

MINE WARFARE and DIVING

AUTUMN/WINTER 2021 #MAD2021

FOR THE MCM COMMUNITY, ROYAL NAVY AND DEFENCE



...THE YEAR OF DELIVERY

EDITORIAL

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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 Memory of

LET(ME) Robert Johansen

and

Lt Joe Spedding RN

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FOREWORD

“The Mine Warfare and Clearance Diving community is at the vanguard of future capability development”



Admiral Sir Ben Key KCB CBE,
First Sea Lord and Chief of the Naval Staff

These are exciting and transformative times for the Royal Navy. The recent Integrated Review (IR) described how UK Defence is key to meeting the ambition of a truly Global Britain. Through increased investment in innovation, persistent forward presence, and a renewed commitment to our allies and partners, we will develop into a more agile, integrated and assertive force, capable of operating in an environment of persistent competition. Central to this is the adoption of the Integrated Operating Concept, which sets out how we will play on traditional strengths, while acknowledging that we need to adapt to the threats of the future in order to ensure that we are immediately ready to transition to fight when required.

As an exemplar of persistent contingency, and with the majority of units already in the operate space, the Royal Navy is already delivering against the ambition in the IR, and will continue to be so as we move forward into the future; the Mine Warfare and Clearance Diving Community is at the vanguard of future capability development.

During my time as the Chief of Joint Operations I was struck by just how much the Mine Warfare Community achieves, both under my Command in that role as well as for the Fleet Commander in Full Command. Forward based in the KIPION JOA since 2006, the two Hunt and two Sandown Class ships, supported by a Bay Class Afloat Support Base and the engineers of the Fleet Support Unit are a critical capability that assures maritime access to the Arabian Gulf. In the UK, as well as generating for operations, both MCM Squadrons support defence of the Homeland through Op PIKE, the Northern and Southern Diving Groups provide essential Military Aid to Civilian Authorities (MACA) through ordnance disposal, whilst also providing assistance to the surface and submarine fleet when required, and the Fleet Diving Squadron also conducts Counter Terrorism and underwater Force Protection tasking. Finally, our commitment to NATO, an alliance central to the UK's defence policy, is affirmed through our contribution to the Standing NATO MCM Groups 1 and 1.

The way in which the RN conducts Mine Warfare is changing. Following the long-expected decision by the Integrated Review to replace the current ORBAT of Hunts and Sandowns with autonomous MCM, I look forward to watching the Royal Navy's Mine Warfare capability continue to transform over the next decade. Of course, autonomy in Mine Warfare is not new; the Mine Hunting Capability programme has been working since 2014 to better understand how best to move away from ship-centric MCM. In addition, the RN's Maritime Autonomous System Trials Team (MASTT) continue to develop the autonomous Mine Hunting Capability (MHC) towards Full Operating Capability.

With this change there will undoubtedly be challenge and difficulties. I am confident that you, the Mine Warfare and Diving Community, will ensure these are overcome, opportunities and technology are embraced, and the UK maintains its reputation as a world leader in Mine Warfare. I look forward to seeing this develop during my tenure as the First Sea Lord and I am proud of the work that continues to be done to achieve this.

A handwritten signature in blue ink that reads "Ben Key". The signature is written in a cursive, flowing style.

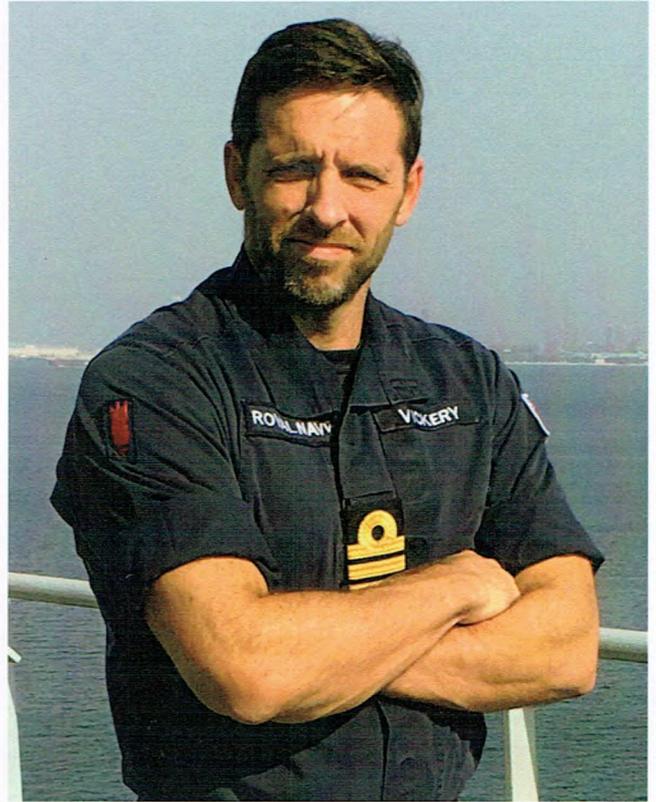
MCM DELIVERY 2021

by Captain Ben Vickery Royal Navy – Captain Patrol, Underwater Exploitation and Diving (PUXD)

The theme of this year's edition of the Mine Warfare and Diving magazine is the Year of Delivery, as coined at the start of 2021. Against the backdrop of the continuing COVID-19 global pandemic, and while a great deal of focus has rightly been on the success of Op FORTIS, the MCM and diving communities have continued to deliver in both home waters and deployed on Operations whether it be with NATO, as part of UKMCMFOR or CTF 52 in the Gulf or supporting the CSG deployment to the far east and Pacific regions.

Op KIPION – Another milestone anniversary

This year marks the fifteenth anniversary of a continuous presence for MCMVs on Op KIPION – a extraordinary feat that our community should be rightly proud of. The latest units to take on the mantle have spent the autumn transiting to theatre, with HMS MIDDLETON and HMS BANGOR now having relieved HMS BROCKLESBY and HMS SHOREHAM of their duties. The latter two units have returned to the UK for re-integration into the UK running fold. Throughout the last 15 years, crews from both MCM1 and MCM2 have delivered on operations at an unrelenting pace, maintaining the Sea Lines of Communication in conjunction with the UK's strategic partners, in the face of varying threats and levels of hostility. With the change to the dual-crewing model for the KIPION units, this has enabled the Ships to endure the current global situation in a more sustainable manner and, I am very pleased to say, appears to have proven popular with those in the KIPION rotation.



COVID-19 – The pandemic's impact

The impact on you, our personnel, our families and our ability to strike a healthy work/life balance is not something to be underestimated. The Mine Warfare and Diving communities have remained as busy as ever over the 18 months since COVID restrictions were first introduced and the operational tempo has remained as high as ever. Pre and post-deployment quarantine, closed gangways for OST, isolation onboard to ensure units were able to generate and a near-total cancellation of runs ashore have carried with them a heavy burden to personnel. Units have had to plan and replan with more frequency than normal as, despite the best efforts of everyone, COVID impacted all units. Despite all this, we as a community have managed to maintain our tasking, assure units ready for operations and continue to deliver one of the Royal Navy's most prized capabilities. There has undoubtedly been a requirement for flexibility, and this remains the case as ever, but with an extremely high vaccination uptake among the community and the focus now firmly being on learning to live with the virus as an endemic risk, I am exceptionally proud of the way that you have dealt with this unprecedented situation, and thankful to your families for their forbearance, commitment and sacrifice to ensure we have been able to maintain all our endeavours.



Autonomy – At the vanguard of Naval Capability

Trials in the MCM space have continued apace, whether with MASTT or with Project WILTON. You will find updates from both of these units within this magazine and a significant amount of time continues to be put into rolling out the future of Mine Hunting Capability of the Royal Navy. The new Autonomous Mine Hunting Squadron – The Mine Threat Exploitation Group (MTXG) – has been stood up, and the plan remains to have autonomous capabilities in Faslane, Portsmouth and in Op KIPION, initially complementing the Hunt and Sandown Classes, before ultimately taking the weight towards the end of the decade. At the same time the Fleet Diving Squadron is transforming to become the Diving and Threat Exploitation Group (DTXG) to ensure it embraces new technologies and remains relevant to the Royal Navy's underwater dominance agenda (more of this later).

While Navy-X may be looking to the future and trialling new systems, in the MCM world we are already operating the future capabilities with some world-leading technology and paving the way for the future of autonomous naval warfare. The Mine Warfare and Diving branches will have to adapt in order to operate the systems, and now is a perfect time to become involved in the delivery of the Royal Navy's latest Mine Hunting capability to the frontline. With the decommissioning of HMS RAMSEY and HMS BLYTH and several members of their Ship's Companies moving into the world of autonomous MCM, the future of RN Mine Warfare is happening and is here now. There has never been a more exciting time to be in the MCM world!

Four on, four off – The new crewing model

The new crewing model has delivered relative stability for those in the Op KIPION rotation. While quarantine requirements have made the crew relief in place (RiP) more difficult, the ability for those who have so far experienced this model to plan their life beyond the next couple of months has been gratefully received. We now need to focus on providing a similar level of stability to those personnel undergoing the UK based elements of the model. The uncertainty in Ship's programmes caused by emerging requirements and the lack of runs ashore means that, as yet, the benefits of the UK/NATO elements of the model have yet to be fully realised. However, with COVID restrictions now relax and the returning KIPION crews moving into this portion of their assignments, the opportunities for next year are clear and we will continue to strive to deliver as much stability as possible.

Op FORTIS – Support to the CSG

It might be the F35s that get the headlines, but it is important to remember the Explosive Ordnance Disposal (EOD) and Diving capabilities brought to the task group by Expeditionary Diving Unit 1 (XDU 1). One of the Royal Navy's highest priority outputs in 2021, the unique capabilities brought to the Op FORTIS units by the Mine Warfare and Diving communities are a key enabler to the successful deployment, and this will continue to be the case throughout the life of the Queen Elizabeth Class aircraft carriers. The ability to clear jetties and chokepoints, under water engineering support, as well as provide a counter-IED capability is vital to delivering the Royal Navy and HMG's global aspirations and maintaining the safety and integrity of task group assets.

These are exciting times that see the MAD community contributing at every level for the RN and Defence, and absolutely at the vanguard of Defence's pivot to autonomy. But, our talented people remain central to our capability both now and in the future – be proud of the role you play in this community's outstanding reputation.

MCM1 OVERVIEW

By Cdr Neil Griffiths RN

"MCM1 deliver the only 200m detect-to-defeat capability to UK Defence in support of CASD, NATO, KIPION & contingency operations"



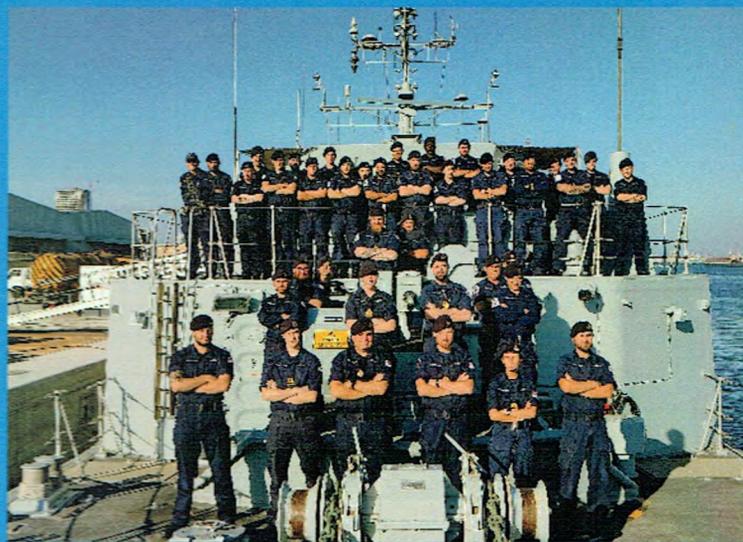
Firstly, a big thank you to you and your families. You have delivered in incredibly difficult circumstances over the last year and have maintained the highest professional standards and ensured our reputation as the best MCM capability in the world has continued. I am proud of everyone within MCM1. BZ.

The RN is embarking on one of the most transformational Defence programmes in years as we transition from conventional ship-based MCM, to a system of off-board Maritime Autonomous Systems (MAS) through the Mine Hunting Capability (MHC) programme, a multi-million pound programme stretching 10-15 years and delivering 13 Mission Systems. The Sandown Class MCMVs of the 1st Mine Counter Measures Squadron (MCM1) continue to deliver on Worldwide MCM operations supporting Continuous At Sea Deterrent (CASD) (the number 1 Defence priority), NATO SMCMG1 and Op KIPION. Whilst the future of Autonomous MCM begins to take shape, our MCMVs continue to provide a unique and essential capability to UK Defence.

Despite a backdrop of the Global Pandemic, much has changed in the MCM community. In 2020 following our long standing presence in the Middle East on Op KIPION (now in its 15th year), and in order to improve N1 stability, 2SL approved the new MCMV Dual Crew Model (DCM), reducing workforce churn and deployment lengths to 4 months in Theatre, with 4 months of Regeneration (RGEN) in the UK. The MCMV DCM is still embryonic and too early to inform retention, however the RGEN periods have worked well so far and the feedback is positive.

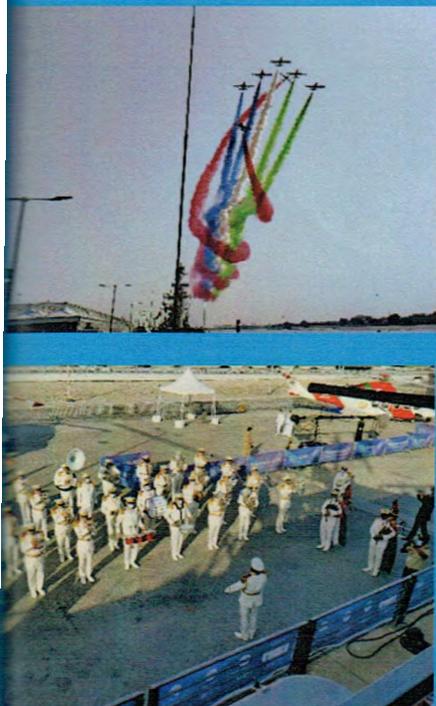
MCM1 now have 7 Crews in 5 hulls, 2 in Kip DCM RGen. HM Ships RAMSEY and BLYTH were decommissioned in Rosyth in August and Crew 7 will be the first Crew to transition to a MHC mission system team. All Crews have delivered on Operations, every Crew has deployed to the Middle East since the last MAD Mag edition, some Crews have deployed twice in the Op KIPION JOA and some Crews have combined KIPION with a NATO deployment. Earlier in 2021 an ISR was delivered which included the plan and dates for the drawdown of the Sandown capability, this will allow the Transformation of personnel to facilitate MHC whilst Block 1 of the Capability progress the project to full business case over the next 4/5 years. Block 2 will be the result of that business case and the LfE from operating Block 1.

This is an incredibly exciting time for the collective MCM community who will be using the latest technology. MHC offers the future generation of MW technicians an opportunity to exploit and lead defence in Autonomy, arguably a concept that will eventually affect the whole of Defence. MHC will offer the workforce more technical and advanced systems, an opportunity to take early responsibility and advance a new skill set compatible with commercial Industry. There will be challenges as we learn how to use, train and generate this capability, a challenge where your feedback will be crucial. For now, the MCM community can look forward to operating both the current in-service capability alongside the future capability as we learn and progress Autonomous MCM Systems.



Crew 1 Alongside Base Port UKNSF Bahrain

Crew 1 in PENZANCE. The Crew started 2020 in GRIMSBY having executed a successful 2.5-month Standing NATO Mine Counter Measures Group 1 (SNMCMG1) deployment. A period of UK route survey followed with an activation for National Tasking during Summer Leave alongside NDG, garnered specific praise from the Fleet Commander. A KIPION OST was successfully completed and the Crew handed the Ship over to Crew 6 immediately on completion. Pre-deployment leave had to be shortened, necessitated by the requirement to quarantine and relieve Crew 3 as quickly as possible, before flying out to the Gulf to commence the first 4-month Dual Crew KIPION tasking in PENZANCE.



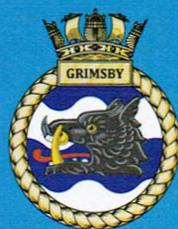
PENZANCE enjoyed a visit to IDEX 21 where they were greeted with a military band and an air display from "The Knights"

SNMCMG1 Task Group, Pictured: Belgium Ship GODETIA and LOBELIA with Estonian Ship ENL UGANDI formally HMS BRIDPORT

ENL UGANDI in company with HMS BLYTH

The Crew spent Christmas at sea and had to fight through several sonar defects throughout the 4-month tasking; the deployment was clearly shaped by the protection measures required due to the COVID-19 pandemic. The execution of the first Defence Engagement (DE) port visit in the Gulf region with PENZANCE's attendance at a COVID-19 restricted IDEX 21 in Abu Dhabi was welcome. Being able to achieve the DE objectives within the confines of a necessarily restrictive Risk Balance Case was a major success of the deployment. This also provided a welcome change of scenery for the Ship's Company noting the Crew had solely operated out of UK NSF for the duration of the deployment. The event included a visit from his excellency Patrick Moody, British Ambassador to the UAE, supported by Air Marshall Sampson CBE DSO, Defence Senior Advisor Middle East (DSAME) and Lt Col Connolly, UAE Defence Attaché. The Crew returned to the Gulf in Jul 21 to start the second of three 4-month taskings.

Crew 2 in BLYTH returned from the Gulf Aug-Sep 20, sailing through the Red Sea and Mediterranean in company with HMS LEDBURY. Late summer leave was much enjoyed by all before the focus shifted to generation once again and the team prepared for SNMCMG1 tasking early this year. A fantastic short deployment saw BLYTH visit the Netherlands, Norway, Germany and Sweden in company with the NATO MCM Group. Highlights were the opportunity to test our force protection team's weapon accuracy against uncrewed jet skis and aircraft, with an added opportunity to work closely with the ENL UGANDI, an Estonian Sanddown Class MCMV.



Crew 3 in PENZANCE sailed out to the Gulf in June 20 in company with HMS CHIDDINGFOLD, deploying in the middle of a global pandemic that created several logistical challenges. COVID-19 restrictions meant port visits during the sail out were limited, which pushed the endurance of a Sandown MCMV to its limits. Due to the inability to obtain fuel in the Southern Red Sea PENZANCE rafted with HMS MONTROSE to take fuel which ensured key operational timelines could be met and demonstrated the flexibility and dynamism of MCM Crews. On arrival in Bahrain, Crew 3 quickly turned around essential maintenance following the long journey and were straight into a significant UK/US MCMEX. Having completed nearly 6 months away the Crew returned to the UK for the first Regeneration period of the Dual Crew Model which was shortened to 3 months and saw the Crew regenerate and return to the Gulf despite the UK being a second national lockdown.

On return to theatre in Feb 21 for rotation 2, Crew 3 picked up where they left off delivering another 2 key MCM exercises: EX ARTEMIS TRIDENT in which PENZANCE integrated into a French Task Group, and a UK/US MCMEX at the peak of Summer. Crew 3 also conducted a presence patrol in the Northern Arabian Gulf, Defence Engagement with the Kuwaiti Navy including survey operations in Kuwaiti waters as well as hosting key Bahraini military leaders on board.

Crew 4 in PEMBROKE returned to the UK last year having completed an 8-month KIPION deployment. In 2021 they have generated under challenging COVID-19 management controls and completed a successful SNMCMG1 deployment to the Baltic Sea. Whilst with the SNMCMG1 task group, Crew 4 took part in Historic Ordnance Disposal Operations and two large PASSEXs, where they exercised with 14 ships from NATO nations. They were also able to exercise with SU-22s and Mig-29s from the Polish military and now claim to be the first Air Defence Mine Hunter! On return to the UK, a period of leave and maintenance is programmed before resuming UK operations.



Departing Gibraltar with HMS CHIDDINGFOLD en route to Bahrain



UK/US interoperability has been a key part of Crew 3's time in the Gulf



HMS PENZANCE rafts with HMS MONTROSE for fuel in the Southern Red Sea



HMS PEMBROKE passes under the new Queensferry Crossing on return from her NATO deployment

Crew 5 in SHOREHAM completed a challenging OST in PEMBROKE in May and Jun 20 despite teething troubles with ORCA and COVID-19 and deployed to the KIPION JOA in July and took over SHOR. The deployment started on a challenging note with a number of critical OPDEFs preventing SHOR from getting to sea, but following a double engine change and a month in dry dock to repair the hull, Crew 5 were able to spend the rest of their six and a half month deployment delivering on operations. The ME department remained resilient and their hard work earned them the team award in the Chief Naval Engineering Officer's Commendations. Some highlights from the rest of the deployment include the first rafting with the Cardigan Bay for 9 months, a NAG patrol and a visit from a real life 'top gun', VAdm Sam Paparo Commander US 5th Fleet, for a defence capability demonstration (socially distanced of course!). Apparently, he is used to slightly larger hangars

As part of the new MCMV Dual Crew Model (DCM) Crew 5 deployed again in Jun 21 and once more Shoreham will become home for the next four months. The Crew have enjoyed a few foreign runs ashore on the transit home to the UK, and have now returned the Ship to its base port in Faslane.



'BZ all round': A formal CO's requestmen saw 5 sailors promoted to AB1, one receive his second good conduct stripe and two Officers receive their BWQ. After a ceremonial sunset all those who received awards were hosted during "sundowners" to toast their success.

'Top Gun' VAdm Sam Paparo, Commander of the US 5th Fleet visits for a Defence Capability Demonstration



Crew 6 in RAMSEY and GRIMSBY. In the year since the last MAD magazine was published Crew 6 have continued to operate effectively as part of the UK based MCM force. Following her return from NATO operations, the Crew took the first steps in the drawdown of the Sandown Class MCMVs and placed HMS RAMSEY in Extended Readiness in Rosyth, awaiting the final decisions on the announcement of Integrated Review, the future of the platform and the plan for successful transition and integration of MHC.

With RAMSEY in the care and protection of Babcock Rosyth, the Crew moved into HMS GRIMSBY where they have overseen the capability insertion of the new ORCA Command System and conducted extensive periods on UK based operations with national duties.

Another result of the new crewing model is the introduction of Intermediate KIPION Assurance Programme (IKAP) weeks, whereby a Regeneration Crew conducts a week of focused training onboard a UK running hull. GRIMSBY successfully conducted the first of these with Crew 3 in Jan 21 and again in Apr 21 with Crew 5, providing a clean and COVID-19 compliant hull for essential training.

In May, GRIMSBY began her core force generation ahead of the Crew's deployment on KIPION in October. Sailing with HMS BANGOR and the French Ship (FS) SAGITTAIRE, Crew 6 successfully took part in Exercise Strike Warrior 21. The two week exercise saw the Crew conduct sustained MCM and recover a total of nine Mines – a record for recent JW exercises, all of which was done whilst successfully defending herself against both surface and air threats and culminated in a swarm attack from 18 hostile vessels fully integrated with the Standing NATO Maritime Group 1 (SNMG1).

Returning to base port for a brief 24 hour stand down, Crew 6 then commenced Tier 1 training (BOST). Developing skills all the way from basic firefighting to dealing with multiple incidents, fires, floods and chemical warfare. The Crew successfully completed their training package and are again ready for operations in October.

Crew 7 in SHOREHAM deployed to the Arabian Gulf in Jan 21, maintaining high readiness from the Naval Support Facility in Bahrain. For the Crew to stay in a COVID-19 safe environment they have had to forego any runs ashore and make their own entertainment within the ship and support facility. As well as the usual patrols in the central Arabian Gulf, highlights of their deployment have included the major MCM Exercise ARTEMIS TRIDENT with US and Fr MCM forces and interoperability periods with the French Ships CEPHEE and L'AIGLE.



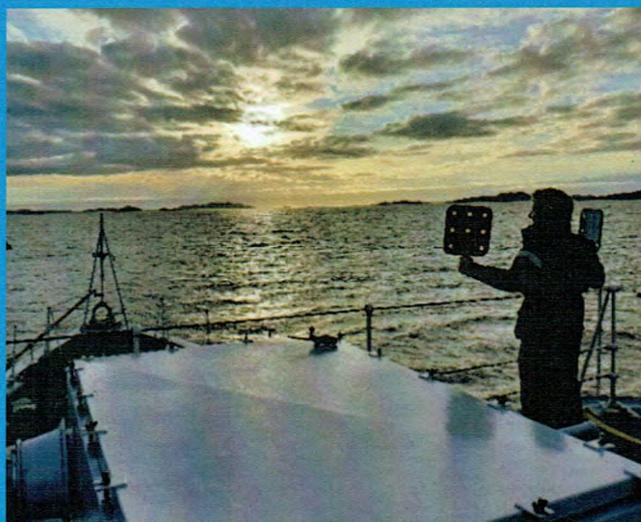
"3 of 9" HMS GRIMSBY leads the way in Mine Recovery with an impressive 9 mines on Exercise Strike Warrior.





"Show of MCM-Strength" Exercise ARTEMIS TRIDENT in the Arabian Gulf

Crew 8 in BANGOR. The majority of 2020 was spent in Rosyth conducting a period of refit, emerging from the sheds in Nov 20. After conducting various sea trials to prove her capability, she finally returned to her base port, HMNB Clyde, in Dec 20. The New Year started with further trials and tests for Crew 8 but was unfortunately hampered by COVID- 19 that resulted in reduced time at sea. The month of March heralded the start of 4 weeks Operational Sea Training with the Ship and Crew fully tested and ready for Operations. This was followed by 10 days conducting Strike Warrior in Company with HMS GRIMSBY, honing lessons learnt during OST and integrating with their in-theatre Battle Staff. Crew 8 have recently arrived in Bahrain after leaving the UK in July in company with HMS MIDDLETON, enjoying several port visits on the way following the relaxation of COVID-19 protocols throughout the world. BANGOR will remain in theatre for at least the next two years, supporting the persistent mine hunting presence in the region.



"Bat Man" our very own Superhero on 01 Deck FWD



SQUADRON UPDATE – MCM2

By Cdr Rich Talbot

This has been an immensely challenging year for MCM2 and the Squadron's outputs have only been maintained by the sterling efforts of our Ships' Companies working closely with industry partners, while all the time being supported by our tremendous and resilient families, friends and loved ones. A personal thank you to all in the MCM2 family from me as your Squadron Commander and a hearty well done for all you have achieved.



With 8 Crews and 6 platforms, 2 permanently forward based in the Middle East, and with the Navy embarking on a significant transformation journey from conventional (grey ship MCM) to autonomous 'off board' systems, MCM2 and the Hunt Class continues to forge ahead supporting UK Homeland Defence and operations further afield. Aside from the significant and wide-reaching impacts of COVID, unprecedented engineering challenges have been faced since the last MAD Magazine. Extended refits and short notice docking periods, class wide davit issues, and a power surge in Portsmouth dockyard put all UK based Hunt vessel out of action. As a result, ship's companies have been tested to the limit, however, each time they have risen to the challenge and overcome them – an outstanding effort. Just keeping the Hunt Class running is a massive achievement for Ships that have already seen or are nearing 4 decades of service and is a reflection of the Squadron workforce's professionalism, pride and sheer determination to get the job done.

2021 marked the 15th year for permanent MCM Forward Presence in the Middle East (a significant achievement) and has also seen full implementation of the MCMV Dual Crew Operating Model (DCM) with HMS MIDDLETON joining HMS BANGOR to sail to the gulf allowing HMS BROCKLESBY and SHOREHAM to return home after 3 busy and successful years of delivering front line operations. Albeit early days, the signs are positive the DCM of 4 months on Operations and 4 months back in the UK taking leave and conducting generation activities is delivering on its promise of greater stability and a better 'lived experience' for our people.

Exciting times lie ahead though with the foundations set during this 'Year of Delivery'. The MHC project, standing up of the Mine Threat Exploitation Group and the Integrated Review decision to retire the Sandown Class, 2021 has seen a real focus on the future. The vision is mission specific, multi-role capable, remote piloted and versatile platforms that can deploy rapidly, conduct enlarged survey operations, with the ability to classify and neutralise any threat to our Sea Lines of Communication. The Maritime Autonomous Systems Trials Team (MASTT) have hands on this kit now and are working closely with industry trailing intelligent and autonomous systems to counter both current and future threats both in UK and the Middle East. The Forward Deployed Hunt Class units are integrating autonomous systems too and are now regularly embarking the US Navy Expeditionary MCM teams with their Unmanned Underwater Vehicles for both exercises and operations, expanding our understanding of these exciting new capabilities.

A challenging year with exciting times ahead for MCM2 and the wider MW Community. A global navy will always need a global MCM force leading the way. MCM2 will remain at forefront adapting to new threats and delivering on operations while protecting our homeland and providing access to our Carrier Strike Group, Command Force, allies and partners.



HMS CHIDDINGFOLD launches a SEAFOX autonomous underwater vehicle as part of Operation NEPTUNE SCEPTRE

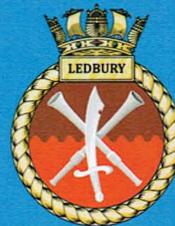
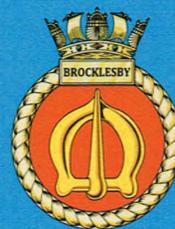
Crew 1 in CHIDDINGFOLD are on their second of three Op KIPION deployments, having taken over HMS CHIDDINGFOLD from Crew 3 in July 2021. The past year has been a busy one for the Crew, managing deployed and regeneration periods effectively to ensure the Crew is fully prepared to deliver on operations whilst maximising periods of guaranteed leave.

Crew 1 took over from Crew 3 who sailed CHID out to the Gulf at the end of 2020. This meant that Crew 1 would be in-theatre over the Christmas and New Year period. However, with a busy schedule of US – UK inter-operability exercises, two transits through the Strait of Hormuz, Op NEPTUNE SCEPTRE tasking and a raft of other Operations, the time passed quickly.

Taking full advantage of their first KIPION regeneration period, Crew 1 conducted multi activity AT in Exmouth provided by the RNAT team, maintained expertise and ensured that the Crew was well-rested, recharged as a team, and ready to deploy again. In future deployments, whole ship AT weeks are going to be considered a regular and integral component of dual Crew regeneration activity.

Currently on their second rotation deployed on operations in the Arabian Gulf as part of Op KIPION, Crew 1 has conducted TIWT, Op NEPTUNE SCEPTRE and at the time of writing are preparing for the US/UK Interop, embarking US REMUS 600 AUVs. The ME and WE departments have been busy maintaining CHIDDINGFOLD, who is still going strong as she enters her 38th year in service. With a significant number of the Crew fully vaccinated against COVID-19, CHID currently has 2 port visits programmed during K2. This combined with the refresh of the MCM 'Operational Respite' package bodes well for the remainder of this second deployment.

Crew 2 in MIDDLETON. As for many in the MCM Community the last 12 months has been a challenging yet rewarding period for M2C2. Following a return from Op KIPION in late summer 2020 the Crew saw a significant turnover of personnel and the assumption of Care and Protection of HMS MIDDLETON in refit. The hull was out of the water with several major engineering projects being undertaken which were delaying her return to operational tasking. When she was finally re-floated using a Jackup Barge the Crew were eager to move onboard and return her to the standard expected of an RN Warship. A trials period followed which inevitably unearthed some technical snags, common after a major refit, which the Marine Engineering Officer and his team dealt with swiftly and efficiently. The refit included the installation of the new ORCA Command System which required a demanding period of first of class trials, supported by Thales and MCTA, within the BUTEQ ranges on the West Coast of Scotland. The Weapon Engineering Officer and his department showed their skill and professionalism to overcome the substantial technical hurdles and bring the system online and ready for use. With ORCA now operational, it was the turn of the Warfare Department lead by the Operations Officer to think outside the box due to the minimal training available in its use. Using their expert knowledge of minewarfare principles and a scientific approach, they were able to provide feedback to Thales which will assist other Crews as ORCA rolls out throughout the Squadron. Our proudest moment of the year however was the day we handed HMS MIDDLETON over to M2C7, in a sound material state and ready in all respects for Global Operations. Whilst we waved them off from the walls of 2 Basin it gave us an opportunity to reflect on our achievements and the contributions we had made to UK MCM warfighting capability.



Crew 3 in CHIDDINGFOLD. 2021 was a demanding, turbulent yet successful year for MCM2 Crew 3. The year began firmly in the grip of the COVID-19 pandemic, with much of Crew 3's regeneration period being significantly reduced as a result. Despite this, Crew 3 displayed typical resolve and ensured readiness to deploy to the Arabian Gulf once more in early March, after a 14-day period of isolation in HMS NELSON QFAC.

On a cold, drizzly day in early March, Crew 3 left the UK, bound for the unforgiving heat of the Gulf to begin the second deployment as part of the MCM Dual Crewing Model, having previously returned from the Gulf in November 2020 to a UK wide lockdown. Upon arrival, Crew 3 began the weeklong handover of HMS CHIDDINGFOLD from the Crew's sister Crew, MCM2 Crew 1. With the handover complete, Crew 3 set to work, sailing for a shakedown period to prove gunnery skills, sea safety serials and simply enjoying time back at sea.

This deployment continued Crew 3's vital work in the Gulf region, which involved working with NATO allies during a UK/US Interop, conducting mine hunting operations, internal training and defence engagement where COVID restrictions allowed.

July 2021, Crew 3 returned to a very different UK in many ways; the UK was in the midst of a heatwave with temperatures exceeding 30 degrees throughout much of the country, and perhaps most importantly, many COVID-19 restrictions had been lifted meaning Crew 3 could enjoy their much-deserved leave.

Now, as we approach the end of 2021, life in Crew 3 is once again pulsating with activity as the Crew prepares to deploy to the Gulf in November to commence the third and final deployment of the MCM Dual Crewing Model. This involves various individual courses for members of the Ship's Company, medical checks to ensure everyone is fit to deploy, and a week's intensive training on board another Hunt Class ship in Portsmouth overseen by FOST staff to allow the Crew to polish their skills before re-deploying.

Overall, Crew 3 is once again enthused, energised and ready to deliver on operations, wherever and whenever needed.



Crew 4 in LEDBURY. MCM2 Crew 4 conducted the RiP into LEDBURY in October 2020, regenerating the platform after an extensive post-KIPION maintenance period. After a brief but productive period of OPDEF rectification, C4 cut their teeth with a high tempo RAV/RTP programme, designed to test their abilities to operate as a Crew, but also as an operational unit. A strong performance and a 'safe to operate' baseline was achieved despite setbacks due to COVID security and compressed timelines, allowing for an assumption of Defence Task 1 duties by mid-November.





The following months were then spent productively conducting Operation Pike and Route Survey operations in waters spanning the length and breadth of the UK. Successful Seafox, Sonar and gunnery exercises over this period meant that there was a constant and sustainable high-level of operational readiness. Such measures soon proved their worth in February when LEDBURY was directed to investigate the datum of the FV GALWAD in support of civilian authorities and to provide assurance to the fishing community. The fishing vessel had dragged up historic ordnance in its nets whilst trawling in the North Sea and was subsequently sunk when the ordnance detonated. Despite inclement weather and strong tidal conditions, mission aims were met and detailed classification work was conducted.

Crew 4's regeneration culminated in a highly successful Operational Sea Training (OST) Package in Faslane, Scotland. The intensive package commenced in May and consisted of four weeks of rigorous training alongside MCM1 Crew 6 (our KIPION running partners) to lay the foundations for the upcoming four on four off KIPION cycles.

It was during this busy period LEDBURY celebrated her 40th birthday, with 14,600 sea days to her name. Crew 4 marked this auspicious occasion in fine naval tradition, with the youngest sailor on board cutting the cake.

Having loaned the ship to M1C7 at short notice for their OST, Crew 4 back in LEDB had the honour of being the first Royal Navy Guard Ship for Cowes Week since 1997, hosting the Fleet Commander's reception and putting the best of the Royal Navy front and centre at a world famous sailing regatta.

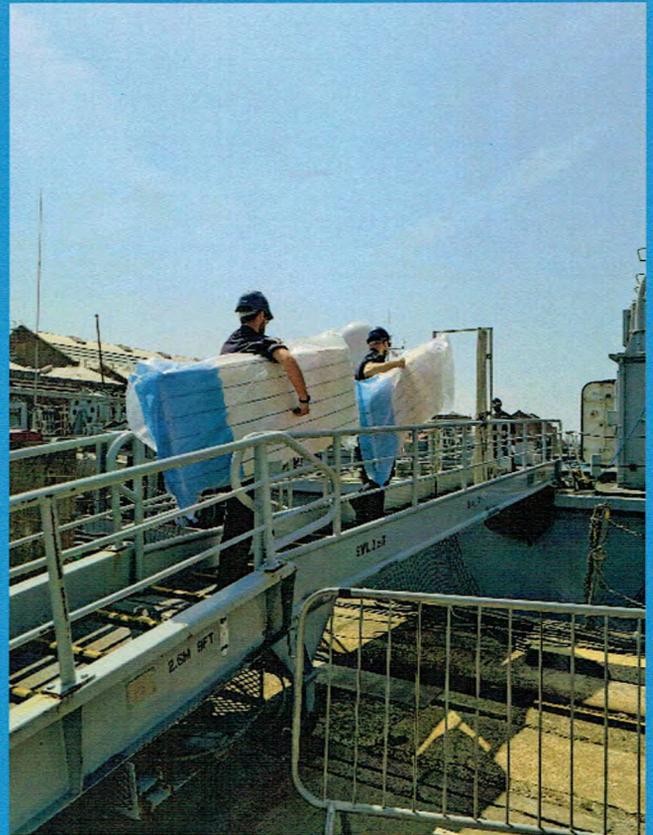


Crew 5 in HURWORTH. Crew 5 took over HMS HURWORTH during SP(D) in September 2020, following a return from KIPION tasking. The new dual Crew KIPION model, including the two years in a UK based hull, is designed to give greater stability to MCM personnel as well as giving greater ownership of their platforms. In Crew 5's case, the last 12 months has been spent working alongside our industry partners and bringing HURWORTH back to a point where she is once again ready to deliver operationally to the UK's national tasking lines. As with all refits there have been numerous hurdles along the way, not least the impact of COVID-19. However, the Crew is now back living onboard and by the time this edition of MAD Magazine has been published, will be back at sea.

Crew 5 has however managed to spend some time at sea with other units, regaining currency or gaining endorsements for the first time. This experience with the other Crews has not only been of value to HURWORTH and has de-risked her emergence from SP(D), but in some cases has been beneficial to the units to which personnel were loaned, covering gaps and allowing the Ships to proceed to sea. Without the new crewing model, it would have been much harder to loan people out and therefore shows another way in which it has benefitted the MCM Force.

It has also allowed the Crew to catch up with an old friend and Mr John Birch, son of the late Lt Cdr Jonny Birch DSO DSC, was recently hosted onboard. Lt Cdr Birch was an extremely successful destroyer captain during WW2 and was the first CO of the original HMS HURWORTH, a Hunt Class Destroyer. Commanding the Ship from build in 1941 and handing her over shortly before her eventual sinking in the Aegean in 1943, his time in Command coincides with the majority of HURWORTH's battle honours. The current CO of HURWORTH, Lt Cdr Nick Southall, returned to Mr Birch memorabilia from the first Ship to bear the name, alongside his grandfather's telescope which had been used at sea since the late 19th century and had been loaned to the Ship in 2015.

CO HURWORTH returns Mr Birch's grandfather's telescope



The obligatory Ship's Staff Move Onboard mattress carrying photo

Crew 6 in BROCKLESBY. After a challenging three-year deployment in the Arabian Gulf supporting Op KIPION, HMS BROCKLESBY and the Crew 6 Mavericks prepare for the journey back to the UK. BROCKLESBY's departure in company with HMS SHOREHAM comes as the UK Mine Counter Measures (MCM) enters its 15th year of continuous presence in the Gulf.

Since mid-2018 BROCKLESBY has formed part of the UK's constant presence in the region. Operating out of the Naval Support Facility in Bahrain, the Mine Counter Measures Vessel (MCMV) has been helping to ensure international shipping lanes remain clear of obstruction, and open to trade while continuously exercising freedom of navigation and strengthening ties with allied nations. Working alongside BROCKLESBY to achieve these tasks have been the Type 23 HMS MONTROSE, and fellow MCMVs, PENZANCE, SHOREHAM and CHIDDINGFOLD, as well as the forward deployed BAY CLASS RFA, which provides a floating logistical, communication and operational hub for the RNs MCMVs.

Having left Portsmouth in June 2018 BROCKLESBY, in company with the Sandown class MCM HMS SHOREHAM, arrived in the gulf 2 months later in mid-August. Replacing HMS MIDDLETON and BANGOR, who subsequently returned to the UK for a period of maintenance. Now exactly 3 years and two days since her arrival, BROCKLESBY departs Mina Salman Port for the final time before returning to the UK in the autumn. Going full circle she is due to conduct a handover with MIDDLETON somewhere in the Indian Ocean.



HMS BROCKLESBY seen from HMS SHOREHAM during recent training in The Gulf



MCM2 Crew 6 'Mavericks'

Lt Cdr Daniel Lee, Commanding Officer HMS BROCKLESBY (MCM2 C6) said "It is a real privilege to be sailing BROCKLESBY back from The Gulf, she has been home to just over 190 sailors in her time out here and been a real driving force in providing a forward presence, trialing autonomous systems, as well as delivering a mine-hunting contingency capability. We continue to meet a busy operational schedule right up to our departure from Bahrain and look forward to handing the reins to HMS MIDDLETON and wishing her all the success in her deployment to the region." In her time since leaving Portsmouth BROCKLESBY has steamed a total 150000 nautical miles, completed 6 Crew changes with 4 different Crews, and most importantly successfully completing 18 different operations and exercises. BROCKLESBY has also played a key role in the development of the latest autonomous systems which it is hoped will replace the Royal Navy's current generation of MCMVs. Significant progress has been made towards this goal recently as MCM1 Crew 7 made the transition to supporting fully autonomous vessels on their return from their most recent rotation onboard HMS SHOREHAM.

Although deployed to the Arabian Gulf for three years, Crews rotate into and out of theatre allowing personnel to balance time away and time at home with families and loved ones. This allows the UK to maintain its' forward presence 24/7 365 days a year. The effectiveness of the forward deployment model is highlighted by the consistent readiness for operations that BROCKLESBY has provided for the last three years, despite the tribulations of a General Election, BREXIT, the COVID-19 Pandemic, heightened tensions in the region, and two major football tournaments all of which have happened since she left UK waters.

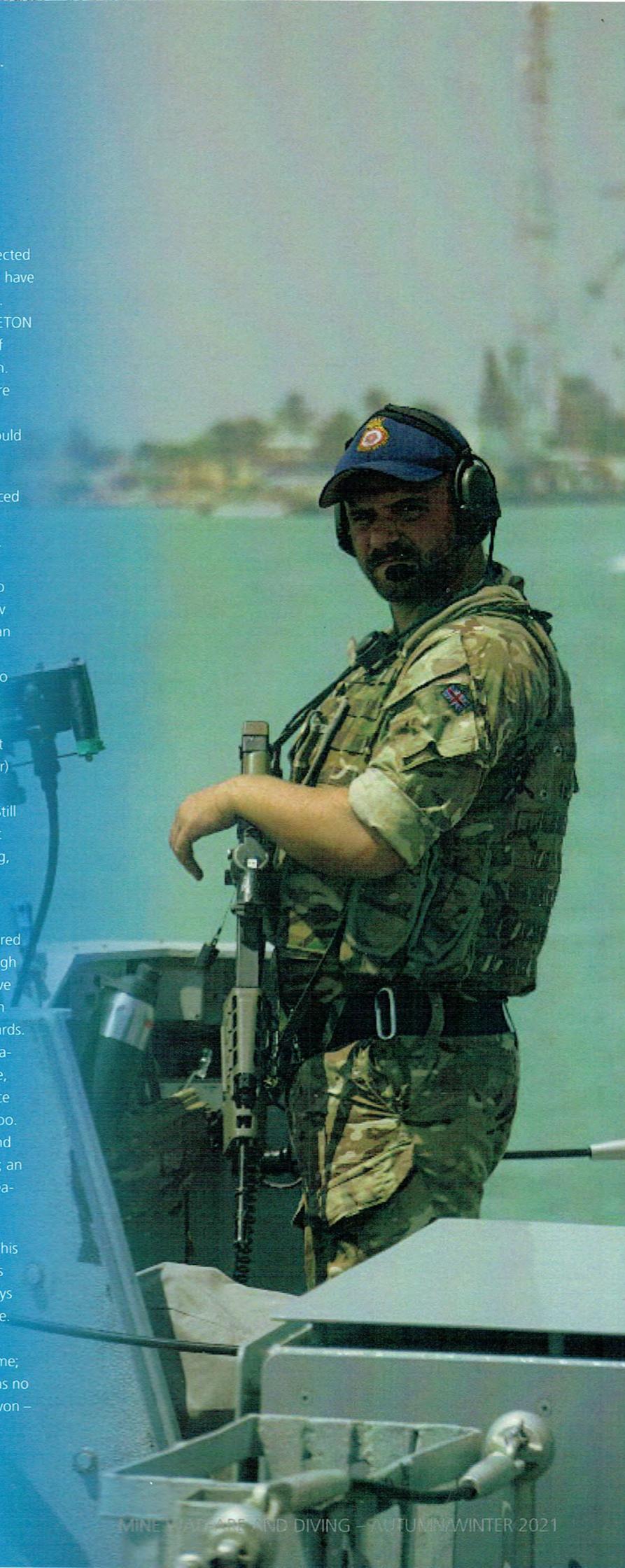
The current Crew of HMS BROCKLESBY (MCM2 Crew 6 – "Crew 6 Mavericks"), on their second rotation to the Gulf, have been in theatre for two months carrying out a busy schedule of operations both nationally and internationally and now prepare to bring BROCKLESBY back to the UK. The 7,000 miles journey home will see the ship visit 8 countries in a two month period in tandem with HMS SHOREHAM.

Crew 7 in MIDDLETON and CATTISTOCK. If it is expected that life in the UK between deployments is easy, Crew 7 have just torn up the rule book and re-written it from scratch. Crew 7 have just arrived in Bahrain, taking HMS MIDDLETON out to the Arabian Gulf; coinciding with the 15th year of continuous Expeditionary MCM Operations in the region. This is a far cry from 12 months ago when the Crew were taking HMS HURWORTH into her refit in Portsmouth, blissfully unaware of the monumental challenges we would need to overcome.

Since the last iteration of MAD Magazine, Crew 7 bounced at short notice into HMS MIDDLETON (first time!), before emergent defects (it came off in my hand chief... honest) forced her back out of the water. This left the Crew with no ship to generate on, so moved quickly into HMS CATTISTOCK. However despite nearly a whole new Crew being pulled together, a COVID-19 outbreak and an electrical power surge which nearly wrote off the ship, Crew 7 maintained its sense of humour and was ready to start training. However, this was not without a number of further defects and programme re-writes which saw Crew 7 subsequently deliver HMS CATTISTOCK into refit (our third ship in 12 months to be taken out of the water) and take some well-deserved leave before taking over HMS MIDDLETON again for BOST and then deploying. Still following...?! Good, because there was yet another twist as HMS MIDDLETON was still not quite ready for training, despite the best efforts from Crew 2.

Without a hull, the chances of sailing on deployment seemed slim, but a one-day RiP into HMS LEDBURY offered a solution. HMS LEDBURY had just carried Crew 4 through BOST in Faslane, and after a gruelling 10 hour coach drive to Scotland, Crew 7 took over HMS LEDBURY and began BOST just 72hrs later – no mean feat by anyone’s standards. Compared to the turbulence prior to this, a month of sea-time around Scotland testing the Crew’s reactions to fire, floods, attacks and everything else they might experience whilst deployed seemed like a holiday. And it showed, too. Crew 7 walked away with a Satisfactory mark overall, and was deemed Very Satisfactory in the war-fighting phase; an excellent result given that Crew 7 had just 2 weeks of sea-time in 2021 to prepare.

Having completed BOST, it was another coach journey, this time south to Portsmouth, where HMS MIDDLETON was finally waiting to get to sea. Another short RiP, and 5 days later Crew 7 were departing Portsmouth for the last time. Since then, Crew 7 have enjoyed runs ashore in Lisbon, Gibraltar, Sicily, Crete and Egypt, with many more to come; a well-deserved reward for a year hard-fought. But it was no accident that Crew 7 came through all these trials and won – as in all things, We Make Our Own Luck.





HMS MIDDLETON conducts a night shoot off Lisbon

Crew 8 in BROCKLESBY. The last twelve months have been a busy period for MCM2 Crew 8, with dedication and hard work at it's centre. The majority of 2020 was spent getting MIDDLETON ready for sea, worked up and ready for operations all in the midst of a global pandemic and with a late notice switch in October from MIDDLETON to CATTISTOCK. Crew 8 sailed in MIDDLETON to carry out Operational Sea Training in October 20, where the Crew performed well under watchful eye of the inspection team. A very rough Irish Sea saw an extended sail home to Portsmouth, with three days spent at anchor weathering Storm Aiden off the North Coast of Wales. After handing CATTISTOCK to another team, Crew 8 had a well-earned month of pre-deployment leave, two weeks of quarantine at RNAS YEOVILTON, before flying out to Bahrain for OP KIPION. After taking over BROCKLESBY, Crew 8 performed at sea to prove they were safe on operations. During this time 13 members of the Ship's Company took part in the "Goggins Challenge" which saw the participants run four miles every four hours for 48 hours and raised over £2000 for the RNRMC and the Movember charity. BROCKLESBY then undertook a multi-national exercise, EX ARTEMIS TRIDENT with the Australian, US and French Navies. This involved mine hunting as part of a task force as well as carrying out joint force protection exercises and photo exercise with 12 vessels from 4 nations. During Op KIPION, Crew 8 spent almost six months in the Arabian Gulf which although curtailed socially by COVID-19, the Ship's Company ensured the time was filled by hard work, whole ship sport and social events and as a result moral remained high throughout.

More recently after a period Post Deployment Leave, Crew 8 have taken over LEDBURY and are getting ready for further training and exercises in and around the UK.

COMUKMCMFOR, OP KIPION UPDATE – PART 1

By Lt Cdr James Oxley

TASK FORCE 52'S UNIQUE UK/US PARTNERSHIP IN THE MIDDLE EAST



ALTHOUGH the vast majority of the Mine Warfare and Diving community have been working side by side with our US Navy MCM colleagues in the Op KIPION JOA for many years, it is our unique partnership that has become the foundation for operational success in the Middle East

Developed, nurtured and strengthened over nearly two-decades, the US military have committed MCM personnel and assets to the Commander Fifth Fleet's Area of Operations (C5F AOO) for almost as long as the Royal Navy has maintained a continuous MCM presence, which reaches its fifteenth year of operations this December. The importance and value that both nations place on this very special relationship between the Royal Navy and US Navy MCM forces cannot be underestimated.

The US Fifth Fleet is divided into ten Task Forces, each with their own specialised capabilities, all commanded by a USN Commodore. Given the importance of MCM for freedom of manoeuvre and maritime access in the C5F AOO, one Task Force is permanently assigned to MCM operations (Task Force Fifty-Two).



Although a US Navy Task Force from its conception, Task Force 52 (TF 52) has been designed to operate as a combined US/UK Task Force in response to a mining event. In order to promote and maintain this essential and enduring partnership, a unique command structure has been created within the Task Force; the Deputy Commodore role always being assigned to a Royal Navy Captain who, more often than not, is a Mine Warfare and Clearance Diving Officer (MCDO). There are few, if any, UK defence exchange positions within the US military that hold such responsibility or direct influence over the day-to-day running of its frontline assets.

However, it wasn't always like this. The evolution and growth of TF 52 has taken place over nearly two decades and its heritage can be traced back to the invasion of Iraq in 2003. Following the success of combined UK, US and Australian MCM operations during Op TELIC, one of the most important lessons identified by all three nations centred on the understanding that regular cooperation through the conduct of joint operations and training will significantly enhance the success of combined MCM operations during times of war.

After the conflict was declared over, some of these MCM forces remained in the North Arabian Gulf to continue the clearance of recent and historic minefields and Mine Threat Areas (first in, last out....), therefore a temporary command structure was established to coordinate and oversee these continued clearance operations. In 2006 the RN forward deployed two MCMVs to the Gulf as part of Op AINTREE and a year later the USN followed suit, permanently deploying a number of the AVENGER Class MCMVs and creating MCM Squadron Five (MCMRON5) to manage and task these assets when they arrived in the Middle East.

Around the same time, another MCM capability distinctive to the USN was also forward deployed to the Gulf; Air MCM. This capability utilises the huge MH-53 "Sea Dragon" helicopters to search the Mine Threat Area (MTA) using a towed side scan sonar, then lower either mechanical, magnetic or acoustic sweep gear in to the water before conducting a MCM sweep using the aircraft to drag the gear through the water.

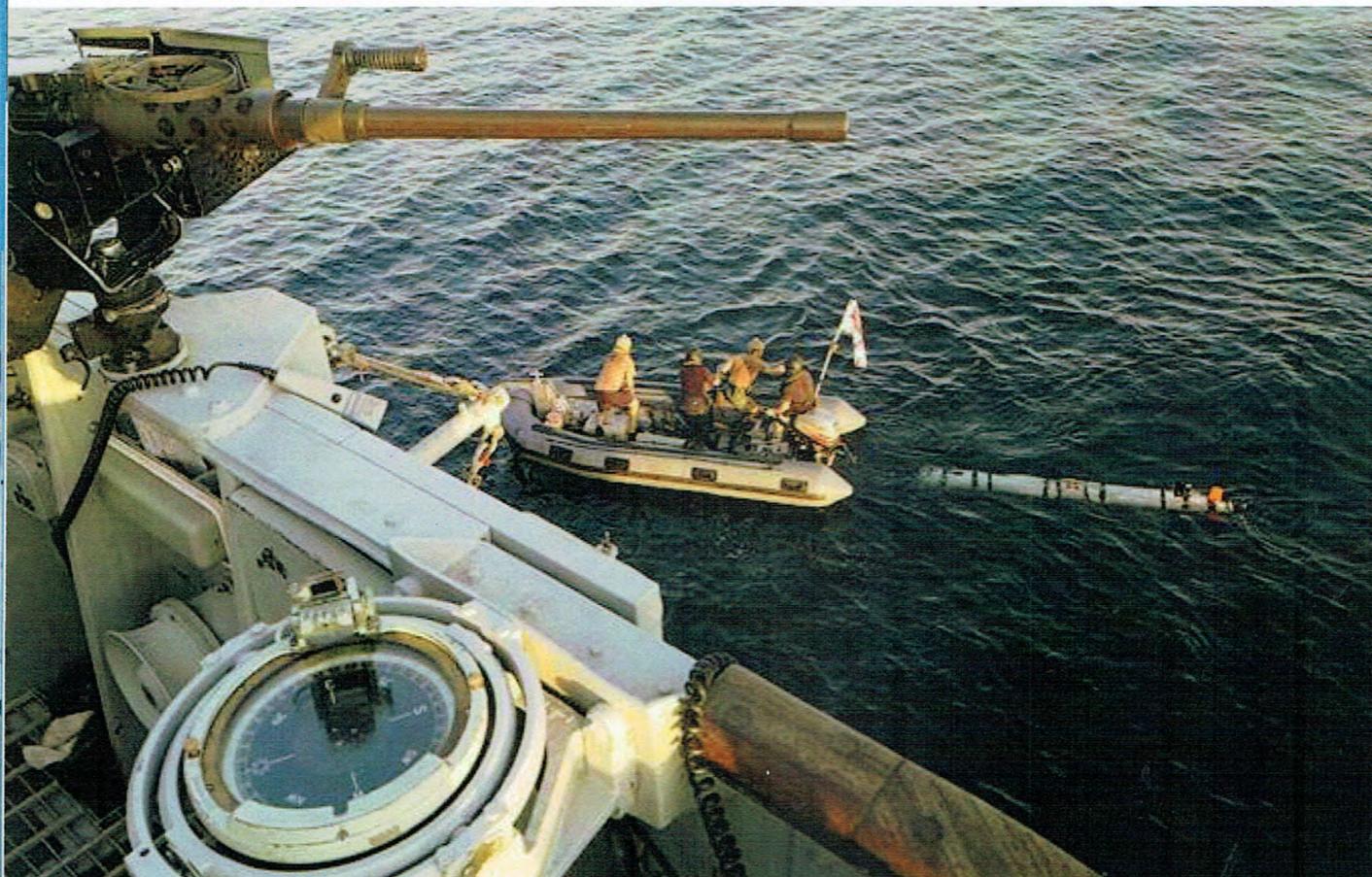
Finally, a third detect-to-engage MCM capability is also provided by the USN EOD Dive Teams based in Bahrain, who have now been formed and evolved into Expeditionary MCM Companies. These teams operate and maintain a suite of Unmanned Underwater Vehicle (UUVs), a mixed gas EOD diving capability and all the necessary equipment to re-acquire, identify and dispose of naval mines and ordnance; much the same as the Royal Navy's own Expeditionary Diving Unit 3 is manned and equipped to operate.

These three capabilities together are often referred to as the MCM "Triad" and represent a contemporary approach to MCM operations to the USN when compared to their peers and allies; a full detect to engage MCM capability via Air, Surface and Underwater platforms. In 2011 the operational importance and growing capability of MCMRON5 was further recognised by C5F when the Commanding Officer position was upgraded to Commodore and Task Force 52 was born; MCM operations now had a seat at the top table within NAVCENT and we have been there ever since.

Throughout the entire evolution and development of TF 52, the mission has remained constant; ensure fleet manoeuvre, freedom of navigation and maritime access. The KIPION JOA presents many unique tactical and environmental challenges to the MCM mission and as a result the UK and US have worked hand-in-glove to create and develop the efficacy of their tactics and SOPs for employment of MCM forces. Focussing on maintaining freedom of manoeuvre through key choke points in the region, tactics often utilise all three arms of the MCM Triad to achieve a multi-sensor, effects-based outcome or scheme of manoeuvre.

Anyone who has served on board a Royal Navy MCM asset as part of OP KIPION in the last decade will have exercised these tactics on numerous occasions, often in company with US assets and overseen by Commander TF 52 and his staff. Regular cross-pollination and a focus on information sharing has helped to promote the tactical proficiency across the MCM force, despite the regular crew swaps and personnel turn-overs, whilst frequent social events (in line with COVID guidance) have served to develop and strengthen the personal bonds and friendships between sailors, aircrew and divers of both nations.

So, what is next for TF 52 and the USN's MCM capability in the Gulf? In much the same way that the RN is rapidly shifting towards the next generation of MCM systems, so is the USN. Their Unmanned Underwater Vehicle (UUV) capability is well established with the Expeditionary MCM Company (ExMCM Co) and already forms an integral element of the Underwater MCM capability. The Air MCM capability will remain for the foreseeable future as this provides the ability to rapidly deploy MCM sensors and equipment ahead of the force to conduct pre-cursor operations, whilst also offering the full detect to engage capability through the use of an air launched Seafox system.





As the MCM paradigm shifts from conventional platforms such as Mine Hunters to next generation autonomous systems, it is well recognised that the capability and operation of these assets presents an opportunity to completely re-think the way that we conduct MCM. In recent months much effort has been concentrated on the development of SOPs and sensor integration tactics so that these next generation systems can be utilised on as many Vessels of Opportunity (VOOs) as possible.

This has also presented an incredible opportunity for further UK/US cooperation, next generation tactical development (TACDEV) and hybrid system integration, with both HUNT and SANDOWN teams helping to develop effective procedures to embark, prepare, launch and recover the USN's medium sized vehicles for both rapid and enduring UUV operations, thereby promoting the development of joint operating procedures and increasing operator SQEP across the Task Force. The constant and continued development of these procedures through regular joint operations and training exercises is essential, and will ensure that the RN and USN remain at the cutting edge of MCM operations as we introduce the next generation of equipment and phase out conventional systems.

If recent events in the KIPION JOA have highlighted one thing, it is the importance of maintaining high-readiness and operationally capable forward deployed forces in this region; this is one audience who are aware of this fact above all else. The forecasted delivery of the first MHC Mission System to the KIPION JOA will present a number of challenges that will need to be worked through, but it also presents even greater opportunity for the MCM community to remain at the very forefront of future naval operations. One thing is certain, if the last two decades of partnership is anything to go on, the cooperation, information sharing and enduring relationship between the RN and USN will be the single most important factor as we look to make the biggest change to mine warfare operations in a generation.



OP KIPION UPDATE – PART 2

By Lt Paul Atkins RN, SEO COMUKMCMFOR



Remus being deployed

It has been a busy year for the UK MCM Force (UKMCMFOR) in Bahrain, protecting the Force from COVID-19 and ensuring the delivery of MCM operations with a combination of HMS BROCKLESBY, HMS CHIDDINGFOLD, HMS PENZANCE, HMS SHOREHAM, HMS BANGORr, HMS MIDDLETON, RFA CARDIGAN BAY and RFA LYME BAY. This year we are celebrating 15 years deployed in the Gulf since HMS BLYTH and HMS RAMSEY deployed on Op AINTREE in 2006 maintaining a continuous presence with US 5th Fleet MCM units and Commander Task Force 52 (CTF 52). The UK contribution to CTF 52 and the contribution to the Gulf is highly valued by the USN and regional partners, as we remain the leading practitioner in Surface MCM Operations.

The complications of COVID 19 have challenged all facets of Operations and without the support of the UK Naval Support Facility (UK NSF) we would have struggled to find respite and refuge. Although it has been a testing period for our people, our ships and our resolve, we have managed to protect the Force and continue delivering our key mission in safeguarding freedom of navigation.

In preparation for the future arrival of the RN Mine Hunting Capability (MHC), UKMCMFOR has been working hard to bridge the gap between Conventional and Autonomous MCM systems. We have embarked USN REMUS Autonomous Underwater Vehicles (AUVs) in our HUNTS and SANDOWNS and progressed our understanding of the advantages and limitations of combined operations. In bridging the gap between Conventional and Autonomous MCM techniques we are ensuring we retain our mantle as pioneers in MW and MCM.

Despite all the challenges throughout 2021, UKMCMFOR has successfully returned to normal operations in the region and participated in a number of multinational exercises, the first being the Multi-lateral MCM Exercise Artemis Trident 21 in April this year. This involved more than 700 personnel, eight ships, two patrol boats, three MCMVs and two helicopters. Our Command Platform, RFA Cardigan Bay proudly served as the exercise flag ship.

By simulating real-world operations, the U.S-led exercise sought to fully integrate the allied Navies in the planning and execution of mine countermeasures operations. The two-week exercise integrated ships, units and staff from the four nations, building cohesion as a coalition MCM Task Force. Our contribution to the exercise included HMS BROCKLESBY, HMS PENZANCE and HMS SHOREHAM, an Expeditionary Diving Unit and the Mine Warfare Battle Staff commanding the UK Task Group from RFA Cardigan Bay. The exercise involved practicing the clearance of sea mines in response to a fictitious mining incident, taking part in a series of self-defence exercises against both air and surface threats, maritime security, force protection and diving operations.

MINE WARFARE AND DIVING – AUTUMN/WINTER 2021



In addition to the traditional methods of mine warfare, Artemis Trident 21 tested the use of new techniques and technologies. The Expeditionary Dining Unit 3 (XDU3), based in Portsmouth, deployed an 11-strong Expeditionary MCM team to Bahrain to participate in the exercise. The unit worked alongside French and U.S counterparts, deploying AUVs and Clearance Divers to find and dispose of drill mines, aimed at maintaining freedom of navigation in the Gulf. Teams from all three nations operated out of a Forward Operating Base (FOB) ashore in the U.S Naval Base in Bahrain, deploying out into the exercise minefield using Rigid Hulled Inflatable Boats and offshore raiding craft.

In July the first UK/US InterOp exercise was conducted with HMS MONTROSE operating alongside HMS BROCKLESBY, HMS CHIDDINGFOLD, HMS PENZANCE and HMS SHOREHAM. RFA LYME BAY also played a major part in the exercise, providing support to the UK and US ships. The purpose of this exercise was to demonstrate the continued interoperability between the two nations, it tested the capabilities of conventional Mine Hunters and new autonomous mine hunting capabilities, whilst being sustained for an extended period at sea delivering detailed route survey. The ability to integrate conventional and new systems into the same area of water, whilst working alongside partner nations such as the US Navy, is testament to the success of UKMCMFOR in the region.

This was the first exercise that RFA LYME BAY had been tasked with following her hand over from RFA CARDIGAN BAY post her arrival in theatre in May. The Task Group conducted Force Protection exercise under the protection of HMS MONTROSE, using her own seaboats and USN Patrol Craft, who acted as simulated attack boats. This dynamic serial was an excellent opportunity to track and simulate engagements against targets when operating as a large Force, a skill key ensure success in the region.

In July, HMS BANGOR and HMS MIDDLETON departed the UK and commenced their long journey to the Gulf to hand over with HMS BROCKLESBY and HMS SHOREHAM. They conducted face to face handovers in Jeddah before parting; this was a great achievement for the four crews after a long journey through high threat areas.

During September multiple Ships, embarked Force Elements and personnel came together to conduct a second UK/US InterOp, further developing and refining the interoperability of conventional MCMVs when operating AUVs. This included the embarkation of USN personnel into RFA LYME BAY including the Expeditionary Mine Countermeasures Company (EXMCMCo) and the Mine-Hunting Unit (a mixture of military and civilian teams working with autonomous systems in the detection, identification and prosecution of mines). HMS PENZANCE and HMS CHIDDINGFOLD also embarked ExMCMCo AUVs for the whole exercise and successfully operated them concurrently alongside core Surface MCMV tasking. This was a great achievement and a clear demonstration of things to come, COMUKMCMFOR will look to embark REMUS AUVs into RN MCMVs more and more to improve our understanding of autonomous systems.

Throughout the exercise the Forward Support Unit, a fully deployable engineering team that can deliver Marine and Weapon engineering support to MCMVs while at sea embarked in the Command Platform. As ever they proved vital in ensuring the sustainability of the whole Force and remain a superb asset.

The period at sea was also a perfect opportunity for RFA LYME BAY to conduct multiple deck landings with a variety of USN helicopters including MH-15s Sea Dragon, the US Navy's primary aerial mine countermeasures aircraft. The ship also rafted with MCMVs enabling the cross-polling of personnel, re-fuelling and transfer of stores.

Representatives from NAVCENT, UKMCC, CTF 52, CTF 59, RN Mine Hunting Capability (MHC), Autonomous Mine Hunting Capability (AMS) and US Naval Surface Warfare Centre (NSCW) Mine Warfare (MW) concluded the exercise with a VIP Day hosted by COMUKMCMFOR in RFA Lyme Bay. This provided an ideal opportunity for both UK and in-theatre seniors to see the new autonomous systems working alongside the MCMVs first hand. It also provided a realistic insight into the conditions experienced at sea in the Gulf, especially in the Summer months.

Notwithstanding the busy operational tempo, our people remain charged and enthused. The success of the Dual Crew Model has brought a significant N1 balance to the Force and is here to stay. The success of the REMUS 100 and 600 embarkation in both HUNT and SANDOWN Class gives us a glimpse of the exciting things to come. Find And Kill Mines.

HMS MONTROSE and RFA LYME BAY



RAdm Sean Bailey, Deputy Commander of U.S. Naval Forces Central Command and U.S. 5th Fleet, Cdre Edward Alhgren, UK Maritime Component Commander & Deputy Commander Combined Maritime Forces, and Cdre Steve Prest, Deputy Director of the Navy Equipment and Systems Acquisitions onboard receive a capabilities brief





LIFE AWAY FROM OP KIPION: HMS BLYTH AND PEMBROKE DEPLOY WITH SNMCMG1

By Lt Harry Long (PEMBROKE) and Lt Conor Smith (BLYTH)

After a short period away from SNMCMG1 operations, MCMVs from MCM1 Squadron have once again deployed with the NATO Task Group helping to demonstrate the RN's enduring commitment to NATO and to maritime security in the region. HMS BLYTH was the first to join the Group, sailing from HMNB Clyde in February after overcoming a series of engineering challenges and a demanding DCT, all with tight COVID-19 controls in place. BLYTH sailed through heavy seas to join another Sandown Class vessel the Estonian Navy's EML UGANDI for exploratory hunting operations in the North Sea. A brief LOGSTOP in Den Helder followed before joining the remainder of the Group in Kristiansand, Norway. BLYTH then went on to participate in Task Group operations that included Historic Ordnance Disposal and Force Protection Training in Danish Territorial Waters and a PASSEX with the Swedish Navy.

Two separate visits to Kiel Naval Base, Germany, also provided fantastic variety and opportunities for R&R. Although COVID-19 constraints inevitably limited what could be achieved, BLYTH still managed to participate in sporting competitions, social events and opportunities to meet and share lessons with Mine Warfare and Diving specialists from the other NATO members of the Group.

The successful deployment ended with a Kiel Canal transit and a brief visit to Rosyth before the baton was handed over to MCM1 Crew 4 in HMS PEMBROKE and Crew 2 took a well-deserved break over Easter!

The build up to any deployment can be hard; goodbyes to loved ones, pre-deployment training and a quiet nervousness about what the deployment has in store. For MCM1 Crew 4 in HMS PEMBROKE this was especially the case with the deployment starting nearly 2 months prior to deploying! COVID-19 meant that the Crew had to start with an isolation period in February so that it was certain she was 'COVID-19 Safe' for her training package with FOST. What followed was an intensive 2 week self-training period to ensure the Crew was ready for anything FOST could throw at it in March. This included MOBEXs, gunnery, mine warfare and diving. Oh and don't forget, what felt like every bit of the Ship suffering a flood or fire (for exercise!) at some point in order to drill the Crew's responses to them. COVID-19 meant no breaks at home were allowed as Crew 4 then rolled into FOST assessment, a gruelling two week period of training and testing. From rescuing a stricken yacht to fighting off swarm attacks to counter-mining dangerous ordnance, the Crew performed superbly and came out with a great result.

A short week of isolation at home followed prior to getting straight back into action at the end of March when PEMBROKE firstly sailed for a quick period of maintenance in HMNB Devonport where a Sandown is a rare sight. Then, finally, after two months of build-up, the deployment started in earnest.

PEMBROKE proceeded out to the Baltics conducting a quick stop in Frederikshavn in Denmark for fuel and stores. She then got to experience the beauty of the Danish straits as she transited south through the Oresund, a narrow waterway separating Sweden and Denmark. Out of one window, two countries and one capital city, Copenhagen, were visible which was amazing to see. It also tested the navigating skills of the bridge team as they deftly handled the Ship in confined waters. On completion, PEMBROKE proceeded firstly to Klaipeda, Lithuania in order to RV with the SNMCMG1 task group. The task group consisted of 5 ships and PEMBROKE: 2 Belgian, 1



On a murky day the 14 ships of the combined SNMCMG1 and Polish Naval task group form up

Dutch, 1 Estonian and 1 German; a very multinational affair! The very next day we were straight back out on operations leaving harbour in a coordinated departure. From there we RV'd with a further 3 units; 2 Lithuanian and the USS Arleigh Burke. This took our task group to 9 ships which was an impressive sight to behold. First up was a FLYEX to tests the ships ability to conduct vertical replenishment.

This was done with a Lithuanian helicopter which used the practice to pass gifts around the task group – the CO was very grateful for his gift from the Belgians! On completion, a set of OOW Manoeuvres were conducted with NATO which included welcoming us to the task group in the traditional way, a Formation Foxtrot steampast! Units successively passed close up the port side of PEMBROKE in order to offer ceremonial.

The SNMCMG1 task group then departed Lithuania to transit west towards Germany. On the way, reminiscent of the days of sail, the ships formed in a line to conduct gunnery. While it was not a full broadside of cannon, 6 ships presenting their starboard batteries to engage a target (this time a killer tomato) was impressive to see. Our aimers clearly had their eye in as well, with round after round hitting the target.

After a busy operational period the Crew enjoyed a period of R&R in Warnemunde, Germany. COVID-19 restrictions meant the usual run ashore was not possible but socialising was permitted between NATO 'Green' ships. This allowed for some useful building of rapport between the counterparts of different units and helped to highlight and learn from the different ways of operating of each country. Additionally it allowed the Crew to let their hair down enjoying the hospitality of the Dutch ship, HNLMS ZIERIKZEE who we were berthed outboard of.

On sailing from Warnemunde the Ship was right back into action with a coordinated MOBEX and importantly force integration training for the divers. BNS CROCUS hosted PEMBROKE's dive team for lunch which allowed them to build rapport prior to conducting training and hull dives on the BNS GODETIA. Later in the week the task group practiced its response to an air threat by drilling responses against the Belgian Alouette helicopter. This was a great opportunity given an MCM task group rarely has an organic air asset at its disposal. Szczecin was our next port of call but not after a complicated six hour river transit to reach it. Ceremonial was conducted on arrival with Szczecin pilots playing each ship's national anthem in salute.

SNMCMG1 ships line up to start their gunnery



After Szczecin our taskgroup was expanded once again with the addition of eight ships from the Polish Navy. Following a quick period of integration the task group knuckled down to its core role of mine-hunting by

conducting Historical Ordnance Disposal Operations (HODOPS) on the north coast of Poland. This was in order to ensure a busy area of shipping was free from World War 2 and Cold war ordnance. Several historic mine seats were found including one item of ordnance from the Cold War. It also provided a great opportunity for the Crew to refresh their mine hunting skills and drills with numerous Sea Fox runs being conducted in a short time frame.

After a busy week with the Polish Navy the SNMCMG1 task group detached and returned to Swinoujscie. A few days alongside gave the Crew an opportunity to say goodbye to the friends they had made over the deployment over a few beers and a barbecue. PEMBROKE then began her long journey home after a busy but rewarding deployment.



The Lithuanian helicopter makes its approach to deliver the Belgian Navy's gift while practicing VERTREP

RN – RAN EXCHANGE: THE VIEW FROM THE OTHER SIDE.

By Lt Cdr James Leeds RAN

Having spoken regularly with the last four Australian MCMV Exchange Officers to the UK, I thought I was reasonably aware of what to expect when I arrived for my 2 ½ year posting. My recent predecessors covered a well-trodden path of courses, OST, KIPION and some travel around the UK and Europe to top things off. After 18 months in, I've had a far different experience than I initially imagined, but it has been immensely challenging and satisfying thus far.

Touching down at Heathrow at 0700 on New Year's Eve 2019, I knew there was going to be a bit of a temperature shock having just left the 35oC Summer in Perth, Western Australia. London didn't disappoint, 4oC and some light drizzle greeted my partner and me (she's Belgian-Australian, so it felt like home for her). Chilly weather aside, we enjoyed the sights of London and I spent the next few days sorting administration at the Australian High Commission. Before long, we made our way down to Portsmouth to find a place to live and for me to start XO Desig course.

Having completed an Australian XO Desig course in 2018, I was well-positioned to compare and contrast the courses that each country runs. As I've found with most RAN/RN comparisons, there are many more similarities than differences. Both Desig courses don't specifically teach you how to be a CO or XO, but they give you some necessary skills and most importantly, space with your peers to think about how you are going to approach your upcoming assignment. My fellow course mates were outstanding and always keen to share their professional insights and experiences, but unfortunately COVID-19 was beginning to rear its ugly head and curtailed some of the course activities and visits. Conducting remote exams over a combination of Skype and DLE was a learning experience for all, but well managed by staff across the board during a time of much uncertainty throughout the country.

During my time off I was able to catch up with friends from (the then) FDU 2 who had visited Australian Clearance Diving Team 4 in late 2019 for Exercise Dugong. At the Dive Teams I noticed some larger differences between the RAN/RN despite our shared past; the main one being the strong domestic (EOD/IED) focus of the RN bomb teams – something RAN Clearance Diving Teams have shifted away from recently in favour of Very Shallow Water Mine Counter Measures and support to amphibious operations. There are certainly several opportunities for further engagement between the RAN/RN in their respective areas of CD expertise and team structure.

Upon completion of my XO Desig course, I shifted across the road at HMS Collingwood to the Mine Warfare Faculty to conduct the Mine Warfare Officer Course. As the only MWOC student, I was teamed up with a PO MW Course who were all very competent and passionate about Mine Warfare. The MWF staff were extremely professional and knowledgeable, several of whom I had previously served with in Bahrain whilst posted to TF52 in 2017-18. I was often asked during my courses 'Why did you come over here?' but the answer was easy – the RN is different to the RAN so it's a novel experience. The RN

also operates with a lot of new technology and most importantly, I've enjoyed working with RN personnel in the past – all of which made applying for this exchange very attractive. .

Post-MWOC, I was assigned to MCM 2 Squadron HQ as conducting a handover with my Crew in theatre was not feasible due to COVID-19 restrictions. Working in Squadron was an eye-opener; the volume of behind-the-scenes work that goes on to keep platforms at sea with finite resources is immense. Squadron jobs are mostly thankless roles that get forgotten about during times of success and viewed with suspicion when things aren't going to plan, especially if communication with an at-sea platform is degraded. With this perspective I joined MCM 2 Crew 2 in Gibraltar, the Crew having just pushed through the South-West Monsoon to recover HMS LEDBURY back to the UK. The Crew had not had a run ashore in almost 6 months thanks to COVID-19 restrictions in theatre, so the visit to Gibraltar was a timely opportunity for them to let off some steam and for me to get my feet under the desk. A relatively quiet transit back to Portsmouth saw us handover LEDBURY to BAe and the Crew take some much-needed leave. My work was only just starting though as once the Crew returned, a large proportion proceeded on assignment and the remainder were assigned to a new platform (HMS MIDDLETON) to generate her for deployment. For me, this was unfamiliar territory – I've almost always been assigned to ships in either the sea training phase or on operations which is a quite regimented and well-supported process. Challenges presented by contractors, sub-contractors, competing maintenance schedules and trying to maintain readiness without a platform are a constantly evolving beast. Throw in some manpower shortages and COVID-19 restrictions and it becomes a juggling act. The RN is not alone in this – I've often been asked whether the RAN has manpower shortages and yes, we do. In the MCM space it is in most of the same areas; technical trades, MCDO/PWO-MW and navigators. The key reasons for people leaving are also mostly the same – time away from home and lack of stability. It's pleasing that significant initiatives have been undertaken to address this, the new Crew rotation schedule (4 on-4 off) seems to have been well received thus far, although it has not removed the immediate need for personnel with key competencies such as those I've previously mentioned.

2021 presented several interesting challenges, COVID-19 aside. Alongside a hull refit, Crew 2 oversaw the first of class fitment of a new combat system (ORCA) to Middleton, a huge undertaking. The amount of work involved in successfully delivering the hull and combat system ready for operations cannot be underestimated and was a testament to the tenacity, professionalism and work ethic of the Crew, most notably the technical staff. Seeing a project such as this move from its infancy in the ship repair hall to delivery for operations and finally operational deployment of the hull is something that I would not have experienced in Australia – especially not with a brand-new, homegrown combat system.

Another organisation that I've been lucky enough to visit this year is MASTT. Autonomous is certainly all the rage across MCM communities around the world and whilst it might not be the gold-plated solution here and now, it is the way of the future.



It's an exciting time to be involved in the MCM space and I can see some massive opportunities for collaboration between MASTT and the RAN's Mine Warfare Team to improve the development of their new capabilities. This is not to say that MCMVs are irrelevant – far from it. The systems are only as good as the people operating them and they also need to be projected into an AO. The key to both lies within the personnel currently in the MCM community who are gaining valuable experience on MCMVs through Op Kipion, NATO and UK tasking.

With 18 months gone on my exchange, I can honestly say it's already been one of the most fulfilling assignments that I have had in the Navy. The people that I have worked with have made it great – the professionalism and commitment that the RN is well-known for is evident daily. I am certainly looking forward to the next 12 months of my exchange.



FORTY AND FIGHTING FIT

By Lt Cdr Sam Stephens



HMS LEDBURY celebrated 40 years of active service in 2021 whilst conducting Operational Sea Training around the Scottish Coast.

It may have been her birthday, but there was no rest for the Royal Navy's oldest warship as LEDBURY and her crew conducted OST in preparation for their upcoming deployment to the Gulf later this year.

The Portsmouth-based Hunt class mine countermeasures vessel was ordered in 1977 - when ABBA filled the dance floor with 'Knowing Me, Knowing You' - along with another 12 vessels of the same class. They were destined to replace the Ton class minesweepers that had been in service since the 1950s. By the time she left Vosper Thornycroft's yard, LEDBURY had cost £65 million, which was at the time the most expensive cost-per-metre for any class of ship built by the Royal Navy. Most of this cost went into the research and development of LEDBURY's glass reinforced plastic hull.

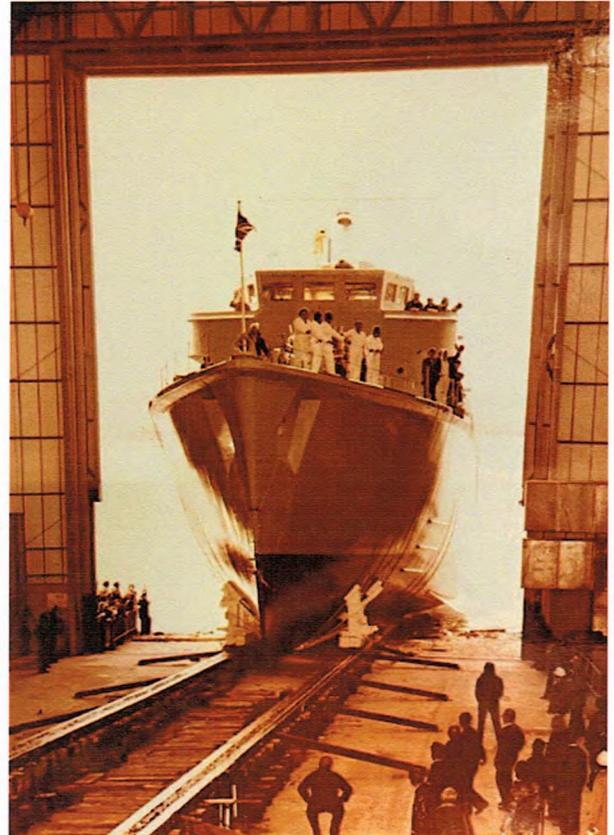
LEDBURY was later commissioned in June 1981, the year of NASA's first ever space shuttle mission, and has since steamed over 68,000 nautical miles. The equivalent to sailing around the globe 3 times.

She has made her presence known in countless naval operations along the way including clearing Argentinian mines in the South Atlantic following the Falklands conflict and playing a crucial part in both Gulf wars. During the latter, LEDBURY cleared mines in the harbour at Umm Qasr in southern Iraq. The dangerous mission was necessary before ships, led by RFA Sir Galahad, could dock to provide much needed humanitarian aid. HMS LEDBURY was one of two vessels given the task and the operation was widely celebrated in the national press. This followed the precedent set in the first Gulf war when she led the way in similar work in Kuwait Harbour.

Throughout her life cycle LEDBURY has been at the forefront of advances in combating the underwater mine threat. As mines have become more advanced, the technique of 'sweeping' is no longer practiced by the Royal Navy but the hunting continues. LEDBURY now uses sonar to detect and locate mines. Once detected, the Ship deploys remote controlled submersible vehicles known as 'SeaFox' to pinpoint, interrogate and neutralise them. In certain cases mine-clearance divers are deployed to do the same manually. As the mine threat continues to develop the RN continues to adapt to these changing threats. Most recently in the trialling of autonomous vehicles which can be embarked on a number of different platforms. This will give the RN a more flexible MCM capability for the future.

In recent years LEDBURY has been part of Op KIPION, maintaining Royal Navy MCM presence in the Arabian Gulf. She was relieved by sister ship HMS CHIDDINGFOLD in mid 2020 and has since been conducting training and high-readiness operations in UK waters. The Ship has continued to maintain a high level of readiness to support any emergent tasking requiring the specific and general capabilities of RN MCMVs.

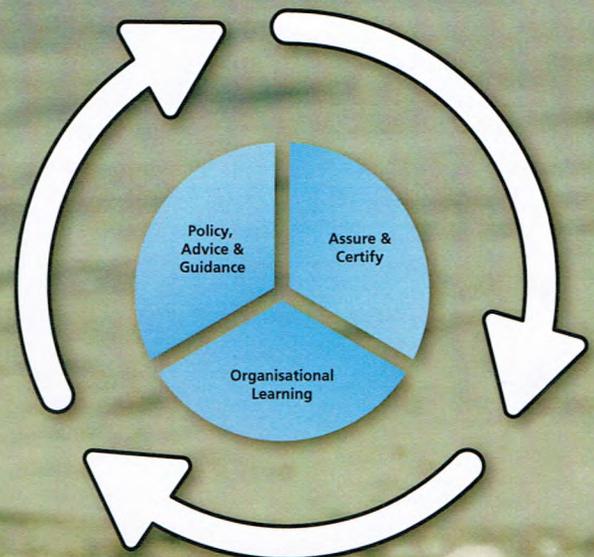
MCM2 Crew 4 onboard LEDBURY were able to celebrate her four decades of commissioning with some well-deserved cake during their busy BOST programme.



DEFENCE DIVING STANDARDS TEAM – ASSURING DIVING SAFETY ACROSS DEFENCE

By Cdr Olly Alexander, Superintendent of Defence Diving

We can all recount events when an action effected an outcome. I remember during a diving course being told not to wear gloves, such that our hands could toughen up. I promptly cut myself on a clamshell and endured the next four weeks underwater with a festering wound that prevented me from gripping things properly. On another occasion I failed to check my fin straps... halfway into a night compass-swim across a Scottish loch I lost a fin and had to surface and signal for assistance. Both events appear relatively minor, but it is often a combination of minor events that leads to something more significant.



DDST SAFETY LOOP

As a community of Military divers, Minewarfare specialists and enabling professionals you are highly skilled, determined and resilient. The Defence Diving Standards Team and I see this consistently as we engage with you all, be it an MCMV crew in the Gulf, the NATO Submarine Rescue System in Faslane or a FDS Element readying themselves to deploy with the Carrier Strike Group. In delivering capability to Defence we must all remain risk aware and never shortcut procedures that are put in place to protect ourselves and others – Diving safety is everybody's business and this is clearly laid down in JSP 286 Defence Diving Manual which draws its directive from both the Diving at Work Regulations 1997 and the Secretary of State's policy statement on Health, Safety & Environmental Protection and subordinate policies. There are many components to safe diving, that all mesh together to avoid divers coming to harm. After the recent Service Inquiries and subsequent Fleet Commander's 2020 Defence Military Diving Review it is great to see that much good work has been done across the Defence diving community to improve governance and safety structures.

This includes:

- Consolidation of policy through release of JSP 286 Defence Diving Manual.
- Improved co-ordination through the new Defence Diving Governance Board.
- Establishment of a dedicated Military Diving Capability Cell hosted by Navy Command and incorporating specialists from Army and UKStratCom.
- Alignment of Initial Diver Training under updated policy across the Services.
- Establishment of Duty Holding for the Defence Diving School to enhance risk management for military diver training.
- SABA Mod1 and SOBA improvements to improve information available to the diver.

DE - A AC

By Cdr

We can a
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These changes when combined are resulting in continual improvements as to how we all dive safely, where risks are as low as reasonably practicable (ALARP) and acceptable. Safety is not just about policy, process and equipment though, it is fundamentally about people, behaviours and culture. I look at safety like fitness – you must continually work at it to stay on form. There are four important principles that run alongside this ethos that I have adapted from Lord Haddon-Cave’s Nimrod Review:

Leadership – We require strong diving safety leadership, at all levels, that is actively engaged and demonstrating through example an active and constant commitment.

Independence – There must be independence in the setting of safety and risk policy and assurance against this, that sits outside of the operating and capability space.

People – People protect divers from harm; focus on the competency, culture and behaviours of yourself, your team, your Unit. Safety is delivered by people, not paper.

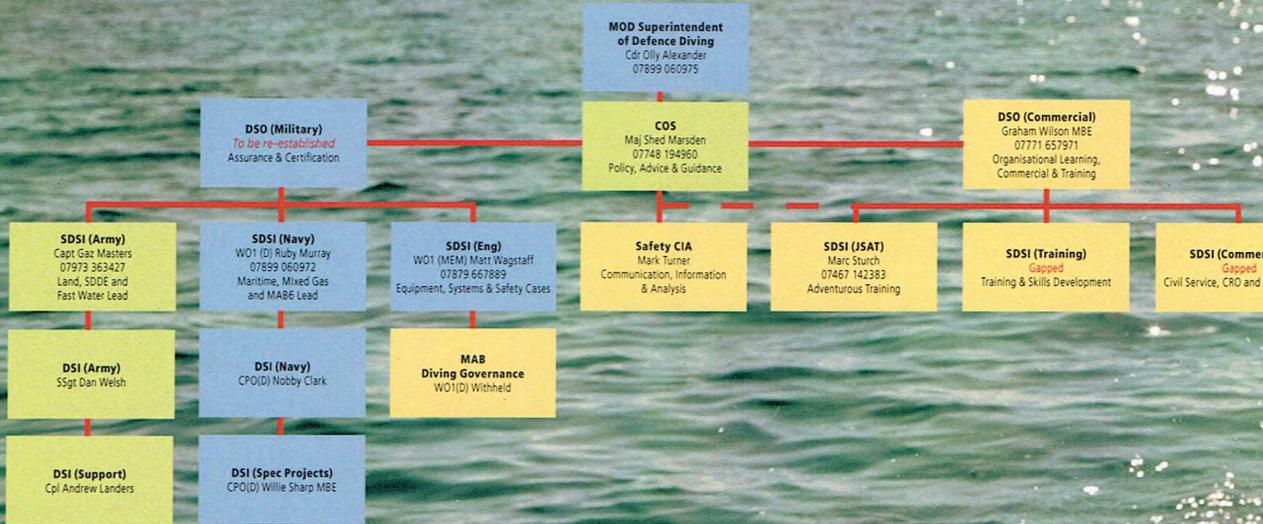
Simplicity – Rules, processes, policy, procedures must be as straightforward as possible; a safe system is generally one that is a simple and stable.

A DDST Org Chart is below, and when viewed with the DDST s loop pictogram helps to show the three core areas of DDST act and how these relate to our outputs. Please continue to reach t the team, who are always happy to provide information on divi safety issues and use our website, the MOD Diving Safety Web linked from the Royal Navy DefNet homepage. Our new locatio Fraser Building, Whale Island – in between the DDS Building 16 the Sailing Centre – please drop by if you can, all are welcome!

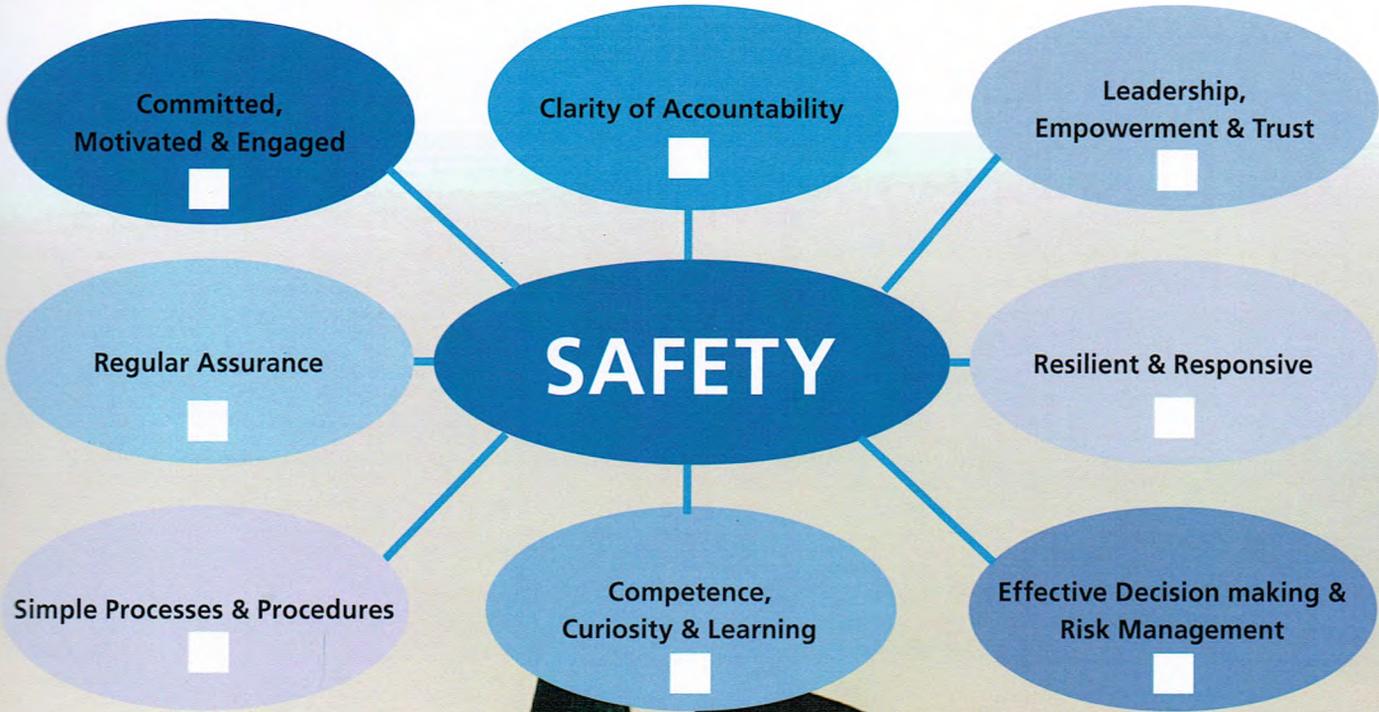
I think reading this article easily constitutes a short safety fitness session and so I hope it has helped you consider ways to improve yours.

Defence Diving Standards Team (DDST)

Fraser Building
Whale Island
PO28ER



ATTRIBUTES OF A SAFE ORGANISATION; CAN YOU TICK ALL THESE FOR YOURS?



DDS – SAFELY DELIVERING WORLD CLASS MILITARY DIVERS TO THE FRONTLINE.

By Lt Cdr James Oxley, Diving Officer Instructor



DEFENCE DIVING SCHOOL UPDATE

Having recovered Military Diver Training to full capacity, rebuilding all courses from a new set of safe practices, delivery has been key this year. The Defence Diving School (DDS) command aim for the last 12-months has been simple; deliver exceptional and safe professional warfighting diver training. Whilst it may seem simple on paper, the single-minded pursuit of safe and exceptional diver training during the last year has influenced, shaped and changed our organisation and our working practices like nothing before.

A year ago DDS was emerging from a period of significant review and organisational reflection, during which every single aspect of our training processes and working practices were scrutinised by both DDS staff and external authorities to ensure all lessons from the Service Inquiry had been learned and implemented. A complete review of all training courses had been conducted, a brand-new Diving Instructor course had been created and we were first in the queue for the second Cylinder Pressure Sensor (CPS) modification to facilitate training delivery using SABA Mod 1. These changes required a huge team effort across the board and saw many individuals working well outside of their comfort zones and terms of reference, however the end state was finally realised in June last year when the first Initial Diver Training (IDT) programme commenced. Since then no fewer than eight IDT courses and their subsequent Royal Navy Clearance Divers or Army Divers (Class 2) Professional Qualifying Courses (PQC) have been completed.



The last year has seen DDS deliver the entire complement of new diving training courses, both at Horsea Island and across the DDS training estate; from IDT courses, through to intense career courses and the full spectrum of continuation training. This has been an incredibly rewarding period for all of us at DDS, but it hasn't been without significant challenges. The difficulties of delivering military diving training during a respiratory virus pandemic cannot be underestimated. Alongside all of the recent changes to course programmes and lesson specifications, the requirement to factor in social distancing, COVID-19 secure procedures and course "bubbles" has underpinned every element of training. These restrictions have reinforced the need to reduce student numbers to eight per course, a decision originally derived from safe training ratios and the need to put staff in the water to teach. Now it has helped to guarantee compliance with social distancing guidelines. In addition training weeks have been added to many career courses to provide more time to clean equipment thoroughly between uses, travel and accommodation plans have been changed at short notice to ensure the integrity of course "bubbles" at all times and numerous COVID-19 safe practices have been introduced across Horsea Island to protect both students and staff on a daily basis. Delivering diving training during a global pandemic has been challenging to say the least and, whilst DDS hasn't remained COVID-19 free throughout the last year, the overall impact of the few cases detected within the student population at DDS has been kept to an absolute minimum and thankfully no individual training or courses have been cancelled as a result. This has been largely down to strict adherence to protective measures, early recognition of any COVID-19 symptoms, followed by immediate and positive action from the DDS staff, but most importantly an incredible level of support from both the Defence Primary Healthcare Centres and the Institute of Naval Medicine. Personnel from both organisations have worked tirelessly to arrange COVID-19 tests, provide antibody testing and expedite the return to diving pathway, which has at times required a huge effort to programme and conduct numerous diving medicals during a period of significant medical staff shortages.

The recommencement of diving training a year ago didn't signify the end of our internal review however, merely the end of the beginning. Much focus and effort has since been expended to ensure that the necessary structures are in place to provide a regular and complete evaluation process for every training course conducted at DDS. This includes a comprehensive pre-course Rehearsal of Concept (ROC), post-course analysis and 12-monthly Red Team event, whereby all course programmes and training documentation are subject to a full peer review. This new training battle-rhythm not only guarantees that each course programme and associated supporting documentation are as up to date as possible, but also that all our staff are entirely prepared and supported to deliver this training to the highest possible

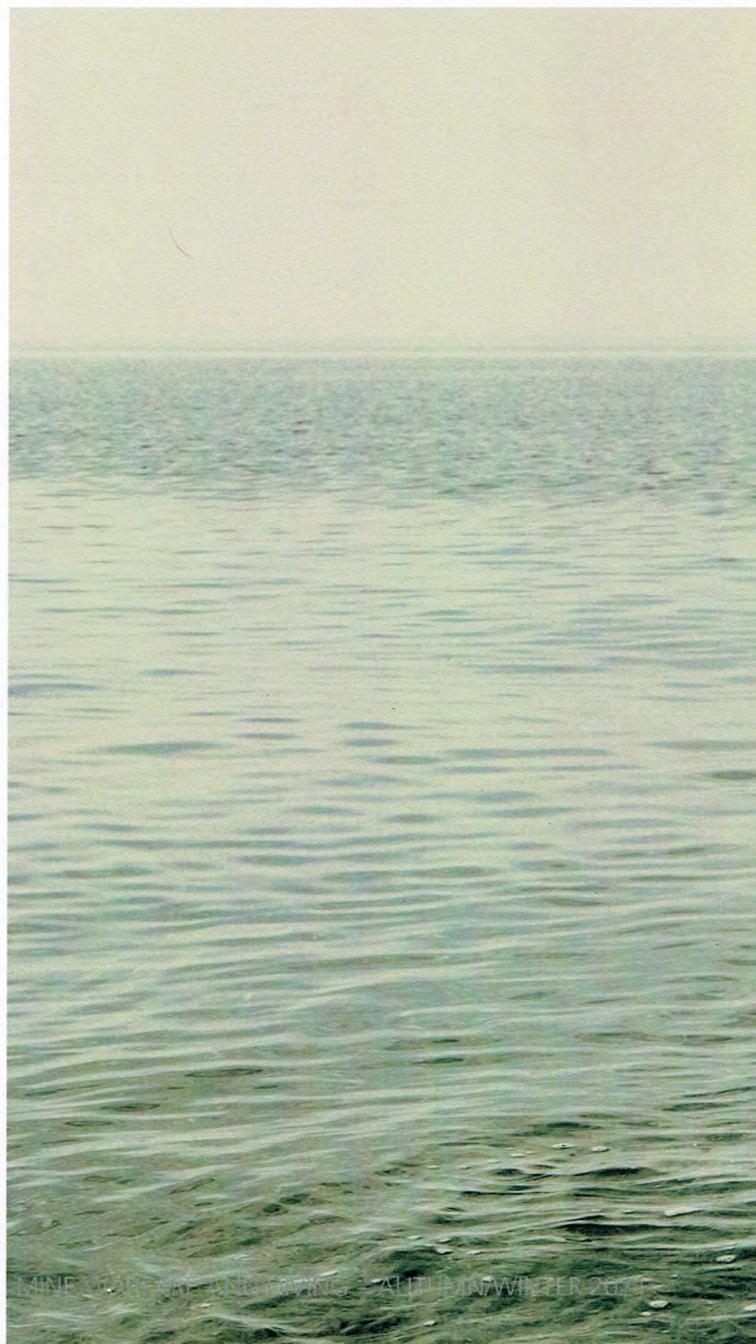
standards. In addition, DDS has adopted digital tools to centralise all its safety governance, training material and training records. A single digitised BRd2806 has revolutionised the way that training is managed, reviewed, recorded and audited at range. Digitisation has continued through onsite and offsite training, remote learning packages and delivery of training and diving. Wet and dry classrooms are now digitally linked and smart boards used for training delivery. S288 Records of Diving are digitised and completed onsite through tablet enabled APPs synchronising instantly with our central records. Military Diving Training can be monitored in near real time from anywhere allowing us to reduce our onsite audit time and increase efficiency of our instructors.



Of course, there is no point in re-writing every lesson plan, developing a progressive training structure and reviewing each course multiple times per year if our staff are not properly equipped to safely deliver the course content. Therefore every member of staff responsible for training delivery has completed the new two-week DDS Diving Instructor Course within the last year. This summative training process ensures that all DDS instructors now have the skillset to deal with a wide range of possible scenarios; from the relatively low-risk in-water instruction associated with continuation training, all the way through to the highest risk-to-life training such as IDT courses and initial career POCs. All of our staff are now trained in DSAT compliant teaching techniques, including the principles of coaching and mentoring, underwater instruction techniques and advanced rescue procedures, meaning they are better equipped than ever to safely deliver in-water instruction and coach their students through the rigours of diving training.

In many respects, one of the most significant developments at DDS during the past year hasn't involved any "wet" diving training at all. The continuous development of the DDS organisation and a desire to learn, record and implement many of the safety lessons identified by frontline units across the Fleet has resulted in the formation of a new Organisational Learning Department; one of the first of its kind outside of the Navy Safety Centre. This department brings together dedicated specialists to not only ensure that every lesson pertinent to safety and training can be identified, recorded and reported, but more importantly used to effectively direct and influence future training practices. One of the first major tasks assigned to this new department was to investigate, understand and manage the effect of fatigue amongst students when undertaking arduous elements of training such as Defence Watch Live-in Week (DWLIWk). This investigation has seen DDS staff consult with renowned fatigue and sleep experts from media (Big Brother sleep consultant!), industry and medicine to develop an operationally focused programme of training that better reflects the sleep profiles experienced during periods of MCM tasking at sea. This all-new scenario-based programme not only combines realistic MCM focused tasks conducted alongside the traditional diving and physical elements of DWLIWk, but also introduces the students to the concept of defence watches prior to joining their first seagoing units, thereby better preparing them for frontline operations.

This culture of organisational learning is now deeply rooted in everything we do at DDS and is even being used to inform and direct training on a daily basis. As is the case in the commercial sector, customer feedback is often the biggest catalyst for change and the same can be said for the military training environment. There is little value in delivering highly trained divers to the frontline if these people are missing essential skills or knowledge required to do their jobs. In order to reduce this risk as quickly as possible, a periodic feedback forum has been established with key stakeholders across the Fleet invited to identify any negative trends, training deficiencies or knowledge gaps in those who reach the frontline following completion of their training. Where possible, this "real world" information is then being used to either rapidly adjust course content or prioritise certain courses for early review with our Fisher partners, thereby ensuring DDS can deliver the most up-to-date and operationally relevant training possible.



This training year has concluded with a huge step change in the way that individual training is delivered. The Selborne contract has been awarded to Fisher and as our new training partner they now have a responsibility for training delivery, and not just enabling training. Already they are bringing fresh energy and desire to the modernisation of all DDS training.

So, given the challenges of training delivery during a pandemic and the huge changes to many of our training processes during the last year, the most important question is this: has DDS achieved the command aim during the RN's Year of Delivery? If we look at the statistics alone then quite simply yes, it has been achieved. Over fifty courses have been completed, with nearly two hundred RN and Field Army students successfully reaching the frontline as either newly qualified military divers or with more advanced qualifications than they previously held. But statistics alone don't tell the whole story

and it is vital that we judge our successes not simply by numbers, but by the quality of the end product and the manner in which the training is delivered. The latter is easy to quantify; all the revised training procedures and course programmes now contribute to the most progressive and accountable training process ever delivered at DDS, and our staff are now better trained than ever before to deliver this training safely. As for the end product? Our newly trained military divers are at a world class standard and they are now more prepared than ever to deliver on operations across the frontline.



Of course, there's a lot of work involved in developing a process that can be repeated multiple times and safely deliver the results. It's responsible for the DDS Diving Institute training process to deal with a low-risk in-water environment through the way through and initial care compliant teaching and mentoring rescue procedures safely deliver in the rigours of

In many respects during the past year. The continuous learning, recording by frontline units, new Organisations outside of the dedicated specialisation to safety and more important training practices, new departmental effect of fatigue elements of this investigation and sleep expenditure programme, experienced scenario-based focused task physical elements concept of which thereby better

FLEET DIVING SQUADRON UPDATE

This has been an exciting and challenging year for the Fleet Diving Squadron (FDS), with Transformation 2 being at the heart of what we are driving to achieve within the Squadron. Our aim is to Rebrigade, Resource, Rebrand and Relaunch the FDS; to generate multi-discipline mission teams to deliver specialist Maritime EOD, Diving and Underwater Battlespace Exploitation capabilities to the operational commander. However, these are not just buzzwords, the way we do our business will change to provide greater flexibility and options to our tasking authorities.



BY REBRIGADING WE WILL:

Deliver more agile mission teams than the current construction, be held at varying states of readiness and will be optimised for specialist Diving, Maritime EOD and Underwater Battlespace Exploitation capabilities. In addition we will generate EOD and Special Operations Capable Forces at readiness.

BY RESOURCING WE WILL:

Use the personnel dividend from MCMV sunset programme to achieve the ambitious undertaking laid out here. In addition we will be able to understand both threat and technology trends, and appropriate countermeasures to both. We will also protect our cadre workforce in FDS and MCMVs from HECATE 2.

BY REBRANDING WE WILL:

Change both parent and subordinate unit names, renaming the Fleet Diving Squadron to the Diving and Threat Exploitation Group and restructuring. This will also include a change of insignia and unit crest.

BY RELAUNCHING WE WILL:

Market ourselves as a full spectrum 21st century Maritime Diving and Exploitation capability, highlighting UWB future capabilities, technology including the use of autonomous and semi-autonomous systems, that the DTXG will employ in concert with Royal Navy hybrid underwater capabilities.

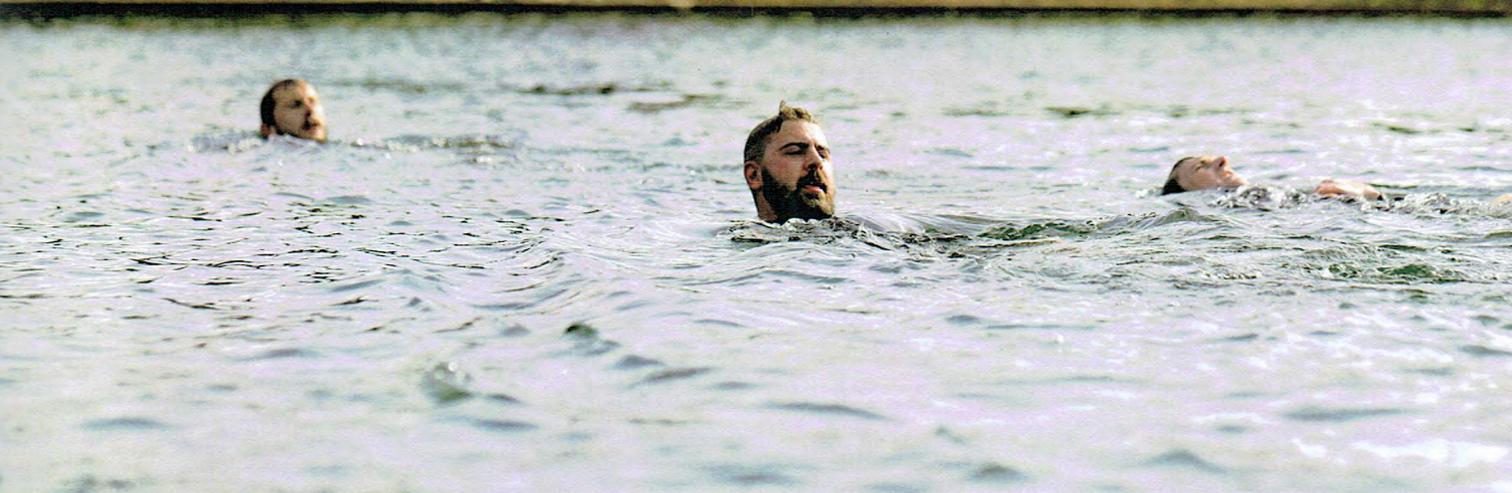
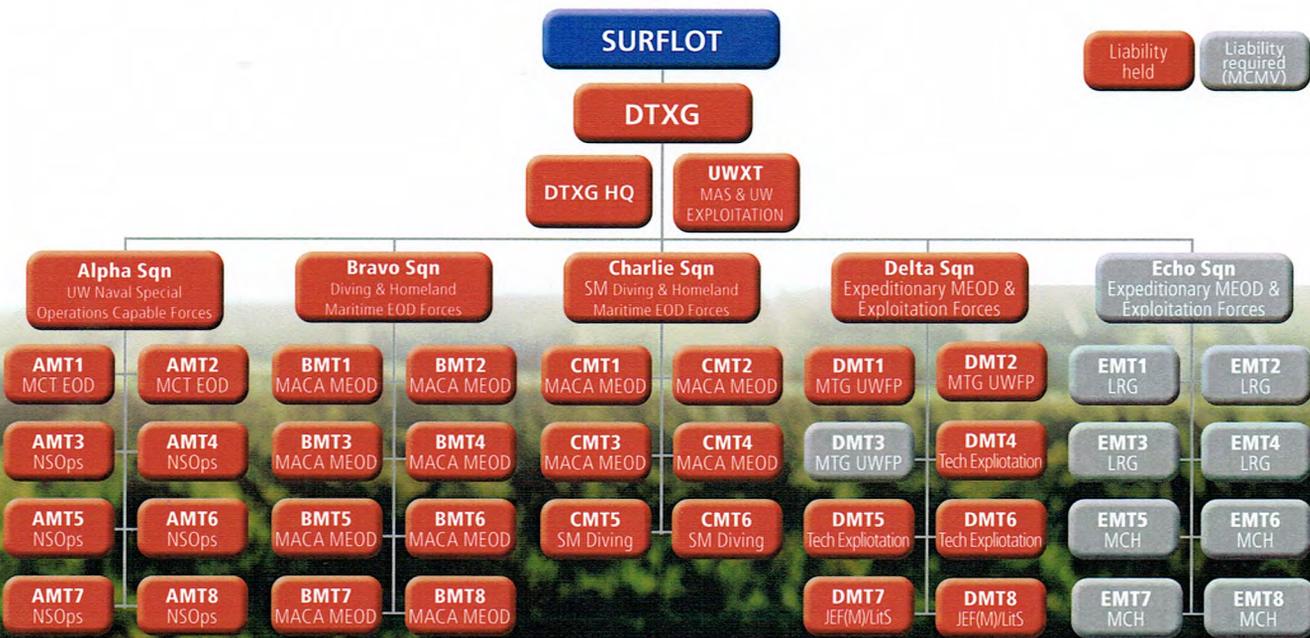
These changes may seem pretty radical, but this has been years in the making, starting with a review concluded in December 2017 which looked at capability outputs, unit structures and readiness profiles; currency and competency requirements for specific tasks; also a review of the FDS HQ. It noted that FDS capability and commitments have evolved significantly over the years, however unit structures and support elements have not kept pace with increasing demands and a modern regulatory environment.

Following further reviews over the last two years, and the success of the first FDS transformation programme, 2SL directed that a second programme should be conducted to create a more agile model to align with Navy Transformation and the Atlantis 2040 vision, a semi-autonomous mothership submarine operating in tandem with remote, autonomous and uncrewed platforms.

Delivery of Naval Special Operations (NSOps) and support to MHC are the two fundamental changes to what the DTXG will deliver over the FDS. Navy Develop are leading on the MHC Diving transition line of effort, to provide Mixed-gas diving capabilities at VHR and crewed to provide persistent intimate support to MHC. This capability must be capable of delivering UW Search/Classify/ID/Disposal of any explosive hazard from the high water mark to 60m; and to exploit both conventional (mine) and unconventional (IED) explosive threats. The provision of the Diving cadre workforce from MCMV sunset programmes is pivotal to the delivery of these emergent demands.

Rebrigading and rebranding the Fleet Diving Squadron to the Diving & Threat Exploitation Group, along with appropriately resourcing the DTXG to deliver agile mission teams globally, presents an exciting opportunity. Aligned with Navy Transformation and the Atlantis 2040 vision, when appropriately resourced, it will provide technologically enabled specialist Maritime EOD, Diving and UWB Exploitation capabilities to the operational commander.

Of course, while all the work to restructure the FDS has been ongoing, we have carried on with our routine tasking as usual. As ever this has included call outs throughout the country including one for Southern Diving Unit 2 in the Solent recently.



Southern Diving Unit 2 (SDU2) is the Royal Navy's Portsmouth Bomb Disposal Team; a land and maritime Explosive Ordnance Disposal (EOD) unit based at Horsea Island. The unit, comprising highly trained divers and EOD experts, is responsible for removing all Unexploded Ordnance (UXO) found in tidal waters below the high-water line, on vessels at sea or in port, offshore installations and in RN Property. Additionally, the unit carries out Improvised Explosive Device Disposal (IEDD) in both the land and maritime environments, all in support of Operation TAPESTRY which ensures Military Aid to Civil Authorities when UXO is found. Its Maritime area of responsibility is vast, covering the coastline from the Humber Estuary south, round to Swanage in Dorset and includes the Isle of Wight and Channel Islands. For in-Land EOD and IEDD tasking, SDU 2 covers most parts of Dorset, Hampshire and Sussex.



Hundreds of thousands of bombs were dropped on and around the UK during World War Two and not all of them exploded as intended. Whilst the majority were cleared after the war by our predecessors, it is not uncommon for them still to be found; they can be hugely unstable and can still pose a real and deadly threat if disturbed.

On the evening of 23 Sep 2021, SDU2's Duty EOD Operator, PO(D) Duncan, received a call from the UK Joint Service EOD Operations room for all Op TAPESTRY related taskings. They reported that a Torpedo had been recovered onto the deck of a fishing trawler operating in the Solent and that the crew needed urgent assistance.

Soon after receiving the call, PO Duncan contacted both the Solent Coast Guard (CG) and the captain of the trawler to discuss the situation. With potentially unstable explosives on deck, the focus was on the safety of the crew and other vessels within the area. Fortunately, due to the time of day, maritime traffic and activity was low and the fishing trawler captain was directed to carefully secure the torpedo on deck to stop it rolling or moving and await EOD assistance. However, he reported that due to the proximity of some large merchant vessels causing a significant wake, as well as the continued deployment of their trawling gear, the vessel was limited in its ability to maintain a stable platform. Due to the precarious nature of the situation Southampton VTS issued a Notice to Mariners, requesting all vessels to keep to minimum speed and position themselves to starboard of the main shipping channel to reduce wash. The trawler captain subsequently reported the torpedo had not moved and that they were then the only vessel in the area.

The duty team must be ready to move within ten minutes of getting a call. They were contacted by PO Duncan and made their way to SDU2's headquarters on Horsea Island to check equipment and plan for the operation. Deciding to use their Rigid Inflatable Boat (RIB) to get to the trawler, they loaded the equipment they were likely to need including diving sets, a specially designed lifting-bag to allow us to recover large items from the seabed, explosives and various strops and lines to secure/move the ordnance.

The team reached the fishing trawler at around 0100, assessing the ordnance and reassuring the crew. The UK's Marine Accident Investigation Branch assess that it is highly likely that fishing vessels have sadly been destroyed or damaged by explosions caused by UXO over the years; the most recent off the coast of Norfolk in December 2020.

Upon inspection of the object it was determined that it was in fact a German SC500 Air Dropped Weapon (ADW) of World War 2 era. This type of bomb contains 220lbs of High Explosive (HE) with an all up weight of 500kg, hence the designation. The rear section of the bomb would normally have an aerodynamic tail-section but this was missing, likely having been broken off on impact with the water when originally dropped. With the rear section of the bomb open it was clear to see the weapon still contained its dangerous High Explosive fill.

While the bomb had sat undisturbed for around 70 years, it was still unstable and capable of causing huge damage. The key in situations like this is to act quickly but safely, minimising the risk to life. It was determined that in this case the safest option was to explosively dispose of the bomb on the seabed. At approximately 0300, after attaching the team's own securing strops to the bomb, marking it with lights and floats and identifying a safe area, the trawler's windlass was used to lower it carefully back to the seabed. Once the bomb was safely on the seabed and with all lines clear, the trawler was released to transit out of the area, much to the relief of the crew and her master. The CG were kept informed of all movements so that they could continuously update other mariners as to the position of the ordnance and direct them to keep clear.

The team returned to HMS Excellent to await sunrise and prepare their equipment and explosives for the final part of the operation. At first-light they returned to the new location the bomb, preparing to dive and place an explosive charge to destroy it. The diver left surface at sunrise, swimming down to the bomb in the murky gloom of the Solent, carrying enough explosives to destroy the bomb. Carefully attaching explosives to a bomb underwater in challenging conditions, with little visibility takes a significant amount of skill, training and bravery. After successfully placing the charge and securing it to the SC500 casing, the diver was recovered and PO Duncan contacted Solent CG and Southampton VTS to deconflict shipping movements and confirm a time for explosive disposal.

At 0713 on 24 Sep 21, with appropriate approvals and cordons in place, SDU2 carried out a successful controlled detonation of the SC500 that had lain on the seabed in the Solent for over 70 years. The actions of the on-call team demonstrate the Royal Navy's continued delivery of operations to support the safety of maritime traffic in the area and give an insight into the actions of the Bomb Teams. While Transformation 2 will change the names of the squadron, the units and the structure, call outs such as this will continue to be dealt with in the same swift and professional manner they always have been.

DTXG will be Global, Modern, Ready....



MARITIME AUTONOMOUS SYSTEMS TRIALS TEAM UPDATE

By Lt Jase Munson RN

MASTT Overview

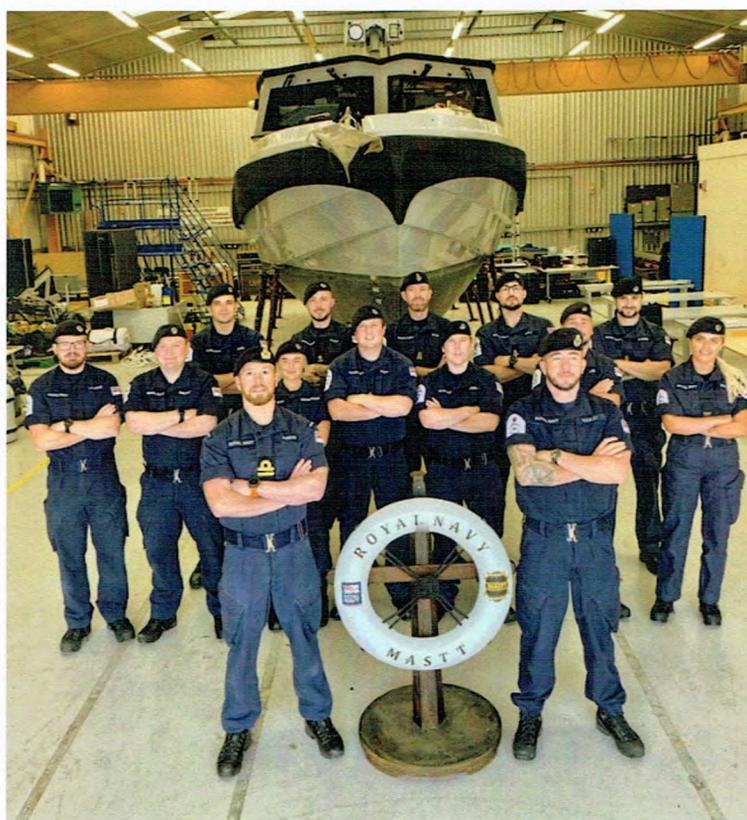
An outline of the MHC programme and the systems it incorporates have been mentioned in this magazine before, but for clarity to this article I'll go through the following definitions;

Mine Hunting Capability (MHC) – A programme instigated to look at options to replace the existing MCMVs. It was built on the premise that much of this capability can be delivered by Maritime Autonomous Systems (MAS). Capabilities must be agile, interoperable, and survivable, using the latest technology in off-board systems.

MHC Block 1 – The first stage of the programme, aiming to deliver modern MCM demonstrators that improve effectiveness and reduce risk to life, whilst informing a decision on the complete replacement for existing MCM capability.

MHC Block 1 will consist of 3 Mission Systems (M/S), each M/S replacing an MCMV. They will deploy a variety of equipment dependent on the task, namely;

- **Sweep** – A portable, autonomous capable minesweeping solution, controlled remotely and deployable from land, host platform or future MHC platform.
- **Maritime Mine Countermeasures (MMCM)** – 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 Uncrewed Surface Vehicles 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 Medium sized Autonomous Underwater Vehicles (MAUVs).
- **MAUV** – these will be controlled and monitored from the MMCM RCC. These will be COTS procured items. On delivery of the MMCM demonstrator, 3x Allister 27 UUVs will be included for trials purposes.
- **Uncrewed Aerial Systems (UAS)** – will increase Command, Control and Communications (C3) and the radio horizon between the RCC and the USV. For Block 1, a tethered UAS will elevate the M/S comms bearers to improve stability and range.



The MMCM system is the focus of MASTT and will be until approximately Q3 2022. With the pandemic as a background it was no surprise that training with Thales, the OEM, faced delays.

The time was spent devising ways to build SQEP in a system unlike any other currently in use by the RN. With no competencies, equipment specific courses, maintenance schedules etc, we had to look at what is available that transfers well to the MMCM equipment, whether that be generic inboard maintainers courses, miscellaneous boat courses at Jupiter Point or in some cases civilian courses that deliver the requisite skills. This has been the case particularly with the future USV Coxswains; the L3HARRIS craft are 12m, fitted with an electronic chart outfit and ARPA radar system, and deploy a towed body 150m astern. This is a step up from similar small craft the RN operates, and with the aim of having LHs and above pilot these, significant upskilling is required until a steady training solution is in place within the RN.



With much of the above weighed off, in June this year we began training at the Thales site in Turnchapel Wharf, Plymouth. The training schedule is 10 weeks, non-consecutive, and is due to complete in October this year. At the time of writing we have covered all aspects of the portable operations centre, sonar analysis and mission management software, and have just completed the safety aspects of operating the USV. The training has been well delivered, and so far the entire system has proven intuitive to learn and use. I'm fortunate to have a team highly motivated by the opportunity to use equipment far removed from that operated by the MCMVs they're used to. It is crucial that we provide feedback on training; this is the first time Thales have instructed anyone outside their staff in this equipment, and with a further 3x training courses to be delivered by Thales over the next few years its essential that it is shaped to the RN's needs.

Come October the equipment will be handed over to the RN, an exciting time and the culmination of many years of planning. We will remain in Turnchapel for the first stage of trials, Capability Development Trials (CDTs), in order to be located adjacent to the Thales system engineers should we experience defects. The aim of CDTs, lasting 3 months, will be to develop SOPs/ EOPs, going through the documentation to ensure that it is fit for purpose. Once complete we will be at a stage of operating the equipment safely, competently, and with 'militarised' processes, ready for System Performance Analysis Trials (SPATs). This is when we will begin gathering data from the system to assess its efficiency and how it compares to existing methods of MCM.

The SPATs will take us into summer 2022. Trials will be interspersed with other activities and demonstrations to improve our understanding of the equipment capabilities. The first M/S to be stood up has the positions going live from Oct this year. They will be taking this equipment out to the KIPION JOA for its final stage of trials by the end of 2022. This ambitious timeline will require significant investment from all involved, and I expect to begin seeing some of the first assigned into the M/S roles with me on trials prior to Dec. This will be to give them as much exposure to the equipment as possible until they receive their OEM course.

All the demonstrators received as part of MHC Block 1 present an exciting picture of the future of MCM and for the MCM community. The change it will bring about will extend to roles and routines, competencies, career courses, and will necessitate a significant

change to how we do our business. Over the coming months I hope that we'll be able to increase exposure of these systems to those in the MW Branch through visits and participation in trials where possible. TRAINING FOR AN AUTONOMOUS FUTURE



Hot Weather Trials

In the last issue of this magazine, my predecessor outlined how the future of MCM may look, with MASTT having recently returned from RN Sweep cold-weather trials, and the UK/FR MMCM system at an early stage of engagement. In the intervening months, much has changed, and with the Mine Hunting Capability (MHC) programme now funded for Block 1, interest and pace of progress markedly increased.

Here I will cover MASTT activity over the past year and how it fits into the wider MHC programme, with its aim of finding solutions to replace the existing fleet of MCMVs. It is a year that has encompassed RN Sweep warm weather trials, building SQEP in preparation for autonomous and remote systems, and the start of training on the Thales MMCM equipment.

In Sep 20, MASTT deployed RN Sweep to the Kipion JOA. The objectives were varied, with the key aims being to understand how the sweep USV performs when faced with increased air/ sea surface temperatures, understand the impact of hot weather on the underwater signature generation, and gain valuable LfE operating offboard autonomous systems from the LSDA in Theatre. AEUK sent a contingent of engineers to embed with the team and assist with the identification and rectification of any defects.

The outcome of these trials was a success, although the conduct was not without challenge. The AEUK vessel had not been exposed to the temperatures experienced, at times limiting speeds. The climactic conditions meant comms issues were one of the first hurdles to be overcome, and the heat had other unforeseen effects on various parts of the system and ancillaries. The deliverable was always to report on LfE, accumulate data in a warm weather environment and collate recommendations in line with the objectives to shape the system for Block 2. The report has been compiled and communicated to AEUK; with RN Sweep now in the OEMs hands, these trials will provide a vital contribution to the stage 2 production equipment.

The MASTT team did a fantastic job adapting to the environment in quick time whilst devising ways to overcome the many challenges they were met with.

Post trials the RN Sweep equipment went back to AEUK, split between their sites in Bincleaves and Winfrith. As well as routine maintenance, the demonstrator units are undergoing significant upgrades with the next set of trials scheduled in Q4 2022.

The work mentioned above is not the sole reason for a pause in RN Sweep trials. 2021 has seen and will continue to see MMCM take up much of the bandwidth of my team of 15, with little capacity to spare. However, the future of autonomous minehunting in the Royal Navy is an exciting one and MASTT will continue to deliver the system trials to ensure a seamless transition to front line operations.



The combined teams of MASTT and AEUK, delivering the future of MCM operations in the Gulf.



PROJECT WILTON OVERVIEW

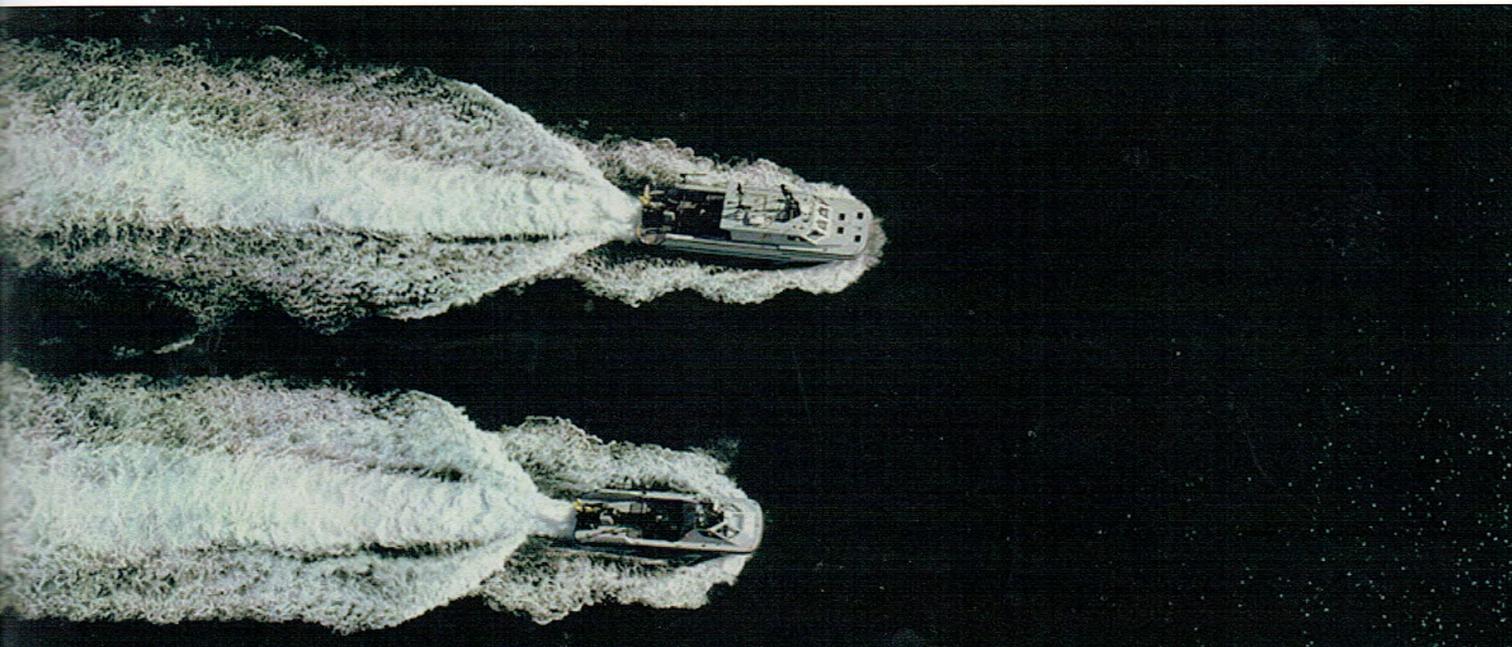
By Lt Cdr Ross Balfour RN

“To Deliver a 200m detect-to-defeat capability to UK Defence in support of CASD, whilst conducting trials and evaluation of Maritime Autonomous Systems (MAS) in support of future RN Mine Hunting Capability.”

WILTON has been given the exciting and challenging role of acting as the capability demonstrator for many of the new MCM technologies in development within MHC and as such we have been charged to act as a ‘pipecleaner’ prior to the arrival of the full demonstrator being delivered by MMCM. As an independent and self-sufficient team working in and around the Clyde we have additional remits to develop a MAS centred Detailed Route Survey (DRTSV) capability to support CASD whilst also paving the way for MMCM’s arrival in Scotland by engaging with and informing the DLOD process to ensure the right people, Infrastructure and equipment is in place.

We are a small but highly capable Team comprising, 1x Officer, 2x MW Senior Rates, 8x MW JRs and 2 Engineers delivering against an extremely varied remit and a comprehensive program of training and trials. WILTONs maritime capability is built upon the Vahana Class workboats. They are small (11-15m), powerful and highly manoeuvrable. However, they have presented many challenges in that the skills required to operate a 20-tonne vessel capable of >30kts, up to 60nm from a safe haven, navigating by WECDIS and Radar are not normally held by Senior or Junior Rates. Our ability to operate these vessels with increasing confidence is testament to the efforts of the team who have embraced new challenges in unfamiliar areas. They are already impressing with their increasing knowledge of Rule of the Road and rapidly improving navigation skills. Developing these hard-won skills has, at times, been painful but the lessons learned are informing MHC and PCAP on how best to train the next generation of MAS/MW Ratings and Officers.

We operate a variety of offboard systems including, Towed SideScan Sonar (TSSS), Autonomous Underwater Vehicles (AUVs) and Remote Operated Vehicles (ROVs). To integrate these into our ‘system of systems’ we are supporting the development of new planning and Command and Control (C2) systems that provide an additional layer of autonomy. This requires us to work closely with DE&S, DSTL and our industry partners, Atlas Elektronik UK (AEUK) and Seebyte to assist in development and manage trialling of these cutting-edge systems.

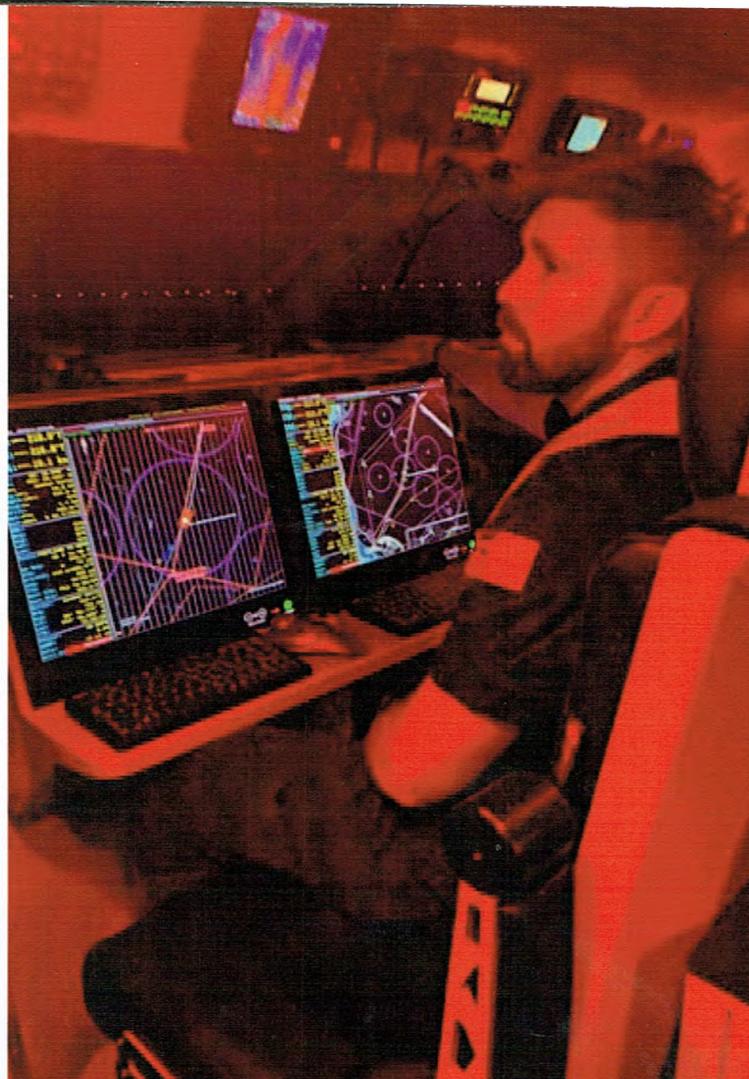


It is important to note that the term autonomy should not be immediately confused with uncrewed. WILTON has systems that can deliver various levels of autonomy, for example the autonomous execution of an MCM plan much like a Sandown MCMV in AIO control; however we are not yet able to operate uncrewed vessels. RNMB HARRIER is designed with a Sense and Avoid (SAA) capability that may allow her to operate without crew onboard but, as yet, she has not received certification to allow her to operate in a fully autonomous (uncrewed) mode. For the immediate future, operation of any autonomous system such as WILTON's vessel HARRIER shall be crewed, regardless of the control mode; however it will be the case that WILTON and MHC shall build a case to enable remote operation of vessels by a SQEP operator from a Remote Control Centre (RCC) with no person onboard the vessel itself.

Along with the hardware and software we are also assisting in the development of the future MHC workforce model. Our lessons are informing the collective understanding of what a MAS Operator of the future will look like. By supporting this process, we are helping to ensure that MWTE can deliver proficient MAS operators. We have developed some new definitions to capture the MAS responsibilities and key positions required to delivery effect from the WILTON system:

Autonomous Mission Commander (AMCDR) (OF2/3-CPO(MAS))

During remote and autonomous TSSS operations from USVs, the AMCDR ensures safe navigation and control of boats and assets from either the RCC Land (L) or Afloat (A). This role is critical to the safe execution of the mission as the AMCDR compiles both the surface and subsurface picture using a combination of WECDIS, NEPTUNE (C2) and Situational Awareness Display System (SADS) in addition to the underwater sensors that they have deployed. Highly orchestrated support and input from the vessels coxswain (LS(MAS)) and Mission Supervisor (SR(MAS)) is essential to ensure the AMCDR remains fully appraised of the situation whilst controlling vessels that are Restricted in their Ability to Manoeuvre (RAM) and have a TSSS deployed down to depths of 200m.



CPO(MW) Morton acting as AMCDR

Autonomous Mission Supervisor (AMSUP) (PO(MAS)-CPO(MAS))

The AMSUP directs TSSS and USV activity under the AMCDR's control. They are responsible for monitoring offboard sensors deployed within the water column and supervision of the TSSS and NEPTUNE Operators and UxV Autonomous Mission Controller (AMCONT). The AMSUP manages the data from these positions to ensure the USV is operated within the turning and speed limitations imposed by the deployed TSSS. All conning orders to the USVs are given by the AMSUP working in conjunction with AMCDR. This highlights the high levels of responsibility delegated to MAS Senior Rates, similar tasks would be undertaken by an OF2 MWO and OOW onboard a MCMV.

Ops Room closed up in HEBE's RCC(A). CPO(MAS) in AMSUP role overseeing concurrent USV and ROV OPS





Autonomous Mission Controller (AMCONT) (AB(MAS)-LS(MAS))

The AMCONT manages both USVs when they are in Remote or Autonomous mode, directly controlling the vessel by remote link and managing the sonar depth and range as directed by AMSUP. HARRIER is overseen by the AMCONT using the Situation Awareness Display (SADs) they will inform the AMSUP and AMCDR of any issues that may impact TSSS or vessel safety.

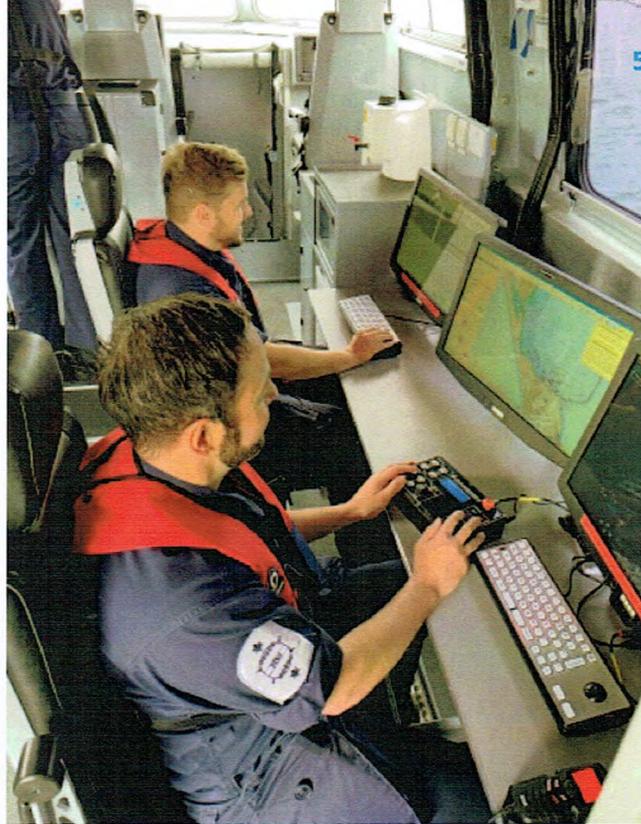
AUV Mission Operator, (>AB(MAS))

AB(MW) Ewart is the most experienced IVER3 AUV operator within WILTON. He is responsible for planning and executing IVER3 autonomous missions requiring him to consider shipping, seabed type and all other environmental factors to ensure a safe and successful mission is achieved. Once he has gained authorisation from the AMSUP or CDR he will act as the AUV Mission Commander and complete the task without further direction.

ROV Mission Operator (>AB(MAS))

AB(MW) Harvey is the lead ROV Operator for the M500 and Videoray Defender systems. He is responsible for rigging, maintaining, conducting pre and post mission preps and piloting the ROVs to a contact of interest using the vehicles own sonar and camera and relying on the datum generated during post mission analysis (PMA) from either TSSS or AUV mission files. He is responsible to the AMSUP and CDR to ensure the ROVs are ready and capable of supporting the overall mission.

AB(MW) Harvey conducting M500 ROV Mission checks



AMSUP controlling HARRIER from HEBE via remote link whilst the Sonar Operator deploys the TSSS



AUV Mission Operator, ABMW Ewart preparing an IVER3 for deployment

Summary

WILTON represents much of the future technology and operating principles that will be seen in MMCM soon. As such the team are operating new and complex equipment, often at the limit of their knowledge and SQEP levels. Much of the trials and development work is being conducted by the most junior members of the Team with highly empowered junior ratings often drafting SOP & EOPs that will endure throughout the life of these systems. At times the journey has been a significant challenge with such a small team, but it has also been a highly rewarding process. The future of WILTON and MHC is constantly evolving, and the name Project WILTON may soon be lost but the capabilities we are generating now will endure on the Clyde for years to come.



THE MARITIME WARFARE CENTRE UPDATE

By CPO Terry Stewart RN

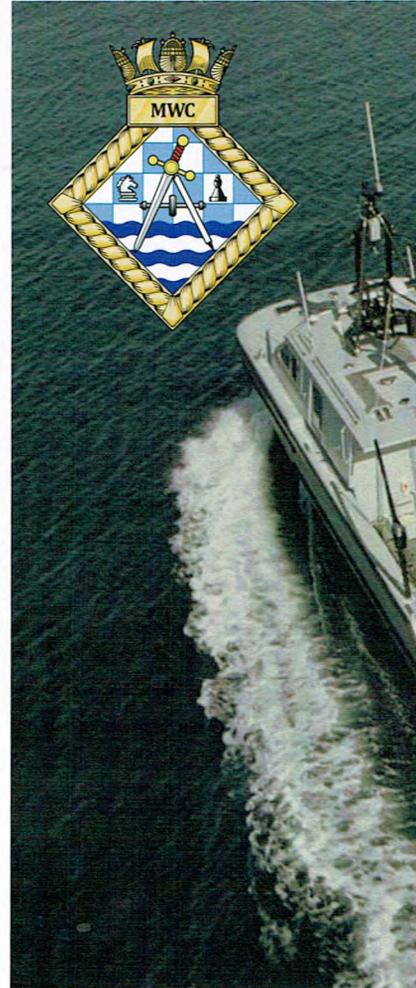
The Maritime Warfare Centre is part of the Operational Advantage Centre

1SL has directed the formation of the Maritime Operational Advantage Centre (OAC) to underpin the restructuring of the Royal Navy's operate domain, embracing the Integrated Operating Concept (IOpC) and better preparing to deliver against a rapidly evolving global operating environment. It will bring together collaboratively the Maritime Warfare Centre and Maritime Capabilities Trials and Assessments (from the CSF enterprise) with the Maritime Information Exploitation Group and the RN's Joint Effects (from COMOPS' enterprise). The OAC supports joint and maritime operational commanders and capability sponsors by fusing threat, operational and performance analysis with doctrine and TTPs to provide exhaustive understanding to optimise effects-centric operations and effective learning.

'Through trials, tactical development (TACDEV), engagement with frontline units and outside agencies we are able to develop tactics to enable the front line to do its job more efficiently and effectively'.

MWC provides a niche capability to the OAC where military subject matter experts work alongside operational analysts to provide a coherent service to the frontline. Significantly, working with partners across the OAC, MWC can articulate technical risk into operational risk and ultimately mission risk.

Within the MW section we have seen a relative period of stability over the past year in terms of workforce, however CPO Terry Stewart has now left without a relief to take up a position as the MW Staff author at Navy Warfare Publications (NWP). In many ways the RN will benefit from him taking his expertise into his new organisation, responsible for delivering our 'Classbooks' as well as other BRd, CBd and NATO publications. PO 'Richie' Richardson RN has been extended with his main role being the support of the MHC/Wilton trials and integration. Lt Cdr Angus Benton is new to the SO2MW post joining this summer and brings with him a great depth of MW knowledge.



Information Exploitation

- Horizon Scanning/ Indicators and Warnings
- Intelligence Preparation of the Op Environment
- Process and Exploit and Disseminate (PED)
- Intelligence Requirements Management
- Collect SIGINT, ELINT, GEOINT, OSINT, ACINT
- N2 HQ functions
- LEGAD/POLAD
- ISTE

Joint Effects

- Hub and spoke with outreach SME's
- SPECAP
- RN LAC
- NSOC
- CEMA (active elements)
- Media Ops, CCTs/MNTs Phots
- Targeting champion

Military Analysis

- Military SME's
- Doctrine and TTPs
- Liaison with DCDC, JW LWC, ASWX, Allies
- TacDev/TacRec/Op Plans
- Lessons
- Liaison with capability sponsors

Capability Optimisation

- E2E kill chain optimisation
- Equipment Optimisation
- CS performance analysis
- Real world testing and trials

Operational Analysis

- Analytical capability
- Big Data management
- FASTOA, monitoring and evaluation, modelling
- S&T Reachback/ Reachforward
- Liaison with PAG & industry



It has been frustrating that we have not been able to visit the MW community since the first COVID-19 lockdown began 18 months ago. We have endeavoured to remain proactive as best we can to progress doctrine and indeed without your support would not have been able to achieve what we have. All that said, new ways of working have still allowed a high level of engagement and although Microsoft Teams has increased connectivity, we are keen to conduct face to face visits and will drive this once the restrictions have been lifted.

Our main aim is to provide realistic, easily understood doctrine to either re-enforce existing tactics or establish new ways of working smarter. This applies to both existing and future systems and in many ways the two complement each other, with advances in one being relevant to the other. We thank you all for your efforts in assisting with this despite busy programmes. We request you please keep this up and if an SOP or tactic does not work, or you think there is a better way to do it let us know. The correct processes of an S2022 or DLIM is always to be followed, but please contact our office by phone or email as we can oversee your concerns/feedback that you have raised. Our contact addresses are at the base of this article.

It has been a busy year in which we have managed to progress with or achieve the following:

- Conducting trials and drafting the tactical doctrine for Project WILTON, MMCM and MHC. The rapid advance in adopting Maritime Autonomous Systems (MAS) is impressive and requires an equally rapid development of tactics and doctrine. This encompasses how we employ systems as well as address the basics of MCM such as 'Exploratory and Clearance Hunting', with this being an ideal opportunity to review all our practices. The Green Paper (GP) for our MAS and SWEEP are in draft and will benefit from the System Performance Assessment Trials (SPAT) being conducted by WILTON and MMCM.
- Considering the move towards MAS, MWC Report 01/21 Operating UUVs from a HUNT Class MCMV has been released. The foundation of this report was from work conducted with the 'US EXMCM Co' and UKMCC which is testament to how the front line can support OAC in the completion of TACDEV.
- Further from the above much work has been conducted with the MWBS in theatre regarding integration of MCM systems feeding a further GP in draft which is aimed at ensuring all MCM systems, sensors and equipment (including ROV and Divers) are employed in the most efficient manner.

- The introduction of ORCA (including the TRAP replacement MSATO) is an exciting enhancement to our MCMVs. However as with any new kit brought into service there will be challenges, but the capability enhancement it brings will be beneficial.
- In the spirit of advancing current doctrine, we are looking at how MCM and Route Survey (RTSV) can be speeded up. Specifically, how fast we proceed along the route can be maximised.
- GPS denial is a constant threat and a C2D2E GP 20/20 has been released to address how this would affect an MCMV. This has included looking how we can re-establish radar position fixing (RPS) to ground stabilise from land and buoys.
- The general review of current SOPs and equipment such as RTPME, MDS battery performance, ORCA, MSATO, MCM EXPERT, S2093(CSP) and S2193 performance also form much of our key work. We are working closely with our NATO and 5 Eyes partners to benefit in 'shared learning'.
- Central to our output as an MCM community is the planning and estimation of risk. We have just been informed by NATO that EXPERT 7.0 is soon to be released which we will obviously work with relevant agencies (especially NCHQ, MWTE and FOST) to ensure it is fit for purpose by the end user. In addition to this you will be aware that MoM 8-18 – MCM planning and evaluation has been replaced by a new version of EXTAC 881, to re-evaluate if this can be used as an alternative planning tool for MCM.
- Several MOMs that instantly improve OC have also been supported by OAC of late. A recent example of this is the trial looking at removing the 60-minute short notice limitation for Seafox. This has since been endorsed by FOST and NCHQ resulting in the release of the MOM prior to inclusion into Classbooks.
- Unfortunately, due to our support of current and future MCM our ability to assist FDS in developing tactics and doctrine is limited. We continue to support FDS in their delivery of capability where we can. This includes the absolutely vital role divers play in current and future MCM and support to amphibious forces .

MWC provides a wide range of services to the front line and other customers which routinely include:

- TacNotes
- Green Papers
- The Fighting Instructions
- MWC FOAS OA Highlights Spring 2021
- Operational Advantage Centre – Warfare Development Plan

Our current Smart TACDEV Instructions (STINT's) are:

- STINT14/21, 21 Instruction – EXTAC 881 planning and evaluation tool.
- STINT06/21, Range and bearing marking error tool.
- STINT30/20, Surface mine avoidance and neutralisation.
- STINT12/20, Radar position fixing functionality in NAUTIS.
- STINT07/20, Route Survey Speed of Advance.
- STINT06/20, Radar position fixing functionality in ORCA.
- STINT05/20, MDS battery gradual power loss.
- STINT04/20, MDR calculation tool vs manual method comparison.
- STINT02/20, Real time performance monitoring equipment vs actual range detection.
- STINT07/18, RTPME Side by side trial.

I would like to take this opportunity to acknowledge 'Dixie Dean' for his tremendous above and beyond support to the MW and Diving community as the late Mine Warfare Naval Author at NWP. He would be delighted to know that 'Project Vernon – The Mine Warfare & Diving Monument' in Gunwharf has become the focal point for both Mine Warfare and Divers. It was recently incredibly moving to see a picture taken of his Grandson with Dixie's monument as the background.

MWC are here to support you by developing simple, efficient and effective doctrine and tactics. You can help us by feeding back shortfalls and requirements for you to conduct your operations in the most effective way possible and helping us in conducting STINT. We are available to talk at any time and our contact details are:

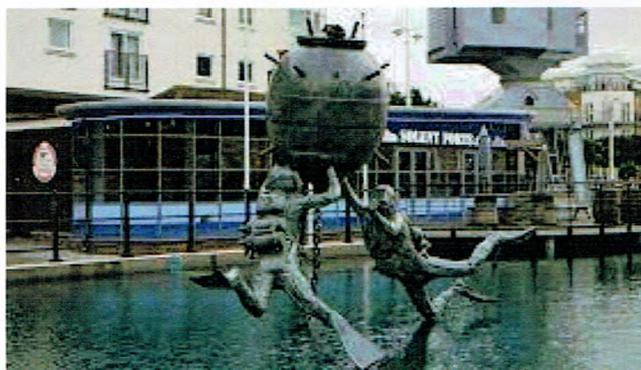
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Kim Patterson – Operational Analyst.
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Mil 93825 5091, Civ 01329 33 5053.

MWC COMMAND INTENT

'An integral part of the OAC, MWC supports RN operations with responsive tactical advice and improves the Fleet's lethality and operational advantage through the development and dissemination of focussed warfighting doctrine.'



REWARD AND RECOGNITION

By WO1 'Chip' Miles, MCM2 XV

The MCM community continues to deliver as one of the Royal Navy's key outputs and this year brings up 15 years continuous presence in the Op KIPION JOA. Although work continues to get official medal recognition, the MCM community has received other forms of reward throughout the past year. Punching well above its weight in receiving 11 Team Herbert Lott awards and 34 individual awards, the MCM community continues to deliver in every area. Two members of the MCM community have also been recognised by receiving a fully funded holiday in recognition of their commitment and sacrifice throughout the COVID-19 pandemic. One sailor received the Worshipful Company of Merchant Taylors' award for their exceptional work as a professional Divisional Officer, while two members of the diving community have been honoured on the Queen's honours list, one receiving an MBE with the other an OBE.

1SL Fellowship.

This year 1SL challenged the Royal Navy to become 'Innovative by Instinct'; to outgun our potential adversaries in our capacity to embrace the new in a world where change is exponential. To achieve this the Royal Navy needs to grow a cadre of personnel able to think and act differently. These will be personnel equipped, empowered and unafraid to deliver change at unprecedented pace. To enable this to happen a 12-week full-time, blended (virtual and face-to-face) course led from London was announced. The course is designed to be intense but very rewarding. It will not be able to be run alongside a day job and will require full commitment. Anyone interested in the course are to speak to their line manager.

Talent Strategy.

The Royal Navy Talent Strategy describes a talent management system which nurtures and empowers you to own your career and fosters inclusivity and fairness. The implementation of the Talent Strategy will develop the skilled, experienced and motivated workforce that we need to deliver the Royal Navy's goals. Talent Management is not only for the top 5%, it is for everybody.

The Talent Strategy will give everyone in the Royal Navy a fulfilling career regardless of circumstance. The new integrated talent management system will provide you with self-led, end-to-end career management which is free of bias and recognises your unique skills. You will be given the opportunity to develop the right knowledge, skills and experience to succeed. You will have more information at your fingertips, freedom to make better choices and to build your own career journey. You will be able to search and apply for new challenges, monitor your performance and access learning opportunities through an online platform where you will be able to invest in your personal and professional development.



DUAL WATCH CREWING OF MCMVS IN THE GULF: A LIVED EXPERIENCE.

By Lt Cdr Andy Kent and Lt Cdr Graeme Hazelwood

Hunt and Sandown class mine-hunters have been operating in the Gulf in some capacity for the past 15 years. In both peacetime and in war, Royal Navy Mine Countermeasures vessels have operated as an expeditionary force in the Arabian Gulf to defeat the mine threat, aptly demonstrated during the Iran-Iraq war in the 1980s and the years following, ensuring the free movement of commerce in the region. Since 2008, two Hunt and two Sandown MCMVs have been permanently based out in Mina Salman port, Bahrain, and as of 2017 out of the United Kingdom Naval Support Facility (UKNSF). This ensures a continuous and sustainable forward presence is maintained in the Arabian Gulf. This is under-pinned by the new KIPION Dual Crew model, with crews now rotating into the Gulf on a four monthly basis.

The rotations work broadly as follows. Each Crew generates in a UK-based hull completing the full assurance cycle which includes OST and, where possible Ex JOINT WARRIOR, before deploying to a forward based unit in Bahrain for a total of 3 rotations of 4 months in length.

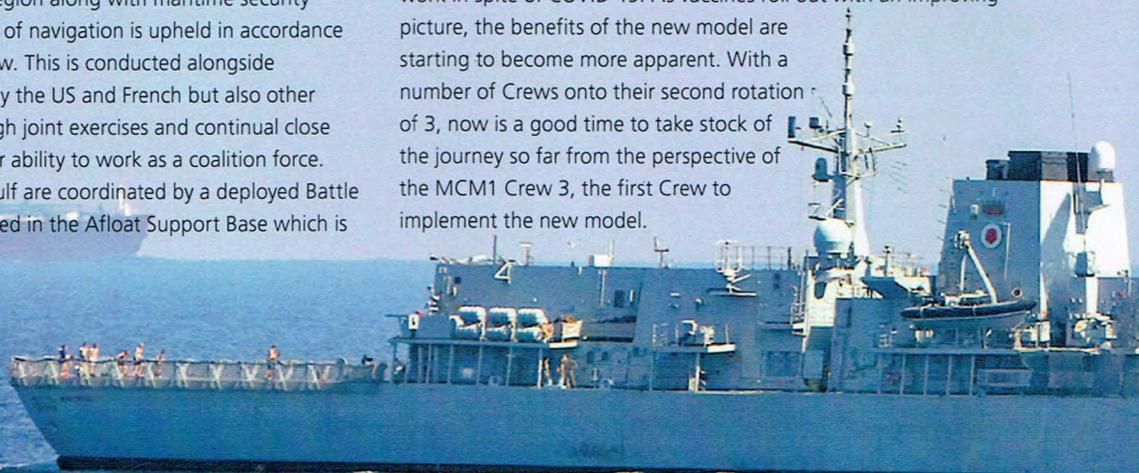
The UK generation includes training serials on a UK running MCM to test the crew's abilities in Mine-warfare, CBRN and damage control serials, among a plethora of other warfare serials which stringently assess the Ship's Company, prior to conducting Operational Sea Training (OST). Once OST has been successfully completed the crew normally take approximately 3 weeks of pre-deployment leave. On arrival in the KIPION JOA, the crew conduct a 3-5 day handover of the ship with their opposite crew, taking the Ship to sea for a standard manoeuvre to prove the engineering plant. During the "on-watch period" the MCMVs are based out of Bahrain, operating throughout the Arabian Gulf to ensure trade routes remain free and open for commerce by conducting Detailed Route Surveys of essential trade routes in the region along with maritime security operations to ensure freedom of navigation is upheld in accordance with international maritime law. This is conducted alongside allied counterparts, particularly the US and French but also other Arabian Gulf partners, through joint exercises and continual close cooperation, which proves our ability to work as a coalition force. UK MCM operations in the Gulf are coordinated by a deployed Battle Watch Staff, normally embarked in the Afloat Support Base which is currently RFA LYME BAY.

The four Bahrain-based MCMVs are rotated typically on a 2-3 year basis to allow the Ships to be comprehensively refitted back in the UK. This means that a crew's "on" watch could start with a sail out to the KIPION JOA or oppositely a sail back to the UK, via the Suez canal.

On flying back to the UK, the crew will take up to 7 weeks leave, conduct requisite training courses, collective regeneration activity and general pre-deployment administration to allow the crew to be ready to take the Ship when they arrive back in theatre. The trickle drafting of personnel means this can often be a busy time for a crew as they work to ensure they are both current and competent to deploy and deliver on operations immediately upon return to their forward deployed unit. Back in the UK, the training continues with an Intermediate KIPION Assurance Programme (IKAP) week, which intends to shake-down the crew in a UK-based MCMV with seamanship, Mine-warfare and CBRNDC serials conducted. Once the crew is ready to deploy, they are granted another 1 week of pre-deployment leave before commencing another "4 on" period. Each crew will be expected to complete three 'on' and three 'regeneration' periods during their allocation to the Dual crew workforce model, after which, the crew will take leave, prior to embarking in a UK-based hull for 24 month period of UK-based and Northern European tasking, thus offering greater variety and overall stability to MCM cadre.

We asked a MCM1 Crew 3 who were now settled into the new KIPION routine to feed back on the lived experience:

The new MCMV Dual Crew model was introduced in 2020 in an effort to offer increased stability for the MCM community whilst also ensuring 4 MCMVs remain deployed at readiness in the KIPION JOA. As the model was implemented in the midst of the global COVID-19 pandemic, the MCM community has had to work hard to ensure its success over the last 12 months with Crews having to deal with the impact of quarantines and stringent restrictions to ensure operational outputs are maintained. This has been a particular challenge for all personnel involved but MCM Crews have continued to show the customary tenacity, determination and grit to make the new model work in spite of COVID-19. As vaccines roll out with an improving picture, the benefits of the new model are starting to become more apparent. With a number of Crews onto their second rotation of 3, now is a good time to take stock of the journey so far from the perspective of the MCM1 Crew 3, the first Crew to implement the new model.



MCM1 Crew 3 commenced rotation 1 in June 20 sailing HMS PENZANCE out to the KIPION JOA in company with MCM2 Crew 3 embarked in HMS CHIDDINGFOLD. Sailing an MCMV 7000 nm to the Gulf is normally a challenge in itself but the pandemic tested this further with limited opportunities for port visits and often only jetty leave possible. Whilst the model intends for a balance of 4 months deployed/4 months in the UK the needs of the sail out meant rotation 1 was longer. The implementation of pre-deployment quarantine also meant both Crew 3s extended to allow their reliefs, Crew 1 to isolate. This took the first rotation to just short of 6 months.

Crew 3's first UK period was also reduced to 3 months in the UK which unfortunately coincided with the 2nd UK lockdown which made regeneration in a short window a real challenge. With the Crew dispersed around the country and restrictions imposed on movement, innovative ways were needed to be adopted to ensure key courses could be achieved and the Crew ready to deploy. Crew 3 pushed through and proved that the regeneration phase of the dual crew method is indeed workable, even in a lockdown, with valuable lessons identified to improve the process in the future. Crew 3 successfully redeployed in Feb 20 and have now completed rotation 2, fully vaccinated and with the benefit of a 4 month UK period to follow before rotation 3.

It is clear from the above that the implementation of the new model during a pandemic has been a significant challenge and there are still lessons to be learned. That said, the picture is improving and the stability the model promised is beginning to come to fruition to the benefit of all. KIPION Crews have been protected from trawls during the UK period with the Navy keeping its promise to protect Crews during the regeneration period. This is integral to the success of this model and has ensured sailors feel valued with a sense that the 'contract' has been honoured. The loyalty shown in keeping to this has been repaid several fold in the output and commitment shown whilst deployed. This promise is the absolute bedrock of this model and must be kept to ensure ongoing success.

Crews and their Command Teams have been empowered to own their regeneration period with the flexibility to shape the UK period to suit their needs. Crew 3's sailors have each been issued with personnel plans for the UK period and encouraged to take ownership of 'their' regeneration period with courses and commitments altered where possible to meet their personal circumstances or family commitments. This tailored approach promotes the individual feeling valued, offers stability and creates goodwill which ensures sailors return to theatre ready to redeploy. Despite the pandemic opportunities have been found to conduct Adventurous Training, a key part of building resilience and something that was difficult to find time to achieve under the old model.

Crew 3 have sought to make use of the 'zeitgeist' of 'Zoom' calls/ remote meetings and working from home which has also been welcomed by the sailors. With the Crew living all-round the country there is not necessarily a need to bring everyone back to Faslane each week when certain meetings, shareholders and discussions can take place remotely. This approach has benefited from the roll out of MODNET 'laptops for life' and more needs to be done here to exploit the benefits of remote working in the coming rotations. In doing so, outputs are maintained whilst offering people the opportunity for more time at home with family and maximising the time spent in the UK.

The transition to the Dual Crew Model is not yet complete and there is much still to do. This article seeks to give an honest review of the road so far and that road is improving. Crew 3's VO rate has decreased since the implementation of the model and is now at zero with one individual having removed their notice due to the stability this model is starting to create. From Crew 3's perspective the new model is generally considered a fairer approach than the old one which often had Crews back on UK operations within weeks of returning home. The lessons identified thus far will likely be taken forward as the MCM community moves towards an autonomous future, namely with the upcoming introduction of MHC and the reorganisation of the Crew structure. Whilst there are undeniably quirks to work through, the general consensus is that the new model is a constructive and credible step in the right direction. The overall Dual Crew experience has been warped somewhat due to being introduced in the COVID-19 era however the signs and feedback are more positive than negative. As the model continues to be refined and Crews settle in there is increased potential for success which will ensure MCM operational output continues in a fairer and more sustainable manner.



MINE WARFARE TRAINING ELEMENT – WHAT'S IN A NAME?

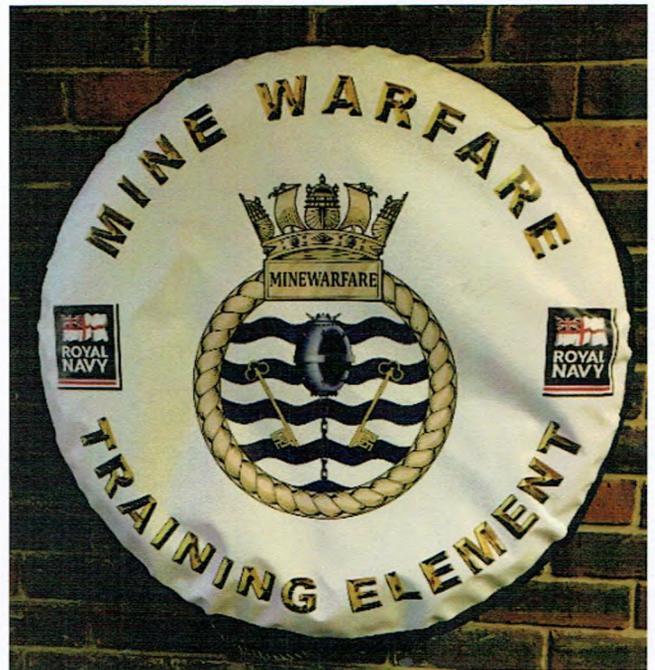
By Lt Cdr John Bainbridge

Over the Summer of 2019, it became clear that Navy Transformation offered the opportunity to restructure MW training to align with all the other specialisations within the Warfare Training Group (WTG). In order to achieve this, the old legacy FOST construct of the MW Operational Training Centre (MWOTC) needed revising. From April 20 the section was renamed the Mine Warfare Training Element (MWTE) with training delivery divided between Warfare Skills (WARSKILLS) training unit conducting MW ratings training and Advanced Warfare (ADWAR) training unit conducting officer and advanced MW training. A WO1(MW) (currently WO1(MW) 'Stirling' Moss) is now the Officer in Charge Mine Warfare Training Element (OIC MWTE) within WARSKILLS with a team of 3 CPO, 4 PO, 1 LS, 1 CAPITA training instructor and 2 game controllers, which is the same as there was under MWOTC.

The new look section Perry Buoy

Within the Advanced Warfare (ADWAR) Training Unit, MWO training is now directed by Staff Warfare Officer (SWO) MW (formerly MW1). Although MWO training is still conducted and supported by instructors within MWTE, the clear delineation between MWTE and MWO training is designed to maintain the wider warfare focus of the Operations Officers at sea. Advanced MW training, both officers and senior rates, as well as Commanding Officers courses are directed by SWO AMW (formerly OIC MWOTC). This places these courses at a similar level to training in other disciplines and will safeguard the continued successful delivery of MW Branch professional training at the highest levels.

A further move ahead with respect to the new structure will be the chance to integrate more fully with other underwater (UW) disciplines such as the Hydrographic and Meteorological Training Element (HMTE) and UWTE to enhance understanding of the Underwater Exploitation picture as a whole. This will additionally involve working with outside agencies such as the Operational Advantage Centre (Maritime Warfare Centre) (OAC(MWC)) and SURFLOT to enable shared ideas and more importantly, bring training to the heart of tactical development thereby ensuring the latest tactics are incorporated in training at the grass roots level.



As with many best laid plans the outbreak of the COVID-19 pandemic put a serious delay to the implementation of training as planned for April 20, with the initial training paused to ensure the RN was ready and able to meet any demands from wider UK authorities; for example CPO(MW) Dixie Dean (CPO1) became the COVID-19 reporting coordinator for the whole of HMS Collingwood (with staff and students this was over 3000 people - or 10% of the RN). Following this, Risk Assessments were conducted for all courses, classroom numbers assessed for social distancing and 'Sneeze Screens' installed in the Hunt and Sandown simulators. Only after this could essential training with reduced numbers gradually recommence to ensure a steady flow of personnel to the front line. We are now hopefully back on track with full course numbers and with the high level of vaccination against COVID-19 significantly reducing any requirement for whole classes to require isolation. This has been essential in providing support to Project SHANNON which brought MWTE an unprecedented level of Phase 2 trainees into the MW branch, with a 100% increase in AB2's coming through the training pipeline.

The current MW training at MWS in HMS Collingwood comprises 7 principal courses:

MWTE in WARSKILLS:

- MW 200 – Able Rate Mine Warfare Phase 2 professional course
- MW 201 – Leading Hand (MW) Career Course
- MW 202 – Petty Officer (MW) Career Course (Syndicate 1, Hunt 2 Sandown)

SWO MW in ADWAR:

- MW 109 – Mine Warfare Officer Course (Syndicate 1, Hunt 2 Sandown)

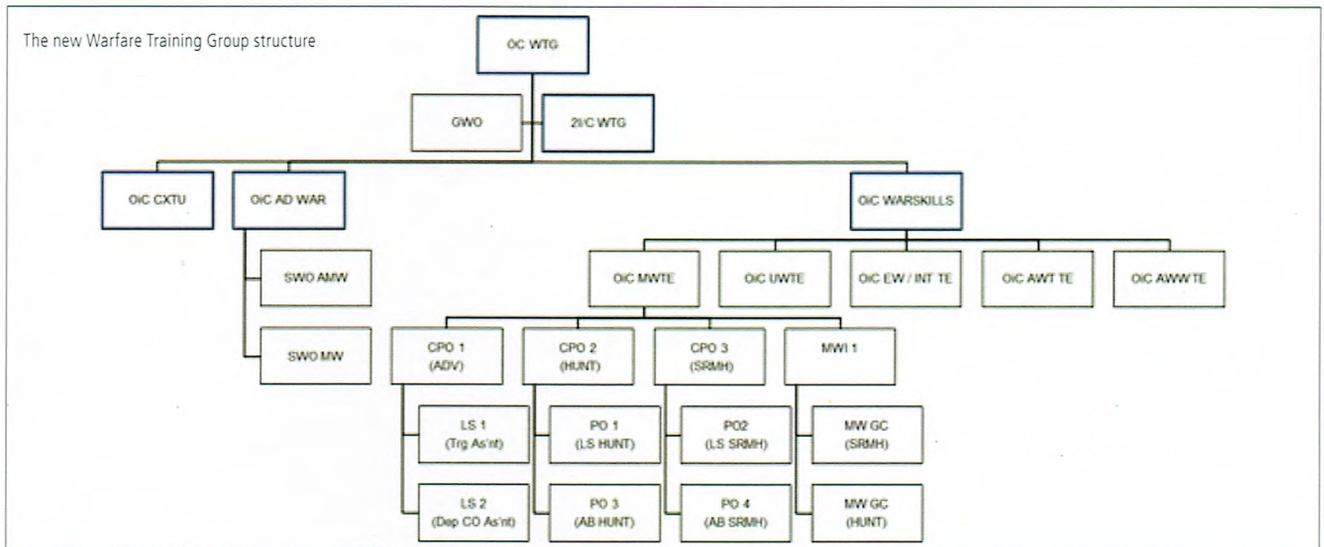
SWO AMW in ADWAR

- MW 110/203 – Advanced Mine Warfare Officers and SRs Course
- CMD 127 – MCM Squadron Commander Course
- CMD 130/132 – Hunt/Sandown-Class Commanding Officer Course.

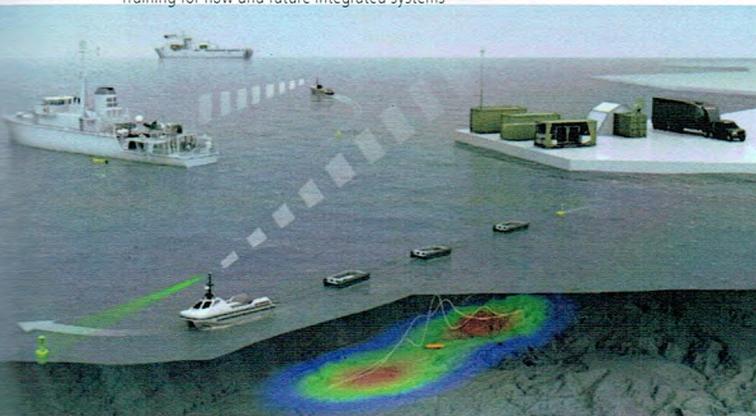
As you can see there is outwardly very little change to the training delivered despite this restructure and the section remains as busy as ever. This will be compounded by a new programme of international officers training and more pertinently, the move towards new technologies and systems such as ORCA and MAS.

The delay in upgrade of the simulators to ORCA will mean training for both Hunt and Sandown ships, regardless of fit, will be conducted on NAUTIS to train how to conduct MW. For those then going to ORCA ships further training with the Original Equipment Manufacturer (OEM) / on the job training will be conducted to understand how we 'push the buttons' of the new command system. This is not ideal but the only way that we can practically train career courses in light of the limited funding we receive.

MAS is already seeing service with WILTON and MASTT with the first Block 1 mission system due to be delivered to the Gulf by Dec 22. Training is currently conducted by the OEM and whilst these new systems are being introduced and trialled there is much work to do to develop doctrine and SOP for their use and to get personnel up to the required qualification and experience (SQEP). Our challenge within MWTE will be to identify how we train these systems with SQEP instructors so that this training can be bought in house and balanced with the requirement for Sandown and Hunt class out to 2025 and 2030 respectively.



Training for now and future integrated systems



In sum the last 12 months has seen a restructure of the WTG; MWOTC is now no more and out of the flames MW ratings and international training is now delivered by MWTE with MWO and advanced course training being catered for by ADWAR department. We remain however inextricably linked, supporting each other in delivery of the best quality training we can aim for and have much work to do in maintaining this quality of training whilst catering for new technologies and training requirements. We look forward to meeting most of you again at some point in your career progression either remaining in MCMVs or starting a new career in MAS and we remain keen for you to come to see us at any time for a chat or discussion of ideas.

A NOTE FROM OUR AFFILIATIONS TON CLASS ASSOCIATION

By Peter Down, Secretary



The principal aim of the TCA is to bring together in bonds of friendship all those who served in the Minesweepers and Minehunters of the TON Class, along with those who contributed in support roles. We do our best to recreate that “jaunty spirit of informality”, commented on favourably by our Patron, HRH The Prince of Wales, who commanded HMS Bronington in 1976.

These little wooden ships were Britain's main line of defence against the sea mine between the 1950s and 1990s. In addition to mine countermeasures, they engaged in duties as diverse as anti-piracy and anti-smuggling patrols, acting as diving platforms and, more pleasantly, defence diplomacy tasking in ports too small for larger RN vessels. They served in every ocean of the world, except the Antarctic, and saw action at Suez (twice), Cyprus, Malaysia and Borneo, the Gulf and Northern Ireland. Many a future Admiral had his first experience of Sea Command in a TON.

With over 1200 members scattered throughout 25 countries around the world, the TCA is one of the largest Ship and Class Associations. We have links with parallel associations in the USA, Australia, Canada, Norway and Belgium, with whom we exchange news and views.

More recently, we have extended our membership to those that served in the subsequent classes of MCMVs: Rivers, Hunts and Sandowns. We are open to all ranks, rates and specialisations who served in MCMVs of any class. We count Admirals and National Service Stokers among our members and all enjoy the reminiscences through our bi-monthly magazine **TON Talk** and our website www.tcaminesweepers.co.uk.

The TCA has always been open to, and derives great strength from, members of other specialisations who shared the close bonds and occasional perils of the world of MCM. This includes gunners, signallers, engineers, electricians, chefs, stewards, watchkeeping officers and most of all, members of the Royal Naval Reserve, who comprise nearly 20% of our membership.

We hold an all-ranks reunion once a year which alternates between venues in the north and south of England, and have been fortunate to attract some distinguished guest speakers. Whenever possible we invite representatives of an MCMV in refit to join us at this jolly. Additionally, our regional groups arrange social events locally. We feel privileged to be invited aboard an MCMV on their rare visits to civilian ports.

We try to keep in touch with the modern RN and MCM world by sending our magazine to each MCMV in commission and greatly enjoy reading their newsletters. Later this year a group of members has been invited to the Minewarfare School at HMS COLLINGWOOD for an update on technology and current practices and next year we plan to visit EGUERMIN, the NATO Minewarfare School of Excellence in Ostend for a similar update – plus some excellent beer and moules frites.

We may be the "Old and Bold", but we try hard to uphold the traditions of the Fleet in which we served and also to have FUN in gathering together. We would welcome more serving members of the RN and RNR to join TCA, perhaps to provide the next generation of leadership to carry our Association forward.



THE MINEWARFARE AND CLEARANCE DIVING OFFICERS' ASSOCIATION

By Graham 'Tug' Wilson MBE

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.



Many of you will already be members of the Royal Naval Minewarfare & Clearance Diving Officers' Association (MCDOA) and some of you may be thinking of joining, or perhaps keen to understand what this association is about and how it contributes to the wider MW and Diving community. This short article aims to provide a brief introduction.



MEMBERSHIP:

Full Members. Eligibility is automatic for all serving and retired Royal Naval Minewarfare and Clearance Diving Officers (MCDOs), Minewarfare Officers (MWOs), Clearance Diving Officers (CDOs), Officers who were qualified in Deep Diving (QDD) 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.

COMMITTEE:

President	Capt Roger Readwin RN
Chairman	Cdr Olly Alexander RN
Vice Chairman	Rob Hoole – RN Rtd
Honorary Secretary	Lt Cdr Ben Brown RN
Honorary Treasurer	Lt Cdr Peter Davis RN
Membership Secretary	Lt Cdr Al Magill RN – tbrb Lt F Baxter-Watt RN
Social Secretary	Cdr Chris Baldwin RN
Committee Member 1	Martin Holloway - RN Rtd
Committee Member 2	Graham Wilson - RN Rtd

VERNON MONUMENT:

Members of the association were prominent in the establishment of the Vernon monument at Gunwharf Quays (formerly the site of HMS Vernon) from its inception to delivery in March 2020.

It commemorates all those involved in mine warfare, be it mine design, mining, mine sweeping and mine hunting, as well as Service diving and Naval bomb & mine disposal – past, present and future. It also acts as a fitting mark to those who have died while engaged in such activities and is a monument to all who served in the establishment and its attached Units.

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 branch issues, but also on personalities, promotions and upcoming and significant events involving members of the association and of the Diving and Minewarfare branches as a whole. 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 Membership Secretary:

Alasdair.Magill152@mod.gov.uk or from
Q4/21 Fraser.Baxter-watt408@mod.gov.uk



