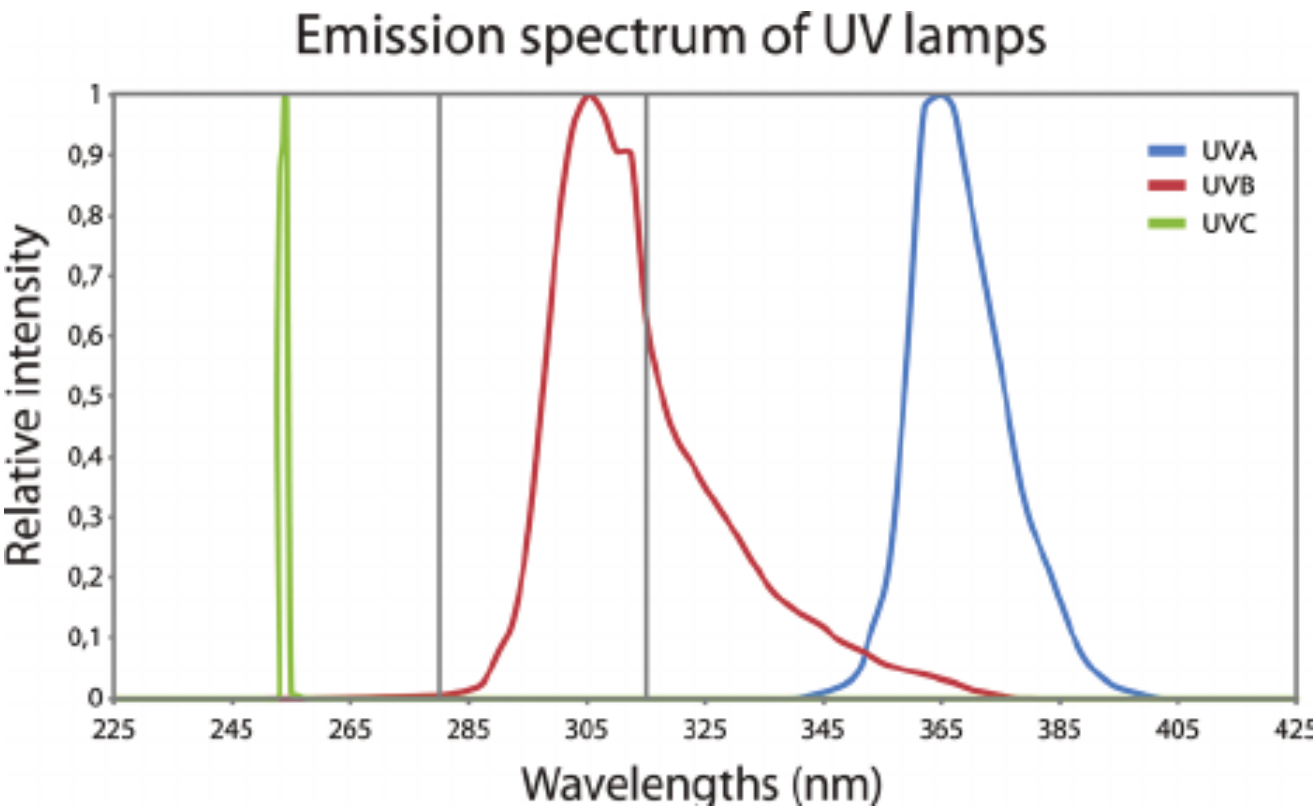
UV-A light, also known as long-wave light, is responsible for about 95% of the UV light that reaches our skin, with a wavelength of 320 nanometres (nm) to 400 nm. UV-A rays are present all year round – as long as there is daylight, there is UV-A. As the longest wave on the UV spectrum, they are able to penetrate deep into the skin: 80% of UV-A rays reach the outer layer of the dermis, the layer of skin beneath the epidermis. This makes them responsible for most preventable photo-ageing, as well as 35% of skin cancers.

Although both UV-A and UV-B are bad for skin, UV-A rays are more of a worry because a much larger percentage of them reach the earth's surface and they are present all day long and all year-round, even when it is cloudy. So, if it is daylight at any hour, UV-A rays are present. Unlike with UV-B rays, you do not feel UV-A rays damaging your skin. UV-A rays are responsible for getting a suntan, and unless you burn first, getting a tan is not painful. However, those stealthy UV-A rays are reaching deep into skin, destroying many of the important substances that help give skin its elasticity and firmness. As a result of this, UV-A rays are a major contributor to wrinkles and skin ageing as well as every type of skin cancer.

Another thing to remember is that UV-A rays penetrate glass, which UV-B rays cannot do. Unless windows are specially treated to filter UV-A radiation, you could be under attack when simply sitting in your car or sitting by the window at work.

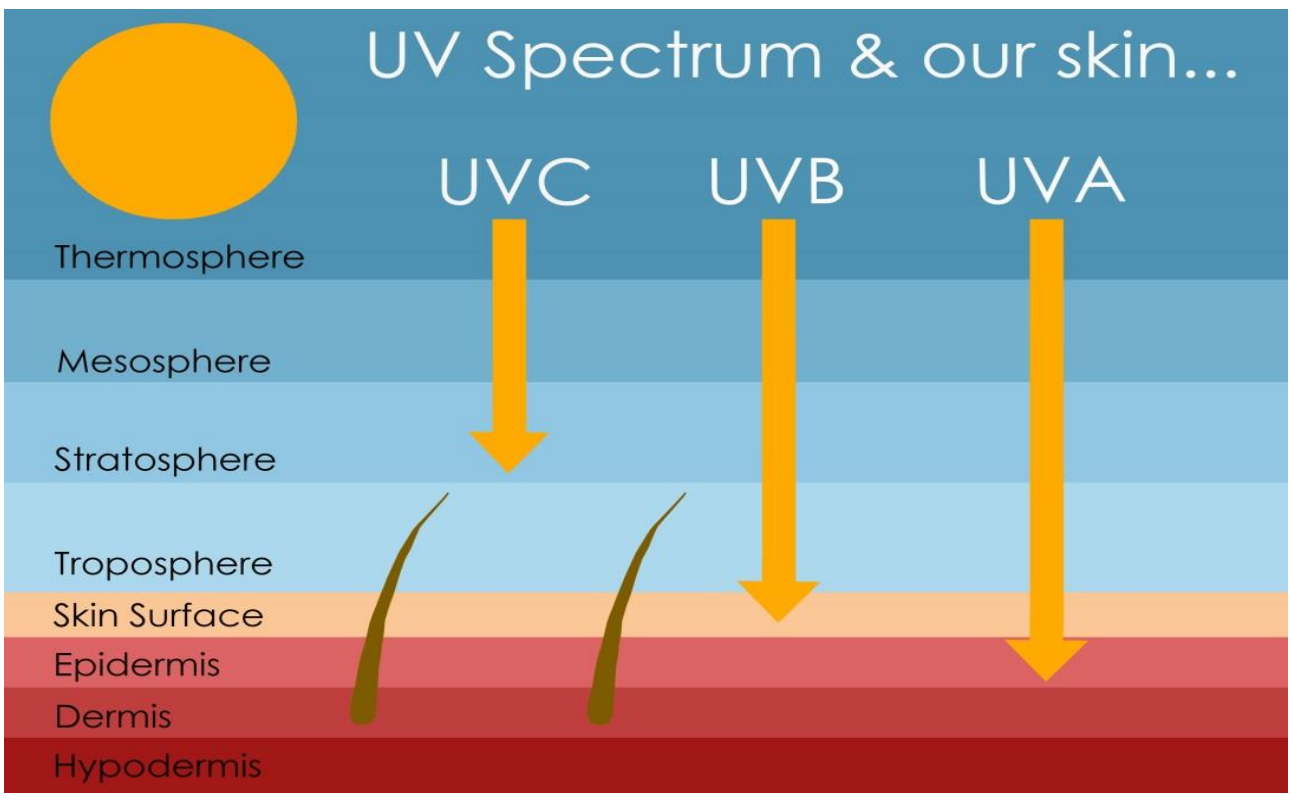


The eye is most sensitive to damage by UV in the lower UV-C band at 265–275 nm. Radiation of this wavelength, being almost absent from sunlight, is found in welder's arc lights and other artificial sources. Exposure to these can cause "welder's flash" or "arc eye" (photokeratitis) and can lead to cataracts, pterygium and pinguecula formation. To a lesser extent, UV-B in sunlight from 310–280 nm also causes photokeratitis ("snow blindness"), and the cornea, the lens, and the retina can be damaged



UVA, UVB, UV-C & Far UVC

Name	Wavelength (nm)	Photon energy (eV, aJ)	Notes/alternative names
UV-A	400–315	3.10–3.94 (0.497–0.631)	Long-wave, black light, not absorbed by the ozone layer: soft UV
UV-B	315–280	3.94–4.43 (0.631–0.710)	Medium-wave, mostly absorbed by the ozone layer: Intermediate UV
UV-C Total band	280–100	4.43–12.4 (0.710–1.987)	Short-wave, germicidal, completely absorbed by the ozone layer and atmosphere: hard UV
Far UV-C	207-222		Very short range and safe to humans



Sterilization and disinfection

Ultraviolet lamps are used to sterilize workspaces and tools used in biology laboratories and medical facilities. Commercially available low-pressure mercury-vapour lamps emit about 86% of their radiation at 254 nm, with 265 nm being the peak germicidal effectiveness curve. UV at these germicidal wavelengths damage a microorganism's DNA/RNA so that it cannot reproduce, making it harmless, (even though the organism may not be killed). Since microorganisms can be shielded from ultraviolet rays in small cracks and other shaded areas, these lamps are used only as a supplement to other sterilization techniques.

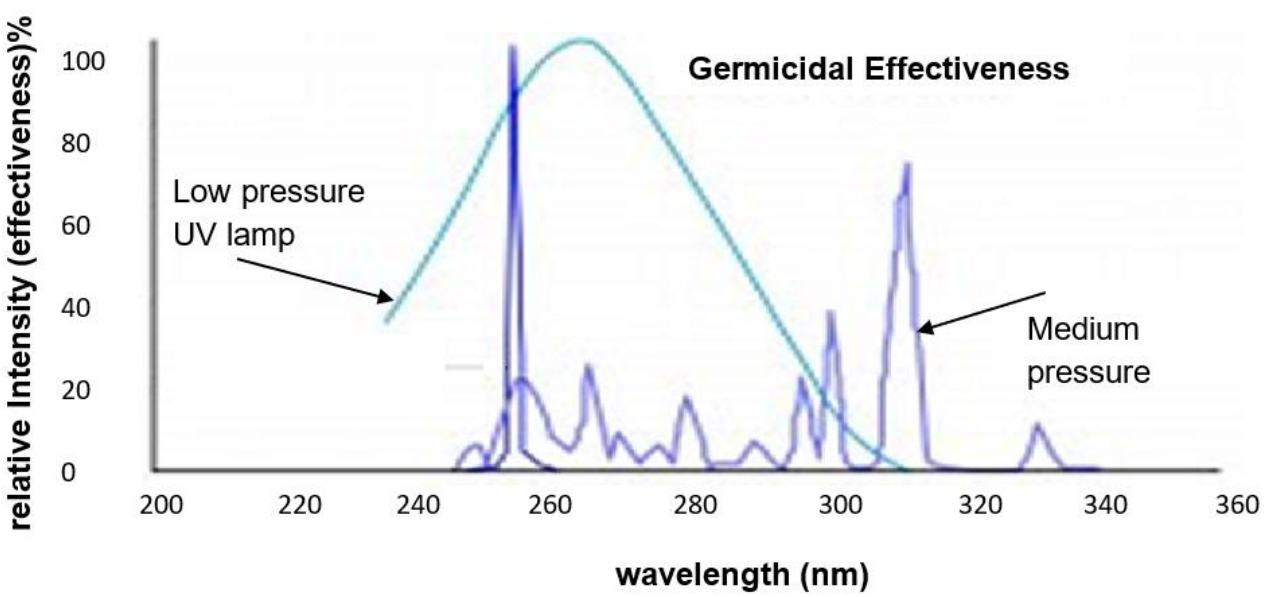
UV-C LEDs are relatively new to the commercial market and are gaining in popularity. Due to their monochromatic nature these LEDs can target a specific wavelength needed for disinfection. This is especially important knowing that pathogens vary in their sensitivity to specific UV wavelengths. LEDs are mercury free, instant on/off, and have unlimited cycling throughout the day.

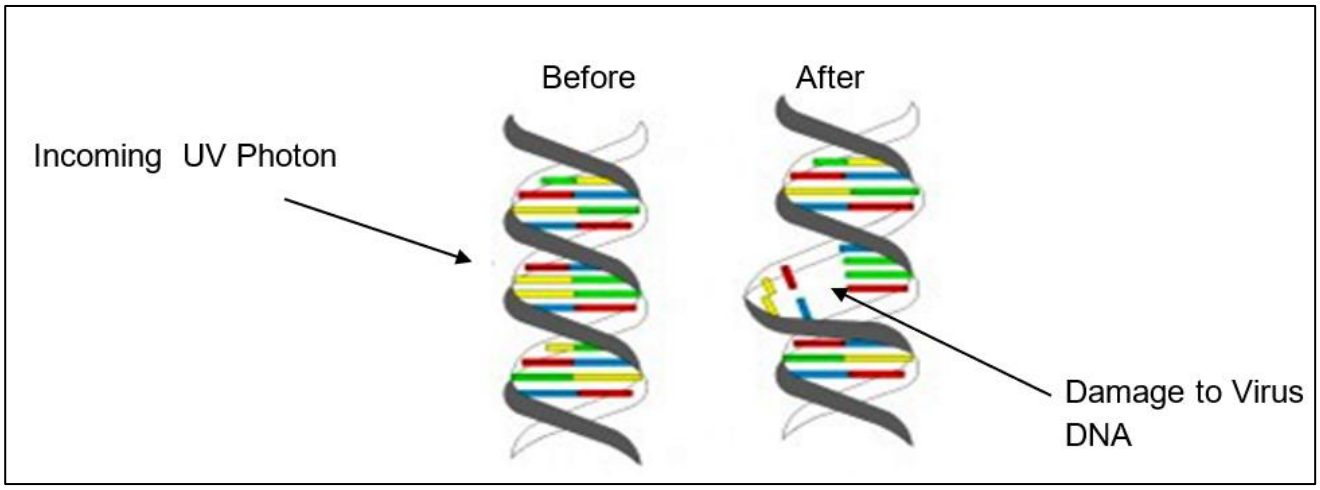
Disinfection using UV radiation is commonly used in wastewater treatment applications and is finding an increased usage in municipal drinking water treatment. Many bottlers of spring water use UV disinfection equipment to sterilize their water.

The airborne antimicrobial potential of UV-C has long been established; however, its widespread use in public settings is limited because conventional UV-C light sources (265 nm) are both carcinogenic and cataractogenic.

UV-C Bulb, Chlorine and Ozone Comparison Chart

	UV-C Bulb	Chlorine	Ozone
Disinfection Type	Physics	Chemical	Chemical
Initial investment cost	Low	Low	High
Work cost	Low	Middle	High
Maintenance cost	Low	Middle	High
Sterilizing effect	Excellent	Good	Not good
Sterilizing time	1-5 sec	25-45 min	5-10min
Human danger	Very low	Low	High
Change water & air	Non	Can	Can





Energy Dosage for UV Irradiation in Microorganisms

The table below illustrates the amount of UV energy needed (at a radiation of 253.7 nm) to inhibit microorganism growth and to completely destroy the presence of the microorganism.

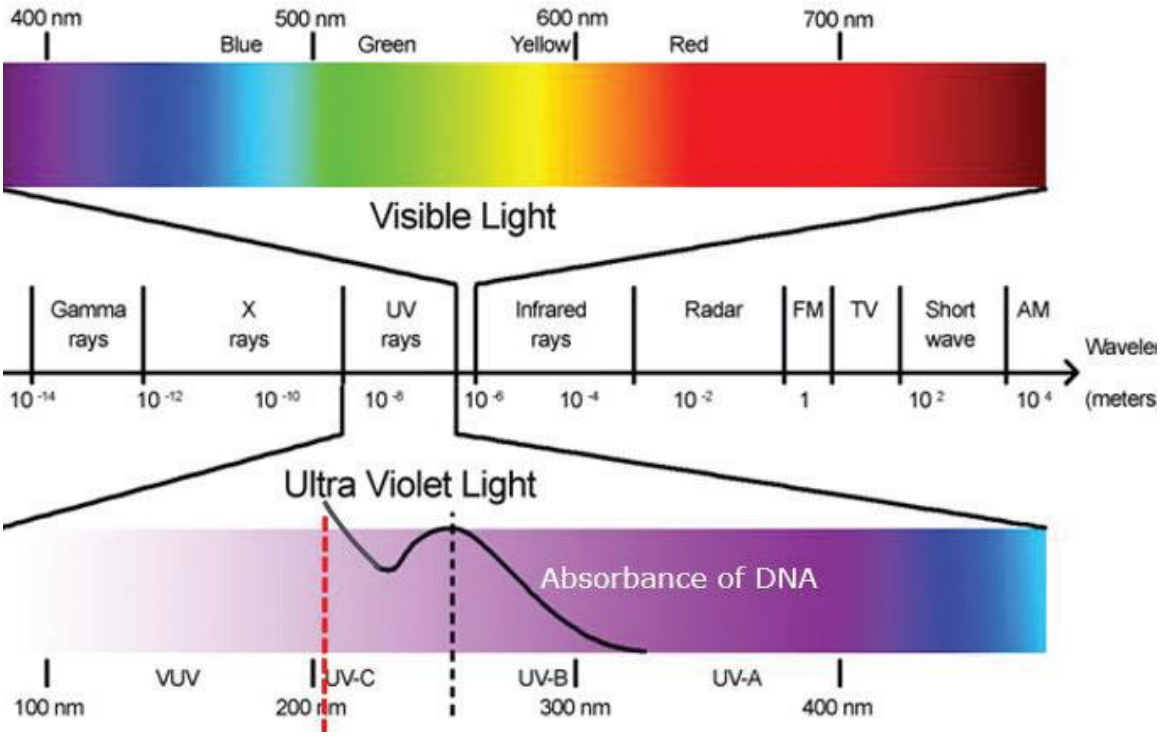
Organism (English Scientific Term)	Type	Disease	Energy dosage of Ultraviolet radiation needed for kill factor ($\mu W/cm^2$)
Bacillus subtilis spores	Germ		22,000
Bacteriophage	Virus		6,600
Coxsackie virus	Virus	The bowel way infects	6,300
Shigella spores	Germ	Germ dysentery	4,200
Escherichia coli	Germ	Food poisoning	6,600
Fecal coliform	Germ	The bowel way infects	6,600
Hepatitis A virus	Virus	Hepatitis	8,000
Influenza virus	Virus	Influenza	6,600
Legionella pneumonia	Germ	Army corps disease	12,300
Salmonella typhi	Germ	Typhoid	7,000
Staphylococcus aureus	Germ	Food poisoning	6,600
Streptococcus spores	Germ	Throat infection	3,800

According to known standards for disinfection, different micro-organisms will have a different killing and death quality value when using UV-C. It can be calculated using the formula as below:

K (disinfectant quantity- μ W Sec/cm2) = I(the strength μ W/cm 2) t(time-sec)*

Based on this formula, it can be seen that either a high strength, short time or a low strength, long time will provide similar disinfection effects.

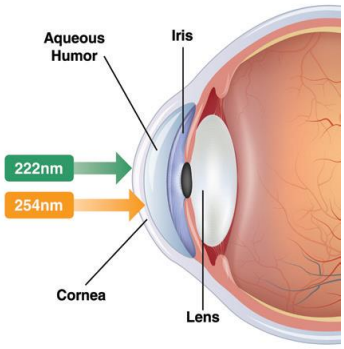
However, in reality, there are many factors to consider when calculating the amount of UV-C energy required, including air flow, humidity levels, time and distance, making the calculation very difficult. Although this is so, studies have shown that sufficient UV-C frequency is able to kill any micro-organism containing DNA



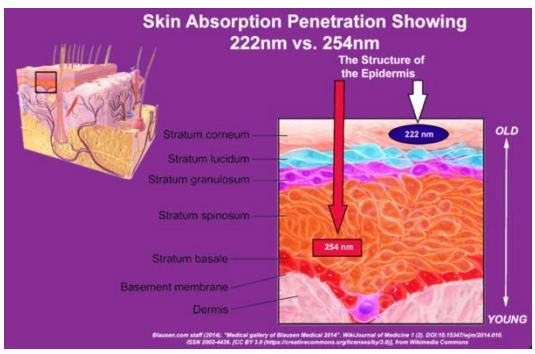
DNA absorbance relative to wavelength
(White paper Ushio America, Inc.)

Far UV-C

By contrast, far-UV-C light (222 nm) is rather unique in that it efficiently inactivates bacteria without harm to exposed human skin. This is because, due to its strong absorbance in biological materials, far-UV-C light cannot penetrate even the outer (non-living) layers of human skin or eye.



Ocular penetration of 222 nm vs. 254 nm
(White paper Ushio America, Inc.)



Skin Absorption 22 2 nm vs 254 nm
(White paper Ushio America, Inc.)

At present one of the few sources of far UV-C is from filtered excimer lamps but there is research being undertaken to produce an LED emitter in the far UV-C range.

Because far-UV-C light does not appear to be cytotoxic to exposed human cells and tissues there is the possibility of using overhead far-UV-C light in public locations which may represent a safe and efficient methodology for limiting the transmission and spread of airborne microbial diseases. Using hand-held excimer lamps, it may possible to sanitise an area in real time without there being a danger to humans.

Ushio America Inc., a specialist in industrial light sources, is introducing the Care222® series of 222 nm Far UV-C excimer lamps. However, availability, at the present time during the Covid-19 pandemic, is virtually impossible.

Efficacy of UV-C Disinfection of Germs and Viruses

Type	Organisms	100% Killing Time (Sec.)
Germs	Anthrax	0.30
	Tubercle Bacillus	0.41
	Diphtheria	0.25
	Vibrio cholerae	0.64
	Tetanus	0.33
	Pseudomonas	0.37
	Botulin	0.80
	Salmonella	0.51
	Bacillus	0.15
	Typhoid fever	0.41
	E. coli (Escherichia coli)	0.36
	Typhoid	0.53
	Helicobacter pylori	0.20
	Shigella	0.28
	L.pneumophila	0.20
	Staphylococcus	1.23
	Micrococcus	0.4-1.53
	Streptococcus	0.45
Virus	Adenoviruses	0.10
	Fluenza Type 2	0.23
	Poliovirus	0.80
	Coxsackie virus	0.08
	Rotavirus	0.52
	Echovirus	0.73
	Tobacco mosaic virus (TMV)	16
	Echoviruses	0.75
	HBV	0.73
	H1N1 (swine flu)	0.5
Mold Spores	Aspergillus niger	6.67
	Ascomycotina	0.33
	Aspergillus	0.73-8.80
	Penicillium	2.93-0.87
	Fungus	8.0
	Penicillium chrysogenum virus	2.0-3.33
	Mucor	0.23-4.67
	Deuteromycetes	0.87
Alge	Spirulina	10-40
	Paramecium	7.30
	Chlorella	0.93
	Green algae (Chlorophyta)	1.22
	Nematode	3.40
	Protozoa	4-6.70
Fish Disease	Fungal disease	1.60
	Infectious pancreatic necrosis virus (IPNV)	4.0
	Vitiligo	2.67
	Viral nervous necrosis	1.6

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