MCM2 & EXERCISE STRONG RESOLVE

MINEWARFARE AND DIVING

VOLUME 9 | AUGUST 1998

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MINEWARFARE AND DIVING

THE MAGAZINE OF THE MINEWARFARE AND DIVING COMMUNITY

VOLUME 9 AUGUST 1998

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EDITORIAL

Welcome to the August 1998 Volume 9 of the MAD Magazine.

Much has changed in the world of Minewarfare and Diving since the last edition hit your desk. We again have a 80m diving capability, a proven tropical capability in the SANDOWN Class, a new CDRE MFP, S of D, MCM, 2 and 3 and of course SDR, but more of that in the Foreword.

One thing that has not changed is your enthusiasm for avoiding submitting articles for this edifying tome, at least until the very last minute! This edition has been produced almost entirely in house by SMOPS Graphics Section. It will continue to be published only annually but the content and distribution have increased. Despite this, it has regretably still been necessary to edit out some of the pictures and visual aids provided in order to remain within budget.

Thanks are due to Cdre J Hance ADC for the use of his Graphics Section, to Cdr John Murphie for writing the Foreward which includes his hot off the press first impressions of the SDR and to all of you who did take the trouble to pick up a quill and inform the rest of us what is happening in your area of the branch.

I now hand over to Lt Cdr Graham Collins as Managing Editor and hope that for the next edition the same quality of articles will be forthcoming. For the last two years we have heard much from the various Headquarters so perhaps next year we could hear more from the coal face, after all it is there that the real business is done. So pick up your pen and start scribbling, the closing date for next year's edition will be APRIL 30th 1999.

FOREWORD

Foreword by

COMMANDER JDD MURPHIE
ROYAL NAVY MINEWARFARE DIVING AND EOD DESK OFFICER.
DIRECTORATE OF NAVAL OPERATIONS

I have been in post in the Ministry of Defence for 2 years ostensibly acting as the central staff advisor on Minewarfare Diving and EOD. In reality I am to persuade all with whom I come into contact that our three separate and complimentary skills provide vital enabling functions and are worth a continuing place in the UK force structure.

The Strategic Defence Review has had a hard look at how UK MCM (by MCM I include minewarfare, diving and EOD) is conducted and has endorsed our role. In addition further encouragement can be found in the emphasis on flexible, joint rapidly deployable forces, this is a direction in which MCM is already moving. Past crises have seen unsophisticated mines disrupt sophisticated operations and the momentum generated within the operation has been lost unless (or until) MCM is included in the force package. We have therefore had to be flexible, joint and rapidly deployable however, there is more potential for us to realise in this area.

To effectively contribute to a deployable force I see the emphasis continuing towards MCM systems which, once on task, can cover the ground much more quickly than currently. Complementing that, the continued efforts into MCM in shallow water will be a very necessary capability to have. particularly with new LPDs entering service. There will be many debates on what sort of shape future MCM systems will take: will they be housed in their own vessels or be bolted on to other ships as necessary? Whatever the outcome the experts will be required to procure, operate, interpret and advise on MCM.

The personnel measures announced will help considerably in retaining and recruiting; filling the gaps that so quickly snowball in ships and teams reducing morale and OC.

Finally a warning. Resting on past successes will not help prove the case for future equipment even with an SDR endorsed role. There is still a need for high quality exercises, preferably joint and combined, from which lessons are drawn and applied. This in turn will improve tactics and bolster procurement bids.

In short. SDR is good news. it points a way ahead and there is a distinct, challenging and necessary role for UK MCM.

On a different tack, it has been interesting to note letters in a recent edition questioning the future direction for our branches. This magazine should become a place where questions can be asked and answers prompted, policy should not be a secret, the only stupid question is one that goes unasked.

SUPERINTENDENT OF DIVING'S ROUND UP

By Commander D Hilton MNI Royal Navy - Superintendent of Diving

My aim for this issue of the MAD magazine, is to update you on how the management of the Clearance Diving branch has changed and mention some of the more important issues.

I thought a Fleet Diving Squadron (FDS) HQ article was appropriate, with a brief overview of the recently formed Fleet Diving Squadron including issues, such as Manpower, EOD/IEDD, UWE and diving equipment.

Firstly, having been away from the diving branch for 3 years, I was most impressed by all the good work and changes my predecessor, Cdr John Arrow achieved over his time as Superintendent of Diving (SofD).

I am equally excited by the potential for work that needs to be done in terms of equipment, concepts and in managing a new developing organisation so that Diving, Underwater Engineering (UWE) and EOD, fulfills its proper role and integrates with other areas of warfare.

FDS - Introduction

You should all be aware that the Fleet Diving Squadron (FDS) was formed in Mar 98. At the beginning of 1996, most Royal Navy diving and EOD forces came under Flag Officer Surface Flotilla type command. Those which did not, the Diving Elements in Hong Kong and Gibraltar, came under his functional authority for procedures and standards, exercised in turn through Commodore MFP and SofD. At the same time, and as a result of the demise of the Area Flag Officers, the former Port Clearance Diving Units were amalgamated into 2 Area Diving Groups, which with the Fleet Diving Group, came under SofD as a Squadron Commander. With the increasing demands for diving and EOD skills to support the Fleet, amphibiosity, Special Forces, MCM and forward engineering, this change was timely and entirely appropriate.

There are 3 Diving Groups under Cdre MFP, made up of a total of 7 Units each led by a LtCdr or Lt MCD. Each Unit is specialised to some extent, but is largely able to provide mutual support to other Units, to maintain a broad level of experience, and to compensate for manning shortages and short term over-tasking. One of the key benefits of bringing the 3 Groups under single FOSF type command at the beginning of 1996, was this ability to command and coordinate the 7 Units easily to a single purpose when required. This change has enabled us to improve our effectiveness and flexibility as part of the Surface Flotilla.

Although there are a lot of very exciting developments, they do require manpower. If I was to state my one overriding problem area, affecting readiness and capability, it would be manpower, particularly at the Able Diver Rate. I have therefore included a Manpower article in this issue.

I am convinced that with the introduction of Investors in People (IIP) used primarily as a business management tool it will improve our business performance further by developing a more highly skilled and flexible workforce. The aim of IIP is that what people can do - and are motivated to do - matches what the organisation needs them to do. The FDS is formally committed to the IIP process, with accreditation planned by Dec 98.(A full explanation of IIP is contained in Cdr Wellborn's article on page.43)

In summary, it is encouraging to see so much progress being made across the whole spectrum of military diving. There is a new military poignancy to our role and as budgets become tighter the importance of naval diving, in particular with Underwater Engineering, is becoming more widely recognised. The long awaited new equipment is coming into service and a more efficient management structure has been developed. The management changes will help us focus and maintain our capabilities with a leaner budget whilst retaining the flexibility to meet wide ranging tasks.

It should be noted that in the current financial climate where budgets are scrutinised and tasks justified at all levels, the need to look constructively at saving measures, however small, is a constant necessity.

Every branch in the RN has its problems; some are worse than others. I saw this in my last job and whilst we have several challenges ahead our future prospects are very encouraging for all involved in Military Diving. My HQ Staff will continue to welcome your invaluable inputs and give guidance on all related subjects.

I look forward to diving with you in the not too distant future.

Safe diving.

THE MANPOWER EQUATION

By Lt Cdr Mike Allen
Deputy Superintendent of Diving

THE MANPOWER EQUATION

This is an emotive and, as I have discovered, a complicated subject. I am going to try to explain in this article why it LOOKS so bad and why some decisions made by the MOD seem peculiar. We have two problems; manning and advancement.

MANNING

Let me begin with numbers. As of the 1 April, the Diving Branch Manpower numbers look like this:

	Bearing	Actually Borne
WO	10	10
CPO	26	26
PO	47	49
LH	73	72
AB	119	105
Totals	275	262

People are always joining and leaving the Navy; we are a dynamic organisation. For the Diving Branch these are the numbers leaving up until Dec 1999, based on their terminal (TX) date:

CPO	- 5
PO	-12
LH	- 6
AB	-12

People are also joining. These are the DDS courses for Able Seaman (Divers) [17 weeks] currently running or expected:

Cse 116 (ends 3/7/98) 6 Students 5 Passes expected
Cse 117 (ends 13/11/98) 12 Students 8 Passes expected
Cse 118 (ends 5/3/99) 12 Students 9 Passes expected
Cse 119 (ends 11/6/99) 12 Students 8 Passes expected
Cse 120 (ends 10/99) 12 Students 9 Passes expected

Notes:Course 120 not yet planned in detail.
Total for all courses = 39

On the courses above there will be both the usual sideways entry and the new direct entry diver. The pass rate is an estimate based on both previous years and new entry training factors. We shall all have to wait and see how it works out, but a word of caution; do not rely on the figures of only one or two courses.
Let's wait at least a year before revising estimates.

If you follow the logic from the tables above we can deduce that something like the following will happen up to Dec 99:

* If 5 CPOs leave 5 POs can be selected for promotion to CPO during 1998.

* If 5 POs are promoted and 12 leave, 17 LHs can be promoted PO.

* If 17 LHs are promoted and 6 leave, 23 ABs can be rated LH.

* If 23 ABs are promoted, 12 leave and 39 pass the course there will be a net gain of only 4 ABs.

A shortfall of 10 ABs will still remain.

The shortage is not good but is containable. We are hoping that an additional course can be run probably late 1999 or early 2000 but it is not as simple as just saying 'run another course.' The teaching staff have to be found and facilities and resources budgeted for. A 17 week course does not appear by magic wand - and if the DDS had people available for 17 weeks with not a lot to do they wouldn't be there - we're short of ABs, remember!

In short, the numbers should slowly get better but it will take probably two years to reach equilibrium. In the meantime please bear with us.

ADVANCEMENT

This is a more complicated problem because Branch size, Rate ratio (the number of people at different ranks/rates to build 'the pyramid'), wastage rate, (the number expected to leave), 'driving Rate' (varies but in our Branch the PO(D) - the man we need for the sea billets) and one or two other, whole Navy, long term factors, all effect how our branch is manned, advanced and extended in service.

The diving branch does not have a good advancement rate, but it is by no means the worst - average waiting time for a B13 for PO(D) is 6 years; PO(SE) is 7 years, PO(Steward)(SM) is also 7 Yrs, PO(AH) is 9 years! Average waiting time for a B13 for LS(D) is 6.5 years; LSteward(SM)is 8.5 yrs, LH(AH) is 6.5 yrs, LWEM(R)(SM) is also 8.5 yrs, Also remember that only a small number are going to make it to the top regardless of branch (or rank or rate), Look again at the table at the beginning. From 105 ABs we need only 10 WOs.

So we are not the worst for advancement but over the years several things have conspired to make us less than the best:

Continued...

THE MANPOWER EQUATION

Sideways Entry. For the last 15 years everyone who joined was about 24 or 25, some even older. Starting a career at that age always puts people behind their contemporaries.

Direct Entry. Up until 15 years ago we used to take Direct Entries. Those DE are now in the WO/CPO and PO billets. They are young(ish), and still have some years to serve.

Drawdown. The writing was on the Berlin Wall as they were pulling it down. The Armed forces had to be cut. The Diving Branch shrank. Many SR jobs were cut and people made redundant, recruiting was significantly reduced and the pool of sideways entry candidates began to dry up. The SRs remaining were young (mostly Direct Entries!) with plenty of time still to serve. The JRs on the other hand were not offered redundancy. They were expected to reduce by the process of 'natural wastage'. (About the same number of people leave whatever job every year, regardless of how well paid, easy or challenging it is. Politics, showbusiness, sport. Everywhere, it happens.) But in some branches they did not leave in quite the expected numbers. The Diving Branch was one of them, because .....

Contentment. It sounds naff but being a diver is one of the best jobs in the Navy. Its demanding, challenging and interesting. We go to places few others see and work. The Regulating Branch does not work with the Police as often as we do, for instance. We work in small, close knit Units (almost 'families') where lives can depend on the actions of each of us. When things go wrong we all apply ourselves 100%, regardless of rank, race, colour, creed, religion or anything else. If a 'buddy' is in trouble; we go for it. Difficult to achieve in 'civvy street'. Outcome; most of you want to stay. Touching, but true!

So if advancement is slow why do we still offer 2OE and 'fifth fives'. The answer to this is long term planning. The plots run by the MOD look up to 10 years ahead. That is, in 6, 8, 10 year's time we need a structure that has both experience and youth. So there will always be a proportion of CPOs on 2OE and, in the future, POs on fifth fives. There will also be about the same number leaving time expired, some having completed 2OE, some a fifth five and the rest their normal engagement. It does not significantly affect the number of people leaving year on year. The promotion ratio remains the same. In fact, it is better than that because the people selected are GENERALLY Warrant Officer candidates and may be promoted out of the CPOs roster early. Now, having spoken to members of 'The Boards' I must emphasise there are no 'rules' to selections for promotion, 2OE or fifth five. BUT, with so many good candidates the Board usually comes down to four or five with only one or two selections to make. Weighting may then be applied to those who have completed POLC and are confirmed. Account may also be taken of those Qualified Educationally for Warrant Officer (QEWO). This increases the pool of candidates for promotion and thus improves the chances of those further down the ladder moving up.

In summary, we are short of ABs but the situation will improve, albeit slowly. Not everyone will achieve advancement to the rate they would like but there IS movement and although competition is stiff, those who work hard and stick with it will be rewarded.

Final Point. Some of you have complained to me that you have insufficient time left to achieve PO and then serve the full two years for a POs pension. Firstly, with fifth fives being introduced for POs some will achieve it. Secondly, after 12 months you get the pension of the rate you are in on termination at a pro rata basis, i.e. PO for 18 months will get 18/24ths of the full POs pension plus 6/24ths of a LH pension.

I hope this helps explain a little of the mysteries of branch size and advancement. Over the next 2 years advancement and manning will improve.

DIVING EQUIPMENT UPDATE

From the Diving Inspectorate:

Here are the latest developments in the seemingly fuzzy world of equipment procurement!. Believe it or not there are a large number of dedicated people beavering away in the backround, finding the money and then the right equipment to meet the military requirement.
Because we are spending Public Monies, it sometimes takes years to develop and sustain the justification for new or even replacement of old equipment. The last two years has seen the culmination of this effort.

DIVING EQUIPMENT UPDATE

CDBA This set featured strongly in a previous issue of the MAD Magazine and I will not "stop" too "deeply" on it, except to say that it is now in-service as a proven 80 metre diving system. Fleet training has commenced and CDBA conversion courses will continue for the next 2 years. Ancilliary equipment to enhance CDBA has been approved and is in the 1998/99 procurement programme which include comms and a diver-surface-diver visual data link.

LEBA(MG) This has been procurred as a 24 metre extended duration shallow water swiming set and has achieved acceptance after rigorous trials. A capable diving set with which the users are extremely pleased and like the CDBA is at the cutting edge of diving technology.

Type C CC This chamber is nearing completion and delivery to the first SRMH is imminent. A two compartment chamber with a built-in computer controlled, closed circuit, breathing system. These CCs will will turn each minehunter into an autonomous and extremely capable diving platform and support 80 metre diving.

SABA This is the old DSSCCA, fitted with a Stab Jacket and renamed to better describe it's military use. Conversion courses are underway and feedback from the Fleet is extremely encouraging.

SDDE SDDE has been rationalised and will become Surface Supplied Diving Equipment SSDE. KMB 10, which served us well for many years, has been replaced with Heliox 18 Bandmask and Superlite 17 helmets. The whole range of equipment under the SSDE umbrella is under review and procurement of sub-systems, such as the HP air panel and underwater lighting, is iminent.

Underwater Habitat The habitat is designed to fit around a CPP propeller and allow a blade change in the dry. It works extremely well, SDG can confirm, and adds significantly to the Service diver capability in support of the Fleet.

Future Equipments Through Water Communications is currently on trial, the primary aim to give all air divers, verbal communication with the diving supervisor.

Ancillary Items Personal dive light, lost diver markers, replacement dry suits, direct feed suit-inflation, under-water lighting, underwater navigation and sub tugs are just a few of the projects under curent consideration.

These achievements are considerable and perhaps co-incidental, falling as they have within the last 18 months. In fact, they are the culmination of many years of planning, budget bidding, negotiation and equipment scrutiny. There is an ongoing commitment to monitor the commercial and recreational diving equipment market in order that we can bid for the best to support the Military Purpose.

EOD UPDATE

As ever the naval EOD Operator is a busy man with the last year seeing a continuing rise in tasking for the Area Diving Groups. Whilst Conventional Munitions Disposal (CMD) continues to account for the majority of tasks (93%) IEDD tasking has also seen a small rise. Across the board the Area Diving Groups conducted a total of 888 reactive CMD tasks during 97/98 ranging from pitch filled shells in aggregate yards to 500LB aircraft bombs and large sea mines. With the re-organisation of the Fleet Diving Group FDU3 have taken on Mine Investigation and Exploitation (MIE) and are working closely with DERA(Bincleaves) to develop exploitation techniques.

Although no new equipment has recently been introduced there are several new areas that are being developed and will start to filter through over the next couple of years. In the short term the **UXO monitor** is due to arrive in 99 which will provide an integrated suite of sensors including cameras, stethoscope, temperature gradient sensor and a chemical sensor remoted to the command post/vehicle. Our current range of **EOD tools** is now outdated and not suited to modern ordnance and two new toolsets, one for general EOD and the other specific to MIE, are due to be trialled in Jun 98. **Abrasive Cutting Equipment (ACE)** is a hydro abrasive cutting system designed primarily as a case entry tool but unlike its predecessor, trepanner, it is capable of much more and promises to be a valuable EOD tool, especially on large ordnance where removal or high order is not acceptable. The in service X-Ray equipments, **Inspector** and **Whale/Andrex** are coming to the end of their useful life and replacements are being progressed for both. A rolling replacement programme should see replacements for both the X-Ray sources and developing systems within the next 5 years with a possibility of real time X-Ray further down the line. The computerised EOD database, **ASH**, is now progressing after a somewhat unfortunate few years and major improvements are being made to the software with the aim of having a useable tool available to the operator in the near future. Much of the above require us to get the ordnance from the seabed to the surface/beach and to this end an improved **Enclosed Mine Lifting Bag** is currently going out to tender. The resulting bag will give units a 500/1000Kg lift capability with remote initiation and controllable lift. The performance of **LMDE** is also being examined in light of the developing threat and potential replacements investigated. In demolition's the lead sheath in CLC contravenes H&SE guidelines and it's replacement,

DIVING EQUIPMENT UPDATE

BLADE, a similar shaped charge encased in foam has now been successfully trialled underwater although an acceptable means of detonation requires developing before it can be utilised by a single diver in the MCM role. **CMD boxes 1 & 2** have also been modified to allow closer compliance with ferry company regulations whilst giving the operator extra options in his approach to the task. The type of vehicle that CMD is conducted from is also under review with the current combination of Ford Transit and Landrover proving unsatisfactory in several aspects. In the slightly longer term **remote vehicles** and other remote techniques, already extensively used in IEDD, are being developed for the CMD task with the aim of moving the operater further from the danger area. The aim is that many of the equipments listed above will be deployable on an RCV platform. Several prototypes have been deployed in Bosnia and whilst currently none is ideal they provide a useful base on which to build.

Turning to IEDD, despite the current cease-fire and ongoing peace process in Northern Ireland the IEDD threat on the mainland remains all too real. Currently the RN fields 4 teams which are declared to the Joint Services EOD Operations Center at Didcot for deployment in support of UK mainland Civil Powers and conducted 46 tasks over the previous year. Additionally FDU1 provides a light weight team specifically aimed at countering an IEDD threat in the MCT environment. Furthermore, recent changes to IEDD training and the establishment of Exercise Resurgent has seen numbers of licensed operators rise from a low of 3 to our current standing of 15. Notwithstanding a significant PIRA campaign prior to the General Election the principal mainland threat remains the criminal element and the thrill seeking nutter (sorry - disaffected person !). Added to this is the proliferation of Internet sites listing how to make homemade explosives and bombs coupled with no shortage of schoolboys willing to give it a go (one was even caught selling bombs to his mates at school). The recent exposure of the Mardi Gras Bomber as a pair of genial old pensioners highlights that anyone can be a threat.
With the exception of the MK8b wheelbarrow there has been little visible movement in IEDD equipment, however an extensive development programme is currently examining all areas of IEDD operations and promises some significant developments in both techniques and procedures in the future.

The FDS HQ EOD team:
SO EOD - Lt Cdr (Dave) BATE Ext 4121
InspEOD - WO(D) (Andy) BRUNTON Ext 4137

EX RESURGENT

In early 97 IEDD pre-licensing training started out with the RAF at Ashfordby Gun Range in Leicestershire (an old WWII naval gunnery range). Unfortunately just as we got into the swing of things the H&SE intervened and banned all training at the site. Left up the proverbial creek without a paddle we cast our eyes around for a suitable venue, not an easy task when you consider that we want to fire explosive weapons in a built up area. After several options proved unsuitable a site offering restricted access and consisting of several multi story buildings and a number of roads and outbuildings, allowing a comprehensive series of scenarios to be run, was identified in Portsmouth. More significantly, with the exception of the adjacent nudist beach, there is little public access allowing the safe firing of weapons . Exercise Resurgent was born.

Exercise Resurgent runs from Tue to Thu in the week before each relicensing period and is intended to focus the IEDD operators skills and ensure they are up to date with current techniques and threats. It is co-ordinated by Insp EOD and supported by the Area Diving Groups with Directing Staff assistance from the Royal Logistics Corps (RLC) and Hampshire Police. Realistic devices are 'manufactured' over the proceeding months and are based on real devices that have been deployed on the mainland. A wide range of scenarios ranging from PIRA radio controlled devices to schoolboy pranks are set up based on recent incident reports and the perceived mainland UK threat. The teams are tasked with minimal information and expected to extract the required information from police and other witnesses. Operators are then required to assess the problem and deal with the device, usually employing both remote and manual techniques with full forensic considerations. At any one time up to three teams can be on the ground at various stages of a task that may last from one to two and a half hours.

For anyone with a professional interest Exercise Resurgent provides an ideal opportunity to witness IEDD operations at first hand and, although numbers must be restricted, visitors are welcome. Anyone wishing to attend as an observer should contact Insp EOD at Fleet Diving Squadron Headquarters.

DIVING IN THE RNR

DIVING IN THE ROYAL NAVAL RESERVE

by CPO(D) BOB HAYTER

Before the 1991 "Options for change" review of the Armed Forces, the RNR contained 3 classes of divers; Port, Ships and Clearance Divers.

Port Divers formed the original RNR Diving Teams and were based at 5 RNR divisions (FLYING FOX, EAGLET, SUSSEX, CAMPERDOWN AND PRESIDENT). The Port Diving teams consisted of ex-RN regular divers with the minimum ship's diver qualification, or divers recruited direct from civilian employment. The latter underwent the necessary training at the RN diving school, HMS VERNON.

The primary role of the Port Diving teams was to support the UK war plan, to assist in the defence of ports and anchorage's and to work closely with RN diving teams. The RNR Port Divers disbanded on 1st January 1992.

The original function of the RNR Ships Divers was to feed the Port Diver Branch. Ships' Divers were employed at all of the above RNR divisions. Each team consisted of between 6 and 14 qualified divers and was capable of supporting the diving tasks required on the MSFs and other craft that were berthed at the units. They remained in-date by conducting ship's bottom searches, underwater ship's husbandry tasks and seabed searches.

In June 1993 a further review, aimed specifically at the Royal Navy Reserve, resulted in the closure of all teams except those at HMS FLYING FOX, EAGLET and PRESIDENT. The training of RNR Ships Divers had ceased at around the same time as the Port Divers were disbanded, and then, in 1994 the remaining RNR Ships Divers were also formally dis-established.

Until the mid 1980s the RNR contained only Port and Ships Divers. It was recognized then that there was also a need for a small nucleus of RNR "Clearance Divers", who would be available to supplement the Regular diving strength during periods of national tension or war. This initiative was modelled on the successful Fleet Air Arm RNR Branch. For the formation of the RNR CD branch the personnel recruited were ex-RN Divers who were then employed in the commercial diving industry. Employing only ex-RN Divers meant that only minimal training was needed to ensure rapid integration into the Area Diving Units. The RNR Clearance diver continues to flourish today.

Every member of the RNR CD branch has to complete a minimum of 12 days training per annum to qualify for their RNR bounty. This is a tax free sum paid every year in May. The training can be carried out at either the Northern Diving Group at Faslane or with the Southern Diving Group in either Devonport or Portsmouth. There is no requirement for RNR CD's to attend evening training sessions at RNR units. All training is co-ordinated through the Inspector of Ships Diving who is the branch manager.

The time spent training is designed to enable all personnel to maintain a satisfactory level of knowledge in current military diving practices and they can therefore expect to work alongside their RN colleagues. Often, the experience of the commercial diver can benefit the Diving Team and help improve techniques in underwater engineering.

Opportunities exist for RNR CD's to fill gapped billets within the diving branch under the Full Time Reserve Service (FTRS) scheme. Under this scheme personnel can serve in a gapped billet for a fixed period of between 3 months and 2 years. While serving under FTRS the RNR Rating or Officer can claim all the entitlements of the regular serviceman, with the potential to extend the length of contract if the billet remains gapped.

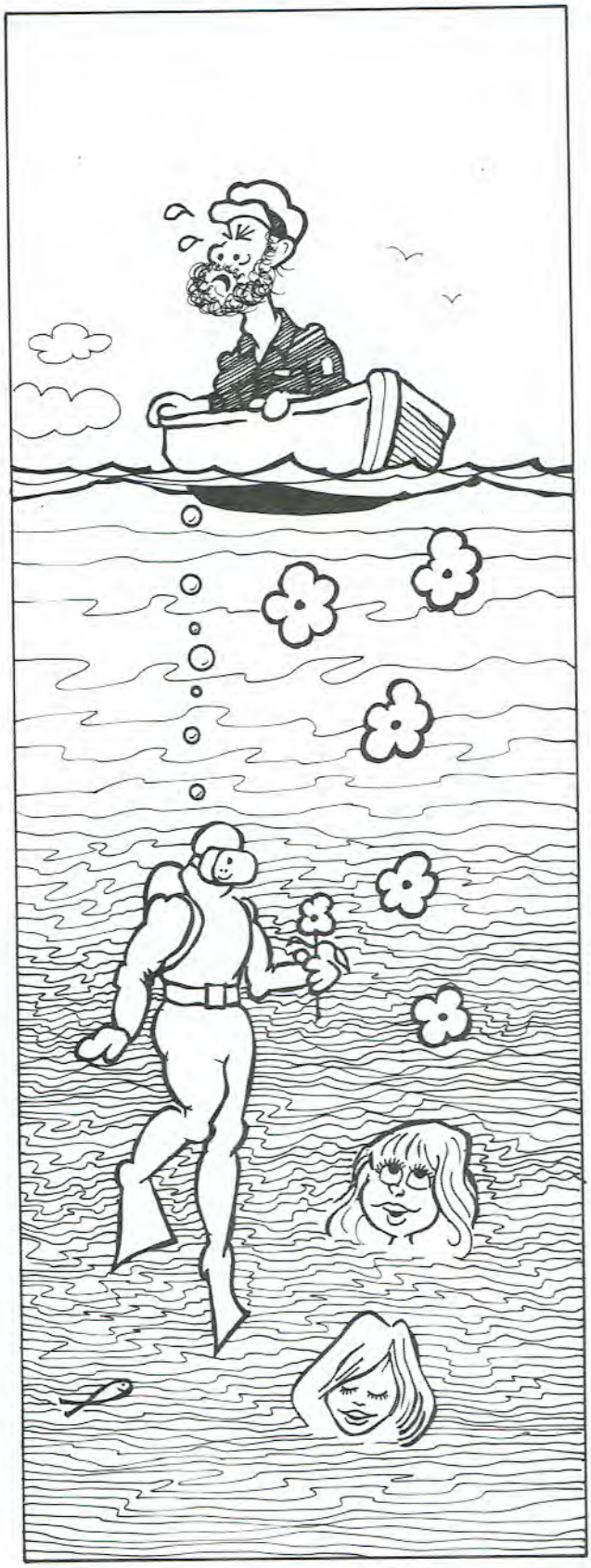
Currently there are vacancies for all ranks within the RNR CD branch. RNR personnel are paid on a comparable rate to that of their full time counterparts, being paid for every day they work. The tax free bounty mentioned above is paid in addition to the basic wage.

The upper age limits for joining are 40 for Junior Rates and 45 for Senior Rates. So, if you are leaving the service but would like to maintain your links with the RN, this is the way ahead for you. Most of the joining administration can be completed before personnel leave the RN, permitting immediate entry to the RNR. Entry within 3 years of leaving the RN entitles the maximum bounty to be paid, (currently £525 per annum) providing the required training time is achieved.

If you are interested in joining the RNR Clearance Diving Branch, or would like any further information the first point of contact is:

CPO(D) BOB HAYTER
Inspector of Ships Diving
Fleet Diving Headquarters, Reclaim Building,
Horsea Island, Cosham, Portsmouth,
Hampshire, PO6 4TT.
Tel: Mil: 93832 4116 Civ: 01705 224116

CDBA CONVERSION



JUST A DIT TO WHILE AWAY A MINUTE

By WO(D) TIMMS, Inspector CD.

Just a couple of days ago I returned from CDBA Conversion Course number 1 where I formally qualified as a CDBA Supervisor, but alas not as a diver. I wanted to give a 'Chuck Up', to CPO(D) S BIELBY and his '2nd Dickies', all of whom are on the training staff of DDS, who have taken the complexities of the CDBA and its associated equipment and procedures and turned them into a training course that is concise, understandable and 'passable'. It was good to see user and supervisor equipment confidences grow throughout the course. The last days deep diving was spent conducting minehunting type dives to 60m... without stops!

Don't let me sow the seeds of complacency. Studying during the course and professionalism is required throughtout. As a word of warning, don't forget that CDBA course attendees are reentering the training environment! Make sure any evident rust resting upon basic drills, regulations and procedures is well 'oiled' (and don't forget to arrive at DDS with your Uni-suit as detailed within the joining instructions you will all receive eventually.)

On a lighter note, if weather and time permits the last days diving on the CDBA course is a 24m swim to allow users to ensure that their buoyancy, trim and more importantly ascent rates are correct (1 metre every 4 seconds, yes I'm right, you'll learn) without the aid of a shot rope. On completion of the last 24m swim an AB(D) was heard to say that his dive had been 'Pretty', I shuddered as I gave a thought to all those old Chief divers of yesteryear turning in their watery graves.

A pretty dive! I must add that to the list of definitions within the 2806!!!

The name of the AB(D) I will withhold, because I would not wish the man concerned to be further ridiculed ... but if I'm asked!

yours Aye.

CPP BLADE CHANGE USING INFLATABLE HABITAT

CPP BLADE CHANGE USING INFLATABLE HABITAT – HMS BIRMINGHAM, MARCH 1998

By Lt Mike McLachlan
Support Engineer Officer (Diving)

Introduction

The concept of changing CPP blades whilst afloat was developed in the early 1980's and was first used during the Falklands campaign during 1982. There have been improvements in the technique used over the years; the introduction of Hedley Purvis hydraulic bolt removal and torque setting tool to replace the large spanners and chain hoists originally used and the introduction of nylon blade bolt covers to facilitate underwater blade change.

The latest development is the introduction of an inflatable habitat, giving a safer working environment for divers and the ability to carry out NDE on the crankring whilst afloat.

In September 1997 members of the Southern and Fleet Diving Groups undertook an aquaint course in the use of the habitat at F J Marine Services (Norwest Divers). This course was arranged by ME 212 as part of a plan to improve the procedures for CPP blade change afloat.

This article details the use of the habitat during a CPP Blade change and repair to HMS BIRMINGHAM's Stbd shaft in March 1998 at Portsmouth, by members of the Fleet Diving Squadron.

HMS BIRMINGHAM Repair

HMS BIRMINGHAM sustained damage to her Stbd propeller and hub when the ship picked up a berthing hawser whilst transiting a lock during a routine visit to Amsterdam. BIRMINGHAM's Ships divers worked to clear bights of steel wire rope and berthing hawser from the propeller for approximately 3 hours and were then assisted by a salvage company to cut off remaining bights, to allow full ahead pitch to be applied prior to the transit back to Portsmouth with a locked shaft. Unfortunately the visit to Amsterdam was cancelled.

Southern Diving Unit 2 (SDU 2) were tasked by CFM Portsmouth to clear the remainder of the foul screw and carry out a shaft survey. 6 turns of 50cm berthing hawser, the remains of the steel wire rope and the rope guard were subsequently removed at fountain lake jetty in very poor visibility.

A video survey was carried out of the blades and hub, witnessed by the ships MEO and ME 212. Due to the extremely poor visibility, with the video camera only able to obtain a picture at a maximum of 2" from the blade, the resulting video was not of a good quality and did not give a true indication of the damage (similar to misleading, magnified, results that can be obtained with an endoscope).

After discussions between the ship, ME 212 and MSM/W1, SDU 2 were tasked to replace one damaged blade and dress the damaged areas of the other blades in the Habitat. Other work included replacing wire locking on the hub protection plate bolts, replacing the damaged after rope guard and measuring A bracket bearing clearances with feeler gauges.

To assist the underwater repair the ship was moved to a non-tidal berth in 3 basin, which gave far better visibility.

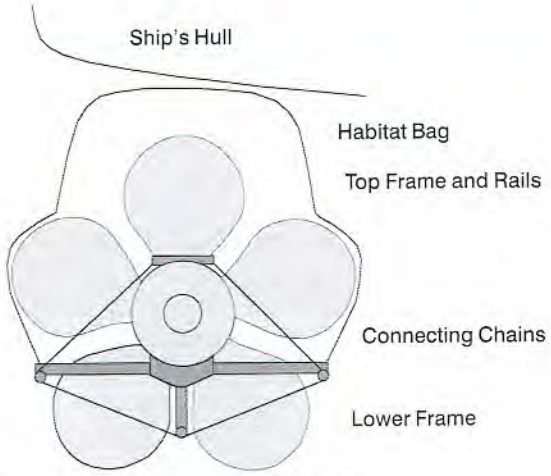
SDU 2 had severe manpower restrictions and therefore, to enable the repair to be carried out, assistance was requested from Southern Diving Unit 1 (SDU 1) and Northern Diving Group (NDG). The WO Fleet Diving Group (WOFDG) and the Support Engineer Officer (Diving) from FDHQ were also on site to ensure a sufficient number of Habitat trained personnel. CPO(D) GALE of SDU 2 supervised the diving operation as SDU 2 were the lead team for the evolution.

General Description of the Habitat

The inflatable habitat was designed and built by Fred Mcnally and Dave Taylor at F J Marine services (Norwest Divers) and first used in 1995.

The habitat is a reinforced coated nylon "bag" (similar to a parachute style flotation bag) which is inflated over the hub, enclosing the blade at top dead centre and the upper portion of the blades each side. The bag is connected to, and supported by, an inverted A frame slung underneath the hub. A top frame, with rails, is positioned over the hub to carry a wheeled trolley to assist in the blade change operation.

CPP BLADE CHANGE



General Arrangement of CPP Habitat

Diving Equipment

Rigging of the habitat is conducted with the diver wearing in-service surface supplied diving equipment (KMB 17 or 18) but using a small bale out cylinder and a 40M umbilical.

To work inside the habitat safely it is essential that the divers come off gas, unclip their umbilical and remove weights and fins. The edges of the blades are sharp and an umbilical continuously chafing against the blade edges would be liable to fail. Additionally there is only limited space inside the habitat and the ability to erect and operate lifting gear and Headley Purvis bolt removal equipment would be seriously hindered if trailing an umbilical.

To enable the diver to easily remove and replace his facemask, a hybrid surface supplied diving equipment has been designed, with consultation with Inspector of Diving. This equipment consists of a surface supplied, positive pressure AGA mask, worn with a simple harness. This equipment is solely for transit between surface and the habitat. Once inside the habitat the mask and umbilical are removed from the diver and stowed in purpose made pockets adjacent to the point of entry. A secondary air supply for the divers is supplied by connecting a first stage reducer with hose, second stage demand valve and mouthpiece to the small baleout cylinder. This can be worn by the diver, strapped to his leg, for ease of use in an emergency.

This hybrid diving equipment was unfortunately not available at this time so dispensation was given by Superintendent of Diving to use KMB, without a baleout cylinder, for transit between surface and the Habitat. The disadvantage of using this rig was the difficulty donning the mask prior to exiting the habitat.

Rigging the Habitat

Prior to rigging the habitat the damaged blade was positioned at TDC, with 19 deg AH pitch applied, the CPP system was isolated at the OT Box, and the ship tagged out for diving.
The first diving task was to remove blanks and bolt a pad eye to the hull above the blade at TDC. Experience has shown that the pad eye positions differ from ship to ship; a Type 42 rarely has a pad eye position directly over the blade. BIRMINGHAM's were displaced about 1m aft and 0.75m fwd of the blade.

The upper frame was then assembled on the hub over the blade at TDC. The frame is of a 2-piece construction with saddles that position over the hub and support rails which run along the length of the hub, protruding forward and aft of the blade. The frame is secured with spansets around the hub.

The lower frame was assembled ashore and got ready to be slung vertically into a position outboard of the lower 2 blades. The dockyard crane driver failed to turn up, reporting that no cranes could operate in the dockyard due to high winds. A bottom line was rigged and the lower

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frame was then manhandled into the water. Once in a vertical position outboard of the blades the securing chains are connected to the top 2 legs of the frame and the outboard side of the top rail. Flotation devices (air bags) are inflated on the lower legs of the lower frame to allow the frame to be floated into position against the underside of the hub, with the lower blades protruding through. The inboard chains are then connected between upper and lower frame and bottle screws tightened to secure the 2 frames to the hub.

During this time the ship was hastening the replacement blade, which duly arrived, along with a mobile crane from CFM. The blade was positioned and secured on a trolley and slung into place on the rails at the fwd end of the hub, then secured with 2 spansets. This evolution did not go as planned; There are inherent problems with the sling design, which hindered slinging the blade and trolley into the confined space between the hull and the top of the rails. The slinging plan was flawed as there should have been a chain hoist on the end of the crane strop to facilitate lateral movement onto the hub and the blade was not correctly aligned on the trolley to allow the wheels to locate on the track due to the limited clearance between propeller and A bracket.

The other trolley was then located on the rails aft of the damaged blade. The habitat bag was then prepared for deployment by binding with rope along its length to minimise the amount of trapped air and then lowered upside down into the water. It was still a struggle to get the bag to leave surface; a down line connected to the top of the bag would have aided this process. Once the bag was under water it was opened out and lowered over the hub and blades, with the seals positioned fwd and aft as marked, and the rest of the material positioned to line up the ends of the restraining strops over the bottom frame.

The seals are made with 1" neoprene strips between the habitat material and the hub, which is then tensioned with a spanset. An additional spanset is placed over the seal, close to the habitat body. The habitat was designed for a Type 22 hub, which makes it difficult to obtain a seal at the A bracket on a Type 42 due to the small dimension of the flat area between rope guard and A bracket legs (approx 70mm). The after seal is also troublesome; it is necessary to rig retaining strops on to the spansets to prevent the seal sliding off the cone on the hub. (Type 22 has a divergent nozzle)

The 8 Habitat securing strops were then shackled to the bottom frame, with a further 2 strops secured by a metal bellyband beneath the hub. The 2 "ears" were then secured to the lower frame and reduced HP air applied to inflate the habitat. During inflation problems arose due to the "ears" being secured too close to the frame. The retaining ropes were slackened off and inflation continued. A good seal was obtained but the strops around the fwd seal took up no tension. Initially the problem was thought to be due to incorrect rigging of the strops and bellybands, but further investigation found the obstacle was due to the connection at the top of

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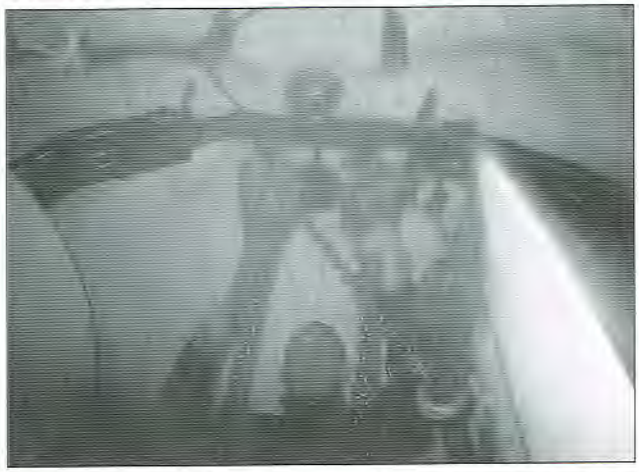
the bag to the pad eye. The pad eye was not directly over the blade and was causing the bag to tilt forward, preventing the strops taking any strain. The bag was again deflated and the decision made to remove the connection to the pad eye. A good seal was then obtained.

The divers then had a good check round prior to entering the habitat. Once inside the habitat the diver removes his weights and fins and then comes off gas. The next task is to rig secondary



air supplies, lights, communications and a video camera. The habitat is supplied with a continuous supply of reduced HP air (4 bar) from the charging panel in the dive store, to ensure a safe, breathable atmosphere at all times. To prevent the reducer lifting the pressure relief valves on the charging panel it is necessary to isolate the charging panel and HP air reservoir on the quarterdeck from the HP air ringmain and reduce the pressure to below 207 bar. In the event of a ship emergency this section can easily be reinstated and diving halted.

Blade Change

An "A" frame is erected inside the habitat to act as a strongback for slinging the blades. The frame is located on the ends of the upper frame and secured to the top of the habitat to prevent movement whilst slinging. Once the frame was rigged the blade bolt covers were drilled, tapped and pulled out then the blade was unbolted using Hedley Purvis gear. The blade was then lifted using 2 lever pulls slung from the lifting frame. The trolley aft is slid into position under the lifted blade and the blade then lowered. The trolley was then pushed back to its original position. There was some concern prior to this stage with regards to oil spillage from the hub, even with the CPP system isolated at the OT box. Dryzit bags were positioned between the blade root and the rails to soak up any spillage, should it occur. In practice it was found that if the pressure in the Habitat is greater than the head of oil in the hub there was no spillage. Once the blade was removed the exposed crank ring was evacuated of surface oil using a hose connected to a container at the surface (habitat pressure forces oil to the surface) and prepared for dye penetrant testing.

The MEO witnessed the dye penetrant procedure on the video monitor on the surface and was then able to debrief the diver (SEO(D) with the aid of the video and talk through any minor concerns. The clarity of the video was excellent as a high-resolution digital camera was used, which possibly gave a better indication than the naked eye. Due to the highly toxic nature of the substances used to carry out this procedure it was necessary for the divers to wear breathing apparatus with positive pressure facemasks (AGA)

The crank ring was then cleaned, seals were renewed and the new blade slid into position, lifted clear of the trolley, trolley removed and the blade lowered into position. Hedley Purvis gear was then used to tighten and torque the blade bolts in the laid down sequence. Plastic blade bolt covers were then cut and faired off after insertion.

Additional Repairs

The fwd trolley was then removed and the area between the A bracket and hub inspected for further damage. The A bracket bearing retaining ring was seen to be damaged, with 2 studs sheared off. The remaining studs and the retaining ring were removed. The habitat was then de rigged to give better access and after drilling and eazi-out the damaged studs were removed. New retaining ring, studs, nuts and split pins were then fitted.

The fwd rope guard was unbolted from the A bracket (without separating the 2 halves) and slid up the shaft to gain access for taking bearing clearance readings.Whilst this work was progressing a video was taken of the remaining blades. The damage was discovered, in improved visibility, to be only minor. After consultation with the MEO and MSM/W1, and agreement by ME 212 it was clear that the damaged areas could be dressed with a smooth file and wet stone without the use of the habitat.

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To rig the habitat on each blade would involve turning the shaft to put the blade at TDC and re-rigging the frames and the habitat bag.

The fwd A bracket rope guard was replaced. The hub protection plate bolts were then proved tight and wire locked. The final task was to clean the aft rope guard bolthole threads and fit the new rope guard.

Time Scale of Repair

The original estimate of time to repair was 12 working days. The actual time taken for the underwater repair was 10 working days, as follows:

Initial inspection, foul screw clearance and rope guard removal	1 day
Rigging top and bottom frame	0.5 day
Slinging blade into position	1 day
Rigging habitat bag	0.5 day
Rigging inside habitat	0.5 day
Changing CPP blade	1 day
Dye Penetrant	0.25 day
De-rigging Habitat	0.5 day
Removing and replacing A bracket bearing retaining ring	1 day
A bracket clearances	1 day
Dressing blades	0.75 day
Replacing wire locking	0.5 day
Replacing rope guard	1 day
Waiting time	0.5 day

The repair was completed within the estimated timescale, although had the habitat been used to dress all the remaining blades the task would have over run by an estimated 2 days.

Future Developments

The habitat used is a prototype. ME 212 are procuring two further CPP Habitats, designed to accommodate the Skew blades being fitted to Type 23 FF. The new Habitats will be stored and maintained by PSSE store at Devonport and Portsmouth and will be an integral part of the 2 CPP Blade change outfits being developed to allow water borne exchange of CPP blades anywhere in the world, by suitably trained military or commercial divers. The CPP blade change outfits have been cleared by JATE to ensure air transportability in a C130 and have been given DAC clearance for commercial and military flights.

The new habitats will have improvements incorporated to alleviate the shortcomings highlighted during use. The redesign will include an improved sealing arrangement, measured strops for the "ears", additional internal pockets and a lighter A frame for lifting.

The procedure for using the habitat will be re-written by ME 212 and SEO(D), which will include a revised slinging plan. The blade sling is in the process of being re-designed, with the intention of having a generic sling to fit all types of CPP blade.

Conclusion

Use of the habitat has clearly shown that NDE can be successfully carried out in dry conditions, without the need to dock the ship, and ships staff can witness all operations from the surface on the video monitor.

Lifting and slinging of blades is safer, with the problems associated with poor visibility and communications overcome. The lifting is carried out in a controlled manner and handling of blades is easier due to the trolleys. Additionally good visual and audio communications with the surface provide a safer working environment for the divers.

The air pressure in the habitat is greater than the head of oil in the hub and the CPP system, giving environmental benefits as there is minimal oil contamination of the water. Any oil that does leak can be contained with Dryzit bags or, should any enter the water it would be contained by the lower edges of the habitat and could be easily reclaimed.

This was the first occasion that military divers have had to rig the habitat on a live ship. The acquaint, at F J Marine premises in a test tank, did not involve rigging the frames or slinging the replacement blade into position. The repair to HMS BIRMINGHAM proved to be excellent continuation training. Lessons were learnt and the deficiencies highlighted will be rectified in the 2 new habitats for the CPP Blade Change Outfits.

HABITAT -SPEAK

HABI-SPEAK	FROM	TO	TRANSLATION
Are you sure this bag fits this ship?	Diver	Surface	We may have this on the wrong was round
These blades don't appear to be very damaged/leaking oil	Diver	Surface	We're on the wrong shaft.
We've had a discussion and have come up with a good idea	Surface	Diver	We're bored because we're not in the water so we've decided to dive by proxy.
I think the habitat may be starting to leak again.	Diver	Surface	Can't any of you up there remember to keep at least a whisper of air going into this bag?
You sound tired, do you want a break for a while?	Surface	Diver	Get this useless ***** out of the water so we can crack on.
Send us down another wrench the ratchet's jammed on this one.	Diver	Surface	We've dropped the original spanner.
Show us on the camera	Surface	Diver	We don't believe you.
Wow - a pink octopus!	Diver	Surface	The lunch and dinner on this boat were bad enough, we don't fancy breakfast too.
This SIKAFLEX is tricky stuff isn't it?	Diver	Surface	I can't make this stuff come out the end of the nozzle because I haven't cut the tip off.
These chain hoists are crap.	Diver	Surface	I don't work out much any more and I'm knackered.
Does DENZO tape smell?	Diver	Surface	There's a suspicious brown substance floating inside the habitat.
Send us another speaker the connection's loose on this one.	Diver	Surface	I've just dropped the speaker in the water despite you caretully packing it in 2 layers of plastic.
We may have to reduce numbers on site tomorrow.	Surface	Diver	While you've been 'in' a better foreign job has come up and we've elected the current topside crew to fly out without you.

BRAVERY AWARD

BRAVERY AWARD FOR AB(D) SIMON MURRAY

Flag Officer Surface Flotilla (FOSF) Rear Admiral P M FRANKLYN MVO recently presented AB(D) Simon 'Ruby' MURRAY with the Queens Commendation for Brave Conduct during a visit to Southern Diving Unit 2(Portsmouth).The Commendation was in recognition of AB Murray's efforts to control a major funnel and uptake space fire onboard HMS HURWORTH during the early hours in May 1996.

As a member of the Standing Sea Emergency Party, AB Murray was first on the scene of the fire and was confronted with the funnel engulfed in flames rising to 20ft and being fanned by the freshening winds. Surrounded by thick, choking smoke and blistering heat, he began dousing the seat of the fire with an extinguisher. Members of the bridge team had swiftly rigged a fire hose which AB Murray took up and wearing only cotton overalls, he aggressively began attacking the blaze. Repeatedly risking injury from the escalating inferno, Murray continued to attack the fire, attempting to access the inside of the funnel which by then had collapsed. Eventually firemain pressure was lost and Murray raced down to 2 Deck for a portable fire pump, carrying it to the sweepdeck with two members of the damage control party. He then realised that the ship's Searider boat was being bombarded by burning debris, so he grabbed a bucket and line and used sea water to douse the boat. There were two full petrol tanks in the vessel and without hesitating he braved the falling, molten fibreglass to move the tanks to safety.

Hearing the pumps run up and the firemain restored, he returned to 1 deck where his firefighting efforts began, eventually dousing the blaze just 23 minutes after the alarm had been raised.

In recommending AB Murray for the award, HURWORTH's Commanding Officer, Lt Cdr Simon Neil said: "There is no doubt that Murray's actions were crucial in maintaining a continuous, aggressive attack at the seat of the fire, which prevented a far more serious incident. He showed courage in fighting the fire unaided at close quarters, outstanding initiative and total disregard for his own safety."

Prior to the presentation FOSF took the opportunity to tour and meet all the personnel serving with SDU 2 and witness an Improvised Explosive Device Disposal demonstration and a display of the new underwater engineering Habitat blade change equipment.

SURF ZONE/VERY SHALLOW WATER MINING: NEMESIS OR OXYMORON FOR AMPHIBIANS

Reproduced by the kind perimsion of the author from an article adapted from the Naval Review. Although largely focused on the USN the parallels with the RN interest in this growth area should be obvious. (ED).

By Dougie the Diver

Introduction

Over the past few years the United States Navy (USN) has reacted very vigorously to its inability to counter sea mines in the surf zone (SZ - high water mark to 10 feet) and very shallow water (VSW - depths 10-40 feet). Ostensibly, such a threat might preclude traditional amphibious landings leaving the Marine Corps (USMC) impotent in its primary role. With the *raison d'être* of the Corps untenable, its very existence might be vulnerable. This reaction stems from Operation Desert Storm where US forces perceived such a threat and considered that they were unable to deal with it, consequently amphibious operations were inhibited.[1] The then Secretary of the Navy, H Lawrence Garrett, considered that in the future amphibious assaults would be more probable. Having learned lessons about recent neglect, he declared "I, for one, have no intention of seeing the Navy someday forced to tell the President that we can't do the job because we're unable to defeat enemy mines."[2] Subsequent studies have presupposed the presence of SZ and VSW mines as a counter to over the beach amphibious assaults: "the prudent commander will assume that minefields will be encountered, even in the absence of intelligence, because shallow water and beach mines are becoming ubiquitous."[3] While others offer at best a cursory threat assessment, for example: "Sea mines may be employed anywhere there is water .... The more important it is for friendly forces to utilise a particular water area, the more likely it is that enemy forces will mine them."[4] Which leads to the conclusion that without active Mine Countermeasures (MCM) such an absence of capability would be a 'show stopper'[5]. Indeed, six years after the event, the hue and cry has still not died down. Major General Hanlon, the Director of Expeditionary Warfare (N 85 Office of the CNO), was only recently quoted in the Naval Institute's 'Proceedings' championing the cause of the intelligent MCM mammal (Mk 7 dolphins, not Clearance Divers!). He stated "the sum of the Navy's effort to solve the MCM problem will have missed the mark if we fail in the VSW zone."[6]

Since World War II clearing SZ and VSW mining has been the responsibility of Underwater Demolition Teams (UDT), now Naval Special Warfare Units (SEAL teams)[7]. While these diving teams have offered a limited capability to counter such mines for some time, the impetus to develop methods that are fully effective was only generated in the 1990s, after the Gulf War. Since then, the quest to acquire countermeasures to this type of threat weapon, such as the Shallow Water Assault Breaching System,[8] has gained much prominence in US Department of Defence procurement programs. Mine Countermeasures (MCM) has not enjoyed such a resurgence of interest, albeit now almost entirely focused toward "Mine Warfare Forward ... from the Sea" in the SZ and VSW,[9] since the USN's embarrassment at the hands of a nation without a navy during the Korean War. Notwithstanding this resurgent interest, its focus is very narrow and diverts resources from conventional MCM systems. Only last month, Defence Secretary William Cohen directed the Navy to re-evaluate its Mine Warfare programs.[10]

Aim

The aim of this paper is to re-assess the SZ and VSW mine threat to amphibious assault operations and to investigate whether the present US focus on SZ and VSW MCM procurement sits well with current amphibious doctrine. In short, is this threat mostly hype and is the emphasis on it counter justified.

Amphibious Operations and the Surf and Shallow Water Mine Threat

Amphibious assaults are regarded as amongst the most difficult of military operations. On the other hand, nearly all modern amphibious landings have been successful.[11] One of the multitude of weapons available for defence against amphibious assault is the maritime mine, for use both close inshore in very shallow water and in more distant deeper seas.

Amphibious Doctrine. Most amphibious attacks have been considered to be operations of choice that can be used to advantage when the proper circumstances arise.[12] The USMC recognises that amphibious operations will only succeed if the principles of war are observed. The key ingredients are surprise, manoeuvre and timing; the ability to act before an opponent can react, even if he can reasonably anticipate the location of the blow. Thus amphibious operations should be conducted where they will succeed.[13] This is also reflected in US Joint doctrine, "the amphibious operation exploits the element of surprise and capitalises on enemy

weaknesses by projecting and applying combat power at the most advantageous location and time. The threat of an amphibious landing can induce enemies to divert forces."[14] Doctrine also recognises that a minefield might be circumnavigated or stepped over rather than breached.[15] Therefore, the operational artist is encouraged by amphibious doctrine to avoid the direct approach if the objective is heavily defended. It is implicit that if SZ and VSW mines are laid then the amphibious assault will be against a defended beach. Further, it is likely that if these weapons are used then other defences such as missiles and artillery, which are easier to deploy and more effective, will be in place which probably implies a much greater defence in depth.

SZ and VSW Mine Types.[16] SZ mines can be of the anti-invasion, controlled, buried or obstacle type. Their small size and explosive content typify these mines. Exceptions are beach obstacles that may be quite large structures albeit with a small explosive charge attached. VSW mines can be of the bottom, moored, controlled or buried varieties. Amongst the more modern anti-invasion ground influence types are the Swedish ROCKAN,[17] the Italian MANTA[18] and the British DRAGONFISH.[19] These weapons also have a relatively small explosive charge for sea mines, about 300 lb of TNT, are effective in depths of between 10 to 60 ft and are primarily targeted against shallow draft shipping and landing craft. Older moored contact mines are the Soviet YaRM with 6 lb of explosive, intended for use in lakes and rivers and the YaM with 45 lb of explosive intended for shallow coastal seas.[20]

SZ and VSW Environment. "There are many technical difficulties associated with laying mines in the SZ."[21] The effects of tidal rise and fall or surf may expose or wash away mines, much as wind erosion exposed land mines in the sand during Desert Storm.[22] Mine burial and migration experiments between 1994 and 1996 have shown how mines can be washed out to sea and then progress parallel to the beach.[23] Further the plan range at which a mine will inflict damage is drastically reduced in VSW because of venting. Energy is vented upwards in a very narrow plume[24] where in deeper water the shock front from an underwater explosion gives damage widths in the order of several yards depending on target type. Accordingly many more mines are needed to provide the same simple initial threat (SIT)[25] in VSW than are needed in deeper water: mining VSW is an inefficient use of assets. Notwithstanding the difficulties of laying mines in the SZ and VSW, the very nature of shallow water limits the targets offered to the miner. They will likely comprise of landing craft, very small ships and hovercraft (LCAC). The latter, with their air cushion and high speed, are quite resilient to mine shock.[26] Larger, more attractive targets such as landing ships (LPD and LPH) which draw about 30ft[27] will operate in deeper water, particularly if they are conducting flying operations and are concerned about sea room, squat[28] and docking operations. In depths greater than 30 ft conventional MCM techniques are effective. Landing beaches and their approaches are normally expansive. Thus they do not offer choke points, favoured by the miner for concentration and economy of effort.

SZ and VSW Mine Threat. In the past the mine threat has had a significant impact on maritime and amphibious operations. "The reason we [the US] did not mount an amphibious operation against Kuwait during the Gulf war was predominantly the mine threat."[29] Nevertheless a distinction should be made between the impact of SZ and VSW mining and that in deeper water. The factors in determining the likelihood of and threat posed by SZ and VSW mining include but are not limited to: the potential destructive effect of mining, the efficacy of alternative weapons, where mines may be laid, their susceptibility to countermeasures and the mission they are designed to threaten. The sum of these factors will give an indication of whether mining is the most effective enemy course of action and if it is the most dangerous course of action.

Historical Perspectives

World War II. Sea mines and beach obstacles were used extensively by the Germans in the construction of the 'Atlantic Wall', the fortification of the French coast to defend against Allied landings. The 'wall' stretched from well to seaward to about 6 miles inland. It was a massive, layered defence of which mines in the SZ and VSW were only a small part. Construction of the forts, with guns up to 16 ins and walls 23 ft thick, fields of anti-paratrooper pikes and barricades[30] required the toil of millions of slave labourers and took years to complete. On the land alone, about 6.5 million mines and 500,000 foreshore obstacles were laid.[31]

At sea there was an abundance of barrier fields in the English Channel made up of buoyant and ground mines. In the SZ and VSW, anti-boat mines and obstacles prevailed. They were mainly waterproofed 'Teller' anti-tank mines.[32] However, to enjoy any degree of permanence they were attached to large and heavy structures such as steel cruciforms or concrete pyramids, weighing up to a ton,[33] and were therefore easily spotted.

While mined obstacles took a toll during the amphibious phase of Operation Overlord, it was only at high water.[35] Maritime forces farther out to sea were subjected to shelling, conventional mining, attack by E-Boats and the threat of 'Small Battle Units' such as midget submarines. Analysis showed that mining, from all platforms, and the E-Boat scored most heavily and suffered least. Further, 80% of E-Boat kills were caused by the mines that they laid.[36] By far the most effective maritime weapon was the 'Oyster', not a VSW mine but a pressure activated naval mine laid in deeper water and targeted against larger ships. These were laid by aircraft 10 days after the landing and were so effective at halting the logistic build-up they contributed greatly to the decision to abandon 'Omaha' beach in Normandy.[37] "German evaluations in mid June 1944 were that the Atlantic Wall had not lived up to its expectations."[37] The majority of Allied casualties were inflicted by regular German Army units and the landing forces found influence mines in deeper water the real threat, not contact mines found in the SZ and VSW.[38]

Allied countermeasures against the VSW threat included the employment of armoured landing craft in the assault[39] (which was normally at low tide to expose obstacles) and subsequent clearance by Underwater Demolition Teams (UDTs) to reduce disruption to the logistic build-up. In deeper water, mine sweeping was the preferred tactic. Though countering over 500 magnetic, acoustic and contact mines this technique was ineffective against 'Oysters' whose pressure sensor could not be swept.

Korean War. During this war, North Korean forces laid thousands of mines, ranging from indigenous buoyant, contact or controlled mines, to small quantities of a more modern Soviet ground mines using a magnetic sensor. They were laid on both the east and west coasts in fields stretching from harbours and port approaches to about 10 miles offshore. The delay of landings at Wonsan for more than two weeks was the most notable example of the effect of mines on amphibious operations. The seas were eventually cleared by mine sweepers and UDTs once the settings of the new 1,800 lb magnetic mines were known.[40] There was no deliberate mining of the surf zone and while those inshore may have technically been in VSW, they were laid in the harbour and shipping channels.[41] The only mines found along the beaches were the many buoyant contact ones that had broken loose from their moorings and washed ashore.[42] The Wonsan encounter was vastly different from that experienced earlier at Inchon. There "the audacity and timing of the amphibious assault caught the communists by surprise;" they had not had the opportunity to lay mines in significant numbers.[43] The Inchon offensive was an excellent example of a 'text book' amphibious operation that relates closely to current doctrine.

Persian Gulf War (1991). During Operation Desert Storm an amphibious landing was not considered feasible because of the sheer size of the Iraqi forces and the limited strength of the Marine assault units.[44] Nevertheless, the Iraqis feared a flanking attack North or South of Kuwait City by the Marine force poised offshore. Accordingly this threat tied down considerable Iraqi forces that could have been used elsewhere.[45] Iraq had considerable anti-ship mine stocks deployed in a classic defensive barrier field, well away from the beaches. This included a line of MANTA mines which are arguably better suited to VSW as an anti-invasion weapon[46] but the Iraqis chose not to lay them there. Its purpose was to deny freedom of movement to coalition maritime forces in the Northern Persian Gulf. Though the northernmost fields were in shallow Iranian waters, this was to complete the circular pattern whose arc centred on Kuwait City. No mines were found on the probable landing beaches[47] or their immediate approaches other than a few stray floaters washed ashore. These minefields damaged the USS PRINCETON and USS TRIPOLI, incidents that caused maritime forces to be withdrawn East until Mine Countermeasures Vessels (MCMVs) could clear a channel through from seaward. This left only a residual threat that would not inhibit an amphibious operation significantly.[48] Nevertheless, much was made of the US failures in MCM and the lack of a covert capability to clear the surf zone, that would avoid compromising the intent to land. That there were "no acceptable procedures for clearing mines"[49] in the surf zone and very shallow water was perceived to be an amphibious show stopper. In the event, the coalition launched a land offensive which outflanked Iraqi forces and, in the end, probably proved a more effective tactic than an amphibious assault and was one which was in accord with current doctrine.

Summary. Mining the SZ and in VSW was last conducted during World War II but was not as effective in disrupting amphibious operations as more conventional deeper water mining. Since then there have been no recorded cases of such mining to thwart over the beach amphibious landings. Doctrine recognises the great utility of amphibious forces in striking where the enemy is not. Mining the SZ is difficult and VSW restricts the size of targets which are presented therefore this tactic is operationally ineffective on its own. Therefore it is normally a small part of much more extensive fortifications, indicating a long war over several years rather than the short sharp engagements of more modern times such as in the Falklands or Persian Gulf. In developing a capability to breach a latent threat in the SZ or VSW will future forces be tempted to breach by brute force rather than exercise operational art and manoeuvre? Admiral Woodward noted the shortcomings of such doctrine and described its practitioners as those "... whose instinct in the field of amphibious assault has usually been to go straight through the front door, kicking it down whether

or not it happens to be locked."[50] With the employment of armoured landing craft, air and hover craft as assault vehicles, small anti-landing mines are likely to inflict only limited casualties. This raises the conceptual argument about a few casualties being disproportionately important and therefore able to weaken national resolve. World War II was the last recorded occasion where the SZ has been mined as an anti-invasion tactic. Although the technology exists to mine the SZ the return is disproportionate to the difficulty and effort. These weapons are better suited to the benign environment of meandering rivers and inland waters.

SZ and VSW Mine Development

Technically rather than tactically, the vast array of existing mine types function perfectly well which is a disincentive for further development. Nevertheless, mines do show potential for development but, in so doing, their unit cost will increase. This will negate one of their great advantages: their relatively low cost. Further, in making these weapons more expensive, they may out price other, more capable systems which employ more advanced principles and require fewer numbers, such as shore based anti-ship missiles. Also, with the demise of the Soviet Union, the major player in mine warfare research and development, global resources to improve these weapons have been greatly reduced.

While further development of these threat weapons cannot be ruled out, it is suggested that changes will be at a measured pace and be of limited significance, which will not change their fundamental purpose; that of an inexpensive nuisance.

Future Development in SZ/VSW MCM and Amphibious Operations.

Since the demise of the Warsaw pact and the USSR, the focus of maritime warfare has moved inshore to the littoral. The US White paper, Operational Manoeuvre from the Sea (OMFTS) regards "forcible entry [from the sea] as a national requirement" and acknowledges "an intolerance of attrition and societal demands for inexpensive victory."[51] This is at variance with the US President who recognises that "reflexive calls for early withdrawal of our forces as soon as casualties arise endangers our objectives as well as our troops."[52] Nevertheless, the US Marine Corps (USMC) considers that in order to achieve this a tool box of tactics and techniques must be developed to overcome the threat of mines in the SZ and VSW.[53] Accordingly, the Unmanned Undersea Vehicle (UUV) for clandestine mine reconnaissance is the Navy's top UUV priority. This mine hunting UUV is intended to be launched from a submarine to provide an accurate over the horizon (OTH) clandestine minefield reconnaissance picture.[54] In conjunction with this program the Navy is modernising its amphibious fleet to provide OTH launch platforms; the MV-22 aircraft and Landing Craft Air Cushion (LCAC) are examples.[55] The MV-22 is a vertical take off and landing (VTOL) aircraft that can transit at much higher speeds than a helicopter. The LCAC is a hovercraft that can transport a main battle tank ashore with a speed of 40 Kts.[56] Immune to contact mines, this craft will actuate influence mines but by virtue of its air cushion and in deeper water, its speed, it is not very susceptible to underwater shock. The air cushion dissipates the highly damaging explosive shock pulses, which are transmitted efficiently through water, and though the spray plume is visually threatening it is of less danger. Indeed some military planners consider these vehicles to have largely obviated the threat mines pose to an amphibious landing.[57] However, while the assault can be launched and sustained from OTH, heavy shipping must close the shore to achieve a rapid logistic build-up for the follow on force. Clearly research and development is motivated by overcoming a problem but is important to investigate the perceived problem thoroughly to vet its credibility or ascertain if it is primarily driven by the state of mind of the policy maker.[58] On the one hand, if SZ and VSW mines can only be expected to inflict limited casualties, then too great an emphasis on the procurement of countermeasures may expose an intolerance of attrition which runs counter to displaying determination. On the other hand, if SZ and VSW mines are part of a more robust layered defence it is highly unlikely that an amphibious assault will be the tactic of choice.

Conclusion

SZ and VSW mines can be deployed, the former with difficulty, in an effort to counter an over the beach amphibious assault. Historically, this tactic has been of very limited value and has not lived up to expectation. Indeed it has not been so employed since WWII. SZ and VSW mining is an inefficient use of weapons which are more potent in deeper water.

In isolation a minefield in the SZ or VSW will not amount to a 'show stopper' like other tactics which use more easily deployable weapons.Accordingly if encountered, history and tactical efficacy indicates that they are very likely to be part of a robust, layered defence. The existence of which will be more easily determined than that of SZ/VSW mines. Therefore, in accordance with current doctrine, an amphibious assault will not be the tactic of choice; an alternative must surely be better. The availability of a means for breaching SZ and VSW minefields may make such a frontal assault seem feasible, even attractive, but it should not undermine current doctrinal considerations, which have stood the test of time.

The current allocation of resources to SZ and VSW MCM procurement is nice but not essential, the threat should be viewed in proportion and not overstated. Further, such procurement may focus attention on an intolerance of even light casualties that may be translated as a weakness in resolve. Conventional mining, in deeper approaches, poses a much more potent threat to an amphibious assault, particularly in delaying the subsequent logistic build-up. While there is only a very limited SZ/VSW MCM capability, if current doctrine is adhered to there is no robust argument to improve it and if it is not needed there is therefore not a capability gap.

Recommendation

MCM resources should be focused at the most likely and most dangerous threat to the amphibious assault. Only then should surplus resources be allocated to counter peripheral threats

As SZ and VSW MCM becomes increasingly effective it should not be viewed as an enabling capability to the detriment of more proficient action recommended by doctrine.

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EXERCISE STRONG RESOLVE 98 THE MCMTA PERSPECTIVE

By LT CDR Bernie Thompson SOO MCM 2.

Working strictly to the MCD tenet that the truth should never be allowed to get in the way of a good dit, the following article is based on extracts from my diary for March 5 - 23 1998, the period of Exercise STRONG RESOLVE 98(SR 98). The article is intended as:

An insight into the scimitar-like, incisive intellect of those who man the MCM Tasking Authority(TA)

A warning to anyone who might in the future be foolish enough to volunteer to serve in an MCMTA

Pitfalls to avoid if you are cornered into doing it anyway

Mild entertainment/education for all but particularly for those who worked for and with MCM2 during SR98.

To put the article in context, I was one of 40,000 or so other lucky people who took part in SR98, an exercise designed to test NATO's ability to respond to two simultaneous major crises, one set in the northern North Sea(Crisis North), the other in and around the Iberian peninsula(Crisis South). Not an ardent lover of winter sports nor chilblains, I was happy to be participating in Crisis South where the scenario involved a UN peacekeeping force keeping apart two warring factions within the imaginary country of Azure. The maritime forces were tasked with embargo operations and, eventually, protection of an amphibious force which would withdraw the peacekeepers and entitled civilians, MCM2, Commander Alan Rycroft, was MCM Commander charged with reducing the mine threat in the Amphibious Operating Area. To do this he was allocated the following assets:

HMSWS CARLSKRONA (ex minelayer - now container ship)

HMS CARLSKRONA(Swedish Minelayer - Command/ Support platform)
HMS ROEBUCK(Survey Vesssel - FDU 02 Embarked)
HMS LEDBURY
HMS WALNEY
HMS CHIDDINGFOLD
FS CROIX DU SUD(Tripartite)
FS CEPHEE(Tripartite)
FS ANDROMEDE(Tripartite)
FS STYX(Diving Support Vessel)
NRP SCHULZ XAVIER(Diving Support Vessel)
PNS PIAST(Polish Search and Rescue Vessel)
SNS GUDIANA(Minehunter)
SNS GUADALMEDINA(Minehunter)

Fairly obvious, then, that when MCM2 staff arrived in Portimao on 05 March to complete final preps for the exercise, we were not expecting anything to be straightforward - 14 units, 6 languages, a Swedish ship as command platform, working initially for a Portugese Task Group with a Practice Programme drawn up by a German. What could be simpler?

Thursday 05 March

1430 Arrive Gatwick. Nearing head of BA queue for flight to Faro. SEO/SMEO are comparing hideous passport photographs with much mirth. Knowing fine well I could black cat Quasimodo with my specimen I flick to phot to see wife staring back at me. I have picked up the wrong passport. I HAVE PICKED UP THE WRONG *******PASSPORT! After minor heart failure/many telephone calls/begging BA staff, I pass through security/ passport control on strength of ID card and NATO travel order faxed from Squadron office.

2230 Arrive Portimao after nightmare journey from Faro airport during which discovered that FSU driver(HGV Class 1) who has kindly come to meet us, suffers from night blindness and is unable to read road signs or see oncoming headlights.

Lessons learned/hot tips

Open passport and check ownership before leaving for airport. Give impromptu eye test to any would-be chauffeur - suggest "Can you see the steering wheel?" may be realistic starting point.

Friday 6 March

0900 Depart for docks to meet ROEBUCK who has worked manfully to line up our exercise signal traffic and make arrangements for RN ships. Decide to call into Portugese Naval Jetty office to discuss berthing plan for our large Task Group. Discover (despite assurances months ago) that no berthing plan exists and besides jetty is already taken by Portugese minelayer.

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Further discoveries include:

* Civilian and naval dockyard don't talk to each other
* No-one is aware that FR/UK group will be late due to heavy weather in Biscay.
* Minelay for the first phase of the exercise is in jeopardy because half the mines are arriving in the French ships(so will be adrift)
* Berth allocated for CARLSKRONA has Portugese survey vessel on it
* A large passenger liner will berth Monday so all ships must be clear of the jetty by 0700 (3 hours early)
* When the Polish vessel PIAST does arrive(she is already late) she will not be allowed to berth in the commercial port as planned because she can't pay the harbour fees.

SOO takes stock - having planned this show for 12 months, attended two major planning conferences, organized and chaired a dedicated MCM conference and spent the GDP of a small African state on telephone calls, FAXs and signals, the plan looks as if it is unravelling before me.

Boss brings heartening news at dinner - the UK/FR group is through the roughers, making good time and will arrive tomorrow instead of Monday and the Harbour Master, having been lashed up at lunch by ROEBUCK, has undertaken to sort out all our berthing problems.

Back at hotel receive call from OIC FDU02. Unit containing all equipment and towing trailer with RIB has broken down approximately 3 hours out of Portimao. FSU quickly organize transport to rescue divers, decant stores and recover trailer. Drift off to sleep with worried dreams that FSUO has despatched night blind driver who will write off team on return journey.

Lessons learned/hot tips

Never believe anyone who tells you in a foreign accent "it's all sorted out".
Ring QHM's MOVO regularly and tell him he is providing the best service in the world.
Don't worry about things over which you have no control(eg the entire Exercise so far).

Saturday 07 March

Totally confused at breakfast as I watch PIAST enter then leave harbour, then re-enter. Assess first attempt may have been close pass for recce purposes (this was later confirmed - she had no chart of Portimao).

UK/FR Group arrives with style, faultless berthing and all in good spirits following flat calm passage for last 36 hrs.

It appears the minelay plan will still work and will commence tomorrow, Portugese minelayer and FDU2(safely arrived, thank God) will lay half of French anti-invasion mines in shallow water for first phase of Exercise leaving other half on jetty for transfer to Spanish waters for second phase. Very smug SOO and SCPO admit that they love it when a plan comes together.

Lessons learned/hot tips

Never be smug and say you love it when a plan comes together

Sunday 08 March

CARLSKRONA arrives Portimao. Aims for the day include:

- Onload FSU stores/personnel.
- Load and establish the TA/personnel.
- Conduct briefings.
- Ensure the group is ready to conduct a two week exercise from the sea.
- Complete the mine lay for the work-up phase of the exercise.

Mid - morning. SCPO Taff Hembrow reports that the allocated area for the TA is totally inadequate as it is almost completely taken up by the Minewarfare Tactical Support System (MTSS - our "portable" computer weighing as much as an Indian elephant). Two minutes after being asked, our Swedish hosts find us an alternative space in a lecture room roughly the size of a CVS hanger.

SOO briefs the dangers of sun stroke

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A truly international audience enjoy yet another first class brief

1400 - Pre sail Briefing. Attended by about 60 people (in room designed for 15) who have all been out on Saturday night with express aim of creating Portugese national garlic shortage. Am very keen to ensure that all participants understand all the brief and therefore keep content to a minimum whilst speaking dead slow. Nods of agreement and smiles indicate things are going well. I then hand over to SEO - midlands man, some odd turns of phrase, but generally comprehended. Next SMEO, from Northern Ireland - I detect some slightly furrowed brows, necks craned a bit, but no questions. Yeoman next. Scouser. Poles, Portugese and some French have heads cocked to one side a bit like labrador puppies trying to decipher a distant whistle. Then, with his brief on records, reports and the mine threat (all vital stuff given our tasking) comes Taff Hembrow. Welsh. From the deepest of the valleys. Speaking at a baud rate normally reserved for SATCOM. I can't describe the scene when Lt Thierry Arnoult, a French Officer working with the TA for the Exercise steps up next, but by the time the last speaker, Lt Cdr John Staveley, stands up to brief the environmental products available to the TG, he might just as well be addressing the Botched Lobotomy Association's Annual General Meeting. Result - approximately an hour and a half after the crowd disperses spent debriefing individual ship's teams on the contents of the brief.
Meanwhile FSU have worked miracles and completed onload.

Meanwhile OIC FDU reports that all mines have been laid in the boat lanes for the first phase of the Exercise. Excellent, says I. The conversation then takes a funny turn "No, Bernie - when I say all the mines I mean ALL. A minor misunderstanding has led to my team also laying the mines intended for the second phase."

I remain very calm but make mental note to rethink timings for mine recovery.

Monday 09 March

Combat Enhancement Training Day One

Commander's long held dream of sailing SR98s largest TG in a "one-er" thwarted by musical ships to accommodate aforementioned passenger liner movement and late arrival of WALNEY - CARLSKRONA remains alongside AM to refuel/water her and to brief command team.

Manful efforts by SCPO and TA Watchkeepers meant TA/MTSS fully up and running in spacious surroundings with embarrassment of desk space - positively agoraphobic for a team used to working in an ISO container.

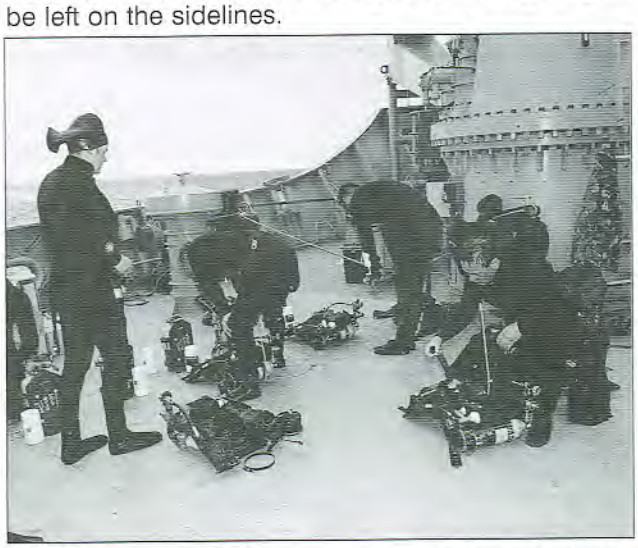
By COP all units at sea in CET EXAS off Portimao. Minehunters hunting, divers diving, SOO trying to figure out which is the definitive CET Practice Programme, who the hell is promulgating all the changes and why we have heard nothing from our protecting assets for tonight's ENCOUNTEREX.

Tuesday 10 March

Combat Enhancement Training Day Two

Delighted, astonished and very relieved to see uneventful OOW Manouvres with all ships afloat on completion.

ENCOUNTEREX also uneventful, so uneventful in fact that there is no contact with the rest of the CET forces, enemy or otherwise. Sinking feeling that despite having attended CET Planning Conference where attack packages for MCMTG agreed, we might again be left on the sidelines.



FDU 02 prepare for VSW reconnaissance on board the Polish ship PIAST

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TOWEX/SALVEX also incident free although stark differences in standards of shiphandling/seamanship/safety/FF noted. Good to see PIAST, whose role is Search and Rescue, coming into her own although language barrier very evident.

FDU2 hard at work despite a wacky plan which has them living in ROEBUCK but operating from PIAST anchored close to shore for Very Shallow Water(VSW) MCM diving OPS. As ever, FDU just gets on with it with no complaints, only surfacing for food, a kip and to refuse yet another glass of vodka.

FDU2 synchronize watches and take bearings

Wednesday 11 March

Combat Enhancement Training Day 3

Good news - Partial victory for MCM force integration - contact made with AAW Protection asset (Babysitter)during ADEX. Bad news? No sign of ADEX aircraft except for fleeting glimpse of unidentifiable jet at ENDEX heading no doubt towards a large cooked breakfast and day by the pool.

The Squadron Staff Sherrif's badge, awarded during deployments for conspicuous acts of stupidity, is won for the first time in SR98 by Taff Hembrow when FGS RHONE arrives mid-morning to RAS the TG. The Druid, now in the groove of 20 hour days and insane workload glimpses up to see, through the nearest scuttle, a tanker's slab side only a couple of feet away. He leaps up, screaming to the packed Ops Room -"Brace, brace, brace, collision imminent!". When it is pointed out to him that the tanker is at anchor and we are rafting alongside, not fuelling underway, he is a touch embarrassed. I of course promise that the story will go no further.

PIAST, despite(as we later learned) having no clearance to do so, takes so much fuel from RHONE that we are convinced she has topped up her mess decks and cable locker to sell the stuff on the black market at home.

Worryingly, the mine tote is not spectacular and includes precisely none of the Swedish ROCKANS laid. More worryingly, weather deteriorating - it looks as if the majority of the CET mines will not be recovered by ENDEX. On the bright side, FDU2 has got ahead of the game, sniffed the change in the weather and recovered all the shallow mines.

Lessons learned - Hot tips

Book carrier aircraft for ADEXs. RAF does not like Algarve Golfing holidays interrupted by flying.
Always take a Welshman along for exercises - stupendous entertainment
Get a swap draft to a Tripartite(presently performing superbly) and take Swedish Supply Officer with you. Without a doubt consistently tastiest food ever eaten in a ship (also take ship's Nursing Officer due to striking resemblance to Ulrika Johnson)

Thursday 12 March

Combat Enhancement Training Day 4
Fears confirmed - MIRY not complete. Despite those mines remainining posing no danger whatsoever to navigation or fishermen (who use lines and drift nets) enormous brouhaha ensues in CINCIBERLANT HQ - we therefore leg it to avoid the bun fight and commence 150 mile transit to the Spanish Sierra Del Retin (SDR)Exercise Areas just south of Cape Trafalgar for Advance Force Ops ahead of the amphibious force.

Friday 13 March

Arrive SDR and conduct formation anchorage for briefings. We have just two and a half days to reduce the threat in the Amphibious Operating Area(AOA) to an acceptable level for the Commander Amphibious Task Force (CATF - in our case Commander UK/NL Amphibious Group, Commodore Paul Stone RN in FEARLESS).

1600 - Briefing for next phase. Thankfully less people attend brief and have resisted temptation to mainline garlic. Two Spanish minehunters have joined the TG. Mood is up beat, CET allowed us to get used to eachother and the shock for foreigners of spending two whole weeks at sea is beginning to wear off.

The plan briefed is straightforward. CATF has nominated the Sea Echelon Area (SEAECH - the area where the ships anchor to launch recover landing craft

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etc) as his number one priority within the AOA and we have carved this into boxes each allocated to an MM. To allow VSW Ops to commence in the boat lanes a Diving Support Vessel Anchorage (DSVA - a clever name made up on the spot) must be cleared. Due to the nature of the sea bed (reportedly B1 bottom) and navigational hazards(area within a couple of cables of the beach) this is a challenging and hazardous OPAREA so ships will rotate through at 6 hourly intervals to give frazzled COs/NOs/OPS Room teams a break.

CHIDDINGFOLD, first into the DSVA, finds conditions nowhere near as bad as reported and blitzes the area. Vis so good that she uses extended PAP runs for visual recce. Other ships also enjoying superb bottom/water column conditions achieving impressive hunting speed of advance and piling up mines on deck.

Lessons Learned

Don't believe everything you read in environmental briefing dockets about your OPAREA - the job's not a write off until your sonar and/or a dive or vehicle run tell you so.

John Law at CINCEASLANT who designed the mining plan has done an excellent job - realistic numbers of mines well spread throughout areas are providing quality training.

All units firing on all cylinders and using bags of initiative. Despite defence watches, arduous conditions in the surf zone and the tight deadline for completion of MCM Ops by H Hour early on 17 March, an extensive Partnership for Peace cross-pol programme goes ahead. TA reports to CATF that the risk level in the SEAECH has already been reduced to a 20pc Simple Initial Threat (one way of expressing risk is in terms of the probability that the first vessel to transit an area will hit a mine, this is called the Simple Initial Threat or SIT - divers please feel free to drop this acronym into conversation with your MW counterparts who will be v impressed).

Best news of the EX so far - MCC/CATF allocates watch on/stop on protection units for MCM TG. HNLMS WITTE DE WIT arrives on station with an outstanding joining message, promulgating it as SOP for all other units who will be likely to conduct babysitting. This really is groundbreaking stuff and certainly my first experience of a NATO exercise where babysitters have taken the protection task seriously - only this sort of escort service would, in wartime, allow the MCM force to fully concentrate on the mine, comfortable in the knowledge that the babysitter has the other threats all sewn up.

FDU02 divers attempt to kidnap Nurse Ulrika Johnson by offering her trip in their Gucci fast boat. (Considering all their time underwater they are looking mighty tanned).

ROEBUCK uses PIAST's salvage diving team to conduct a wreck survey - another instance of initiative/lateral thinking.

LEDBURY limps to Rota with suspected hydraulic oil contamination and can therefore no longer host visit by Secretary of State for Defence. CHIDDINGFOLD told she has won visit and has a whole day in a minefield to prepare for him. Fred Truman didn't ever bowl em that fast.

Lessons learned/Hot Tips

FDU 02 - no point in trying to steal Ulrika, she has seen SMEO, Des Grimsley, in his birthday suit (mixed showers on board!) and will probably never be the same again. (Nor will Des who nearly choked on his shower gel).

Sunday 15 March

Astonishingly, and thanks to some exceptionally hard work, the risk level in the SEAECH outside the boat lanes is now down to two percent, the hunters therefore turn their attentions to other areas of the AOA and after 7 days continuously at sea(a national record for some participants), we start to rotate units through 12 hour stand offs at anchor.

FDU 02 and STYX divers are nearing completion of their respective boat lanes and, without having to be tasked, plan to give SCHULZ XAVIER a lift with their area. (SCHULZ has been hampered throughout by lack of PN - FDU02's GPS Plugger comes into its own)

Monday 16/Tuesday 17 March

Due FDU02/STYX herculean efforts in support of SCHULZ, 2pc SIT achieved throughout SEAECH including boat lanes. CATF gets green light for landing and sight of heavies' nav lights looming over horizon in early hours puts effort bang in context.

CARLSKRONA, as well as supplying fuel and water, is also baking bread for MMs. Despite 3 choices of salad at every meal, chefs on call all night and genuine hospitality at all levels, FSU engineers complain at lack of chips/too much fish and uncomfortable benches in sauna. I realise that their grouchiness is alcoholic withdrawal symptoms, Swedish ships are dry at sea and some FSU personnel have never gone so long without a tinny.

EXERCISE STRONG RESOLVE 98
THE MCMTA PERSPECTIVE

Wednesday 18 March

Bang on cue the weather turns nasty. The local wind, known as the Levante, whips through the STROG and hugs the coast, causing a choppy short swell which also induces a current. PIAST, having been tasked by CATF to conduct TOWEX and SALVEX receives real tasking to stand by to take MEXE floats and other amphibs under tow if they get into difficulties in the surf.

Boss and I visit CATF in FEARLESS using CARLSKRONA's assault boat which she has embarked for defence sales promotion. SOO amazes Swedes by sleeping for entire return trip at 40 knots in sea state 4. Boss unimpressed as he has seen SOO sleep through much worse.

Thursday 19 March

The Maritime Component Commander, FOSF, Rear Admiral Franklyn visits CARLSKRONA. TA team has dug out to show our working area at its best and Kiwi parade gloss has made annual visit to Yeoman's steaming bats. All is prepared for our distinguished visitor and we wait to brief him on the MCM operation so far. Des Grimsley, meanwhile, is unable to resist the temptation to check the watertight integrity of the hydrant in the passageway just outside the TA and eventually proves that the hose, charged for an earlier NBCDX, will disgorge its contents all over the flat and into SOO's boots if sufficiently twiddled with. Only 30 seconds of manic activity with 500 Kimwipes and a bale of rags enables FOSF to avoid a 20 metre swim to his brief .

FOSF genuinely pleased with the performance of all units, particularly during the past few frantic days - choc frogs all round.

Friday 20 March

TG begins to disperse as CARLSKRONA, ROEBUCK and SCHULTZ XAVIER head back to Portimao. CHIDDINGFOLD is despatched early to spend 24 hours attempting to recover mines laid for the first phase. WALNEY and LEDBURY head for UK to pick up their insanely busy programmes which don't even allow for a run ashore after almost a fortnight at sea.

Epilogue

The FSU unload from CARLSKRONA was again faultless and blood alcohol levels were allowed to gently normalize. I also have it on good authority that FDU2 enjoyed a restful day or so in Portimao before returning to UK. For my part, MCM2 and I were forced to spend the weekend in Rota waiting for the Exercise Hot Wash Up on Monday 23 and had to put up with hot sand on the beach and sangria that was often just too cold

Although I never thought I would hear myself say it, I thoroughly enjoyed SR98, mostly for the following reasons:

Just one of the beaches available for RAF R&R

*The satisfaction of achieving the task given such a seemingly disparate Task Group and a Partership for Peace command ship new to the task

*Working with ships, diving units and FSUs who continually keep coming up with the goods despite gapping and programmes from hell

*Finally seeing the message get across that for amphibious operations the MCM forces are Mission Essential Units who must be integrated and protected

*Working with the easily the least sane staff in NATO - and I still can't believe that RNR Officers and Ratings volunteer to do this sort of thing during their leave!

After a snorkel dip to 50 metres for mine recovery PO Sid Seabrook discusses the day's catch

EXERCISE ANALYSIS

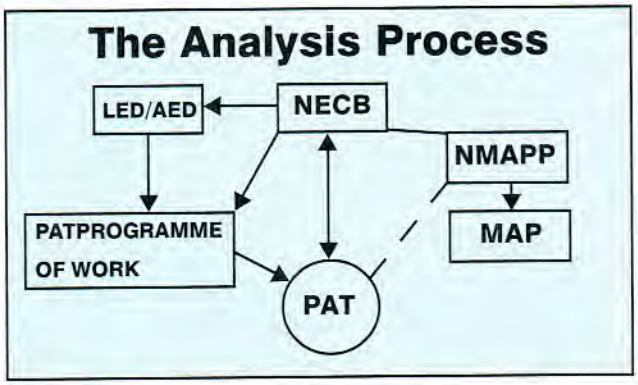
By Lt Cdr Chirs Davies RN SOMFP

General

1.The exercise is over, the last minehunting watch has been completed, the bars are open and the local ladies willing, so how come some idiot needs an entire rain forest of reports, comments and Formexs to be completed and despatched before you can secure and equally as importantly why? Obviously, the aim of record taking should be to support the Analysis Objectives (AOs) of the exercise/ operation which are themselves designed to study or highlight areas of tactical development and/or deficiencies. This article will hopefully explain how the AOs are chosen and the analysis achieved.

Background Planning

2.Illustrated below is the background planning that goes into establishing NATO's analysis priorities and the Permanent Analysis Teams program of work.



NATO Maritime Analysis Planning Panel (NMAPP for short)

3.This panel comprises representatives of national and NATO Commands and meets annually in March, under the chairmanship of the Director of the Permanent Analysis Team (PAT), to produce the Maritime Analysis Plan (MAP). This should be a rolling 5 year plan that lists national and NATO analysis objectives and their priorities and is usually published in May. The UK lead is the Maritime Warfare Centre (MWC) - keeping up with all these Three Letter Abbreviations (TLAs) - good! Exercise planners are encouraged to use the MAP as a planning tool when selecting objectives for analysis by the PAT and in this respect the document acts as the Terms of Reference (TORs) for the PAT - if it's not in the MAP then it will not be subject to analysis by the PAT. I mentioned this is what should happen - during the last few years PAT has been heavily involved with Operational Analysis (OA) support for IFOR/SFOR operations in the Former Republic of Yugoslavia (FRY). Hence the MAP has not been up-dated since 95 and is out of date, although hopefully this should be corrected later this year.

Other Publications

4.A number of other publications also need to be considered when the AOs are being agreed. These are:

A. NATO Lessons Learned Database (NLLDB)

The NATO Lessons Learned Data Base (NLLDB) is managed by PAT. It is a windows based program that runs on any PC with at least a 386 processor or better. It is distributed on a 3.5" diskette and contains the following:

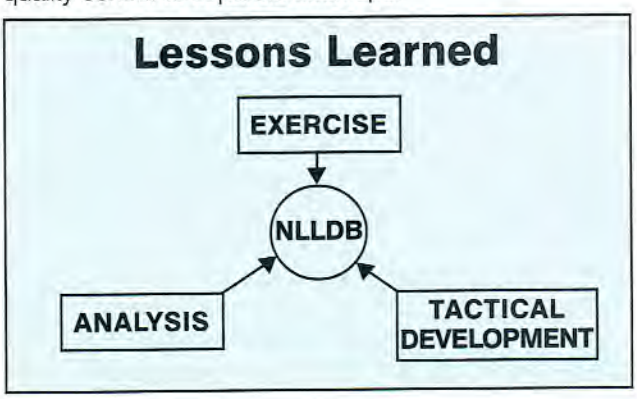
The data base.
Installation software.
A sophisticated retrieval software.
A program for producing inputs to the data base.

The NLLDB currently contains Lessons Learned and experiences gained through tactical analysis of maritime exercises and operations. It is aimed at 3 groups of customers:

Warfare Staffs.
Exercise Planners.
Tactical Development Community.

Edition 3 (98) contains almost 800 records (150 relate to minewarfare) from a variety of originators who include PAT, the MWC, the Netherlands Analysis and Tactical Centre etc. NATO has started work on a grandiose plan to establish a complete Joint and Combined Lessons Learned Data Base. The current NLLDB is seen as its forerunner and has the advantage that it already exists. The new all singing and all dancing data base is probably at least 3 or 4 years away.

The chief problem with the current data base is that all the lessons learnt from each live exercise are entered with no quality control to separate cock-ups.



from genuine areas of tactical deficiency. It can also lead to the same lesson being repeated several times within the database - fine if you wish to stress the point but some consolidation would be helpful believe me!

B. CREME (MW)

The purpose of the Conclusions and Recommendations from Maritime Exercises (Minewarfare) (CREME(MW)) is to highlight those conclusions and recommendations from NATO exercises, both synthetic and Livexs which have implications for exercise planners and which are not yet adequately stated or stressed in existing tactical publications, planning documents policy or doctrine. The CREME(MW) is the only remaining CREME from a series which formerly covered all warfare disciplines. Its advantage over the NLLDB is that the information it contains has gone through a formal staffing process (see para 15) thereby ensuring a succinct, concise list of areas of concern (Operational, tactical, procedural and exercise related). The document places the concerns in a priority order and is used by the Mine Warfare Party (MWWP) in its attempts to find solutions to the problems raised.

C. Maritime Tactical Development List (MTD)

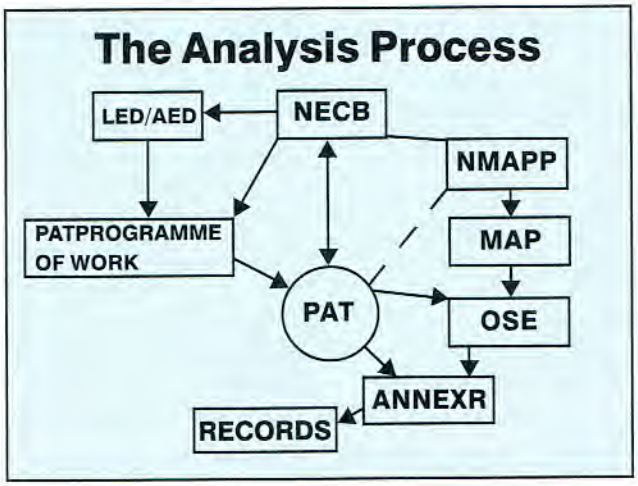
The aim of this document is to identify areas of tactical deficiency and weakness where development of new tactics and evaluation of current tactics are particularly required. Resulting from the annual meeting of the Maritime Tactical Working Party ((MTWP) the Maritime Tactical Development (MTD) list was first produced in 1990. The current list, for really sad people, can be found in the back of AXP 5B Vol II. Most of the minewarfare input is passed to the MTWP by the MWWP from those entries in the CREME(MW) which have a tactical implication.

The Analysis Objectives

5.Using these documents the Analysis Objectives (AOs) to be included in an exercise can be produced. The Officer Scheduling the Exercise (OSE) is the final arbiter of what is/is not included, although the advice and guidance of the analysis agencies and exercise planners has a strong influence over what is finally included.

6.Analysis agencies increasingly make use of automatically recorded data. Inevitably, some manually prepared Formexs are needed but the numbers are carefully screened to keep them to the essential minimum (honest!). In some cases specialist recording equipment such as the Data Logger will be installed on selected units. Once the AOs are agreed then they are listed along with all the records required to enable the analysis work to be undertaken within a suitable publication. This, in days-gone-by, was within Annex R of the old type Exopord and in future will be within Annex M of the new Exercise Planning Instructions (EXPI).

7.The most useful record for analysis is a well presented and comprehensive Formex 101 (Narrative of Events). There is a set of guidelines for completion on the back of the form and particular note should be taken of the requirement to give command comments and rationale where appropriate. As an aside Formexs used to be found in NADREX Vol IV which has now been replaced by the new Exercise Planning Guide (EPG); unfortunately without the Formex formats. Practically, this means all the forms that are required will need to be reproduced and placed in the EXPI. This was one reason why for Ex Strong Resolve the document came in about 17 volumes and resembled war and peace!



8.Much use is also made of the Formex 100 (Commander's Comments and Recommendations) which is normally combined with the First Impression Report (FIR) that is called for as a message at Endex. Ship's Command Teams should therefore take particular care when compiling these forms.

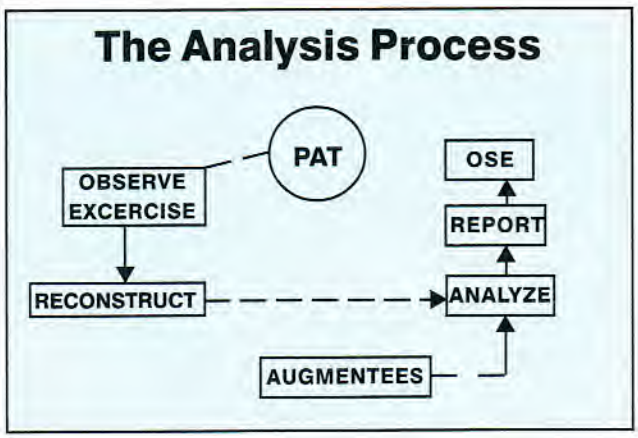
The Analysis Process

9.The PAT and other agency analysts will deploy to units and HQs during the exercise to observe what actually happens. Their presence is on a "non-interference" basis and is intended to allow them to gain an insight into the command and tactical decision making process to assist in the subsequent analysis. They will also assist in the collection of records.

EXERCISE ANALYSIS

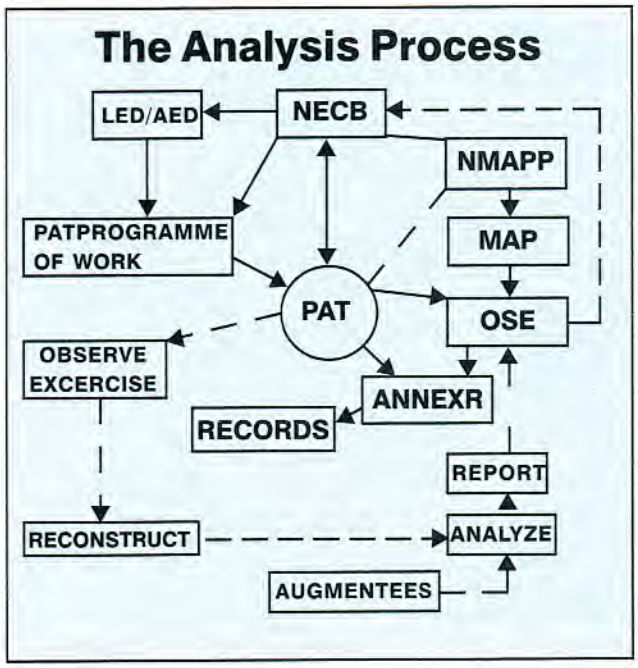
10.Following the exercise the re-construction usually takes between 3 to 10 weeks depending on the complexity of the exercise and the amount of data available. Part of the work consists of converting raw data recordings to a format that can be input into the Tactical Information Management (TIMS) which is the PAT networked computer system. In parallel, the team members will review all of the hard copy records and compile a detailed timeline of events relevant to their area of analysis.

11.After reconstruction, the analysis commences. This is basically a study of what happened, with what should have happened - taking into account SOPs, Extacs, exercise artificialities etc and what we would have wished to happen if it had been for real. The aim is to produce an objective report with relevant Conclusions and Recommendations to the OSE within 5 months.



12.On receipt of the Analysis Reports, the OSE is required to validate the Conclusions and Recommendations and write a Final Exercise Report (FER) for submission to the NATO Military Committee. At the same time he should also forward any recommendations that require further work to the appropriate NATO Working Party (eg the Maritime Tactical Working Party (MTWP), Mine Warfare Working Party (MWWP) etc).

13.So much for the theory. In practise, regrettably FERs are about as common as hen's teeth. Consequently the PAT, which is represented on each of the major WPs usually presents the recommendations personally at the next appropriate WP meeting.



14.Although the Analysis Report is made to the OSE it is given a wide distribution and copies are sent to all participants as well as to the commands involved in the exercise. This includes the Major NATO Commanders who form the NATO Exercise Co-ordination Board and provides for the experience of each exercise to be fed back into the planning cycle.

Role of the Minewarfare Working Party

15.All FERs produced are sent to the MWWP which sits annually (October) within the NATO HQ at Brussels. The MWWP is split into a number of panels which cover specific areas (ie Panel 1 publications/Panel 2 technical issues and Panel 3 which covers exercises). All the FERs produced are presented, the conclusions and recommendations discussed and if raising a serious concern placed into the CREME(MW). A suitable body to take corrective action is then identified (hopefully) and the issue passed to them for action.

16.For example:

a.During Northern Wedding in 1994 the uninhibited movement of DD/FF units through minefields was raised in several FIRs and ultimately the FER. Raised at the MWWP as a further example of the lack of integration.

MESSAGE FROM SOMFP

COMMAND AND CONTROL OF MCM FORCES AT SEA

By Lt Cdr Chirs Davies SOMFP

1. During the coldest (or should that be hottest) days of the Cold War the Command and Control (C2) of our at sea maritime forces was relatively simple. With Sea Area Commanders having fixed boundaries or Areas of Responsibility (AORs) it was straight forward to see who you worked for, who to report to and who was issuing the orders. Today with Out of Area (OOA) operations much more the norm and these likely to be joint or combined or both in nature the C2 is different but if understood no more complicated than before - trust me I'm a diver. At the top of the purely military tree we find the Permanent Joint Headquarters or PJHQ to its friends.

The Permanent Joint Headquarters (PJHQ)

2. The PJHQ was born out of a need to move away from the old ad hoc joint headquarters that were formed whenever a joint operation reared its ugly head (eg Northwood 82/High Wycombe 91). Its primary function is to be responsible, when directed by the Chief of the Defence Staff (CDS), for the planning and execution of UK-led joint (more than one service) or potentially joint, combined (more than one NATO/WEU country) and multinational (more than one country outside any formal defence organisation) operations. It is also responsible for exercising Operational Command (OPCOM) of UK forces assigned to combined and multinational operations led by others, in order to achieve MODUK's military-strategic objectives.

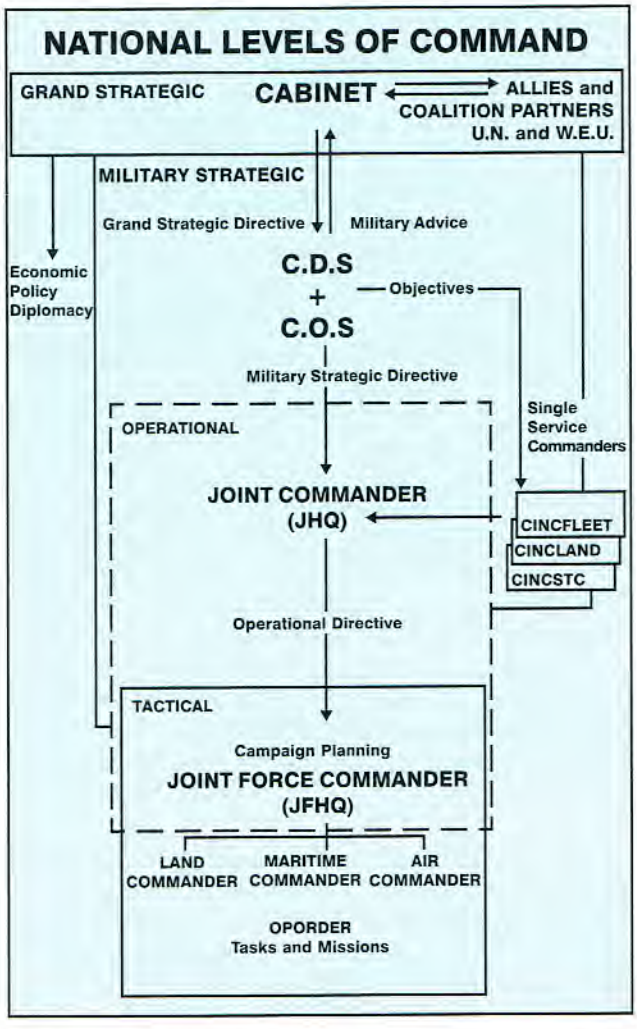
3. The PJHQ sits in the higher chain of command between the Ministry of Defence, which gives political direction and the new Joint Force Headquarters (JFHQ) which takes Operational Control over assigned forces. Any future operation will be Commanded by a **Joint Commander** who will be "The Commander with OPCOM of assigned Units" and who will be based in and also head the PJHQ. In a small scale operation he will most likely be the Chief of Joint Operations (CJO) who is also the normal head of the PJHQ. In a larger operation one of the single service chiefs may be appointed as the Joint Commander.

Joint Force Headquarters (JFHQ)

4. Next in the food chain is the Joint Force Headquarters (JFHQ) which is the headquarters that will deploy into theatre for an operation (eg Dhahran 91) and fight the battle. Depending on the nature of the operation the JFHQ may be ashore or afloat as both the operational CVS now have an interim JFHQ afloat equipment fit. This later option not only confers additional flexibility on the in theatre commander but it also deprives the Wafus of the wardroom bar - so it must be good news! The JFHQ has a much smaller staff than the PJHQ and when not deployed it is based at Northwood as another division of the PJHQ. On deployment the permanent members of the JFHQ act as a core staff around which significant numbers of augmentees (200+) gather depending on the type of operation. The full JFHQ has only deployed as a corporate body, once since its formation, which was during Exercise Purple Link in the autumn of 97. On this occasion 3 Infantry Division provided the principle augmentation expanding the JFHQ to some 250 personnel.

5. The head of the JFHQ will be the **Joint Force Commander** ie "The Commander with OPCON of assigned units" and as mentioned he will normally be based in theatre.

Single Service Organisations

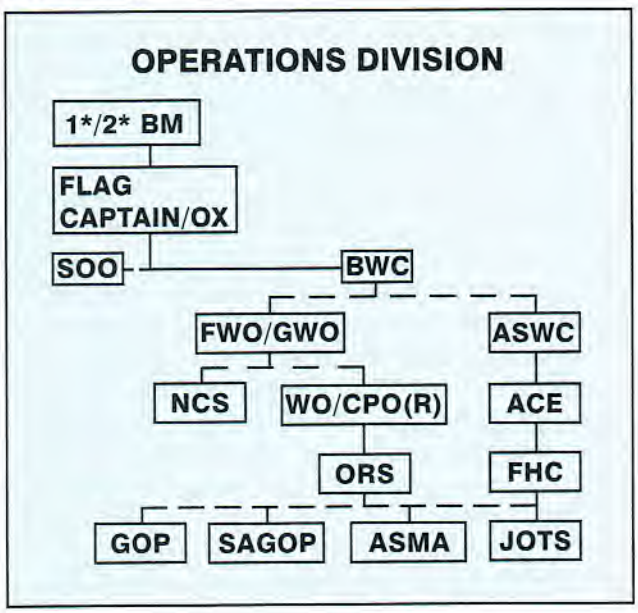


6. It should be noted that the above will result in a significant change for each of the single service

MESSAGE FROM SOMFP

organisations. In future operations CINCFLEET will retain Full Command of maritime units and will be responsible for providing military capability (operational readiness, training etc) and support to enable combat effective forces to be deployed, sustained and recovered from an Area of Operations (AOO) but will have no operational control.

a. In recent years we have been well served within the battle Staff's Operations Divisions with a number of GWOs/FWOs being MCD qualified.



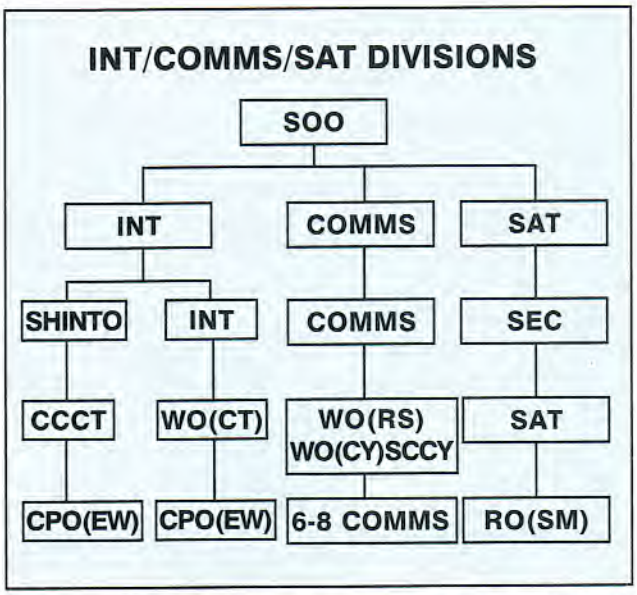
b. A Plans Division - comprising of specialist AWW/AV/UWW/SM/MW/AW/C2W/MPA and METOC officers. The divisions staff are normally table topping possible options, plans etc from 24Hrs to 96Hrs ahead. The ultimate product is the Intentions signals which is released at 1800Z each day and covers a period starting from 0800Z the following day as follows:

H 0 to H+24Hrs - In detail
H24 to H+48Hrs - In outline
H48 to H+96Hrs - In broad outline

basically this signal lays down the MCCs requirements and instructions for the conduct of ongoing operations.

Both COMUKTG/FABs Staff's have a dedicated Minewarfare Officer to act as the MW specialist although COMUKTG does not have a full-time representative - a situation we hope to rectify shortly.

c. Int/Comms Division - which proves additional specialist intelligence and communications support plus the Submarine Advisory Team (SAT) for the Command and Control of Submarines allocated to the MCC. In future additional personnel may be added to this division to enable the operation of the Minewarfare Tactical Support System (MTSS) from sea.



d. A Logistics Division - To provide specialist logistic support. Most of the personnel are supplied by the ship's staff who provide Marine/Weapon/Air Engineering and logistic support as well as additional personnel to cover PR, Medical, Legal and RFA aspects.

e. A Support Division - Comprising of Writers, Stewards and Cooks to provide administrative support to the Battle Staff and ease the loading on the command ship's staff.

10. The full MCC Battle Staff organisation is therefore:

11. A significant number of augmentees are again needed to bring either of the Battle Staffs up to the full strength shown above, building around COMUKTG Staff or the FOSF seariding staff as required.

12. The revised C2 arrangements described here have been in place since August of 1996 and have proved themselves capable in both exercises and live operations, on a number of occasions, of providing the effective Command and Control which is fundamental to the efficient and effective employment of maritime forces - do you know who you work for?

MW AND THE JMC

THE EVOLUTION OF MINEWARFARE IN JOINT MARITIME COURSES

By Lt Cdr Tom Russel SMCDO to FOSNNI

The days of MCM participation in the JMC consisting of a Mine Detonation Demonstration and a short leadthrough are now in the past; and long may they stay there. Modern JMC's revolve around well balanced fully integrated forces capable of conducting warfare operations in a hostile environment. To that end, not only do the MW forces gain from the dedicated MCM training available but they are also immersed in the broader aspects of warfare and as such are forced to learn about other disciplines and tactics. This short article will attempt to inform you of the development and ongoing improvements made to the course by JMOTS and how we, the MCM community, are gaining maximum benefit from it.

In the early days of the JMC/MW metamorphosis, as you would expect, the MW expertise in the JMOTS organisation was limited. As a result JMOTS relied heavily on the MCM commander who had been allocated as the CTU, for expert advice and initial planning as well as a goodly amount of advice during the course itself. This as you can imagine is a less than satisfactory situation with the CTU planning and executing his own exercise. This problem was identified early in the proceedings at which stage 3 main players emerged as the planning and execution cell; namely SO (ASW) JMOTS, SO MFP (NORTHWOOD) and SMCDO to FOSNNI.

The first priority was to find and establish an operating area for the units to work in. The main operating area centred on the Minches and Loch Ewe in particular were presented as a "fait acomplit" because of the tactical scenario. It was then up to us to develop a varied and interesting MCM playground for the CTU to work in. The first point of contact was the local fishing community, who after much negotiation (mostly over bottles of single malt) allowed us to establish a rudimentary set of operating areas. Since then the areas have grown and developed into the challenging operating environment that you should all be familiar with. The areas consist of mine sweeping corridors for both mechanical and influence sweeps, a MDDU area, MDC firing box and a few hundred miles of Q routes which includes several anchorage boxes, all of which are being incorporated into an Exercise Minewarfare Pilot by HYDROUK. The whole package has been designed with the JMOTS remit to conduct tier 2 training in mind, which as you can imagine means that there are some pretty demanding MCM conditions to deal with. No apologies are proffered for the difficult conditions as we must practice operating in all environments if we are to be effective when we go into live operations.

With the playground developed we then went on to look at the tactical scenario and the integration of the MW force into the bigger picture. Which, as you can imagine, had many teething problems. This is where the MW community have gained maximum training value in an area which had been badly ignored for a long time, and where at last MW is getting a fair hearing and being seen as a very useful asset to have in the force. The first week of the course is conducted in a serialised programme format, which exposes all units and commands to the full range of warfare disciplines. Week 2 is the free play operation which allows realistic warfare to be conducted in a hostile environment. There are no great surprises with C2 which is your familiar chain of working for an MCMTA (CTU) who in turn interfaces with the CTG. Communications can at times be very demanding, however rest assured that the limitations of the MCMV's has been fully briefed and taken into account. Support comes normally from the MCMTA either afloat or ashore but always located in the vicinity of the POL jetty at Loch Ewe. Several minefields have been laid to add to your enjoyment and when added to the air, surface and sub surface threat you find that you have a demanding but thoroughly enjoyable environment in which to hone your skills. You will have noticed that I have used the term MW as opposed to MCM, that is because more and more NATO units are participating which on more that one occasion has given the force the use of a Minelayer. This in turn gives us the ability to lay tactical minefields and practice all minewarfare disciplines. To take full advantage of this highly effective warfare discipline it has been recommended that CTG staff is complimented with a dedicated minewarfare specialist. Thus, I think that when you arrive for your JMC you will find that you are presented with a viable tactical scenario, with a set of realistic goals, which provide a chance for all parties to gain maximum benefit from the course.

The course continues to develop, as you would expect, however, a solid set of foundations have now been laid which will allow subsequent courses to be tailored to meet the needs of all the parties concerned. The significant advances made in developing the present course have come about by the good working relationship between the three previously mentioned officers, effective and friendly relations with the local community and a well rounded and tactically sound scenario which exposes all players to the MW environment. The training achieved by the MW assets is now on a par with that achieved from the FF/DD community and continues to improve with each course. It only leaves me to wish you good hunting and hope that you enjoy the experience during your next JMC (weather permitting).

THE MOVE UNDER FOST

THE MOVE UNDER FOST

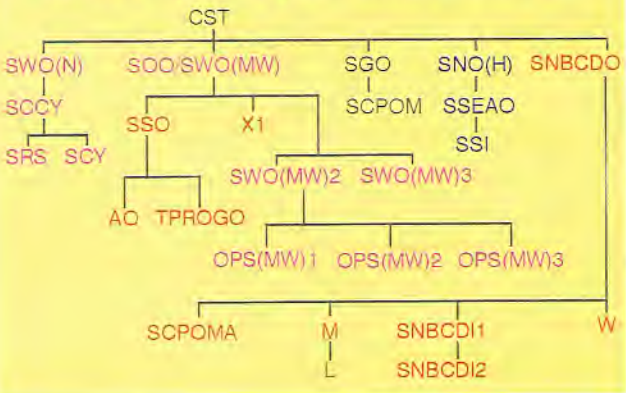
The organisation of FOST (MPV) is now firmly established within HMNB Clyde conducting OSTs of all MM/PPs in the CLYDE approaches. Since the move in Dec 1995 and the subsequent integration into FOST we have seen considerable change and improvement in the way we conduct our training. The integration with FOST has removed any trace of the myth of the 'double standard' between the MM & FF/DD community, the influence of FOST being crucial to this success. This in turn has seen the introduction of the FOST Staff Training and Development Plan; this has been introduced to provide a method to train, develop and appraise FOST Staff to ensure they are fully capable of meeting FOST's requirements. This is achieved through initiatives such as Training the Trainers which will contribute to FOST's Investors in People accreditation (due June this year). The training and development of each member of the FOST(MPV) team will then provide you, the customer, with what is increasingly accepted to be the best Operational Sea Training available in the World.

ROSYTH TO FASLANE 1995

FOST
Minewarfare and Patrol Vessels

SSOTS
Small Ships Operational Training Staff

FOST (MPV) FAMILY TREE



THE TEAM

The Staff in total consist of 28 personnel, of which 26 seaside, covering all departments. The Minewarfare Training Team now consists of 3 MCD/MW Staff Officers and 3 CPO(MW)(O) Staff Instructors thereby allowing full 24 hour cover for two MMs undergoing OST simultaneously. A Lt Cdr MCD, PWO qualified, heads the team with the other Officers having recently completed a tour as XO/OPS onboard MMs; the 3 Senior Rates are all NBCDQs to enable ships to continue developing those skills acquired during general training. For those interested, the job is extremely rewarding and, for the Lts', ideal pre PWO training.

THE TRAINING PACKAGE

All RN (an increasing number of international) MM/PPs undergo a period of General Training, based at Faslane, day running from the Naval Base and which culminates for the MM in a General Phase Assessment (GPA); it is after achieving a successful GPA that Minewarfare training starts in earnest. Ships are issued with a comprehensive MCM OPORDER supported by the requisite setting up signals which include an OPDIR, OPTASK MW/AAW/COMMS/EW etc plus associated Intel/ROE signals that you might normally expect prior to any exercise or operation. The scenario is a familiar one and based on recent RN littoral operations; the MM forms part of a multi-national Task Force attempting to maintain the status quo between two protagonists, who steadily become more hell bent on ethnic cleansing and world domination. In addition to a steady flow of neutral shipping in the area and the assigned (paper) baby-sitter, the ship must also carefully monitor the progress of a 'ghost' MCM Task Group operating in an adjacent area.

FOST - MCM TRAINING

MCM TRAINING

Normally the ship sails the day following the GPA and are 'forward deployed', operating in Defence Watches, in the Clyde Approaches for between 1½ and 3 weeks. After each 5-7 days tasking period a 36 hr Operational Support Periods ('stand offs') is ordered, these are normally taken alongside at Campbeltown on the Kintyre peninsula. Initially undertaking a CET phase (MXTI's drills and RTSV), the embarked staff ensure basic procedures and drills are correct before ordering more complex MCM hunting or sweeping tasking. Regular intelligence signals are introduced which, in addition to invoking renewed urgency, increase the air and surface threat and gradually draw the ship into a volatile, bitter conflict. Regular sitreps on LAAWC keep the Command team busy, and soon all are involved with countering the air probes and damage inflicting raids. This ultimately leads to the Final Inspection commencing during the evening of the penultimate day of training; for this CST and other members of the staff embark to fully assess the ship's ability to successfully operate in a tactical MCM environment.

This training period allows all aspects of MCM to be enhanced; for the operators drills and procedures are explained in detail and then tested in varying environments. Maintainers have to deal with paper (and all too often real) defects fighting through to achieve the aim. The command team has to think tactically; establishing the most efficient plan to achieve the task utilising all available MCM computer tools and large doses of common 'MCM' sense. All this conducted under a broader tactical umbrella where the action stretches reserves of stamina to the limit.

LIFE AFTER OST

Clearly the end of OST is not the end of the story. The training cycle continues with second tier training during JMC followed by squadron training and NATO exercises to add the final tactical polish. Of course preparations for the next OST must continue within this 18 month cycle. Remember, operating in three conflicts over the last 16 years we have been lucky not to loose a ship. This busy and demanding training period is an exacting challenge specifically designed to ensure that you are equipped with the basic necessities required for you to survive in a minefield during the next conflict.

THE AREAS

The Clyde Exercise Areas are an ideal training ground. Sheltered water can be found in almost any weather conditions, therefore training time due to inclement weather is seldom lost. Traffic levels are lower and negotiations with the local fishing community are continuing to the benefit of all. General training is conducted in the inner Clyde approaches just 35 minutes steam from Faslane. MCM training is conducted along the network of exercise Q - routes as well as in the bespoke minefields. A variety of minefields cater for a range of depths, with sea conditions ranging from the benign to the blessed difficult. The areas around Campbeltown offer ideal medium depth fields and varying bottom conditions, whilst those areas in Jura Sound and Loch Fyne offer deep training for the Sandown in Deep VDS Operations.

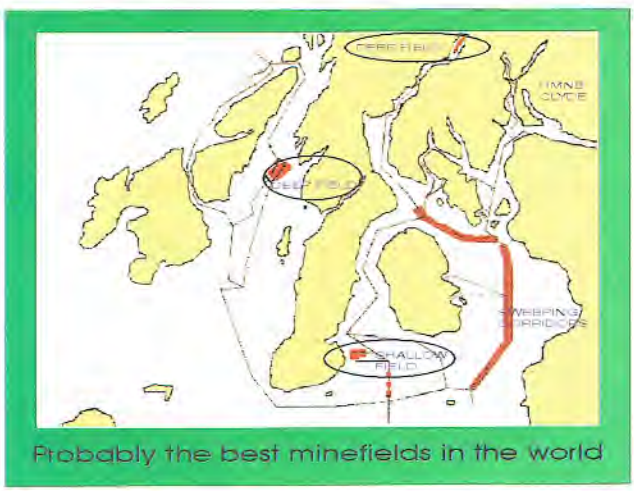
Our arsenal comprises close on a 150 mines all told, in depths between 9-200 meters and varying topographical and environmental limitations; the pièce de la résistance is a 2 square mile Task Force Anchorage containing 50 mines which we genuinely believe is "probably the best mine field in the world".

OUTSIDE INTERESTS

Beyond the training of UK units, at FOST(MPV) as at FOST we are broadening our international interests. Within NATO we conduct SCWT for SNFC, next planned being a two week slot in Feb 99. We also maintain close links with MOST at the ABNL school Eguermin. Beyond NATO our customers include Saudi Arabia, Qatar and, in the near future, the UAE.

WE ARE HERE TO HELP, TRAIN AND DEVELOP SURVIVABILITY IN A MINEFIELD.

Whether it be at sea or in office our doors are always open (that includes before and after normal working hours), to answer your questions and queries. Remember good communication is the fundamental key to success, and to that end a list of present Staff and telephone numbers are below. Happy Hunting (and sweeping).



Probably the best minefields in the World

FOST CONTACT NUMBERS

FOST MPV TELEPHONE NUMBERS
93 255 ext (Network)
01436 674321 ext (BT)

TITLE	RANK	NAME	EXT	TITLE	RANK	NAME	EXT
CST(MPV)	CDR	R A MARSHALL	4340	M(MPV)	WOMEA	B J PAMPLIN	4420
SOO/SWO(MW)	LT CDR	J L POOLE	4459	WE(MPV)	CCWEA	WILSON	3652
SWO(N)	LT CDR	S R McQUAKER	6856	L(MPV)	CMEM(L)	K SANGSTER	4451
SNO(H)	LT CDR	G TURNBULL	4031	SNBCDI(1)(MPV)	CMEM(M)	I M WHITE	3712
SGO	LT	M J WALKER	4383	SNBCDI(2)(MPV)	POMEM(M)	F R SMITH	3835
SNBCDO(MPV)	LT	S DUNNINGHAM	3774	SCMA	CPOMA	A FOSTER	3651
SWO(MW)2	LT CDR	A GRIFFITHS	6995	SCCY(MPV)	CCY	LONIE	3207
SWO (MW)3	LT	T J LAMBIE	4408	SCY(MPV)	CY	J PETRIE	3638
OPS(MW)1	CPO(MW)(O)	S M DOWNEY	4439	SRS	RS	BROWN	3204
OPS(MW)2	CPO(MW)(O)	G G COYLE	3776	SSO	WOSA	K TOMLINSON	4470
OPS(MW)3	CPO(MW)(O)	B V HOGG	6985	TPROGO	CPO	M SLATTER	6644
SSEAO	CPO(SEA)	D J DEAKIN	3648	AO	CIV	I FRASER	3773
SSI	PO(SEA)	S R BROSNAN	3770	TSM	CIV	H BRUNTON	6644
SCPO (M)	CPO(OPS)(M)	A IMMS	6573	FAX: Direct Dial 01436 677221 OR EXT 3696			
X1(MPV)	MAA	DOBSON	3786				

COMMON WEAK AREAS

1. The list below details the current common shortcomings in Minewarfare and Diving. These are recurring points which have been noted in more than 50% of ships undergoing OST over the last year.

MINEWARFARE

SUBJECT	COMMON WEAK AREA	SUGGESTED REMEDIAL ACTION
HOVERING	More emphasis is to be placed on all OOW's to ensure an acceptable standard is maintained - MHSC.	Sufficient time to be planned into Ship's programme.
RECORDS	Lack of detail in compilation of correct manuscript and magnetic media records, vital for post task analysis.	MWO/MHD to be familiar with BR 8513 (2C1) (MHSC) and BR 8413 (2A,2B) (MHC).
RTPME	VOS dips to be saved to unique files (and results relayed to operators).	More emphasis required by MWO/MHD.
HVME	Insufficient corporate knowledge in use of equipment to optimise Threat Reduction.	More use to be made of system and associated publications. Relevant personnel to complete the PJT (ME36C).
FORMATTED SIGNALS	More familiarisation required when using pre formatted Minewarfare Messages.	MWO/MHD and Comms staff to be familiar with APP4 Vol
SONAR DRILLS	a. Correct drills not used i.a.w. Class BRs. b. Contact Marking during Classification does not reflect perceived orientation of target.	a. Onboard Education, Ops Room formality, MHDs to enforce standards. b. Operators to mark length of target depending on orientation, not simply left to right across screen with bias turned down (unless appropriate).
PN FAIL	Poor level of procedural knowledge for recovery action.	Familiarisation and practise
NAVPAC	Poor utilisation and knowledge of setting up/limitations.	Improve education and practice.
KOM CALIBRATION	Ships are arriving at OST with Kite Otter Multiplanes incorrectly calibrated.	Allocate sufficient time during shakedown period to ensure KOM's are calibrated.
MCM STATEBOARDS	Stateboards are not being updated during watches or on change of task.	MHD's to ensure stateboards are updated.
WATCH HANDOVERS	Insufficient detail being passed between key personnel at handover.	MWO/OOW/MHD's to ensure relevant details covered (using of aide-memoire is recommended).
DEGAUSING	Command Teams unaware of DG System defects affect on ship's signature.	Disseminate results of last ranging and Table Top actions in event of failure.
MCM PLANNING TOOLS	MWOs unable to effectively use MCM EXPERT and A & B Predictor.	Teams to fully utilise and acquaint themselves with MCM Tools prior to OST
THREAT APPRECIATION	Appreciation of Threat insufficiently developed, thereby stifling accurate reduction measures.	Command Teams to fully consider threat and valid reduction measures.

STANAVFORCHAN - A COXSWAIN'S VIEW

DIVING AND DEMOLITIONS

SUBJECT	COMMON WEAK AREA	SUGGESTED REMEDIAL ACTION
DIVING WORK-UP	Ships arriving at OST with divers unable to dive to maximum depth under Minehunting Diving Rules	Conduct a dedicated work-up before arrival, or progressively work-up the divers from OST minus 3 months
EXCEEDING GEMINI HOISTING LIMITS	Hoisting and lowering limits exceeded when the Gemini is rigged as a diving boat	Review procedure for loading/unloading the boat, with particular reference to a casualty
SURFACE DECOMPRESSION	Poor appreciation within the Ship as to what the evolution entails and why it is not an emergency	Regular practice as a whole ship evolution
BR2807 RECORD	Poorly maintained, in particular sections 4, 7 & 9. This should be a "living document"	Diving Officers need to pay a closer interest in the documentation
FCD3 planning	Planning of ship's diving team training is reactive to CAPES printouts, rather than pro-active to individual/collective requirements	Establish a planning grid to help better maintain the team's OC
DIVING LOGS	Old style logs incorrectly completed and following formats at variance with BR2806.	Adopt the new format
E LISTS	E Lists W3101, W3072, W3038 not held by the Diving Maintainer	Request from Irwin Desman Ltd
DEMOLITIONS KIT	Not held, or holding equipment inappropriate to the task	Consult BR338(1)
BRIDGE FILE	Predominantly containing out of date photocopies of sections from BRs, with no explanations to the layman	Diving Officer to take a greater interest in its completion
BRIDGE DIVING EMERGENCY CARDS	Containing actions inappropriate to MCMV in a minefield (starting main engines)	Review
HISTORY SHEETS	Adqual and NAMET not up to date	Review

STANAVFORCHAN - A COXSWAIN'S VIEW

By PO (D) Steve Strange.

Having been fortunate in being on the "signal" and been given the option of early relief or staying on HURWORTH for 9 months of STAN's, I had a dilemma, sea pay or subbies, home to duties or Officer of the Day duties. The prospect of New York, St Johns and Halifax won, "I'll stay".

Prior to joining STAN's we had to pass MOST, a sort of alternative continental OST. The Minewarfare stage was "interesting", instead of the usual 2 seariders during OST on MOST you have 13 onboard continually! The Diving was quite "sporting" as there is little shelter off the Belgian coast during October and the current and sea state, a lot of which is wind driven, is unforgiving. The last serial during the Minewarfare phase of MOST is a live MDC firing, inevitably it failed, (as we were due home on completion after 2 months in Belgium) - standby 2nd MDC. Whilst I was taking bets in the galley on the 2nd failing, the Belgian SOO appears outside the MCO, holding a 1 lb scare charge, had he gone mad, was he a potential suicide bomber? "Excuse me Sir, we don't bring live explosives into our ship, can you take that outside?" (or words to that affect). Little did I know he had already taken the pin out, ditched it over the bridge wing, in anticipation of a "wrecking" scenario when the MDC exploded. The fatal flaw in his plan was exposed when the 2nd MDC failed and he was left wandering around the ship with an elastic band around the fly-off lever trying to find someone to hand the offending item to. The second MDC having failed, we were left baby-sitting the charges for 24 hours. Andy Lonsdale did a sterling job in packing both charges in marginal diving conditions the following day.

Having successfully passed MOST we joined the rest of STAN's in Southampton after Christmas leave. Trips to Barrow, Port Glasgow and Kirkwall followed. Here I got to meet one of the STAN's

STANAVFORCHAN - A COXSWAIN'S VIEW

Dive teams, led by a Belgian Chief Diver called Bart who introduced himself by giving me a "terror" shake in the cabin at 4 am, "Piggy I've come to drink your apples". The guy was either living in a time warp or stringing me a line as Piggy Trotter had left the HURWORTH at least 10 years before.

Kirkwall was interesting, SOO to COMSTANAFORCHAN, Alistair Strangroom, had organised a day's diving for the force in Scapa Flow. We dived the wrecks of the German Battle Fleet, Koln, Dresden etc, outstanding wrecks in gin clear water, however, a weeks sustained wreck diving is needed to do the area justice. In addition the Brits were tasked to survey the wreck of the ROYAL OAK in Scapa Bay. The wreck has been leaking bunker fuel for some years, the oil is easily seen from the surface and in fact was used to locate the wreck. The task was to survey the leak stopping patch placed on the ship's hull, and we used a U/W video camera to achieve this. It is a moving experience to dive this designated war grave and permission from MOD to dive is not given routinely. The dive was preceded by a speech from Lt Cdr Stangroom, followed by a minute's silence, to honour the 833 British sailors who rest there, having met their fate on 14 October 1939.

On to the Baltic, Norway and Denmark and a Squadron exercise. A quiet exercise until the last day, at 0700 the team was tasked to investigate a possible WW2 mine. The contact was 80% buried and in poor condition. Three divers later and lots of measuring, sketching and referring to AEODP's, probable A Mk 9 British ground mine. The application of copious amounts of "white Lightning" sorted the problem out. Mid-day onwards mine recovery, 6 mines on deck, the team was dived out by 0400 and in desperation the "Onesy" had to go in. 0530 back onboard with a promised 6 hour stand-off for the team. Wrong again, 0805 a terror shake by an OM, "Coxswain, you've got to see the Captain, they want you to blow up an exercise mine", surely not. CO to Coxswain, "Swain they have laid mine's explosive case for us to MDC as a demo, however, they've laid it in a "rock garden" and the PAP can't find it, can you blow it by nine?" "Nine tonight" I hopefully replied, "no, nine as in 40 minutes, we have half the Norwegian and Danish Navy waiting outside for this thing to go bang". Pausing only to peek into the Ops room seeing the MWO with his head in his hands and the Bosun, bless him, driving the vehicle around in an aimless grid search from FBR to FBR. Luckily the mine case was buoyed and after some lightning EOD preps and short fuses we packed and detonated the mine at 0902, an interesting 24 hours.

Norway and STRONG RESOLVE seemingly the biggest NATO maritime exercise ever staged, however, HURWORTH was firmly stuck alongside, engine changed. The time wasn't wasted though EAD's and diving drills outside the harbour (how cold) and Minesweeping practice at night (at £5 a "wet" in Norway you protect your assets).

Coxswaining is definitely easier second time around as you've heard all the "bone" questions before. "How many warrants have I left Coxswain?", "one less than last time, you asked 5 minutes ago", and the all time chestnut from a legendary AB(MW) colloquially known as "Bullet". "How often do we have to do this Annual Personal Weapons Test then Coxswain?", yes he did say it and I was speechless.

THE SWEDISH EXPERIENCE

By Lt M S Long RN

"No one else is available, so you will have to spend 2 weeks in Sweden with their navy." Oh well I suppose someone has to do it. The Royal Swedish Navy had requested that a short exchange of Minewarfare personnel could be established, obviously with a view of something more substantial in the future. My instructions were clear enough; I was to fly to Karlstadt, Sweden and report to HMS ARLHOLMA, a LANDSORT class MCMV.

I was somewhat intrigued to learn that Karlstadt is in fact on a lake! MCM operations on a lake sounded rather limiting until I discovered that it was the size of Wales.

I arrived onboard and was shown to the Wardroom. "Good evening Sir" I greeted a very relaxed 3 ringer lounging in front of the TV. My first mistake, he was a Lieutenant.The Swedish Navy likes their gold braid.

We sailed the next morning for MCM ops and a number of ADEXs with their Airforce Viggen and Grippen fighters.The force of three MCMVs were supported by three fast attack craft providing air defence cover.The real reason that the minehunters were operating on Lake Vaanern was in support of the local fishing community (where have I heard that before?), clearing an airforce bombing range.Like ourselves the Royal Swedish Navy (RSN) has to justify their existence to the tax paying public in an ever changing political world. Consequently their MCM fraternity are benefiting from a large amount of positive press coverage, both of their ops on Lake Vaanern and off the Lithuanian coast clearing a large amount of Former Soviet Union ordnance. For example, such is the high profile of MCM in Sweden that in order to obtain their new stealthy multi role corvette, it had to demonstrate an MCM capability.

RSN MCM ops differ from ours in a number of ways, the principal one involving manpower allocation. The LANDSORT class, similar in size to a HUNT, has a ship's company of approximately 26. Armed with this fact it does not take the brains of a rocket scientist to conclude that their personnel are spread thinly. One area where it is noticeable is in the Ops Room. One sonar display and one AIO display, separated by the ROV station, are available and these are manned by two minewarfare officers, one on the sonar and the other principle "MWO" dividing his time between AIO and the ROV. Could this be a solution to our gapped billets one cries! At this point it should be noted that the RSN is a conscript navy, with the majority of "skilled" tasks allocated to professional career officers, namely the CO and ten others.

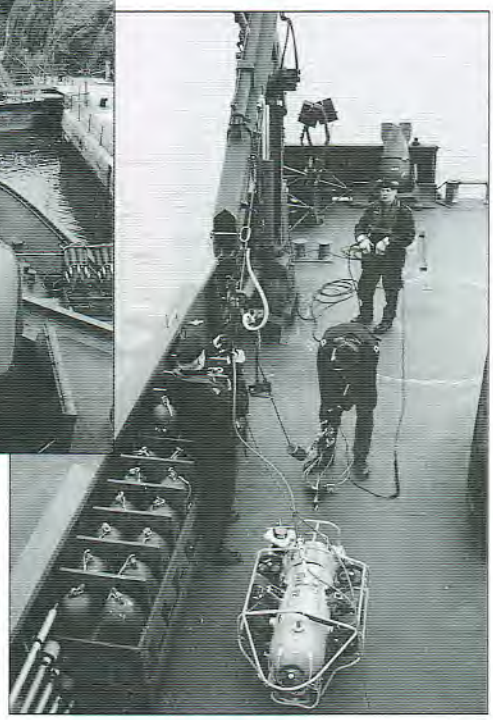
The other discipline that seemed to suffer from a lack of hands was firefighting and damage control. A large degree of their philosophy was based on the theory that the majority of fires are successfully extinguished by the person discovering it. Any escalation of the incident and

THE SWEDISH EXPERIENCE

the ship would then rely on closing down the affected compartment and calling in external support. To emphasise this fact the ship only carried three "BASCCA", two of which would be used by the "attack party", with one set retained in reserve. An interesting scenario for our wreckers perhaps?

After four days day running, the MCMVs left the fast attack boys and passaged through the lock system of the Trollhatte Canal to Gothenburg and the open sea (now where did I put my stugeron?) We arrived in Karlskrona (their main base in the south) in time for the weekend and their Coastal Fleet Mess Dinner and Ball. After much persuasion (!) I accepted their invite and an offer of a blind date to help with translating the menu. My fears of escorting a 600 lb shot putter were unfounded, she didn't even like athletics! It has to be mentioned here that the RSN policy on what jobs conscripts are given has to be praised in one important area: chefs. The two on our ship were excellent and providing you enjoyed fish, cooked or raw (and not a bit of batter in sight!), served dishes that would not have looked out of place at any high class restaurant. Not surprising since both had worked in top restaurants in Stockholm before their draft. Cheesey Hammy Eggy, "tank tracks" and chips will never look quite so appealing again.

It was also interesting to note the RSN employment of CDs. Apart from dedicated CD vessels (converted trawlers), their MCMVs carry a small CDE, principally 2 conscripts and 2 officers. The majority of the contacts investigated during the clearance of the bombing range was done by ROV, rather than diver. Perhaps this was down to the fact that the ROV (Single Eagle) [PHOT 05] was able to be rapidly deployed, since it was physically small and powered from the ship via an umbilical and thus was not limited by battery life. Nevertheless, the depths encountered were not extreme and this unwillingness to use a very capable asset was strange.



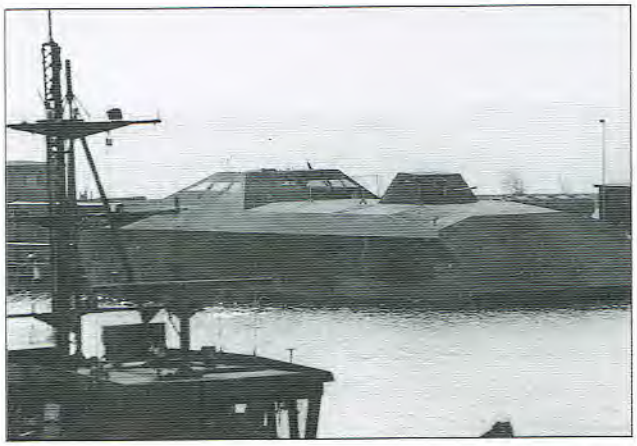
The RSN showed me around their new MCMV, the STYRSO class. Unlike the LANDSORT (twin VS units, no bow thrust) this vessel has a conventional propulsion arrangement more in line with the HUNT. However, state of the art Bridge and AIO systems (combined on the bridge) distances itself from the older British design. Positioning of the ROV hanger forward, away from the underwater winches appears to be a sound decision. However, the RSN has seen fit not to provide facilities for a CDE and has opted for total reliance upon their ROV and external diving support. Also the design only offers a mine avoidance hull mounted sonar with a towed side scan sonar.

The remainder of the second week involved visits to other non MCM units, including their Submarine Escape Training Tank (an 18m tank

based on the RN one at Gosport) where in addition to submariners their Mine Divers, Clearance Divers and helicopter aircrew practice free ascents. Glancing around their historic dockyard one could spot weird and wonderful

FAREWELL TO THE 2641

equipment, most of which the Swedish officers were happy enough to explain. Large submarine "saddle tanks" housing a minelaying system just discarded on the jetty which were apparently "not in service at present" and their experimental stealth ship, tied up and gutted of systems, which has acted as a technology demonstrator for their new stealthy corvette.



The two weeks were soon over and it was apparent that the RSN is keen to strike up some form of link with ourselves and other NATO MCM units. For despite their obvious skill and experience in minewarfare they are fully aware that their neutrality has denied them access to valuable "cross pollination" with organisations such as NATO. The reciprocal part of the exchange will occur later in the year, which should give me ample time to organise a suitable prop forward blind date!

FAREWELL TO THE 2641 AND ALL THAT!

By WO Lawrie DNM(D)

A new ratings' appraisal report has been developed: gradual introduction is planned to start in autumn this year. The report is designed to make life easier for busy Divisional Officers by replacing the 2641, 281, and 206CW with one single report which will also be used for RM other ranks. A further boon: the new report only requires two, instead of three, sections of text:

assessment of current performance - how well is the individual doing in his/her job and in achieving results;
assessment of potential for those eligible for promotion/further Service - current and long-term potential.

The new report removes any remaining mystique about "write ups" - it is fully open: all our men and women will receive a copy of each report written about them.

The new appraisal report is supported by two new documents which form part of the pan-Navy approach to the 'Investors in People' (IIP) accreditation. One is a Job Description and the other provides a through career record of Training and Development. The former will be primarily based on existing Ship/Unit/Department Orders and Terms of Reference; the latter should eventually replace most History Sheets.

Overall, Divisional Officers will see benefits as the number of Service documents reduces, information is more logically presented and report writing is reduced. Additionally, IT support, particularly replacement "report writer" software, is fundamental: development work is underway and trials will take place in the next few months.

I I P EXPLAINED

EXCELLENCE IS A HABIT NOT AN ACT

by Cdr Colin Welborn - MCM1

I keep six honest serving men
(They taught me all I knew);
Their names are what and why and when,
And how and where and who;

Here, though not in order, are some answers to Rudyard Kipling's six questions applied to Investors in People (IIP).

What

Investors in People is a national standard that seeks to encourage organisations to train and develop all their people. In order to meet the evolving demands placed upon the Royal Navy our people need to be motivated, committed and fully developed in order to achieve the goals of their organisation. IIP is based on proven principles and its integrated approach to training, development and communications relies on:

-Commitment from the top to develop all employees to help achieve its organisational objectives.

- Regular review and planning of training needs of all employees.

- Action to train and develop individuals on joining and throughout their careers.

- Assessing the investment in training and development to ensure success and seek continuous improvement.

Who

Chief of Defence and Permanent Under Secretary of State made a formal commitment on behalf of the Ministry of Defence to implement alignment with IIP standards. Simply, that is every unit and individual.

Why

Our main aim is to provide Operational Commitments to Commander in Chief Fleet. We can only do this by putting quality into all our endeavours. To perform at best our people must:

- Know, understand and agree the requirements and responsibilities of their billet.

- Know how to do their job and why it is important.

- Have the materials, tools training and information to do their job.

- Be able to measure how well they are doing.

How

The IIP accreditation process can be divided into five phases:

1. An explanation of IIP to the ship's company.

2. A comparison (called Gap Analysis) of the current practices compared with the required National Standards. This is done by questionnaire and interview.

3. Development of an action plan to close the gap.

4. Implement the plan.

5. Assess against the National Standard.

Squadrons will be accredited as "autonomous units" with Head Quarters and Superintendent of Diving area forming separate units. For IIP purposes, MCM1 and MCM2 will combine with MCM1 taking the lead. Each Squadron has nominated an IIP co-ordinator, who will ensure commonality of approach within the Squadron. Within ships, steering groups have been established.

When (in the Flotilla)

MAR-MAY 98	MCM1 Briefs 1&2 MCM ships
APR/MAY 98	Gap Analysis by MCS
NOV 98	Action Plans produced
DEC 98-APR 99	Implement Action Plan
MAR 99	Formal Commitment
MAY-DEC 99	Rolling Accreditation

Benefits

To the ship:

- A reaffirmation of the Divisional System.

- A concise Ship's Training Plan aligned with all the ship's objectives.

- Encouragement of innovative thinking.

- Help manage change.

To the individuals:

- Improved joining procedures.

- Better internal communications giving everyone an understanding of what is going on.

- Greater motivation through focused teamwork.

Summary

None of these principles are new to an organisation which has been investing in training for 300 years. Indeed, the approach is to build on the solid foundations of the existing Divisional and Training system. Above all an objective is to avoid bureaucracy and concentrate on the practicalities of implementation. Roman Army principal of war was FESTINA LENTE (make haste slowly) and this is worth considering because IIP is a journey not a single event. At the end of the day the shortest answer to all Kipling's questions will be in the doing.

BABY TALK

AB DIVER PQC 115

We arrived at DDS on the 27 October 1997 to embark on AB(D)115 PQC. The prospect of being thrown together working as a close team for a duration of five months held a little comfort for all involved. However, as we are now aware only three of the team were to make it!

It was here we all got to know each other a little better, straight into wit, sarcasm and darned right taking the P out of one another. It appeared that ground work had already been laid in the process of becoming divers. We soon appreciated how fortunate we were to be on course after discussing the varying difficulties in just getting this far. Although this was shallow mud compared to what was to be tackled later!

After drawing our kit we were then introduced to new ways of freshening up in the mornings by means of group circuits, which our cardiovascular systems grew to know and love. From here it was straight into the classroom for three days of intense HSE Diver First Aid Training, this classroom work put us at the foot of the steep learning curve we were to endeavour to climb throughout the course.

The first day of the SABA phase put our feet firmly in the starting blocks of our chosen careers, and we found that is exactly what we were doing, since this phase immediately started with the DPFT. Which was a good warm up, because after that our feet didn't touch the ground!

After we were all fully conversant with the equipment it was on to the endurance swims, our water fitness improving by the day, especially the non ships divers. Week 3 and it was up to Portsmouth Harbour for ships bottom searches, a scary encounter for the non ships divers, and even worse for those who had to dive with them! By the end of this week it was fair to say the entire course were 'level pegging' with one another.

With the air phase successfully completed it was on to DSSCCD which we had heard so many horror stories about [as we are now aware divers don't exaggerate much!]. We were also introduced to our friend, the hand booster pump. This is where the course were to step up a gear, both physically and mentally. Some of the evening classes and leisure entertainments introduced, included pleasant strolls across Port Solent Mud Flats as the sun went down, and further time spent listening to the cogs turning learning more physics of diving.

After these two weeks we were fully ready for live-in week.

This was to be the largest test of endurance that any of us had ever experienced. This is where our ready-formed team work was tested to the limit. Regrettably our team suffered a major set back, we lost two course members due to medical problems. We were now on the skin of our teeth since the minimum number of three on course was reached. Of course, it made it no easier for those remaining, but through good team work and a stubborn non-defeatist attitude we overcame live in-week. Just in time to load the lorry for Portland.

Next stop, Portland! and sea bed searches. This was to be our first time detached from Horsea. After having learned to dive DSSCCD we could actually relate to the tasks that we executed as part of our bread and butter. Our team work had now come into fruition this became apparent in the preparing and laying of the searches at Portland Harbour, facing all of the elements of a typical December day. After two weeks of hard but enjoyable work, the course departed Portland feeling competent and confident enough to lay and dive any of the searches. At this point the Staff unleashed us for what we thought was a well earned Christmas break.

It was now even colder! So thank goodness the New Year started with a two day introductory course to mine warfare. This gave us a good introduction to mines and how the whole system in general gets a mine on deck. Then it was back to Horsea and on to another new piece of equipment Surface Demand Diving equipment KMB17/18.

Paisley tank at Horsea Island is as good a place as any to get your head wet on any new piece of equipment. We were able to build up our confidence on the diving set and panel operator drills. Having reached the standard required with SDDE all that was left to do was to load the wagon for the Kyle of Lochalsh.

After two whole days loading and unloading and loading the ISO container we were given two days, from Friday to prepare for the flight to Inverness.

The two second dickies met us at Inverness airport, funnily enough the permanent grin that was usually fixed to their face had gone, maybe the snow and ice and blistering blizzards had something to do

BABY TALK

with it. We arrived at Balmacara House to be greeted with a lovely Sunday dinner at a very high standard, which was maintained throughout our three week stay [life's small luxury].

Monday morning came quicker than expected, the lorry was quickly unloaded and we set up our second humble abode on board fleet diving tender Datchet. The objective of Week 1 was to work-up to 50m using SDDE, we successfully achieved the aim, in the process feeling the effects of nitrogen narcosis which up until then had only been a lesson in the classroom. We also achieved all the social objectives over the weekend ... ouch!

With KMB phase completed we then did a reversal and pulled DSSCCD out of the box again, very crafty move from the Staff since this gives them an opportunity to see how much you've forgotten. With ten days left to dive it was busy, we had to work-up to 54m using the three different gas mixtures and also include an afternoon equivalent air depth dive, and with only three students left on course this meant we had maximum in-water time, which gave us invaluable experience. Pity our 1000 minutes didn't start now.

The bitter pill of the intensity of the course was made that much more sweet by the remaining pitiful but elated three, involving themselves with the Course Officer in the grand visitation of the epicentre of Scottish night life - the Nor West Bar, IN DRAG!

AB(D) PQC 115

Back row A/AB(D) P E Holand, A/AB(D) R Halliday, A/AB(D) G T Waring.
Front row WO(D) C J Hughes (Course Officer), Lt Col R G R Hall RE (Officer in Charge) PO(D) J Gofton.

ADVENTUROUS TRAINING

FLEET DIVING UNIT ONE - EXPED TO SNOWDONIA, "BIG GULP II"

By Doug Stewart

Exped Members:

MARK RUSSELL
DOUG STEWART
KEV THOMPSON
PAUL BHATHENA
STEVE VERNON
LESLEY VERNON
STEVE STRANGE
SI MARSTON

After some late cancellations and frantic phone calls to the Warden, Vance at Bethesda, the Landrover, packed with victuals from HMS EXCELLENT, and equipment loaned from the Army at Thatcham, departed the Fleet Diving Group Headquarters on Sunday 6 July 1997 en route to North Wales.

We all met up at the Naval Air Command Mountain Centre, in Bethesda later that evening, and sorted out our accommodation, victuals etc. Everything sorted and everyone having arrived safely, we adjourned to a local bar to discuss the finer points of rock climbing!

MONDAY 7 JULY

After nearly 3 weeks of heavy rain, we couldn't believe our luck, on waking to a clear and bright morning. After a hasty breakfast, gear was sorted out and the team full of enthusiasm headed for the Milestone Buttress, picked for its position, only ½ mile from the cottage, and having routes from DIFFICULT through to HARD VERY SEVERE, which suited everyone in the party.

The first route to surrender was Direct Route (*** VD), climbed by all, a tough VD in places, 5 pitches and slightly polished. This is one of the most popular climbs in the valley and the classic of the Milestone, and was enjoyed by all even Mark Russell, on his first taste of rock climbing. Nearly all the other routes were done on the front of the Milestone, including Pulpit route 230 feet - DIFF, which has an exciting exit after a chimney, through a hole on the right, then the world's scariest pull up on good holds to finish.

TUESDAY 8 JULY

Another glorious day, in fact the weather was kind to use all week, unlike the Army rock boots which had chewed mine and Si Marston's feet to ribbons, to such an extent that we detoured to Cotswold camping and bought some new stickies. Then onto Rhiwiall Caws (Idwal Slabs). A smooth slab, unbroken for 450 feet, although it has many holds, many are well burnished after years of traffic. The openness gives a notable impression of exposure, and belay ledges are few and far apart. Paul Bathena and I started on subwall climb 340 feet SEVERE, but moved over to Faith after 120 feet and the first belay stance, as there was almost a river running down our route, which was the last thing I needed having fallen into a stream earlier that day, to everyone's amusement.

Kev Thompson, Steve Vernon and Steve Strange started on Faith 440 feet (VERY DIFFICULT **) and climbed as a three. The crag was very busy and the climbs/descent took up most of the day. Si Marston joined Paul and I at the first belay stance, where Paul was heard to mutter, "that he wasn't that happy at being above a flying seagull".

A couple of the party climbed to the summit of Snowdon and were well rewarded with the views on a fine, sunny day.

WEDNESDAY 9 JULY

A change of scenery and mood were decided on for today, and the Landrover fully laden headed for the Llanberis Pass.

Carreg Wastad (the Flat Crag) was chosen, it has a few hundred yards up the valley from Clogwyn y Grochan and is opposite the climbers' club hut.

Kev Thompson and Si Marston started on Wrinkle 235 feet, (VERY DIFFICULT ***), the last pitch is quite hard for its grade, being polished and protection scarce to say the least, but a satisfying climb. Steve Strange and I went for Crackstone Rib, 175 feet (SEVERE ***), one of the Welsh classics, it has a very fine exposed rib pitch, which makes for good photographs, even though it was mid week, climbers were queuing to make the climb. Kev Thompson and Si Marston went on to climb Crackstone Rib, and we went up Wrinkle.

Scouse and Lesley Vernon chose today to summit Snowdon, and a few of the team went for an epic mountain bike session.

THURSDAY 10 JULY

Initially tried at Tremadog, but it was very busy, and due to some of the party wanting to go through Abseiling and belay procedures prior to Rock Leader Training Course, we relocated to a small crag in the Ogwen Valley, opposite Llynall Mymbyr.

Abseils were set up, including releasable abseils, belay techniques etc. Some small climbs were set up, and the

team taken through, climbing past protection, escaping the system and assisted hoists etc. A rewarding day was had by all, and we all hit the streets of Bangor that evening to celebrate a fine week.

FRIDAY 11 JULY

Everyone got off to an early start and we were clear of the cottage by 10 o'clock, and en route south to Portsmouth.

The Tai Newyddion Navy Cottage proved to be a first class facility and was reasonably priced. Anyone interested are reminded that the cottage is now self funding and therefore fees must be covered by all those making a reservation.

Accommodation can be booked by contacting the Warden, Vance, on 01248 600416.

THE CROMNESS EXPEDITION 27-31 OCTOBER 1997

By LT CDR Topsy Turner CO HMS CROMER.

Taking advantage of their ship's maintenance periods, members of the Ships Companies of HMS ships CROMER and INVERNESS took part in a 5 day Adventurous Training expedition in the Cairngorm area from 27-31 October 1997.

During the week the group completed a challenging 35 kilometre route which embraced the Cairngorm summit itself and the adjacent Ben Macdui. In addition the group enjoyed less ambitious low level walks as well as a morning of horse riding in the Kingussie area. On the planned rest day individuals took the opportunity to test their skills at 4 x 4 off road driving and to mountain bike through the beautiful Glenmore Forest. The weather was unseasonably clear and fine and overall the trip was acclaimed a resounding success by all those involved inspiring planning for future expeditions. The group were grateful for the advice and assistance of Lt Cdr T M Kenealy (Fleet Recreation Officer) who arranged the necessary financial support and ensured that the group were prepared in all respects for the 5 day expedition. If you are thinking of planning a period of Adventurous Training then Lt Cdr Kenealy can be contacted on Portsmouth Naval Base extension 24426.

Accommodation was provided by the Joint Services Scottish Recreation Centre at Rothiemurchus Lodge. This magnificent centre is set in a remote section of the Rothiemurchus Estate in the heart of the Cairngorms, some 7 miles from Aviemore. It provides accommodation to parties of Regular, Reserves and Cadets from all 3 services and their families. The Lodge consists of 2 Buildings - the Nuffield Lodge and the Union Jack Lodge. Accommodation is generally in 4 berth cabins which are double glazed and centrally heated with a total capacity for 102 persons. Visitors are required to self cater but facilities are first class, the kitchens being fully equipped with fridge, freezer, crockery and cutlery. Bedpacks are supplied consisting of: duvets, covers, sheet and pillowcases with hand and bath towels for each guest. Costs are £7.50 per person per night with lower rates for children. For further information contact Doug or Meg Blair (Managers) on Aviemore (01479) 861288.

From Left to Right.
S/Lt. Chris Turner, Inverness.
Om, Scouse Kerr, Inverness.
Lt Cdr, Nick Borbone, Cromer.
S/Lt, Steve Couch, Cromer.

DRIVE NAVY

THE RN DIVERS GOLF CHAMPIONSHIP 1997

By WO (D) Spike Hughes

The RN Divers Golf Championship 1997 was once again a resounding success. This was due mainly to the large number of entrants (in excess of ninety) serving, ex-RN Clearance Divers and guests attending.

Under near perfect weather conditions for golf, Southwick Park saw CPO Diver A J Wheeler regain the Divers' top prize in style and equalling the Championship record of gross 147 over two rounds. Runner-up was PO Diver Jess Owen. Other successes were 1st Division Stableford winner of the Ebinger Trophy, C P O (D) Dave Southwell, 2nd Division Stableford winner of the Carleton Trophy, AB(D) Spud Murphy and WO(D) Spike Hughes MARA Engineering 24 Handicap Trophy winner beating a very despondent WO Diver on a count back. By the way Donkey, the decanter looks great! The Mick Fellows Pairs Trophy was won by A J Wheeler and D Bailey.
The putting competition won by John Dadd and the gallow of whiskey hole along with the evening's raffle, helped raise over 250 for 'The Evelina Children's Hospital' taking the total sum raised by the competition to nearly 3,000. The prizes were presented by Commodore Richard Moore RTD, and the evening concluded with a disco and good old sing a long. Worthy of mention is CPO(D) Spider Webb, who quickly overcame his disappointment at coming runner up for the Wooden Spoon, and returned his winnings from the raffle donating it to charity.

Thank you to last year's sponsors for their support: Solent Divers, Carleton Technologies Inc, MARA Engineering, Pressure Products, Divex, Haskel Energy Systems, and MSI Defence Systems.

The names in the photographs are Commodore Richard Moore (Rtd), Mr P Owen, Guests Champion, PO(D) Jess Owen, Championship Runner-up, CPO(D) A J Wheeler, Divers Champion.

EMERGENCY DRIVING WITH THE DEVON AND CORNWALL TRAFFIC POLICE

By LS(D) Russ Russell SDU2

Having just successfully completed a two week emergency response driving course with the Devon and Cornwall Traffic Police, I thought it would be a good idea to put pen to paper and spread the good word.

My two fellow students for the course, which ran from April 20th through to May 1st, were LS(D) John Battersby and LS(D) Jonah Jones, both from SDU1. We would be day running from the diving section for the duration of the course, stopping at various police stations around the south-west for lunch.

Day One consisted of our introduction to our driving instructor, MPC Gary Jane from Bodmin Traffic Division, who is extremely well known throughout the Devon and Cornwall area as one of their best drivers.

After proving that we could drive on paper we then had to go out on the public roads in Southern Diving Unit 1's Astra and prove to him that this was the case. Generally all three students were assessed as poor drivers, taking into consideration that we had all been "Blue Light Driving" for various units over a number of years.

Our first objective was to shake off over ten years of bad driving and to generally try and perfect our gear changing, so as to avoid severe whiplash at every gear change. Smooth steering was next on the agenda, closely followed up by educating us to take in more information about our surroundings. By day three we started to see quite an improvement and it was at this point we started introducing the blue lights and sirens, then we all started getting plenty of driving hours under our belts.

DRIVE NAVY

By the end of the first week we had moved on to use an RN EOD Land Rover and MPC Jane felt that we had improved sufficiently, although there was still an awful lot of room for improvement.

For the Monday of week two we were given a fifty thousand pound fully marked-up "R" registration Range Rover to take off-road for the day. However during the demonstration drive we managed to prove that the Range Rover is possibly not quite as off-road capable as it should be, for whilst taking it through a deep ravine the Range Rover decided to cut out. MPC Gary Jane and Jonah at this point managed to escape and go for help, whilst myself and John were left bailing the deep pile carpet out with our berets. Once pulled clear we got to the root of the problem, a badly placed air filter intake, which we managed to rectify and we went on to have a thoroughly enjoyable and informative day getting to grips with the various techniques used.

Tuesday morning we spent on the skid pan. For this we had a two litre Mondeo which was permanently fixed to (and sitting in) a hydraulic frame with a trolley wheel at each corner. From the passenger seat the instructor uses a hand control to lift or drop the Mondeo within the frame, so as to alter the traction to each of the four wheels, in any sequence. With discrete fine adjustment it is possible to induce all kinds of situations, from understeer and oversteer right through to aquaplaning and other wonderful skids. This again proved to be a very useful exercise which all three of us enjoyed immensely. The afternoon was spent back on the public roads in our Land Rover and at this point we got the opportunity to show off our newly acquired talents to the new Superintendent of Diving, Commander Hilton, who was in the area visiting SDU1 at the time.

On Wednesday we carried on with more response driving, in preparation for working up to our final test at the end of the week. On the Thursday we managed to get a police escort so that each of us could experience driving through urban and city roads safely, at speed, where appropriate.

Unfortunately the police Range Rover that was originally going to escort us that afternoon was diverted to a serious accident and whilst on route to this, blew up! "Apparently" it had got water inside the engine a few days earlier. Whoops, guess which one it was?

Finally, on the day of the tests, we all passed with flying colours and came away better and safer drivers for it.

On reflection all I can say is what a great course and about time too! All the police officers involved could not have been more enthusiastic and were only too pleased to help us in any way they could. In week one there is even an opportunity to go out on duty for an evening with a traffic policeman if you wish.

My message to you all is, if you do get a chance to get on the course, get your name down quick. You definitely won't regret it!

CANADIAN EXCHANGE

CANADA, Eh?

By Lt Cdr Jonathan Lee RN

The Family in Canada

Let us not beat about the bush! Quality of life should be very important to every one of us, whether married, with a family or not. Hence, I start with what I consider to be a most important factor when considering 'accepting' an exchange post. And I say accept because everybody (I believe) always badgers the Appointer or Drafty for a foreign job but when push comes to shove and it's offered to you, all the reasons why you can't, shouldn't or ought not to accept, suddenly become more apparent. For us with 3 boys (all under 8 at the time), a wife who we thought, as a Physiotherapist, was employable anywhere in the world and a recently sold house, there were none of these barriers. November 22, 1997 couldn't arrive quickly enough with numerous calls to and from Tom Russell, who I was due to relieve. We had 7 days to domestically and professionally 'turn-over', inheriting virtually everything from the Russells except the wife and kids! Tom's "Oporder" worked a dream and ensured all the boxes were ticked before he, Karen and their girls left kicking and screaming for Scotland; I can already understand why. Timothy (7) joined the local community school, Alastair (4) started at a small private school, as free full-time education does not start in Canada until thev're 6, and Nicholas (1) began to get used to being dumped in Child-care whilst Mum commenced a rigid (unemployed) exercise and social programme! Unfortunately, in order for her to be licensed to work in Canada, various very expensive practical and written exams are required. If you have a few spare hours, or need a cure for insomnia, I'm sure she would love to explain the vagaries of why there is not a common bilateral agreement on both that and free driving licences for spouses! Nevertheless, all the family are having a great time here in Ottawa. Winter, really is winter. December through March there is **LOADS** of snow, it gets **VERY** cold, sometimes as low as -28°c **plus** wind chill! I'm sure that most of you heard about the Ice Storm last January, which brought many local communities to a standstill, after up to 82mm of freezing rain fell, severely damaging power lines, trees etc. Nevertheless, the skiing (downhill & cross-country), ice-skating and ice hockey become a way of life. We have just started our second, traditionally short spring, and now summer has already started. Air-conditioning at home, work and in the car is essential and the 12' x 3' swimming pool in the garden, will again get regular use. We've 'done' Niagara Falls, spent last Summer driving throughout the Maritimes on the East Coast, and this July are heading to the Canadian Rockies. Enough of that, what about the job?

The second largest country in the world.

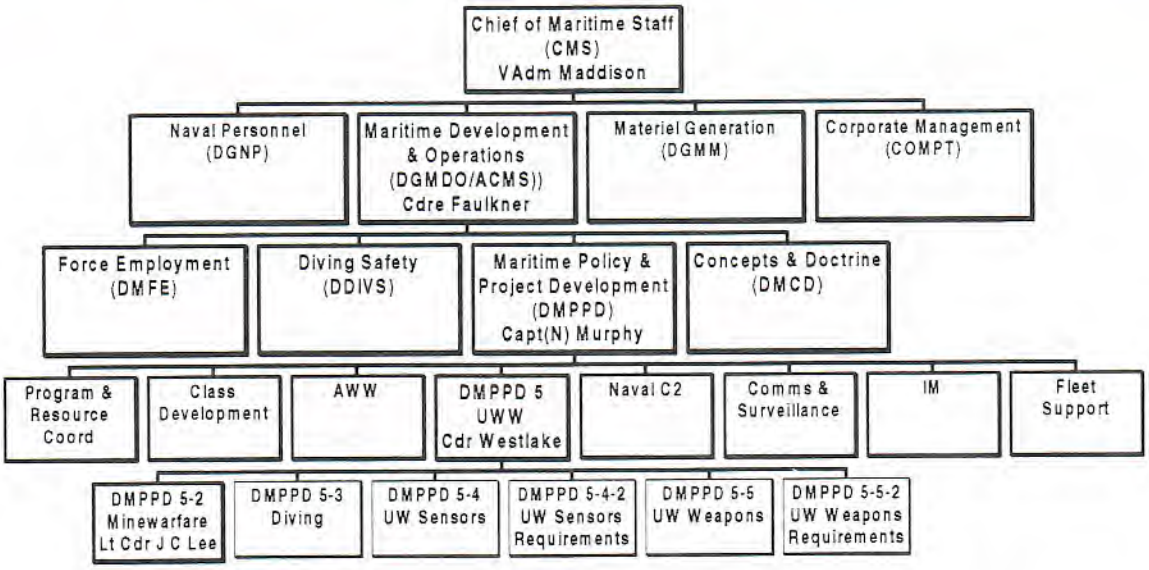
The Job in Ottawa

Ottawa is a lovely clean University City with a great atmosphere. It is the National capital whereas Toronto (5 hours drive away and where Mark Kessler is based)is the Provincial capital of Ontario. The exchange post is based in Louis St. Laurent (LSTL) Building, colloquially known as 'Louis Stand Around A Lot", in Hull, Quebec -just over the river from Ottawa, Ontario. DNR 2-2, my title until 31 July last year, was in the Directorate of Naval Requirements Fleet support (Minewarfare).

It is Canada's equivalent to DOR(SEA) RUMi in the MoD. In basic terms, my post reacted to Minewarfare (MW) 'Capability Deficiencies' from the two coasts by drafting Statements of Requirements, liaised with Defence Research and procurement staff, lobbied for funding from that ever diminishing pot and finally acted as Project Director for any projects that survived the selection process.

As of 31 July last year, the overall command structure of the Canadian Navy changed: Maritime Command (MARCOM) (equivalent of FOSF) was in Halifax, Nova Scotia but moved to the National Defence Headquarters (NDHQ) in Ottawa and was renamed Central Maritime Staff (CMS). My title and job then became even more complicated: DMPPD 5-2/ N34-4-1, translated as Directorate of Maritime Policy & Project Development, Underwater (Minewarfare) and therefore gained the MW 'policy' issues. This was a very positive change as MW is now recognised as a warfare discipline rather than a support function, however this new post has obviously diluted the time available for both MW Policy and Project Development. I now report to a different Commander, responsible for both AW and UW matters.

CANADIAN EXCHANGE



The CMS Organisational Tree as it affects my post.

The Future Job in Halifax

All that being said, this MW exchange post will move to join MAROPSGRU5 (Maritime Operations Group 5/MOG 5) (equivalent to a DD/FF/SS/MM Squadron) in Halifax. There are many good reasons both why this should happen and why a Canadian should relieve me, not least of which is that the 12 Maritime Coastal Defence Vessels (MCDVs) are now becoming operational - final one in 1999. There is therefore a need for a Minewarfare staff officer to assume a similar role to a SMCDO/SOO to advise on and task these potential MCM assets.

Minewarfare in Canada

Canada has a plethora of very experienced Clearance divers and many who have both qualified in Minewarfare at HMS VERNON, Gunwharf and latterly HMS DRYAD and also completed exchange posts as Ops and XO of UK MCMVs. However, on returning to Canada there have been minimal career opportunities to progress and promote their recent MW experiences, as the majority return to Diving Units or other purely diving-related appointments. This is now changing. Certainly MW is assuming a larger part of the CD 0's course and there should be regular numbers on all future MWO and Advanced MW courses at HMS DRYAD. There is no MW sub-specialisation in Canada so their Reserve Navy takes long-term contracts and forms the full ship's company (except for 2 WE senior rating posts) of the MCDV, from CO to most junior. Before joining an MCDV, the necessary MW training takes place at the Fleet School, Quebec City.

The Maritime Coastal Defence Vessel (MCDV)

Canada's 1987 Defence White Paper Challenge & Commitment", assigned Maritime Coastal Defence, in particular MCM and Naval Control of Shipping (NCS) as primary roles for the Naval Reserve. They also announced the acquisition of MCM-capable ships and equipment. The MCDV was initially intended to be an 'all singing all dancing' MCM platform, capable of hunting, sweeping and destroying mines and was in reaction to extensive lobbying from my more distant predecessors such as Dan Nicholson and Martyn Holloway; and Canadians like Jim Hewitt who had served in the UK and returned with many positive ideas. The MCDV's size, shape and design, it has to be said, is not a million miles away from the RNR's ex-Mine Sweeper (Fleet) (MSF). What eventually came out of the procurement and building process was, as happens the world over, not quite what the vision intended. Although its NATO designator is MM (MCMV), its name alone implies that it has a primary role as a PP (Patrol Craft). Its formalized roles are Coastal Patrol, Surveillance Operations and an MCM capability. The multi-role concept is certainly the way ahead in the present financial climate and Canada has utilized the modular approach to achieve the various MW payloads. A 200 metre depth US mechanical sweep which can operate as an 'Oropesa' or 'Team' sweep. The Bottom Object Investigation Vehicle (BOIV) is also available however it was not designed or built to operate close to a mine threat. The Route Survey payload will be trialed this year, and comprises a towfish housing a multi-beam side-scan sonar, also operable to 200 metres. The data collected from this will be the main source of seabed bathymetry information for the Coastal Operations

Planning & Analysis Centre (COPAC) a Canadian Mine Warfare Data Centre.

The Coastal Operations Planning & Analysis Centre (COPAC)

This almost completed analysis facility will provide 2 deployable systems with identical hardware & software to the Minewarfare Control System (MWCS) in the MCDV. It will be a Route Survey Data Base, however the intention is to develop the capability to be interactive with National C^2 systems - based on the Joint Maritime Command Information System (JMCIS); to produce detailed MW Pilot information including water column data; and to be collocated with an MCM tasking Authority. It has also been recognised that it should incorporate full data-exchange interoperability with Minewarfare Data Centres (MWDCs) of other NATO nations.

The Remote Minehunting System (RMS)

Much 'in the margins' Research and Development has already been carried out on a Canadian RMS, however a more formal Major Development is about to get underway. The basic requirement is for the remote control of an unmanned vehicle utilising a minehunting sensor suite to survey, detect and classify mines. Other considerations are for it to be operable from an MCDV, Craft of Opportunity (COOP) or from shore; to incorporate a launch & recovery system; a Computer Aided Detection and Classification (CAD/CAC) facility; real time telemetry and to be fully road/rail/air transportable. The tow vehicle will most likely be the Dolphin Mk2 - a 27 foot, diesel powered semi-submersible capable of upto 18 knots in a sea-state 5 whilst maintaining impressive stability. The multi-beam side-scan sonar payload will be deployed within a tow fish down to 200 metres. The disposal problem will be addressed later, probably with a one shot COTS system, once the Route Survey/Surveillance capability of the RMS has matured. Funding is now in place for a 4-year R & D Project in collaboration with industry and contracts should be placed by the end of this year. Remote Mine hunt mg is undoubtedly the way to go.

Versatile Exercise Mine System (VEMS)

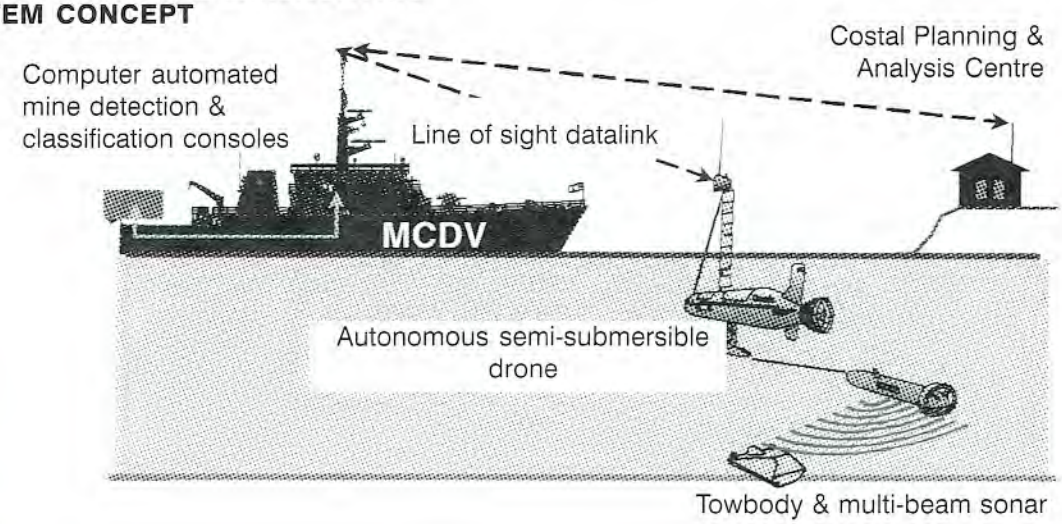
Last year, Canada took delivery of 1 system for each coast (4 mines) for Diver MCM/EOD training and as a MCM exercise/tactical evaluation tool. Training on the system has taken place and will undergo OPVAL this April.

In Summary

A lot of excellent work has been done by my predecessors in helping to promote and advise on MW matters and their efforts are now beginning to come to fruition. The education process to the uninitiated has been a daunting and onerous task. However, the mere fact that last year Canada hosted their first MW Symposium in Halifax, Nova Scotia which was attended by representatives from Cdre MFP, HMS DRYAD, STANAVFORCHAN and COMINEWARCOM; and this year will be hosting both STANAVFORCHAN and the US Advanced Concept Technical Demonstrations at their MARCOT in June '98, are in themselves an indication of Canada's heightened MW profile.

* Many Canadians finish their sentences with eh?" but are not necessarily expecting an answer!

CANADIAN REMOTE MINEHUNTING SYSTEM CONCEPT



POST CARD FROM ABBEY WOOD

SHIPS

The Golden Age of Minewarfare and Diving Equipment?

By Lt Cdr Jon Chapple RN, WE123N

First, a quick organisational reminder - within the Naval Support Command (NSC), DSWE manages the in-service support of Minewarfare and Diving equipment. Formed in 1996 from the ashes of the former DGUW(N) Portland, CINCFLEET (Engineering) Portsmouth, and DGST(N) Copenacre, we relocated to MOD Abbey Wood in 1997 as mentioned in our previous MADMAG postcard. DSWE also retains responsibility for the procurement of some MW systems and all Diving and Life Support Equipment. For the record, we are NOT part of MOD(PE)!

Programme Overview

It always strikes me how quick we in the MW and Diving community are to criticise our kit. Yet the past few years has seen an extensive range of equipment enter service. The MW achievements include **Sonar 193M MAS**, a post-Operation Granby enhancement to HUNT Class MMs which achieved Fleet Weapon Acceptance (FWA) in 1997. Also **RCMDS Mk 2** which achieved FWA and delivery of a new batch of vehicles in 1998. **MTSS**, oft maligned as a speed-bump on the information highway but nevertheless an important step towards computer-assisted MCMTA support, entered service in 1994 whilst the **Route Survey Data Base** was delivered to the Hydrographic Office in March 1998. The past year has even seen a new beginning for **MSSA Mk1** *(almost unbelievable but see WO Dean's article for more TAG details. Ed.)*. Arguably the most significant item is **Sonar 2093**, transferred to DSWE in April 1998, which has set new standards of sonar performance in spite of support problems.

On the Diving side, driven by H&S considerations as well as operational capability, the impressive **Two-Compartment Compression Chambers Types A** and **B** were the first major items of new equipment (1994). Buoyancy Control Aid turned DSSCCA into **SABA** in 1997 whilst **CDBA** achieved an operational 80 metre capability in May 1998. Marching to a slightly slower pace, the **Transportable Manned Compression Chamber** (TMCC aka 2CCC Type C) follows on to replace the Type 7A one man chamber onboard all MMs.

These significant achievements cannot be decried but what of the next half-decade? It will be no surprise that there are fewer new projects on the horizon. Some items are there, for example **VEMS Mk2**, a **MTSS** upgrade, a replacement **Enclosed Mine Lifting Bag, MCM/EOD Diving Ancillary Equipment** (hand-held sonar, communications etc) and the **Enclosed Space Diving System**. Below the horizon, other priority items are competing to get into the Long Term Costings programme - for it is funding which is today's single greatest factor - although nothing is guaranteed.

All of these projects represent years of staff effort within MOD, CdrMFP (Warfare and SofD staff) and the NSC *(you mean you do talk to each other? Ed)*. However, the 'golden age' of MW and Diving re-equipment - for that is how it will seem in retrospect - is coming to an end just as, coincidentally, the piggy bank is almost empty. Accordingly, the focus of attention today is increasingly on in-service support or, in basic terms, keeping the kit that we have serviceable and useful to the operators at the lowest possible cost. And that is what the rest of this article is about, namely the efforts of DSWE staff, military and civilian, male and female, to keep our colleagues in the front-line supported during the past year.

Minewarfare Matters or "A Day Without Minesweeping is a Day Wasted"

By WO(MW)(O) "Dixie" Dean MBE, WE123N2

My first year as the MW Applicator has been extremely busy. Firstly the move from Weymouth to MOD Abbey Wood, almost certainly a good thing in my opinion. The move enabled a fresh start and fresh thoughts from, in the main, new people. Whilst DSWE is no longer responsible for MW equipment 'from cradle to grave', WE123 was almost unique in that some equipments were still in development during the transition from DGUW(N) to DSWE and therefore WE123 retained the procurement responsibilities and continued the introduction into service of these systems. This makes my job all the more interesting as I am heavily involved in trials which provide the opportunity to travel around (albeit mainly to Scotland) and, most importantly, to visit the ships.

The other side of the coin, involving support of all in-service MCM equipment, is just as interesting. Juggling priorities between financial constraints and spares availability takes some doing when we aim to meet as many of the MCM squadron priorities as possible. This effort is probably not appreciated by those on the coal face especially when some requests cannot be met on time, if at all, but believe me the amount of negotiating, bartering and juggling that goes on behind the scenes is extensive and there is never a dull moment at Abbey Wood, not in WE123

POST CARD FROM ABBEY WOOD

division anyway! Here is an indication of "the State of the Nation".

MTSS. The system achieved provisional FWA in 1998. The outstanding requirement for CAAIS Weapon Practice Assessment was overcome by the issue (early 1998) of MTSS Phase 5 software. The remaining item (recording of empheral data from NAUTIS) is the subject of investigation by another DSWE group but it is likely that this will remain a shortcoming for financial reasons. MTSS will be held at Phase 5 software until the interface with RSDB is proven after which both systems will keep in step. Defect reporting is now firmly established using Form S2022 procedures and NAVOPDEF signals when the system is deployed, and, following a successful meeting in Feb 98, it is intended to continue with an annual MTSS User Group (MUG).

The future of MTSS is the subject of much debate. We are constrained by the original Miscellaneous Equipment Requirement (MER) which, we must remember, was written some years ago. In spite of hard work to improve system performance, technology (the best available at the time) has moved on. Although technology has improved, unfortunately the funding has not. Incorporation of MTSS into the Command Support System (CSS) is one option under investigation but the main driver will be cost. If integration proves too expensive we will probably pursue the alternative option of updating the existing stand-alone system - watch this space!

RSDB. RSDB was delivered in March 1998 following extensive trials. The system has a vast capability and will generate all the required MTSS databases plus any that may be required for future operations/ exercises. The sole system is based at the Hydrographic Office which acts as both the custodian and operator, the latter under separate tasking from MFP. Some technical items remain to be proven before the system is taken forward to FWA, the main one being the interface with MTSS. Additionally the system has to be proven to be millennium bug proof (as do all IT systems now).

In due course RSDB, as the UK MW data centre, will be a major MCM asset. There is a lot to be gained from the database and the presentation of information to the user is excellent. It will produce the Minewarfare Pilot and the pictorial presentation will be a noticeable improvement. Briefing documents can also be produced including 3D pictures of seabed topography, segmentation diagrams and plentiful environmental data. Ask and it can be yours! Eventually even Route Surveys will become a pleasure rather than a chore (*now you're talking! Ed*) because RSDB technology will provide the data to make the job easier. It is going to take some time to fully populate RSDB with information - a start has been made - and it is an ongoing task. The end products will be a credible and easily updated MW Pilot (Harry Parker would be envious) and a comprehensive UK master database for MTSS that will produce usable data for ships on task.

Towed Acoustic Generator (TAG). The TAG has undergone a major internal redesign. 'I've heard it all before' I hear you say. Yes you have, but this time the rebuild has been computer-modelled at each step and any conflicts in materials/capability corrected early. The proof of the pudding was demonstrated successfully during a Fleet Trial in spring 1998 when the prototype TAG Mk3 achieved 216 hours operation without defect - more than any other TAG in history! *(See separate article. Ed)*

RCMDS Mk 2. The support of RCMDS Mk2 has been affected by the shortage of spare vehicles but this problem will ease with the delivery of 24 new vehicles from May 1998. Vehicle recovery remains an area of concern and trials on two different devices, the "Skipping Rope" and the "Happy Hooker", completed in 1998. Feedback to date has been mixed and a clear way ahead will be sought from the SRMH platform group (the MOD(PE) lead authority). At over £500,000 per vehicle, DSWE shares the users' concerns.

The Exercise MDC has been issued to the SANDOWN Class - each MM has an allowance of two in number plus the necessary tool kit to enable preparation for use. The Exercise MDC will enable the operators to practice 'live firing' procedures without the bang and more often without the need to book live firing areas.

Fibre Optic Bobbins are an area of concern. They are very expensive (approx £4 million per year!) and highly susceptible to damage if not handled correctly. In future F/O bobbins will be supplied in purpose-built 'SPIS' packaging and will remain packaged until loaded onto the vehicle. This should provide added protection and reduce the number of defective bobbins. Increased use of 'shortened' bobbins will be enforced as a savings measure - these items are patternised and should be used for all training runs. A reminder that all bobbins are permanent stores items and, irrespective of their state, must be returned to Naval Stores to allow evaluation for re-use.
It is imperative that the correct procedure for re-packing a bobbin in preparation for return to stores is followed.

POST CARD FROM ABBEY WOOD

MDCs have also caused some headaches in the past year. The problem with arming pin lanyards on HE MDC's (common to both the HUNT and SANDOWN Class) has, in the interim, been overcome with the new arming lanyard (with a red end) issued to all HUNTs and SANDOWNs. S2022A serial No 718344/1 dated 22 Oct 1997 and MOMs 4/98 and 5/98 refer. A more detailed study into improving the whole RCMDS arming mechanism is planned. To add insult to injury, we also learnt of a potential problem with the arming pin possibly sticking in the fuse, particularly if the MDC had been in store for any length of time. To overcome this problem further official guidance was promulgated to rotate the pin through 90 degrees and back again whilst the transport pin is in position. All this information will migrate into the manuals idc.

RCMDS Mk1. The RCMDS Mk1 plods on. SIT Cameras are being fitted to all vehicles (part of a programme to overcome obsolescence) which will go some way to improving the identification of objects without the need to use the searchlight all of the time.

The RCMDS Run Reports reaching us at MOD Abbey Wood have been disappointing. The main problem is that most are incomplete and therefore of no use when attempting to identify problems with equipment. Sonar 2059 is the main culprit - if, on the run report, you indicate that the performance of 2059 is UNSAT then you must state the reasons why in the Remarks column. This will then allow us to investigate the problem further. If you help us, we can help you! 'Nuff said!

The problems with the arming pins and lanyards are covered under RCMDS Mk2 so if you skipped that paragraph because you are on a HUNT please go back and read it. It DOES apply to the HUNT Class.

Sonar 2093. As stated in the introduction, during 1998 we took possession of 2093 from the PE (*1st April wasn't it? Ed*). This transition process occurs when a project is deemed to be "mature". A new Equipment Project Manager (Mrs Annabelle Ransome-Williams - WE123A3) is running the engineering support contract. There is not much to say about 2093 at this stage except that spares are going to be a problem due to chronic underfunding - we are on the case and are working to resolve some of the issues. More positively, HMS WALNEY successfully completed a FORACS ranging trial in Stavanger, Norway, in April.

Mines. Contractual negotiations with BAeSEMA are underway to procure the VEMS Mk2 and, by the time you read this, these should have been finalised. The first production VEM will reach the coal face approx 12 months post contract. The mine will be supplied with various mine emulations and the capability to accept more. The method of recovery differs from the Mk1 in that the mine body surfaces and only the ballast weight, connected to the body by kevlar rope, is recovered from the seabed. As well as improved hardware, the system will be supplied complete with an analysis software package. Some of you will have seen VEMS Mk2 already as 2 pre-production versions have been used extensively for WPA purposes. I hope you agree that the system is a vast improvement on the Mk1. Spread the word! On the related subject of exercise mines, we are investigating recoverable targets as a spend to save measure which, if successful, will replace exercise AMk12 and Mk17 mines - it has been recognised that these venerable types are unlikely to be the threat in any future conflict!

Epilogue. There is a lot happening and the above only scratches the surface (the Ed restricted our space!). Please remember if you don't tell us what is wrong with the equipment we cannot remedy it. To us in the Ships Support Agency, the S2022 is invaluable. Without documented proof of a problem we cannot justify further funds - funding really is today's single greatest factor. Finally, a plea: do remember to insert the equipment PMS number in the space provided at the top of the S2022 - the number is important, without it the FEAS Administrator is unable to direct the form to the appropriate section and it could be lost. Lastly, RNTM 144/97 gives detailed instructions on the distribution for S2022's, they must not be sent directly to the Equipment Project Manager. If you have any queries about any MCM equipment or would like any information please don't hesitate to give me a call (contact numbers at the end of the article). If I'm not in, please leave a message after the tone and I'll get back to you ... honest ... trust me I'm not a diver!

"Diving Windows"

By Lt Cdr Jon Chapple, WE123N and WO(D) Graham Petrie, WE128N

This short update focuses on in-service support (mainly because the WO(MW) has taken all the space!):

Hybrid SDDE. The equipment is in the middle of an unofficial "get well" programme. 1998 has seen the issue of new technical handbook (BR 2807(1)(B), new MMS, codified annual servicing kits and spares. New tool kits are in the pipeline and we hope to procure underwater lighting (at last) as a H&S item.

POST CARD FROM ABBEY WOOD

2CCC Type A and B. 1998 saw the expansion of contractorised maintenance to all containerised systems in response to evidence that CDU technical staff were overloaded with chamber maintenance. An improved Chamber Handling System (for SUBMISS) has been developed and trialed under a Post Design Support (PDS) task and, in response to S2022 reports, improved internal stowages have been designed for the Support Unit. Full implementation will depend on funding. Of concern, however, has been the physical state of 2CCC containers and equipment - particularly on return from deployment. User custodians of each 2CCC system (be they CDUs or MCM Squadrons) are well-defined and each has overall responsibility for the availability and serviceability of their equipment. The 2CCC Types A and B are among the best hyperbaric systems in the world - we must look after them.

Enclosed Mine Lifting Bag. The "interim" EMLB entered service for Op GRANBY in 1991 and has been supported "hand-to-mouth" ever since. These bags are essential for peacetime EOD tasks, where remote moving of UXO may be the only option, and are central to the maintenance of a credible wider MCM capability. However, the 12 in number EMLB are ageing fast and have design shortcomings. Pending progress with the replacement EMLB (in service date forecast end 99), all users have been instructed by SofD staff to liaise direct with DSWE for support.

Suits and Accessories. A comprehensive amendment to BR 2807(2) has been issued which identifies new items of ancillary equipment (Personal Dive Lights, rigid Flag ALPHA etc) introduced in response to user feedback. In addition, some exceedingly expensive items have been replaced with newer (and cheaper) commercial off the shelf items (ie Firefly distress lamp by Aqua Strobe). However, the bad news is that, in line with the end of the "golden age", new items of equipment will become increasingly rare. On the suit front, zip failures have been the most reported S2022 defect and have been investigated with a vengeance (we use them too!). The problem is that, in order to win an argument with the manufacturer, we need bombproof S2022 evidence - the suit number and batch is critical information and the defective item is useful.

MCM/EOD System Integration. DSWE naval staff have also liaised, on behalf of the user, with other sections concerning integration of MCM/EOD equipment. Broadly, this work is driven by the need to ensure that new equipment such as CDBA and TMCC interfaces correctly with other system components such as diving boats and HUNT and SANDOWN Class MMs. You may be interested to learn that the mine-clearance Gemini craft will be replaced progressively by a MCM/EOD variant of the Medium Inflatable Boat (MIB) from mid-99 onwards. A prototype MIB, incorporating special-to task modifications for the MCM/EOD role, is scheduled for trials by the end of 1998. Similarly, a diesel version of the "minmag" outboard motor will be further developed in 1999.

Epilogue. The diving applicator's life is never dull. The work is interesting and varied - attending project progress meetings, field trials and acceptance testing - and, due to the large amount of equipment entering service with the RN, RE and SF diving communities, extremely busy. I can only echo Dixie's comments on the amount of negotiation and juggling that takes place within WE128 section to assist all users.

Conclusion

By Lt Cdr Jon Chapple RN, WE123N

Which brings us back to the main point ... keeping the front-line supported is getting more difficult. The brutal fact of life is that, in spite of claims made in previous years, we are experiencing a tighter squeeze on funding than ever before. We must therefore manage and look after our MW and Diving kit better now than in the past and much better in the future. Part of our role as DSWE naval applications staff is to ensure that the users' views are heard by the appropriate desk and to focus the SSA's finite resources where they are most needed. This involves liaising with the user and our thanks goes to all those ships and units who have willingly given their time to assist with trials and visits during the past year. We rely on your input ....

Who we are

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CCWEA Iain Forrest WE123N1 MW Technical Support Manager	ABW 38217
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TAG ENDURANCE TRIAL

FLEET TRIAL 54/97

TOWED ACOUSTIC GENERATOR ENDURANCE TRIAL

By WO(MW)(O) R Dean MBE

It was my intention to write an article on the history of the TAG to mark the occasion of its 40th birthday this year. Unfortunately, due to the pressure of work (and the editor chasing me for an article) I have not had the time to complete the necessary research. Additionally the move of DSWE/WE123 from Egdon Hall to Abbey Wood required all packs to be given a severe weeding and as you can imagine, a lot of the historical material was filed under S for shredding!

Basically, the Naval Staff Requirement for MSSA MK 1 was put together in 1958 and muddled along quite merrily for many years. I served on HMS WOTTON in 197? which was part of the original Third MCM Squadron based in Portland. The squadron, consisting of HMS SHOULTON, WOTTON and GLASSERTON, was formed to conduct the necessary trials for the HUNT Class. WOTTON and GLASSERTON were the trials ships for the Minesweeping Equipment and SHOULTON was used to trial RCMDS MK1 and the Slow Speed Drive (or overstern unit as it was known then!). HMS GLASSERTON was fitted out with a 3 tonne davit and the necessary TAG Winch and TAM winch to conduct trials on MSSA MK1. The TAG was know then as the Osbourne (amongst other things!). GLASSERTON used to disappear into the Portland mist to conduct the trials with the scientists from AUWE (remember them?) embarked along with all their measuring equipment.

Anyway, to cut a long (and chequered) story short, HMS BRECON entered service fully fitted out with a TAG and Tam or MSSA MK1. The rest you probably know.

The TAG has undergone many changes, both internally and externally, from its days as Osbourne and the method in which we deploy MSSA MK1 has changed dramatically. Unfortunately TAG was completely let down by its reliability for lots of reasons and in defence of all those who have worked on or with the TAG, these problems were not easy to solve. The necessary technology was not available nor were the man made materials that could withstand the stresses of the engine and RAMS etc.

Today it is different. Some three years ago DERA Winfrith were tasked and contracted by DSWE/WE123B to conduct a Post Design Study of the TAG with a view to improving its reliability and thereby its performance to meet the Naval Staff Requirement. The team from DERA Winfrith, lead by Mr Jon Baker under the watchful eye of Norman Morris, took the TAG by the horns and carried out some pretty radical changes having first computer modelled the performance of these changes to identify any potential conflicts before incorporating them into the TAG. The changes are too numerous to mention but the most significant are as follows:

a. LF Block design including the use of Titanium Grade 4 for the manufacture of the block.

b. PM1000 Block including the use of Titanium alloy grade 4 for the manufacture of the block.

c. New design LF Drive.

d. Hydraulic System using OMD80X instead of OMD 33.

e. Processor Control System.

f. Alternative LF RAM Bearing and seals.

g. New AF Servo Valves.

Having trialed all the changes both on a Hybrid MK3 TAG on the test bed at Thrust Engineering and during basin trials at DERA Bincleaves, the Mods were incorporated into the Prototype MK3 TAG in early 1998. Due to tight time scales to meet the programmed Fleet Trial onboard HMS ATHERSTONE, the prototype TAG was only run in on the test bed for some 28 hours before being transported to Campbeltown for the trial.

Prior to Fleet Trial 54/97 it was necessary to prove the effectiveness of the improved cooling system in the Hybrid TAG. This was conducted in January 1998 onboard HMS LEDBURY during a weapon training period on overnight passage from Portsmouth to Weymouth. The Hybrid TAG, having a steel engine, weighed considerably more than a conventional TAG and could not be supported by the Algerine Float. Instead a raft, consisting of two Ton Class Algerine Floats welded together, was used. The Bosun's face was a picture when it was craned onto the sweepdeck, a few choice words were said and I suspect that there were a few sweepstakes running on whether the beast could actually be deployed. As usual nothing defeats the MW Branch. The raft was successfully deployed along with the hybrid TAG. The towing trial was a success.

The Fleet Trial:

HMS ATHERSTONE was programmed to conduct the trial from Campbeltown 20 Apr-11 May. The aim of the trial was to prove the improved performance and reliability of the TAG by conducting three 72 hour serials at the full Low Frequency (LF) and Audio Frequency (AF) levels (using the same TAG!).

TAG ENDURANCE TRIAL

The Trials Team , consisting of personnel from DERA Winfrith, BAe SEMA and of course myself, mobilised to Campbeltown and set up a shore facility at the Oil Fuel Depot (OFD). HMS ATHERSTONE arrived on the Sunday morning and the Trials Team swarmed onboard to fit the trials equipment to the ship. It was decided not to sail until the Tuesday as the trials equipment does take some time to set up and as it happens we needed that time. The TAG was to be controlled by the Combined Control and Display Unit (CCDU) in conjunction with a prototype TAG LF/AF Controller. The Controller is a PC based system that runs the control algorithm and controls the drives. The drives were controlled manually for the trial but future versions of the controller will have an Automatic Gain Control (AGC). This controller fits into the MSSA Cabinet in the Ops Room and replaces the need for the channel setting controls amongst other things. Watch this space for further information should the controller go forward for production!

Back to the trial. The MK3 TAG is slightly heavier than previous versions but not as heavy as the hybrid TAG (confused yet?), therefore there was no need to use the raft but instead the Algerine Float was increased in length by 1 metre. This certainly raised a few eyebrows on HMS ATHERSTONE and a few smart comments were passed (all proven to be unfounded).

Having successfully installed the trials equipment in the Ops Room, embarked the MK3 TAG and set the system to work, the ship sailed on the Tuesday for the first 72 hour serial. This was the first time that this TAG had been in water and everyone watched with baited breath. The MSSA MK1 including the extended Algerine Float was successfully deployed, not surprising really as there is no changes to the streaming procedures whatsoever (as a WO(MW)(O) I watched from the canopy deck whilst the Bosun took charge - I have a pension to preserve!).

The TAG started first time and that was it for the whole 72 hours, the TAG monitoring indicated that everything was as steady as a rock and that the appropriate output levels were maintained. The Trials Officer did twitch for the first 48 hours as this is the time where things would have gone wrong, he called it the 'Bathtub Period'. After that everyone settled down to read books, play computer games and enjoy the good weather (yes it was good, not the normal liquid sunshine of Campletown!).

On completion of the first serial the ship returned to Campbeltown for a stand off and to allow the trials team to service the TAG. The oil filters were changed and a sample of oil taken for analysis. The TAG was then put back on the ship ready for the next serial.

Much the same happened during the second 72 hours and even more paperbacks were read by the trials team. It was decided not to change the oil filters this time as this would provide valuable information on the maintenance of the MK3 TAG in the future.

The only excitement of the trial was during the transit to the areas for the third and final serial. Whilst pressurising the TAG in preparation for streaming, the Port external LF Diaphragm went bulbous indicating a fault with the internal diaphragm. The ship returned to harbour. It was decided to exchange the whole LF Diaphragm assembly with that of the Hybrid TAG ashore which is normally carried out at level 3. No problem, some brackets to hold the assembly steady were manufactured by the trials engineer and after a very good suggestion by Gary Burridge the assemblies were changed, the TAG checked for leaks and run up, all in under 4 hours. It should be noted that this was a random failure as the seal had actually conducted some 600 hours running previous to this trial which is pretty good considering the beating it gets!

The third serial passed without incident, remember that this is unknown territory as no TAG has ever before run at these output levels for this length of time. It was time for celebration, a cake was made by ATHERSTONE's Leading Chef and presented to the Trial Officer who scoffed it before the CO could even get a photograph.

The ship returned to harbour and all the trials equipment was off loaded and the ship's own system set to work. ATHERSTONE sailed on the Tuesday morning (14 days after the start of the first serial) 3 days ahead of schedule.

The trial was deemed to be a complete success. The necessary endurance (216 hours from 1 TAG) at the required output, was achieved without any defects occurring therefore proving the improved performance and reliability. The next step is to move forward to Fleet Weapon Acceptance which hopefully may be achieved later this year. I'd like to take this opportunity to thank the Commanding Officer, Officers and Ships Company of HMS ATHERSTONE for their efforts during the Fleet Trial. The hospitality and friendliness towards the Trials Team were second to none and your efforts to ensure the success of the trial were very much appreciated by everyone involved including the backroom boys.

We have reached a significant milestone in what has been a chequered history in the service life of the TAG, it can only move forward and that is DSWE's plan.

... And the TAG presumed dead came forth (John 11,44).

M W C

THE NEW-LOOK MARITIME WARFARE CENTRE

By Lt Cdr Rob Roole (MW OA)

Handovers

It is now over a year since I relieved Lt Cdr Paul Davey as the Minewarfare Operational Analysis Officer (MW OA) at the Maritime Warfare Centre, Portsdown (MWC(P)). Paul only moved two corridors away to occupy a newly instituted billet as the Minewarfare Tactical Development Officer (MW TD) but is retiring from the RN shortly to return to Australia. He is due to be relieved by Lt Cdr Adrian Blakey in Jul 98. Mrs Anne Burden, our scientific analyst and one-time Staff Analysis Officer (SANO) to Cdre MFP, provided continuity until she left in Apr 98 to accompany her husband John to the USA where he is occupying the exchange MCD appointment at COMINWARCOM in Texas. Anne has been relieved by Miss Julie Voss, an ex-naval weapons analyst who has been working at MWC for some years. Together, we provide support to the operator in the analysis of MCM system performance and the development of new doctrine, tools and tactics to help improve the operational capability of the Fleet.

New Organisation

MWC was born in Oct 95 out of the Maritime Warfare Development Centre (MWDC) at Gosport (formerly the Operational Evaluation Group (OEG), then Fleet Operational Analysis Section (FOAS) at Northwood) and the Maritime Tactical School (MTS) at HMS DRYAD, Southwick. MWC (Southwick) remains home for the Director MWC (Cdre G K BILLSON) and the Captain MWC (Captain C J PARRY RN) and is responsible for maritime and joint tactical training and doctrine. MWC (Portsdown), complemented with a mixture of Naval, MOD scientific and civilian contract staff, is accommodated at the Land Based Test Site (ASWE as was) on Portsdown Hill and is responsible for Operational Analysis and Tactical Development. A new management structure was implemented on 1 Sep 97 to integrate these groups. Eventually, it is intended to collocate all departments at HMS DRYAD. MWC works directly for the Deputy Commander Fleet at Northwood and is tasked via CINCFLEET N7 although day to day business is conducted with the staffs of Type Commanders including Commodore MFP

Minewarfare Activities

In the Minewarfare OA section, we have continued the SANDOWN Class Operational Evaluation (OPEVAL) to analyse system performance against various mine threats in an ever wider range of operational and environmental conditions. During 1998, we covered Exercise STRONG RESOLVE off Portugal, the Arabian Gulf Combined MCM Exercise (AGMCMEX) off Bahrain and Exercise BLUE HARRIER in the Baltic. Later in the year, we hope to take a closer look at VSW MCM conducted by MMs and CDs during JMC 983. To date, the SANDOWN OPEVAL has not only led to improvements in manning, training, tactics, software tools and equipment by identifying shortfalls and providing quantitative evidence to support remedial action, but has shown how successfbl these ships are when operated properly. May I take this opportunity to thank all those Commanding Officers and ships' companies who have hosted our seariders during various operations and exercises. Our reports are normally published within 6 months and are distributed to all relevant authorities and ships. As a result of the SANDOWN OPEVAL, MWC has produced the A&B Predictor including separate versions for 193M and 2093, the Minewarfare version of the Data Logger, and has helped refine MCM EXPERT. These are all tools which help the MWO in his job.

In the Minewarfare Tactical Development section, tactical trials during JMCs and other exercises have resulted in the publication of several FOTIs although security considerations prevent further description here. It is worth noting that MW TD is not borne to develop tactics for the conduct of MCM but to develop tactics to integrate MCM with other warfare areas including AAW, ASuW, ASW and C41.

Fighting Instructions

MWC edits Fighting Instructions (CB 4487), Volume One of which will become the primary instrument for disseminating live maritime warfare doctrine. A section covering Minewarfare doctrine is currently being pursued. DCI (RN) 177/96 describes the British Aerospace Maritime Warfare Trophy for the best contributions to CB 4487(2). Ironically, the 1997 trophy (DCI (RN) 88/967) for bright tactical ideas was awarded to an RAF Flight Lieutenant who suggested the use of mine countermeasures vessels for shallow water ASW while he was on the Short Tactical Course. HMS COTTESMORE's submission 'Defence of the MCMV' received a commendation and I am sure we can do even better in future.

The Future

1998 will see us continuing the SANDOWN OPEVAL and examining Very Shallow Water (VSW) aspects of MCM by MMs and CD Units during amphibious operations. Take a look at FOTI 1001 for a flavour, then think of the future with HMS OCEAN, HMS BULWARK and HMS ALBION coming into service. From time to time, we ask for detailed records including completed feedback forms on specific items like the A&B Predictor, MCM EXPERT and CD EOR and EOD tasks. I know how inconvenient this can be but remember that this data is crucial to support recommendations for better equipment, manning, training, tactics and procedures and provides visibility of our capabilities and achievements to a wider naval audience.

Contacts

Whilst our main contact with the Minewarfare and CD community is via Commodore MFP, we are always happy to provide advice and learn of new developments which may affect our studies. Contact us at MWC(P) on BT: (01705) 21-(plus ext) or Mil: 93821-(plus ext).

Minewarfare Operational Analysis Staff

Lt Cdr Rob Hoole	MWOA	Ext. 2229
Miss Julie Voss	MWSC OA	Ext. 2230

Minewarfare Tactical Development Staff

Lt Cdr Adrian Blakey MW TD	Ext. 2182

CLEARANCE DIVING TACTICAL DEVELOPMENT

CLEARANCE DIVING TACTICAL DEVELOPMENT AT THE MARITIME WARFARE CENTRE

By Lt Cdr Paul Davey RN

In March 1997, a new billet, responsible for tactical development for Mine Warfare and Clearance Diving. was established at the Maritime Warfare Centre. The establishment of this billet brought MW and CD in line with all the other warfare disciplines at the MWC. After one year as the first incumbent of the MW TD billet, I have been coerced into writing an article summarising the recent activities of this post.

As mentioned in the article by Lt Cdr Rob Hoole RN, the role of MW TD is not to develop tactics for specific MCM equipment. That role is carried out by SWO 2 MCD (Lt Cdr Mike Leaney) within CdreMFP's organisation. The role of MW TD, to quote the billet's job description, is: "To develop and validate MW tactics and procedures with particular emphasis on the integration of MW with other warfare disciplines."

Contrary to popular belief, the tactical development tasks undertaken by the MWC are not dreamt up in the bathtub. Tasks primarily come directly from a document known as Military Capability (MILCAP), This document, issued from Fleet, lists deficiencies or major capability concerns and is compiled from critical constraint inputs from the various type commanders, in our case CdreMFR MW TD refers to this document and in consultation with CdreMFP determines which MILCAP items should be addressed.

Some recent tasks conducted at the MWC have been:

ASW Tactics in the use of SANDOWN Class MM in littoral water ASW have been developed. This task was raised through an ASW study when concerns were raised regarding detection and prosecution of SSC/SSKs operating in the littoral. The suggestion of employing the SANDOWN Class in this manner was first suggested by Cdr "Doug ie" MacDonald RN when he was MCM 2. In June 1997, a set of very successful trials were conducted in the BUTEC trials areas with HMS BRIDPORT successfully detecting and classifying (IAW ATP 1 C) a bottomed and slow moving SSC in 200m of water, Two tactics have now been developed and have been published as FOTI 0109 Annex D and E. Considerable interest has been generated on these tactics within the ASW world and it is planned that they will be used during future JMC's when SANDOWN Class and SSKs are participating. AD An initial review of the procedures for Air Defence 72 of MM's was completed in Jan 98. This review looked at the problem of conducting Air Defence of units operating in a "Static Pim" scenario. This included amphibious ships and MMs conducting MCM operations. The study was divided into 3 main areas. Area one looked at the vulnerability of MM's to missile attack. Next, the survivability of units in a hostile air environment deploying onboard soft kill measures was modelled. And finally, the use of "Static Decoys" was investigated. Due to security classification level, the outcome of the study cannot be expanded on here, but as a direct resuft of the study a revised FOTI 0408 Annex F has been issued.

Link Data in MMs One area of concern highlighted during the Air Defence study was the ability of providing an accurate air picture to MMs. A trial is scheduled for JMC 982 where a MM will be fitted with receive only Link 11 equipment. The aim of the trial is to determine how useful this data is for the ship to conduct self protective measures.

AW Further work has been done on MCM support to amphibious operations and a new FOTI 1001, written in conjunction with the Amphibious Warfare Desk Officer (a Royal Marine) and MW OA (Lt Cdr Hoole) was published at the end of 97.

VSW/SZ MCM Following on from the AW work the MWC are reviewing the tactics employed in VSW and SZ MCM, this includes: surface MCM (HUNT and SANDOWN Class) in mine hunting and mine sweeping, effectiveness of CDUs in EOR/EOD in VSW and SZ, with particular emphasis on navigation, hand held sonars, communications including in-water comms, disposal techniques and equipment and diver delivery vehicles/methods, remote EOR/EOD equipment.

One of the main objectives of the study and subsequent tactical guidance will be the interoperability of each of the above.

MCM Expert. The new NATO software program for MCM Planning, Evaluation and Risk Assessment has now been issued as EXTAC 857, MW TD is the UK National Point Of Contact (POC) for this program. The UK and in particular the MWC, played a major role in the development of this program. Those of you who received copies of the program also received a questionnaire. Feedback on the use of the program is extremely useful and the questionnaire is a good medium for providing this feedback.

Over the past year, the job of MW TD has been both challenging and very rewarding. It has also been my last appointment in the Royal Navy and I will depart with very fond memories of my years in the RN MCD branch. Au revoir!

INCOMING FROM LA SPEZIA!

"Some Corner of a Foreign Field That Is Forever England..."

Brooke,Rupert 1914

"Yes, dear Appointer, I know SACLANT's HQ is in Norfolk, Virginia, but his Research Centre is in Italy!"

Staveley,John 1995

"He doesn't even know which continent he's sending you to!"

Staveley's HOD 1995

By Lt Cdr John Staveley RN

It's a bit rich when the choice of fresh lemons for your gin and tonic is limited to what you can find on half a dozen trees in your own garden. And it can get quite warm on the terrace so it's important to maintain fluid levels while you discuss when to trim those olive trees. Then there's the bougainvillea - the rich purple variety looks good but it's going to spoil the view across the bay if it gets any bigger. Perhaps it would be better to discuss it with Luigi over a Grappa in his seafront bar.

Being the link (or the gap, as some say) between the NATO naval community and the scientists at the SACLANT Undersea Research Centre in La Spezia, Italy, can be something of a distraction, just as the beach interferes with the concentration of the kids preparing for exams in the local Italian schools. This Mediterranean climate, the wine, the food, the beaches ... it reminds me of Rosyth really, with the view of the sea on one side and the mountains on the other. And the skiing is only an hour away in winter.

Meanwhile, back in the gap, the link between basic applied research and what eventually goes into your minehunter or submarine can sometimes appear a little tenuous. There is a lot of development work to do on "Auto-Regressive Analysis of Acoustic Scattering" and "Broad Band Geo-Acoustic Inversion Using Gene~c Algorithms" before the end-product finds its way into an operational vessel at sea. Some programmes have immediate results while the products of others may not surface for 5, 10 or even 15 years. Nevertheless, the gap-filler has to leave his barbecue behind while he flies to attend meetings of such august bodies as the NATO Minewarfare Conference where he tries to explain the operational significance of such research.

One is not alone. The SACLANTCEN Systems Research Division consists of 3 groups, MCM, ASW and Operational Research. In the latter, when he is not windsurfing, we can sometimes find John Redmayne, who has been a key figure in the development of the Planning and Evaluation Tool, MCM EXPERT, and the synthetic minefield we know as the Electronic Minefield Referee John is about to embark upon a new project which could represent a quantum-leap in terms of the progress science can make in the service of the Minewarfare community and which I will now try to explain.

While minehunters have traditionally classified their targets using a shadow-based process, the seabed has been termed A, B, C, D as a measure of ripple size, or roughness. The conventional wisdom, however, appears to indicate that the single most important factor affecting the success of a minehunting operation is the difference in signal strength between the target and the background noise, from clutter and acoustic backscattering or reverberation, i.e. signal-to-noise ratio at the receiver. Roughness is only one of many contributing parameters. Signal to noise ratio is a function of many more.

We are proposing to harness all available modern scientific techniques to develop a sonar performance model which will incorporate all the physical environmental parameters affecting signal to noise ratio: seabed reverberation, target strength, propagation of sound in sea water, depth, bottom composition, shear strength, grazing angle, clutter density, sub-bottom profile, burial prediction, as well as seabed roughness - and anything else the research reveals. They will be fused to derive a prediction of performance as signal-to-noise ratio and/or Probability of Detection. There is work already underway in the various corners of SACLANTCEN which will be drawn together to support this, including expertise in the modeling of sonar performance, target strength, seafloor reverberation, volume and surface reverberation and ambient noise. John's role, as well as leading the project will be to examine the mathematics and the user interface and to organise some means of validating the results. Hopefully, we will be able to come up with an input to the Planning and Evaluation programs which will be much more meaningful than the values for B that we have used to date.

Some will remember Glynn Field from his days at DRA Bincleaves where he established himself as the king of the Total Mine Simulation System, used extensively during operations, in the Adriatic and in the Persian Gulf to evaluate the threat from certain mines. Glynn is now in the MCM Group at SACLANTCEN where he is the sole authority on minesweeping research. Having spent some time working on Target Setting Mode sweeping he is now concentrating on the relatively new concept of Mine Jamming.

INCOMING FROM LA SPEZIA!

This will be a technique which renders the mine dormant for a critical period (permanent or temporary) by preventing it from arriving at a firing solution. It will be something which the MCM Commander can employ when minehunting conditions are poor and the minesweeping option has been exhausted either because of inadequate intelligence on the mine algorithm or a shortage of time. If for whatever reason, the Commander cannot be certain that the level of mine risk has been reduced to an acceptable level, he may choose to deploy his jammer which will break the mine's firing circuit, rather than complete it, as we do in minesweeping. In addition, for the foreseeable future, it might conceivably be the only means we have for countering the multi-influence mine with a pressure component.

We can define jamming as "locking the actuation mechanism in an unworkable position". This might be interpreted as:

- masking or altering target ship signatures,

- generating artificial signatures which cause the mine to go into a self-defence, anti-sweep mode,

- the use of deceptive signatures which cause the mine to fail to recognise its target,

- other means hitherto undiscovered.

Fundamental to this philosophy is our assessment that the enemy minefield of the future will be a mix of old and new mines, activated by any one of a number of unknown influences. The objective of the research project is to identify potential techniques for the jamming of such a minefield. Options under consideration include interference with the normal operation of the mine systems. The safety and arming device is proving difficult but we do hope to influence the fire control algorithm, to convince the mine that its target is not valid, and the sweep rejection algorithm, to convince the mine that the sweep is not a ship. If we can encourage the countermining logic to operate then the mine will not fire.

LEDBURY and her CIS will be take part in a sea trial in Oct 98, near La Spezia, for which a total of 8 mines have been offered by Denmark, Italy and Germany. Acoustic, magnetic and other influences will be provided by DERA UK, and we will have the Italian MCM range, an Italian frigate and the SACLANTCEN Research Vessel ALLIANCE. NL, UK and US have also entered into the spirit of collaboration by offering simulation work. It will be a big show which will constitute a major step forward for this innovative work.
Other projects underway in the MCM Group include the detection of buried and low target-strength mines and the differentiation between mines and natural objects, such as rocks. There is some particularly interesting work on the construction of a 3D image of the target by adopting a technique similar to that used in medicine for scanning internal organs and foetuses. All the acoustic responses from the target received throughout the detection and classification process are fused with the shadow and echo data which are processed separately. Results to date show not only a CERTMINE but also an indication of mine type.

The Systems Division draws heavily on the Environmental Division's research into the acoustic and mechanical properties of the seabed and how they affect high resolution sonars, background reverberation levels and mine burial prediction. The objective is an improvement and detection capabilities and to come up with more scientific means of classification of bottom types than we use hitherto. Projects include:

- an examination of the effect of current, salinity and temperature on the acoustic signal and background reverberation with a view to improving minehunting performance.

- the classification of the upper levels of seabed's mechanical characteristics (shear strength, density, grain size) and their effect on sonar performance, mine burial prediction and bottom type.

- the prediction of acoustic backscattering and its effect on target strength.

- increasing the understanding of the Very Shallow Water environment and its effect on high resolution sonar.

The same Division is working on Rapid Environmental Assessment, a concept which aims to contribute to Operational Efficiency by collecting, analysing and predicting acoustic and oceanographic parameters in advance of Out-Of -Area operations. Tools are being developed which will enable that data to be gathered in scenarios where there is no other source of operationally significant environmental data. Candidate systems include satellite sensors and air-dropped expendable buoys and work is underway to convert the data they can assimilate into the parameters the operators need. There is still some way to go before we will be able to predict sonar performance from satellite data but we are well on the way towards remotely predicting minehunting bottom type. In recent exercises in the Mediterranean, remote techniques have been employed which measure physical environmental parameters different from those we have used traditionally but still deliver the seabed classification required by ATP 24(B).

In summary, the broad aim of the multi-national group of scientists at SACLANTCEN, with a strong technical support

team behind them, is to further our understanding of the underwater environment with a view to the development of ASW and MCM systems which will maintain NATO's technological advantage. An appropriate analogy for the Centre's position in the research community is the hub of a wheel, the spokes of which represent collaborative research work undertaken with the NATO nations. The programme of work is overseen and endorsed by the Scientific Committee of National Representatives which is the means by which the nations and NATO commands can ensure that the research continues to be relevant to operational requirements.

Needless to say, the conduct of all this scientific research at sea requires a considerable amount of diving support - but that's another story. It's Friday afternoon on the Italian Riviera and the distractions are calling...

THE CHARACTERISTIC SEARCH PROBABILITY OR THAT BLESSED B

By LT Cdr Rich Cowley RN MWI SMOPS

Over the past few years, I have listened to and caused, a number of arguments regarding the above mentioned B. Not possessing the necessary staff training, nor having the patience to suffer rewrite after rewrite of a relatively minor staff paper, I have decided to use the pages of this illustrious tome to pass my obviously correct view, of what one should understand ftom the blessed B, hereafter referred to as bB.

In 1995 during one particular NATO Exercise it became apparent that the MCM Commander was less than impressed by the calculation of the bB by a number of Ops Officers who were "fortunate", to be working for him at that time. Yours truely was duly tasked to enlighten those officers as to the error of their ways. After conducting thorough and timely research, a signal was drafted and subsequently sent, informing our unfortunate Ops Officers, COMMW, and also the other, less well informed, Squadron Commanders, that the value of B was calculated using the following:

Bd — The probability of detection of a mine like contact (MILEC) by the sonar, possible to predict using the RTPME and relevant for a particular range, aka Pd.

Bc — The probability that the MILEC is classified correctly ie mine or non mine, possible to predict using RTPME for a particular range.

Bo — The probability that once a MILEC appears on the search/class screen the operators conduct thier drills to the optimum efficiency of the equipment.

Bn — The probability that the MINE once positively identified is successfully neutralised, found in CB8513 2A,2B

ie B= BdxBcxBoxBn.

However, although my Commander and I were perfectly at ease with the explanation (which although not specifically stated in ATP 6B VOL II is alluded to), subsequent discussions have revealed that other EXPERTS have an entirely different point of view.

The authors of MCM EXPERT, who know far more about mathematics than I will ever learn, assure me that B= BdxBo.

Because there is a requirement to enter Bc and Bn elsewhere in their computer programme.
MCM EXPERT is most accurate when the value of B is calculated using another relatively new piece of MW software, the A & B predictor, which also states,

B= BdxBo.

SANO who calculates actual rather than predicted probabilities during WPA, OPEVALS and Exercise Reports is fully aware of the anomalies within the nomenclature. However, the nature of his calculations does not allow differentiation between Bd and Bo, therefore as Bdo is not defined within the documentation, the published probability of detection Bd actually consists of Bd and Bo ie:

Bd = Bd x Bo

Not wishing to be an ostrich in the matter of the bB I carried out some further research with the help of the most Senior MW Chief Petty Officer currently serving. After a few hours it became apparent that the original aim of this wee ditty (ie. To explain to one and all the meaning and calculation of the value of B) was not going to be that simple. We found 19 references in 4 separate publications. The crux of the problem appears to be that a Minesweeping term has been adopted for use in Minehunting. Suffice to say, feel free to bandy around the bB in knowledgeable circles, but please explain exactly what you mean when dealing with lesser mortals.

CONISTON CHRONICLE

by CPO Taff Reader Training Office Manager (T.O.M.)

Another year has passed since the MW Section's last MAD Mag article and since then the Section has tirelessly continued to train MW personal from OM2 to Squadron Commander level. In fact, over the past 12 months trainee through-put at the OM 2 level has been run in most cases with 2 students over the maximum numbers, with 75 Students arriving to start the courses and through a variety of reasons only 60 actually only passing through. The training of foreign personel has also increased with officers and ratings coming from Canada, Austrailia, Italy Japan, and Saudi.

However, before we embark on the nif naf and trivia of Coniston life, the following are highlighted as worthy of all our Congratulations for their reconition by various selection boards.

Queens Birthday Honours - WO Dixie Dean OBE
Officers Promotion - Cdr Paddy Mac Alpine
Lieutenant Commander - Adrian Dann
Warrant Officer - Tinse Mansell
Chief Petty Officer - Tony Starbuck

Training

The Autumn term proved to be the start of a very busy and challenging year for the School, as it faced the onslaught of the recent recruitment campaign to reduce gapping at sea. At OM2 Level the courses have run countiuosly back to back with an agreed maximum increase of 14 students on most courses.This needless to say has been quite a challenge and a lot of late evenings for both Chris Christian and Sebs Sebright during their periods as OM2 instructors.

The LOM's / L/S Courses have been just as busy, again running in most cases to maximum numbers. The Autumn term saw the end of the L/S course as most of us know it. For the limited number of L/S still requiring to complete their career course, they will now join in on the MW Module of the LOM'S. Course.

Since the last publication we have only seen 1 PO's Course coming through the school. The remaining 2 courses being cancelled due to insuficent numbers of students from Drafty. However this did prove to be a very challenging time for their instructor, Bunny Warren, who not only had to cope with one over the maximum numbers, but also with two randy Italians loaned to the RN for 12 Months!

The LMCDO Course continues to thrive and has undergone several major changes recently. The course has now reverted to it's original format of Diving,EOD and then the MW Module. Another major change was the decision to move the Minehunting phase of Sea Training to the Portland Areas for better Minehunting Conditions. It also means that Students now remain onboard overnight, Hunting overnight in a two watch system. This has proved to be highly sucessful.

Finally, a slow trickle of Advanced Minewarfare and Sqdn Cdr students continue to wrestle with the vagaries of MCM evaluations each term, enjoying the computer run wargames in Eguermin and completing the Training cycle from OM2's on the Sweepdeck to SOO in the MCMTA.

URSA THE STORY SO FAR

This year, to date the Sandown Section has run four Officers, Senior Rates, and Junior Rates PJT's. It has also carried out Command Team Training (CTT) for HMS Cromer and Walney. Due to the advanced technology and current interest in MCM, THE URSA Trainer has been a popular stop with visitors of all nationalities to Dryad. Currently the Section has hosted some 40 official visits with many more to come in the near future.
The Main Machinery Interface (MMI) on the Exercise Control Console (ECC) is to be converted into an Interactive Games Console during summer leave. This modification will enhance the operational effectiveness of the ECC making the system easier for the controller to use. One stand-alone colour NAUTIS console has been installed in the W/BRIDGE area of the trainer. This should be flilly integrated by December 98. Issue 13 and 14 software update, which includes Blind Pilotage and Differential GPS, is also expected to be installed by December 1998.
In the short term, there are still two Officers, and J/R's PJT's to run this year, and lots more CTT. During the autumn term there will be a major turn around of Sandown staff, (see Paragraph on staff for update). In the longer term if staffing levels improve we may begin stream training in April 99.

ARCTURUS

The Arcturus Trainer has been very busy in the last six months, being booked solid with Career Courses and Command Team Training. It is already fully booked well into next year with no let up likely in the forseeable future. The revised CTT Package has now been incorporated with seven Ships already benefiting from the three day package. Arcturus is now ready to change her

operating areas to the WEST COAST of Scotland, hopefully being introduced during the summer leave period with it up and running for the winter term. HMS Chiddingfold likely to be the first to benefit. Finally updates to the trainer will include a " Visual Mine Screen (VMS)" This will give the Class Operator a real time picture to aid Classification. The VMS will also be incorporated into the RCMDS software and Exercise Games Console giving the same azimuth picture on all consoles Training General.

Looking ahead the remainder of this year and into next year continues to be busy. At OM2 Level Raliegh indicate that we will be running at our maximum increase of 14 Students for the forseeable future, with more new entries selecting MW as their first choice than there are places available so they should all be volunteers. Raleigh have also been directed by DMR that the branch is now open to females. As of yet their have been no volunteers, however it is expected that our first female MW will be on course with us in the very near future. At L/S/LOM Level, courses are now manned up into 99, with Drafty indications that all courses will run if enough students can be made available to reach minimum numbers. At PO level, again all courses are manned into the summer of 99 with all courses planned to run after that. The most significant event at PO level is the arrival of the first LOM with Baz Collyer nominated for the the PO(MW) 01 Course in December.The other major change is the pre-requisite to pass PO Leadership Course prior to to commencing the MW course this will be planned by Drafty when he drafts students to course.

Staff

It has been a turbulent year with a great deal of gapping and major changes especially at Senior Rate level. We went from being over 30% gapped last autumn, to 100% manned this spring. However, like most good things, this was short lived and gapping has already crept back in with more to come as the year progresses. We have seen a lot of comings and goings too, with many more to come before this reaches print. Perhaps the most notable recently was the departure of Phil Brace (Chopper) to Civvy Street. Seen here being presented with a glass mine by Cdr Keith Harvey Cdr(U) on behalf of the section. This in appreciation of so many years dedicated service to the MW Branch. Chopper was last seen roarnig out of Dryad on his much longed for Harley Davidson, destination Spain. I am sure we all wish him well in the future, where he intends amongst other things to help run the family restaurant. This year has seen highlights too, with CPO Priddy Hattle deserving a mention for winning the Autumn Person of the Term Award despite some fierce competion. Priddy was nominated amongst other things for his efforts in teaching a Japanese Course (who spoke very little English) in the Sandown System. This also goes to show just how well we are progressing at integrating ourselves within SMOPS. Finally, back to Manpower and a look at the comings and goings in the near future. As you will see by the list below and the family tree (as always subject to change), the section will have numerous gaps by the autumn term. Any willing volunteers out there will be welcomed with open arms so get your C240's in.

SOMW	Cdr Tom Chambers
MW-TAC	Lt Cdr Graham Collins
MW I	Lt Cdr Richard Cowley
MW 2	Lt Cdr Nigel Hill
MW 3	Lt Tim Russell
MW 4	WO Dave Smith
MWTOM	CPO Taff Reader
TCM	CPO Paul Campbell
LCI(H)	CPO Simmo Simmonds
LCI(S)	CPO Priddy Hattle tbrb
	CPO Pete Mills Aug 98
P01(H)	CPO Simon Chapman tbrb
	CPO Pinky Preston Aug 98
P01(S)	CPO Pete Mills will relieve LCI(S) then Gapped
LSI(H)	P0 Alan Mills
LSI(S)	P0 Sebs Sebright Gapped from Jul 98
OMI(H)	PO Ronnie Barker
ONI(S)	PO Chris Christian Gapped from Jul 98
HTC	CPO Max Coffey
STC	CPO Jan Takel Gapped Sep to Nov tbrb
	CPO Pony Moore Nov 98
HTD	PO George Heir will Transfer to STD Sep 98 tbrb PO Tony Grundy Nov 98
STD	Gapped untill Sep 98
HTO	Temp filled by PO Nobby Hall whilst awaiting PO's Course Aug 98
STO	Gapped untill Jul 98 tbrb
MOW	Mrs Kay Bray

LETTERS TO THE EDITOR

Dear Editor,

On reading LCDR Jim Bradh's USN (Rtd) letter in the August 1997 edition of MAD and his recollections of Bob Fraser and Fraser Diving in Singapore, I was reminded of another Fraser and his diving company. There may be other barnacled divers like myself who worked for Universal Divers during the 1950-1960's. The company was formed by Ian Fraser VC (of X craft fame) and his brother Brian (Special Boat Section) and their motto was "Any Diving Job, Anywhere, Anytime". Divers were employed exclusively from the RN. I can indeed confirm that the 'any job, any place' claim was fully justified when I worked for them in Howth, near Dublin, on a sewage outfall tunnel project! I hasten to add it had not then been commissioned.

Have any of you 'greybeards' out there any past connections with Universal Divers? If so I bet you could really spin some yarns. Unfortunately dredging deep from my fading memory I can only come up with one name from that era, that of 'Sam' Muskett - a real grafter and an able consumer of Guinness book of records.

Yours in nostalgia,

Doug Bruce-Jones

Dear Editor,

It was a pleasure to read the letter from Jim Bladh in Volume 8 last year. It set me searching through the old Diving Magazines, and there in Volume 14 No 3 (winter 1967) on page 13 is a picture of Jim and his opposite number James Majendie, the first RN exchange officer in Indian Head USA. I hope you can get a clear enough copy of it.

Greetings to Jim and all other old acquaintances. I see Jack Smith's letter on the same page as Jim Bladh's: Jack's name also is in the 1967 magazine - he was the treasurer - but the picture on Jack's page (3) is much better looking!

Best wishes,

Harry Parker

Dear MADMAG,

Further to previous correspondence seeking information on the history of the diving branch, may I draw your readers' attention to Chapter 1 of BR 5063, Clearance Diving Operations, which contains a considerable amount of background material and is a useful starting point.

I would also like to submit the following A to Z:

"A Clearance Diver's Heritage"

A is for Admiralty Experimental Diving Unit, where clearance diving began.
B is for Brixham, the Diving School's wartime home.
C is for Crabbe ("Buster"), Charioteers and Challenger.
D is for Deepwater, post-war diving tender.
E is for Excellent, home of the first hard-hat Divers.
F is for Fleet Diving Squadron, a recent milestone.
G is for George Cross (not VC) awarded to mine disposaleers in WW2.
H is for Human Minesweepers, the earliest CDs.
I is for Illchester, Instow, Ironbridge and Ixworth.
J is for Jackstay, may they always be short.
K is for Kirby Morgan and "crossing the keel".
L is for Lochinvar.
M is for Miner III and Minehunting diving.
N is for Nose clip (non-mag of course).
O is for Oxygen Pete (who lives in a diving tank 30 ft deep).
P is for P_Parties, the ancestors of Diving Groups.
Q is for Queen's Gallantry Medal, we've earned a few.
R is for Reclaim.
S is for Shelford (the first SofD), Siebe Gorman ("Use No Oil") and Seaforthe Clansman.
T is for Tedworth, the RN's first deep diving tender.
U is for UWSS (still Avon Rubber).
V is for *Vernon Semper Viret.*
W is for Warfare - because that's what we do.
X is for X-Craft.
Y is for "Yo Yo".
Z is for zzzzzzz (in the back of a Land Rover).

I'm sure other readers have more ideas and I would be glad to hear them (preferably in the bar!).

Dear Mad,

Welcome from the LOM(MW) 07 Course. What to say? Seven weeks at Collingrad. Sheer hell. How they ever expected a bunch of Muppets to become professors in maths in such a short time is beyond all of us but we made it ... just. Enough said about that place.

To DRYAD we were bound with great expectations of sports make 'n' mends, but there were none! Our illustrious instructor PO(MW)(O) 'Chris' Christian had his work cut out. For three weeks we were brainwashed into thinking we would never get our hands dirty again. Sounds good this leader stuff.

It was not all plain sailing though, LOM Jeff 'nasty' Nash spent most of the course arguing with all the instructors and doing his best to break our instructor into the ways of

LETTERS TO THE EDITOR

teaching killicks. LOM 'Rammy' Ramsdale spent most of his time looking like a bear with a sore head and telling us all how it was so difficult to stay faithful. More like he was losing his touch. LOM 'Dickie' Davies was just Dickie. By the way, he drives a BMW, with a toolbox ... NORMS the name. LOM 'Lee' Bamber was the best class leader for divisions. Four times we went around the parade ground and still we got it wrong. "Back on Wednesday at 0715", we were ordered, so Lee decided it was time to visit the sickbay. Funny old thing he wasn't on divisions the following week. Bad leg, my foot.

LOM 'Fingers' Dumbleton and LOM 'Bunny' Warren spent three weeks annoying each other at the back of the classroom. Then when they found out they are both to join the same ship they fell in love. God help HMS PEMBROKE. LOM 'Nobby' Clark tried in his greatest wisdom to educate us all about the hard work he has had to endure on HMS INVERNESS. He didn't make for a very good liar.

The course has now come to a close and we all made it. STAND BY FLEET, LOM(MW)07 INCOMING.

Yours sincerely,

LOM(MW) 'Cris' Applegarth

THE MINEWARFARE AND CLEARANCE DIVING OFFICERS' ASSOCIATION

By Lt Cdr Rob Hoole

The Minewarfare and Clearance Diving Officers' Association (MCDOA) is rapidly approaching its tenth anniversary. Far from being just another club for 'old fogies', its membership numbers approximately 150 serving officers and 90 retired but extremely energetic officers from the MCD, MW and QDD sub-specialisations. Membership also includes several officers from foreign navies who have undertaken the appropriate courses. Associate membership is offered to exchange officers serving in RN Minewarfare and Diving billets, REDE officers on the staff of the Defence Diving School and other individuals deemed to have made a particular contribution to the benefit of Minewarfare and Diving.

The MCDOA's objectives are to promote the interests of the Minewarfare and Diving community and to foster the ésprit de corps of its membership. Officers completing the Minewarfare module of the MCD course receive a year's free membership (provided they sign the direct debit for the following year onwards). There is an active social programme which includes the annual spring party or ladies night, held this year at Fort Nelson on 14 May 98, and the annual autumn dinner in HMS EXCELLENT. The association also looks after its own by providing a ready response where there is hardship, illness or bereavement. A regular newsletter of activities called 'Five Bells' is published by the Honorary Secretary.

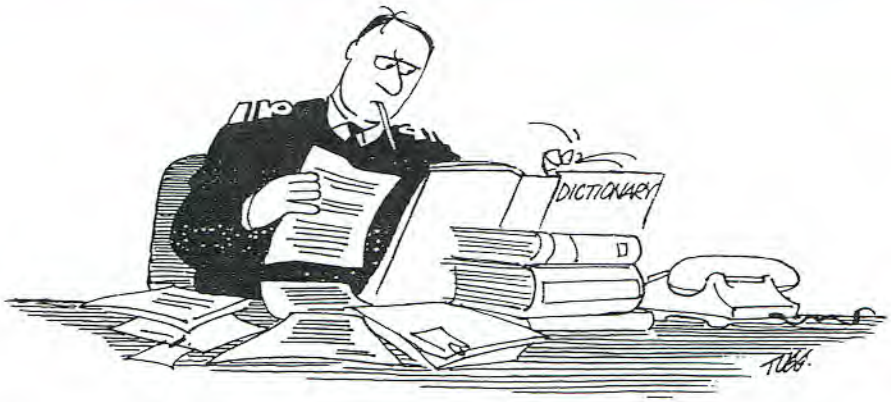
This year's MCDOA dinner, to which Rear Admiral Jonathon Band (ACNS) has been invited as the principal guest, will be held in HMS EXCELLENT on 13 Nov 98. It has been decided to mark the 25th anniversary of each long course at the annual dinner in order to provide encouragement and a focus for reunions. Non-paying guests at this year's dinner will therefore include MCDOA members from the 1973 Long Course as well as any members retiring from active service. Members of the 1974 Long Course, prepare yourselves now for next year! Recognising that some members find it difficult to attend events in the south, the committee would like to encourage regional gatherings of association members elsewhere, particularly north of the border. If you are willing to organise a 'proper' social event in your area, an appropriate subsidy will be considered by the committee on application.

The association's president is Captain Chris Massey-Taylor OBE, our senior serving MCD officer. Activities are organised by a committee which is elected each year at the AGM. The following officers were elected at the AGM on 8 May 98 for 98/99:

Chairman	Cdr David Hilton
Vice Chairman	Lt Cdr Rob Hoole
Honorary Secretary	Cdr Frank Ward
Honorary Treasurer	Lt David Ince
Serving Officers Rep (1)	Lt Adrian Dann
Serving Officers Rep (2)	Lt Cdr Nigel Hill
Retired Officers Rep (1)	Cdr David Edwards
Retired Officers Rep (2)	Cdr Mike Kooner MBE

If you are a member and have an item to raise, please contact the appropriate representative. If you are not yet a member but feel that you are entitled and wish to join, please write to The Honorary Secretary, MCD Officers' Association, Castlewood House, 77-91 New Oxford Street, London, WC1A 1DS or telephone him on 0171 829 8536. Membership costs just £10 per year, which also entitles retired members to a regular copy of the Minewarfare & Diving Magazine. Association ties (£5), cufflinks (£10) and other insignia are available from the Honorary Secretary or Treasurer on request.

FEEDBACK



Your Name.....

Your Rank/Rate.....

Your Job Title.....

Your Unit.....

Your Address.....

Your Tel No.....

Your Fax No.....

The Editor
"Minewarfare and Diving" Magazine
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School of Maritime Operations
HMS DRYAD
Southwick, Fareham
Hants P017 6EJ
Tel: 01705 284782

Dear Editor,

1. I have read this edition from cover to cover and I think:

(a) It's terrific - keep up the good work..... ❑

(b) It's OK - but you need more..... ❑

(c) It's no good - because..... ❑

2. Please find attached my contribution towards the continued success of "Minewarfare And Diving" Magazine.It is:

(a) A written article/letter to The Editor, typed, and word-counted..... ❑

(b) A photograph ❑ /slide ❑ /diagram No. of items:[ ]

of.....

(c) Less than RESTRICTED in classification..... ❑

3. I realise that the Magazine publication date is 1 Aug and that by sending my article in today it will arrive at least six weeks before the next edition is due.

4. I would/would not like my material/contribution returned on completion of printing..... ❑

5. I understand that inclusion of my contribution, in whole or in part, is at the discretion of the Editorial Committee.

Yours ..... Signed .....

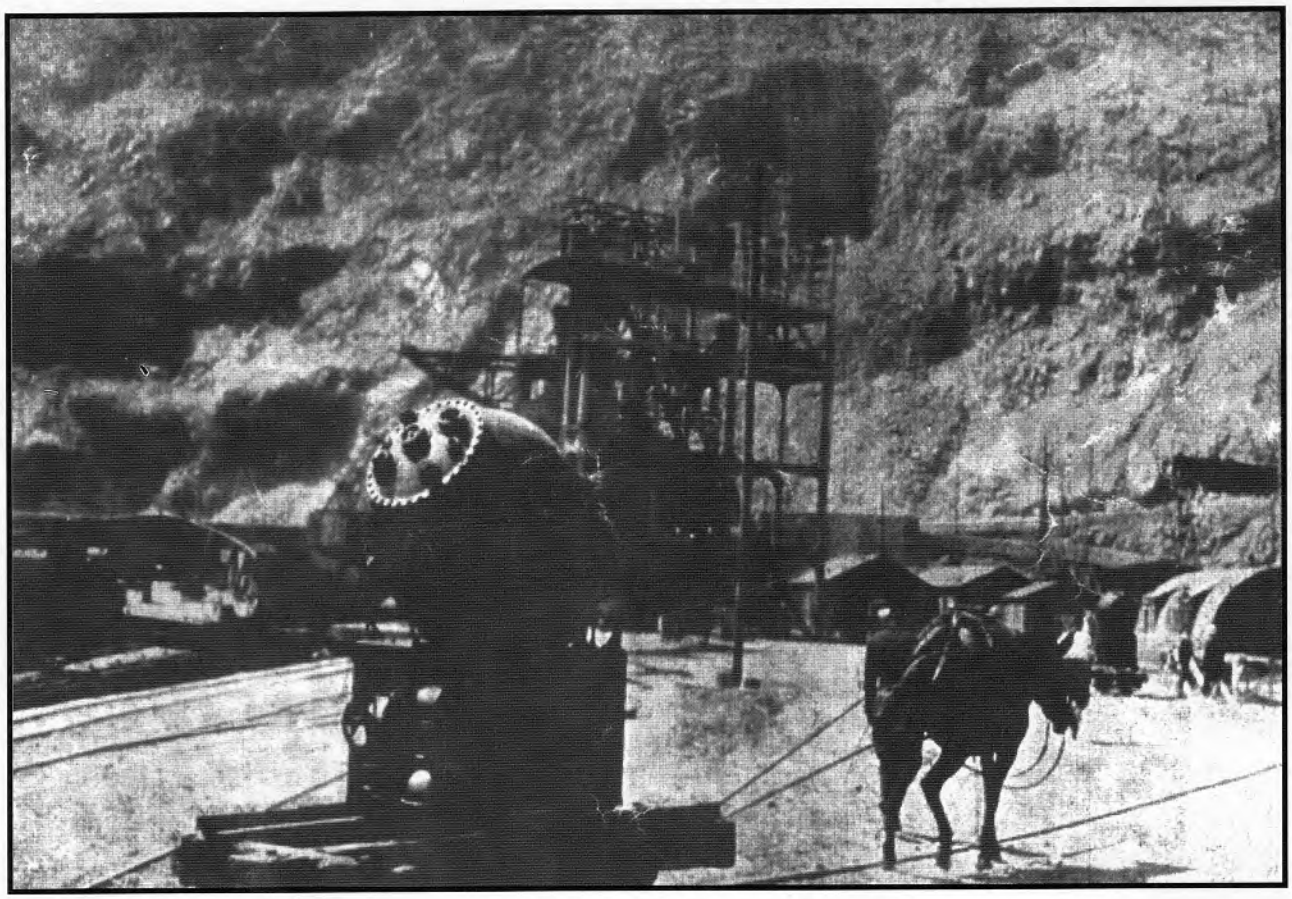
ARE YOU A DIVER LEAVING THE RN SOON?

If the answer to the above question is YES and you would like to continue to serve on one of the Area Diving Units as a Royal Navy Reserve Clearance Diver. Then contact:

CPO(D) BOB HAYTER, RNR CD branch manager
on Portsmouth Naval Base Ext 4116 or BT 01705 224116

THE CLOSING DATE FOR SUBMISSIONS FOR NEXT YEARS EDITION IS THE 30 APRIL 1999.

CAPTION COMPETITION



WHAT IS GOING ON HERE?

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THE WITTIEST ENTRY WILL RECEIVE ONE YEARS FREE
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