

MINEWARFARE AND DIVING



VOLUME 2

NUMBER 2

1 JULY 1992



MCM Trawlers in the Falklands - Page 10

MINEWARFARE AND DIVING



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MINEWARFARE AND DIVING COMMUNITY

Front Cover: Two MSA's conducting a light line transfer in the South Atlantic.

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Admiral Sir Julian Oswald GCB, ADC First Sea Lord and Chief of Naval Staff

Although the events of the Former Soviet Union and Eastern Europe have reduced the risk of immediate war, we in the military are only too aware of the potential dangers posed by political instability and arms proliferation in many regions of the world. The sources of unrest are numerous and a look at the world today will indicate that some of these conflicts are very close to home.

Despite Arms Control Initiatives the proliferation of weapons continues apace and events in the Gulf War served to demonstrate that the mine was one such weapon which is widely available, relatively cheap, easy to deploy and can have devastating consequences. The Royal Navy played the leading part in mine hunting and clearance operations during and post hostilities which greatly enhanced the status of minewarfare and EOD operations as an integral part of Fleet operations. The success of these operations was due to the high level of operational effectiveness of the minewarfare and diving specialisations and I urge you all to work hard to maintain these high standards.

*During my recent visit to the Fleet Diving Group at Gunwharf last month I was most impressed by the enthusiasm and level of professionalism shown by everyone regardless of age or rank. To those of you responsible for training and safety my message is simple: do not let the standards drop. To **all** of you I say: you enjoy a first class reputation as real professionals in a difficult and dangerous area; work hard to keep it.*

Julian Oswald.

MINEWARFARE AND DIVING



EDITORIAL

“Uncertainty” has been the watchword for many of us during the past months due in no small part to unsubstantiated rumours, prophets of doom and requests for impact statements concerning possible manpower reductions. Whatever the final outcome may be a continued high level of minewarfare capability remains foremost in the priorities for the future Royal Navy. This magazine provides a vehicle to allow those of us who are sub-specialised in minewarfare and or diving to express opinions and possibly more importantly to publish our achievements.

Events of note during the past six months include the disbanding of the Fourth (Blackfoot) Squadron, a reorganisation of the chain of command for the Superintendent of Diving so that he now comes under COMMW, and the allocation of two Hunt Class to Fishery Protection duties. The Second Squadron deployed to the Mediterranean between May to July which hopefully will provide some good articles for the next edition of MAD. The closure of Gunwharf has been further complicated by the temporary relocation of CGRM to Creasy building from early '93 until their permanent new site on Whale Island is ready. The present plan is that the Minewarfare school and Maritime Trade will move to HMS DOLPHIN, the Diving school to Horsea and all should be completed by mid 1995.

The lions share of the credit for the production of this edition of MAD must go to S/LT George Turnbull who has managed to retain some of the Careyisms needed for the task and to Mr Raymond Tindle of Bourne Press for providing timely professional advice. The editorial team are very grateful to all who have contributed to this edition. Unfortunately due to our inability to advertise Janes Information Group were unable to fund a copy of Janes Fighting Ships for Lt Cdr Mansbridge's article in the last edition and the editorial team apologies for this disappointment. We are currently investigating a Service source of funding for prizes and it is hoped that more of you will find time to compose articles and/or to report newsworthy events.

Diver Sub Branch

DO YOU WANT TO BE A DIVER?

Lieutenant Commander Holloway

This article is directed at all Divers, whether existing members of the sub branch or potential members still paddling. The Diver sub branch needs your help in recruiting suitable young men to take their chances as a professional.

Although the Diver sub branch is healthy with respect to required numbers above Leading Seaman Diver, there is a current shortfall of approximately 10% of AB Divers which is likely to get worse before it gets better. Reasons for the shortfall include the reduction in the size of the Fleet which has reduced the requirement for Ships' Divers and thus the size of the pool of potential recruits. Another is that a number of other branches and sub branches are listed as being short and we are not allowed to recruit from these. Mixed manned ships are not realising Ships' Diver volunteers from the WRNS categories either. Clearly something must be done to whip up some custom.

One suggested solution is the reintroduction of the direct entry diver, however, this is not a simple answer and will bring about changes in training philosophy and employment. Part of the strength of the sub branch has always been the high standard of young men taken in from other branches who, apart from bringing a skill with them, have invariably had some experience of naval life and grown up in the process. Should we return to the direct entry route it is likely that we will experience large failure rates, suffer immaturity and waste valuable and costly training unless we lower our standards. Clearly this is unthinkable and unacceptable.

So, enough of the sales pitch I hear you say, what can we do? A degree of positive encouragement is necessary, bordering on aggressive Press Gang recruiting among your Ships' Diving Teams and any others looking for some proper action. As mentioned previously, a number of other branches and sub branches are feeling the pinch for people so do not suffer any pangs of conscience or ethical misgivings about going on the offensive before they do. The Diving School sponsors an annual FTM and HTM to encourage ratings to join the sub branch but do these always filter down to the right level? In addition, an attempt is made to recruit successful Ships' Diver candidates on completion of course.

The main selling points to aid you head hunters are probably:

- a: **Pay:** Having passed AB(D) PQC course, completed 6 months sea time and the AB(D) Task Book, the confirmed AB(D) receives £7.00 diving pay per day (Group 3) rising to £11.87 (Group 4) on advancement to LS(D). For those on Group 5 (supervisors) enjoying the over 5 year rate the amount is clearly 'obscene' (to quote Richard Geary in *Pretty Woman*) and quite unrepeatable.
- b: **Sea/Shore Ratio:** The Diver sub branch enjoys a very high shore ratio by comparison with other sub branches and branches.
- c: **Employment:** Divers serve at sea in Hunt and Sandown class mine hunters only. There are no Divers serving in Tons. This incidentally is the reason why we cannot accept WRNS as Divers at the moment as there are no female facilities available in these ships. You will

know that we have trained some WRNS as Ships' Divers and have been very impressed with the standard. Although this article is primarily concerned with the Diver sub branch, there is a need to keep the Ships Diver candidates coming in and that includes the ladies.

d: **Travel:** Last year units of the Fleet Diving Group deployed to Cyprus, Turkey, Canada, Bermuda, Dubai, Denmark, Sicily and other places too hot to mention. This year training teams have gone to Saudi Arabia and Canada and one lucky PO(D) is off to the Maldives for 2 months to teach the locals to dive.

e: **Job Satisfaction:** Always a difficult one to quantify but the sub branch is known for its professionalism, adaptability and esprit de corps. There are opportunities for Divers to parachute, work alongside the Special Forces and be guaranteed to be in the forefront of any action; the honours lists after the Falklands and the Gulf actions speak for themselves.

The admin process required is not crystal clear, however, there is a draft change to BR 1066 article 1005 in the wind which should improve matters but it may be some time before the word gets through. Another reference is BR 8748 article 0302 although this is broad brush only; the former is specific to Divers. The main points are summarised overleaf:



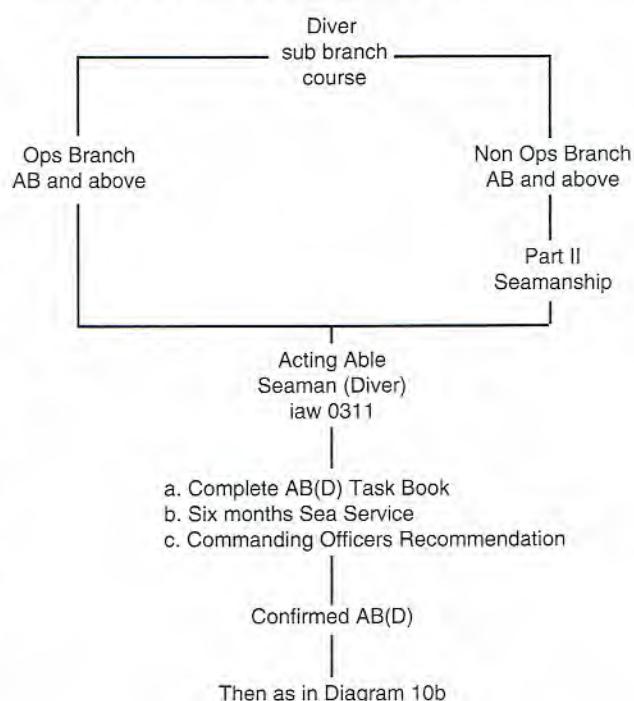
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HOW TO JOIN THE DIVER SUB BRANCH

- The Diver sub branch is open to any RN rating (and hopefully RM in the future) at all rates i.e. Able, Leading, PO or Chief, however each must revert to A/AB(D) on completion of the AB(D) Diver PQC. As you can imagine this tends to discourage all but ABs and Leaders.
- New entry to the Diver sub branch is in abeyance but remains an option which will be ordered should circumstances dictate its necessity.
- Normal selection is by late entry from male rating volunteers of all branches and sub branches. (When appropriate sea billets in mine countermeasures vessels have been identified, applications for transfer to the Diver sub branch from WRNS ratings will be considered.) All applicants should be advised they will be reverted to A/AB on successful completion of the Diver sub branch professional qualifying course.
- All volunteers must meet the required medical standard for Divers as laid down in BR 1750A The Handbook of Naval Medical Standards, have 6 months VG Conduct and have 18 months left to serve on completion of the Diver sub branch professional qualifying course. Volunteers are expected to have previously qualified as ships' divers before applying for transfer although exceptional cases will be considered where, for example, an individual has previous diving experience and is in possession of a sports or professional diver qualification. Due to the physical nature of the training, preference will be given to applicants between the ages of 20-25, although volunteers outside this age group will be considered.
- On receiving a request "for transfer to the Diver sub branch", a rating's commanding officer should satisfy himself that the individual has a strong sense of responsibility, is reliable, is able to produce a high standard of work unsupervised and is suitable for service in small ships. A candidate will not be accepted for the 5 day Diver aptitude course unless he shows these qualities. A recommendation nominating a candidate for aptitude course should be fully supported by the rating's recorded service history.
- When the commanding officer is satisfied that a candidate meets the initial criteria, application for the Diver aptitude course should be made on the rating's behalf to The Commander, MDT Department of SMOPS, HMS NELSON (Gunwharf), Portsmouth, Hants PO1 3HH. The application is to include certified copies of the ratings full Service Documents with Form C2641 written up for the occasion. If selected, the rating will be allocated a place on the 5 day Diver sub branch aptitude course comprising a series of tests listed in BR 2806 Article 3106.2 and joining instructions will be issued. In the event a nominee is not selected for aptitude course, a letter explaining the reasons will be forwarded to the unit concerned.
- The result of the aptitude course will be reported to the parent unit. If the candidate has been successful and remains a volunteer, further application by the parent unit to the Commodore HMS CENTURION is necessary to establish drafting clearance and to nominate the individual for the next available Diver professional qualifying course. **No action will be taken to draft a rating to course until this application has been received** when, providing there are no manning objections, the candidate's name will be placed on a waiting list. The aptitude course result will remain valid for a period of two years and a copy of the acceptance letter is to be placed with the candidates Service Documents.

- A candidate name is to be withdrawn if the continuity of his VG Conduct is broken after recommendation or if for any reason the rating is no longer considered suitable for the Diver sub branch. Withdrawal must be notified to the Commodore HMS CENTURION and to The Commander, MDT Department of SMOPS, HMS NELSON (Gunwharf). A rating may reapply for transfer 6 months after restoration of his VG Conduct; if approved by the rating's commanding officer, it will not be necessary to reapply for the aptitude course unless the two year period has lapsed.
- In accordance with BR 1066 Article 0311(1d), ratings will remain in their present Branch until successful completion of the Diver sub branch professional qualifying course. Ratings who fail the course will remain in their present Branch or sub branch. Transfer to the Diver sub branch will take place as shown below.



- Ratings of the Operations Branch (Seaman Group) who attain the rate of Acting or Confirmed Leading Seaman before transfer will not be required to recomplete Task Book 2 Seamanship or the Seamanship WPE when readvancing to the Leading Rate in the Diver sub branch. Completion of Diver Task Book 2 and WPE will be necessary to attain a full pass, Seamanship will be reflected as previously passed.

So that's it; get hot; go out and round 'em up. Seriously, if you have any recruiting ideas please drop a line to the school so we can all have a good laugh. CPO(D) TEMPEST is available on Dkyd 24535 in the Diving Planning Office should you need details of diving courses, aptitudes, time of day...



LEE SPLASH



by Phil Burrell

It started, as these things often do, with a casual remark over a pint of beer.

"If there's ever a spare place when you're parachuting into the sea, Steve, I'd love to have a go."

"OK, I'll bear it in mind" was the response by Steve Marshall (OIC FDU1) to a request he'd doubtless received numerous times before.

That was the last I expected to hear about parachuting until Steve, as always true to his word, telephoned to say that all arranged for the forthcoming LEE-SPLASH. I was to be included in the jump.

"The ground training is at Poole on 3rd December, you'll be jumping from DAEDALUS on the 12th. Paul Leader will sort you out with all the details."

"Oh marvellous" was my feeble response.

A quick jerk and I was pulled out of my reverie. "Wait for the instructor to drop his hand and then slip the harness" were the instructions. With my head 12 inches underwater it was proving pretty difficult to see the instructor! I waited for what seemed like a prudent amount of time and then slipped the shoulder strap. Nothing to it! One by one the rest of the team repeated the evolution with varying degrees of success. LS(D) Elrick embarrassed the branch by failing to swim back against the tide and having to be rescued by the boat before being swept into Swanage Bay!

That was the easy bit over. The next part of the exercise involved mustering at Overlord Hanger, HMS DAEDALUS, at 0730 on 12th December.

The weather was particularly cold, however, otherwise ideal for parachuting. The cold weather, unfortunately, had affected the aircraft. An RAF mechanic had failed to anticipate the low temperatures and omitted to put anti-freeze in the aircraft engines. As a result the Hercules was frozen at RAF LYNHAM and wouldn't be on station until 1300. A reprieve? Not a bit of it. Just 5 more hours of nervous anticipation! The time was spent as a guest of the SPAG from HMS DOLPHIN. After numerous cups of tea, a tour of the SETT and 2 viewings of Terminator 2 (who better than Arnie to put you in the mood

So it was that December 3rd found me in a Landrover together with Lt. Cdr. Stuart McAlear, LS(D) John Meakin and LS(D) Jock Elrick travelling west to Poole for an introduction to wet parachute jumping. Ground training proved to be quite an experience. It turned out to be a conversion course for experienced parachutists to prepare them for jumping into the sea. Within 2 minutes were conspicuous by our lack of knowledge, not to mention the absence of parachute wings on our sleeves! As usual, however, the Diving Branch representatives learnt quickly and were soon leaping around the hanger with the best of them. A briefing on the numerous things that could go wrong dampened our enthusiasm, although fears were alleviated when the No2 Instructor took us under his wing during the lunch break and re-established our confidence.

The warmth of the hanger was swapped for Poole harbour for the afternoon 'session'. As with all military courses we had to experience the 'buggerance' factor. We were to be dragged behind a Searider in an attempt to simulate the experience of being hauled through the water by an open parachute. I'm still not convinced that it wasn't purely for the malicious pleasure of the instructional staff.

The experience, however, was worth it, if only to see all the confident, fully trained parachutists encountering the delights of a Pussers Dry-Bag for the first time!

Poole harbour looked particularly uninviting as I clipped myself into the mock-up harness. I thought back to Paul Leaders briefing. I'm sure that he said we'd be using a swimming pool for this training. I shivered in my lightweight dry bag and swimming trunks!

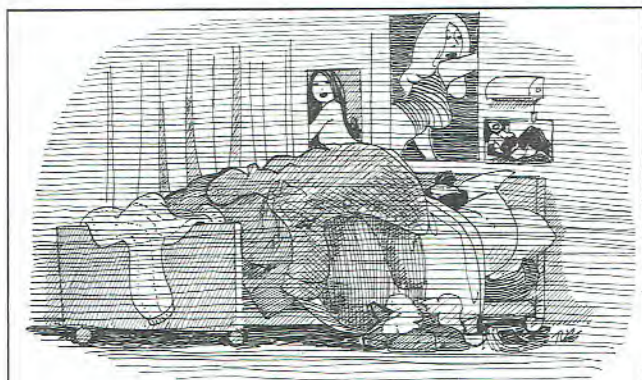


It started as these things often do, with a casual remark over a pint.

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LEE SPLASH

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An RAF mechanic had failed to anticipate the low temperatures and omitted to put anti-freeze in the aircraft engines.

for parachuting?) it was confirmed that the aircraft had defrosted and would be available on time. We returned to DAEDALUS, drew 4 parachutes and reserves and got kitted up. The plan was to make 4 jumps, 3 day and 1 night, and to save time on turn around between jumps all gear was to be prepared in advance. I wore a lightweight dry-bag, hood, training shoes, knife and fins in addition to the parachutes and lifejacket. The knife was in pristine condition having been specially sharpened should the need to slash parachute shrouds arise. We were organised into 'sticks' with between 4 and 6 jumpers in each group. We 4 novice jumpers formed stock No 4 with the heaviest, LS(D) ELRICK, as No 1 in the stick.

After a very comprehensive briefing from the RAF Parachute Jump Instructor (PJI) we were ordered to embark. We all piled into the back of the aircraft and strapped ourselves in. The ramp closed, the engine revolutions increased and we were off.

All too quickly we achieved jump height of 1000 ft and preparations to jump commenced. The back doors were opened and the 1st stick were ordered to hook up. The stick was called forward to the ramp, "Red On", "Green On", Go, Go, Go, Go, Go, Go, Go.

It was all over in seconds and the sky was full of parachutes. The process was repeated with Sticks 2 and 3. It was not our turn. By this stage I had decided that there was no going back. We carried out final checks on each other before being called forward to the ramp.

The aircraft turned for its approach run. Lee-on-Solent appeared below and gave way to the Solent.

"Red On", "Green On", Go, Go, Go I was dead, no I was alive—the parachute was open. What a glorious sight. I took a few seconds to admire the view before practising steering the canopy. All too soon it was time to turn into wind and prepare for landing, or is it splashdown? The entry to the water was remarkably smooth and the parachute was



slipped just as in training. The pick-up boats were on hand immediately to recover us and return us to the mother craft. Once all 5 sticks had jumped we were returned to the shore ready for the next jump.

"The 2nd jump is much worse than the 1st" or so I'd been told. It wasn't too bad until the aircraft took off. I then understood what people had been talking about. This time when I jumped things didn't go quite as smoothly as with the 1st jump. The parachute rigging lines had twists in them which caused momentary concern, however, I was able to kick out of them, just as we'd been shown in training, and the descent continued without further incident.

By now time was getting on and it was decided that the 3rd and final jump would be a night jump. It was for me by far the best of the 3 jumps. My senses were now fully heightened and I had a good appreciation of what was going on. The experience of jumping into a black void was invigorating to say the least.

It was over. All gear was all stowed and I returned home to "dit the wife to death" with tales of bravado and excitement. I am extremely grateful to Steve Marshall for giving me the opportunity to participate in the exercise.



THE MINE IN THE GREAT WAR

By PO(MW) S.W. Baillie

The first major use of the sea mine was in The First World War. The Imperial German Navy laid some 43,000 mines in the four years from 1914 to 1918. During that time the Royal Navy dealt with over 30,000.

The remaining mines accounting for one million tons of shipping. Amongst them were 588 British ships.

On the first day of the war at sea the German auxiliary minelayer KONIGIN LUISE slid out from Heligoland to sow her deadly cargo in the Thames estuary. Next morning the new British 3,500 ton light cruiser H.M.S. AMPHION, struck a mine and sank. She took 131 men with her to a watery grave. The KONIGIN LUISE was caught and sent to the bottom. More casualties were to follow.

On the 27th of October 1914, with the war still in it's infancy, came the first major victim of the sea mine. With probably little more than 350lbs of explosive, a mine 10-15 feet beneath the surface, sank H.M.S. AUDACIOUS. A brand new dreadnought weighing in at 23,000 tons with 13.5" guns, she struck the mine in a German minefield off the tip of Ireland. She stayed afloat long enough for all her crew to be rescued.

Such a loss shocked the Admiralty into keeping it a secret until after the war. This combined with a sighting of a periscope, led Admiral Sir John Jellicoe to move the entire Grand Fleet, from Scapa Flow to safer anchorages on the west coast of Scotland and Loch Swilly in Ireland.

Another two casualties were the two destroyers H.M.S. ZULU and H.M.S. NUBIAN. The bow and stern halves were salvaged and welded together to form the new ship H.M.S. ZUBIAN.

Many skirmishes occurred throughout the war, but not many major fleet actions. That is until the 31st of May 1916. The British Grand Fleet and the German High Seas Fleet were destined to meet. The place, some 85 miles east of the Dutch coast, near a peninsula which would give the battle it's name JUTLAND.

Many articles and books have been written on this battle, few have agreed on the results, however a momentous battle it was. Victory, in some ways for both sides, defeat also to a degree for all concerned.

Even here the mine played a part. Admiral Jellicoe, believing the Germans to have evaded him after the battle, took the Grand Fleet to intercept them before they reached the safety of the Jade estuary. To cover a less likely avenue of escape, he sent his only minelayer H.M.S. ABDIEL to Horns Reef to sow a mine field. With no escort for protection ABDIEL was unaware that the Germans had turned and were heading for safety through Horns Reef.

On the morning of Thursday June 1st 1916 the British grand fleet was turned and headed home for Scapa Flow. The huge Jade River locks had opened and closed all night to let the German fleet into their harbours. The last ship in, the dreadnought OSTFRIESLAND, crippled by a mine in the early morning.

This was to be the last great fleet action of the war. No longer would dreadnought be pitted against dreadnought. The German Navy was imprisoned in their home waters for the rest of the war. The Royal Navy had virtual control of the seas. Not however total control. The mines were still there.

One week after Jutland, H.M.S. HAMPSHIRE was on it's way to Russia. Off the Orkneys she struck a mine and sank. Only 12 of her crew of 655 survived, the rest drowned. Amongst them was Great Britain's Secretary of State for War, Lord Kitchner. Along with Jutland this served to make the British public distrust the capabilities of the Royal Navy.

Still the navy was there doing it's job. The little ships of the minesweeping flotillas at the van. At the peak of operations some 725 minesweepers turned out every day! By the Armistice 210 had not returned.

The German mines have mostly been removed through the year, but some are still there. That is one small reason why the little ships of today's minewarfare squadrons turn out daily. However as recent events have shown, minewarfare has come a long way from the "WAR TO END ALL WARS."



Minewarfare Reporter



● *Minewarfare Reporter*
CPO (MW) Paul Cambell

CPO(MW) Paul Cambell has taken over the reins as the MW reporter from PO(MW) Wally Vassie whose sea time exploits prevent him from keeping in active contact with the majority of the branch. Our thanks go to him for his sterling efforts to date and we wish him all the best for the future.

Paul is currently the staff CPO(MW) to MCM 10 a task which keeps him constantly on his toes and takes him to the far reaches of the UK as he visits the many RNR units. There are undoubtedly untold tales to tell from that particular area of activity and we look forward to deluge of "good yarns".

CONGRATULATIONS

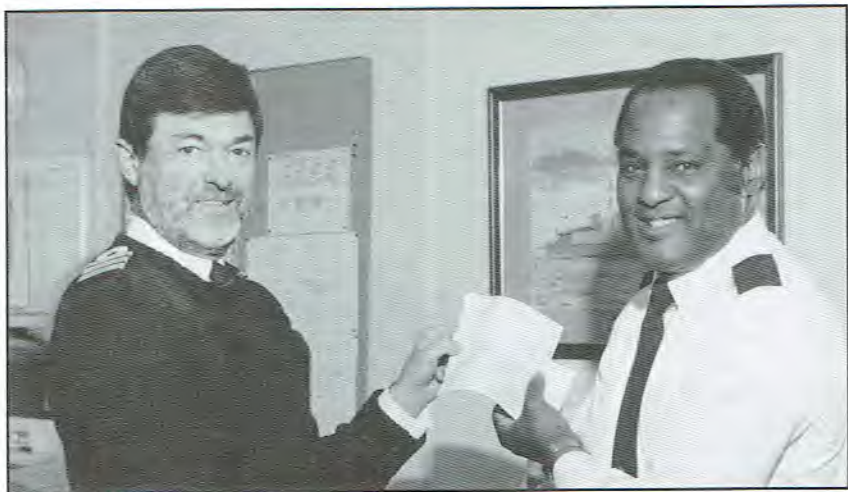
To "BARNEY" Barnett who was promoted to Warrant Officer (MW) on the 31 March this year. Barney (whoops sorry) Mr Barnett moves on from Staff CPO (MW) to MCM 10 to take up his new appointment on the MCM desk of COMMW.

Congratulations are also in order for that other old man of the sea "NORMAN" Blick. Norman was selected for promotion to Warrant Officer at the recent sitting of the promotions board. He expects to be moving on to a new appointment in June.

Best wishes for the future are extended to them both.

The Sea Systems Sub-Committee on awards to inventors agreed to make an award of £110 to PO(MW) CASS RAWLINS for his suggestion of swaging the soft eye into the end of sweepwires, in place of the finger tearing task of splicing. In addition the HERERT LOTT Naval inventions trust fund committee also agree to make an additional award of £185 making a total of £295. PO RAWLINS made his recommendations in 1979 whilst serving in HMS ABDIEL.

● *PO(MW) RAWLINS receives*
his award from CDR PJ GALE
of MDT Portsmouth



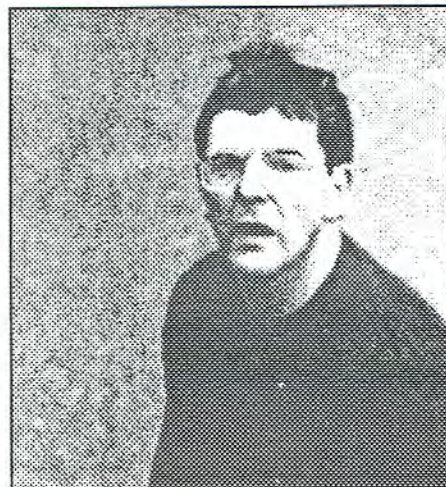
SCOTTISH HOSTAGE RELEASED

Scottish Hostage, Steve Gobey, today admitted that he was surprised at his selection for release. He told reporters that he had not been informed by his captors that release was imminent. After 10 years of incarceration in the bleak wilds of Fife, he is to be liberated to the sunnier, but even bleaker, wastes of Canada in late March 1992. Asked whether he was looking forward to being free again he replied "See yooo Whally, in Canada, Eh!"

Steve told reporters that he would not miss the cold, wet, dark, drab drives to Rosyth dockyard on winter mornings, and was more than happy to swap this for even colder, wetter, crowded bus rides into the industrial wastes of Hull, Quebec. Especially in sub zero temperatures. Dr. Dan Nicholson, a leading Canadian psychoanalyst, confirmed that Gobey was not suffering from any after effects of continued isolation. He added that Steve had been advised to keep a low profile between now and his actual release date from Scotland. "Assagais are known to travel around corners and still hit you between the shoulder blades", he commented.

On the domestic scene, it is rumoured that Dr. Nicholson has succeeded in reserving a four bedroom igloo on the frozen Ottawa river for the Gobey family, "This will be OK until May when it all melts", he said. There is nowhere else for the Gobey family to stay when BDLS kicks them out of their hotel after 2 weeks. The big advantage of the igloo, of course, is that they will not need to bring a freezer with them and they and they can skate to the nearest Macdonalds.

When Gobey was asked if he had made any other decisions about his future he replied, "No, but as it's a MOD job I'm not expecting to make any decisions anyway!"





LEAVING THE NAVY

by George Turnbull

The Minewarfare section of SMOPS said a final goodbye to an old friend PO(MW) "MICK" Luke in April of this year. PO(MW) Luke has had a long and varied career which began as a JS2 in May 1959. He saw sea service in HM Ships TYNE, BERMUDA, ADAMANT, YARMOUTH, ORION, CROFTON, BERRYHEAD, GALATEA AND MERMAID. This was interspersed with the mandatory time at the "Alma Mater" HMS VERNON for advancement courses.

He transferred to the newly formed Minewarfare Branch in 1975 and has the dubious claim to fame of being the first PO(MW) drafted to a complement billet in an MCMV. He went on to complete more sea time in HM Ships MAXTON (twice) BOSSINGTON and KELLINGTON.

PO(MW) Luke also spent some considerable time at the Minewarfare section as an instructor, where he was able to pass on the benefits of his experience and in depth professional knowledge to a large number of MW trainees.

He was discharged to a full service pension in 1986 and took up civilian employment. Recalled to the service in May 1990 on a 2 year ES engagement he taught MCM procedures to Royal Saudi Forces and made a valuable contribution to that task.

To mark the occasion of his final retirement Mick was presented with a silver hip flask filled with the appropriate spirit. Which he promised not to drink all at once. We wish him "Fair Winds" and "Good Luck" for the future.

Falklands Remembered

THE FIRST MINE

By Martyn Holloway

In 1982 five Hull trawlers were commissioned as Her Majesty's Ships and joined the Falklands Task Force in the South Atlantic as minesweepers. This article describes their first encounter with a live mine.

A good diver has a healthy respect for his environment and knows the shortcomings of his equipment. Who will not admit to a slight quickening of the pulse on first entry into the water; yet it is nothing like the burst of adrenalin I experienced when my first live mine dramatically presented itself.

I had been in the right place at the right time to be given the honour of commanding the five trawlers of the Eleventh Mine Countermeasures Squadron. Some of them had been fishing when Argentina invaded the Falklands in 1982 but all found themselves suddenly hauled into Rosyth for rapid conversion to a minesweeping role. This in itself was something of a miracle and a testament to the foresight and organisation of CMCM's SOO Lieutenant Commander Phil Morton. Freezer lorries met the ships, the fish holds were emptied, although we still found dead fish some four months later, the freezer plan was decommissioned and filled with nitrogen, extra ballast was put in and the ships were stored for war. The spirit was unbelievable, imagine dockyard mateys asking what wanted doing and then getting on with the job before your very eyes. The ships were manned entirely by RN personnel drawn mainly from ships of the MCM Flotilla then in maintenance.

For sweep gear the trawlers were fitted out with the extra deep armed team sweep WSMk 9 which provided a 200 metre capability. After some quick thinking a deep double Oropesa sweep was devised using the enormous 'Jumbo' floats, the Algerine multiplanes and some large heavy duty four legged Algerine otter slings which were hastily manufactured in Rosyth and delivered to the squadron most impressively by parachute some 150 miles South of



Ascension Island. Complete with some DGUW(N) computer predicted float and kite wire tables, the squadron now had a vitally important precursor sweep capability to clear those mines dangerous to the trawlers before using the WSMk 9 team sweep.

Up until the time the otter slings arrived we had been practising team sweeps in pairs, in threes and finally all five together. As the ships continued South out of touch with the Task Force and CINCFLEET, we heard the awful news of the loss of HMS SHEFFIELD on the World Service of the BBC and realised how serious it might get. Work is the best distraction and we busied ourselves relearning Oropesa Formation GOLF and standard track turns by flag hoist and flashing, being totally silent on voice circuits after Ascension.

With the coming of precise navigation, formation Oropesa sweeping had generally fallen from favour and I was glad that a recent 1st MCM Squadron exercise had refreshed the art. This took me back to early minesweeper days in Malta with the 7th MCMS; Shavs, 'CHOKKA' the dog, Marsovin Special Reserve, Whitehall (T'pax Towers) Mansions...

We adventured with QE2 in South Georgia, avoided blue on blues off Teal inlet East Falkland (thanks Richard) "You mean those rust buckets are warships and on our side?", transported those interesting gentlemen from Hereford and Poole and went Guinea Pig influence minesweeping ("Excuse me sir, what does Directive Charlie mean?") before





finally getting down to the real business of clearing the Port Stanley minefields three days after the Argentines surrendered.

The first day we set off in a tight formation GOLF, keeping just to the South of the suspected minefield, and predictably swept nothing. As the surrender had been signed or, as some had put it, peace had broken out ("Officers *will* wear ties ashore...") we had been given permission to use VHF (deep see trawlers are not into UHF or much else in communications for that matter). We had practised throughout for silent operations and ships had been accustomed to taking stations close up on their next aheads' floats in order to see the flat hoists. Comfortable with the togetherness of this arrangement I had not thought to extend the distance. The next day this brought us near to disaster.

As the trawlers had no damage control or shock hardening to speak of, we had reasoned that a close mine explosion would knock out all communications, apart from anything else, and had devised a Very pistol flare code to cope

with an emergency situation. A green flare would bring everyone's attention to a swept mine or a floater, a white would denote a temporary breakdown requiring others to take avoiding action and a red would signify urgent assistance was needed and assumed an imminent danger of sinking.

Wednesday 23 June 1982 started out well enough, the ships weighed anchor in Berkeley Sound in the early morning half light and, having streamed the gear in a port formation sweeping to advantage, stepped over the threshold into the minefield at the moment of sunrise. The first minefield was only four miles long and the sweep plan required an alteration of lap course or starboard of some 65 degrees between the two minefields. I was busy myself getting the order ready while making sure CORDELLA stayed in safe water just as a helicopter arrived.

Helicopters are like policemen, when you want one they cannot be found, and when you don't need one they do their best to spoil your day. Memories of innumerable Highland Flings flooded

back when the brief was always not to delay the very important helicopter but to drop everything to meet its every need; but in the Clyde we were up against exercise mines, these were for real. Being too busy for aviators just at that point I waved him away. The Sea King pilot was undaunted by my rude gestures and found a kindred spirit in Lieutenant Commander David Garwood, another pilot and my number two, in HMS PICT on my port quarter.

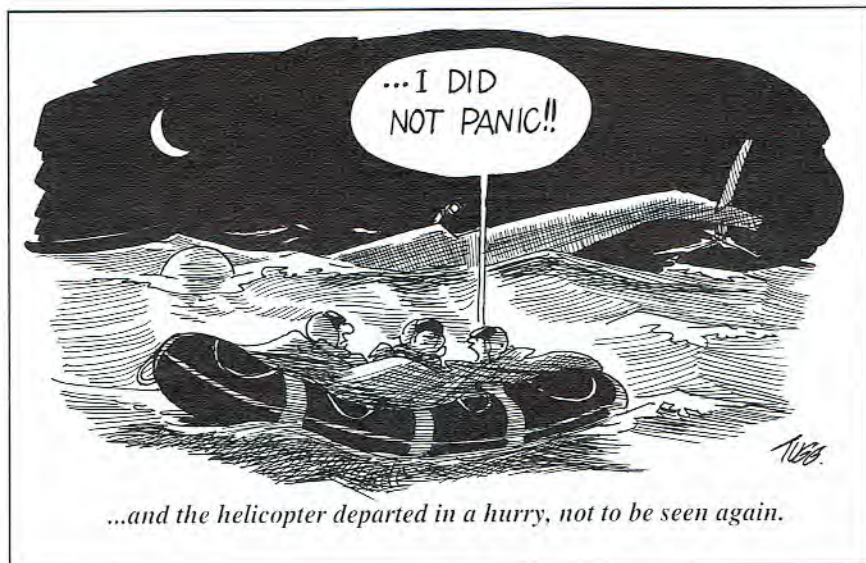
The trawlers were a great inconvenience to helicopter pilots as the location of the forward and after masts means that the helicopter had to hover between them and drop the goodies onto the bridge wing. To prove the point, a Wessex had already chopped off the SATNAV aerial from the front of FARNELLA's bridge and had lost a couple of feet of rotor blade in the process.

Lieutenant Commander (now Commander) Jerry Greenop in NORTHELLA and number three in line recounted afterwards a freeze frame recollection of what happened next. In the midst of the helicopter activity, an

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Falklands Remembered

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without further incident. Lieutenant Nigel Art. (Bernie) Bruen (FDT 3) joined us by helicopter on 28 June to discuss the recovery and exploitation of a mine and ended up in the water that day securing a tow to the last one swept. His and JUNELLA's subsequent outstanding achievements in beaching and rendering the beast safe are worth a chapter on their own.

We knew that the fields had been laid to counter an amphibious assault and from the length of wire found on the mine calculated the mine case depths to be 18' below the surface (we drew 24'). The only remaining Argentine naval officer had confirmed this and had been delighted to discuss the effectiveness of his minefield, the discussion taking on a typical PXD flavour rather than an interrogation.

apparently motionless but large black shiny apparition with horns suddenly presented itself just in front of his starboard bow in full view clear of the water, having propelled itself from depth with great force. He altered the ship rapidly to port to avoid the mine, suffering a steering gear breakdown in the process. Number four, Lieutenant (now Commander) Bob Bishop in FARNELLA, became greatly concerned as NORTHELLA began cross the 'T' ahead of him into unswept water. FARNELLA altered violently to port and further into the minefield to miss NORTHELLA. Not to be outdone a member of PICT's bridge team, who had heard an excited report of the swept mine, rushed on to the port bridge wing, oblivious to the helicopter hovering a few feet above him and fired a green Very flare. The flare missed the attendant cab but clearly passed through the rotor disc. A somewhat shaken pilot aborted the drop and the helicopter departed in a hurry, not to be seen again. At the end of the line Lieutenant Commander Mark Rowledge in JUNELLA managed to avoid the two performing ahead of him ahead while PICT swept another mine.

floaters to deal with before nightfall there was insufficient time for a return run; ships recovered sweeps and did their best to sink the mines. Try hitting a semi submerged floater at 200 yards sometime.

The ships rafted up later in Fitzroy Sound for a hotter than usual washup; we had been blooded and were the wiser for it. We counted our blessings and were grateful for the innate sense of telepathy which had developed between the ships as a result of our close company time.

The shallow depth of the mine cases entirely vindicated the decision to put the precursor deep Oropesa sweep together and it was significant that all of the mines were swept with this adhoc gear. To prove its effectiveness, we allowed ourselves a couple of stirring bottom following five ship EDATS check sweeps to show there were no more poised mines left to sweep.

The years of practice and training had paid off and all lived to tell the tale. The full story will have to wait for the book but I do not think any of us will forget the first mine.

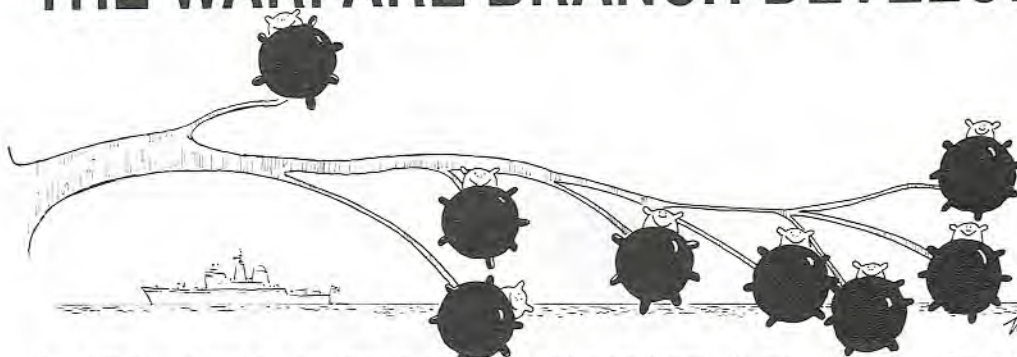
During the next 5 days, when the wintery weather permitted, the squadron swept a further 4 Argentine contact mines



With the formation in disarray and two floaters to contend with, I brought the proceedings to a close. JUNELLA quickly recovered gear and sank the mines with LMG fire, NORTHELLA fixed her steering gear and we tiptoed carefully out of the minefield. After restreaming the sweeps we started again; this time with a healthy distance between us. No more mines were swept in the first field but JUNELLA tallied four in the second. With four more

The Warfare Branch Development

THE WARFARE BRANCH DEVELOPMENT



by WO(MW) R. DEAN

You will have heard by one means or another about the feasibility study into the integration of the Operations and WEM Branches under one title, THE WARFARE BRANCH.

During recent visits to ships it was obvious that not everyone understood why or how it will affect the Minewarfare Branch. So what better place than the MAD Magazine to ensure that the buzzes are quashed to give all concerned an insight to the future. Much time and effort has been put into staffing the proposals to ensure that the MW Branch is fully integrated into the Warfare Branch as a whole.

The need for change was identified in the mid eighties as a result of a variety of studies by a number of teams. The main reasons were:

- a. To make more efficient use of available manpower as more leanly manned ships enter service.
- b. The need for a greater technical awareness by operators due to the continuous advance in technology.
- c. The need to provide a more rewarding career for ratings involved in warfare.
- d. Structural problems will make the Ops and WE Branches unsustainable in the mid to longer term.

The Navy Board commissioned a study into the feasibility of forming a Warfare Branch in 1987. The initial study was completed and the need for the 'Operator - Maintainer' accepted. It was decided that the WE Officer and Artificer would remain within the realms of the WE Branch and should not be affected by WBD work. The WEMs were a different matter. The future employment for Senior Rate WEMs was, and is, called into question causing career and

promotion problems. It was decided therefore that the WEM training would form the basis of the maintainer training in the Warfare Branch and that WEMs would be phased out. It must be said that the requirement for Senior Rate WEMs will continue until the first Warfare Branch Senior Rates bred from seed reach the fleet. This is envisaged to be in the year 2000.

SUB BRANCHES

The Warfare Branch will encompass all sub branches of the present Operations Branch. Each sub specialisation will be grouped according to the type of sensor they operate and the type of Warfare conducted. Each sub specialisation will be grouped according to the type of sensor they operate and the type of Warfare conducted. Each is listed below:

Abovewater (AW)	Tactical (AWT)
	Weapons (AWW)
Underwater	(UW)
Minewarfare	(MW)
Electronic Warfare	(EW)
Communications	(C)
Submarines - Sensor	(SSM)
- Tactical	(TSM)
- Weapons	(WSM)
- Comms	(CSM)

Those branches that recruit through sideways entry will remain as they are i.e. PTI's, Regulators, Seaman Specs and Divers just to name a few.

TRAINING

Four levels of training will be introduced for all Warfare Branch specialisations each entailing a Professional Course which will train ratings in both operator and maintainer skills. It must be understood that the maintainer skills included in the following courses are those taught to WEMs at present and in

no way encroach on the skills of the Artificer. The Title Seaman Minewarfare and Able Seaman Minewarfare will be replaced with Operator Mechanic 2nd Class (OM2(MW)) and Operator Mechanic 1st Class (OM1(MW)) respectively. The Leading Seaman Minewarfare will become a Leading Operator Mechanic (MW) (LOM(MW)) and the Petty Officer will remain as PO(MW).

After extensive staffing by various authorities but mainly CINCFLEET the Operational Performance Statements (OPS) have been agreed and published. The OPS is a statement which describes all the tasks which a Rating could be called upon to perform. Following the issue of the OPS the Training Performance Statements (TPS) which form the basis for the Training Courses were produced and published. These gave rise to many concerns over the Minewarfare Branch and its position within the Warfare Branch especially with regard to the maintenance package. After much time, effort and good liaison by COMMW, The Minewarfare Section and The Warfare Branch Training Design Group at COLLINGWOOD the TPS's were revisited and revised to include a maintenance package which brought the MW Branch in line with others. This was accepted by the Warfare Branch Development Team at the MOD and now forms the proposal to be put to the Navy Board later in the year. The Professional courses for the

Minewarfare Branch are as follows:

- PC1**—Based on the present Sea (MW) Course designed to teach the ratings basic Minewarfare Skills. Additionally, students will be given a package concerning the

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precautions to be taken with regard to safety of personnel and equipment. This will include Man Aloft procedures, Magazine safety precautions, Hazards associated with Toxic Materials and many more.

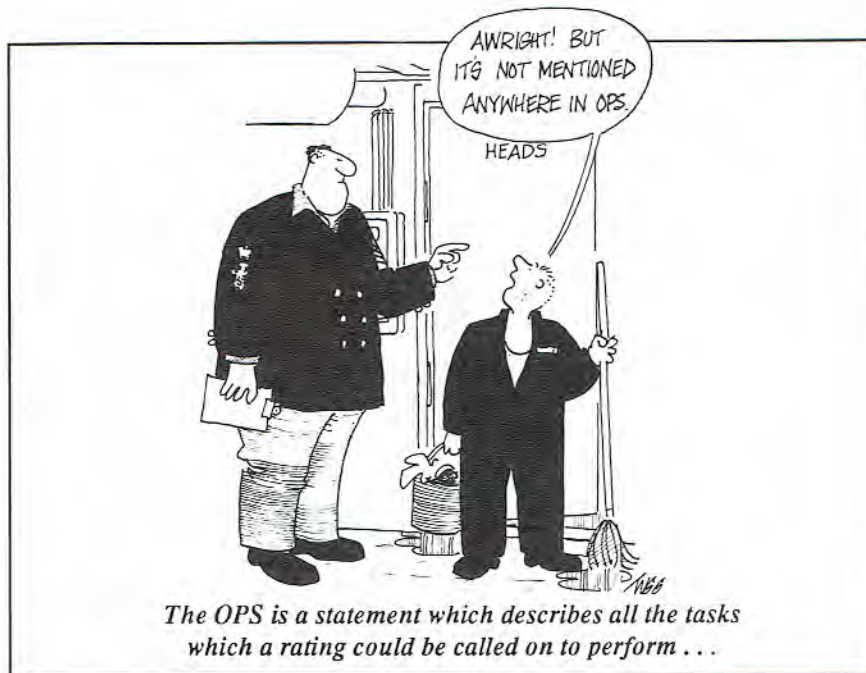
PC2—A new course designed to provide further training in Maintenance Skills. Students will be taught how to use test equipment, measure voltage, current and resistance; to maintain electrical, hydraulic, HP/LP Air systems and the maintenance of Small Arms and Close Range Weapons. In the case of the Minewarfare Branch no additional Operator Training will be included in this course. Any student showing the potential to become an Artificer will be provisionally selected at this point.

PC3—This course will train Leading Hands in the Supervisory role in both Operator and Maintainer Skills. Some skills have been inherited from the Petty Officer notably the Operation of RTPME (but not the interpretation of results) and HVME Equipment.

PC4—The course will equip the Petty Officer with in depth knowledge of weapon systems as well as the role of the Director for Minesweeping, Minehunting and Minelaying. Additionally formal training in the management and administration of the Minewarfare Department concerning both operator and maintainer skills will be given. Maintenance duties will be carried out under the direction of the System Artificer/WEO.

All the courses have been designed to train Ratings to carry out their duties at the required level and to this end no repetition of training will occur. For example, at present 'Components of the SSB' are taught at all three levels, under the WBD only the PC1 course will be taught basic components. The same applies to Minesweeps and Sonar Drills.

Seamanship training is at present under review, however the Seaman Specialists will continue to provide the necessary expertise. Cross training will



be given to some Minewarfare Rates at the Able Seaman level. It is envisaged that those ratings who complete the Sea (MW) Course from about now and onwards will be given cross training in Maintenance Skills and become Operator Mechanics late 1993.

CAREER PROGRESSION

Obviously everyone is concerned at how this is going to affect career progression. Well the short answer is not very much. Detailed Advancement regulations have yet to be worked out but it is planned to keep the principles the same. The major difference is the introduction of the PC2 Course which must be completed prior to confirmation in the rate of Operator Mechanic 1st Class (OM1).

Task Books and Advancement Examinations will be a pre requisite for each rate prior to undertaking the Professional Course.

An additional benefit is the introduction of Selection for Artificer (ARTCAN). If a man demonstrates the academic and technical qualities for artificer he will be provisionally selected prior to the PC3 Course. On completion of the PC3 Course the candidate will then be given a draft to a selected billet where he can be further assessed on his technical skills. If successful the man would then be extracted from the Warfare Branch for Artificer Training. The exact details have yet to be established.

GENERAL

The proposed Branch Badge consists of the present WEM Badge with the appropriate Warfare Branch letters underneath. The proposal has been forwarded to the Uniform and Clothing Committee who will then seek the approval of the Navy Board.

In some vessels other branches may be replaced by OM(MW)'s. The OM(AWW) (Gunners Yeo) for instance may be replaced by a Minewarfare Rate who will have completed the required PJT's remembering that training in the maintenance of Small Arms and Close Range Weapons will have been completed at the PC2 level.

CONCLUSION

It must be remembered that at the moment all the above is subject to the approval of the Navy Board. With our ever advancing technology and reduced manpower the need for Operators to be able to identify and correct minor defects on their equipments as well as maintain that equipment must be the way ahead. The enhancement of Minewarfare Skills with Maintainer Skills offers greater job satisfaction within the Branch as well as a more comprehensive civilian recognition of skills acquired during Naval Service.



THE HISTORY OF DIVING

By H. WARDLE Lieutenant Commander R.N. (Rtd.)

Herewith an attempt to outline the history of diving in the Royal Navy up to the immediate post war period with particular reference to the introduction of the aqualung into the service.

Divers were first employed on the wreck of the Royal George sunk at Spithead in 1782. The work was carried out by Royal Sappers and Miners in 1839-40 using the rigid copper helmet and flexible dress developed by Mr. Seibe. Representatives from the Admiralty inspected the work in 1840 during which 23 cannon were recovered. This led to the start of the diving branch of the Royal Navy within the Gunnery Branch.

The Seibe Standard type diving dress, commonly known as hard hat diving, with manual air pumps remained the primary form of diving apparatus in the Royal Navy for the next 100 years.

Although trials had been carried out on various experimental types of breathing apparatus over the years, in the early part of the 39/45 war, the only alternative systems available were oxygen rebreathing, namely the Davis Escape apparatus primarily supplied by escaping from a sunken submarine and the Salvus Breathing apparatus primarily supplied for damage control purposes i.e. entering contaminated or flooded compartments.

Diving using these systems was normally carried out in bathing suits with a lead weight to overcome the buoyancy of the body and counter-lung. Not surprisingly diving using these systems was primarily carried out in warmer climates than the United Kingdom. All divers in the Royal Navy were trained in hard hat and Salvus diving and carried out some remarkable work using these systems.

The use of midget submarines and divers using oxygen breathing apparatus in their attack on ships in Gibraltar and Alexandria by Italian Navy divers in 1941 led directly

to the formation of the Admiralty Experimental Diving Unit at Seibe Gorman's works under the then Lieutenant Commander W.O. Shelford, formerly the Instructor Officer in charge of submarine escape training. This unit concentrated on the design of self contained, oxygen and mixed gas breathing apparatus whilst the development of miniature submarines and so called human torpedoes came under the Admiral Commanding Submarines. One early result of this new organisation was the introduction of a lightweight waterproof suit essential for diving in UK waters. This suit was called the 'Sladen Suit' after Commander Sladen the Officer in charge of human torpedo training.

By the end of the 39/45 war the number of personnel trained in various forms of diving must have been in the order of two to four thousand. The main 'hard hat' diving schools continued at Portsmouth, Devonport and Chatham. Smaller schools operated in Alexandria and Trincomalee. The Boom Defence Depots operated salvage and wreck disposal vessels world wide whilst each port had a team of divers. Cruisers and above also carried divers. All the above were hard hat divers trained at one of the schools. The link from Royal George days continued with the Royal Engineers (Sappers) being trained by the Royal Navy in basic diving techniques.

Operated separately from the foregoing but with many cross fertilisations were midget submarine divers and human torpedoes, divers were also specially trained in the search for and recovery or disposal of mines. In Combined Operations divers were trained in Landing Craft obstacle clearance operations, whilst Royal Marine divers were trained as swimmer canoeists and submersible operators. There were, no doubt, other units, for example following the Italian attack on Gibraltar volunteers were called for searching ships hulls for limpet mines and the then Lieutenant Craff R.N.V.R. volunteered and received his initial training using Salvus equipment

adapted for use underwater.

The equipment in use by these specialised groups consisted mainly of improved oxygen breathing apparatus with mixed gas systems consisting of enriched air i.e. a nitrogen/oxygen mixture, in use for working in depths greater than 33 feet, the then limit for diving on pure oxygen. For work on magnetic mines a self contained non magnetic diving dress and breathing apparatus was developed, similar in design and appearance to the old helmet or hard hat but with cylinders of mixed gas and a carbon dioxide removal system being carried by the diver.

In 1945 the Admiralty decided to change the administration of diving from the Gunnery Branch to the Torpedo Branch which was already responsible for Mine Counter Measures i.e. Mine Sweeping, mine location and disposal.

A high percentage of the diving personnel trained in special operations were hostilities only and were leaving the service. Fortunately some of the Officers and men who had carried out such splendid work during the war stayed on for a further period. The Officers in Charge of the three Port Diving Schools were at this time Commissioned Warrant Officers of the Gunnery Branch. Normally these officers had qualified as a diver whilst serving as a rating before being promoted to Warrant Officer.

In September 1945 I was appointed to the Devonport Torpedo School on the Instructional Staff having previously served in a Destroyer as the Warrant Officer in Charge of the Torpedo Division. To my surprise I was sent for and asked if I would like to be trained as a Deep Diving Officer! I had not even thought of this but, having spent five war years in destroyers teaching how to carry out destroyer torpedo attack when I had never fired one in anger and the Atomic Bomb had just ended the war, hardly filled me with enthusiasm for my present job, I agreed.

Initial training was carried out at the

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History of Diving (continued)

Continued from previous page



● *HMS Reclaim Paying Off*

principal Diving School in H.M.S. Excellent at Portsmouth followed by about six months as understudy to the Officer in Charge Devonport Diving School, H.M.S. Drake primarily employed on training duties, then to H.M.S. Deepwater for further training in Deep Diving Techniques under Commander Shelford, the then Superintendent of Diving. I thoroughly enjoyed this period. A combination of the old school in the Diving Schools at Portsmouth and Devonport and the new under Commander Shelford.

I returned to the Diving School at Devonport which had now been transferred to the Torpedo School in H.M.S. Defiance and in September 1946 was appointed Officer-in-Charge.

The next 18 months were hectic building up the 'new look' Diving School. The Staff of Defiance, particularly the Training Commander, Commander Peard, gave me every encouragement to build up a modern diving school. Divers were returning to base from all over the world with a vast range of experience from salvage to midget submarine operations. Many were senior Artificers from all branches who wished to stay with diving. I could not have had a more competent team who could tackle virtually anything underwater.

With about 150 divers we were able to

carry out many interesting jobs within Plymouth Command such as inspecting and clearing obstructions from Lease Lend ships on route back to America, assisting in mine clearance etc. A demanding, exciting and instructive time for me with only one Officer to assist me. It must have been in the summer of 1947 that I was asked to go to the Imperial Hotel in Torquay to meet a man called Cousteau who had a new diving set. The man I met was in fact Commandant Cousteau's father, a very fit man probably at that time in his early fifties. I tried this new device, the Aqualung, and was most impressed by its simplicity. Being a strong swimmer, its scope for sports diving was obvious, fascinating as it had been for me in my early cumbersome helmet diving days in good visibility to observe undersea life particularly in Plymouth Sound. I wrote a glowing report to Commander Shelford and got on with my day to day work. Some months later Jimmy Hodges, a wartime officer, came down to Devonport to try out an underwater camera with an aqualung. Unfortunately it was not charged and as at that time we had no means of charging the bottles, we could not use the set. I believe Commander Shelford had done a swop with Cousteau, aqualungs for rebreathing sets.

In April 1948 I was appointed Senior Diving Officer of the Royal Navy's new Deep Diving and Submarine Rescue

Ship, H.M.S. Reclaim, and my diving works until December 1951 were concentrated on Helium Mixture Deep Diving and Submarine Rescue Operations. During this time underwater television was first used and we were successful in breaking the World's Deep Diving Record.

In December 1951 I was appointed Officer in Charge of the Principal Diving School at H.M.S. Vernon, Portsmouth. Commander Shelford, now a Captain, had moved on and the Superintendent of Diving was a Torpedo Specialist, Commander Bob Harland. At this time the Superintendent's real job was that of Superintendent of the Admiralty Experimental Diving Unit responsible to the Director of Underwater Warfare at Admiralty Bath. The Captain of H.M.S. Vernon was responsible to the Director of Torpedo and Anti Submarine Warfare at Admiralty, London for the training of Personnel, the establishment of staff requirements for new equipment and its acceptance into service. I in turn, was responsible to the Captain, H.M.S. Vernon. The Diving School was now located on board H.M.S. Deepwater alongside H.M.S. Vernon's harbour wall. Initially efforts were centred on the Naval requirements associated with Deep Diving and Submarine Rescue following the recent loss of H.M. Submarine Affray, salvage and wreck dispersal clearing wartime wrecks, and routine ship maintenance. Routine basic training in hard hat gear continued with the Sappers coming to Vernon for training plus senior rates from the Royal Marines Swimmer Canoeist training as diving supervisors. H.M.S. Dolphin also sent a small number of midget submarine crews for training. A small number of divers received specialist training in Mine Disposal work using oxygen and mixed gas equipment at H.M.S. Lochinvar in Scotland, the Minesweeping base. For example, whilst at Defiance I had sent a Petty Officer diver First Class and ten divers Second Class to Lochinvar for training in clearance diving. After successful completion of this course the Suffix (C) was added to the diving rate. The Officers at Lochinvar included a number of wartime extended service officers.

Naval requirements were based on 'in time of peace prepare for war'. Suppliers of Naval Diving Equipment were obviously keen on developing a market for aqualungs and associated products and played an active role in developing the British Sub Aqua Club. Basic

History of Diving (continued)

underwater swimming training using oxygen breathing apparatus in H.M.S. Vernon was carried out in Horsea Lake near Portsmouth. I was asked if the then small number of Sub Aqua Club members could use the Lake at weekends. With a small number of Navy divers interested I agreed to this based on the principle that in time of emergency we would have a pool of divers to draw on in time of war. I saw no real military application for the aqualung, from the Naval viewpoint except for recreational and commercial work.

Earl Mountbatten visited H.M.S. Vernon prior to taking over as the Commander-in-Chief, Mediterranean Fleet in 1952. I was required by the Captain of H.M.S. Vernon, Captain Howard-Johnson to meet the Admiral and have two frogmen ready for inspection! A visit to the Admiralty Experimental Diving Unit followed and some aqualungs were shipped out to Malta at Earl Mountbatten's request. The Clearance Diving team in Malta had use of the aqualungs which, for divers used to oxygen and mixed gas diving, were simple to use. There were various tales of some of Mountbatten's Staff Officers reluctantly taking to the water.

In 1953 following the accidental loss of one of the Malta Clearance Diving Team's divers and the subsequent enquiry, it was stated that responsibility for all diving training should rest with H.M.S. Vernon. I was then instructed to proceed to Lochinvar at Port Edgar to initiate the transfer of the Clearance Diving organisation to H.M.S. Vernon.

H.M.S. Lochinvar was primarily a Minesweeping base developed during the war for the training of minesweepers and responsible at this time for their operational control. The Port Clearance Diving Teams came under the same administration. Effectively therefore as Minesweeping came under the Torpedo specialist the Clearance Divers were already under the Torpedo Branch wing. Clearance Diving Teams were based on Port Edgar, Harwich, Malta and Hong Kong. At Lochinvar the Training Officer had been ill. It appeared the organisation was a loosely knit follow on from wartime lacking the normal Port Training Schools facilities available at the Principal Port Diving Schools.

At this time I was a Senior Lieutenant with a staff of two or three Warrant Officers, none trained in port clearance.

Search of Vernon's records showed a Torpedo Anti-submarine Officer, Lieutenant Commander John Crawford had qualified in Clearance Diving. I was asked if I would be agreeable to working with him as his No. 2. This was the logical solution and I was sent to see him on H.M.S. Apollo on which he was serving to discuss the move.

From the point of view of establishing the Naval Diving Branch as a cohesive organisation this worked well. We produced comprehensive training programmes for Clearance Divers working entirely with rebreathing systems with oxygen and mixed gases together with courses on Naval Mine disposal and Army Bomb Disposal. Early in 1953 the Clearance Diving Branch assumed responsibility for all the Navy's responsibility in Bomb and Mine Disposal. A new American built rescue bell was undergoing trials on submarine rescue.

Late in 1953 I completed a conversion course to qualify as a Clearance Diving Officer before appointment to the Far East in the role of Fleet Diving and Bomb and Mine Disposal Officer. Returning home in 1956 I was offered the job as Deputy Superintendent of Diving under Commander Harland previously mentioned.

Commander Harland had proved a most efficient Superintendent. I was delighted to find he had many development projects in hand, including a small, compact aqualung type breathing apparatus designed for damage control use, i.e. entering through manholes into flooded or contaminated compartments. On diving the first prototype I advised the breathing apparatus was the most comfortable I had ever used. The harness sat neatly on the shoulders, the small high pressure cylinders offered little resistance and underwater swimming was a joy and trials at the Navy's Damage Control School were a success. Later this same system with lightweight air hose to a surface supply from a compressor or air cylinders. This, in my view, was all the Royal Navy needed in the way of aqualung type breathing sets. It was known as the Surface Demand Diving Equipment (S.D.D.E.).

Also in the pipeline was a navy's Aqualung, or as it was christened, Swimmers Air Breathing Apparatus (S.A.B.A.). This project was a shambles.

Partly, I believe because the Navy did not really know why it wanted an aqualung. One of the specifications was "should be as non magnetic as possible." This resulted in alloy air cylinders and the consequential problems. To go near a mine on the sea-bed which could be triggered magnetically or acoustically would be madness.

Early prototypes went to a survey vessel which was a logical user. The S.A.B.A. Demand valve was excellent but the set compared unfavourably with commercial systems. This one failure should not detract from the many successful projects completed by the Admiralty Experimental Diving Unit against Naval staff requirements.

In 1958 I applied for early retirement under one of the Government release schemes. I had been fortunate in that after the drama of the war years I had spent most of the post war years in one of the few expanding branches of the Royal Navy and achieved job satisfaction. With the sea-going Navy retracting the prospects for future interesting appointments were not good. As it was I felt I had gone full circle. In 1948 I was serving as Senior Diving Officer to Commander Shelford, then Superintendent of Diving, as a Warrant Officer. In many ways as Deputy Superintendent of Diving in the rank of Lieutenant Commander I was doing a similar job. Apart from the possibility of becoming the first qualified Diving Officer to become superintendent the prospects of a seagoing command for an Officer with my over specialist background were small.

I left the Royal Navy satisfied that the priority for aqualungs for service use was low. The S.D.D.E. set was adequate for use in Damage Control and for Ships Divers for ship husbandry and ships bottom searching. I believe the present day Navy uses a commercial type of aqualung which strikes me as sensible. For full time Navy Clearance Divers the use of aqualungs should, in my opinion, be restricted, possibly to recreation purposes only. Compared to oxygen and mixed gas diving equipment likely to be the systems primarily used in wartime, the aqualung is elementary. Constant training and practice is vital using rebreathing systems. For example, if I were commanding a Clearance Diving Team today I would ban the use of aqualungs.

Diving Work-up

THE MINEWARFARE AND DIVING WORK-UP STAFF

by Pete Cawsey

Here's just a few lines from the team who, probably for the first time, are all Rosyth referees.

Who are we? I hear you ask.

TITLE	RANK	NAME	JOINED
SMWO	LT CDR	AA BAYLISS (Alan)	Dec.88
tbrb	LT CDR	J BURDEN (John)	Oct.92
DSMWO	LT	AMC HEALY (Andrew)	Jun.90
tbrb	LT	To be named	Nov.92
SMWI(1)	CPO(MW)	PR CAWSEY (Pete)	Nov.90
tbrb	CPO(MW)	RG TURNER ("Topsy")	Feb.93
SMWI(2)	CPO(MW)	BV HOGG ("George")	Sep.91



Lt Cdr (Alan) Bayliss (SMWO) Lt (Andy) Healy (DMWO)

CPO (MW) (Pete) Cawsey (SMWI (1))

CPO (MW) (George) Hogg (SMWI) (2))

There has been some re-shuffling of offices, with SMWO firmly settled in his own "box-room." He can be contacted on extension 62523, with the rest of the team on 62139.

As I write this the ROSYTH OPERATIONAL SEA TRAINING GUIDE is under review, with the intention of issuing the latest change. All we ask is that everyone on board be given every encouragement to read this worthwhile publication.

That, and the relevant equipment handbooks, are our foundation upon which to build the expertise within the departments. Please ensure that these are used to prepare the departments for both day one and the OST period throughout.

COMMW produces CWA's, (Common Weak Areas), in the form of a letter, (pack 300/11). Get a copy of this from the CORRO, and ensure that the team reads this. A little effort in preparing for and executing the PST/BOST/COST can only pay dividends for the whole ship at the end of the day.

Even though we are renowned for the "Green Jackets", which many people think change our personalities, we shouldn't have to ask Senior Rates to point out to their department that, not so many moons ago, we were in exactly the same position as them, and when Drafty and the Appointer have their way, we will be back in that same position again. So we are human and are approachable, and we like to think that this team in particular is progressing, and ridding the world of the "Staff Syndrome" which seemed to make the younger members of the ships' company cower in the corner.

One point that appears to rear its ugly head quite often, especially on the sweepdeck, is the expression "But we've always done it that way on here!" Yet if it's not in black and white then I'm afraid it can't be done. Notwithstanding that however, if you do have an "idea" that you feel is the way ahead for operating or using any piece of

Diving Work-up

equipment, then PLEASE share it with the rest of us. Submit a FLOM proposal or S2022 with the details on. We are all aware that BR's are extremely slow to be updated, but MDT and COMMW, in conjunction with the Naval Staff Authors, are working hard to overcome any problems. But unless you point out any improvements that you can see, then it is no use saying "That's a waste of time, this way's better!"

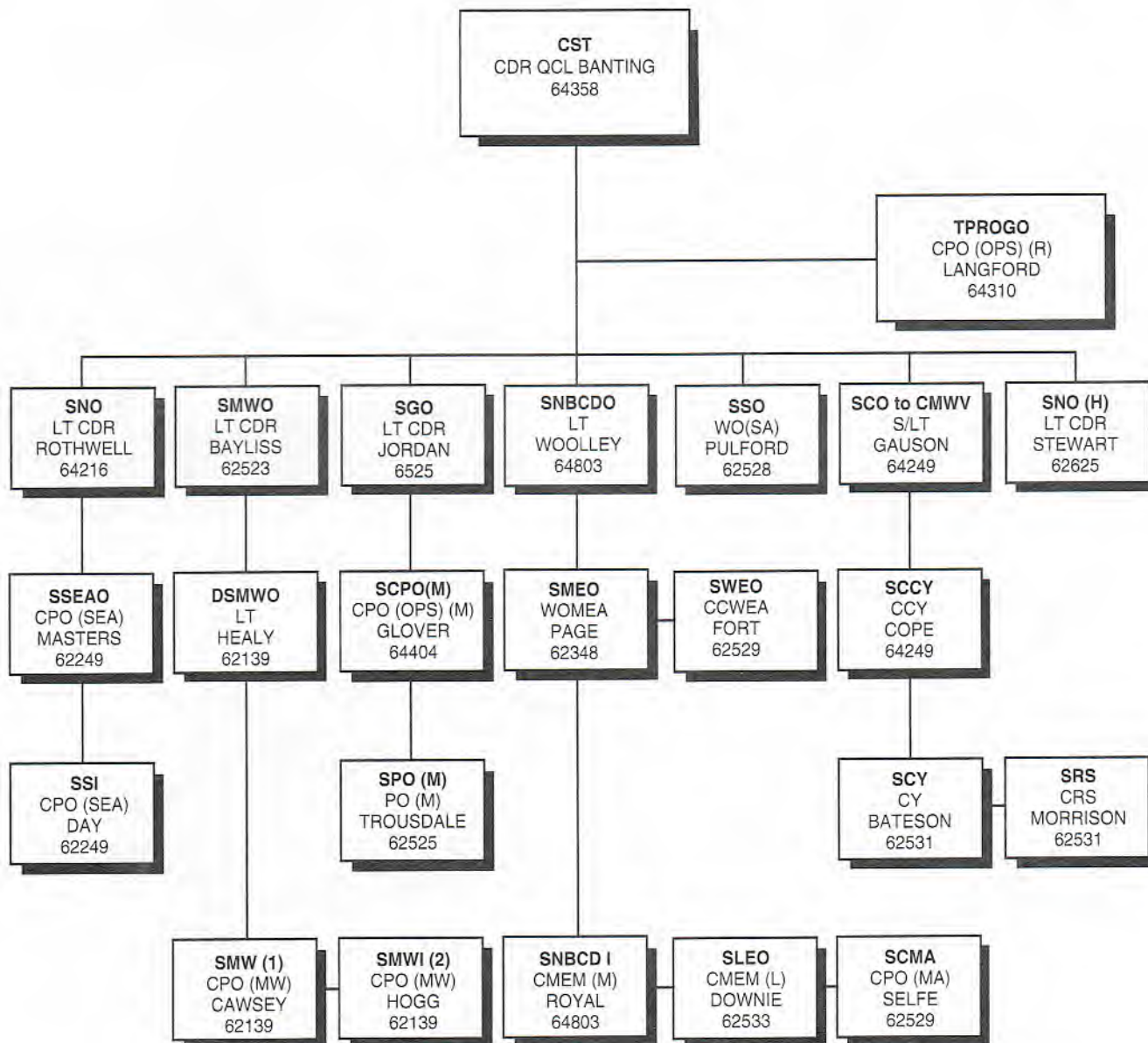
In these days of cost-cutting, your S2022 is often a means of securing some extra cash to investigate an improvement to a system or procedure, (and I am sure that Project will gladly receive your thoughts).

Whilst on the subject of paperwork, take every opportunity to include the Leading Hands in the, often, complicated process of raising paperwork, especially S2022's, S340's and refit specs. Take the time to involve them throughout the action. Because they themselves will be at the sharp end in the not too distant future and many's the newly qualified PO who has to run to the MEO with the plaintive cry of:-

- a) "How do I fill this in?"
- b) "I've never seen one of these before!"
- c) "That's not what I asked for!"

I have enjoyed my time as a member of the SSOTS team. I've seen every one of the HUNTS, all the remaining TONS, been involved with SANDOWNS and am now seeing ships for the second and third time—the shortfalls remain the same! So don't despair when you read a specific point on your Daily Work-Up Report—it's surprising just how many pick-up points are "universal" to all ships.

Remember, when we are not at sea, the office always welcomes people in—whether it's for a pre-OST chat or a more informal meeting. The earlier we get to know each other, the better for all concerned.



Diving Reporter



AB(D) KEVIN AMAIRA is welcomed to the editorial staff of the M & D Mag. as the "Diving Reporter". He transferred to the Diving branch from the Fleet Air Arm in 1987. On the completion of his S(D) course he was drafted to the diving team at Faslane, thence to HMS BICESTER. This was followed by a stint with the Rosyth team and more sea time in HMS MIDDLETON. Now at the Diving training school HMS NELSON (GUNWHARF) where he expects to be for the next 3 years. AB(D) Amaira can be contacted through the Diving Planning office on Ports NB Ext 24586.

TAFF WATKINS recently left the Navy as a Leading Seaman Diver. He settled within the Portsmouth area and took up civilian employment as a commercial diver. Some time later he was contacted by another ex-diver who was experiencing problems in securing diving work in the commercial sector. Taff was able to supply him with some good advice and he has been successful in finding suitable employment in the diving world.

Taff Watkins is convinced that the major factors in securing work in the diving industry are: Good advice, Commercial contacts and being in the right place at the right time. In an effort to assist other divers leaving the service Taff has agreed to put himself up as a civilian contact man and says he can give invaluable advice on Tax certificates, personal book keeping and commercial contacts.

If you think that Taff's expertise could be of value to you he would be delighted to hear from you and can be contacted on 0831 380135.



WHAT'S THE CAPTION?

This amazing photograph of REDE diving training was recently taken at PASLEY'S POOL Gunwharf. The editorial staff have racked their brains in an attempt to find a suitable caption. Suggestions such as: "The blind leading the blind" or "pew what's that smell" seem to lack the necessary descriptive impact. In desperation it was decided to print it anyway and leave the selection of a caption to you, who we know have a far greater imagination. Answers please to the Editor. The best printable ones will be published in the December '92 issue.

TOOL TRAINING FACILITY HORSEA ISLAND BLADE CHANGE FACILITY

The tool training facility at Horsea island now has a Variable pitch blade change outfit. The unit simulates the removal of the top dead centre blade, which is the normal position for blade removal. This is achieved by lowering the base plate to the sea bed which then simulates TDC for the blade change.

The unit utilises the Hedley Purvis hydraulic wrench and with the expert guidance of CPO Shipwright Bill Hadfield achieves a two day turn round.

Also available for use is the Hydro brush for those all important prop polishing jobs.

Please direct all enquiries through WO(d) Ramsay on HMS Nelson (Gunwharf) Ext. 24821.



● Seen here operating the Hedley purvis gear are from right to left CPO Hadfield, L(D) Richardson, AB(D) Watson.

Photo by kind permission Smops Photographic.

Letters to the Editor



Dear Editor,
CAMIS

With reference to Mike Leaney's article on the Fleet Diving Group's operations in Kuwait, I am pleased to inform him, and others who have the same problem transporting a Public Library full of Ordnance Identification and Disposal publications around, that a computerised system does exist.

Computerised Mine Identification System (CAMIS) has been developed specifically to overcome this problem, and was in fact ready in prototype form before Operation Granby. It is now undergoing assessment by the Defence Research Agency at Portland, and I hope many of your readers will have the opportunity of playing with it in the near future and of using it in operations and training in the future.

Yours faithfully,
R. J. Lowther
MNI MBIM MIExpE
Managing Director
(MCDO Long Course 1969)

Dear Editor,
SKIN DIVING

The following is an extraction from the "Manual of Demolition 1949": The Americans use the "Seadive Mask" which is preferred to any type of self contained breathing apparatus, or any type of goggles. The mask consists of a circular plate of heavy glass 5 in. in diameter, set in a moulded rubber frame that fits round the forehead, cheeks and upper lip, covering the eyes and nose. Exhaling slowly through the nose while under water, although uncomfortable when first practised, tends to equalise and keep water out of the mask. To avoid fogging, scrub the glass inside and out with a cigarette, or some plug tobacco soaked in water. A swimmer must never dive from a boat with the mask on, or the glass will be broken; it is safe to jump feet first from a height of 4 ft., if one hand is used to keep the mask in place.

It would appear that 42 years later nothing has changed!

Yours Aye
BOB OULDS
PCDU

Dear Editor,

There is a nasty rumour flying around that I have been killed in a motor crash. I would be grateful if you could assure your readers that I am well alive and that these buzzes of my death are well out of order.

Aye Bernie
Bernie Bruen
Highfield
Lobhill, Lewdown
OKEHAMPTON
Devon EX20 4BS (From Aug.92)

"Minewarfare And Diving" welcomes letters from readers. Letters should be addressed to the Editor and should include a daytime telephone number. Please cite page reference and edition for any article mentioned. Letters may be faxed to: 0705-822351-24705.

Letters not intended for publication should be clearly marked as such. Where possible authorities or Units involved in correspondence will be given the automatic right of reply in the same edition

Dear Editor,
MINEWARFARE & CLEARANCE DIVING OFFICERS' ASSOCIATION

On 3rd April 1992, the Minewarfare & Clearance Diving Officers's Association was officially launched at a well-attended meeting in HMS NELSON (Gunwharf). The Association has been formed to perpetuate the Esprit de Corps and comradeship amongst Minewarfare and Clearance Diving Officers by the regular exchange of information and meetings on both a social and formal basis to their mutual benefit. Full membership is open to serving and retired Royal Naval Minewarfare and Clearance Diving Officers (MCDO), Minewarfare Officers (MWO), Clearance Diving Officers (CDO) and Officers who were qualified in Deep Diving (QDD). Other forms of membership are open to appropriately qualified officers of foreign navies and those persons who have made contributions to the aim of the Association or to the activities of the Minewarfare and Clearance Diving community and welfare of its members.

The well-attended inaugural Annual General Meeting adopted the draft constitution, elected a committee headed by Commander DS Sandiford, set membership fees (£10 Entrance Fee to cover initial year and £10 annual subscription thereafter) and unanimously endorsed Captain R C Moore as the Association's first Honorary President. In the evening, a party was held during which Lt Cdr Tag Caisley was appointed as the "Official Baritone to the MCDOA" and was presented with a framed photograph of himself as an AB among HMS LIVERPOOL's 1950-51 rugby team. Lt Cdr Brian Mansbridge helped festivities along with a generous donation in celebration of his recent selection for promotion to Commander.

The next major event will be a dinner at HMS DOLPHIN on 6 November 1992 at which Admiral Sir John Coward KCB, DSO, Commandant of the Royal College of Defence Studies has kindly consented to be Guest of Honour.

The Secretary of the Association holds most potential members' names and addresses but if you believe you are eligible for membership and have not yet heard from him, please send appropriate details to:

Lieutenant Commander
R J Hoole, Royal Navy
Secretary
Minewarfare & Clearance Diving Officers' Association
Minewarfare Section
HMS NELSON (Gunwharf)
Portsmouth
PO1 3HH
Tel: (0705) 822351 Ext. 24011

Look What Taff's Doing Now!

HMAS PROTECTOR— Trials and Safety Vessel

by Lt. Cdr. Taff Sweeney RAN. (Ex Rn MCD)



- *We have it from the author that the flight deck has been removed for stability purposes*
Editors comment: And presumably to make it easier for Taff to drive!

HMAS PROTECTOR was built for the National Safety Council of Australia (NSCA, Victoria) in 1984 by Elder Prince Marine Services, in Fremantle Western Australia, and named the BLUE NABILLA (aboriginal for whale). The NSCA built the vessel to be used as an offshore supply vessel and a search and rescue platform. Unfortunately for NSCA, four years later they were declared bankrupt and millions of dollars of assets were sold.

The Royal Australian Navy (RAN), had identified the need for a Trials and Safety vessel to act as support for the Type 471 submarine project as well as a support vessel for the Bay Class Mine Hunter sonar trials. Funds from both these projects were used to purchase the BLUE NABILLA in October 1990 and she was officially renamed HMAS PROTECTOR on the 20 March 1991. The ship has a crew of 20, and is currently Commanded by a Lieutenant Commander MCDO.

The roles of HMAS PROTECTOR have been defined as follows:

- To act as the submarine escort and safety vessel during the trials for the new Collins Class submarines,
- to act as a support and target vessel for the submarine trials,
- to conduct all facets of Navy diving in support of the trials,
- to assist Mine Warfare trials and
- to conduct environmental data gathering for the Mine Warfare and submarine trials.

HMAS PROTECTOR is fitted with an HIAB sea crane for lifting loads of up to two tonnes, an 'A frame' capable of lifting 13 tonnes, bow and stern thrusters, forward looking sonar, a LIPS dynamic positioning system, diving equipment and a six man recompression chamber. The A frame will be used to deploy and recover a manned submersible which is to be used in support of the submarine trials in early 1994. Two Phantom IV Remote Operating Vehicles are held on board which are

fitted with their own sonar and a TV camera. Two rudders capable of being operated independently and two controllable pitch propellers, combined with a dynamic positioning system and bow and stern thrusters make her the most manoeuvrable ship in the RAN.

In November 1991, a Royal Australian Air Force 707 crashed off the south coast of Gippsland, Victoria, during a training flight. HMAS PROTECTOR proved its versatility just eight months after it was acquired by the RAN, by recovering all the wreckage, including the 'black box'.

From January this year PROTECTOR has been involved primarily with the Mine Hunter project. One of her tasks for the trials has been laying, accurately fixing and recovering mines for the Mine Hunters. She has also provided diving support for the trials and has also been used as a platform for the gathering of scientific data on the waters salinity and temperature against depth, as well as information about the sea bed. So far these trials have been conducted at Jarvis Bay, 100nm south of Sydney, Keeping the ship's Clearance Diving Team extremely busy.

In June this year the MHI project will move north to Cairns to conduct the trials in tropical waters. Because of the remoteness of the trials area from the facilities at Cairns the support role of PROTECTOR will be fully exploited. She will carry two containers on her maindeck which will be used as accommodation and galley modules. PROTECTOR will also be used as a mother ship for the Mine Hunters, and at the end of each day both the MHIs will raft up with her.

Once the trials are completed PROTECTOR will sail for HMAS STIRLING in Western Australia where she will be home ported and undergo a refit to prepare her for her support role for Australia's new Collins class submarine.



Safety from Explosive Hazard

RCMDS DIHEDRAL CUTTER

By Simon Crozier

Introduction

This article is an example of the work of the department of Chief Inspector of Naval Ordnance (CINO)

The primary responsibility for the explosive safety of Naval Armaments on behalf of the Controller of the Navy rests with CINO, which in recent years has been part of the DGST(N) organisation.

CINO has a team of Ordnance Safety Engineers, the majority of whom were trained in Naval Ordnance Engineering at the Royal Military College of Science at Shrivenham and who are experienced in weapon design and safety. CINO's division of DGST(N) is organised into Above-water and Underwater Weapon Groups. I am a member of the ST61D Underwater Weapons Group with responsibility for Mine Countermeasures Stores.

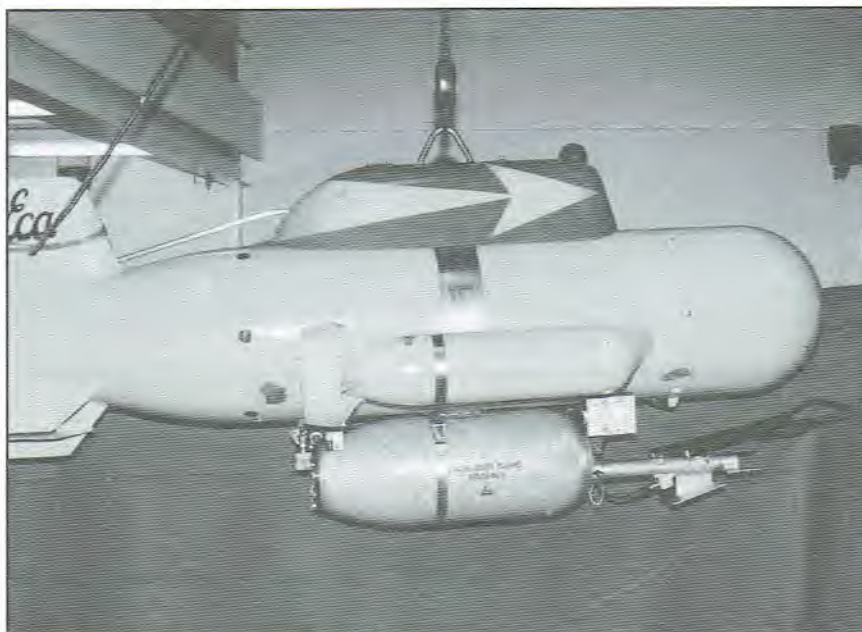
Gulf War Preparations

In January 1991, during planning for mine clearance in the Persian Gulf, it was recognised that the RN capability to deal with moored mines could be hampered by the lack of a remote control cutter. It was obvious that the cutter under development for RCMDS would not be available in time and at short notice I was tasked to assess the safety and suitability of a cutter in service in the French Navy.

The urgency was such that myself and Lt. Cdr. John O'Driscoll (at that time Naval Applicator DGUW(N)) visited the Direction Des Constructions et Armes (DCN) Navales at the Naval Base in Brest. The Base is now the home of the French MCMV Fleet but during the War it was used by the Germans as a submarine base. The massive concrete submarine pens are still there and their roofs and walls are said to be in excess of 10 metres thick. The allied bombing failed to make much impression on them although, apparently a direct hit from a 5443kg "Tall Boy" bomb (warhead 2270kg Torpex) did manage to penetrate through the roof of one of the pens.

RCMDS Dihedral Cutter

The RCMDS Dihedral Explosive Cutter, (so described because the jaws of the cutter form a dihedral when viewed from the underwater vehicle camera) has been used by the French Navy for some years as a standard item of equipment deployed from



● *PAP with BCA and Gun fitted*

the PAP (Poisson Auto Propulse) underwater vehicle.

My job was to assess the safety features built into this device against the requirements of BR 8541 (Safety Requirements for Armament Stores For RN Use) and together sufficient data to enable me to compile a Safety Statement.

Basically, BR 8541 requires that there must be a minimum of two separate and unassociated safety features incorporated into the weapon design which will prevent arming of the Fuze under all conditions (including credible accidents) prior to deployment and specified safe time/distance. There must also be a feature which enables the ready determination of the safe or armed condition of the store. This is particularly important for a cutter of this type which will, in some instances, be recovered unused. The explosives used must conform to a number of standard tests designed to ensure that sensitivity and performance are predictable and can be categorised accordingly.

Once on site I was able to examine a cutter and receive a detailed explanation of its functioning sequence. Lt. Cdr. O'Driscoll and I then boarded a French MCMV and witnessed the handling and drill procedures. This was

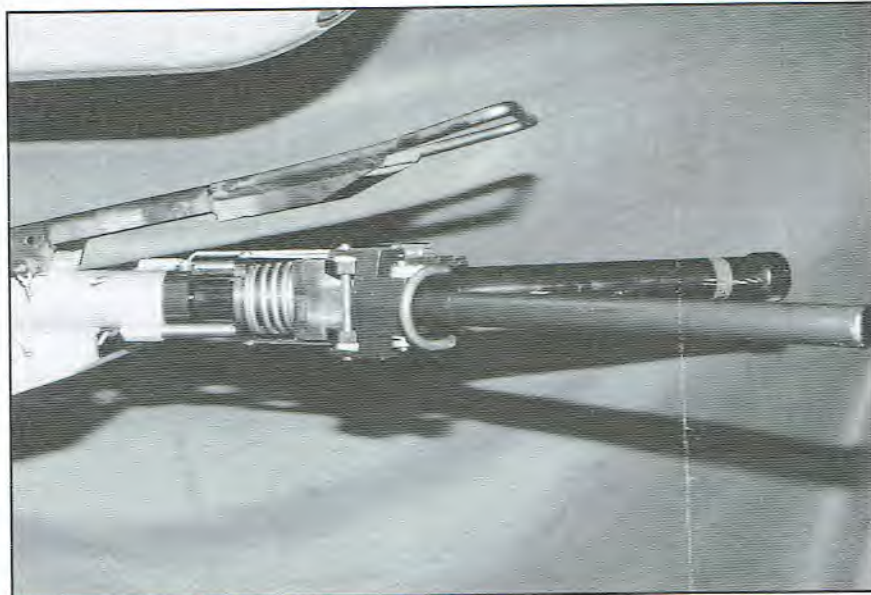
followed by a "hands on" session on the ashore PAP simulator/trainer, which allowed our "Naval Applicator" the opportunity to "get the feel" of driving the cutter onto a mine mooring wire.

The following day (Sunday) was spent in the ECA (RCMDS Contractor) Offices in Brest where our hosts managed to answer most of our questions and, with the assistance of a member of ECA staff, we were able to produce an English version of drill and emergency procedures.

Back to Base

In the Office at Bath, having given my debrief, I had a couple of days in which to produce a Safety Statement. Anyone who has had the pleasure of reading one of our recent Safety Statements will know that it is not so much a statement as a detailed booklet of weapon design data, explosives compatibility and credible accident effects!

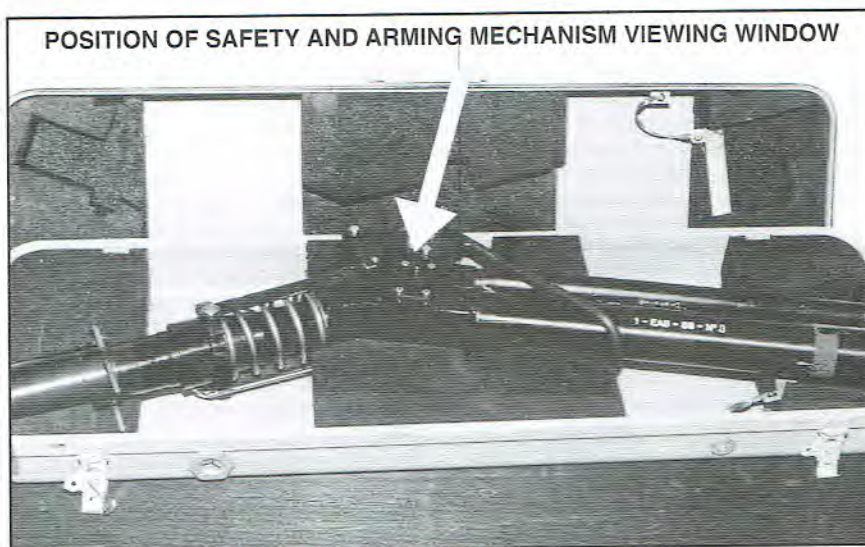
Fortunately the French had done a god job on the design of safety features. The cutter has two arms rather like a giant pair of scissors! One of the arms is spring loaded for clamping to the mine tether and the other is a tube containing 430g of high explosive packed behind a copper Vee shaped liner forming a directed energy charge.



● *Cutter in fitted position (Fender should be in 'down' position for operations)*

The base of the live arm is housed in a Safety and Arming Unit (SAU). The SAU houses the Fuze comprising a detonator, lead-in booster and main booster. The lead-in booster is held out of line in a rotor. The SAU also contains a hydrostat which is locked in the safe position until the cutter is released from the PAP. Release of this hydrostat in water, at or below the design operation depth, allows the rotor to turn under spring force to bring the lead-in booster in line in the explosive train. The rotor also controls microswitches to complete the firing circuit (armed position), and disconnect the firing circuit (sterilised position). There is also a viewing port in the body of the SAU which allows the status of the cutter to be observed, i.e., Red indicates that the cutter is Armed and Green indicates that the cutter is Unarmed/Sterilised.

The cutter is fitted to the PAP via a ballasted casing assembly (BCA) which is, in effect, a Mine Disposal Charge (MDC) casing incorporating an ejector gun. The BCA is installed under the PAP in place of the Mine Disposal Charge and the cutter is fitted to the gun which holds the cutter in the field of view of the PAP camera. The gun is fired from the control console onboard the MCMV. Firing the gun activates a gas generator in the base of the cutter, causing the cutter to eject. At the same time a shear pin is severed, releasing the spring loaded closing arm to capture the mine mooring cable. Release of the cutter activates sea water batteries in the tail to power an electronic timer, allowing a safe period to elapse during which the PAP can be withdrawn to a safe distance. Time out causes the cutter to explode, thus severing the mine tether.



● *Exercise Cutter and Box*

Shallow Water Operations

Prior to receipt of the cutters, DGUW(N) advised that there would be a need to operate in water depths less than the minimum operating depth of the cutter. This resulted in a second urgent visit to DCN, this time accompanied by the DGUW Project Officer, Phil Sanham and WO John Docherty of ComMW fame. Our objective being to investigate the feasibility of a design modification to the SAU which would allow shallow water operation, without compromising existing safety features. Several ideas were considered and eventually it was decided to fit a new hydrostat cover incorporating a spring which would preload the existing hydrostat spring so as to reduce the effective operating force and thus allow the SAU to arm at a shallower water depth. However, owing the short delivery timescales involved the French were unable to carry out the modification prior to delivery. This meant Phil had to hastily arrange for UK manufacturer of the new hydrostat covers and spring. It also quickly became apparent that there would be no time for modification work to be undertaken in the UK and we therefore needed to devise a method whereby the modification could be performed in the Gulf. WO Docherty had no doubt in his mind as to who would draw the short straw, so he was keen to understand the workings of the SAU and risks involved in the work to be done in the theatre of operations.

The modification involved removal of the existing hydrostat cover and locking pin. In this condition the hydrostat is unlocked and pressure on the exposed hydrostat spindle will cause the cutter to arm, i.e., the lead-in-booster would move in line between the detonator and main booster. This means the detonator now only requires a firing current which, in normal circumstances, would come from the sea water batteries. The possibility of RF induced current to the detonator could not however be ruled out and so the CINO advice was that, if possible, the modification work should be carried out away from any known RF transmitters.

Provided that the hydrostat spindle remains undisturbed and the new hydrostat cover is replaced with locking pin fitted, the cutter is restored to the safe condition. A quick check that the arming window shows green and the cutter can be returned to its package. In fact the modification work was successfully carried out in a Gulf area shore facility, however WO Docherty did admit that the RADHAZ conditions were less than ideal. It is rumoured that he had to carry out the task in an area known locally as the "Bomb Dump" (2000 Tonnes) at RAF Muharraq in Bahrain, 50 metres from the runway where Tornados, Jaguars and Buccaneers were taking off and landing. As if that wasn't enough, this was 80 metres from the Airport main radar, and 100 metres from a Patriot missile battery with other items of ordnance present. So much for advice!



Superintendent of Divings' Report

UPDATE FROM THE BOSS

By Cdr. D.B. Sandford
Superintendent of Diving

Introduction

The last two years have been a familiar mix of equipment, manpower and money problems. However professionalism, enthusiasm and adaptability continue to see the branch through. In particular the highest standards of Operational Effectiveness were displayed during the Gulf conflict, and are on show on a daily basis in the EOD front line. There have been changes and more are due so it is appropriate to give a 'State of the Nation' report but necessarily in brief.

Personnel

With one exception manpower in the diving branch is at the required level. The exception is at the Able rate where there is not only a shortfall, but also in insufficient number of candidates applying for transfer into the sub-branch. What has happened to all the good looking, macho Ships Divers looking for a career change? Please encourage your personnel to apply through the usual channels.

Equipment

DSSCCD is still with us and providing sterling service in between its various problems, at present the proto standards which are being addressed. The MER for the new MCM/EOD Diving system is at an advanced stage of staffing. Research into the replacement set, communications system, diver tracking system and heated suits is the next step. However, the process is at a relatively early stage and as always funds are

becoming even tighter, but we have support in high places for the replacement set.

DSSCCA Type A is now widely distributed and in use throughout the Fleet, although the larger Type B set is still awaiting acceptance. The Interim Compressed Air Diving Set (ICADS) is still certified for use by the Fleet Diving Units to provide a self contained air diving capability to 50m.

SDDE remains under a ban because of the equalising valve problems and surface supplied diving is barely being achieved using the sparse KMB equipment. We are assured by DGUW(N) that 61 sets of KMB 10 are now being re-furnished and should be available by the end of June. The Fleet Units continue to maintain a 75m Oxy/Helium capability although the new panel is experiencing several problems, the most recent of which was a serious explosion on the HP oxygen side of the panel, resulting in a fire on board the Ilchester. Fortunately there were no serious injuries.

The contracts for wet and dry suits for clearance divers have improved our underwater dress and efforts have been made to get better surface equipment. They are being hampered by funding but we have applied for Goretex suits and a warm suit for gemini use. We await developments.

EOD

EOD continues to develop with close Tri Service ties with a rationalised procurement process for the three services. The tools are being studied with a view to improvement. Efforts are in hand to further standardise and improve the explosive packs with an eye to Health and Safety matters.

Transport

Great strides have been made in rationalisation/standardisation of unit transport and apart from the continued problems with road traffic accidents we

are in a healthy state. A case is being made for the TK replacements and is receiving good support from the transport section in Bath.

Publications

The final draft of the long awaited standardised Master Dive Log has been approved and will be published shortly under the title of BR 2806 (Record). The section used for recording dives had been designed to use as the form or inputting information into a Diving Data Base under development at INM. The data base will provide for the first time quantitative information on RN diving for both operational analysis and to justify procurement of new equipment.

Change 4 to BR 2806 is now being published. It is a fairly major change which needs studying by all divers. Future changes to the manual are planning to divide the book into two sections. One section will contain the theoretical side and the other the more practical aspects.

Form S 333 series has undergone a complete re-write/re-print and should be available by the end of 1992. Information from the new forms will be entered into a Diving Incident Data Base held at INM so that diving accidents can be studied in greater detail and any trends established.

Form S 288 has also undergone a major revision and copies are expected to be available in mid '92.

Details on Defence Against Underwater Sabotage Attack can now be found in BR 8988. A new BR 41 will soon be published which will contain Weapon Data Sheets for RN weapons. Development work has started on a computerised, laptop version of AEODPs perhaps akin to the system used by the USN EOD teams in the Gulf.

Organisation

The organisation of the Superintendent of Diving has undergone a recent

change. With effect from 7 April 1992 the Commodore Minor War Vessels Minewarfare and Diving (still COMMW for short) has direct authority over S of D. This change was effected within the rationalisation of the Fleet structure and should have little effect on the day to day work of either divers or the organisation, but policy matters will be directed through the Commodore.

Looking to the Future

Despite a variety of constraints and problems, Operationally Effective diving continues to be practised in the Royal Navy with an enviable record of safety. Following the events in the Gulf conflict divers are held in the highest regard within the MOD and internationally as an important facet of the future Defence Forces. The efficiency in MCM and EOD

and the cost effectiveness of Underwater Engineering and the wide variety of other tasks performed in peacetime means our place is recognised both in war and peace. Finances will always be tight and every penny of procurement will have to be justified, but our professional and highly motivated divers are well positioned for the future.



REMOTELY OPERATED VEHICLES— THE WAY AHEAD

There has been considerable interest shown in the future use of ROVs. Three articles have been received by the editorial staff and are published for interest.

During the Gulf War when USS TRIPOLI and PRINCETON were damaged by a tethered contact and a bottom laid influence mine the worlds eyes were once again turned to the effectiveness of these weapons of war. "Woefully incapable of dealing with the problem" was how critics of the US navy described the American MCM capabilities. Particularly when facing mines in the numbers which were deployed in the Gulf waters. The HUNT class MCMV led the challenge when "dealing with the problem", highlighting the RN expertise in this field. Nevertheless, overall there was a high percentage of all nation MCMVs required to complete the task.

ECA PAP 104 has now been in service for approximately two decades during which live operations have been conducted in the Falklands, and the Persian Gulf. There has been numerous modifications to the original issue of this vehicle and the Mk5 is now in service with the Sandown class minehunter. The increased depth capability along with the vertical lift facility have improved the operational performance. Despite the many improvements and its obvious suitability for the task it remains and expensive commodity in its dependency of an expensive MCMV, particularly when employed on peacetime tasks.

Future periods of tension and peacetime activities will undoubtedly require the surveying and possible clearance of important choke points both around the

(COOP)

Many commercial companies have developed ROVs predominantly for offshore work. However there is an increasing awareness of their use in a military capacity. Some as a bottom survey facility and others as a stand alone minehunting tool with the capability of conducting a minehunting search ahead of the ship and delivering a Mine disposal charge (MDC) as required. The complete package comes as a containerised unit which can be deployed from any suitable COOP. With the added bonus of mid water flight and the use of extending manipulative arms they should not be ignored. The safety factor must also be taken into consideration. For example in the clearance of a harbour or anchorage the COOP could remain outside the danger area and deploy the ROV like a dog on a lead.

With defence cuts upon us and the escalating cost of producing a modern MCMV causing some concern the use of Autonomous ROVs should be given greater consideration. There

are many systems in use throughout the world which could be readily adapted. Technology is constantly changing and many updates have taken place. If the Royal Navy is to continue to lead the world in Minewarfare a serious study should be taken to assess the way the ROV could complement our rapidly depleting MCM force, at minimum expense.

Simon Mansell



UK and during Out Of Area (OOA) operations. Such tasks are of course both costly and labour intensive, involving many hours of tedious sea time. In addition the committal of national MCM forces to OOA activities leaves serious shortcomings in the defence of national seaways. A viable alternative to such a force would be an autonomous Remotely Operated Vehicle (ROV) operated from a craft of opportunity

ROV

COST SAVING IN MINEWARFARE PEACETIME OPERATIONS AND EXERCISES

Introduction

1. Whilst on the recent Group 9 deployment to the Mediterranean, HMS BERKELEY, CHIDDINGFOLD and MIDDLETON participated in two mine warfare exercises. During these exercises, MIDDLETON alone conducted 37 Remote Controlled Mine Disposal Vehicle (RCMDV) runs of which four resulted in successful identification of mines, twenty two identified jetsam ranging from parachute housing to large rocks and eleven runs were aborted. The total material cost of these vehicle runs was £39,470.12, based on the cost of a bobbin (umbilical) £880.00 and a dragrope (ballast weight) £186.76. This article is being written to highlight these costs and examine a means of reducing them. It assumes that the reader has a basic knowledge of the Remote Controlled Mine Disposal System. The Staff of COMMW Warfare Office, RNDA Copenacre and Swedish Ordnance SUTEC were consulted during its preparation.

AIM

2. The aim of this article is to propose an alternative, cheaper and more environmentally acceptable method of conducting minehunting training and operations in peacetime.

REQUIREMENT

3. The need to maintain our minehunters at high operational effectiveness is paramount and, to achieve this, MCMVs must take every opportunity to practice all aspects of MCM. For Hunt Class, this includes regular training on the Remote Controlled Mine Disposal System of which the RCMDV is the key unit. The RCMDV Mk 1 was used to good effect in the recent Gulf War Mine Clearance Operations and proved itself an excellent mine disposal system. However, in peacetime mine warfare operations and exercises the RCMDV is only required to positively identify a sonar minelike contact/the bottom type. This is particularly true during Operation Pike and route surveys tasks. The only part of the RCMDV required for this is the television camera mounted in its nose; however, each vehicle deployed will expend a bobbin and dragrope.

OPTIONS

4. There are three possible options for future MCM peacetime minehunting tasking: continue with the sole use of RCMDV, change to a suitable Remote Control Vehicle (ROV) or operate RCMDV and ROV in tandem.

5. **RCMDV ONLY.** Continuing as at present would allow our operators to maintain the necessary operating, handling and maintenance skills of the RCMDV and ensure that operational effectiveness is maintained. It will also enable the RN to honour its contract to CSIP (UK subsidiary to ECA, the French company who supply RCMDVs). Over the next five years the Hunt Flotilla will conduct at least 5000 RCMDV runs, costing a total of £5,333,800. With the RN's responsibility to MARPOL in mind, this will result in the abandonment of 125,000kg of lead and 5,000,000 metres of coaxial cable on the seabed!

6. **ROV ONLY.** An ROV, such as the SUTEC Sea Owl MkII, suitable for peacetime tasking would cost £108,000 (SUTEC price list Jan 92); this equates to about 100 RCMDV runs. The obvious advantage of an ROV is that it is re-usable as well as being easy to use. Instead of a ballast weight, they rely on thrusters for negative buoyancy and have an integral umbilical cable. As they are designed to be 'submersible eyeballs' the television camera has an excellent field of view and would be ideal for sonar contact or seabed identification. An ROV would also have an independent power supply connected into a ship's ringmain, theoretically giving it a limitless run capability. There is no MARPOL problem as no part of the system is discharged. The RN used the Sea Owl ROV during Operational HARLING in the Red Sea in 1984 with success. Retrofitting an ROV system to a Hunt would be relatively simple and could easily be achieved in a Base Maintenance Period. Space exists in the Operations room for a control console and power pack, even with enhancement equipment in place. The systems handling and operating characteristics vary somewhat from the RCMDV so there would be a loss of operational effectiveness. Being smaller and lighter the ROV does not have the power to tackle the stronger tidal streams it may encounter. ROVs are not necessarily magnetically or acoustically safe, a potential problem in the exercise minefield.

7. **RCMDV AND ROV.** This is ultimately the ideal situation and a sound compromise. A Hunt Class could operate with one PAP and one ROV with the second RCMDV released for maintenance/modification. The problem of continuation training on the RCMDV is easily solved by alternating the submersible runs. Even one ROV run in place of an RCMDV would save money. If operational effectiveness was a concern then ships could be directed to conduct a set amount of runs prior to use of an ROV. Likewise in OST, MCMG, in strong tidal streams and in some exercise minefields the ship would only employ RCMDV. For ease of fitting it is envisaged that the vehicle be restricted to port side deployment only, in order that deck connections and cable runs be kept to a minimum. The restriction which this places on the Command when manoeuvring the ship for a hover are easily surmountable. The MARPOL problem is halved.

CONCLUSIONS

8. It is believed that a Remote Control Vehicle used in peacetime operations could save the Royal Navy substantial amounts of money. It is not intended that the ROV replace the RCMDV in all its roles although its potential is clear. Operational effectiveness and flexibility can be maintained by operating the two systems in tandem. 101 RCMDV runs will buy one ROV with the capability of limitless runs. It would be relatively simple to retrofit the system and its use would only require onboard training and minor adaptation of tried and tested techniques. Not least, our MARPOL responsibilities must be taken seriously in peacetime, the operating cycle of an RCMDV is not environmentally friendly, the ROV is a 'Green' machine by comparison. However, as with many cost-saving plans, it would require 'spend to save' due to the procurement cost of the ROV system.

D P INCE
Lieutenant (MCD) RN
Operations Officer

Continued overleaf

FIRST AUTONOMOUS UNDERWATER VEHICLE COMPLETED

The UK's first autonomous underwater vehicle (AUV) has now been built and after a year's evaluation will make a 200km voyage under the Arctic ice.

The AUV has been built as part of a Department of Trade and Industry-supported collaborative research programme led by Marconi Underwater Systems Ltd (MUSL). Participating companies are MUSL, Chelsea Instruments Ltd and Moog Controls Ltd.

Research has shown that there will be a demand in a few years for unmanned, untethered underwater vehicles to undertake scientific data gathering and survey tasks that cannot at present be achieved by manned submersibles or limited range tethered vehicles which rely heavily on surface ship support.

The AUV is a test bed which provides a platform for the development of modular sub-systems and after its year's evaluation and characterisation it will undertake a deliberately challenging scientific data gathering voyage in the Greenland Sea. This had dictated a

demanding specification for the six-metre long, 0.53m diameter vehicle which has a range of 300km, speed of 2.5 metres per second (about five knots) and an endurance of 36 hours.

The AUV and its subsystem will have to withstand severe environmental conditions, not just in the water but during stowage on board and during deployment. Air temperature may be as low as minus 40°C and so thermal shock during launch and recovery could be as high as 40°C. Launching from this air temperature into sea at minus 2°C will cause rapid ice formation of up to 4mm on the hull and its sensors and so particular attention has been paid to design techniques and materials selection to prevent ice-clogging of relevant apertures and orifices.

The AUV has upward-looking and side scan sonars and a 3-axis inertial navigation system with fluxgate compass and electromagnetic log. Location devices include an Argos satellite beacon, beeper and transponder. Marconi Underwater Systems is responsible for the overall systems

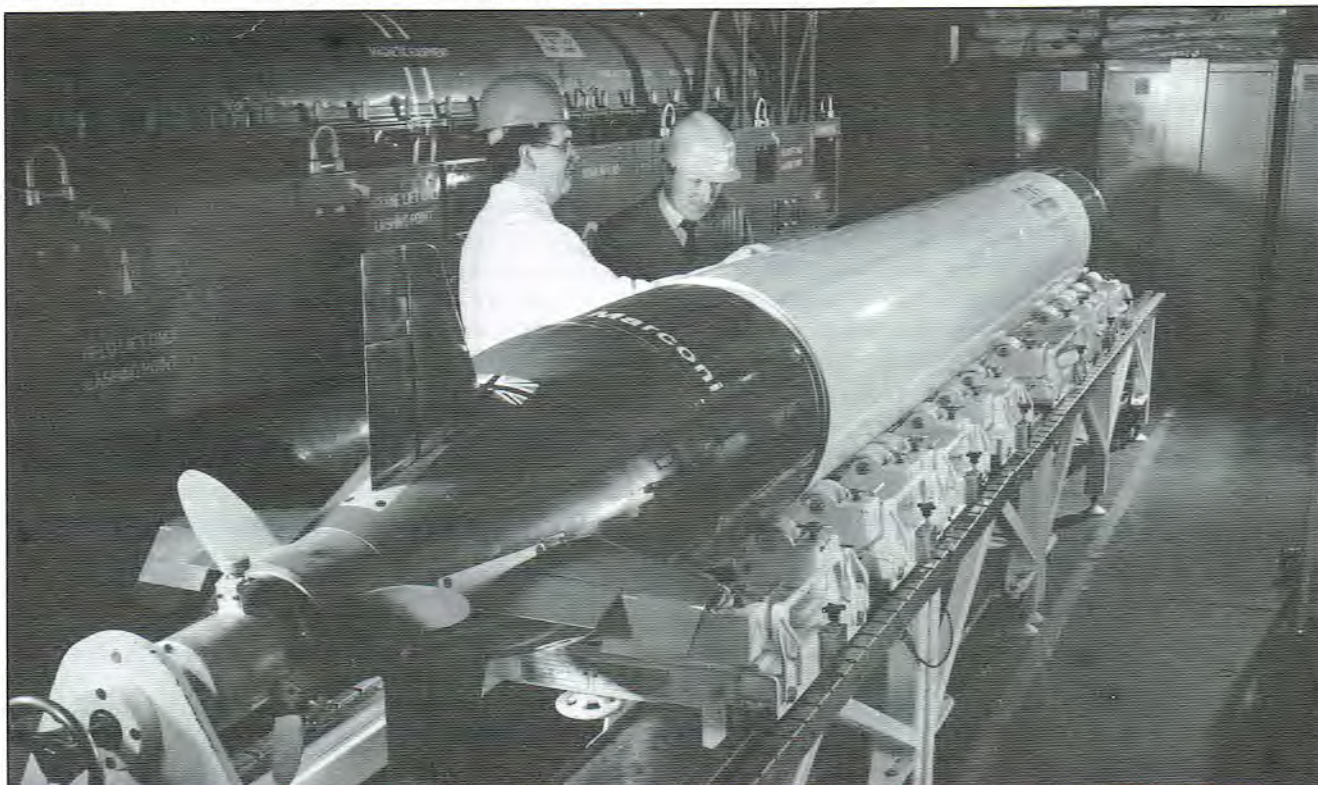
engineering of the vehicle, the sonar payload, navigation systems and the logistics of launch and recovery.

Moog Controls has designed, built and tested the propulsion motor and motor controller.

Chelsea Instruments has designed and built the oceanographic data gathering suite and associated data handling system. This is a self-contained, single-housing instrument distributing power to and receiving data from externally mounted sensors which will measure the basic ocean parameters of conductivity, temperature, depth and chlorophyll-a fluorescence.

After its Arctic voyage and further trials the test bed AUV will, by the end of 1993, be available to the wider AUV community for research.

The AUV is on show at the Oceanology International Exhibition, Brighton, UK, March 10-13.



● The Research Underwater Autonomous Vehicle under development.




**COMMANDER-IN-CHIEF
NAVAL HOME COMMAND'S
HERBERT LOTT TRUST FUND AWARD
CPO(D) B TEMPEST**



Chief Petty Officer TEMPEST has been employed as the Chief Diving Instructor at Horsea Island since January 1990 and is responsible for maintaining training standards, regulating training activities and for the general management of the site. The facilities at Horsea have changed little during decades of use and the resources which could be made available have been severely limited to the extent that the maintenance of even basic services has become very difficult. Drawing on deep reserves of enthusiasm, outstanding managerial skill and considerable ingenuity, TEMPEST has risen to the challenge admirably. This facility has therefore continued to function effectively and has provided a very high level of support; this is due entirely to TEMPEST's own continuous and selfless efforts.

TEMPEST is a single parent with the sole responsibility for bringing up his young son, yet has devoted much of his own time to his work out of hours and during many weekends over the last 24 months. His extraordinary initiative in maximising the availability of resources, using them to best advantage and his dogged determination to achieve results have been remarkable. He has taken full advantage of all the normal methods of getting things done and developed others which were not thought possible. Without the benefit of working hands to assist him in his general duties, the considerable catalogue of his achievements is all the more commendable. These include the refurbishment of classrooms; the organisation of extensive self help repairs to the bank of the lake involving many tons of spoil material; cleverly managing the sparse funds available to provide both female changing facilities and a new building, the latter using largely scrap materials; the resiting of a large compression chamber and the medical room; extensive improvements to other changing areas; the provision of proper drying facilities and many more too numerous to list.

TEMPEST's unflagging enthusiasm, his total dedication to his work and the outstanding initiative he has shown in getting things done, have been of the highest order and warrant the recognition of a "Commander-in-Chief's Award" from the Herbert Lott Naval Home Command Trust Fund.


Admiral

30th April 1992

MINE AVOIDANCE

By George Turnbull

The recent threat of "Floating Mines" experienced in the Gulf has been the basis of much debate and increased the level of mine awareness amongst our brethren of the "big ship" navy. Its presence has caused a major change in operational tactics and mine avoidance is very much included in the FOST work up programme. The rapid fitting of Mine Avoidance Sonars (MAS) into ships deploying to the Gulf was another indication of just how serious the Mine threat has now become. But is this a new threat? Is the fitting of MAS the first attempt at trying to protect surface vessels from floating or shallow moored mines? The answer to both questions is of course no. The following article was extracted from an ARE publication and I think it makes interesting reading. "Happy Sweeping".

For several years prior to the 1st World War it had been known that Germany had been spending large sums of money on the provision of mines. To meet this menace a system of minesweeping was developed and efforts made to provide the minesweepers with devices on the lines of "cow catchers" fitted to the bows to give them some self protection as well as sweeping mines. Proposals to fit other vessels were approved after the commencement of the war but although various devices were tried they did not meet with the same degree of success as the minesweeping arrangement.

The points which had to be borne in mind were:

- a. The equipment had to be sufficiently strong to withstand a seaway in which the ship it was fitted to might be rolling and pitching considerably.
- b. The equipment had to be capable of being rigged and unrigged at sea—preferably without having to stop the vessel.

- c. The diminution of speed caused by the drag of the gear should not be excessive.

Most of the early equipment was aimed at catching a mine in a net on the cowcatcher principal as it was considered necessary to safeguard the ships from floating as well as moored mines. The catching of the mine in a net was not, however, a satisfactory way of dealing with the problem, as if the mine exploded, it would certainly blow the defence away and probably damage the ship to a certain extent, whereas if it remained in the net it would be exceedingly difficult to dispose of. In any event it would only be capable of dealing with a single mine.

In 1908 a proposal was first put forward by Lt. (later Captain) C. L. Lambe to fit an experimental cow-catcher on a battle ship for trial. This comprised a number of booms projecting ahead of the ship carrying a transversed horizontal steel bar about the depth of the keel some distance ahead of the ship. The bar was about equal in length to the mean of the ship and a net was to be fitted above the bar. The proposal was considered heavy and complicated and in view of the experience obtained with similar gear at the DARDANELLES in 1878 it was not approved for trial.

The first of the cowcatcher type equipment was fitted to minesweepers. These vessels were of two types, torpedo gunboats and trawlers. Appliances for the gunboats were developed at Portsmouth in HMS VERNON being fitted in the Dockyard and tried against dummy mines in 1911. In 1913 a further test was made by building a false bow to represent a torpedo gunboat on an old vessel (the Mastiff) fitting a type of cowcatcher approved for HMS SEAGULL and exploding a charge of 501lbs of guncotton beneath the gear. The result was considered satisfactory and this type of gear was approved for the torpedo gun boats.

Bow defence for trawlers was worked out on the ACTAEON with the assistance of Sheerness Dockyard, tested against

dummy mines and a number of sets provided for fitting to trawlers.

In 1914 when war started DNC (Director of Naval Construction) put forward for trial a bow protection gear which could be extemporised and fitted to merchant ships with a view to their protection when in the North Sea. This comprised four heavy spars heeled against a chain passed round the forefoot and stayed from the forecastle, a net being spread between the four forward ends of the spars. It was, however, decided that bow protection against mines at this time was not required and no trial was made.

However, very soon after the war stated a demand arose for bow protection for battleships as well as improvements in the gear provided for trawlers and torpedo gunboats. It was also decided to fit such protection to as many minesweeping vessels as possible and to test any promising gear. A number of systems were trialed and these are listed below:

- a. Wilson Gear
- b. Ollis Gear
- c. Exmouth Gear
- d. "Campania" Gear (DNC Type)
- e. Ellison Gear
- f. SCW Gear (Superintendent of Contracts)
- g. Skipjack Gear
- h. "Raglan Castle" Gear

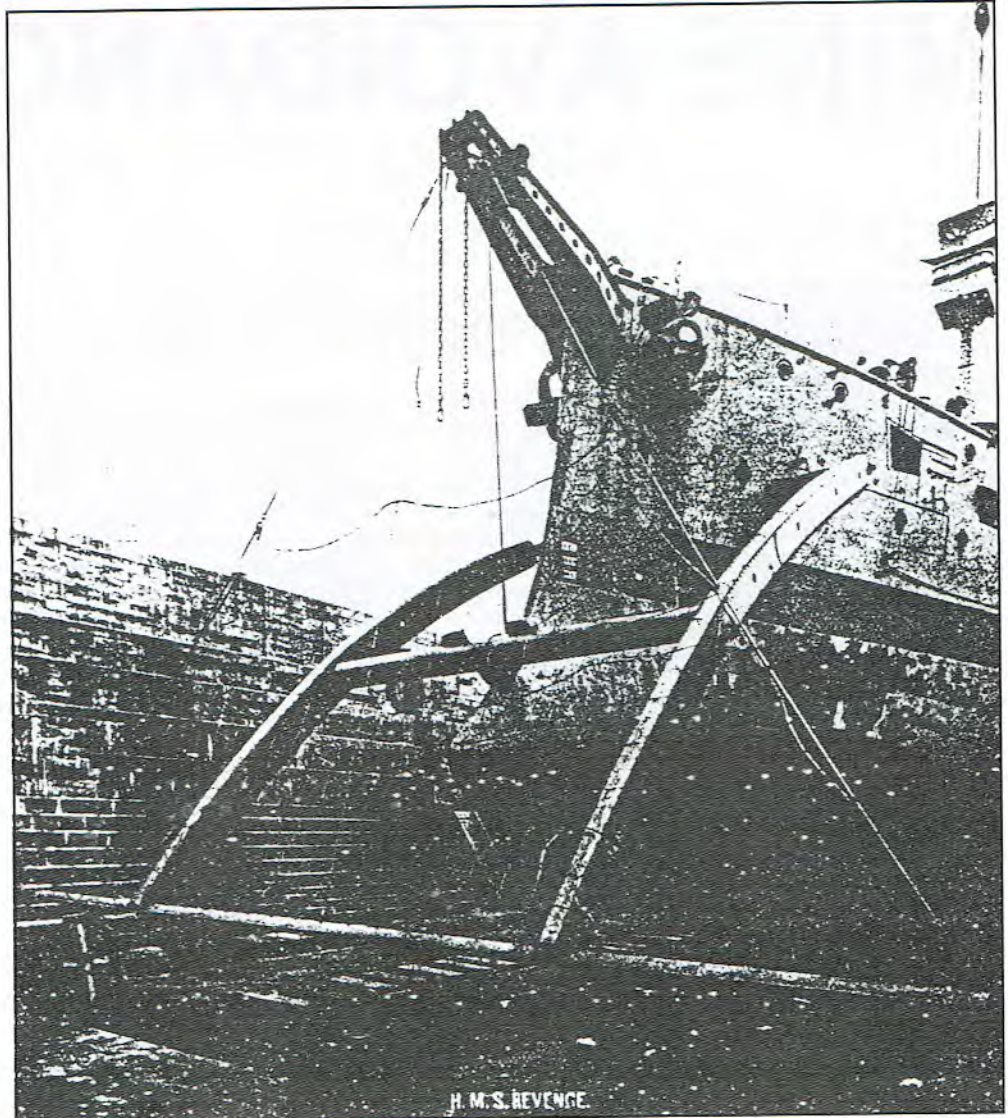
All of these equipments were similar in construction and the experiments took place between October 1914 and December 1916.

Thanks to DRA ARE Southwell for allowing us to reprint the above article

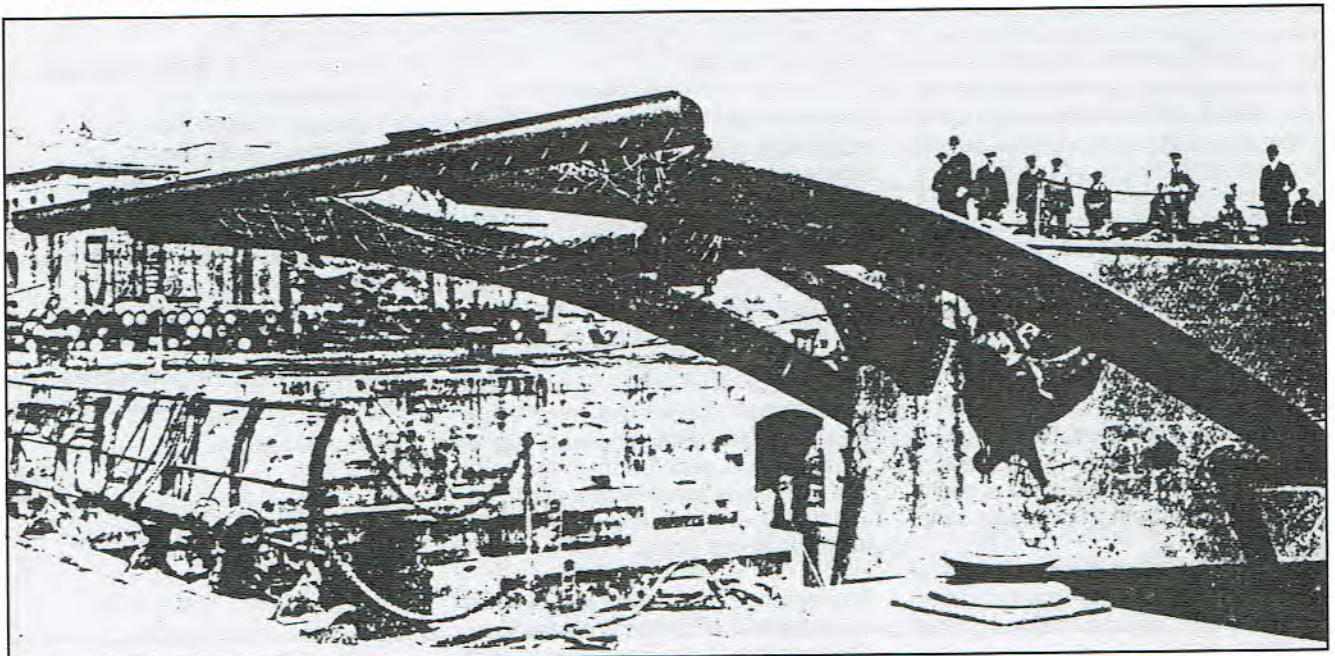


Mine Avoidance

- *“Ollis” Gear (down) on HMS REVENGE (now REDOUBTABLE).*



- *“Ollis” Gear (up).*



Notes from the Warfare Office

A number of personnel changes have taken place since the last issue, as at June 92 we are:

Staff Warfare Officer	64219	Cdr Dougy MacDONALD
Minewarfare Development Officer	64733	Lt Cdr Frank WARD
Asst MWDO	62494	CPO(MW) Nobby CLARK (tbrb CPO(MW) Peter CAWSEY
Route Survey Officer	64241	Mr Harry PARKER
Staff Analysis Officer	622494	Lt. Jennifer GORRINGE (tbrb Lt Anne LUCAS Sept 92)
Asst SANO	62494	Wrn Paula MASON
Staff MCD Officer	64227	Lt Cdr John STAVELEY
Deputy SMCDO	64228	Lt Richard HILL
Staff MCM Officer	64228	WO(MW) Bob BAKER
Staff Mining Officer	629733/63369	WO(MW) Barney BARNET
Staff Officer SOD	64228	WO(D) Tiny TIMMS
Staff Precise Navigation Officer	62973	Lt Cdr Any HOLT
Asst SPNO	63369	CPO(SR) Sam COULTER
Warfare Department Coordinator	64219/64733	Mrs. Barbara DUFF
Staff Officer COMMW (Northwood)	7848	Lt Cdr Tim CURD

You will notice that Warrant Officer Timms has changed titles, this reflects the fact that as of 07 April the Superintendent of Diving became part of COMMW. Tiny Timms is therefore SODs northern representative. This has also incurred a change to COMMW title which is now the **Commodore Minor War Vessels Minewarfare and Diving**, the short title remains COMMW.

It is intended that this section becomes a permanent addition to the magazine and will aim to bring its readers up to date with some areas of interest within the Warfare Office sphere of responsibility. When appropriate it will include notes from the relevant Staff Officer.

MWDO UPDATE

Having been SMCDO for some 15 months I took over from Lt Cdr Steve Gobey in March. Steve has now moved on to relieve Dan Nicholson in Canada. As most of you will be aware the Minewarfare Development part of the organisation is essentially the Minewarfare Tactical Development Group although somewhat thinned from the days of Dennis Selwood. The group consists of myself and CPO(MW) Clark with SWO designated as OIC MWTGD to maintain a structure similar to the other Warfare Groups. The Analysis organisation also fall within my sub department. As the name suggests our areas of interest are with future developments whereas SMCDO concentrates on day to day MCM problems of the Flotilla. Current projects include:

- **Minewarfare Tactical Support System (MTSS)**. The contract has now been placed with Computer Devices of Eastbourne. We hope for an In Service Date of late 93, early 94. It will be provided to COMMW as the MTSS Manager, CINCFLEET, Area Flag Officers, MCM Commanders for their MCMTAs and MDT. It will provide the following primary functions:

- Storage of Minewarfare Data
- Planning, tasking and evaluation of MCM effort
- Calculation of MCM risk
- Monitoring of MCM activities
- Provision of Minewarfare Pilot data from the Hydrographers Route Survey Data Base to MCMVs
- Receipt of data from MCMVs for subsequent analysis
- Handling of MW signals

In support of these functions it will also provide:

- Upkeep of the MW data stored on MTSS
- Administrative support

- Analysis of ship performance i.e. WPA and ORI
- Presentation of data recorded by MTSS during an operation
- User training

To enhance the capabilities of MTTs a requirement for a Route Survey Data Base (RSDB)MER 7/90 has been established, providing detailed feature information to the user. The Ordnance Survey 1:50,000 series instead of an AA Handbook.

- **SANDOWN Class**. The Group is involved with all development aspects of the Class and we are hopeful of an OPEVAL at the end of 93 early 94.

In liaison with FOAS:

- Protection of the MCMV in a hostile environment
- Review the RN MCM capability in support of Amphibious Ops
- Shallow Water MCM
- RTPM validation
- MCM reporting procedures
- Development of tactical procedures for the SANDOWN Class
- SANDOWN Class OPEVAL
- EXTAC 843/Risk Evaluation

The Group welcomes your ideas and views either by phone or visit to Lochinvar Block

SANO UPDATE

As I sit in the small office with bars across the opaque frosted windows, I realise that the time has come to share the excitement of life as a Mine Warfare analyst.

The "team" consists of Wren Paula Mason, the weapon analyst and myself Lt Jennifer Gorrings. However the highly secure (cleared to secret with the door shut!) office is cluttered with numerous computers, useful boxes, analysis tools, a continuously heated coffee machine, the VEMs programming analyser and a "tall" Chief MW. The walls are tastefully decorated with colourful plots and reconstructions highlighting the facilities of the Mine Warfare Operational Analysis Tool.

The main tasks of the COMMW Analysis section are to provide assessment, reconstruction and analysis for Weapon Practice Assessment serials (generally during Operation PIKE), to evaluate records from BOST/COST/WORK UP ships (as soon as possible—within 24 hours), to provide 'ad hoc' reconstruction of recorded operations and to assist in the assessment/development of future analysis facilities.

Weapon Practice Assessment (WPA), is the process of comparing the

Notes from the Warfare Office

performance achieved during a Weapon Practice against a standard criteria. Thorough magnetic tape and manuscript records enable us to produce full data reduction and analysis. The results of the WPA, including pictorial views of procedures (see diagrams), a tote of the number of mines detected and classified, track keeping ability, RCMDV run times and a Measure of Performance (MOP), are reported back to ship and squadron and databased for future analysis.

The MOP is sometimes incorrectly taken as an absolute value, forgetting that differing conditions and equipment states have combined to retard or enhance the results. A qualifying comment is given to temper the percentage.

As in all fields of analysis the Analyst treads a precarious path where every comment is seen as a criticism and long held "anti-analysis" prejudices are more difficult to counter than a minefield of MANTAs! The sea-riding of WPA ships is a most useful part of the analysis process. It is also a somewhat disturbing experience—last year the IVESTON thought that they had the first "woman overboard" as I personally negotiated better sea conditions for WANS on a dark stormy (sea state 1/2!) morning. Thankfully Wren Mason is untroubled by any turbulence and covers for me in the Ops room when I am indisposed. The analyst tries not seem smug but having sat at the back of the Ops room for a few hours "noting things" while everyone else has plenty to do gives them the right to utter a quiet, sinister laugh as the ship passes over another known mine position. No, of course we are not like that—believe me!

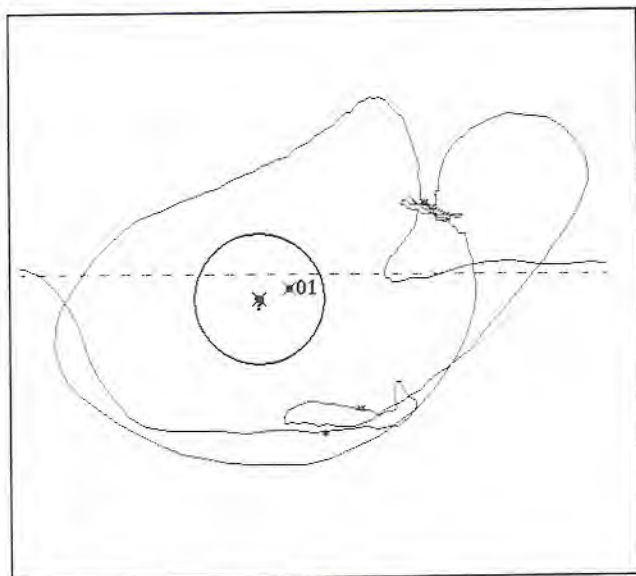
Complain as we do about our sea time as "non-volunteers" the PIKE period provides us with best records for analysis. Good records from completed serials provide us months of interesting work. A TON class WPA is an added joy as it sends us back to real analysis methods with everything done by hand. The VEM has recently returned to the scene after a years absence. This will hopefully cause the re-emergence of more Mine Sweeping analysis!

Analysis, well that is it; the job we were trained for, our raison d'etre. So the next time you are tasked to conduct a recorded serial do not be perplexed about somebody assessing you—we only do it because we enjoy it and if we didn't there would be no numbers, statistics, figures, plots, diagrams for everyone to puzzle over!

So while you are out there at the sharp-end we are back here, happily analysing away, planning exercise minefields, filling databases and drawing conclusions where conclusions need to be drawn. Please remember we are always available to discuss or explain any analysis or recording queries.

Jennifer Gorringe Lt Wrns

SANO



Good avoidance of Mine Damage Radius

SOSOD UPDATE

You may have read by now in DCI 140/92 that as of the 7th April the Superintendent of Diving and his subordinate staffs have been subsumed by the Commodore Minor War Vessels (COMMW), this is in continuance of the FLEETMAN re-organisation. In layman's terms this now means that SOD is no longer directly responsible to COMMW for providing Diving, EOD, and IEDD services to the Commander in Chief Fleet. Although SOD remains, at this time, located within his Portsmouth headquarters, he has become a Head of Department within the COMMW organisation, represented on a daily basis in the Rosyth by Warrant Officer (Diver) "Tiny" Timms.

On a mechanical note, the six basic DUOCOMs used within the MCMV flotilla are slowly disappearing. Due to the efforts of various interested parties in past years to enhance the safety aspects of the DUOCOMs, the chambers are now undergoing a metamorphic change to update ageing design and increase safety, these converted chambers are known as DUOCOM (HOULDER VARIANTS). Four of the chambers have been converted with the last pair going for modification before too long. Once all six chambers have undergone conversion it is intended to place four in operational MCMVs, retain one as base "Hot Spare" and transfer the last chamber to the Diving School to allow formal training to be undertaken. Oh and as one last point for all concerned Diving First Lieutenants that may be reading this missive, the refurbished chambers are painted "Pussers Grey" so you will not have to suffer the yellow cromated objects sitting in your Pap wells.

Warrant Officer (Diver) TIMMS

Staff Officer To the Superintendent of Diving

STAFF MCM OFFICER UPDATE

This is the desk which covers current MCM operational and personnel/training issues at the relevant level. That single sentence covers a job which ranges from explosive trials to assessing whether a question in a task book is relevant or not. Below I've attempted to summarise issues that I'm involved with at the moment.

Mechanical Sweeping

DGUW are at present undertaking a complete review of mechanical mine-sweeping stores, with a view to making as many components as possible interchangeable between the various sweeps.

From the tactical side, the original ATS and Oropesa FLOMS have gone forward to MOTIs and are currently being incorporated into BRs. In drafting both documents we had attempted to make the instructions user friendly and relevant. However, we are particularly keen to receive any feedback (positive or negative) which might help us to improve these or any other MCM publications.

Influence Sweeping

MSSA Mk1 and MS 14 have been amalgamated for all practical purposes, and are now referred to as Combined Influence Sweep (CIS). Some items of the equipment are currently undergoing a modification programme designed to improve reliability and maintainability. Within the warfare office, the system specialist, should advice be required, is CPO(MW) Clarke. He is the author of all of the FLOMS and signals which originate from COMMW on this subject (see separate article).

RCMDS MK 1 and MK 2

As a result of lessons learned in the Gulf conflict, a FLOM (2/92) has been published to disseminate improved operating procedures. This information will be incorporated in relevant BRs in the not too distant future.

The introduction and acceptance into service of the sonar type 2059 for the Mk 1 RCMDS is covered in the FLOM and make its use the Standard Operating Procedure.

The rationale behind the introduction of sonar type 2059, is to improve operational effectiveness by reducing mean mission time. For example:- If mean mission time can be reduced by 5 minutes and each ship is conducting twelve runs per day, that represents 1 hour of additional

Notes (continued)

hunting time a day. To an MCM Commander with a Squadron of five ships, that means an extra 5 hours of hunting per day. At an SOA of 2.5 knots that means an extra 12.5 miles of route clearance a day!

Drill Mine Lay and Recovery

A recent amendment forwarded to the Naval Staff Author will include a recovery stop in the rig for laying and recovering a drill mine. The purpose of this improvement is to reduce the requirement to deploy a gemini when recovering and as a result improve recovery times.

Warfare Branch Development

The future of the Warfare Branches in the Service is being examined at present, with a view to improving skill levels and job content. This is being done by a team from DNMT, and their study is well advanced. It looks almost certain that from the end of 1993 people joining the warfare branch will be trained as both operators and maintainers. Those already in the Ops and WE branches will be given the opportunity to cross train.

It looks like the future MW will be required to maintain and repair the equipment which he currently operates. No longer will the cry "shake the WEO" be heard emanating from the Ops room. Instead, the Operator Maintainer (MW) will be required to trouble shoot and repair the fault himself, only resorting to further help when the problem gets too difficult technically.

Finally—My Relief

By publication date Warrant Officer Bob Baker will have taken over from me, and I am off into civvy street to pursue another career. Best regards for the future to all within the two branches.

John Docherty WO(MW)

SMCMO

HUNT CLASS MHSC-COMBINED INFLUENCE SWEEPING

1. Just a brief dit on the current status of CIS. For full details see FLOM 15/91 (CIS extant documentation) and FLOM 4/92 (Revised Operating Procedures).

2. Recent rapid CIS developments have meant that the Operators (and Maintainers) documentation is continually being updated. Rest assured though, your friendly Mine Warfare Development representative will keep you informed of the latest changes, (if you read the FLOMs that is).

Current Status

3. MSSA1 Closed Loop operations were stopped in 1990 after trials analysis showed no benefits to be gained from its continued use. CAAIS Acoustic Sweep facilities remain available but are not to be used. They will be removed from the operational program at a convenient time, possibly at the NAVPAC/CAAIS software rewrite. They have become obsolete due to the withdrawal of Closed Loop operations and because the use of CIS in the 90s is Multi-Influence, ie. Acoustic and Magnetic, and the calculations are for a single influence only (Acoustic).
4. Towed Acoustic Monitor (TAM) has been retained for its role in the collection of the transmission loss factors k1 and k2. The processed results of k1 and k2 data collection are stored in an environmental data base within CIS DREAMT and used in pre and post tasking calculations. The future use of k1 and k2 values is currently being examined by DGUW with a view to withdrawal of the TAM, watch out for more FLOMs!

Note: CIS DREAMT is the tasking tool used by the Tasking Authority to calculate the optimum outputs for the sweep.

GRANBY enhancements.

5. The Mine threat for Operation GRANBY brought about significant changing Engineering and Tactical use. These enhancements have obvious benefits for UK use and have been retained for the future.

6. The Combined Sweep Control Unit (CSCU) was introduced allowing the two influences to interact more efficiently. Use of the CSCU has also removed much of the mystery surrounding setting up of the control cabinets. At last the operator can use the controls with ease and safety, depending on the operator concerned. We know it works, it was tested on a bunch of Australian Diving Officers who had never seen CIS

control cabinets before, no problems.

7. Tactically, the introduction of the Target Setting Mode (TSM) is the main event of the decade. Details are shown in the replacement chapter 11 to BR 8513(2C1) issued under FLOM 4/92, read it and weep. A FLOM detailing instructions for TSM Leadthrough operations is in production and should be at the printers June 92.

Sweep Configuration

8. A more realistic ship signature has been produced by shortening the MSSA1 Tow cable. The Acoustic Influence (TAG) is now immediately astern of the Magnetic influence. The intelligent Muppet might deduce that ships with their propellers offset to starboard of the stern are few but its a step in the right direction. Future MS14/MSSA1 developments may allow the Acoustic influence to be centralised, but don't hold your breath, that's in the future.

Note: The equipment supplier and Loop sheds (Dennis/Jumper) have received advance notification of the revised lengths and serving measurements but there may be the odd rogue cable about. Check your Tow cable at each change.

9. MSSA1 Tow Cable Servings have changed as well, not only position but also the cordage used. 4 stranded cordage is now obsolete and 6 strand too big to allow cable clamps to be fitted. 5mm diameter braided Polyester (Signal Halyard) is the replacement. The material for MS14 servings remains Cord Polyester Plaited Matt finish 8 strand 6.5mm.

10. Damaged MSSA1 Tow cables that have been returned to stores for repair may be re-issued as a shortened Exercise (Drill) cable. Marked with a Yellow sleeve at 16 and 248m, the exercise cable may be used for streaming and drills except when sweeping VEMs. The use of cables which cannot be repaired to operational standards is an obvious 'cost saver'; and will allow inexperienced Bridge and Sweep deck teams to practise their art 'economically'.

Current Snags

11. Restrictions were placed on MSSA1 output in Nov. 91. Mk 2 Mod 1 TAGs were self-destructing because of two mechanical defects. One problem has been resolved by using Mk 2 Mod 0 TAGs and modification of the Mod 1 to Mod 2. The other problem is not so easily solved and will involve modifications to the Control Cabinet. The modifications will be trialled in May and if successful, a program of modifications will follow. Be warned, the restriction still applies at present. Read all about it in FLOM 15/91 items 11 and 12.

Documentation

12. Operating instructions have been brought up to date in the replacement chapters to BR 8513(2C1) and (2C2) issued at FLOM 4/92. These are with the DNW Naval Staff Author and will be included in the next change to each BR.

13. Maintainers instructions. BR 8512(1) (SURs) were updated as an enclosure to FLOM 4/92. DGUW have initiated a major updating program for the remainder of the CIS handbooks.

The Future

14. Undoubtedly, Influence sweeping remains a valuable asset in MCM. With 13 platforms capable of using CIS it is a major weapon system in the MW arsenal. The HUNT Mid Life Update will probably be the catalyst for major change but smaller developments will continue to be introduced. Look out for instrumentation to display TAG RAM Balancing later this year.

The Statement

DGUW (UW215A) and COMMW (AMWDO) working with you the Operator to make a better and brighter Mine Sweeping environment.

Nobby Clark CPO(MW)

AMWDO

Response Page



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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 Portsmouth
 Hants
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 FAX: 0705 822351 Ext 24705

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, double spaced 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 dates are 1 Jun / 1 Dec of each year, and that by sending my article in today it will arrive at least six weeks before the next edition is due out.

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, but that if I am to be considered for either of the prizes associated with each edition, I must be prepared to have a "grip and grin" mugshot taken and published.

Yours.....

Signed.....



Challenge And Reply

BIG BADGE CHALLENGE IV

Answers To Big Badge Challenge IV (BBCIV)

Many replies were received in response to the Big Badge Challenge IV in the June 1991 edition of the MAD Magazine. Three of the best and most humorous answers from John Chapple EDU Ontario, Mr John Whatling and "Stan" of diving theory are published below.

No disrespect is intended by publishing the most humorous reply to any such competition and it is hoped no offence will be taken, in keeping with the spirit of the magazine.



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EMBROIDERED NAME BADGES

For those persons interested in ordering Diving, Minewarfare, overalls or No. 8 embroidered badges, the service has been assumed by Roger Sawell of Rainbow's End, Shamrock Quay, William Street, Southampton, Hants, SO1 1QL. Details and prices are available on request, care of the above address, or Tel. 0703-223434.

Dear Editor,

BIG BADGE CHALLENGE IV—DEEPWATER

The answer to the Where? When? Why? question is to be found within the pages of "HMS VERNON A SHORT HISTORY from 1930 to 1955" by Commander E. D. Webb RN (Published by the Wardroom Mess Committee HMS VERNON in 1956).

When HMS VERNON (D) in Brixham, the wartime home of the VERNON diving organisation closed down at the end of 1945, personnel and responsibilities returned to HMS VERNON in Portsmouth. At this time HMS TEDWORTH became a tender to VERNON to carry out deep diving training and experimental work.

In March 1946 the ex-German ship WALTER HOLTZAPPEL commissioned as HMS DEEPWATER and relieved HMS TEDWORTH as the deep diving tender to HMS VERNON. She was berthed alongside the Whitehead jetty, north of Vernon Creek, and was commanded by the Superintendent of diving, whose experimental diving unit (AEDU) she also accommodated.

HMS RECLAIM commissioned as the deep-diving tender in June 1948 and relieved HMS DEEPWATER of any further sea going responsibilities, thus allowing DEEPWATER to settle closer to the wall with the sole duty of "Diving School".

Yours Aye

JON CHAPPLE
Lt Cdr RN

Dear Sir,

The badge is of VERNONS diving tender DEEPWATER. In March 1946 the ex German WALTER HOLTZAPPEL was commissioned as DEEPWATER and relieved TEDWORTH as deep diving tender to VERNON.

A smaller tender the ex-German LUMME was also commissioned and as CLEARWATER at the same time.

DEEPWATER was berthed north of Vernon creek on the Whitehead jetty. I well remember doing my S. W. divers test dive from her in 1957 whilst stationed at VERNON II in Stokes Bay.

Keep up the good work with the magazine "it's great".

Yours Aye

John Whatling

Dear Editor,

DIVING THEORY'S THEORY

The badge shown was actually combined from two different sources. The DEEPWATER part was originally a sign that read "WARNING DEEPWATER" which was fixed to the bulkhead of the 3M level of the diving trials tank. It was put there to warn all the MCD officers acquiring their minutes not to go deeper than the sign. If they did they were in danger of becoming confused and tended to concentrate on correct drills and use of tables instead of just concentrating on getting their fins on the right way up.

The second half was adapted from a doodle found on the Diving Planning office message pad, believed to have been drawn by CPO(D) John Malham RN (Rtd) one wet Wednesday afternoon after he had finished the Sun crossword.

Yours Aye

Stan.



BIG BADGE CHALLENGE V

The badge illustrated above belongs to an historical RN unit. The challenge for this issue is: What? Why? Please send your answers, dits and pics to The Editor MAD Magazine. The best replies will be published in the next edition of MAD. Stories generated from BIG BADGE CHALLENGE IV (DEEPWATER) are on page 37 of this edition. Any badges considered suitable for inclusion in future challenges, gratefully received and returned.