

MINE WARFARE AND DIVING

SUMMER/AUTUMN 2023 #MAD2023 FOR THE DIVING AND MINEWARFARE COMMUNITY, ROYAL NAVY AND DEFENCE



CONVENTIONAL AND AUTONOMOUS... ...BRIDGING THE GAP.



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The Mine Warfare and Diving magazine is published by SURFLOT Staff to serve the Mine Warfare and Diving Communities, but also to raise awareness across the wider Royal Navy and Defence as to the incredible contribution made by this deeply specialist capability. This has been brought to you by COMSURFLOT MCM2 staff and we would be interested in any feedback ahead of further editions.

Thanks must go to the many contributors that have made this magazine possible. Designed and printed by Navy Graphics, Whale Island, with our sincere thanks.

In fond memory of

POET(WE) Jon 'Paxo' Paxton MCM2 Crew 8

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FOREWORD



**Vice Admiral Andrew Burns CB OBE,
Fleet Commander**

The Royal Navy continues to deliver global operations at a time when conflicts are becoming more sustained, internationalised and harder to resolve. The imperative to manage security risks and deter violent conflict could not be greater. The Royal Navy is playing its part in assuring security of trade, maintaining territorial integrity in the Euro-Atlantic and Indo-Pacific regions, while demonstrating the ability to project power and maintain forward presence. Key to maintaining our operational advantage against these challenges is our ability to adapt to changing threats and to develop modernised capability as technologies emerge and evolve.

Understandably there continues to be significant focus on the war in Ukraine. Among the many conventional capabilities employed by parties to the conflict in the maritime, land and air environments, there also many conspicuous examples of uncrewed technologies delivering surveillance, targeting and lethal kinetic effect to support or counter more traditional methods. The power of these combinations in a modern, hybrid approach has resulted in enhanced lethality and subsequent tactical success.

The presence of sea mines in the Black Sea and land mines ashore in Ukraine presents a challenge to freedom of navigation and manoeuvre respectively, threatening the delivery of aid to the region and jeopardising the continuity of global grain supplies with all the inherent economic and societal instability this will bring. As NATO and western alliances continue to oppose this violation of the rules-based international system, we remain resolute in our strategic signalling that Russia's interventions in the Black Sea must not prevail; nor can similar activity be allowed in the Baltic, the Middle East or the Indo-Pacific.

For the Mine Warfare and Diving community, enabling access is a well-established output of their contribution to operational success. They are in the vanguard of the Royal Navy's technological evolution, developing and employing autonomous and offboard systems at pace. Faced with the challenges of how to equip, train and protect both our people and our physical assets, many hurdles have been cleared as we become increasingly proficient in operating remotely piloted and autonomous systems.

Although our aim is to deter and maintain peace, we must be prepared for conflict, and so we must maintain our readiness for global, expeditionary operations and enable rapid responses against a variety of threats, using our skilful workforce and exciting new technologies. This is what our allies rely on and what our adversaries fear – our long experience of using mobility, adaptability and speed as enduring principles of how we conduct warfare. Doing so also requires thought leadership to develop options, combining conventional practices with emerging concepts, to protect maritime access across the world.

The history and culture of the Mine Warfare and Diving community makes it well-placed to lead such adaptation, blending world-leading operational experience, with revised doctrine and world class capability; a bright future lies ahead. I am both proud of your work and excited by the prospect of where you will take the next generation of sea to shore war-fighters.

Alan



BRIDGING THE GAP... ...OUR DEVELOPMENT CONTINUES

by Captain Simon Pressdee Royal Navy – Captain Patrol,
Underwater Exploitation and Diving (PUXD)

A warm welcome to this publication of the Mine Warfare and Diving Magazine following an exciting period of development in which our close-knit but far-reaching community has continued to deliver globally while preparing for the future.



Our Mine Warfare and Diving forces have always led the charge in terms of clearing the way for follow-on units and we continue that legacy through our current pioneering technological and structural change. In the last year we have proven the transformation of the Diving and Threat Exploitation Group as an adaptable and scalable response force, we have deployed an autonomous Mission System Team to Op KIPION, and we have commenced an overhaul of conventional Mine Hunting platforms to integrate offboard and autonomous technologies. We have also seen the transition of title from MCM1 to the Mine and Threat Exploitation Group (MTXG) and it was a pleasure to see so many people from the MCM community at the recent celebratory event.

Our close working partnership with the Royal Fleet Auxiliary goes from strength to strength, not just in terms of deployed logistics through the Afloat Support Base (usually RFA LYME BAY or RFA CARDIGAN BAY), but also in the arrival of RFA STIRLING CASTLE – a dedicated platform for trials and delivery of autonomous capability and command node. In the past 12 months, but not before time, we have successfully provided permanent accommodation for female ratings in the Hunt Class MCMV.

There remains much discussion about the future – talking is usually the easiest part, and now is the time to deliver. We are a community whose role is to produce results and enable access in the maritime and land domains and I expect us to be judged on our achievements over the next decade as we transition our MCM capability.

Today the threat at sea from mining is higher than it has ever been in living memory. The very real danger to sailors and land forces from a range of explosive threats is no longer hypothetical, with credible evidence that there are mines deployed at sea, intact, armed, and ready to kill. Our response is and must be credible – to innovate, to render safe and to clear the way for others to follow.



MCM1 OVERVIEW

Cdr Daniel Morris RN

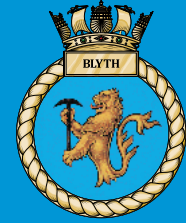


2022 was a busy year for MCM1 before transferring title to MTXG in 2023 (see articles below). SQN and ship outputs were maintained, despite reducing hull numbers: UK VHR (and Op PIKE), NATO, and Op KIPION (including Op SHADOWFOOT support to Qatar World Cup 2022).

Since early '22, the UK government's support to Ukraine has been highlighted through the sale of two SRMH and the establishment of SDG (Sandown Disposal Group). Cdr Jim Lovell, Lt Cdrs Bryden and Platt transferred legacy RN ships GMBY and SHOR to the Ukraine Navy. This work continues, with WO John Cowan and SDG, as BLYH and RAMS are also being prepared for a Government-to-Government sale. Planning is well underway to realise a key ISL priority: MHC. In July 23, MCM1 rebrand title to MTXG (Mine Threat and Exploitation Group). MTXG will maintain a permanent staff presence on the Clyde, alongside WILTON which is now at FOC. Cdr Dan Herridge returned from deployment as COMUKMCMFOR and took the reigns from Cdrs Dan Morris and Neil Griffiths, to be Cdr MTXG and Senior Operator for the remaining Sandowns, and for MHC. MTXG will command the remaining Sandowns, MHC and the Mission Teams.

MCM1 Crew 1

Crew 1 returned to the Gulf under the command of Lt Cdr Castrinoyannakis for their final KIPION deployment. Following direction from the Secretary of State for Defence, Crew 1 commenced the return passage home to the UK, handing over to Crew 4 alongside Crete. Crew 1 have since supported SDG (Rosyth), supporting Defence Disposals and Babcock to prepare the next SRMH for sale. C1 will deploy to KIPION, again, in Q3 23.



MCM1 Crew 2

Early in '22, Lt Cdr Simon Henderson, in command of GRIMSBY, joined the Standing NATO MCM Group in the northern Baltic region, and so enjoyed the Ship's final deployment, before she entered Rosyth in preparation to Transfer Title to the Ukrainian Navy. Crew 2 have since regenerated for KIPION, specifically to support Op SHADOWFOOT; supporting COMUKMCMFOR to provide maritime security to Qatar during the FIFA World Cup.



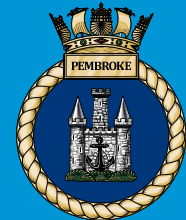
MCM1 Crew 3

Having returned from their final KIPION rotation, Lt Cdr Daff Bryden and Crew 3 contributed greatly to the UK Government's support to Ukraine. Crew 3 have delivered the Transfer of Title of GMBY to the Ukrainian Navy, which has incorporated a transfer of SRMH knowledge and training MCM to the Ukrainian Crews in the UK. GRIMSBY transferred title in Oct, and the Crew decommissioned shortly afterwards.



MCM1 Crew 4

Lt Cdr Chris Chew and C4 RIP'd into PENZ in the summer of '22, to complete the return passage to the UK. En-route, she was tasked to conduct Detailed Route Survey in Gibraltarian territorial waters, providing critical underwater data to the UK Hydrographic Office. C4 brought PENZ back into a Support Period, which has included ORCA and S2093 upgrade and regenerated for KIPION. C4 are regenerating for K2.



MCM1 Crew 5

Lt Cdr Andrew Platt and Crew 5 held Defence Task duties for large parts of Q1 and Q2 before taking SHOREHAM into Rosyth, where they joined Crew 3 to transfer SRMH knowledge to the Ukrainian Navy. Since then, Crew 5 have been on PEMBROKE. Q1-2 of the New Year saw Andy and his Crew conduct OST and Force Generate for KIPION.



MCM1 Crew 6

Runners up in three SURFLOT Excellence Awards, Lt Cdr Dan Briscoe and Crew 6 have completed their final KIPION rotation. They took on PEMB, maximising time on PIKE tasking around the UK, prior to her final period at sea under a White Ensign before returning to Rosyth for the final time.



MCM1 Crew 8

Lt Cdr Rob Couzens and Crew 8 completed their final KIPION rotation. Thereafter they brought PENZANCE out of a Support Period and held UK duties and supported regenerating Crews before disbanding at Easter 2023.





HMS PENZANCE – THE FINAL SAIL BACK

Lt Euan Johnston NO MCM1 Crew 1

In mid-June last year, HMS PENZANCE had arrived in Hamad Port, just South of Doha, Qatar. The ship had just completed a stint of multinational operational training North of the Qatari peninsula in support of OP KIPION, and was now alongside to host a Defence Engagement event with a variety of guests ahead of the FIFA World Cup later that year. The crew however was not expecting to receive the news delivered later that day; HMS PENZANCE was required to return to the UK as soon as possible in support of wider defence commitments. The date to sail from Bahrain was the 24th of June, as HMS PENZANCE was needed back in Faslane by September. The ship sailed from Qatar and was alongside in Bahrain on the 14th, leaving the crew, the Mine Warfare Battle Staff and the wider KIPION enterprise just 10 days to plan an unprecedented solo Sandown sail back to the UK; a task usually undertaken with a Hunt Class partner and with months of preparation. The following 10 days was intense with preparations for sailing, many of the Ship's Company worked harder and longer than ever before. The short support period that the ship was due to undertake was to be accelerated and work commenced immediately to ensure she would be in the best possible material state before setting sail. The proposed route was – Muscat, Duqm, Salalah, Djibouti, Jeddah, Aqaba, Souda Bay – at which point Crew 1 (under the command of Lt Cdr T Castrinoyannakis) would hand over to Crew 4 (under the command of Lt Cdr C Chew). Preparations commenced apace whilst the planning group quickly identified the main three challenges the crew would need to overcome: inclement weather, insufficient fuel and acquiring the necessary Diplomatic Clearances.



Weather – In the summer months with temperatures in Bahrain regularly exceeding 45°C, the Arabian Sea to be navigated was in the grips of the early stages of the South-West Monsoon season; with a challenging Sea State 5 just 6 miles off-shore and with winds rarely below Near Gale (33kts). The operational capability of the ship was going to be constantly tested and the crew pushed to their limits fighting the elements.

Fuel – With only a few days endurance depending on the slow-ahead engine configuration and speed available to Command, it was vital that critical resupply ports were identified and reachable with limited range. The ship had to be able to sail from Muscat to Salalah direct, without refuelling in Duqm, if the weather window allowed. Subsequent key logistics stops would be Djibouti and Jeddah and Aqaba. With little room for manoeuvre in dates, timely organisation and delivery of fuel would be crucial for a safe transit, and one which HMS PENZANCE would fall victim of in a few weeks.

Diplomatic Clearance – With a complex and taut navigation plan and crucial logistics stops a considerable volume of diplomatic permissions were necessary. Whilst Rites of Innocent Passage entitles warships to transit through other nations' Territorial Waters (usually up to 12nm from the coast), it is customary to request ministerial approval from the host nation. This process can take longer than expected, and flexibility in timings is needed to capture the unpredictability in weather and respond to emergent challenges. Acquiring these permissions within the timescales available was going to be particularly difficult.

With the preparations complete HMS PENZANCE was ready to sail on the morning of the 24th of June, from UKNSF, Departing Bahrain for what was the very last time, she was waved off with fair wind and following seas by the Crews of HMS BANGOR, HMS MIDDLETON, and HMS CATTISTOCK, along with the KIPION staff. The first stop was to be Muscat, but before that the ship would need to transit through the Straits of Hormuz – one of the world's most strategically important chokepoints.



Between Iran, the UAE and Oman, the 20-mile-wide waterway is the transit corridor for over 35% of the world's petroleum. With Iranian interactions likely to occur, HMS PENZANCE rendezvoused with T23 frigate HMS MONTROSE the night before heading up and made her way the following morning. The Iranians made their presence known at first light and then relentlessly throughout the transit. With the chokepoint successfully navigated, HMS PENZANCE detached from HMS MONTROSE and continued with her tasking.

With Muscat in sight the crew encountered not just one, but two of the hurdles identified in the planning stage. Having prepared to come alongside in the morning, the Ship's Company arose to find that instead of making way towards Port Sultan Qaboos, Diplomatic Clearance had not yet been achieved and HMS PENZANCE was to stand off outside Territorial Waters. Despite the bureaucratic and timely process, the ship was alongside Port Sultan just after

sunset, only for the next hurdle to arise – the weather forecast for the onward journey had deteriorated significantly. It was decided to make use of the delay and HMS PENZANCE would sail into the Gulf of Oman to conduct Unit Level Training whilst awaiting a permissive weather window. The little spare time in the programme was quickly consumed whilst the ship watched the weather in the Arabian Sea intently. By some good fortune the ship was even able to rendezvous with Italian Carlo Bergamini-class frigate ITS VIRGINIO FASAN to practice some OOW manoeuvres. After three days, with a small weather window suddenly available a quick logistics stop into Muscat to refuel and HMS PENZANCE was back on her way.

The amended navigation plan was to hug the Omani coastline, where the wave height was expected to be 4 metres and below, and to sail straight for Salalah. Making slow progress, albeit ahead of schedule, the next few days and nights consisted of the Ship's Company being secured for sea in the most difficult and testing of conditions. Despite the best efforts of the South West monsoon, and with many personnel struggling, HMS PENZANCE made it into Salalah for a logistics stop and a brief opportunity for respite before continuing westwards. After two nights in Salalah, she was straight back into the monsoon, headed for Djibouti and hoping for a calmer sea state afforded by the Horn of Africa. Fortuitously with Somalia providing some shelter from the worst of the winds, HMS PENZANCE made her way down the International Recommended Transit Corridor towards the Gulf of Aden, in good time and eager to get alongside. However further delays were encountered with Diplomatic Clearances resulting in the Djibouti logistics stop being shortened by 24hrs.





Hoping the worst of the weather has passed, the Red Sea forecast had high winds funnelling which although would be more comfortable to navigate, would significantly reduce transit speeds. The hurdle was another of the world's most renowned chokepoints – the Bab Al Mandeb (BAM). The BAM lies between Yemen and Eritrea and due to the ongoing conflict between Saudi-led Coalition forces and the Houthis, additional force protection measures for HMS PENZANCE would be necessary. With support from the regional US Navy fleet and other coalition forces, the chokepoint transit was successfully completed with no complications.

Up until this point, it hadn't really dawned on the crew that an end to the deployment was quickly approaching and a reunion with their families was only a matter of days away. The next challenge in Jeddah however tested the crews resolve and placed significant risk on HMS PENZANCE meeting her Suez transit.

Hours away from arriving alongside, the MEO and the Navigator awoke to the news that there were complications with the quality of the fuel available in Jeddah. To make matters worse, the approved Diplomatic Clearance timeline wasn't sufficient to meet the next fuel shipment. With only half a tank of fuel left, the decision was made to make a swift departure and proceed at the most fuel-efficient engine configuration towards Aqaba. This hurdle tested the crew as they battled against the winds in the Red Sea, at time slowly crawling at 2kts up the Strait of Tiran. A few days of endless fuel calculations and speed adjustments would have the ship in place to be alongside in Aqaba with sufficient time to resupply and prepare for the final stage.

A unfortunate delay awaited in Jordan as the allocated berth was occupied by another vessel which was suffering complications due to COVID. HMS PENZANCE was required to loiter for another 24hrs in one of the few places in the world where one can see four countries from the same spot – Jordan, Israel, Saudi Arabia and Egypt.

Following a reduced Logistics stop and some essential repairs, the final hurdle awaited – The Suez Canal – the famous waterway which accounts for 8% of global shipping traffic annually. HMS PENZANCE arrived at the anchorages at the southern entrance (Port Suez) late in the evening, the ship very quickly undertook another fuel top up at anchor whilst simultaneously ditching gash and taking on water. The serial was over and done astonishingly in under two hours. All that was left was to wait with the growing number of merchant ships ready to go through, all vying for pole position in the convoy.

Warships enjoy priority status to lead the procession through the canal, so in the early hours of the following morning, HMS PENZANCE, a very small warship led a very large convoy of super tankers and merchant vessels North through the Suez canal, passing the place where just over a year previously the MV Ever Given had caused havoc with global trade when she found herself beached and obstructing the waterway.



As the sun was setting at the tail end of July, HMS PENZANCE finally exited the Suez Canal at Port Said and into the Mediterranean Sea. The change in the air and weather was immediately evident and focused the crew on the final stage of their journey. Making best speeds to Souda Bay, and following some Diving training in cooler waters, MCM1 Crew 1 came alongside the NATO base to bring their journey with HMS PENZANCE to an end. Handing over the "Pirates of Penzance" mantle and the remainder of the transit back to the UK to MCM1 Crew 4, MCM1 Crew 1 had completed their mission. After a rollercoaster final 5 weeks of deployment (and 1100 seasickness tablets), MCM1 Crew 1 could look back at their journey from Bahrain to Crete with pride. Demonstrating resolve, determination in the face of adversity and true MCM ethos, they had conquered the SW Monsoon and truly earned their sea legs.



SQUADRON UPDATE – MCM2

By Cdr Adrian Visram



2022 marked the end of the heavy restrictions imposed across the world because of the impact of COVID 19. The relaxation of social distancing and a return to a new normal of life has allowed a fresh approach to be taken in programming activity undertaken by MCM2 platforms. Although the prescribed commitments of High Readiness Tasking, Op KIPION (16 years) and Force Generation remain the fundamental pillars of our activity, our route to achieving these has developed significantly.

Our successes this year have not come without significant challenge. I recognise the considerable delays to the Support Period Docking (SP(D)) of CATTISTOCK and LEDBURY has increased the pressures on the remaining Crews and Platforms to maintain the high tempo of Operations both in the UK, NATO and KIPION – I, like you, remain frustrated by this, but determined to ensure the short term pain results in a more relevant, lethal and sustainable class of ships for the next decade. Workforce pinch points across the Royal Navy have further increased the pressures on Crews and I acknowledge the ‘N1’ impact this has on you as individuals but also your families. As such they have my wholehearted thanks for their continued support and dynamism in allowing you to deliver during these challenging times.

It is widely understood and acknowledged that Hunt MCMVs are the oldest platforms operated by the Royal Navy and while we collectively tackle the challenges of obsolescence, equipment fragility, lack of stores, increasing maintenance and programming burdens; I could not be prouder of the entire Squadron in ensuring we deliver on our commitments. The collective talents of the 8 Crews, Squadron Staff and supporting elements have ensured that despite a reduced number of platforms available to undertake tasks we have continued to deliver a dynamic and rich programme in direct support of Defences wider aims and objectives.



Out of significant challenge comes opportunity - this past year has seen the first 12 months of the revised OP KIPION RSOI process with Crews operating within the Dual Crew Model (DCM) continuing to reap the successes experienced in earlier iterations. An increased level of autonomy to deliver and maintain readiness for tasking during Regeneration Periods (RGen) has increased the N1 effectiveness of the DCM, while enabling Command Teams to focus their activity in an ever more bespoke and appropriate manner. We have continued to pioneer the integration of autonomous technologies both in the UK, Op KIPION and NATO arenas to a high level of success. This momentum has enabled a programme to 'up gun' the HUNT class. The product of this effort being the imminent introduction of REMUS 300 AUVs and a demonstrator PODS mission support system to be embarked in and operated from LEDBURY by the end 2023. The success of this will be maintained and the aspiration is to roll this out further over the HUNT Class going forward.

As I have already touched upon above, this is a time to be excited despite a multitude of challenges. 2023 has seen several significant changes to MCM2, along with the capability upgrades of AUVs, female Ratings have joined the squadron ranks at sea with Crews 3 and 8, legacy Sweep capabilities in LEDBURY have been removed along with improvements to the living standards in CATTISTOCK are all set to tackle some of our obsolescence issues. Our successes however aren't limited to material improvements. Programmes have also been improved with Crews achieving visits to an increasing variety of UK Ports - a theme to be continued in 2024! KIPION units have also increased their engagement schedule, particularly in support of the FIFA World Cup and plans are always being scoped to increase our NATO commitments in coming years. Most importantly and despite the delays, CATTISTOCK and LEDBURY will return to operational tasking more technologically advanced, deadly and better equipped to defeat the challenges posed by an ever-evolving threat while leading the way for a class of 'HUNT PLUS' ships for the next decade.

The future is exciting - the future continues with the Hunt.

MCM2 Crew 1 in CHIDDINGFOLD (KIPION)/BROCKLESBY and CATTISTOCK (UK)

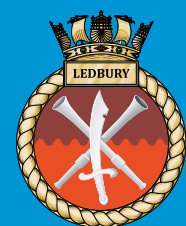
Crew 1 spent their final rotations in the successful DCM operating in CHIDDINGFOLD as part of the UKMCMFOR based in the Middle East. The majority of their busy deployed periods were spent undertaking essential TACDEV for the increased integration of Autonomous (REMUS 100) capabilities from a HUNT. Crew 1 worked tirelessly with embarked elements of the US Expeditionary Mine Counter Measures Company (EXMCMCo) to achieve significant advancements in the side-by-side operation of current MCM techniques and offboard systems. This essential activity has helped pave the way for a similar operational trial using UK REMUS systems in HURWORTH during crew 3 recent NATO deployment. Crew 1 have now successfully completed their 3 Gulf rotations in the DCM under the Command of Lt Cdr Chris Sharp, winning the SURFLOT MCM Efficiency Pennant. Crew 1 have closed out '22 with a return to sea and have been conducting important UK Operations and TACDEV in BROCKLESBY under the Command of Lt Cdr Jonny Campbell before taking on CATTISTOCK and returning to operations.

MCM2 Crew 2 in BROCKLESBY (UK FGen)/CHIDDINGFOLD (KIPION)

Having taken over BROCKLESBY following her return from the Gulf at the end of '21 Crew 2 quickly commenced a period of platform sustainability and Force Generation activity to prepare them for their Gulf deployment towards the end of '22. Under the Command of Lt Cdr Matt Teare, Crew 2 successfully returned to sea in BROCKLESBY and worked hard to deal with serious emergent engineering challenges including an engine change in Scotland. Their hard work paid off and after a variety of regional engagement visits to Belfast, Swansea, Hull, Jersey and Largs Bay after completing OST. Crew 2 are now established in Gulf Dual Crew Model in CHIDDINGFOLD.

MCM 2 Crew 3 in HURWORTH (KIP/NATO)

Crew 3 are arguably one the widest travelled MCM Crews in MCM2 over the last 12 months; having signed off their final rotation in the Gulf DCM a RiP in to HURWORTH and a short regeneration period (DRT) in the UK awaited them upon their return. This marked a transition from the familiar operations of the Middle East and the support of the NSF Bahrain, to the less familiar surroundings of NATO SNMCMG 1 tasking. Focused on the Atlantic Coastline of Southern Europe Crew 3, Commanded by Lt Cdr Simon



Reeves took up the baton of HUNT Class/Autonomous system integration to great success. HURW deployed with UK REMUS 100 systems operated by augmentees from DTXG (Echo Sqn) to deliver essential TACDEV. This included support to the NATO Robotic Experimentation and Prototyping using Maritime Uncrewed Systems (REPMUS) exercise in September. Based off the off Lisbon and involving 900 participants from 16 Nations REPMUS provided Crew 3 with the opportunity to operate with autonomous elements from across the NATO Task Group while reinforcing previous evidence of the suitability for HUNTS to act as 'motherships' for offboard systems while maintaining traditional MCM outputs concurrently. Crew 3s' efforts cannot be underestimated in a year that has shown a wide portfolio of operational deliverables across a multitude of tasks and environments. Crew 3 have now moved into LEDBURY, now under the Command of Lt Cdr Craig Clark, and will bring her out of refit in '23; they will use their AUV experience in shaping the integration of the new PODS system into LEDBURY, following her sweep gear removal, they will develop designs and operating procedures for future HUNT PODS embarked to deliver sustained operations using both REMUS 100 and 300.

MCM2 Crew 4 in MIDDLETON (KIPION)

2022 proved to be another busy period for Crew 4, initially Commanded by Lt Cdr Sam Stephens, deployed in the DCM on operations East of Suez. MIDDLETON is the sole operational HUNT Oceanographic Reconnaissance Combat Architecture (ORCA) platform. ORCA is the brand-new Command System shared across MCM platforms. Combining a full system hardware and software update Crew 4 lead the way in the development of SOPs for a system which is to be rolled across the remaining HUNTS. Under the Command of Lt Cdr Gemma Britton Crew 4 completed their 2nd Gulf rotation, during this successful period PO(MW) Jay Jae Barlow was awarded by the Squadron Key Affiliate (The Merchant Taylors' Company - One of the oldest of 12 Livery Companies of the City of London) for his efforts in the documentation and employment of ORCA. Crew 4 returned to the Gulf for their final rotation in early '23 and will take on HURWORTH for UK running.

MCM 2 Crew 5 in HURWORTH (UK FGen)/ CHIDDINGFOLD (KIPION)

Starting out the year in HURWORTH, Crew 5 Commanded by Lt Cdr Nick Southall completed a hard-fought period of Force Generation culminating in a successful OST in Scotland. This was followed by a RiP to CHIDDINGFOLD and commencement of operations in the KIPION JOA and their first rotation in the DCM. Adapting quickly to the extremes of the Bahrain summer, they have continued the efforts of Crew 1 to embark and integrate US offboard MCM systems while laying the pathway for further development of joint UK/US current and future MCM techniques. Crew 5 have continued their balance of UK re-generation and KIPION deployment in 2023, with Lt Cdr Dan Briscoe assuming Command in September.

MCM2 Crew 6 in LEDBURY (UK SP(D))/HURWORTH (UK FGEN)

Having spent 2022 in a period of technical and operational upgrade, HMS LEDBURY has been cared for by a combination of BAE systems engineers and Crew 6 personnel. Appointed to the role of SNO, Lt Isaac Johnson oversaw the day-to-day generation of a Crew which has provided significant workforce support across squadron ensuring that both UK and deployed operating crews have maintained the required operational outputs in challenging workforce conditions. During this period Crew 6 have been heavily involved in a complex engineering project which has seen significant capability insertions to LEDB including upgrading her combat and engineering systems. Pioneering the removal of her legacy sweep capability in favour of the soon to be delivered PODS and REMUS 300, LEDB will return to operational service in '23 ready to integrate autonomous capabilities. Crew 6 have handed LEDBURY to Crew 3 and returned to sea under the Command of Lt Cdr Alex Knight in HURWORTH as they prepare to enter the DCM and deploy to OP KIPION in '23.

MCM2 Crew 7 in MIDDLETON (KIPION)

Commanded by Lt Cdr Neil Skinner, Crew 7 have been committed to the Gulf throughout '22 delivering effect and influence in KIPION JOA. Having conducted the sail out of MIDDLETON to the Middle East in late '21 in the face of a compressed Force Generation timeline Crew 7 and introduced ORCA to the operational environment for the first time. During their remaining time in MIDDLETON in the Gulf Crew 7 have faced various challenging engineering problems, they have always remained positive and committed to restore capability to meet the demand from their Operational Commander. They are now in the UK overseeing BROCKLESBY SP(D), aiming to produce an upgraded serviceable platform in the near future.

MCM2 Crew 8 in CATTISTOCK (UK SP(D))/HURWORTH (UK)

Crew 8 have been UK based in '22, initially delivering periods of tasking in home waters LEDB before taking her into refit. SNO, Lt Jason Rogers subsequently took CATT and worked tirelessly to bring her out of an extended refit period. This period of refit and capability enhancement is designed to deliver an up to date, relevant and lethal platform. Crew 8 have had to adjust to various overruns as a result of project growth remaining positive throughout while supporting the wider Squadron during a challenging workforce resource period. With Lt Cdr Jonny Campbell moving to Crew 1, Lt Cdr Tom Lindsey is now in Command and Crew 8 have moved to HURWORTH to complete OST before commencing KIPION DCM.

Squad News - MCM2 pan-squadron team building at Pier Cellars in July - W01 Malcom (XWO MCM2).

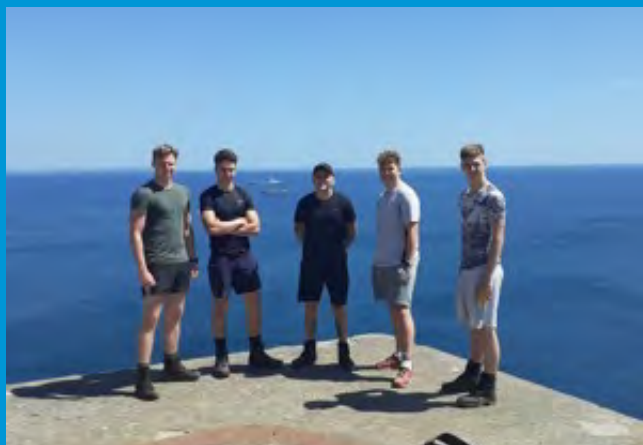
Finally, a summer without C-19 restrictions! MCM2 Squadron decided to take advantage of the summer heatwave along with the facilities and AT equipment that are free to serving personnel and the idyllic Cornish setting of Pier Cellars.

Originally planned for five days but reduced to three due to high demand of Pier Cellars, an AT package was organised for all personnel under the command of Cdr MCM2. Activities included mountain biking (thank you LS MW Brown), walking, in camp PLTs and a BBQ.

What turned out to be the one of the hottest weeks on record resulted in tailoring specific activities, allowing for rehydration and rest (and application of some SPF 50!), a successful three days was had by all with the consensus being this shouldn't be a one off. The event gave staff a chance to get to know personnel better and hear first-hand of their lived experiences in the RN to date.

The intention is to hold a similar event Q2/3 2023 with possibly the introduction of SUP and opened up to the wider MCM community, standby for further announcements but please forward your details to MCM2 XWO if you have relevant qualifications that will allow introduction of other AT activities.

The booking of Pier Cellars and other camps like this are not limited to Flotilla staff, anybody wishing to organise their own events and wish to learn the process may contact MCM2 COS alexander.coleman102@mod.gov.uk or XWO robert.malcolm153@mod.gov.uk for guidance.



The beautiful setting of Rame Head Peninsula.



CPO Robinson aka Damsel in Distress Falls The teams take time out for some cheesy to get feet wet due to sturdy raft design. Grins!



Raft building (a welcome respite from the heat)

NATO MATTERS

By Lt Joe Hobday RN, NO MCM2 Crew 3

The Standing NATO Mine Countermeasures Group 1 (SNMCMG1) deployment included MCM2 Crew 3 in HMS HURWORTH working alongside Canadian, German and Lithuanian allies to conduct historic ordnance disposal, prove and test future capabilities, whilst also conducting a selection of inter-ship serials. Spanning from France, Spain and Portugal, the deployment provided numerous port visits to complement the tasking being conducted. Naturally, as is the case with all deployments, significant work-up was required beforehand.

Off the back of their last Op KIPION rotation, Crew 3 immediately conducted a RiP into HMS HURWORTH post-leave to quickly get to grips with their new platform. The deployment then began some time prior to sailing from Portsmouth 8 Aug 22, culminating in a rigorous two-week FOST-led Deployed Readiness Training (DRT) package to add the final polish.

To get to the training, Crew 3 sailed for Scotland, stopping at Newcastle along the way. An enjoyable UK run-ashore ensued, blowing off steam prior to the delights of Faslane. With the training successfully achieved, the crew were ready to deploy.



After a short transit from Portsmouth, Crew 3 were met by the picturesque city of St. Malo. Under a beaming sun, HURWORTH sailed amongst pleasure boats and yachts to reach the walled city. Better yet, within ten minutes' walk from the Ship was a plethora of cafes, bars, shops and restaurants to enjoy. It was a welcome indulgence before conducting historic ordnance disposal. The preceding week set the tone for the deployment, one consisting of a working week at sea, followed by a port visit. During the historic ordnance disposal phase, Crew 3 put their experience into practice and successfully conducted live countermining; procedures worked soundly, identifying with Seafox and destroying with Diver Placed Charge.





After this first task of the deployment, Crew 3 went on to perform various seamanship evolutions between different ports. Light-Line Replenishment At Sea (RAS) transfers were conducted between each ship of the task group, each exchanging beers to prove capability. Furthermore, towing with weight was also carried out. Both serials are rarely conducted in MCMVs, aside from during FOST, and the NATO deployment was giving the Ship's Company ample opportunity to put their knowledge into practice. Overall, the seamanship evolutions performed with out allies are invaluable experiences, consolidating professional skills whilst also being enjoyable.

Socially, the NATO trip gave us the opportunity to interact with other crews. Events were organised by the Germans and Canadians at different ports, providing interesting nights respectively. Of course, Crew 3 were eager to introduce their NATO counterparts to ridiculous dice-offs, culminating in a close shave for a few. Sporting competitions were also encouraged: hockey, football and a biathlon brought a competitive edge.



Further port visits were welcomed, with a highlight being Lisbon. The vibrancy and dynamic nature of the city meant there was much to explore, whilst many of the crew were able to sample surfing courtesy of AB(D) Andrews. During this first brief visit, HURWORTH embarked a REMUS team from DTXG to prove and test the capabilities of future operations. Their involvement enabled Mine Warfare ratings to see first-hand the strengths of REMUS, and how

it can enhance organic (conventional) capabilities. The necessity for defect rectification forced the Ship alongside prematurely, yet the additional time in Lisbon was valued.

Despite arriving back in the UK shortly after, the work continued. We conducted gunnery serials off Plymouth to test task group reactions, embedded within Exercise JOINT WARRIOR. These exercises rounded off the deployment aptly, providing the crew with experience and training across the full scope of maritime operations. These drills involved live aircraft and multiple surface contacts, and the use of blank firings enabled gunners and firefighters alike to practice realistically. The exercise, complete with live gunnery, was an impressive way to end the deployment before sailing into London for a final great port visit followed by homecoming in Portsmouth.

The NATO deployment was enjoyable and professionally rewarding. It has not been a holiday, nor has it felt like an Op KIPION deployment. Instead it has been a perfect blend of work and play, enhanced by the various port visits on offer. Busy working weeks meant the time at sea was utilised productively, and the weekends alongside enabled downtime and enjoyment; a perfect blend.



DUAL CREW MODEL IN HMS BROCKLESBY – THE UK PART

By Lt Alex Gliniecki RN, NO MCM2 Crew 1

Having spent the past two years forward deployed to KIPION, MCM2 Crew 1 has recently transitioned back to UK running. As one of the first Crews to complete all 3 KIPION rotations, we were firmly used to 4-month deployments in the Middle East, and the off-watch Regeneration periods had become the norm for the Ship's Company. It is still true that the Dual Crew Model has proved immensely popular, offering a very clear balance between operational tempo (deployed, abroad) contrasting with quality time at home.

Less familiar, oddly, was sustained working in the UK; a surprising number of us had never operated in UK waters, and some had never experienced a UK port visit.

After our last post-deployment leave, our return to UK ops in a running Hunt gave us a completely new perspective: the risk was that there might have been less opportunity for leave, and the work-life balance might easily fall prey to weekends at sea and long hard days in the dockyard during the week.

As much as it has been a different mindset, we've tried to manage routines, leave and minimal safe crewing to get a good balance, and the result has been some great tasking and some fulfilling port visits.



The breadth and range of experiences have been the real standout features of UK running. Even in a fairly short period we have had many highlights. Involvement in the November ceremonies in Poole culminating in a 'Rig Run' was relished by the entire crew and is sure to live long in their memories. Berthing at Poole Quay also allowed the chance to open the Ship up to families and friends, so that personnel were given the chance to show off the unique experience of MCMV life, and to add a little context to some of the stories about how we live and work.

Survey tasking as a singleton unit has been balanced with port visits to far flung corners of the UK which have included places that many of the crew have never visited before (Douglas, Isle of Man and Belfast). Following a recent visit to Dublin, joint tasking with HMS PENZANCE combined with an operational stand-down in Falmouth before we resumed our close inshore work in Plymouth Sound.

Whilst the prospect of more time at sea in UK waters was initially daunting for the crew, the variety of operations associated with home waters (and the many port visits) has tied in well with opportunities to return home routinely and provide relative stability.



COMUKMCMFOR

By CPO(MW) Matthew (Taff) Routliff

Commander UK MCM Force (COMUKMCMFOR) is responsible for the UK's globally deployable MCM Task Force, which is currently located in the Op KIPION Joint Operating Area (JOA). They execute tactical command (TACOM) of approximately 300 RN/RM, RFA and Army personnel, which can significantly swell in size during Mission Rehearsal exercises. They provide subject matter expert (SME) advice in MCM, Maritime EOD and Naval Military Diving to both UKMCC and CTF 52. Whilst in theory, a staff can command from any location, providing there are suitable communications, the reality is that the importance of commanding from afloat cannot be overstated. It enables the staff to experience the conditions experienced by the ships (weather/threat etc.), and essentially allows the Commander to 'Command in context'.

With COVID-19 continuing to fade in the distance, the KIPION JOA is steadily reopening, returning a feeling of normality to those who have previously served in the Gulf, and allowing those, who have only known a COVID-19 world, to experience what the Gulf has to offer. This has enabled the UKMCMFOR to ramp up activity including port visits, which slumped over the previous 24 months, owing to the imposed restrictions. This has allowed the ships to conduct multinational exercises, port visits and defence engagement outside of Bahrain. These have included ports visits to Dubai, Abu Dhabi, Kuwait and Saudi Arabia and Qatar. Not only has this benefited our personnel for N1 reasons but also eased logistical restrictions for ships within the JOA. UKMCMFOR continues to conduct route survey operations on Q-Routes within the KIPION JOA alongside our allies, the United States of America and France, helping to ensure Freedom of Navigation.

The COMUKMCMFOR staff are embarked in RFA CARDIGAN BAY (CRDG), which allows the UKMCMFOR to really stretch its legs and focus on interoperability and interchangeability. This has been delivered continuously throughout 2022 with the execution of several INTEROP exercises with the USN. These exercises involved combined US/UK Clearance Diving Elements conducting reactive tasking scenarios as well as cross-pollination of US seafox pilots. The ability to interchange our workforce in such a high tempo environment is critical to enhancing operational capability.

UKMCMFOR continues to push the operating boundaries, using all available assets within our sphere of influence to remain at the highest levels of operational capability. This has included embarking the US Expeditionary MCM Company (ExMCMCo) in CRDG along with the autonomous US Mine Hunting Unit (MHU), demonstrating the ability to continually deliver MCM Operations in the region into the 17th consecutive year.



Everyone in the MCM community is familiar with the Middle East. Since the first Op AINTREE deployment in 2006, the UK has maintained a forward-deployed MCM capability in Bahrain, which has evolved, via Op TELIC, into a mature and well-supported concept of Op KIPION. These deployments are the backbone of the MCM Force and there are several personnel who have conducted seven, eight, or even more Gulf region tours. MCMFOR was unable to properly celebrate the 'Continuous 15' years owing to COVID-19 restrictions. However, in 2022 a proper event was completed, celebrating the achievement in style and the award of a Continuous 15 Challenge Coin for deployed MCM personnel by Commodore Adrian Fryer (Cdre UKMCC and previously Captain Patrol, Underwater Exploitation and Diving).

In September the UKMCMFOR received the devastating news of the passing of Her Late Majesty Queen Elizabeth II when only a few months prior we had celebrated her jubilee. COMUKMCMFOR, in support of UKMCC and UKNSF, held a service to allow all personnel deployed under his Command to pay their respects and witness the laying to rest of the longest serving Monarch to the United Kingdom and Commonwealth Countries; a very poignant moment that we will all remember forever.

The UKMCMFOR's dominant focus this year has undoubtedly been the preparations for and delivery of Op SHADOWFOOT; the UK's contribution to a safe and successful FIFA World Cup Qatar 2022. Deploying the entire force from Bahrain to Qatar, with the associated support from the Forward Support Unit, this operation provides a key focus for the MCMFOR to close out the year. Forward deployed continuously for 16 years, all personnel who have served in the Gulf should be proud of their contribution.



STARTING LINE-UP: MINE WARFARE, DIVING AND EOD ALL CALLED UP FOR WORLD CUP TEAM

By Cdr Dan Herridge RN



2022 FOOTBALL CUP

Salaam Aleikum! COMUKMCMFOR Staff (MWBS Red) send you salutations from Umm al Houli Naval Base in Qatar, where we've operated from over 2 months supporting the Qatari effort to provide a safe and secure Football World Cup Qatar 2022 under Operation SHADOWFOOT.

Throughout the build-up to and during the World Cup, the sailors of HMS BANGOR, HMS CHIDDINGFOLD and RFA CARDIGAN BAY have surveyed the key approaches to Ports Hamad (commercial) and Doha, including within the ports themselves, as well as Qatari territorial waters and even out into parts of the Central Arabian Gulf to assure secure access to Qatar. Units have surveyed 51 nautical miles of Q-Routes, and embarked Maritime IED Disposal specialists from Diving Threat Exploitation Group (DTXG, formerly Fleet Diving Squadron) provided additional support to UK Metropolitan Police S015 ashore. It's been a challenging operation – the waters being secured are the busiest Liquid Natural Gas shipping lanes in the world. The MCMVs have operated in confined waters such as harbour approaches and near busy anchorages, interrupted time and again by large merchant vessels and the odd cruise liner, but have showed remarkable persistence and managed to get the job done ahead of the first football match.

Throughout, 23 underwater contacts have needed identification by Seafox and Clearance Divers. Conditions have been permissive for the most part, but a weekly pulse of Shamal wind has kept the resident Hydrographic and Meteorological Officer on his toes, providing guidance on force positioning and tasking to best use our units. The force has maintained 24/7 coverage of the area throughout mission and is privileged to be the only non-Qatari units to be allowed to operate within Qatar's territorial waters. We are quite proud of that fact!

BZ to HMS CHIDDINGFOLD who put their best foot forward when we were approached to help with the delicate issue of recovering a piece of equipment lost by a partner nation. A multi-national search was initiated but the first and only prize went to HMS CHIDDINGFOLD when she arrived on scene, cut through some ambiguity regarding the location of the lost item, and located the object with sonar then dived to recover the 4m-long towed array. This raising from the depths of a critical piece of equipment also saw RN reputation rise to new heights amongst our partner nations.

It wouldn't be an article about Op SHADOWFOOT without some mention of the World Cup football, although the media seemed to give less coverage after that December night where England played their last match. Transport was laid on continually from our base port in Umm Al Houli to get personnel from Ships alongside to see the matches, though the £4000 price tag for the semi-final was deemed prohibitively expensive by all. The crews of the MCMVs and RFA CARDIGAN BAY were, however, able to soak up the admittedly different atmosphere of the World Cup in Doha. Some even managed to attend England and Wales group matches, back when there was yet hope that 'football might come home'.

It has been a busy and varied time out here. The sailors of UKMCMFOR have overcome numerous and significant equipment challenges as well as the usual challenges of coalition operations to deliver the high operational standard expected. This has been well noted by other nations and the UKMCMFOR has had positive effect in both political and military spheres of influence. As well as giving a particular mention to HMS BANGOR for commencing and competing our initial tasking alone and for leading the charge, it is of course the whole squad which counts to deliver success up front; as such all the personnel involved in the operation from COMUKMCMFOR, RFA CARDIGAN BAY, HM Ships BANGOR, CHIDDINGFOLD, and MIDDLETON, Diving and Threat Exploitation Group, the chefs of HMS VENGEANCE, the engineers of Forward Support Unit 02 and a very useful Leading Photographer have all contributed immensely to deliver the RN's contribution to Operation SHADOWFOOT. BZ all.

OFFBOARD REMUS OPERATIONS FROM A HUNT CLASS MCMV

By Lt Jake Guildford RN, Ops MCM2 Crew 1

HMS CHIDDINGFOLD (CHID) was tasked to prove interoperability between UK and US units during periods of operations in the Gulf region. Having previously embarked personnel from USN Expeditionary Mine Counter Measures Company (ExMCMCo) with REMUS 100 (R100), the next step was to embark an Expandable Small Air Mobile Shelter (ESAMS), 3 x R100 AUVs, 1 Seabotix ROV and up to 5 USN ExMCMCo personnel. This allowed further development and testing of the operational concepts for future UK employment of AUVs in MCM operations. The employment of the ESAMS represented a genuine opportunity to reinforce the strategic relationship between the UK and US at the operational and tactical level. Use of the ESAMS system from an RN platform could be a definitive step towards the introduction of sustainable autonomous systems, potentially as a bridging capability ahead of MHC.

CHID operated in two distinct phases, the first of which was to act as Logistics Support Vessel (LSV) or Vessel of Opportunity (VOO) i.e. operating without using any of the Ship's organic sensors. The second phase was to weave AUVs in to the Ship's capability as an additional offboard sensor to the routine MCM battle rhythm and effectively 'up-gun' the OC and lethality of a Hunt Class MCMV.

One option for the future could be to have fly-away teams embark in RN vessels, or indeed another vessel where small boats could be launched from, to deliver a mine countermeasure capability using this equipment. This team would consist of REMUS operators, Post mission analysts and EOD capable dive teams.

The second phase of CHIDs tasking merged AUVs into the more familiar operating mode, but adding REMUS as an additional offboard sensor. Having sensors in the water greatly increased CHID's speed of advance on task. We would deploy REMUS into an adjacent section of water, allow it to run its mission collecting data, then a number of hours later recover REMUS for data analysis, while the Ship conducts her normal business using her organic sensors of S2193 (hull-mounted) and Seafox ROV.

Operation of R100 from RN vessels is fairly simple and should pave the way for smoother integration of non-organic systems.

The R100 are human-portable, easily deployed from MCMV W525 inflatable boats and are stowed within their ESAMS container. Data analysis is handled by a stand-only laptop with data export functions in a format that can be read by on board computer systems.

We talk a good game but how seamlessly are we integrating 'offboard' technology in conventional platforms?



The key to sustainability of R100 operations from MCMV, is the ability to charge their batteries and keep them cool. The Gulf's extreme summer heat has always proved difficult. In the past R100 were kept cool by being in the shade, with ice baths in their transit cases and minimal time being powered up before the mission. Additionally the need for a compatible power supply is important, since ship's electrical supply often doesn't produce the correct power without a considerable amount of adjustment through transformers. These hurdles were all overcome by the embarkation of the ESAMS, providing air conditioning, a small workshop and charging facilities via a free standing WhisperWatt Generator. Use of the ESAMS in MCMVs is the key to sustainable REMUS operations.

The option to embark REMUS or similar equipment in Hunt MCMVs can be made to work well and increase operational capability. Some of the equipment, training and maintainer support is already held within the Royal Navy. Adaptability and innovation are surely an effective part of developing future capability, and seeing CHID's success in this area provides another option.

INTEROPERABILITY BECOMES INTERCHANGEABILITY

By Lt Cdr Ryan Huges RN, UK Liaison Officer to CTF-52

In October 2020, the former First Sea Lord, Admiral Tony Radakin KCB ADC and the US Chief of Naval Operations, Admiral Michael Gilday USN signed a joint Statement of Intent regarding Future Integrated Warfighting. This engagement aimed to build on established cooperation forged through interoperability, to deliver quicker and more focussed change in the way that we collaborate and enable seamless interchangeability between our two Navies. In order to keep pace with modern threats and fight as a truly cohesive force, the RN and USN should endeavour to progress from interoperability to interchangeability and should enable critical force elements to become transposable; from ships of one navy operating in the other navy's taskforces, to crewed and uncrewed vehicles operating from the decks of each other's ships.

According to NATO, interoperability allows forces, units or systems to operate together. It requires them to share common doctrine and procedures, each other's infrastructure and bases, and to be able to communicate with each other. It does not mean they must share the same equipment, but that it should be similar in its function, and be able to communicate effectively.

UK and US Mine Countermeasure (MCM) units within the Broader Middle East region have worked hand-in-hand as a combined force (when assigned) under Commander Task Force Five Two (CTF-52) for the last 16 years, with co-operation likely to continue. Bilateral exercises and operations between UK and US forces are a common occurrence, but ordinarily units will work independently within the same Task Group. This regular interoperability drumbeat has ensured that our forces are able to work together effectively and efficiently, whilst developing tactics and sharing best practice.

Unlike Interoperability which keeps forces independent of one another, Interchangeability is all about physical integration. As the Statement of Intent suggests, this means making force elements transposable, such as operating equipment from the deck of another navy's ship. In the context of (Mine Warfare) MW and diving, it could mean operating a UK dive element from a US Avenger Class MCM Vessel (MCMV), or operating US Unmanned Underwater Vehicles (UUVs) from UK MCMVs. This is exactly what units operating under CTF-52 and COMUKMCMFOR have been doing for the past few years.

Figure 1 – UK and US personnel deploying a US Mk18 Mod II UUV from HMS BROCKLESBY





Figure 3 - HMS MIDDLETON's Clearance Diving Element and MW personnel integrated with the crew of USS SENTRY

In late 2019, elements of the US Expeditionary MCM Company (ExMCMCo) embarked in HMS BROCKLESBY (Hunt Class MCMV) to trial the embarkation, launch and recovery of their Mk 18 Mod II Medium Unmanned Underwater Vehicle (UUV)(REMUS 600). The trial yielded excellent results with the deployment of the UUV significantly increasing the overall search capability of the Ship and proved the ease at which they were able to integrate with the crew. The lessons and best practice identified during this trial were put to good use again in 2021 where ExMCMCo embarked on HMS PENZANCE (Sandown Class MCMV) to conduct similar trials. The success of both trials resulted in published reports from the Maritime Warfare Centre (MWC) which can now be used, with authorisation, for further Tactic Development (TACDEV) or to enhance the capability of UK MCMVs during exercises and operations.



Figure 2 - UK and US personnel deploying a US Mk18 Mod II UUV from HMS PENZANCE

More recently, in early 2022, the Clearance Diving Element (CDE) and MW personnel from HMS MIDDLETON (Hunt Class MCMV) embarked in USS SENTRY (Avenger Class MCMV) for a short period at sea where they not only fully integrated into the crew, but conducted MW diving operations, including what they believe to be the US Navy's first diving conning run (using sonar and visual communication to direct the dive boat to the target for diver deployment) utilising UK standard operating procedures. The after-action report written by the Diving Officer highlighted several opportunities to build upon their experiences, such as compatibility with the ship's compressed natural breathing air system, equipment storage and boat launch and recovery procedures. Overall, the trial proved that UK diving elements were able to quickly and effectively deploy to a US vessel and conduct successful MW diving operations, enhancing the capability of a unit that does not have an organic CDE.

Following on in a similar fashion, during the alongside portion of the UK/US INTEROP exercise in August 2022, the CDEs of all three UK MCMVs under the Command and Control of HMS MIDDLETON's Diving Officer worked with ExMCMCo and CTF-52 personnel to develop a concept for a joint UK/US limpet mine response team. The UK MCMV borne divers were able to utilise their proficient underwater search techniques to locate exercise devices attached to the hulls of vessels and within the structure of jetties and piers, which were then handed over to the ExMCMCo and US Explosive Ordnance Disposal (EOD) Mobile units for positive EOD action. The two entities were able to work seamlessly to identify and disrupt several exercise mines, whilst developing Tactics, Techniques and Procedures (TTPs) and proving the concept for future integration opportunities.

These examples demonstrate how effectively UK and US force elements are able to integrate, overcome challenges and operate at a high level, ultimately boosting the operational capability of individual units and the combined force as a whole. Through collaboration, innovation and the strength of their relationships; CTF-52, UKMCMFOR and UKMCC will continue to seek opportunities to further develop interchangeability between our two great navies.

MINED THE GAP – SHOWCASING THE INTERIM MCM PROGRAMME

By Cdr Rory Armstrong, MW Platform Lead

Tunnelling towards MCM autonomy...

In December 1990 a historic handshake occurred deep beneath the seabed of the English Channel when a team of British engineers made contact with their French counterparts. It is perhaps apt if we consider NCHQ Director Acquisition's (ACQ) team delivering the MHC Programme as those miners digging from the right and of the in-service capability team under Director Force Generation (FGEN) furiously tunnelling from the left. Under the banner of MCM Transition, ACQ are to deliver a fully resourced future capability in the form of MHC, comprising the supporting Lines of Development (LoDs) as well as the equipment. FGEN must shape the current capability in a direction which meets that future, particularly with regard to workforce and the skills required to operate and support the MHC equipment sets - this is the interim MCM Programme.

The intent? When the final stone is punched out, a handshake between a community with legacy skills but primed to embrace MHC and those parts of the force charged with responsibility for delivering it.

Writing from my role as in-service platform lead for MCM this article deliberately does not dwell on the exciting capabilities soon to be delivered to service by the MHC Programme but takes a look at MCM enhancements and evolutions which comprise our tunnelling towards MHC. A major focus of this is our Uncrewed Underwater Vehicle (UUV) capability which, in addition to having clear military utility in itself, can also be viewed as a stepping stone in the skills transition to MHC.

The operation of offboard systems comprising side scan sonar requires some fundamental rethinking of our MCM doctrine and of the legacy process which underpins it. With increased reliance on post mission analysis (PMA) vice in-stride, the boundary between DETECT and CLASSIFY is necessarily blurred. With novel offboard systems IDENTIFY cannot usually be conducted until PMA has concluded so an additional step of REACQUIRE is required. Finally, with the evolution of the seabed threat and increased priority of intelligence collection, the final step is as likely to be EXPLOIT as it is to be NEUTRALISE. This evolution is illustrated at Fig 1.

Establishment of NCHQ's Military Diving Capability Cell and the consequent decoupling of SO1-level responsibilities for Diving & EOD from those of MCM has seen creation of my post for delivery of in-service capability management, including leadership of the MCM SO2 and WO1(MW) in the FGen-Ships pillar of NCHQ.

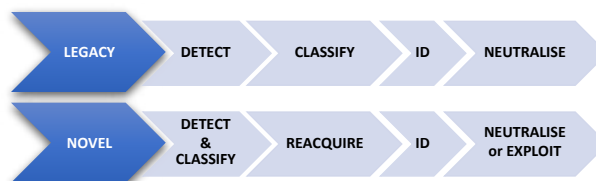


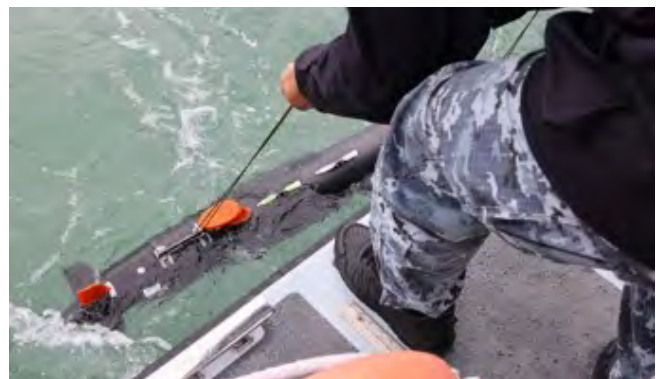
Fig 1. Evolution of the MCM Process.

The happy coincidence of a little more staff horsepower and an unusually bountiful year for equipment-buying has allowed us to work closely with the Capability Sponsor in Navy Develop (DEV) to address obsolescence issues within the current MCM arena. It has also permitted us to conduct some future-proofing as we look ahead to a hybrid of legacy MCM platforms and novel MHC autonomy for the remainder of the decade.

Expeditionary UUV fleet

While DTXG (and FDS before) have been in the vanguard of RN UUV use for two decades, their Remus 100 small Autonomous Underwater Vehicle (AUV) fleet had become increasingly fragile. Close collaboration with the manufacturer following relinquishment of Remus 100 by WILTON and by the Fleet HM Unit allowed the pooling of materials to return some vehicles to serviceability while retiring those deemed beyond economical repair. Funding from DEV concurrently permitted purchase of three 'Next Generation Remus 100' (Remus 100 NGR) to offset this reduction in numbers.

This carefully crafted husbandry of the in-service AUV fleet was further stressed by an emergent but vital requirement to provide equipment to the Ukrainian Navy for exploratory hunting /surveillance of their Black Sea coast. This saw a supremely impressive effort by DTXG in collaboration with USN and industry partners to deliver urgent Remus 100 training and to furnish Ukraine with a total of five RN vehicles. While this has driven DTXG's Remus numbers lower than envisaged, Government-funded replenishment of the equipment will see a further three Remus 100 NGR delivered over the course of 2023.



This complete overhaul of DTXG's AUV capability will see it optimally positioned to deliver very high readiness expeditionary MCM in support of Littoral Strike and to conduct explosive ordnance reconnaissance or detailed route survey in home waters. Importantly, almost all of their AUVs will be configured to exploit SeeByte's software for mission planning, post mission analysis (PMA) and squadded autonomy as described below.

DTXG has also benefitted from DEV-funded enhancements to their Remotely Operated Vehicle (ROV) capability with additional Videoray Defender systems fielded for trial across its squadrons for homeland EOD and for specialist deployed use. In addition, SRS Fusion AUV/ROV remains under trial both as a QEC-focused underwater FP asset and for the collection of evidence in a post-blast scenario. Fusion has been brought to the latest specification with upgrades including manipulator arms, a payload bay and enhanced side scan sonar.

SeeByte autonomy software

Multiple user groups (including DTXG and WILTON) are benefitting from partnership between the RN and maritime autonomy pioneers SeeByte, whose SeeTrack mission planning and PMA software is recognised as world leading and is in use by a number of our NATO partners. Recognising that multiple equipment from different manufacturers and with a range of sensor payloads creates an unhelpful operator burden, NCHQ is seeking to maximise the use of SeeTrack as the common interface for both planning and PMA. This is to be across both our UUV capabilities and for elements of our MHC Uncrewed Surface Vessel (USV) fleet.

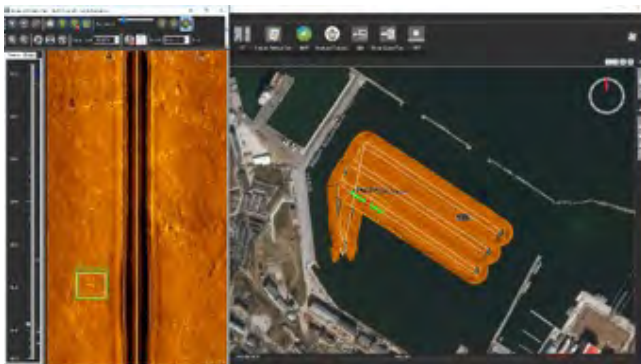


Fig 3. SeeTrack PMA Interface (image courtesy of SeeByte)

The commercial-off-the-shelf SeeTrack software permits intelligent mission planning through an intuitive graphical user interface which maximises the capabilities of the offboard sensor. The PMA aspect of the software is yet more powerful and allows expert manipulation of the raw sonar data to classify objects as minelike to confidence levels consistent with allied MCM doctrine. Contact data can then be exported either to a battlestaff or to a route survey database in a range of formats including HTML and AML SBO. SeeTrack is expandable to permit automatic target recognition (ATR) of threats and the RN will work closely with SeeByte to develop the algorithms and threat libraries to exploit this feature.

The RN's Remus fleet will also be upgraded over the course of 2023 with SeeByte's Neptune goal-based autonomy software which permits squads of sensors (either UUV or USV) to work collaboratively to achieve mission outcomes. Teams of vehicles can communicate in-stride and dynamically re-task each other should a sensor become defective, encounter an obstruction/countermeasure or experience adverse environmental conditions. A future aspiration will be to include ATR algorithms on the sensor

itself so that real time 'contact calling' can occur, including the dynamic allocation of a sensor equipped to conduct IDENTIFY rather than being limited to CLASSIFY only.

Allied partners (principally the USN) are already exploiting these features of SeeByte's software and we can look forward to becoming genuinely interchangeable with their capabilities in due course.

AUV enhancement to Hunt Class

Drawdown of the Sandown Class, and in particular the accelerated decommissioning of GRIMSBY with SHOREHAM for sale to Ukraine, has yielded funding for capability enhancement of the Hunt Class. Historically limited to <100m water depth by hull mounted sonar, the full potential of the Hunt can be realised by augmenting with AUVs capable of greater depth. A contract has been placed for procurement of six Remus 300 modular AUVs, capable of operating to the depths at which Seafox can effect disposal and able to perform mission durations of up to 20 hours. Scheduled for delivery March 2023, these three pairs of vehicles will be equipped with the same side scan sonar found in the Remus 100 NGR and will also have the option of a high-resolution camera. Allocation of a pair of Remus 300 to three Hunts has the potential to make them a full spectrum detect-to-engage asset to Sandown equivalent depths.

Much work has been done, principally by UKMCMFOR in The Gulf but also recently by HURWORTH on SNMCMG1, on trialling the integration of Remus AUVs into MCMVs. Hitherto this has been limited by lack of environmental protection for the vehicles and by the impact of short AUV mission duration on any hybrid MCMV/AUV scheme of manoeuvre. The extended duration of the Remus 300 will mitigate the latter problem but temperature-controlled onboard real estate continues to be a challenge.

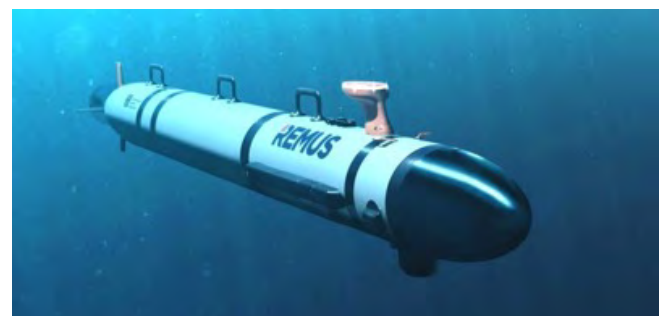


Fig 4. Remus 300 AUV with long duration energy module (image courtesy of HII)

DEV is therefore funding a collaboration with the RN's Office of the Chief Technical Officer (OCTO) for a demonstrator pair of AUV NavyPODS based on 10 foot ISO containers. Removal of LEDBURY's redundant sweep gear and installation of a ballasted baseplate will see her emerge from docking period in summer 23 ready to accept one POD outfitted for AUV storage, charging and maintenance plus one configured as a PMA suite. Pending securing of further funding, this collaboration will inform subsequent partnering with DE&S to field low magnetic signature NavyPODS to further Hunt Class as sweep gear is removed. Though optimised for Hunts, the solution

is intended to be further deployable to vessels of opportunity such as B2 OPV or even ashore in an austere environment. This will enable a versatile expeditionary MCM capability which can deliver operational effect and improve interoperability with international partners beyond the traditional reach of MCM platforms.



Fig 5. NavyPODS launch at DSEI 2021

Synthetic aperture sonar (SAS)

DEV are also funding procurement of a number of Kraken Miniature SAS (MinSAS) modules compatible with in-service AUVs for trial and evaluation. SAS offers a game-changing improvement in fidelity for small object detection and is of particular interest for novel seabed warfare threats of small size and low target echo strength. Integration with Remus AUVs will allow us to establish whether incorporation of MinSAS will permit AUVs to be used as IDENTIFY assets (as doctrinally now permitted in NATO EXTACs). Trade-offs may include increased power consumption plus a small AUV may not be a stable enough platform in some conditions hence the need for evaluation but it does offer tremendous potential, particularly when coupled with SeeByte Neptune goal-based autonomy.



Fig 6. Kraken MinSAS image of anchor scour and sunken dinghy (image courtesy of Kraken Robotics)

WILTON enhancements

Declared operational in autumn 22, the WILTON MCM capability on the Clyde is delivering strategically significant seabed data to the UK Route Survey Database but is currently limited by depth and by system robustness. MOD Head Office funding for Hunt AUV enhancement is also permitting upgrade of WILTON's existing AUV fleet (L3Harris Iver3) to the Iver4 580 variant. On contract to deliver March 2023, these three new vehicles comprise the same form factor as Iver3 so will seamlessly integrate into WILTON's platforms but offer a 300m depth capability and an improved sensor/navigation suite. They are fully capable of integrating with SeeByte software for mission planning, PMA and squadded autonomy.

WILTON is also benefitting from a redesign of the launch and recovery system for its towed side scan sonar in order to maximise availability of the system to the operational commander and to increase the operating parameters of this 'system of systems'. WILTON's IDENTIFY capability will also be enhanced through procurement of an additional Videoray Defender ROV to provide resilience to the current capability.



Fig 7. Defender ROV (image courtesy of Videoray)

MCM Command and Control (C2)

Acknowledging that even the most sophisticated sensor is rendered useless if not tasked correctly and if the data harvested cannot be meaningfully presented to higher authorities, work is also underway to examine the utility of experimental MCM C2 software. In the fullness of time, it is intended for SeeTrack to contain features to ingest APP-11 compatible MCM tasking signals and to generate the associated reporting messages.

While this collaboration with SeeByte continues, an opportunity exists to evaluate utility of NATO's LIME 711 MCM planning and reporting software. The subject of an MWC Green Paper, units (including battle staffs) are invited to trial use of the software for automatic generation of OPTASK NMW signals and the associated various OPREP NMW messages. Through a user-friendly interface the software appears to offer particular utility for an expeditionary UUV detachment which may not have access to message handling systems or which may be light on experienced signal-writing personnel.

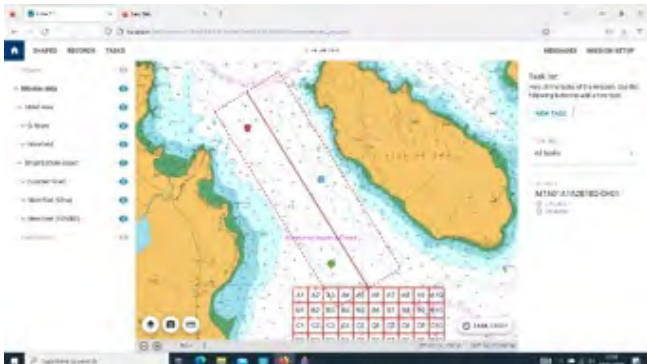


Fig 8. LIME 711 experimental MCM C2 software interface (image courtesy of NATO ACT)

Conclusion

So perhaps the metaphor is imperfect but it does feel like we are chipping away towards a genuinely more effective and more efficient future. The challenge interim MCM has is to make sure that we stay on track for the aiming point so that, when the tunnels meet, the handshake can be brisk and business-like as we step through and embrace all that MHC has to offer. As the opportunities arise over the forthcoming years to improve our collective understanding and experience of MCM autonomy it is vital that we exploit them, be it as part of a mission team or within the conventional MCMV community episodically integrating offboard systems.

As we collectively tunnel our way towards the light it's perhaps worth reflecting on the motto of our civilian mining counterparts:

"The Past We Inherit, The Future We Build"



MARITIME AUTONOMOUS SYSTEMS TRIALS TEAM (DE MASTT)

By Lt Cdr Jason Munson RN, OIC MASTT

In the last issue of this magazine, MASTT had received training on the Thales MMCM system, and were shortly to take delivery of the equipment. Much has happened in the interim, involving significant challenge and success.



For context, MASTT conduct trials on behalf of the Mine Hunting Capability (MHC) programme which sits within DE&S, their aim being to seek the replacement of the existing MCMVs, a process accelerated in recent months. Since late 2021 we have fallen under the Command of Mine Threat Exploitation Group (MTXG).

Throughout summer 21 we received OEM training in the MMCM system; A portable autonomous capable mine hunting system, controlled from a portable Remote Control Centre (12ft ISO), providing a detect, classify and defeat capability. The primary system includes various sub-systems; 12m USV manufactured by L3HARRIS, towed synthetic aperture sonar (TSAM), and an ROV with mine disposal system. The RCC will be capable of concurrently controlling and monitoring the USV and up to 3x MAUVs.

In Nov 21 we took receipt of the system and began trials. Each equipment set being procured by MHC goes through the following processes once OEM user training is complete:

- a. Capability Development Trials (CDT).
- b. System Performance Acceptance Tests (SPAT).
- c. Deployed Operational Evaluation (OpEval).

MASTT moved the equipment to Portland Port after a short period operating from the Thales site, with Wey Bay giving us an optimal test environment. The teams main aim throughout the CDT's was to develop Standard and Emergency Operating Procedures (SOPs/ EOPs), identify if the training and manuals are fit for purpose, and feedback any design deficiencies which need addressing in the future.

This was a considerable amount of work, but incredibly rewarding for team. With only 15 personnel, and 2 engineers, once working at sea the entire team were employed, either in the USV, support RHIB or Remote Control Centre. In some cases, particularly with EOPs, many of the OEM procedures had to be completely rewritten to bring the safety aspects in line with how we are used to working in the RN.

Throughout the year, equipment availability issues and defects were a regular occurrence. Most can be attributed to the equipment being a 'demonstrator' system, however there were also some trends which pointed to design deficiencies. The installation of the payloads (towed sonar and ROV) involves a significant number of connections, and identifying where the problem is located is not an easy task. The upshot of this is the knowledge gained by both engineers and operators in fault finding throughout the system. Our findings and experiences have been captured and passed to the design authority in regular working groups, a fantastic example of the Royal Navy shaping improvements to the system for future iterations in partnership with the OEMs.



Delegation of responsibilities has been a key theme. I have the USV crewed by a LH Coxn, responsible for the 12m vessel, its payload, and trained in the operation of its navigation suite (electronic chart system, ARPA radar, LiDAR and more), with the AB co-pilots operating and monitoring the onboard systems, autonomous equipment, and on standby for any EOPs which may be required. This marks a significant leap in what we expect of our sailors, and the team have proven that trust is well placed. The same can be said in the positions within the RCC, the amount of information available to the operators is significant, and I rely on them to monitor and relay info which is crucial to navigational safety.

Despite the delays, we have completed all but a handful of the CDT serials. 2022 culminated in MASTT preparing for a Degree 3 autonomy trial with the Naval Authority Group (NAG). In the scale of autonomy, Degree 3 means that the equipment is operated uncrewed, but operators control the systems remotely. The NAG is in a position to be able to issue us a license to operate in this way.

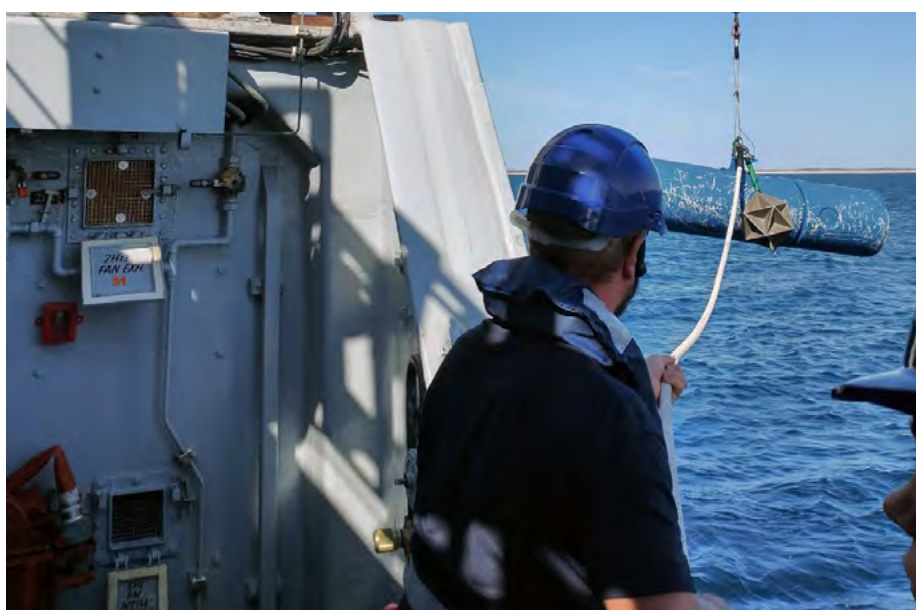
In Nov 22, a frantic week saw us ensuring that the equipment was serviceable, and all serials which we would be required to conduct were well rehearsed. Over 8 serials, the NAG wished to see the USV operated in various shipping scenarios; small floating object detection, head on/ crossing situations etc. In each case the ability of the system and operators to detect and visually ID the vessel/ object was assessed, as well as the time taken to take the correct course of action. This was conducted with the USV crew onboard initially for safety reasons, however our success meant that by the end of the week, the NAG were content for us to remove all personnel, and repeat the serials uncrewed.

Watching the crew disembark with the onboard cameras was a significant moment, and following the SOPs we have written, operating uncrewed did not feel daunting. The remainder of the week went well, and the NAG were content to issue the MMCM system a license for Degree 3 autonomy. This is the only one currently held in the RN. There are caveats of course; daytime running only, speed limited to 8kts, up to sea state 2, but the main value is that there is now a recognised process for assessing and issuing systems licenses for higher levels of autonomous operation. We are rightly proud of this achievement and look forward to it laying the foundations for future teams and equipment.



This year we have continued to progress MMCM trials and battle defects. We will be shifting target to MAUV training and trials this summer using the AEUK SeaCat system, before receiving top up training in MMCM on how to utilise the mine disposal system on the ROV. The overall MHC programme has a lot of moving parts and dependencies, with shifting deadlines, however despite this there is always plenty to achieve and for the team to contribute to.

This has been a genuinely exciting time for the MASTT as they see first-hand the direction the Mine Warfare community is taking. It is not without its challenges, but in the periods of success it is clear what a leap in capability these future systems offer, and the upskilling of our personnel which will result.



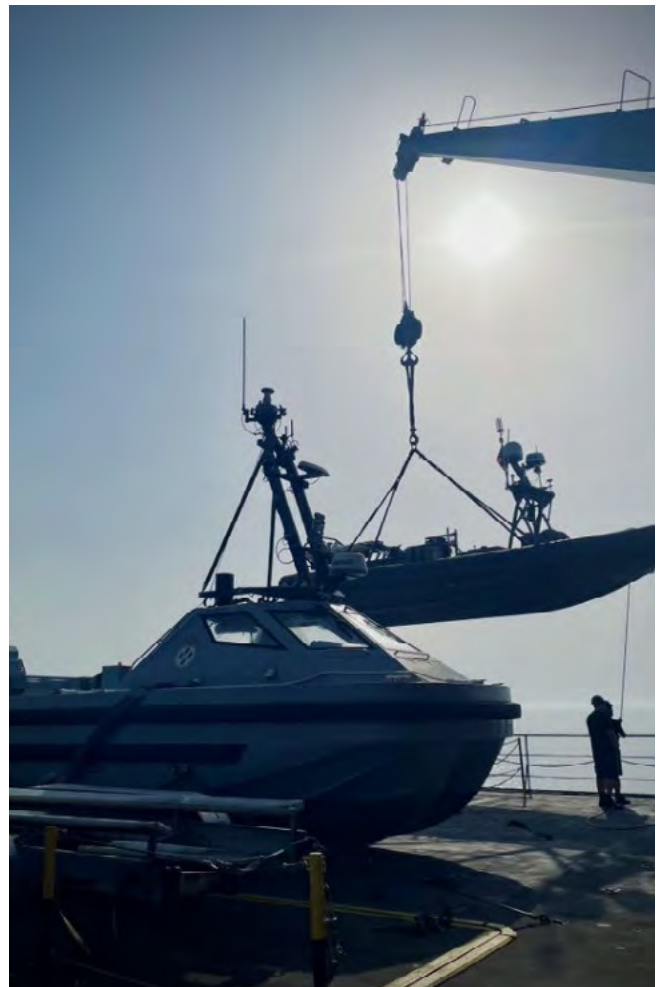
THE OPERATIONAL EVALUATION UNIT IN OP KIPION

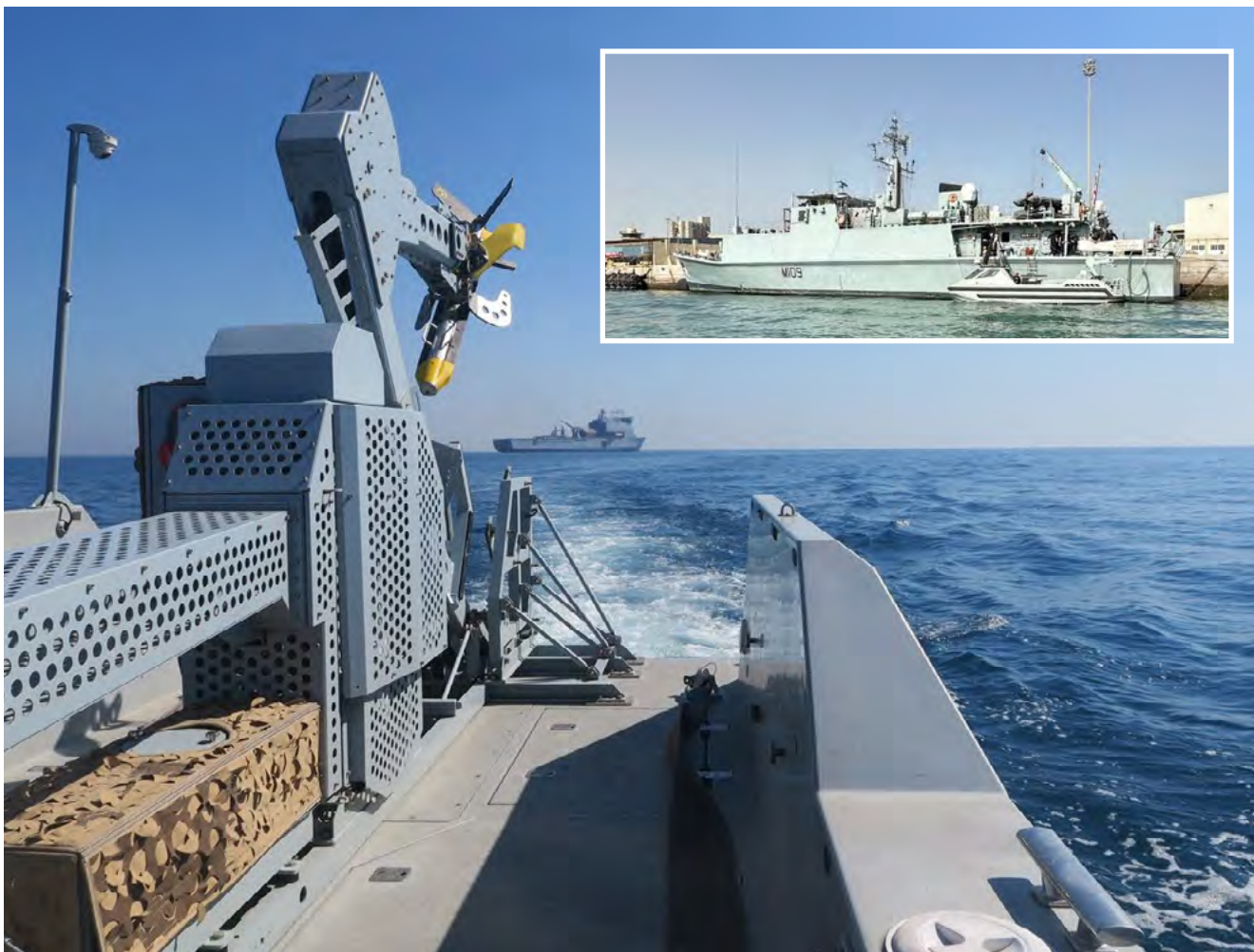
By WO2 Andrew "Ozzy" Osbourne



In January, Mission System Team 1 (MST1) arrived in Bahrain to deliver the Deployed Set to Work Trial of the MHC. Consisting of RNMB HARRIER (HARR) with a Towed Side Scan Sonar and its Remote Control Centre, colloquially known as the Operational Evaluation Unit (OEU).

Their mission has been to evaluate system operation in the harsh conditions of the Gulf. Additionally, they have been assessing how the System and Team integrate into the existing C2 structure, sustain from UK NSF, and operate from both NSF and the AFSB - RFA CARDIGAN BAY (CRDG). Successfully embarking HARR and the support equipment in to CRDG in Feb, they have spent the last three months understanding both the opportunities and challenges of operating Maritime Autonomous Systems from this sort of platform. The lessons being identified are informing development of future Systems which will operate in the KIPION JOA, but also across MTXG where Systems will operate in a similar manner e.g WILTON from RFA STIRLING CASTLE. As part of the deployment MST1 have worked alongside Allied units also embarked in CRDG during the International Maritime Exercise and Exercise ARTEMIS TRIDENT, proving interoperability for future cooperation. On completion of the trial later this year the OEU will transition into operational service and be supplemented by additional capabilities in the coming months and years. The Mission System Team's will operate on a four-monthly rotation in the same way MCMV's currently do. MST2 are due to relieve MST1 in Jun.





TIP OF THE AUTONOMOUS MCM SPEAR

By Lt Cdr Alex Szweda, CO Mission System 3 (WILTON)



Mission System 3 is making significant strides in delivering a peace-time survey capability to the Clyde, mitigating, in part, the SANDOWN drawdown, through supporting CASD.

Previously operating a small specialist unit as PROJECT WILTON, in April 23 WILTON (now the equipment set) transitioned into Mission System Team 3 (the crew), receiving an uplift of operators providing resilience to current tasking and to support the upcoming equipment uplift to MHC systems (Q1 '24).

Within the merger, since achieving Initial Operational Capability (IOC) in October 2022, following a first of class FGen period and OSSR, WILTON has maintained a steady rhythm of area survey operations, trials, training, and maintenance schedule throughout 2023.

Focused primarily on area survey rather than route survey (STINT 16/22), WILTONs survey operations rely on a mixed fleet of VAHANAs and PAC 22s equipped with a sensor suite comprising of a Towed Side Scan Sonar (TSSS), IVER 3 Autonomous Underwater Vehicles (AUVs), and VideoRay Defender Remotely Operated Vehicles (ROVs). This unique equipment suite, brought together outside the MHC construct, has consistently delivered credible and accurate survey and ID results. However, the current configuration lacks means for recovery or disposal, limiting its full MCM capability. Yet, the anticipated delivery of upgraded IVER 4 AUVs (Q4 '23) and RNMB HYDRA (Q3 '23) will significantly enhance operational capability, enabling survey depths of up to 300 meters and surface remote/autonomous operations.

Through this diverse portfolio of assets, the unit has adopted a modular approach to capability delivery, which has allowed WILTON to address emergent defects internally while conducting concurrent activities within the program. This model has enabled Wilton to maintain continual readiness for DT2 and additional Op P* periods to the MOC overlaid within a compressed programme.

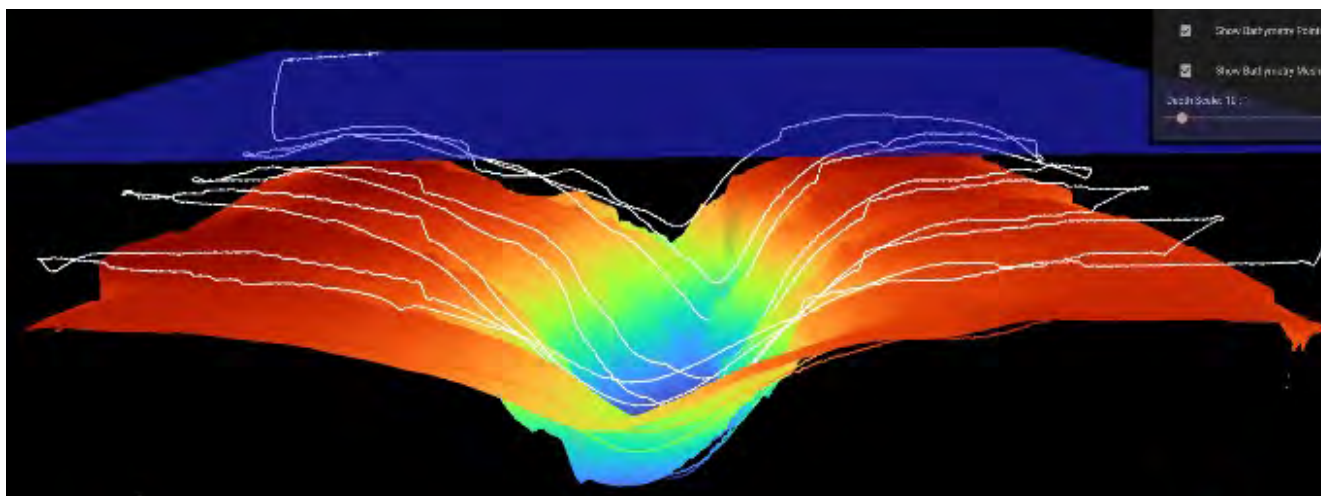
By generating survey data with an autonomous capability, has necessitated extensive collaboration and liaison with both MWS and UKHO, in order to enable the survey records to be included in the Route Survey Data Base. As such, by refinement of record collation and a full review of the data, UKHO is now satisfied that WILTON is able to achieve the minimum viable standard. Leading to approval being sought for WILTONs records to be included within the Route Survey Data Base, specifically within an AUV layer.



Training in San Diego



ROV Defender Operations in Campbeltown



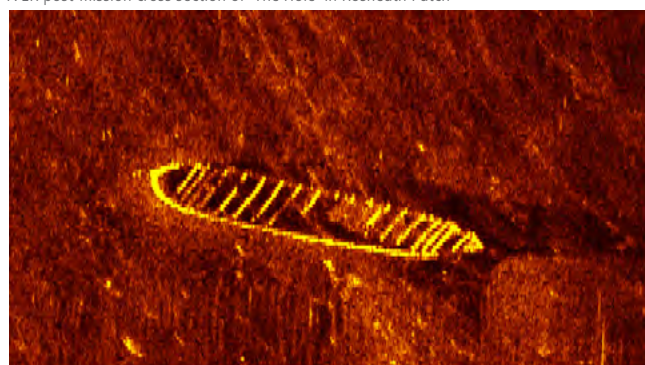
IVER post-mission cross section of 'The Hole' in Rosneath Patch

Beyond area survey operations, WILTON's involvement in Joint Warrior 01-23 provided valuable exposure to a multi-layered environment and allowed for TACDEV in autonomy integration within a Task Group and the wider fleet. Working alongside the Mine Warfare Battle Staff (MWBS) RED was particularly rewarding, fostering early mutual exposure and collaboration before the MWBS's deployment and subsequent cooperation with the KIPION-based Operational Evaluation Unit (OEU).

Furthermore, Wilton's comparable UK-based system played a significant role in supporting MHC development. Where interaction with WILTON allowed the OEU to gain initial exposure to the equipment and complete a full FGen package to support the generation of Mission System Team 2 before their deployment to the KIPION JOA. WILTON also embarked with HURWORTH during the crew's KIPION generation, simulating an E Squadron deployment. This opportunity enabled the crew to develop SOPs for AUV survey data interaction while demonstrating the capabilities and limitations of AUVs.

Building upon this initial integration, ongoing trials throughout the year have further showcased WILTON ability to operate from various surface vessels. Where continued trials (CFS and MCM2) and TACDEV will inform future military choice in the delivery of survey and MCM effect, aligning to wider 2022 RN Strategy.

Looking ahead, MST3 is eagerly anticipating integration with RFA STIRLING CASTLE, which will expand our operational capability, significantly extend the unit's range and on-task sustainability, whilst fostering further development in MHC/support ship integration, complementing the ongoing work of OEU1 in the Gulf.



IVER image of a wreck side using -scan sonar



RNMB HELLCAT & HMS BROCKLESBY on JW



TSSS Training on RNMB HEBE

DTXG TRANSFORMATION – 1 YEAR (AND A BIT) ON...

By Lt Cdr Tom Forbes, OiC Echo Diving Unit 1



With the pandemic and ‘Diving from Home’ in the distant past, Fleet Diving Squadron (FDS) started 2022 with a robust New Year’s Resolution and eyes on the future. After an initial transformation in 2020 which rationalised and restructured the FDS, there had subsequently been two senior level reviews of military diving. These resulted in direction to conduct a second more ambitious and comprehensive transformation of FDS (T2) – Enter, the Diving & Threat Exploitation Group (DTXG).

Cdr Sean Heaton after over 30 years in the branch and now at its helm commented “*This once-in-a-generation transformation has enabled the Royal Navy’s Clearance Divers to be the most agile, lethal and technically advanced they have ever been*” Through internal re-brigading DTXG is now structured to deliver Diving, Exploitation and Explosive Ordnance Disposal (EOD) force elements with greater availability, sustainability, and lethality.

What do the Divers do now?

DTXG delivers six key operational effects:

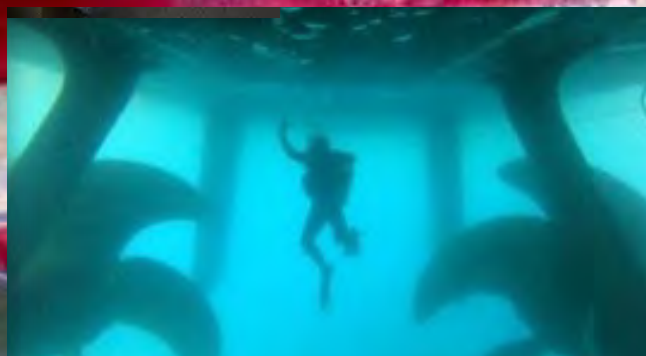
- Naval Special Operations (NSOps) – Specialist diving, maritime and land EOD and maritime exploitation capabilities (detail held at higher classification).
- Mine Hunting Capability (MHC) – Persistent mixed-gas underwater EOD and exploitation capabilities to the MHC.
- Maritime Task Group (MTG) – Persistent diving and In Water Maintenance & Repair (IWMAR) support to the QEC carriers and the MTG, capable of providing Under Water Force Protection (UWFP) to the whole force.
- Littoral Response Group/Future Commando Force (LRG/FCF) – Persistent mixed-gas diving and maritime and land EOD capabilities to the LRG or JEF(M), able to operate discreetly and integrate with Commando Forces.

- In Water Maintenance And Repair (IWMAR) – Very high readiness diving capabilities, including confined space entry, to provide IWMAR and Battle/Peacetime Damage Repair (BDR/PDR) to SURFLOT and SUBFLOT platforms.
- Homeland Defence – Specialist diving, maritime and land EOD capabilities for MACA4 EOD under MOD/Home Office SLAs and Directives.

What are the names again?

To deliver these effects, DTXG is now comprised of 6 Squadrons. There has been some natural veer and haul with which capabilities naturally sit within each squadron, but the seabed has now settled as:

- DTXG HQ and Operational Support Squadron – HQ, Sqn supporting elements, training, validation, and an organic Autonomy Team. (Portsmouth).
- Alpha Squadron – NSOps, MCT and SMERAS. Homeland and Overseas (Portsmouth).
- Bravo Squadron – Homeland Defence and IWMAR diving to SURFLOT. (Portsmouth and Plymouth).
- Charlie Squadron – Homeland Defence and IWMAR diving to SUBFLOT. (Faslane).
- Delta Squadron – MTG, QEC and Deployed Maritime EOD. (Portsmouth).
- Echo Squadron – MHC, Exploitation and LRG. (Initially located in Portsmouth).



So what have they done since?

"Since T2 and the implementation of the latest RN Command Plan with wider unit activity across the globe the operational tempo of DTXG has increased exponentially. The formation of DTXG is allowing flexibility in tasking between squadrons and the ability to surge ahead in specialist capabilities in multiple areas of defence." Lt Cdr Dave Starkey – CO Delta&Echo Sqns

During the last year (and a bit), DTXG has not only provided 24hr Diving and EOD cover to the UK Homeland, Training with Partner Nations in 20 different countries, Validation for all capabilities and multiple NSOps but also the following highlights:

- Alpha conducted media publicised Maritime Interdiction Ops in support of Op KIPION.
- Bravo supported both QNLZ and PWLS via short notice Fleet Tasking Numbers.
- Charlie won the SURFLOT Efficiency Trophy in Q122 and successfully kept the SUBFLOT deployed on extended operations in numerous locations.
- Delta kept the surface fleet safe during 30 plus Underwater Force Protection tasks around the world.
- Echo Validated for the first time and declared FOC the new capability in Technical Exploitation as well as Training the Armed Forces of Ukraine in AUV operations with the Operational Support Squadron.

Job done?

Absolutely not, this is just the first step on the journey to formalising the multi-discipline nature of the Diving Branch and what options it provides to Defence. The next 12 months will see DTXG support both QEC deployed concurrently, continue to develop the relationship and operating model alongside MTXG, and begin to forward project a Diving and EOD capability to the JOA.

To provide these options to Defence, DTXG needs the primary resource of workforce. In recent months the Clearance Diver Workforce Recovery Project has been exploring the possibility of bringing more Divers into DTXG sooner rather than later as the MCMV sunset approaches. This would allow the 'Red' boxes below to be filled and make DTXG completely sustainable in all its current and expected future commitments.

New equipment is coming to support the drive of autonomy across the military and keep DTXG at the forefront of world-wide underwater warfare. This includes ROVs, new firing systems, remote disruption and exploitation, continuing to improve Hand-Held Sonar, and software to link all this technology under one operating system.

As in all areas of the MOD, eyes remain focussed on how operations in current areas of tension will evolve - DTXG must be ready when required to support. The Group has come a long way from the 'P' Parties of WWII and continues to grow in number, capability, and technology to remain relevant in the modern navy.

HOW THE DEFENCE DIVING SCHOOL HAS IMPROVED MILITARY DIVING TRAINING

By Cdr Martain Mackey RN, Superintendent at Defence Diving

“Diving is dangerous, but necessary.”

Lieutenant General Roly Walker DSO

The first record of British military diving (and Army diving) occurred in 1838 when a Royal Engineer - Colonel Charles Pasley¹ - of the School of Engineering, Chatham, was charged with removing a wreck blocking the Thames Fairway at Tilbury. Pasley dived a Standard Dress helmet manufactured by Augustus Siebe.

The Royal Navy's diving history commenced in 1844. Colonel Pasley tasked Lance Corporal Jones of the Royal Engineers to attend HMS Excellent to train 13 petty officers and sailors. A Royal Navy diving school was then established at Whale Island.

Since the early to mid-1800s the military has been teaching people to dive, and the exceptional feats of many of those qualified divers throughout history have been recorded. Diving is necessary for military operations. However, it has the potential to be dangerous, therefore the training is designed to reduce the likelihood of someone being injured or worse. Sometimes it goes tragically wrong, but as a learning organisation, the MOD seeks to continually improve and make training evermore safe.

A CATALYST

On Monday 26 March 2018, a 27-year-old popular, hardworking² Royal Engineer sadly died in a tragic underwater training incident. Several investigations were carried out into this fatality. The Gloucestershire coroner held the inquest in June 2022, where medical experts confirmed the cause of the loss-of-life was 'sudden death in adult'. When the inquest closed, the Jury listed eleven factors which it found had contributed to this fatality. Internally, a Royal Navy Service Inquiry was held in April 2018, and 53 recommendations were made in February 2019.

“We had to change. We could have changed just enough and patched over the cracks. Instead, we went back to first principles and rebuilt it.”

**Cdr Ian Richardson, CO Defence Diving School (DDS),
September 2022**

Less than 60 months on from this fatality, what has changed in military diver training at the DDS to reduce the likelihood of another serious or fatal diving incident?

CROWN IMPROVEMENT NOTICES

The first action dealt with the Crown Censure that the Health and Safety Executive (HSE) had issued to the Ministry of Defence (MOD).

“Just like any other employer, the MoD has a responsibility to reduce dangers to its personnel, as far as they properly can”³ **Julian Tuvey, HSE Inspector of Diving, September 2020**

The two Crown Improvement Notices related “to the failure to train all Army divers how to undertake air endurance calculations and to assess the risk of a diver running out of air.”⁴

“There is an inherent risk in diving activity, particularly in initial diver training...which requires vigilance and careful risk management”

Royal Navy Service Inquiry, February 2019

The DDS reviewed and revised their risk assessments, including 'out of gas'. Eight hazards were identified, and in each case suitable actions were noted. The Health and Safety Executive's (HSE) Inspectorate of Diving was updated and informed that that the DDS had updated staff on the controls required to mitigate the risks from 'Underwater Diving Breathing Equipment'. The HSE confirmed that the MoD's action was satisfactory, and the Crown Improvement Notice was lifted.

'MOD Risk Training' was made mandatory for all using a virtual learning environment (VLE). Further external health and safety courses were attended by DDS staff where appropriate to role such as, completing IOSH 'Managing Safely' and NEBOSH 'General Certificate' training. Today all supervision courses include a practical application, and the 'MOD Risk Training' VLE module is completed.

The third action taken by the DDS was to formally amend the course programme to include air consumption calculations. This process is taught to all trainee divers and supervisors, used on all training dives, and knowledge transfer is checked via the exam route. Today the School states that air endurance calculations are understood, briefed, and used as standard.

DDS DOCTOR APPOINTED

It should be noted that all diving – recreational, technical, commercial, aquaculture, scientific, media and military – requires some element of medical screening specific to diving, prior to undertaking training. This process is far more stringent for dive professionals. Civilians who earn their living by diving in the UK and military divers must pass a rigorous annual dive medical.

“We have a medic in the loop” **Cdr Ian Richardson, CO DDS, September 2022**

There is a need to protect and reduce the risk to untrained divers undertaking military diving training at the DDS. Cdr Ian Richardson stated that the HSE had observed that *“the MoD continues to fail to learn,”* when it is issued the Crown Censure. With the appointment of a Royal Navy Medical Officer (MO), the MOD has listened and acted – the medical risk has been appropriately owned – and the HSE’s observation has been taken seriously. The responsibilities and remit of the MO⁵ are extensive and include additional pre-screening of dive medical fitness of all initial diving trainees. The MO also provides onsite medical provision and assurance for high-risk training, and timely advice on fitness of students to remain on course whilst monitoring trends in physical symptoms in students placed under physical exertion.

DIGITAL ADOPTION

“DDS is a learning organisation where knowledge and experience are readily accessible, and where learning, passing on learning become routine” **DDS Training Assurance Officer**

When the Royal Navy Service Inquiry recommendations were made in February 2019, the Convening Authority remarked on the poor quality of associated documentation with the dive course. Documents were physically printed out and filed, a clunky system that restricted remote collaborative work.

DDS has now moved from paper to digital having adopted and embraced Microsoft OneNote. This has created a digitally connected dive site, where everything relating to a student’s education (welfare, programme, learning style, medical, audio recordings of briefs and debriefs, reports, diving logs, exams etc) is now securely stored and accessed online.

OneNote enables and promotes accurate and accountable information to be recorded throughout the organisation. Instructors can input key student dive data, whilst teaching on the waterline. This can instantly be viewed by authorised personnel, who are involved in either the training regime, or the duty holding chain.

CO DDS stated that one of the benefits of OneNote is that it is easier for DDS staff to identify emerging trends, behaviours, and concerns. For instance, *“the student is not meeting the air endurance expected at this time in the course.”* The staff are then able to intervene and look at student techniques. If required, additional training is scheduled with different personnel, and the remedial log is updated.

From the instructors’ point of view, going digital has made the job more efficient and cohesive. Productivity has been boosted for the teams on the waterline, with instructional personnel more able to concentrate on the delivery of safe training. Outside of the DDS, two Army Dive Teams are now trialling OneNote in the field.

BEHAVIOURAL CHANGE

“How do we stop failing to learn?”

Cdr Ian Richardson, CO DDS, September 2022

To promote a safety culture there is a need to change people’s mindset and habits so that the new behaviour becomes a way of life. The approach the DDS has adopted is the ‘Plan, Do, Check, Act’ methodology. This process achieves a balance between systems and the behavioural aspects of management, and it encourages continuous improvement.

CO DDS believes that the continual improvement model coupled with the appointment of an onsite Organisational Learning Team (OLT) has made DDS a better working and learning environment. The OLT has a five-year plan to look at people, culture, tools, and incident reports.

“We coach success, not failure”

Cdr Ian Richardson, CO DDS, September 2022

CO DDS notes the school is more student centric – there is an improved awareness of how a student learns; visual, verbal, auditory, kinaesthetic, and logical – and the students are encouraged to adopt and own reflective learning. To support this DDS changed its method of delivery to have instructors in the water training the students rather than the historic training in the classroom and leaving the students to find their way practically. This creates peer to peer learning and allows the DDS to be more open too with reassurance given to students. They are actively encouraged to ask for help if they feel additional coaching is needed to develop strong muscle memory. Instructors are saying *“tell us if you don’t understand. We will listen to you when you tell us ‘I don’t get it.’”* According to the instructors, students are doing just that.

A site-wide positive reporting process (using QR codes) has been established. This anonymous system has enabled a journey in training and environment improvement to be implemented. Cdr Ian Richardson believes the process provides objective evidence, rather than hearsay, and proves where there is a matter of concern. *“You need external people to have fresh eyes and spot things.”* For instance, submissions are now highlighting that certain equipment does not fit correctly. This reporting process does not mean there is always going to be an instant result or answer. It does however allow issues to be highlighted in a timely manner, to enable quicker learning and change facilitation.

Having observed a positive and tangible benefit of the QR reporting process, the Maritime Warfare School at HMS Collingwood is now looking to adopt this system.

INCIDENT REPORTING

"The safety culture of an organisation is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management." HSE⁶

Prompt reporting allows actual incidents and, crucially, also near misses to be analysed objectively, with a view to trying to stop future reoccurrences. Defence members and organisations are required to report incidents via their Single Service Reporting System. The plan is for all Services to have a common reporting platform using the Defence Unified Reporting and Lessons System (DURALS).

A JUST CULTURE

In the first instance true incident reporting is only possible if the incident is logged with full transparency, and no fear of recrimination. This is known as 'just culture' and this ethos is embraced at the DDS.

Many organisations have issues fully adopting a 'just culture', and admittedly it can take time for this ideology to bed in, be fully embraced and thrive. CO DDS explains that whilst DDS struggled with a blame free culture, *"we have the ability to learn."* For example, previously students would return equipment that may not be working correctly but say nothing. This led to problems and potential safety issues. Now everyone is being encouraged to *"just put your hand up and say something has happened to it. We need to know it is complete and safe to use."* This is borne out through a safety reporting culture that has increased by over 600% and a near zero incident level.

Using mechanisms to encourage and support an increase in incident and near miss reporting, the aim is to decrease the likelihood of serious incidents occurring.

"We have come a very long way, but this is not the end of story. We have not got there yet"

Cdr Ian Richardson, CO DDS, September 2022

So, whilst the loss of any service person is utterly tragic, as a learning organisation, has diving training become safer as a result of the death that occurred on 26 March 2018? The conclusion must be yes. The benefits of those changes at the DDS have seen an increase in pass rates that could be drawn across to other parts of training in Defence. Cdr Ian Richardson states a full review has been conducted at the DDS, with training and procedures examined top to tail. As a result, many changes have been made and safeguarding provision has been put in place at the school. Does this mean the journey is complete? No. The legacy of this tragedy will continue to positively impact on DDS because of the introduction of a raft of safety measures.





1 MCD Branch History (mcdoa.org.uk)

2 MOD confirms death of Lance Corporal George Partridge - GOV.UK (www.gov.uk)

3 George Partridge: MoD admits safety breaches in diving death - BBC News

4 HSE ISSUES MOD WITH CROWN CENSURE (tomorrowshs.com)

5 Job Specification (2021) N685OU/ROLE/PID

6 Common topic 4: Safety culture (hse.gov.uk)

DEFENCE DIVING STANDARDS TEAM

By Cdr Martin Mackey RN, Superintendent of Defence Diving, and the Defence Diving Standards Team

On 27 Oct 22, [2022DIN06-18 \(The Defence Diving Standards Team\)](#) was published which, as the title suggests, is about the DDST's role. But the DIN says what we do not who we are and how we carry out our tasks. This article aims to bring the DIN to life particularly the role DDST plays in assuring diving safety management systems.

The DDST is a relatively large team who, as the DIN outlines, carry out a number of functions with auditing being one of the main ones. DDST is responsible for conducting independent assurance of 59 organisations across Defence. The team is headed up by an

RN SoDD who is also Head DDST and an Army Chief of Staff (COS) supported by an MOD Civil Servant responsible for diving safety Communications, Information and Analysis (CIA) plus members of the Royal Navy, Army and the MOD Civil Service. Today the SoDD is Commander Martin Mackey Royal Navy, the COS is Major Malcolm 'Shed' Marsden and the CIA is Mr Mark Turner. But who are the rest of the team and what do they do?

Team Navy

Team Navy is responsible for conducting second party assurance (2PA) of Diving Safety Management Systems (DSMS) in the naval domain by conducting certification audits primarily on the Sandown and Hunt Class MCMVs, the Diving & Threat Exploitation Group, the NATO Submarine Rescue System and MAB6. In addition to these audits, they also assist with a collective audit at the Defence Diving School and, from time-to-time, they support Team Army and Team Adventure Training with their audits. In 2022, Team Navy has conducted audits from as far afield as Oman, Bahrain and Belize but mostly in Portsmouth and Faslane. Team Navy is pictured with the SoDD during an audit of MCM2 Crew 4 (HMS Middleton) following their recent successful certification audit alongside Bahrain.

Team Navy is:

W01(D) Ruby Murray, Senior Diving Standards Inspector (Navy)
W01 Waggy Wagstaff, Senior Diving Standards Inspector (Engineer)
CPO(D) Willie Sharp, Diving Standards Inspector (Special Projects)

Diving Standards Inspector (Navy) was, until 14 Oct 22, CPO(D) Nobby Clark who departed on promotion to Charlie Squadron. The position is currently gapped.



Team Army

The Army branch of DDST exists to provide second line of defence assurance to the Army Military Diving community which consists of some 14 teams geographically spread from Southampton to Kinloss, Scotland. Whilst predominantly drawn from the Royal Engineers we have a team from 17 Port & Maritime Regiment, Royal Logistic Corps and a Royal Navy team at the Defence Explosive Munitions and Search Training Regiment in Bicester, Oxfordshire.

Their audits are split into two types: light and full. A light touch audit, spanning two days concentrates on the DSMS and includes general health and safety matters, management of diving safety information, equipment maintenance and forecasting and records of diving to name but a few. The full audit adds two further days and allows observation of the team diving in accordance with its DSMS as well as undertaking a theory exam to assess knowledge of diving theory, safety signals and procedures. This provides an additional level of assurance to the chain of command. Successful completion of a full audit results in the award of a Diving Safety Certificate by the SoDD.

Being on site with teams provides a holistic view of how diving is conducted within the organisation. Witnessing the planning, execution and post dive procedures allows a thorough insight into the safety culture which contributes to the overall assessment of whether the team are 'operating safely'.

A recent example provided a first-hand view of how a team managed an unexpected safety occurrence. Whilst in the final stages of preparation for diving and immediately prior to the diver being placed 'on air' a fault developed on the surface supplied panel which caused a mains air supply failure. Had this occurred whilst the diver was in the water, at depth it would have initiated an emergency and required a switch to the reserve air supply. Such was the calm manner in which this situation was managed we were left in absolutely no doubt that the team would have reacted appropriately and safely returned the diver to the surface. Follow up action and reporting were managed appropriately and therefore the process of capturing lessons learned naturally began.



It is a hugely rewarding role particularly bringing the teams many years of experience to the fore and knowing that you are contributing to the safety and wellbeing of the Army Diving Community.

Team Army is:

Capt Gaz Masters, Senior Diving Standards Inspector (Army)
 SSgt Dan Welsh, Diving Standards Inspector (Army)
 LCpl Andy Landers, Diving Standards Inspector (Support)



Team Adventurous Training (AT)

The DDST AT team audits Joint Service Adventurous Training (JSAT). Their mandate is to ensure that all MOD sponsored AT diving activity is carried out safely, with risks as low as reasonably practicable, by authorized, current and competent personnel, and using equipment which is fit for purpose and maintained to the correct standard. The DDST(AT) audit is designed to identify areas of concern where an improvement or prohibition notice is required to prevent or stop unsafe or dangerous practices.

To maintain safety standards of MOD sponsored AT diving, the DDST(AT), as a minimum, conduct assurance activity in the following domains:

- a. Military MOD Approved Centre's (MilMAC) UK and Cyprus.
- b. Commercial MOD Approved Centre's (ComMAC) Cyprus, Lanzarote, Malta, Borneo, Brunei, Belize and Oman.
- c. MOD Expedition Centres. Gibraltar.

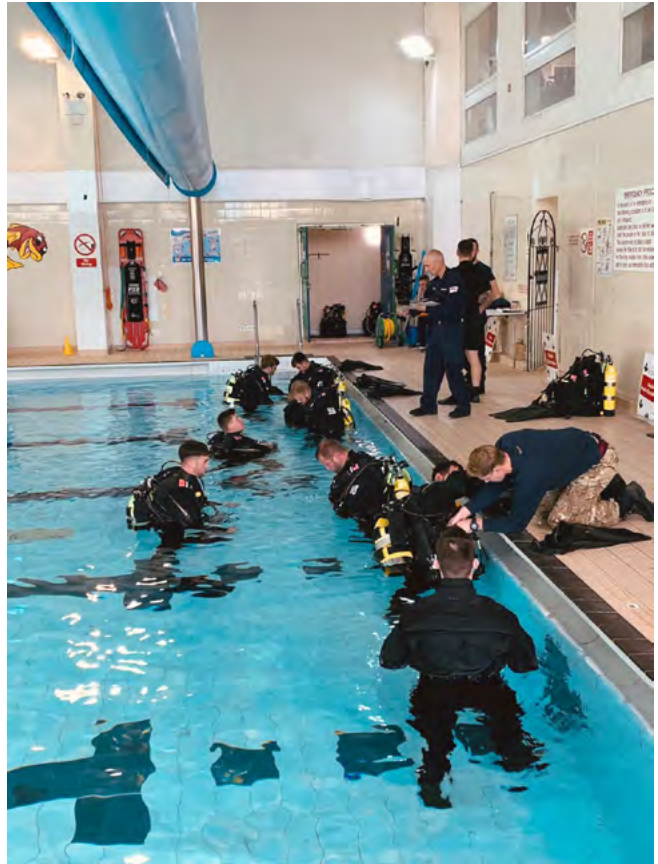
The DDST(AT) assesses an organisation's suitability to support the conduct of JSAT diving training and compliance by auditing a dive centre's DSMS, maintenance schedule, recompression facilities and medical.

As part of their role, the DDST(AT) also conduct in-water observations to determine that standards and procedures shown in the DSMS are being transferred to the dive site. This enables a better understanding allowing the organisation to demonstrate safe diving practices and the adequate supporting elements of the training delivery such as supervision, boat serviceability and boat handling. Training agency standards and procedures are also confirmed for compliance.

AT is on-duty, mandated, military training which, through exposure to controlled risk, enables Service Personnel (SP) to develop the fortitude, robustness, and leadership required on operations and during other military tasks. It is an integral part of Service life, recruitment and retention and is therefore the responsibility of the DDST(AT) to provide this assurance with the same due diligence required in all areas of MOD sponsored diving activity.

Team AT and Training is:

Mr Marc Sturch, Senior Diving Standards Inspector (Adventurous Training)
Ms Rosemary Lunn, Senior Diving Standards Inspector (Training).





Team Commercial

The DDST Commercial team is involved with assuring MOD Civil Service diving undertaken by SALMO diving units, the Underwater Escape Training Unit at RNAS Yeovilton as well as being part of the team who conduct governance verification audits of client responsible organisations ie those organisations such as Defence Equipment & Support, Defence Infrastructure Organisation and Submarine Delivery Agency who all contract diving. The team has recently been supporting those organisations to set up their own internal diving safety assurance arrangements.

DDST Commercial also looks at industry to monitor standards in the commercial diving sector looking for good practices that Defence might consider adopting. That is done by keeping in contact with industry organisations like the International Marine Contractors Association and the Association of Diving Contractors. Attendance at those organisation's diving safety meetings is key as is the Commercial team's attendance at the HSE's diving Industry Committee meeting where DDST provides an update on MOD diving safety and takes away safety information which, where relevant to Defence diving, will be disseminated.

Team Commercial is:

Mr Nick Mitchell, Senior Diving Standards Inspector (Commercial)

The team is currently gapped a Diving Standards Officer (Civilian).

Conclusion

So, hopefully readers will have read at the recently published DDST DIN and, along with this article, can see that the team is busy playing its part in assuring that all diving carried out across Defence has effective diving safety management systems in place and that diving is conducted as safely as reasonably practicable.



RNCDA UPDATE

By PO(D) Causer RNCDA Secretary

The RNCDA continues to go from strength to strength and is an all-ranks association for serving and non-serving divers. Numbers have grown since its formation in 2010 and there are now over 600 members worldwide. The main objective of the RNCDA is to promote the Clearance Diving specialization through the provision and support of facilities, activities to enhance efficiency and wellbeing of serving and non-serving members. This is achieved by providing support in times of need or distress and fostering an 'esprit-de-corps' whilst promoting the welfare of the branch. Organised events are conducted throughout the RNCDA calendar, and the Annual Dinner is at the forefront of our planning. This year was the 70th Anniversary of the branch and gave the chance for members to catch up face to face with each other whilst promoting the ethos of the branch.



Other events held yearly include the Army vs Navy rugby at Twickenham which sold out quickly after the easing of COVID restrictions. Although the Navy gave a brave account of themselves on the day it was one of the closest run matches since our last win in 2018. Other notable dates in the calendar include the annual Golf and Northern Gathering. The Golf was held at Petersfield Golf Club this year and the tournament winner taking the trophy was ex diver Jess Owen; all abilities are welcome to attend and many trophies are available on the day so even the most amateur of golfers can have an enjoyable day.

If you would like to contact the RNCDA please do so by email on

Committee@rncda.com



The Northern Gathering this year was held at The Last Post Memorial Bar, Stockton-On-Tees. There was an ardent uptake at the event and all had such a good time at the venue the RNCDA committee is considering it for next year's gathering also.

The biggest achievement for the RNCDA is the growth of our members and being able to receive charity status, it was something the members at the AGM voted on and the committee went to work to try and achieve. Due to COVID restrictions the application process took a considerable time, but charity status was received in May 2020. Since Charity status was achieved it has already helped Divers discreetly with issues which have presented themselves, the charity trustees continue to support applications which are presented and support given where required. If anyone requires support or knows of someone that does, please email charityrep@rncda.com.

Following on from the news of Her Majesty Queen Elizabeth II passing, the Association's attendance again this year at the Cenotaph is of significant importance. This presents an opportunity for members to march and pay their respects to the fallen across all conflicts. This brings together young and old, and it is truly an amazing day for all who attend to pay their respects.

Dedication to the memorial garden continues and the RNCDA have recently completed the installation of a new flagpole. This allows the Association to continue the tradition of the 5 bells eulogy, and with help from members ensure every clearance diver gets the bell rung in their memory and, whether members of the RNCDA or not, have a plaque placed inside the memorial garden on their passing.



If anyone requires support or knows of someone that does, please email charityrep@rncda.com



TON CLASS ASSOCIATION

By Peter Down JP, FBCS – Vice Chairman

TCA represents the Old and Bold in the MCM Community.

We have over 1200 members of all ranks and specialisations, ranging from Admirals to National Service Stokers, spread across 24 countries round the world. They are mainly ex-Royal Navy and RNR, but we also have members from other navies that operated TONs and other allies. We are proud to include in our numbers two Four-Ring Captains from Argentina and Germany, as well as friends from Norway, the USA and EGUERMIN. About 1 in 8 of our members served in the Naval Reserves.



Exchanges of news and views among members are lively and stimulating.

Please visit our website www.tcaminesweepers.co.uk to learn more about our Association and the exploits of our little wooden ships that were Britain's main counter to the sea mine during 1950's to 1990's. We also pioneered the transition in technology from minesweeping to minehunting.

Everyone with relevant MCM knowledge and experience, especially those still serving, is welcome to join TCA and participate in our activities. If you are a good organiser, we could use your skills on our Committee to help take our Association forward. Our current Chairman is, and our recent Vice Chairman was, a serving officer.

Most of our Committee meetings are now held by Zoom, and we retain an Annual Reunion Weekend in October for our AGM, when we relax with our wives and other guests, in addition to regional events.

We publish a magazine, TON Talk, quarterly and try to keep abreast of developments in MCM technology. We are learning about robotic devices and are heartened to note that the Orpoesa float has returned to service, together with influence sweeping and even wire sweeping is on the cards.

We recently presented a painting of "Minesweeper Sailors Through the Ages" to the Minewarfare school at HMS Collingwood and hope to arrange a visit there soon. [see photograph opposite of TCA Chairman Commander Bob Hawkins MBE RN, a serving MCD specialist, presenting the painting to Warrant Officer 1 Steven Moss. The painting will be displayed in the new Rest Room in the school.]

TON Talk is sent to all operational MCMVs and also to the OPVs in recognition of their Fishery Protection role; once a TON speciality. We welcome feedback from those vessels, especially newsletters, which we upload to our website. Ship visits, so we can meet the modern matelot, are prized but often difficult to schedule because of operational priorities.

TCA was represented at the recent dedication of the VERNON Monument by our President and Chairman, who also had a hand in resourcing the RN contribution to the funeral of our late beloved Queen Elizabeth. In 1994, the then Prince of Wales kindly consented to become Patron of TCA, in recognition of his time in command of HMS Bronington. We are waiting, with baited breath, to discover whether this Patronage may be rolled forward to his new Role.

Our aim is to maintain the Spirit of the TONs; very much a small ships navy. "Jaunty informality, with great professionalism" as our Patron described his experience of serving in a TON. We aim to live up to that description with social contacts and comradeship, including welfare provision, where appropriate.



We have published three books and four monographs which tell the story of the rationale for the TONs, our deployments and details of life on board. We also explain to the public, via the books and website, the importance of sea-borne trade to the livelihood of our nation. Over 90% of our imports and exports travel by sea and hence the vital importance of the Royal Navy in keeping sea lanes open for navigation.

Come and join us, not only for the social contact, but to help keep our Association up to date and vibrant. You can download an Application Form from our website: www.tcaminesweepers.co.uk



The painting was produced by former ME1 Tony Standish, our resident artist, which is why the figure from our era (1950's/60's) has a Stoker's badge on his arm. In TONs all specialisations shared duties including gangway watch, wheelhouse, driving the motorboat and helping out on the sweepdeck.



THE MINEWARFARE AND CLEARANCE DIVING OFFICERS' ASSOCIATION

By Lt Kyle De-Banks RN

Bringing friends and colleagues, past and present, together through social events, the sharing of up-to-date news and a wealth of historical and corporate knowledge.



The Minewarfare and Clearance Diving Officers' Association (MCDOA) is in an exciting phase of growth and innovation. Many readers will already be member and others may be thinking of joining, or just keen to understand what this association stands for and how it contributes to the wider Mine Warfare and Diving community. I hope to explain these points in this article.

WHERE DID IT ALL BEGIN?

The MCDOA was founded in 1992 with the primary objective of bringing together members of the community in one place where the exchanging of news and history is actively encouraged. The aim of the Association is to preserve the "Esprit de Corps" of Minewarfare and Clearance Diving Officers and to give members a safe space to share the lived experience. The similarities and the differences that come up in conversations between the generations of MCDOA members is fascinating, particularly when these conversations take place in the jovial atmosphere of the MCDOA annual mess dinner. The Association encourages members to have an active role in both formal meetings, to shape our future, and on a social basis.

AM I ELIGIBLE?

Full Members. Your eligibility is automatic if you are one of the following; serving and retired Royal Naval Minewarfare and Clearance Diving Officer, Minewarfare Officer, Clearance Diving Officers, Clearance Diving Warrant Officer, Minewarfare Warrant Officer, Officers who were qualified in Deep Diving and Officers from other Navies who have similar qualifications and who have served with the Royal Navy.

Life Members. Free life membership is granted to those members who have attained the age of 75 or have been qualified for 50 years or more. Life members have the same membership rights as Full Members.

Associate Members. Associate membership is awarded to those who have made a marked contribution to the Minewarfare and Clearance Diving community and the welfare of its members.

Honorary Members. Honorary membership may be bestowed on individuals who have made outstanding contributions to the objectives of the Association or to the activities of the MCD and MW Officer community. Honorary members pay no fees and are entitled to all privileges of membership except voting rights.

Today our President is Capt Ben Vickery RN (Captain Patrol, Underwater Exploitation and Diving) and the Committee members are:

Chair	Cdr Martin Mackey RN (Superintendent of Defence Diving)
Vice Chair	Lt Cdr Rob Hoole RN (Retd)
Secretary	Lt Alex 'Snowy' Snow RN, CO HMS PUNCHER
Treasurer	Lt Ali Aindow RN
Social Secretary	Lt Cdr Kevin Giles RN (Retd)
Serving and Retired members representative	Cdr Bob Hawkins RN (Deputy Naval Regional Commander and Chief of Staff, Scotland and Northern Ireland)
Committee member	Lt Cdr Graham 'Tug' Wilson RN (Retd)

HELPING THE COMMUNITY:

The MCDOA was able to contribute to the commissioning of the Vernon monument at Gunwharf Quays (formerly the site of HMS Vernon) and members of the association played an active role from its inception to delivery in March 2020. The monument pays tribute to all those involved in mine warfare throughout the generations and into the future. Those that attended the Operational Update Briefs held in the home of DTXG on Horsea Island learned that not only is the Minewarfare and Clearance Divers community staying relevant in an ever-changing world but is thriving and growing in many areas from automated systems to support to Tier One Forces. This monument stands as a reminder of the ever-present capability and skill the members of this community have and continue to demonstrate. It also acts as a fitting mark to those who have died while engaged in such activities.

UPCOMING EVENTS:

24 Nov 2023 – MCDOA Operational Update briefs and Annual General Meeting at Horsea Island (all members are encouraged to attend both events).

24 Nov 2023 – MCDOA Annual Dinner at HMS EXCELLENT.

MCDOA WEBSITE:

The MCDOA website is expertly managed by the webmaster Rob Hoole and is an excellent resource for keeping up to speed not only on news but also upcoming and significant events involving members of the association and of the Diving and Minewarfare branches. It also features a comprehensive history of the branch and its glorious past and exploits of our predecessors. The news archives including back copies of the MAD magazines are also available. It can be found at: www.mcdoa.org.uk

MEMBERSHIP ENQUIRIES:

Full details regarding membership are on the website and enquiries should be addressed to the Secretary:

Kyle De-Banks: kdb88@hotmail.co.uk



THE ROYAL NAVAL PATROL SERVICE MEMORIAL - LOWESTOFT

By Paul Botterill©

About the Author: Suffolk born Paul Botterill served in the Royal Navy including a period in command of the minesweeper HMS Chawton.



The most Easterly point of the British Isles is Lowestoft Ness, about half a mile north of the entrance to the harbour. Not far inland, the Lowestoft lighthouse, stands sixteen metres tall on the top of a twenty one metre high cliff; thirty-seven metres above sea level. Its single flash every fifteen seconds is visible from twenty three nautical miles away at sea. The current light was built almost 150 years ago, the latest successor to other structures that stood there since 1609CE, guiding ships through the perilous shoals and sandbanks that lurk not far offshore, the final resting place for many a mariner.

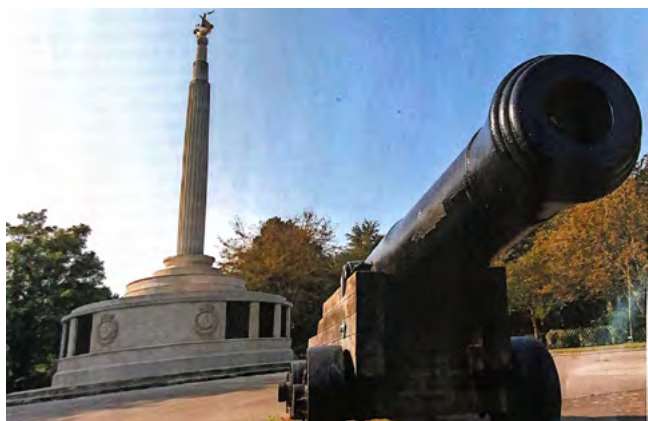
Royal Naval Patrol Annual Service and Parade at Belle Vue Park in Lowestoft

A little to the north of the lighthouse in Bellevue Park stands a fluted column of Portland stone topped by a golden galleon almost the same height as the lighthouse. It is a memorial to commemorate the 2,385 men from the Royal Navy Patrol Service (RNPS) who have no grave but the sea, their names engraved on the seventeen bronze panels surrounding its base. Designer Fred Crossley FSA was commissioned by the Commonwealth War Graves Commission to design a memorial to those men who served as the crews of the trawlers, drifters, whalers and other assorted craft used to sweep mines and patrol against submarines throughout the second world war. At the beginning of the war they were almost all professional seamen from the Trawler section of the Royal Naval Reserve. As the war ground on, they were joined by thousands of volunteers from all walks of life most of whom had never been to sea.



Royal Naval Patrol Annual Service and Parade at Belle Vue Park in Lowestoft

The importance of their work and sacrifice can be gauged by the fact that the monument was unveiled on 7 October 1953 by Admiral of the Fleet Sir Roderick McGrigor, who was the First Sea Lord. War time Prime Minister was represented by Admiral of the Fleet Sir Philip Vian, former captain of HMS Cossack when she captured the prison ship Altmark whose internees memorialised the expression "The Navy's here!" when they were released. Churchill understood the importance of the work these men were to do and impishly christened them "Churchill's Pirates", a title they savored and strived to live up to.



The Lowestoft Naval Memorial commemorates almost 2,400 sailors of the Royal Naval Patrol Service

Despite this, I have to admit that having served in the navy myself, including in two minesweepers, I never heard any mention of the RNPS or the work they did.

They were viewed as a navy within the navy and it has been a voyage of discovery finding out about them.

The work they did was not glamorous. They went to sea in all weathers keeping the sea-lanes open. Their ships were slow and ungainly. Living conditions were cramped and damp, the food monotonous and the work physically demanding. Conditions were sufficiently bad the men received "hard lying" money, extra pay, not something the notoriously parsimonious Admiralty awarded lightly.

Because their ships were small and often scruffy and the ship's companies attitude to uniform somewhat flexible, they were christened Harry Tate's Navy by the rest of the Fleet who served on larger or what were considered as "pusser" ships. It was a name they took to heart and used with deserving pride.

In the planning for hostilities, Lowestoft was chosen to become the headquarters for the Trawler Division of the Naval Reserve because it had plenty of accommodation for the holiday trade, was already a large fishing port and something that might surprise us today, good rail connections. The Admiralty Surveyor identified the Sparrows Nest municipal park at the foot of the cliff below the Bellevue Gardens as the ideal place with its seven acres of parkland, a thatched pavilion, a 1300 seat concert hall and a bandstand.

The Admiralty planners had also identified retired naval Captain Basil Piercy as the person who would take command of the "Nest" as it became known, in the event it had to be activated. Although he had retired from the navy in 1926, following a period tea planting in Sri Lanka he had settled in Fornham St Martin near Bury St Edmunds with his wife and daughter. In the Navy's eyes that made him local!

On Wednesday 23 August 1939, the day Germany and the Soviet Union signed the Ribbentrop-Molotov Pact dividing Poland between them, 57 year old Piercy received a coded telegram promoting him to Commodore with instructions to activate his command, the most unlikely "stone frigate" in the service. He arrived at the stage door of the Pavilion Theatre later the same evening to interrupt a show by the comedy duo "Gert and Daisy" the stage names of Elsie and Doris Waters, sisters of the well-known actor Jack Warner. The show was stopped, the Commodore took possession of the building and the Waters sisters are reported to have said, "This is the last peace we are going to know for a long time."

Billy Thorpe, a naval reservist and Mate of a Lowestoft trawler arrived back in harbour early the following morning to be greeted with his mobilisation telegram. He went from the fish dock straight to the Nest and was the first man to report for duty at about 11 o'clock. By early afternoon others started to arrive including a batch of regulars from the naval depot at Chatham together with a few truckloads of supplies. They set about removing the seats from the concert hall, altering the stage and stowing bedding wherever they could before making it sufficiently habitable to turn in at about midnight.

More recalled reservists arrived and by Saturday trains were bringing in men from as far away as Fraserburgh and Aberdeen. They were allocated into crews for the various armed trawlers controlled by the Admiralty, some equipped with the relatively new ASDIC for detecting submarines, others as minesweepers. They were given a medical examination, issued with gas masks, hammocks and whatever other kit they could scrounge, given £5 to post to their wives and then dispatched by train or bus to wherever their billets were berthed.

Billy Thorpe's draft required him to travel to Hull but he wasn't allowed to go home to say goodbye to his wife living not far away in Essex Road down near the harbour. He spent the next seven years in the Patrol Service, took part in the evacuation of Dunkirk and cleared several hundred mines from around the coast of Britain. He rose to the rank of Skipper Lieutenant, the highest rank open to the Patrol Service and by the end of the war had so many medals his friends joked the weight of them made him "list to port," sailor speak for lean to the left. However those medals did not include the Defence medal because he hadn't served ashore in the UK for the requisite six months; he had been at sea which didn't count.

The government ordered general mobilisation on 29 August then on 3 September, Commodore Piercy, cleared lower deck to announce from the bandstand that Britain and Germany were again at war. 100 fishing vessels had already been converted and manned but the cadence of work at the Sparrows Nest was about to increase dramatically.

Initially there were 6,000 men in the Trawler section of the Naval Reserve, professional seamen used to working in all weathers in small ships but after they were deployed the Patrol Service expanded to 66,000, the professionals supplemented by Hostilities Only men and volunteers. Between them they manned more than 1500 ships and another few thousand smaller launches and support vessels.

Managing them and administering their pay, training and advancement was the responsibility of Sparrows Nest which soon became a naval establishment with the name, HMS Europa. In the course of the war almost 70,000 people passed through Europa and there were usually about 7,000 in residence at any time undertaking courses or awaiting drafts.

Accommodating everyone was one of the early challenges. At the beginning of hostilities, Lowestoft was evacuated but Commodore Piercy negotiated with almost a thousand seaside landladies to return to the town and open their boarding houses for his sailors. They received thirty shillings (£1.50) a week for every man they housed and fed with the fairly generous ration allowance for serving personnel being an extra bonus at a time of limited supplies. Collectively the landladies were known as "Ma" and while there were good and bad among them, word soon spread about where the best berths were to be found.



The Royal Naval Patrol Service RN School for Cooks and Stewards at Church Road School in Lowestoft

New arrivals in the know would go and check in with "Ma" before reporting to Europa where they would tell the "Crusher," the Master at Arms and senior regulator, that they already had a billet with an "aunty" in town.

One of the skills that Commodore Piercy realised was lacking among his people was basic cookery skills; many of the men couldn't even make a cup of tea. He enlisted Miss Grace Musson, the principal of the Lowestoft Technical College to establish a cookery school. Coal fired ranges like the ones to be found on most of the converted trawlers were installed and a five-week cookery course established. Eleven co-opted domestic science teachers would instruct up to 160 men basic cookery skills. Piercy's flair and improvisation combined with Grace Musson's organising ability ensured Churchill's Pirates would be as well fed as possible when they were at sea.

Other local establishments were taken over and courses established to teach seamanship and engineering skills as the number of the Hostilities Only ratings increased.

Recognising the importance of their work, Winston Churchill when First Lord of the Admiralty decided the men of the Patrol Service should have their own distinctive badge denoting their special service. Coinage designer George Kruger Grey created an image symbolising both minesweeping and submarine hunting. The result was a silver disc almost an inch in diameter that was worn by both officers and ratings four inches above the cuff of their left sleeve. To qualify for the badge it was necessary to have served at sea for six months. It was highly coveted and showed the rest of the navy that the wearer was from this rather select part of the service.

The other mark that identified the Patrol Service men from their general service counterparts was in their official numbers. Ratings' service numbers were preceded by the letter of their base ports, C for Chatham, D for Devonport, P for Portsmouth. The Sparrows, as they like to be called, had LT for Lowestoft. LT ratings may only have made up less than one tenth of the manpower of the wartime navy but they bore a quarter of the fatalities, more than died serving on the Destroyers and Cruisers of the Fleet. Nothing shows more clearly the very dangerous nature of their work.

This is also reflected by the sheer size of the honours boards still on display at the RNPS Museum in the Sparrows Nest today. It lists some 850 names of people who received gallantry awards including the Victoria Cross awarded to Lieutenant Richard Stannard VC DSO RD. Richard was in command of HM Trawler Arab at Namsos in Norway in May 1940. Enemy action had caused an ammunition store to ignite on a jetty where there was no running water. He took his ship onto the jetty and held it bows on while they sprayed the fire for two hours. His action prevented a major explosion and saved the jetty which was subsequently used to evacuate retreating troops.

Another honour on the board is the Distinguished Service Medal (DSM) awarded to ex-borstal boy Signalman Trevor Stanford, better known as the popular 1960's pianist Russ Conway. His medal was awarded for zeal during minesweeping operations at the relief of Greece in 1944. He also lost the tip of the third finger of his right hand while serving but not in action. He was using the bread slicer in the ship's galley at the time!

While each name on the honours board is an extraordinary story in its own right, that of Chief Engineman Bill Goodsall encapsulates the character of these men. Bill joined the Royal Marines in 1894 at the age of 18 and was awarded the Benin Medal for anti-slavery operations while serving there in HMS Theseus three years later. A few years after that he deserted from HMS Galatea, settled in Grimsby and worked on various fishing boats. Lying about his age, he enlisted in the Naval Reserve before the First World War during which he served on a variety of minesweeping vessels.

He was chosen to represent the RNR at the funeral of the Unknown Warrior at Westminster Abbey on 11 November 1920 in the presence of King George V. He re-enlisted again for the Second World War and in 1941 he was awarded the DSM at the age of 64 for "outstanding zeal", probably the oldest recipient of such medal. He served right through the war ending in the Far East theatre in 1945. He died on return to Grimsby in early 1946 at the age of seventy.

The honours board only survived because the RNPS Association managed to save it from an adjacent building where workmen were using it to mix cement on!

Among the more than 70,000 men who passed through Europa, other famous Sparrows include former Prime Minister Lord (Jim) Callaghan of Cardiff who described his time in digs above a fish and chip shop in Lowestoft as one of the worst experiences of his life. The author Neville Chute and Broadcaster Richard Baker were also Lowestoft alumni as was the comedian Eric Barker of "Steady Barker" fame. Commodore Daniel de Pass who succeeded Basil Piercy in April 1941 spotted Barker and appointed him Europa's Entertainments Officer. He started the RNPS Blue Mariners Band that played frequently at events in the area making the Patrol Service the only naval command with its own dance band; everyone else had Royal Marine musicians!

While hostilities in Europe ended in May 1945 and the Far East in the following August, units of the Patrol Service were retained in service until 1946 to clear the myriad minefields. During 1946, a further 130 merchant vessels were sunk by residual mines. In all Churchill's Pirates managed to clear about 35,000 mines during and after the war and lost almost 15,000 men.

Many are buried in various war cemeteries around the world and the names of those with no grave but the sea are inscribed on the memorial at Lowestoft. It is thanks to them and the others who survived to tell the tale that the food and materials we needed continued to arrive by sea. We owe them all a debt of gratitude.



Photo: Royal Naval Patrol Service Museum

MINESWEEPER SAILORS THROUGH THE AGES

By Peter Down JP, FBCS – Vice Chairman

TCA Committee has sought to find a suitable use for the kind bequest of £3000 made by the late Captain Jeremy Stewart, our first Chairman. Several ideas have been examined that could benefit the Association and also provide a lasting tribute to Jeremy.

The aim is to combine Jeremy's interest in naval history with his professionalism in MCM - he was First Lieutenant of FENTON during Cyprus and Suez, a TAS specialist and on the training staff at VERNON, Commanding Officer of FLOCKTON in the Gulf and Captain MCM during the Falklands Campaign and hence ultimately responsible for the creation of 11 MCMS - those converted trawlers.

This painting, has been produced by our very own artist Tony Standish, assisted, on this occasion, by his talented daughter Kelly, of sailors grouped on a sweepdeck and dressed in the working rig for minesweeping over the ages viz:

- **Baltic 1855** – First RN encounter with sea mines. HMS Merlin damaged off Kronstadt during Crimean War. Initial MCM effort was limited to "fishing" for mine mooring cables from ship's boats - NO MCM Doctrine and no Health and Safety
- **First World War** – Working dress was No.3 blue suit with red badges but without tiddley collars, although former fishermen in Trawler Minesweepers of the Patrol Service soon reverted to Guernsey sweaters and long sea boots.
- **Second World War** – The ubiquitous duffel coat was soon also seen ashore with RN Bomb and Mine Disposal parties, especially during clearance of ports and estuaries in Europe during the bitter winter of 1944/45. Often supplemented by any warm garments that could be scrounged; fur-lined leather Army Despatch Riders' gilets were prized.
- **TONs in the Mediterranean & Far East 1955-1967** – Banyan rig was usual at sea, with No. 8's in harbour. SOPs later declared that when sweeping we should wear protective headgear but none was supplied, so crash helmets and steel helmets from the gun mountings had to suffice. We also had to move around with knees bent (like monkeys) to avoid shock wave injuries. You can imagine how Jack responded.
- **Present day** – Comfortable and weather-proof Action Working Dress, supplemented by hard hat and steel toe-capped boots, with reliable lifejacket.





