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# MINEWARFARE AND DIVING



**VOLUME 1 | NUMBER 1 | 1 JANUARY 1990**



Challenger goes deep – Pages 12-14

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NEW  
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# MINEWARFARE AND DIVING



**THE MAGAZINE OF THE  
MINEWARFARE AND DIVING COMMUNITY**

*Front Cover: HMS CHALLENGER  
demonstrates the versatility of her dynamic  
positioning system.*

**VOLUME 1 NUMBER 1**

**1 JANUARY 1990**

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## EDITORIAL STAFF

**Sponsor:** Cdr. A. Rose, **Publisher:** Cdr. T. Hildesley  
**Managing Editor:** Lt. Cdr. D. Carey, **MW Editors:** Lt. A. Silva and WO (MW) J. Turnbull, **Diving Editors:** Lt. I. Geraghty and WO(D) M. Crang, **Assistant Editor:** PO(MW) D. Jordan, **Overseas Editor:** Lt. P. Davey, **Diving Reporter:** AB(D) S. Maddison, **MW Reporter:** PO(MW) W. Vassie.  
**Editorial Offices:** MDDS Faculty, HMS, NELSON (GUNWHARF) Portsmouth, Hants, PO1 3HH.  
**Telephone:** 0705-822351 Ext. 24826. **Facsimile:** 0705-822351 Ext. 24705

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### **Captain Richard Moore R.N.**

*During my career as an MCD officer it has been my good fortune to have served with a large number of very professional officers and ratings from the Minewarfare and Diving Branches. However I am sure we have all experienced an incident, or 'close call', caused by someone having a momentary lapse of concentration or allowing the regulations to be flouted. In some professions this might be acceptable but in ours such malpractices can prove fatal. I encourage everyone to make sure that they are not responsible for causing the next 'close call'.*

*My recent experience in the Second Sea Lord's Department has confirmed my previously held view that the future of the Minewarfare and Clearance Diving Branches is very healthy. However everything in the garden is not rosy and resolving the difficulties at the Senior Rate level in both Branches is being given high priority.*

*Every major task the Branch has tackled in recent years: in the South Atlantic, Gulf, Red Sea or Home waters, has been a major success, thanks primarily to the professionalism of our personnel. We do however need to apply this professionalism to the procurement of our equipment so as to eliminate some of the embarrassing defects we have suffered in the last few years.*

*Whilst, unfortunately, my next appointment is not within the MCD world I can assure you that my allegiance remains firmly with the Branch. I will also give, whether supervising or diving, my close attention to ensuring that I am not responsible for the next 'close call'.*

*Richard Moore*

# MINEWARFARE AND DIVING



## Editorial

**The relaunch or restyling of any magazine with a specialised readership is bound to cause varied reactions. The "MINEWARFARE AND DIVING" Magazine, as it is now known, is a sincere attempt to further improve upon the two previous in-house magazines of the respective Minewarfare and Diving communities: "M.I.N.E." and "BUDDYLINE".**

The publication date of 1 January 1990 is not unintentional: the start of a new decade to herald the start of a new style of magazine. The Editorial Committee hope that the new look, plus the more "Health and Safety"-conscious approach towards editorial material and the use of varied, illustrated articles, will stimulate further readership among the Minewarfare and Diving Sub-Specialists within the RN, RM, RE, RNR, RMR and RMAS. The circulation has therefore been increased from the previous limited numbers to 3000 per edition.

A variety of diagrams, photographs, articles (be they factual, fictional, humorous or otherwise), illustrations and "letters to the editor" will be included in each edition. From Edition Number 2, TUGG will be contributing cartoons to highlight paragraph titles, headlines and explicit points. Articles will be sought from Exchange personnel serving abroad in the various NATO and Commonwealth Minewarfare and Diving fraternities. Please note the strict limit of classification and distribution as per the definition of "Official Use Only" on the inside front cover.

The magazine will be published thrice-annually, in January, May and September, with the volunteer editorial staff being drawn from staff employed within the MDDS Faculty of SMOPS. Articles for future editions should be attached to the pro-forma to be found on Page 28 and despatched accordingly. To encourage contributions from the readership, there will be a competition for the best article and best picture in each edition, with a literary prize for each, kindly donated by Jane's Information Group. Details of this edition's prizewinners are listed below.

This magazine is produced for the mutual benefit and professional interest of the Minewarfare and Diving communities alike. It is

acknowledged that there are certain members of each community who do not wish to foster the association between the two and who do not support either this magazine or further editions. The absence of contributions from those units reflects their attitude. So far, the general response from the "coalface" of the ships and teams has been more than favourable. The quantity and quality of contributions received to date has been very promising. The editorial committee await the response to this edition with eager interest.

All Diving Officers and Divers are recruited from Ship's Divers, hence the inclusion of the latter in the magazine's distribution list. The RNR PD and MCM branches are still at the infancy stage of development and further reports from them are very welcome. Regardless of their own sub-specialisations, officers and ratings alike can still maintain their branch identity, whilst acknowledging that, particularly in the field of Mine Countermeasures, the two communities are notably entwined. There are many developments, trials and changes underway around us and one aim of this periodical is to provide a forum for the positive-minded review of MW and Diving events, whilst not seeking to by-pass official channels. Letters and articles published in this magazine do not necessarily reflect official MOD policy and remain the property of their respective authors.

To summarise, this magazine is now formally sponsored, officially funded and professionally printed. The thanks of the Editorial Staff go to the individuals who have preceded them in the respective "Buddyline" and "MINE" magazines. The support of the TS Wrens in MDDS TSRO, CS(Rep)S, CS(Graphics), plus the advice of other MOD(N) magazine editors has been of considerable assistance in the preparation of the magazine. Thanks also go to Colleen Jordan for Sub-Editing this edition.

The challenge ahead is the continued publication of such a magazine in times of tight financial budgets. The future of "MINEWARFARE AND DIVING" lies in the hands of its readership and will be determined by their contribution to future editions. The positive incentive to forward articles will always be by the award of prizes rather than compulsory deadlines set by higher authorities. The rest is up to you, the reader.



● **Left** – Capt Du Vivier (Capt (T) SMOPS) presents CPO(MW) "Dixie" Dean with a copy of Jane's Fighting Ships for the best contribution to this edition. **Right** – Lt John Giddens receives a year's free subscription to Jane's Defence Weekly on behalf of HMS CHALLENGER for the best photographic contribution.

# Enter the Sea Dragon

## RH-53D SEA STALLION

The Sikorsky built RH-53D Sea Stallion serves as an Airborne Mine Countermeasures (AMCM) helicopter and is capable of both mechanical (contact) as well as influence minesweeping. Introduced in 1973, the twin engine, single main rotor RH-53D helicopter utilizes various minesweeping equipment. Maximum gross weight is 42,000 lbs and maximum forward airspeed is 130 knots. The RH-53D is fully equipped for instrument flight, can perform search and rescue missions, and is also capable of either internal cargo missions or external cargo lifts with a 25,000 lb capacity cargo hook. The helicopter can also transport up to 37 fully combat loaded troops or 24 litters for medical evacuation.

## CH-53E SUPER STALLION

The Sikorsky CH-53E Super Stallion is among the western world's largest and most powerful aircraft. The aircraft is a follow on to the RH-53D and is configured with seven main rotor blades and three engines. The aircraft has a maximum gross weight with an external load of 73,500 lbs and like the RH-53D is also capable of instrument flight, shipboard operations, and transportation of up to 24 medical litters or 55 fully combat loaded troops. Introduced in 1983, the CH-53E's primary mission is Vertical On Board Delivery (VOD) services to ships at sea, and can carry up to 16 tons of cargo up to 50 nautical miles. The CH-53E also performs additional missions such as the movements of containerized cargo, transportation of heavy equipment, and retrieval of damaged aircraft.

## MH-53E SEA DRAGON

The MH-53E Sea Dragon is a Sikorsky variant of the CH-53E which has been configured for AMCM. Operationally introduced in 1987, the MH-53E is the largest helicopter in the free world and represents the latest in helicopter technology. The MH-53E will be capable of towing the newest minesweeping equipment as well as the equipment presently towed by the RH-53D and with its enlarged fuel sponsons will be able to double the present on-station time of the RH-53D for AMCM missions. The Sea Dragon will be capable of VOD missions similar to the CH-53E making it one of the U.S. Navy's most versatile aircraft.

Tail and main rotor folding features make the helicopter fully capable of shipboard operations. For the primary AMCM mission, the RH-53D is configured with a three axis of motion tow boom assembly attached to the cabin overhead which is readily adaptable to all minesweeping systems. The ability to transport the RH-53D inside the U.S. Air Force C-5 Galaxy aircraft gives the helicopter its rapid deployment capability to anywhere in the world on short notice. Additional range extension is also available from shipboard refuelling, jettisonable auxiliary fuel tanks, or in flight refuelling from C-130 Hercules tanker aircraft.



## AIRBORNE MINE COUNTERMEASURES SWEEP EQUIPMENT

Helicopter AMCM squadrons are equipped with a variety of towed Mine Countermeasures (MCM) equipment that provide the capability to sweep and detect mines. Traditional moored contact mines are swept with the MK-103 system, which consists of an elaborate system of underwater cable cutters connected by tow wires and floats. The cable by which the mine is moored is cut, causing the mine to rise to the surface where it is destroyed by .50 calibre machine gun fire from another helicopter.

Acoustic influence mines, which are activated by ship noise, are detonated by the MK-104 device, which employs a water driven propeller inside a metal tube. The cavitation of the propeller simulates the acoustic signature of a ship passing through the water, thus detonating the mine.

Shallow water magnetic influence mines are detonated by SPU-1W Magnetic Orange Pipe (MOP), a thirty-foot pipe which is magnetized prior to each mission. More thorough magnetic influence minesweeping for deep water mines is provided by the MK-105 system, which consists of a hydrofoil sled towed 450 feet behind the helicopter. The sled houses a gas turbine engine which drives an electrical generator that supplies electrical current to a two electrode tail attached to the sled. The energised electrodes create a magnetic field similar to that of a ship passing through the water, thereby causing magnetic influence mines to activate.

● Below. MH53E helicopters are easily recognised by their enlarged sponsons, their prominent engine inlets and their angled exhausts.



The helicopter also tows mine detection equipment, the AN/AQS-14 and AN/ALQ-141, which provide the capacity to detect mines underwater. More traditional AMCM or Surface Mine Countermeasures (SMCM) are then directed to the mined areas, or the mined area is bypassed by friendly shipping.

AMCM efforts also employ a portable precise navigation system developed by Teledyne-Hastings Company known as Raydist. Raydist consists of portable radio transmitters which transmit signals received by gear aboard the helicopter. The helicopter can then determine its precise position in the minefield, fly an exact predetermined course, and record its movements for post mission evaluation.

● Left. MH53E Sea Dragon towing MCM sled  
● Below. RH53D Sea Stallion deploys its sweep



Photographs courtesy of United Technologies Sikorsky Aircraft and Janes Information Group. Article by Dave Carey with acknowledgements to Helicopter Mine Countermeasures Squadron Twelve of Naval Air Station, Norfolk, Virginia for their contributory material.

# Diving Round Up

## DIVING SAFETY Teamwork and Initiative by I of D

In any organisation such as the Royal Navy Diving Branch there are two elements which are important to ensure mission success and efficiency. These are teamwork and individual initiative. A recent incident occurred that highlighted this point.

A leading seaman diver in one of the mine hunters was filling a DSSCCD canister with proto when he noticed that it took more than the usual amount to fill the canister. He then noticed that the grains of proto looked different from what he was used to seeing and he brought it to the attention of the Chief Diver. The Inspector of Clearance Diving was then called to ask for advice. The Inspector CD had the ship send down a can to his office at Portsmouth. Since the appearance of the proto was markedly different, ARE Alverstoke was

requested to perform an analysis on a sample from the lot in question.

The results of the analysis were that the proto in question failed to perform up to required standards. The batch was then quarantined and an investigation was initiated to determine why sub-standard proto was being produced and why this batch appeared so different.

The investigation went back to the factory where the production process was thoroughly reviewed. It was found that beginning in August of 1989 new processing equipment was installed there. The process now involved extruding the raw proto mixture into long sausages instead of large cakes. The sausages were cut into small bits and a granule of a more uniform shape was produced. This new equipment was also more accurate in the amount of proto packed into each can

whereas before there was some amount over what was listed on the outside of the can.

At this point two problems were identified. First the lot of proto that was not up to performance standards and second there was no longer enough proto in the shipping cans to completely fill a DSSCCD canister. Both items have been addressed to the company manufacturing the proto and steps are being taken for larger proto cans and to ensure better quality control at the factory.

The alertness of the Leading Seaman Diver in this case is an example for all of us to follow. The people who make the changes for better equipment and safety rely upon the operators to report back deficiencies they have encountered. Remember no one has more invested in the diving kit than the diver himself.

### Editor's Note

A double-page spread was allocated to Diving Safety but only one contribution was sent — by I of D. The aim is to publish anonymous (where applicable or requested) reports of diving incidents in a simple, factual report style. If, by the publication of the cause of one diving accident, we can prevent another then this column will justify not only itself but the entire magazine. Please send in your "I learned about diving from that" stories.

## FDU 3 REPORT FOR 1989

FDU 3 has had a busy and varied year, although the glories have been mainly reflected from other diving teams. Divers from FDU 3 travelled to the South Atlantic to assist in the repairs to HMS ENDURANCE, sailed aboard HMS CHALLENGER for her 120 and 300 metre saturation diving trials, and supported numerous trials of other underwater equipment for DGUW(N) and ARE.

In other areas, divers from the team participated in trials of new oxyhelium decompression tables both here in the RN, and in a CANUKUS Project located

in Toronto, Canada. The Neoprene Dry Suit trial has been completed, and the suits look good for most, if not quite all, service applications.

One element of the team has been reoriented to ROV operation, away from 75 metre diving. This means that one element of FDU 3 will continue to work-up and train in 75 metre oxyhelium diving in conjunction with FDU 2, whilst the other element trains in ROV operation. Saturation diving support to CHALLENGER and to ARE Alverstoke will, of course, remain.

In 1990 we expect to trial the SIVA and

SIVA Plus MCM diving sets under the auspices of ARE, and we hope to finalise the trials on the 75 metre diving panel. The digital depth gauge which is contained in this new panel could have much wider application in RN surface-supplied diving. Of more interest to the average working diver, FDU 3 will be trialling several wrist depth gauges early in 1990.

1989 has been a varied but interesting year, and FDU 3 expects to carry on with more bread-and-butter trials work in 1990.

**This section is deliberately left blank in order to provoke discussion and, hopefully, to stimulate contributions on the subject of Diving Safety.**

## Fleet Diving Unit Two Reports

### Turkey 89 by Jess Owen

One of the Fleet Team's commitments for 1989 was a NATO Exercise in Turkey alongside the Turkish and American EOD divers. Nobody in the section seemed to understand why several tents were being loaded into the TKs. It brought a look of horror to a few of the hair gel boys!

We arrived in Turkey thanks to the comforts of the RAF Hercules and proceeded to the Izmir Palace Hotel by coach. LS MEEKIN (the buffer) was glad to find an American PX store which sold very large hamburgers. The PX bar was the first encounter we had with the American EOD divers, a fine group of men, one looking like the original American dream boy. Not to be outdone, the Boss gave a very shortlived demo of his American quarter back throwing skills.

At the exercise area we made camp on the sand alongside the American and Turkish diving teams. There were three areas marked out about 200m out to sea, the British section being by far the biggest. The diving support ship USS GRASP was anchored just alongside the 3 exercise areas.

The geminis laid out the light line search gear. The lanes were 1200m long by 35m wide and the deepest depth of water was around 18m. After doing everything possible in preparation for the next days diving, the volley ball court was marked out in the sand. A gruelling 30 minutes daily PT with the Americans was conducted. The buffer actually found out where his abdoms were.

The first days diving started early. The first 3 divers swam the 1200m lanes in perfect conditions taking about 60 minutes per lane. By this time the Americans had already found one mine and had a good contact using hand held sonars. The USN team had to get one over the Brits eventually. The Fleet Team's secret weapon was unloaded from the TK (it wasn't AB LASCKEY). The towed diver rig was prepared, much to the delight of the boys.

Several days passed with no luck or sign of a mine in the Brits box. The Americans had found 3 and were close to finishing the box when luck struck: our first mine was just

outside the end of the lane and just inside the American's box. It was quickly marked with a Union Jack. Two American ground mines were found and marked. PO(D) WILSON's Gemini driving was unlike his golf, he may not hit the flag on the golf course but he certainly hit the flags with a few divers.

Following several hard days of diving the land had been swum and all the mines had been found. All the mines were lifted and towed for recovery by the USS GRASP. The Exercise finished with the Turkish divers being hosts for a big party with the Brits and Americans which was a great success and many thanks to the Turkish Diving Team.

The tents were struck, the TKs loaded up for the long drive back to Izmir for a one night stay before the RAF flight back to the UK. A farewell meal with the American's finished off a very well executed exercise by the Fleet Team. Hopefully it won't be long before we see our very close American friends again.

## Exercise SPANEX 89 by Steve Strange

In October 1989 FDU 2 was deployed to Spain for a joint MCM exercise with Spanish diving teams. Spain has in recent years become a full member of NATO and this was the first joint UK/Spain cooperation of diving teams. The team arrived in Spain after an overnight ferry journey from Plymouth and drove to Santander in the North of Spain to Cartagena in the south-east; a journey which took five days with stops in Burgos and Madrid.

The Spanish diving team we were to work with, the UNIDAD Especial Buceadores De Combate, are essentially attack swimmers, equivalent to the USN SEALs, not specifically MCM trained; the Mine Clearance and EOD phases of the exercise they planned were their first for a number of years.

After two days at their base making friends and acquaints on their techniques and equipment we proceeded to a small island two miles offshore called Crosa Island, or more commonly, Devils or Fantasy Island by FUD 2 members, due to the somewhat extreme conditions we faced there, its not all sunshine and subbies on the Fleet Team. The mines encountered looked uncannily like forty gallon oil drums with holes in to make them sink, they are not listed in current AEODPs!



The EOD/IED phase back at Cartagena was with the small five man unit, extremely well equipped and experienced, their EOD/IED techniques are very similar to our own, some instructors having visited DEODS in the past.

SPANEX 89 was a successful deployment for FDU 2, proving the team can deploy anywhere effectively with any NATO allied force.

The Spanish Team may be coming to the UK in 1990, I hope any member of the branch who works with them will be as helpful and generous to them as they were to us.

## Mine hunting Feature

# THE HUNT FOR THE LOST TORNADO AND ITS BEACON

By Richard Bell-Davies

**ON 19 July 1989 a Tornado from RAF LEEMING crashed into the sea 30 miles NE of Sunderland. Sadly the Pilot was killed but the Navigator, who ejected safely, was picked up.**

HMS CATTISTOCK sailed from Sunderland to find the aircraft and if possible locate the flight recorder.

On arrival at the datum a dan was laid and the search started. The depth of water was 70 metres and the seabed type flat sand with ridging. Ground stabilisation was achieved using DECCA and the dan; the local HiFix chain being unavailable.

The flight recorder of a Tornado has a 9KHz beacon attached to it which emits a 'cheep' at 2 second intervals and lasts for 10 days. While the ship carried out an expanding search around the datum the divers were employed as dipping sonars to see if they could hear the beacon. They could and the search shifted one mile to the loudest point and the first small items of wreckage were picked up on sonar and seen by RCMDV.

For the next 12 hours the search concentrated on the beacon position which was updated more accurately using a Sea King sonar, but only small items of wreckage were found and no flight recorder. It was deduced that the aircraft must have exploded either before or on impact with the sea and had spread over a large area. It also seemed likely that the flight recorder, which is situated behind the cockpit, had separated from the fuselage and would be hard to find. A request for a beacon locating device was signalled.

CATTISTOCK's secondary task was to

find the cockpit consol and tailfin. Overnight the search expanded to a 2 mile square box based on the scattered wreckage theory but by dawn the next day nothing had been found. Perhaps the aircraft was after all lying in a small area and the ship had missed it.

More RCMDV runs 40 yards from the beacon position revealed the answer — the wreckage was not showing up on sonar as solid contacts but as an area of high reverberation similar to a ridge.

The search now changed to one of driving the RCMDV through the high reverberation area and seeing what appeared on the video. Trying to keep track of the vehicle was not easy because it would only periodically show up on sonar, ground stabilisation was inaccurate and 2059 was suffering from problems. Furthermore, the angle of the RCMDV camera made the search rather like crawling around a car breakers yard on your hands and knees looking for a particular steeringwheel. But it was successful and with the help of a Tornado engineer, who was flown out for identipart purposes, the engines, tail, wings, wheels, fuselage, cockpit consols, ejector seat and even an aircrewman's knife were found and mapped in an area some 200 by 300 yards.

Meanwhile the beacon continued to 'cheep' from its lonely position out of reach of divers. A team of select scientists in the gemini were tasked to try out a few Heath Robinson ideas while the ship continued its work. Their mission was to acoustically 'on top' the beacon, lay an ICOS and then the RCMDV would be driven to the ICOS.

Two baked bean cans on a string one

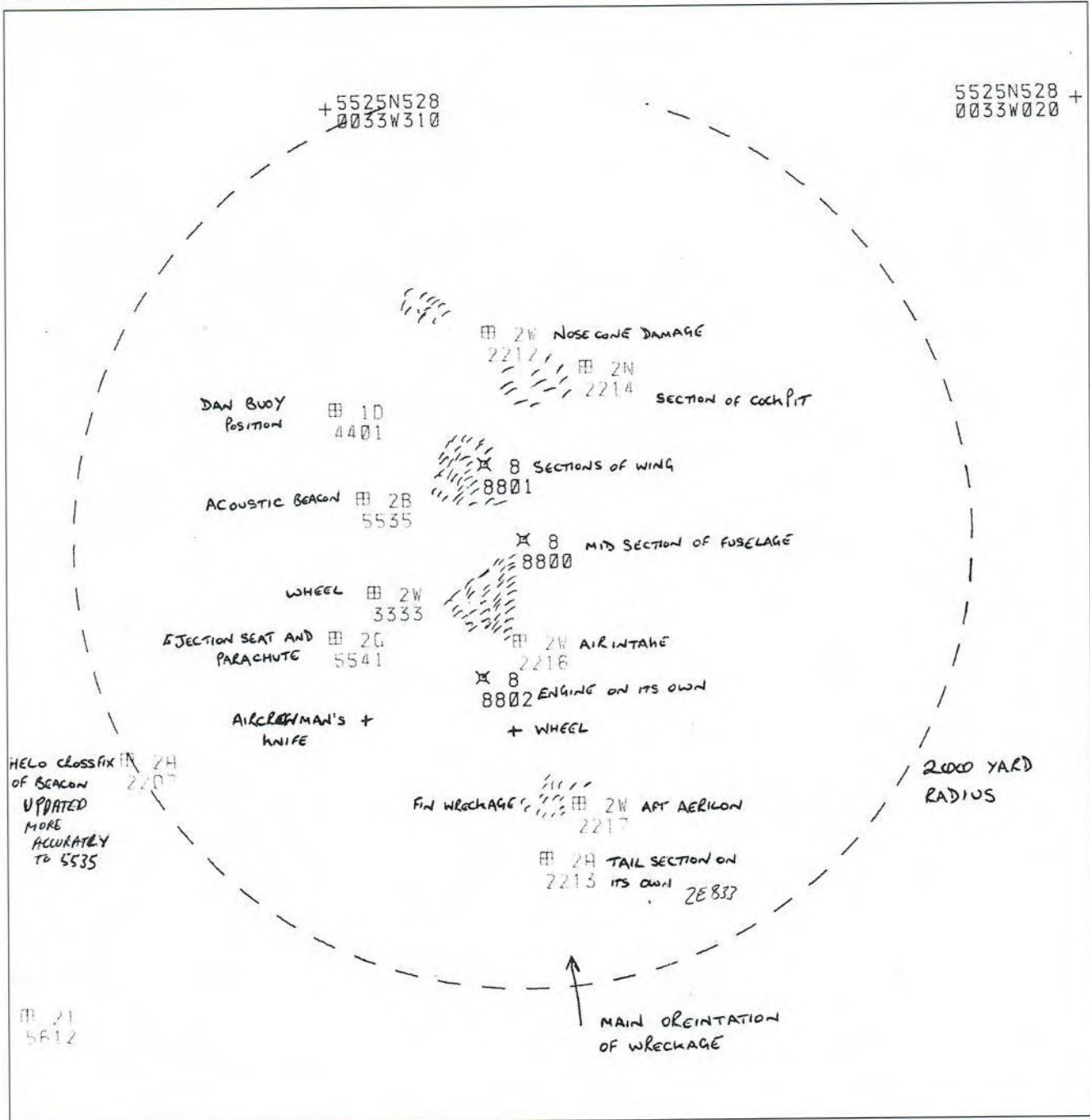
close to the seabed the other in WEO's ear did not hear a lot. Nor did a long rubber hose with a funnel on one end and the Coxn's ear at the other. A microphone packed in grease and lowered down could be heard hitting the seabed but would not hear the 'cheep'. It was put inside a fire extinguisher sealed and lowered down. The fire extinguisher came back up crushed with the microphone still working but no 'cheep'. However, a BROOMWOLUG, standing for Broom Handle in the MWO's ear did work and the 'cheep' datum error was reduced to 20 yards, definite potential for a Herbert Lott and close enough for salvage.

The next day a large 8 foot long lavatory ball cock was lowered down by helicopter to the ship. This extraordinary contraption was the boffins answer to the locating device. In practise it proved to be more accurate than the BROOMWOLUG.

After 4 days, 33 RCMDV runs and 5 hours of "Davey Jones Wreckage Video" the map was complete. CATTISTOCK laid a dan with a massive sinker over the site, fixed and plotted it and returned to Rosyth.

RMAS SALMASTER with a deep diving team embarked was contracted to do the salvage. One week later she returned to the site with the wreckage map and videos and successfully recovered the flight recorder, cockpit consol, engines and tail. An analysis of the flight recorder and subsequent Board of Inquiry revealed that the crash was caused by Pilot error.





Denotes areas with large amounts of debris that cannot be positively identified.

# TORNADO WRECKAGE MAP

# MW Reporter



● MW Reporter  
A/PO (MW) Wally Vassie



## The Whitbread Round The World Race – A brief history

The first round the world yacht race took place in 1968 when the Sunday Times newspaper offered a prize of £5000 for the fastest non-stop single handed circumnavigation of the globe. Nine yachts set out on the epic voyage but only one Suhudi, manned by Robin Knox-Johnstone, actually completed the course.

At the time Robin Knox-Johnstone was a member of the Royal Navy Sailing Association, a yacht club that had, and still does have, close links with the Royal Navy; and which has branches and contacts throughout the world.

The Royal Navy Sailing Association's Flag Officer at the time was Otto Steiner. He believed that the time was right for a race that would take fully manned yachts around the world, and thought that the Royal Navy Sailing Association should organise the event.

An advisory group was immediately formed by Otto Steiner to investigate the feasibility of the idea. Among those that were invited to join the group were Sir Francis Chichester and Sir Alec Rose, who had sailed around the world single handed in 1966 and 1967 respectively. Robin Knox-Johnstone, along with others was also invited to join the group.

A race of the magnitude envisaged was, however, well beyond the

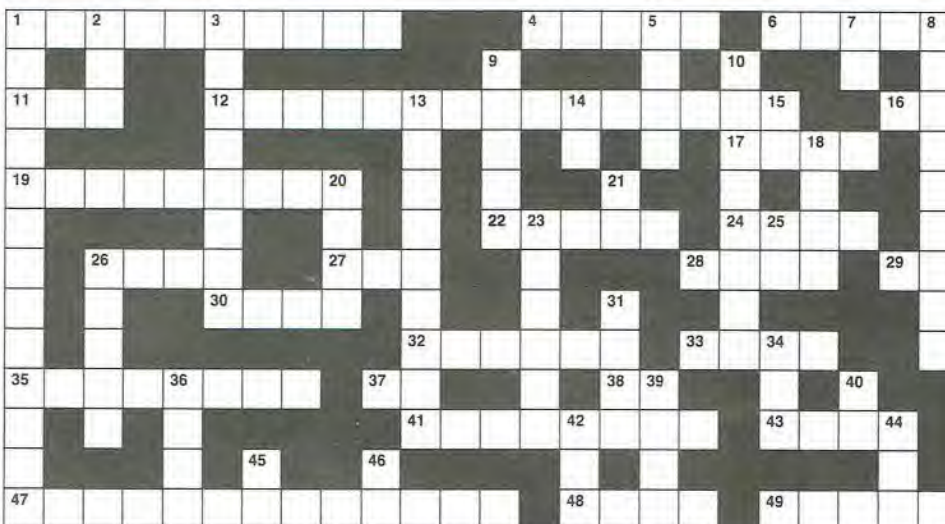
Royal Navy Sailing Association's financial resources so the committee, under the guidance of Otto Steiner, started a search to find a sponsor. It so happened that the famous English brewing company, Whitbread, had sponsored Sir Francis Chichester on his single handed round the world voyage and readily agreed to back the new Royal Navy Sailing Association race.

The first of the Whitbread Round the World Yacht Races took place in 1973/74 and fourteen yachts from six different countries completed the gruelling course.

In the second race, which took place four years later, the number of yachts taking part in the race had increased to fifteen. By 1981 no fewer than twenty nine yachts crossed the line at the start of the third Whitbread Round the World Yacht Race. In 1985 the number of entrants dropped to fifteen yachts of which fourteen completed the race.

This year the race has twenty three yachts actually competing, and at the time of going to press, Satquote British Defender, the Combined Services entry, was safe in Freemantle laying 13th overall in the Race.

## Cryptic Crossword by Nobby Clarke



**ACROSS**

- 1. TAKE A PORTION OF ARTHUR AND THE END OF EXCALIBUR AND PUT THE SWORD BACK WHENCE IT CAME (10)
- 4. THE FRUIT OF A TREE (5)
- 6. YOU WON'T GET ANY CLOTHES IN THIS ONE (5)
- 11. MIDSHIPMAN ONBOARD (3)
- 12. PLAY THIS ONE OUT AND IT WILL GO WITH A BANG (9-6)
- 16. NOT THE BEST ROUTE TO TAKE UNLESS BEFORE TEA (2)
- 17. THE DAYMARK IS NOT HARD ENOUGH (4)
- 19. SHE WAS WEEPING ALL DAY, UNTIL THE TEARS WERE ROLLING DOWN HER NECK (5-4)
- 22. REMOVE THE COVER AND MAYBE THE DAYLIGHT WILL BE SEEN (5)
- 24. TO JOIN TOGETHER (4)
- 26. A WAVE POWERED BOARD (4)
- 27. BELONG TO YOU (3)
- 28. MAY IT NEVER EXPLODE (4)

- 29. TRAIL TOTES (2)
- 30. NOT NAVAL STORES BUT JUST OUTSIDE (4)
- 32. A PERT OX THAT PACKS A PUNCH (6)
- 33. PAP'S HAVE TWO OF THESE BUT ENA SHARPLES ONLY HAD ONE (4)
- 35. DITCHED AIRCRAFT ARE GOOD FOR SCREWING THESE UP (4-4)
- 37. QUALIFY WITH NOISE MAKING BROOM (2)
- 38. INSTRUCTORS BACK AT SCHOOL TO LEARN HOW TO TEACH (2)
- 41. A TICK FOR THE MAGAZINE SHOWING GOOD FISHING GEAR (8)
- 43. ONE ACROSS IS ONE OF THEM (4)
- 47. BRUSH DOWN THE LEFT SIDE WITH A METAL BROOM (4-5-4)
- 48. GET YOUR PREPS DONE BEFORE YOU GET TO IT (4)
- 49. THE OTHER HALF OF 4 ACROSS (5)

**DOWN**

- 1. WE HEAR THE CLEAR UP WAS NOISY (8-5)
- 2. THIS P.P.M. GOES ON AHEAD (3)
- 3. TIME FOR A LITTLE R & R DURING EXERCISE (5-3)
- 5. FIRST TO LEAVE A SINKING SHIP BUT NOT IN THIS CASE (4)
- 7. TO THE FRENCH THIS HAS MEANING (2)
- 8. NORA BATTY HAS TROUBLE WITH THESE (9)
- 9. IT SEEMS SO NEAR AND YET SO FAR (5)
- 10. SSWR (7902) (4-4)
- 13. A SCHOOL GAME JOCK LISTENS TO (3-3-3)
- 14. HELPS YOU TO KEEP YOUR DISTANCE AND KEEPS YOU SAFE (2)
- 15. HELPS YOU WITH PROBLEMS YOU MAY HAVE ONBOARD (2)
- 18. DON'T BE ADRIFT OR YOU WILL INCURE A PENALTY (4)
- 20. TIE UP THE SPEED OF A SHIP (4)
- 21. POSITION YOURSELF ON WHAT SOUNDS LIKE A DANCE HALL (2)
- 23. TURN STARBOARD OVER THE NET (6)
- 25. NOT OUTSIDE BUT . . . (2)
- 26. BRUSH UP (5)
- 31. NEXT IN LINE TO LEAVE (4)
- 34. BRAIN OF THE A MK 12 MOD 2 (3)
- 36. SPILL (4)
- 39. RISE AND FALL OF WATER (4)
- 40. NOT AUTO TRACKING (2)
- 42. THE NAVIGATOR NEEDS TO GET THIS RIGHT SO TRAINS CAN BE CAUGHT (3)
- 44. STAR GUEST AT COMMISSIONING (3)
- 45. EVALUATION OF TRACK KEEPING (2)
- 46. COMPUTER WIND (2)

# Diving Reporter

## NAVY DAYS DEEPWATER Display Tank

As ever the 1989 Portsmouth Navy Days proved to be another successful event with the public. Highlight of the event, of course, being the Diving Display Tank hosted by members of the Diving School GUNWHARF.

Strategically placed for maximum effect, the sight of gallons of cool water and six burly divers in the heat of the day attracted capacity crowds. A record number of people completed a dive and claimed the much coveted certificate.

Amongst all the excitement there was even a time for a call-out job to No. 2 basin for the salvage of a German Frigate model. A quick circular and there she lie on her port beam, unfortunately her remote control system badly damaged. Still, a good write up for the log!

All in all the three hard days were rewarded with the exchange of numerous telephone numbers and offers to return the invite. Pleased to report that the event was carried out without incident and a good time had by all.



● Diving Reporter  
AB(D) Steve Maddison

## SHIPS BOTTOM SEARCHES

As the branch awaits the release of the new SABRE set intended to replace DSSCCA, do spare a thought for those members who spent three arduous weeks abroad filming the new Ships Bottom Searches movie, starring SABRE and nine of the branch's best looking chaps.

Despite the usual criticism by other lesser looking members of the branch as just another diving jolly, the trip involved a great deal of pre-planning and thought to detail, all credit to Lt Cdr Cairns and CPO Christie.

After much discussion, planning and head bashing, Madeira and Gibraltar were decided upon the film's location. Madeira for all above water shots and Gibraltar for the diving shots. Much to the team's disapproval they packed armed with shorts, shades and lotion and headed for the rendezvous in the sun.

Three members had flown out a week earlier for preparations for the Gibraltar phase and to arrive in Madeira with RFA FORT GRANGE to join the main party. After a two day delay the FORT GRANGE arrived at Funchal, Madeira and the boys were mustered from the pool side to commence filming.

Working hard and to tight schedule, stage one was completed in the remaining three days as opposed to the intended five days allocated. The FORT GRANGE departed and the team returned to the poolside for a debrief for their remaining few days in paradise.

Following a first class flight via London the team found themselves in Gibraltar and back to earth as they arrived at HMS ROOKE.

The Team spent twelve hard days completing phase two of the film of all underwater shots. Despite the numerous complications that occurred it was the complete professionalism that overcame all and there finally evolved some sort of film that they assured us could be cut into something by October.

Despite all the complications that did occur and that some members would rather forget about the whole trip, there did evolve a final product and therefore proved to be a successful operation, not to mention entertaining — sometimes!



The Royal Navy's first women divers have completed the rigorous Port Diving Course with a plunge into the Solent at Portsmouth. Wren Sharon Crosbie (left), aged 19, and Wren Karen McCurdy, aged 18, will be expected to carry out underwater surveys of ports, to search ships' hulls for mines and to help clearance divers find and dispose of mines.

To qualify as port divers they both spent four week-ends training followed by two weeks of continuous training working alongside male colleagues (one of whom is their diving instructor Harry Cripps, above). They both undertook a fitness programme of running and weight training to prepare for the course and just can't wait to get diving.

## PLUMBING THE DEPTH

Computers will never  
replace human beings  
entirely — someone  
has to complain about  
the errors.

## Deployment Report

# GROUP 5 DEPLOYMENT TO SUNNY CLIMATES

By "Dixie" Dean

As you are all aware the CALENDAR II ships are now at 35 days notice for operations in the Gulf. The ships' companies are still worked up as before so they are ready in all respects to deploy should the need arise. The ships are still fully enhanced both with personnel and materials giving sailors some experience with other weapon fits not normally used in MCMV'S.

### Getting Ready

HM Ship BICESTER and LEDBURY conducted their CALENDAR II work up in the Firth of Forth under the watchful eyes of the MW Staff of CST. Unfortunately HMS BROCKLESBY was delayed for various reasons after her refit and was unable to conduct her CALENDAR work up with the other two ships. Instead she had to carry out her BOST first using Squadron Staff (MW and Diving only).

After Summer Leave the ships held a families day in Rosyth for those based in the north. Then it was off South to Portsmouth where BICESTER and LEDBURY spent the weekend and held a families day for those with families in the South. Unfortunately BROCKLESBY was unable to sail South because they still had to complete their CALENDAR II work up.

Having had a good time in "Pompey" BICESTER and LEDBURY sailed for PORTLAND to complete their CALENDAR II work up with FOST Staff. This entailed a tense few days conducting Gunnery Drills, Boghammer attacks, 2059 SATS and Noise Ranging.

With the work up complete (exempt BROCK) it was time for some fun with a Squadron Run to SCHEVENINGEN. Three ships (BICESTER, ATHERSTONE and LEDBURY) spent a few days alongside and by all accounts a good run was had by all. (I understand that a few "cherries" were lost). Plenty of time off to play golf and do some Windsurfing or just visit the local bars. The Squadron "eating out team" (Taff Davies and Cheesy from the Bicester) ate extremely well scuppering one of their now well renown 23 course meals (including house plonk).

As always all good things come to an end, the ships sailed for Dover to participate in EXERCISE SHARP SPEAR (now affectionately known as BLUNT STICK). The ships conducted some varied tasks with the occasional stand off in a South Coast Port.

While the others were swanning around the ocean BROCKLESBY was busy in Rosyth completing her

CALENDAR II work up. This also gave us, the staff, a chance to catch up with the paper work and pack away the office ready to deploy with the ships as the Standby Squadron. SOO and myself travelled South to meet BROCKLESBY in PORTSMOUTH to embark for the final part of her work up at PORTLAND with FOST Staff embarked.

### Off we go

With SHARP SPEAR over and BROCKLESBY'S work ups complete the three ships meet up in PLYMOUTH. FSU were on station to conduct and LSP to ensure the ships were top line before they left UK waters. Again PLYMOUTH turned out to be good run for those who did not take the opportunity to get in that last weekend with 'she who must be obeyed'. It is not often that MCV's get to Plymouth so the RA's made the most of it.

On the 26 September the ships sailed in company for passage to PORTIMAO in Portugal. During the passage limited weapon training was conducted including CIS, Oropesa Sweeping and a Team Sweep. The weather was relatively kind to us improving as we went south. Inter ship quizzes were conducted every night on wide range of subjects including those that cause more arguments than others put together ie sex, politics and religion.

### Portimao

On arrival in PORTIMAO the weather was fantastic, it was one mad dash to get

to the beach to get the tans under way although it must be said there were those who managed to get a good one on the way down (WEO's in particular). The town was still throbbing even though the end of the season was pretty close. A lot of lads hired Mini Mokes to get around in and to go further afield (the jetty looked as if it were the local yuppy car park).

The Squadron Eating Team went on the rampage and ate a very expensive lobster meal with all the trimmings. Others were content with the banyans to the beach, visiting the local discos and bars trying the local brews. The food was exceptionally cheap if you looked around (someone did try to point this out to the "team"! with fish being the cheapest option. PORTIMAO is expanding all the time, the beach is man made stretching for about half a mile with a lot of secluded beaches further on. Before leaving the Squadron Funnel Badge was painted on the jetty, a tradition carried out by all visiting ships on this particular jetty.

Next came the passage to Funchal in Madeira. Again a fast passage but not to fast to spoil the Sundowners held on the Flag Decks by Officers and Senior Rates on alternate evenings. The quizzes continued along with several other exercises (non-delaying) including the nightly Screenex. Heaving Line transfers were carried out on one occasion when I suspect the same bottle of wine was passed from ship to ship. The day prior to entering Funchal the ships anchored off



● CINCFLEET spends some time with the lads in HMS BROCKLESBY

Porta Santo, one of the Madeira Islands so as to conduct some deep diving (after all the end of the quarter was up soon) so the opportunity was taken to hold a barbecue and a sailboard race. Lessons were also given in sailboarding, boarding being the operative word. A lot of us found it difficult to stay on the board let alone sail it. Some others went fishing over the stern and were doing fine until one sailor caught a brightly coloured fish of large proportion that no one recognised. I don't think a sweep deck has ever been cleared so fast, even in a DOGGO situation. The traditional Horse Race was held on the sweep decks and in BICESTER's case the profits donated to the RM Band Deal Appeal.

### Funchal

The Squadron entered Funchal at 0800 on 8 October, the weather was grim but cheered up later. A more cultural but good run was experienced here. The streets were full of tourists and the shops tended to cater for these rather than us but if you managed to get into the back streets and see the old town the prices were more acceptable. The night life was good but didn't start until late in the evening and finish in the early hours. The local vino was good and reasonably priced but again it was a case of going into the backstreets to find the best deals.

To drive in Funchal is not recommended, it is twice as bad as driving in Portsmouth during dockyard outmuster times. Cars are hired for a reasonable price and the Hertz dealer does give a small discount.

We left Funchal and passed to Gibraltar. The passage was a fast one (well 12 knots) so that we could get to the GIB Exercise Areas to carry out some Formation OO (we couldn't do it on passage for various reasons). The weather was not as good as it could have been but not so rough that the Klankies had to get their heads down all day (not that it makes a lot of difference anyway) the time was spent carrying out non-delaying exercises namely Machy Breaks, NBCD teach in, Screenex and Navcomex's. The nightly inter ship quiz continued with those subjects likely to create a lot of discussion on completion (no blood though).

On arrival at the Gibraltar exercise areas the ships commenced the Formation OO. On completion the ships anchored off Rosia Bay for the night where, again the BBQ's were ablaze and the burgers cooking (for those who had any left that is). The nights entertainment consisted of inter mess games night and horse racing.

### Gibraltar

At 0730 the ships weighed anchor and entered Gibraltar, already alongside were the MCM3 ships on their fun in the sun run, so it was inevitable that the preverbal Inter Squadron Top Of The Rock Race took place and yes, the flexible Hunt Team beat the Soggy Wood team.

The students for the MCMG Course flew out to Gibraltar to conduct their Sea Training onboard BICESTER and LEDBURY (the buzz about the MW Section getting better tans than the ships'

companies is totally untrue!!). The S(MW) stayed for a week and the LMCDO's carried on for 2 weeks. The S(MW)'s were seen ashore enjoying themselves thinking all their birthdays had come at once, the officers meanwhile celebrated Trafalgar Night in the Army Officers mess and by all accounts a good time was had by all.

BROCKLESBY remained alongside to conduct a BMP supported by that much travelled bunch called FSU. While alongside the sailors took advantage of station leave and ventured across the border to Spain having hired one of ROOKE's mobile campers. Others just used their feet and hiked across. One tale that emerged was when a certain young MW rate onboard found himself in the company of a mother and daughter along with a rough AB Diver, towards the end of the evening the two ladies in question began arguing over who should take the young MW home, I believe the mother won.

What about the Squadron Eating Out Team? I hear you ask. Well yes true to form they were spotted eating at the local chinese restaurant out of house and home (we heard the owner had to close down until the container ship arrived with his next consignment of beanshoots). Behind the bar was a delightful young lady with a well developed figure, perhaps the food was actually nothing to do with the fact that they ate at that restaurant, who knows.

On completion of the MCMG Course the ships swapped around, LEDBURY and BICESTER went into BMP while BROCKLESBY went out to sea to make a training film for CIS. The ships posers were in evidence as soon as the film crew arrived (the divers did not get a look in on this occasion). The Australian on temporary loan (Brad Doyle) took the lead part as SDD, it was considered at one stage to send him for elocution lessons but we realised that you cannot teach an old dog new tricks. The film crew enjoyed their stay with BROCKLESBY and learnt a great deal about small ships. We wait with bated breath for the end result and to see the posers, sorry the Sweep Deck Crew in action.

Finally, the ships carried out 3 days weapon training with the Fleet NBCD Team and Fleet Close Range Weapons Team embarked. The wreckers let off their usual astronomical amount of smoke generators and CS candles giving the DC Parties and Cleansing Teams something to think about. The FCRWT launched the Matz A targets (remote control aircraft) which were quickly shot down with the 20 mm and 30 mm guns.

The ships left Gibraltar on the 10th November and headed for CASABLANCA. Again the weather was more than kind to us whilst on passage, in fact the coxswain could not give away the Sturgeson which is a feat in itself.

### Casablanca — the Town

On arrival in CASABLANCA the awnings were rigged for the children's party and the Cocktail Parties. The majority of the ships companies were low on funds by now having taken the wives and girlfriends to GIB but there was still



● CPO (MW) "Dixie Dean" and CPO (SR) Sam Coulter visit a Trisponder site on Gibraltar.

the odd pound (or Morrocon Dib Dobs) to be found to spend in the local ale houses. The local bazaars were a sight to see, just reams of leather and silk goods with a wide range of rabbits available including dubious watches sold on the street (the cockroach dies when you pass the breakwater). The local beggars (bless their cotton socks) are walking around with an 4MCM zap stuck on their chest, it actually got to the stage where if you offered them money they were offended. The infamous Rick's Bar was sought out and of course there was roughly 30 bars of that name.

On leaving CASABLANCA the ships were watched by the majority of the staff from the jetty (white hankies with an onion underneath) who unfortunately had to return to the UK.

### Homeward Bound

The ships passage to LISBON. The visit was covered by a team from DPRN and it is hoped to get a spread in January's Navy News. As I was not present in LISBON I shall leave it to one of the ships to tell the tale.

The ships returned to Portsmouth (the passage apparently was a trifle rough. Sharky Ward reckons he has seen more roughers in his tot, (yes you probably have mate especially when your tilt switch operates) for a well earned extended weekend and customs clearance before passaging to Rosyth. Overall the deployment was well balanced and in most cases rewarding. A lot of signals and letters were received from many VIP's stating how much they enjoyed the ships visits and praising the ships companies in every respect. ROLL ON THE NEXT TERM OF STANDBY.

# Main feature

# CHALLENGER GOES DEEP

THE following is an extract of a presentation given to the MCD Conference on the 28th November 1989, by Captain Mark Masterman RN (Commanding Officer of HMS CHALLENGER), Lieutenant John Giddens RN and Lieutenant Stuart Heaver RN . . .

1989 has been the most successful year of Challenger's life so far, during which we have carried out:

An intervention operation (PERINTIS — Salvage of toxic cargo)

The first diving task (recovery of a crashed Harrier in Lyme Bay) and, participated in a major, six yearly, submarine rescue exercise (SEDGEMOOR).

Since last year's conference the diving system has really come to life, and a large number of major milestones have been achieved:

**26 Nov 88:** The diving system was pressed for the 1st saturation dive — to 10 metres for three days alongside at FAIRLIE, with 9 divers excurting to 18 metres from the SCC.

**19 Feb:** (this year): Divers operated from the ship for the first time in dp to 50 metres on air from the surface support diving station.

**20 Apr:** We used that same facility operationally to conduct the underwater load transfer in DP of a 24 ton container of CFC gas from the wreck on MV Perintis in the vicinity of the channel LT vessel.

**1 Jul:** On the way back from TUMS trials in the Mediterranean we conducted the 1st full open water saturation dive to 50 metres for 5 days, in Falmouth Bay.

After a break for Summer Leave, and maintenance, the diving started in earnest again on October 2 with shallow water lockouts including an acquaint bell run and excursion for the commanding officer.

**9 Oct:** CHALLENGER's 1st operational diving task got underway, with the recovery of a Sea Harrier from HMS ARK ROYAL which ditched in 40 metres of water in the PORTLAND exercise areas. Three containers of very mutilated wreckage were recovered in 2 days by divers in saturation, during which time we achieved 68 man hours working on the seabed. An excellent demonstration of the operational efficiency of saturation diving techniques.

A further 2 training saturation dives were conducted in the Moray Firth over the wrecks of a WWII submarine and Lancaster bomber, on the way to Norway for the diving system acceptance trials where on;

**26 Oct:** We started a 140 metre saturation dive with a commercial diving vessel riding shotgun at a cost of £760,000 providing the essential services of a SEAHAWK Remotely Operated Vehicle (ROV). The divers surfaced from the 140m dive alongside in ROSYTH on Friday 3 Nov, after 5 days 15 hours decompression.

**12 Nov:** Again in Norway, CHALLENGER successfully completed 6 days of bounce diving trials, culminating in 3 bounce dives to 120 metres achieving the SRS standard.

After a well earned break in Bergen the 300m Naval Weapon Sea Trial commenced on 20 Nov with the divers conducting a variety of tasks on the seabed over a 4 day period. The bottom phase was successfully completed last Thursday, to SRS standard, and CHALLENGER returned to PORTSMOUTH only yesterday with the divers still in saturation. The divers exit the system on 4 December after 10 days 12 hours decompression (and having earned) £2,591.22 per man in deep diving diving pay!!!)

The 300 metre dive was the 10th saturation dive that CHALLENGER has conducted this year (and for those of you with divisional responsibility for divers considering a draft to Challenger, the diving team has earned approx £2,800 per man in deep diving pay so far during 1989).

The plans for the current diving trials were formulated in April of this year, and it is a significant comment on the reliability of the ship and the diving system that we are now completing those trials on 4 December, two days earlier than planned. We have functioned the system through its complete range, and have built up enormous operator confidence in systems such as:

The Environmental Control System (ECS), operated by divers an example of a user maintainer concept in operation.



● Newspaper clippings featuring HMS CHALLENGER after the PERINTIS Operation.

The self propelled Hyperbaric Lifeboat, which has completed successful manned trials at 275 metres . . . (Internal not external depth!!) And especially:

The Secondary Life Support System (SLS), which has now had over 1,000 man hours operational use and well used sets were successfully activated 300 metres underwater during trials in Norway.

We now have a system in CHALLENGER which is well made and well maintained not just in our own opinion, but also that of the numerous visitors we receive from the commercial diving world.

**Saturation diving in the Royal Navy is once again alive and well, and, more importantly ready for employment.**

None of this would be possible without the successful achievement of copious and sometimes tedious trials, including proving and expanding the DP capability envelope, taut wire performance in deep water, re-engineering of the diving handling system and about six re-terminations of the umbilical to our "Chandelier", the underwater TV and Sonar platform — one diver is reputed to have chopped it with a wayward hydraulic tool.

We have also successfully completed numerous trials with the towed unmanned submersible (TUMS) to depths in excess of one mile. In these "deep" operating areas, the ship cannot always navigate with the standard degree of high precision, however, TUMS CAN, by tracking deep ocean acoustic transponders with its sophisticated Nav data processor. In this way, TUMS tells the ship not only where TUMS is, but also where the ship is, passing the relevant information along up to 9km of coax cable together with video and sonar

presentation of the bottom. We are excited by the prospects of this capability and look forward to further TUMs progress next week and into the new year.

Our most publicized achievements this year have been while operating with the Ship's 20 ton manned rescue submersible, LR5. LR5 is owned and operated by STENA OFFSHORE of Aberdeen and is on permanent charter to join the ship at 24 hours notice. This she did for OPERATION PERINTIS, and with the assistance of the ROV's SPRINT and SCORPIO, 28 drums of Panamanian pesticide were recovered from the English Channel. Both civilian and RN Pilots were used for the mission. Amidst 200 tons of phosphate bags and 400 drums of petroleum jelly plus cranes, crabs and carnage the ship sniffed out 12 out of 12 drums of highly toxic Cypermethin and 16 out of 20 of the lower risk Permethrin, in less than one week on task. The drums were transferred to a recovery basket on the seabed and winched inboard where they could be wrapped, in protective sheeting and stowed prior to scientific inspection, on the ship's return to Portland. The success gave the ship enormous confidence operating in difficult conditions and also aroused considerable national media interest.

In September, we sailed for the CLYDE EXERCISE areas to join OPOSSUM (THE DISSUB) and REPULSE (MOSUB) and its attendant deep submergence rescue vehicle, the United State's "MYSTIC", in the major NATO submarine rescue exercise: EXERCISE SEDGEMOOR. As OTC, CHALLENGER proved her versatility and command control capability. In zero viz at 120m we coordinated the transfer of Admirals and Generals in and out of a distressed submarine with impunity. Most remarkable was the first ever transfer of men between two pressurized submarines at depth using LR5 in her primary role. In addition sonar 193m discovered an unconventional capability as a useful ASW SM tracking sonar. In the absence of DRSV we must now examine ways of transferring pressurized submariners out of LR5 and into a hyperbaric living complex, where they can be treated during controlled decompression.

Overall, we have improved many operating procedures, and refined deck and salvage evolutions. The accuracy and repeatability of the ships positioning and UW mapping systems has continued to be impressive. On the seabed at 300m an excurted diver can request vessel movements to within 1 metre to better position himself or his support equipment. We have discovered that during sustained diving operations, expertise in diving and DP seabed ops becomes severely stretched. Now all OOW's are being trained "downstairs" in the ops room and selected senior rates are becoming fully qualified DP operators. The QM, on the bridge has the assistance of a 15m morse "U" light which keeps all but the most persistent well clear.

The scope of operator experience has been greatly increased over the last 12 months and we are on track for completion of part four trials next Spring.



● Challenger diver excurting from the diving bell during the 300m trial.



● LR5 being deployed from HMS Challenger.

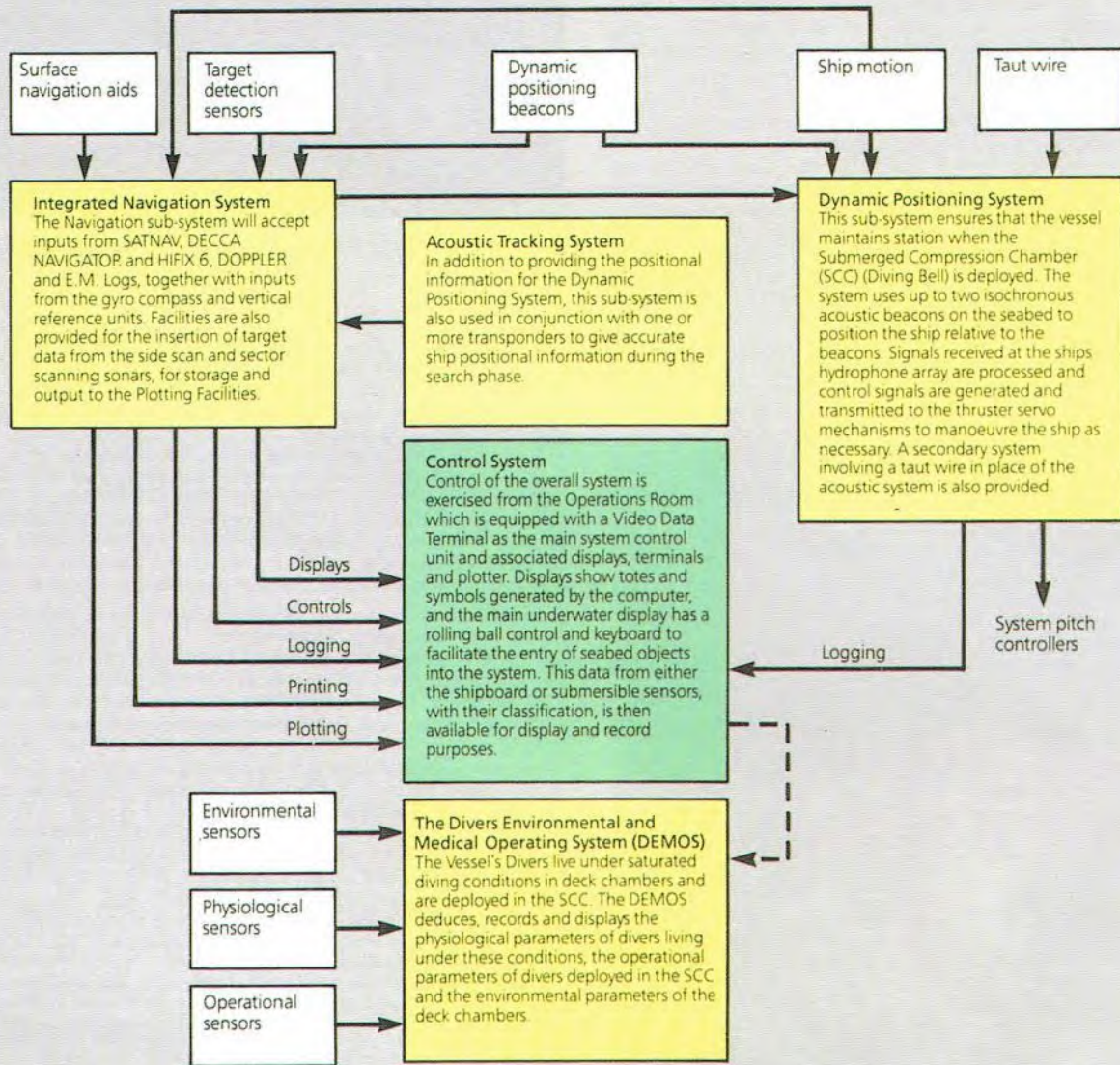
That's the good news. Its all happened by plenty of hard work and dedication by the ship's company and with direct support from project staffs. Once ODMA arrives and we are fully dependent on Fleet and DGST(N) resources, there is every indication that there will be difficulties; many unique stores are in short or even zero supply. Unlike other vessels whose platform utility may be gradually reduced by a succession of OPDEFS, CHALLENGER can quickly become non-operational and there can be safety to life implications. She also remains non-operational until the problem is solved and is not easily employable on alternative tasks. The ship has raised proposals for an alternative upkeep and support philosophy.

Also, sadly, despite having made great strides forward, there remains considerable uncertainty about the ship's long term future. April's D.E.D. is not yet confirmed, may be prolonged and there could be further changes afoot. I do fear that if we make major changes to the way we intend to undertake Seabed Operations, then, with the modifications necessary, we risk serious disruption to what is now a running concern. What we in blue must do is to extol the virtues of the system and capabilities that have been produced — and we must be seen using the ship. A seasonal programme in which we aim to demonstrate intervention capability, a deterrent activity if you like, is being devised. That includes the support CHALLENGER can give to submarine activity and Q-Route survey. Training is done on board, on the job, and action takes place in peacetime; we have had 216 days at sea this year including 25 week-ends, mostly in two watches. We have made some proposals on how we can sustain this activity, grant leave and reduce the ship's company. We are seeing longevity of draft as many extend or want to come back to the ship. This bodes well for the future development of Seabed Operations expertise in the Navy.

I urge your support in keeping the ship alive, the flag flying: In spreading the good news and in finding an ROV so that the ship can carry out independent diving operations in water depths greater than 50 metres.

# Seabed Operations Vessel

**AN INTEGRATED NAVIGATION AND CONTROL SYSTEM FOR SEA-BED SEARCH AND RECOVERY OPERATIONS WHICH PROVIDES ACCURACY, STABILITY, ECONOMY AND SAFETY**



● Artwork courtesy of Marconi Underwater Systems Limited.



# SPECIAL SUPPLEMENT

## WHERE ARE THEY NOW?

AS AT 1 DEC 89

### OFFICERS

NAME	RANK	CURRENT LOCN	JOB TITLE	NAME	RANK	CURRENT LOCN	JOB TITLE
ACTON J S	LT	DULVERTON	OPS	KERR W M M	LT	BROCKLESBY	XO
ALLEN M J	LT CDR	PEACOCK	CO	KESSLER M L	LT	ATHERSTONE	XO
AMEYE C R	LT	IVESTON	CO	KING	LT	BICESTER	XO
ARMSTRONG C A	LT CDR	CDRE MINOR WAR V	SMCDO	KOONER M D	LT CDR	MOD DGUW PTLAND	UW214C
ARROW J W	LT CDR	CDRE MWV NWOOD	SO COMMW	LADE C J	LT	DRYAD	COURSE
ASHCROFT	LT	BERKELEY		LANDROCK G J	LT	SNONI	OPS
BATE D I G	LT	QUORN	OPS	LEANEY M J	LT	SUPT OF DIVING	OIC FDU2
BAYLISS A A	LT CDR	CDRE MWV SEA	SMWO	LETTY A H G	LT	MIDDLETON	XO
BELL R D	LT	COTTESMORE	OPS	LINDSAY A J	LT	LEDBURY	XO
BLAKEY A L	LT	CATTISTOCK	XO	LOUDON J H	LT CDR	MOD DGUW KYLE	SOO
BOUND S N	LT	HUBBERSTON	XO MWO ERO	MACDONALD D H L	LT CDR	LEDBURY	CO
BURDEN J C	LT	LIVERPOOL	PWO(U)	MACKAY I B	LT CDR	CWTA PTSMTH	M2-MW/DIV
BUTTERWORTH N R	LT CDR	MCM2 SEA	SWO	MAIR B	LT	CATTISTOCK	XO
CAIRNS G A	LT CDR	NELSON GUNWHARF	IOMCD	MALEC J G	CDR	CINCNAVHOME	SOT(O)
CAREY D J	LT CDR	NELSON GUNWHARF	DSO MW	MANSBRIDGE B J	LT CDR	CNSA PORTLAND	AN103B
CASSAR A P F	LT	DRYAD	COURSE	MANNING A K	LT CDR	MANADON	
CHAMBERS T G	LT CDR	DRYAD	COURSE	MARSHALL R A	LT CDR	PEACOCK	CO
CHAMBERS W J	LT CDR	FOSNI OPS	OIC SNICDU	MARSHALL S M	LT	NELSON GUNWHARF	RSNF.BA
CHAPPLE J C B	LT	EXCHANGE CANADA	D & C INST	MARTIN G W S	LT CDR	CWTA PTSMTH	MI-GLDR
CLIFFE C B X	LT	SANDOWN	XO	MCALEAR S D	LT CDR	NELSON GUNWHARF	SODD
COGGINS J S	LT CDR	SUPT OF DIVING	DSOD	MCALPINE P A	LT	CHIDDINGFOLD	OPS
COX J P	LT	NEPTUNE BASE OPS	2ICCSBCD	MCCANN M	LT	CHALLENGER	SBO(D2)
CRAMPTON-SMITH A	LT	EXCHANGE AUSTLIA	MCD CO	MEATYARD C G B	CDR	MCM4 SEA	SENIOR OFF
CRITCHLEY M A	LT CDR	NELSON GUNWHARF	SO MW	MOORE R C	CAPT	NAVSEC	
CROOME-CARROLL M P J	LT	SUPT OF DIVING	OIC FDU1	MORTON I	LT	QUORN	XO
CURD T A	LT CDR	RNSC GREENWICH	COURSE	MURPHIE J D D	LT	DRYAD	COURSE
DAVEY P F	LT	NELSON GUNWHARF	MW3	NEIL S J	LT	DRYAD	COURSE
DAVIES A C	LT CDR	DRYAD	COURSE	NICHOLDON D A	LT CDR	EXCHANGE CANADA	SO MCM
DAVIES C J	LT	BERKELEY	XO	NICHOLSON S C L	LT CDR	NEPTUNE BASE OPS	(SA)
DAVIES E R	LT	PORTSMOUTH ACDU	OICPACDU	O'CONNELL D C W	LT CDR	STANAVFORCHAN	SO(OPS)
DAVIES N J A	LT CDR	ENDURANCE	XO	O'REILLY S A	LT	HERMIONE	PWO(U)
DEARLING	LT	NELSON GUNWHARF	NELSON	O'DRISCOLL J F	LT CDR	MOD DGUW PTLAND	UW211C
DODD C M	LT CDR	CDRE MINOR WAR V	SOO MCM10	PADWICK A T J	CDR	NELSON GUNWHARF	CDR MT
DURKIN M T G	LT	IVESTON	XO MWO ERO	POOLE J L	LT	COTTESMORE	XO
ELLIS D	LT CDR	ARE PORTLAND	UJRN 1	POTT C D	.CDR	NS OBERAMMERGAU	NI
ELLIMAN	LT	BRECON		RAISBECK P T	LT	NELSON GUNWHARF	MW1
ELVIN A J	LT	FO PLYMOUTH OPS	2IC PCDU	RAYNER J	CDR	MOD DNL P	WP
EMARY M F G	CDR	SACLANT USA	WOPS-NC5	RICHES K M	LT CDR	MIDDLETON	CO
FIELD S N C	LT CDR	DEF EXP ORD SCHL	CI	RICHES R J	CDR	SUPT OF DIVING	SOD
FLOWER K E J	LT CDR	RNR ULSTER	SO(X)	RIDOUT S S	A/SURG CDR	RNAS CULDROSE	
FRANCE S J	LT	CDRE MINOR WAR V	DSMCDO	ROBINSON M P	A/LT CDR	CINCFLEET	OA-MW
GALE P J	CDR	MOD DNOT	SO(X)	ROGERSON C S J	LT	MCM3 SEA	SOO
GERAGHTY I M	LT	NELSON GUNWHARF	DSODD	ROSS S A G	LT	DRYAD	COURSE
GIDDENS J H	LT	CHALLENGER	SBO(D1)	RUSSELL T	LT	CDRE MWV SEA	DSMWO
GILES K D L	LT	SHERATON	XO MWO ERO	SANDIFORD D B	CDR	FO PLYMOUTH OPS	OIC PCDU
GOBEY S J	LT CDR	CDRE MINOR WAR V	OIC MWTDG	SCARTH W	LT	DRYAD	COURSE
GODFREY K R	LT	CHIDDINGFOLD	OPS	SHERMAN C J	LT CDR	EXCHANGE USA	NSSC
GOODWIN G	LT CDR	SAUDI AFPS UK	SHIPS1	SILVA	LT	NELSON GUNWHARF	MW2
GREENWOOD P	LT	EXCHANGE USA	EOD	SIMMONDS R M	LT CDR	HURWORTH	CO
GRIFFITHS D T	LT	DRYAD	COURSE	STAMP G	LT CDR	EXCHANGE USA	MINE WAR
HARPER S A	LT CDR	BERKELEY	CO	STANLEY N P	LT CDR	ANDROMEDA	PWO(U)
HARRISON P T	LT	NELSON GUNWHARF	DO1	STAVELEY J R	LT CDR	FOSNI OPS	DSPO
HARVEY K	LT CDR	MCM1 SEA	SOO	THOMPSON B D	LT	KELLINGTON	XO MWO ERO
HARWOOD M J	LT CDR	ACDS OR (SEA)	RUD	THOMPSON C R	LT CDR	DANAE	XO
HAWKINS R H	LT	CENTURION	FSL	TODMAN A J	LT	LEDBURY	OPS
HAYES S J	LT	DARTMOUTH BRNC	DON6	TREVARTHEN A G	LT	CHALLENGER	SBO(S)
HEALY A M C	LT	FOSNI OPS	2IC SNICDU	TROTTER H L	LT CDR	MOD DNW	WM1
HICKS P L	LT CDR	CINCNAVHOME	SDO(R)	TURNER D	LT	DRYAD	COURSE
HILDESLEY T I	CDR	NELSON GUNWHARF	CDR MDSS	UTTING D W	LT	ATHERSTONE	OPS
HILL N G	LT	SANDOWN	OPS	WARD F S	LT CDR	SANDOWN	CO
HILL	LT	CHIDDINFORD		WARLOW M R N	LT	FOST	OICFOSTCDE
HILTON D	LT CDR	NELSON GUNWHARF	LTO	WELBORN C G	LT CDR	CENTURION	COURSE
HINTON	LT	CATTISTOCK		WHITE R W	CDR	CINCNAVHOME	SOSY(C)
HOGG I C	LT	WILTON	XO MWO ERO	WILD S	LT CDR	NELSON GUNWHARF	MW1
HOLLOWAY M C G	LT CDR	NELSON GUNWHARF	SODD	WILLCOX I	LT	HURWORTH	OPS
HOOLE R J	LT CDR	NELSON GUNWHARF	RSNF TD CO	WILLIAMS A P	LT	DULVERTON	XO
HOSKING D B	LT CDR	NELSON GUNWHARF	COURSE	WILSON C D	LT CDR	NEPTUNE BASE OPS	OIC CSBCDU
ILES T D S	LT CDR	JUNO	XO	WISEMAN J W	LT CDR	BLACKWATER	CO
JACK R J M	LT CDR	NELSON GUNWHARF	OICSRMHTDT	WOOLLEY M J	LT	HUBBERSTON	CO
JENRICK M F	LT	BICESTER	OPS	WRIGHT J C L	CAPT	RALEIGH	
JOHNSON G P	LT CDR	MCM4 SEA	SOO				
JONES P	LT	NURTON	XO				

# SPECIAL SUPPLEMENT

## WARRANT OFFICERS MINEWARFARE

NAME	CURRENT LOCATION
BAKER R L (BOB)	COMMW (MINING DESK)
DOCHERTY J (JOHN)	COMMW (MCM & GENERAL)
HITCHCOCK P (PETE)	CWTA PORTSMOUTH
MOORE M A (PONY)	MOD (DGUW) (N) PORTLAND
SMITH E (EDDIE)	HMS MERCURY
TURNBULL J J (GEORGE)	NELSON GUNWHARF
WOODHAM A E (TONY)	ARE HELSTON

## DIVING

NAME	CURRENT LOCN
FELLOWS M (MICK)	SUPERINTENDENT OF DIVING (SoD)
GREEN D F W (JIM)	SUPERINTENDENT OF DIVING (SoD)
KIDMAN C A (SCOUSE)	SUPERINTENDENT OF DIVING (SoD)
LIMBERICK B (BLONDIE)	FO PLYMOUTH (OPS)
MORRISON E F (TED)	NELSON TX JAN 90
OULD S R J (BOB)	NELSON GUNWHARF
SETTLE T (TERRY)	COMMW (DIVING)
STILL P F (PETE)	CHALLENGER
CRANG M J (MO)	NELSON GUNWHARF
TROTTER G (PIGGY)	SUPERINTENDENT OF DIVING (SoD)
RAMSEY R (RAY)	NELSON GUNWHARF

## DIVING SUB-BRANCH

NAME	RANK	LOCATION
BALLINGER C	CPO(D)	MOD DGUW PTLAND
BRUNTON N A	CPO(D)	PORTSMOUTH ACDU
COLDWELL C M	CPO(D)	SUPT OF DIVING
DEVITT A W	CPO(D)	GIB NAVAL BASE
EGGINTON	CPO(D)	COTTESMORE
HARRISON M	CPO(D)	NELSON
KERR E G	CPO(D)	FOST
LAWRENCE A A	CPO(D)	SUPT OF DIVING
MACKAY J	CPO(D)	TAMAR
MASSEY C T J	CPO(D)	DP&EE
NEIL S J	CPO(D)	HURWORTH
QUINN J M	CPO(D)	NELSON GUNWHARF
RAMSAY R M	CPO(D)	DULVERTON
SCARGILL K	CPO(D)	FO PLYMOUTH OPS
STANLEY F J	CPO(D)	CINCNAVHOME
TAYLOR G R	CPO(D)	CHALLENGER
THOMAS C C	CPO(D)	CINCNAHOME
TIMMS J	CPO(D)	NELSON GUNWHARF
TROTTER G M	CPO(D)	BICESTER
KNOWLES H V	ACPO(D)	DEF EXP ORD SCHL
LEADER P F	ACPO(D)	PORTSMOUTH ACDU
MASON M J S	ACPO(D)	EXCHANGE USA
MORRIS D G	ACPO(D)	MIDDLETON
ROWLANDS R J	ACPO(D)	FO PLYMOUTH OPS
TEMPEST B	ACPO(D)	BERKELEY
BALL R	LACPO(D)	NELSON GUNWHARF
CHRISTIE N	LACPO(D)	NELSON GUNWHARF
HANCOCL R	LACPO(D)	CHALLENGER
SOUTHWELL D W	LACPO(D)	DEF EXP ORD SCHL
STEADMAN A	LACPO(D)	DEF EXP ORD SCHL
WILLMER G A	LACPO(D)	NEPTUNE BASE BASE OPS
ALLAN S L	PO(D)	PORTSMOUTH ACDU
BARRATT K L	PO(D)	SBS RM
BENBOW S J	PO(D)	ATHERSTONE
BIELBY S A	PO(D)	CHALLENGER
BRA Y A B	PO(D)	CHIDDINGFOLD
CARDWELL J M	PO(D)	NELSON GUNWHARF
CARLIN J	PO(D)	WILTON
DENNIS J W	PO(D)	NELSON GUNWHARF
DOWELL L	PO(D)	FO PLYMOUTH OPS
DUDLEY G N	PO(D)	QUORN
FURLONG J M	PO(D)	BROCKLESBY
GALE C R	PO(D)	IVESTON
GIBSON G P	PO(D)	SUPT OF DIVING
GRATTON A P	PO(D)	KELLINGTON
GRIFFITHS M R	PO(D)	NEPTUNE BASE OPS
GUIVER P	PO(D)	NELSON GUNWHARF
HAMMOND P J	PO(D)	
HARRISON A R	PO(D)	
HILL P W	PO(D)	
HUGHES C J	PO(D)	
MATTHEWS N F	PO(D)	
MCCABE P J	PO(D)	
MCDERMOTT P A	PO(D)	
MOSS A J	PO(D)	
NOBLE A D	PO(D)	
NORRIS A	PO(D)	
PATTINSON E M	PO(D)	
PETRIE G	PO(D)	
ROGERS M P E	PO(D)	
SAUNDERS M J F	PO(D)	
SHEPPARD I	PO(D)	
SMITH C P	PO(D)	
STEVENS D E	PO(D)	
TATT R L	PO(D)	
WALLER J P	PO(D)	
WEBB R K	PO(D)	
WHALLEY S	PO(D)	
WILSON G J	PO(D)	
BLAMPIED S M E	APO(D)	
CRIPPS G A	APO(D)	
FULLER D J	APO(D)	
HADLEY T M J	APO(D)	
HAYTER R C	APO(D)	
HUMPHREYS D C	APO(D)	
KELLY T	APO(D)	
KINCART N P J	APO(D)	
LYNCH J	APO(D)	
MORSE N D	APO(D)	
MOTTRAM C	APO(D)	
NEW RA	APO(D)	
NILSSON S C	APO(D)	
SEWELL G J	APO(D)	
SIZER T J D C	APO(D)	
SMART C A	APO(D)	
YOUNGER P J	APO(D)	
ANSELL J S	LS(D)	
ARCHER M R	LS(D)	
BALDOCK R V E	LS(D)	
BARRETT D	LS(D)	
BASEY J N	LS(D)	
BATEMAN D R	LS(D)	
BATTEN R N K	LS(D)	
BEALE M D	LS(D)	
BEAN G S R	LS(D)	
BOWKER M N	LS(D)	
BRAITHWAITE R G	LS(D)	
CARTWRIGHT G	LS(D)	
CHAPMAN A D	LS(D)	
CHERRY D A	LS(D)	
CLARE P A	LS(D)	
CLARKE M S G	LS(D)	
COOKSON M	LS(D)	
COWLING D	LS(D)	
CROALL D	LS(D)	
DOONAN A C	LS(D)	
EASTHAM N R	LS(D)	
EDWARDS R J	LS(D)	
EDWARDS R S	LS(D)	
ELRICK W G	LS(D)	
FARR R	LS(D)	
GARLICK J	LS(D)	
GERMAN J E	LS(D)	
GODDARD D M	LS(D)	
GOFTON J	LS(D)	
GRIGG K	LS(D)	
HALL G	LS(D)	
HANWELL S F	LS(D)	
HARKER R	LS(D)	
HURLEY P	LS(D)	
JACKMAN I M	LS(D)	
JACOBSON S J	LS(D)	
JOHNSON R	LS(D)	
LIBBY G W	LS(D)	
MANGIONE F	LS(D)	
MARTEN M J	LS(D)	
MCFARLANE J F	LS(D)	
MCGRATH D F	LS(D)	
MEEKIN J A	LS(D)	
MERRY J J	LS(D)	
FOSNI OPS		
FOST		
CHALLENGER		
FOSNI OPS		
NELSON GUNWHARF		
DEF EXP ORD SCHL		
CNSA PORTSDOWN		
BRINTON		
HUBBERSTON		
FOSNI OPS		
CATTISTOCK		
KEDLESTON		
LEDBURY		
SHERATON		
NEPTUNE BASE OPS		
BRERETON		
FO PLYMOUTH OPS		
NELSON GUNWHARF		
FO PLYMOUTH OPS		
SUPT OF DIVING		
NELSON GUNWHARF		
SUPT OF DIVING		
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SUPT OF DIVING		
NELSON GUNWHARF		
SUPT OF DIVING		
NELSON GUNWHARF		
BRECON		
NELSON GUNWHARF		
NELSON GUNWHARF		
TAMAR		
SANDOWN		
NELSON GUNWHARF		
NURTON		
FO PLYMOUTH OPS		
NELSON GUNWHARF		
NELSON GUNWHARF		
NELSON GUNWHARF		
COTTESMORE		
NEPTUNE BASE OPS		
MIDDLETON		
NELSON GUNWHARF		
MIDDLETON		
FO PLYMOUTH OPS		
CHALLENGER		
CHIDDINGFOLD		
SUPT OF DIVING		
NELSON RELEASE		
FOSNI OPS		
FO PLYMOUTH OPS		
FO PLYMOUTH OPS		
CHALLENGER		
SHERATON		
QUORN		
FO PLYMOUTH OPS		
FOSNI OPS		
PORTSMOUTH ACDU		
BRECON		
SUPT OF DIVING		
HERON		
BICESTER		
CHALLENGER		
CHALLENGER		
SUPT OF DIVING		
FO PLYMOUTH OPS		
NELSON		
BERKELEY		
NELSON GUNWHARF		
CHALLENGER		
NELSON GUNWHARF		
CHALLENGER		
KELLINGTON		
SUPT OF DIVING		
NELSON GUNWHARF		
ATHERSTONE		
NELSON RELEASE		
NEPTUNE BASE OPS		
SUPT OF DIVING		
NEPTUNE BASE OPS		
FO PLYMOUTH OPS		
SUPT OF DIVING		
FO PLYMOUTH OPS		

# SPECIAL SUPPLEMENT

NAME	RANK	LOCATION	NAME	RANK	LOCATION
MORLEY C N	LS(D)	GIB NAVAL BASE	DUNDERDALE P	AB(D)	NELSON GUNWHARF
OPENSHAW M	LS(D)	TAMAR	EDNEY T L	AB(D)	CHIDDINGFOLD
PAXMAN R W	LS(D)	NELSON RELEASE	EWART J P C	AB(D)	DRAKE
PEAKE R J	LS(D)	SUPT OF DIVING	FLEMING I J	AB(D)	COCHRANE
PEARSON W J	LS(D)	CHALLENGER	FLETCHER G	AB(D)	COCHRANE RELEASE
PLATT A J	LS(D)	FOSNI OPS	FORREST R W	AB(D)	FOSNI OPS
PURCELL J H	LS(D)	PORTSMOUTH ACDU	FROWLEY A D	AB(D)	SUPT OF DIVING
RAINE M	LS(D)	GIB NAVAL BASE	FULLEN E C MCK	AB(D)	FO PLYMOUTH OPS
RENNIE G	LS(D)	FO PLYMOUTH OPS	FULLWOOD D	AB(D)	FO PLYMOUTH OPS
RICKARD R H T	LS(D)	CHALLENGER	GATES T J	AB(D)	NELSON GUNWHARF
ROLLAND M N	LS(D)	SUPT OF DIVING	GODFREY S	AB(D)	NEPTUNE BASE OPS
RUSSELL M A	LS(D)	NEPTUNE BASE OPS	GRADIDGE W J P	AB(D)	SUPT OF DIVING
SEABROOK A	LS(D)	PORTSMOUTH ACDU	GRAY R	AB(D)	HURWORTH
SHARP W T	LS(D)	BRECON	GRIMES D J	AB(D)	DEF EXP ORD SCHL
SHARP J W	LS(D)	CATTISTOCK	HALL N W	AB(D)	BRINTON
SLATER A T	LS(D)	CHALLENGER	HANSON S M	AB(D)	CHALLENGER
STRANGE S G	LS(D)	IVESTON	HARAN G	AB(D)	PORTSMOUTH ACDU
TAYLOR C	LS(D)	SUPT OF DIVING	HARRIS K	AB(D)	FOSNI OPS
TEAL S S	LS(D)	SUPT OF DIVING	HARRISON G D	AB(D)	FOSNI OPS
THOMPSON R	LS(D)	BRERETON	HEDLEY P M R	AB(D)	FOST
TUDOR P	LS(D)	SUPT OF DIVING	HOBLYN N A	AB(D)	FO PLYMOUTH OPS
TURNER A R	LS(D)	WILTON	HOCKING V J R	AB(D)	FO PLYMOUTH OPS
WALL J C	LS(D)	FOSNI OPS	HOLGATE G M	AB(D)	DULVERTON
WALLACE H E	LS(D)	BROCKLESBY	HOLM J	AB(D)	NELSON GUNWHARF
WEAVER J A	LS(D)	NEPTUNE BASE OPS	HOPE M	AB(D)	BROCKLESBY
WELSH R J	LS(D)	DULVERTON	HORBATOWSKI A P	AB(D)	SUPT OF DIVING
WHEELER A J	LS(D)	SUPT OF DIVING	HOSKING S J	AB(D)	SEAHAWK
WOODWARD A	LS(D)	PORTSMOUTH ACDU	HUDSON A M	AB(D)	COCHRANE RELEASE
WORT R	LS(D)	FOSNI OPS	JACKSON P R	AB(D)	LEDBURY
WORTH N J	LS(D)	PORTSMOUTH ACDU	JOBBINS N	AB(D)	MIDDLETON
BIRCH G	ALS(D)	SUPT OF DIVING	JOHN S D	AB(D)	SUPT OF DIVING
BROWN G	ALS(D)	FOSNI OPS	JONES A W	AB(D)	FOSNI OPS
CAMPION G M	ALS(D)	HUBBERSTON	JONES M A	AB(D)	IVESTON
CARSS A J	ALS(D)	FOSNI OPS	JONES A D	AB(D)	FO PLYMOUTH OPS
FITZJOHN S A	ALS(D)	BRINTON	KASAPI M H	AB(D)	BRINTON
HOLROYD M D	ALS(D)	FOST	KENNAIR N J	AB(D)	WILTON
JACKSON A F	ALS(D)	NELSON GUNWHARF	KENNEDY P	AB(D)	IVESTON
LATHWELL K A	ALS(D)	NELSON GUNWHARF	KENNINGTON C A	AB(D)	CHALLENGER
LEWIS M J	ALS(D)	JS SUB AQUA DC	KILBY M A	AB(D)	SUPT OF DIVING
MELEADY S T	ALS(D)	PORTSMOUTH ACDU	KNOWLES A E	AB(D)	WILTON
MILLER G C	ALS(D)	NELSON	LAMPOR T A P	AB(D)	FO PLYMOUTH OPS
MITCHELL D R S	ALS(D)	SUPT OF DIVING	LASCKEY A J	AB(D)	SUPT OF DIVING
O'BRIEN M	ALS(D)	FO PLYMOUTH OPS	LENNON M S	AB(D)	FO PLYMOUTH OPS
PATTERSON N R	ALS(D)	NEPTUNE BASE OPS	LIMBRICK R I	AB(D)	FO PLYMOUTH OPS
PENNY N A	ALS(D)	SUPT OF DIVING	LIMBRICK R I	AB(D)	FO PLYMOUTH OPS
RICHARDSON C C	ALS(D)	FOST	LISTON A V	AB(D)	GIB NAVAL BASE
SIBBALD G M	ALS(D)	SUPT OF DIVING	LOTHIAN R	AB(D)	NELSON GUNWHARF
SILCOCK S P	ALS(D)	PORTSMOUTH ACDU	LOVELL S K	AB(D)	DARTMOUTH BRNC
SIMMONDS T J	ALS(D)	SUPT OF DIVING	LOVELL J M	AB(D)	NEPTUNE BASE OPS
SIMPSON D	ALS(D)	SANDOWN	LUCAS C G	AB(D)	VICTORY
STODDART J J O	ALS(D)	NELSON GUNWHARF	LUKE K S	AB(D)	FOSNI OPS
WARD G T	ALS(D)	SUPT OF DIVING	MADDISON S	AB(D)	NELSON GUNWHARF
YATES L G	ALS(D)	NEPTUNE BASE OPS	MADDOCK M A	AB(D)	FOSNI OPS
GOULD S J	ALS(D)	RM POOLE	MAIN A J	AB(D)	NEPTUNE BASE OPS
BREAREY D A	LALS(D)	LEDBURY	MARSTON S T	AB(D)	FOSNI OPS
BUTLER E P	LALS(D)	HURWORTH	MARTIN P	AB(D)	DEF EXP ORD SCHL
JAMES K F	LALS(D)	SUPT OF DIVING	MCHUGH P	AB(D)	SUPT OF DIVING
JEACOCK P F	LALS(D)	NELSON GUNWHARF	MCKEEVER S A	AB(D)	SUPT OF DIVING
LEACH M S	LALS(D)	DEF EXP ORD SCHL	MCKENNA D I	AB(D)	CHALLENGER
PEARCE A J	LALS(D)	SUPT OF DIVING	MCSKIMMINGS M R	AB(D)	NEPTUNE BASE OPS
ALLEN S G	AB(D)	BICESTER	MERRIDUE D G	AB(D)	FOSNI OPS
BAMFORD M L	AB(D)	PORTSMOUTH ACDU	MOON P	AB(D)	HUBBERSTON
BARNES C	AB(D)	SUPT OF DIVING	MOORE D J	AB(D)	NELSON GUNWHARF
BARRON P	AB(D)	NELSON RELEASE	MULLEN W J	AB(D)	PORTSMOUTH ACDU
BEAN A M M	AB(D)	CHIDDINGFOLD	O'GRADY S D	AB(D)	NELSON GUNWHARF
BEECHING L G	AB(D)	FO PLYMOUTH OPS	ORTON T	AB(D)	COCHRANE RELEASE
BELL K	AB(D)	SUPT OF DIVING	OWEN A J	AB(D)	SUPT OF DIVING
BELL I R	AB(D)	QUORN	PARKINSON M A	AB(D)	TAMAR
BOUCHARD R J	AB(D)	NELSON GUNWHARF	PARTON A	AB(D)	SUPT OF DIVING
BOYD S A	AB(D)	HURWORTH	PENNINGTON S	AB(D)	SUPT OF DIVING
BOYLE R J	AB(D)	FOSNI OPS	RAMSHAW J R	AB(D)	FO PLYMOUTH OPS
BRAILEY S W	AB(D)	FO PLYMOUTH OPS	RAVENHALL J S	AB(D)	TAMAR
BROWN A J	AB(D)	PORTSMOUTH ACDU	REILLY A N	AB(D)	GIB NAVAL BASE
BUGGIE S Y	AB(D)	IVESTON	RIGBY T J	AB(D)	NELSON GUNWHARF
BURNETT D A	AB(D)	CATTISTOCK	RILEY M A	AB(D)	CHALLENGER
COLLINS J P	AB(D)	NELSON GUNWHARF	RINTOUL D J	AB(D)	FOSNI OPS
COUGHLAN J J	AB(D)	SEAHAWK	RINTOUL A N D	AB(D)	BRECON
COUSINS S M	AB(D)	SUPT OF DIVING	ROBERTS K J	AB(D)	SHERATON
CURNOW C J	AB(D)	PORTSMOUTH ACDU	RUSHFORD D	AB(D)	SANDOWN
DANIELS R J	AB(D)	NELSON GUNWHARF	RUSSELL S	AB(D)	CATTISTOCK
DEARLOVE T	AB(D)	FOSNI OPS	SCANLON P J	AB(D)	NELSON GUNWHARF
DEVANEY T	AB(D)	PORTSMOUTH ACDU	SEARL B R	AB(D)	QUORN
DIGWEED P J	AB(D)	CHALLENGER	SEXTON T M	AB(D)	SUPT OF DIVING
DONNELLY J	AB(D)	SUPT OF DIVING	SHAW A W	AB(D)	NEPTUNE BASE OPS
DONOGHUE J S	AB(D)	FOSNI OPS	SLADE M A	AB(D)	SUPT OF DIVING
DOUDS J L	AB(D)	NELSON GUNWHARF	SMITH N	AB(D)	NELSON
DOWLING R A	AB(D)	FOST	SMITH D J	AB(D)	BROCKLESBY

# SPECIAL SUPPLEMENT

NAME	RANK	LOCATION
SMITH D W	AB(D)	PORTSMOUTH ACDU
STEWART D R	AB(D)	SUPT OF DIVING
STOKES I J	AB(D)	WILTON
STURGESS K J	AB(D)	PORTSMOUTH ACDU
TEMPLETON A F	AB(D)	FO PLYMOUTH OPS
THOMPSON K P	AB(D)	POSTMOUTH ACDU
TROMANS A D	AB(D)	NELSON GUNWHARF
TURNBULL G	AB(D)	CHALLENGER
VERNON S J	AB(D)	NELSON GUNWHARF
WAKEFIELD J P	AB(D)	POSTMOUTH ACDU
WATKINS D N	AB(D)	NELSON GUNWHARF
WATSON R D	AB(D)	PORTSMOUTH ACDU
WEATHERLEY S	AB(D)	SANDOWN
WELLER C C	AB(D)	BROCKLESBY
WILKINS K N	AB(D)	FOSNI OPS
WILSON P J	AB(D)	SUPT OF DIVING
WRENS A M	AB(D)	BERKELEY
AMAIRA K	AAB(D)	BICESTER
ANDERSON P	AAB(D)	FO PLYMOUTH OPS
ASHWORTH B L	AAB(D)	QUORN
AUBREY DE L AVENU H A	AAB(D)	ATHERSTONE
AVILL C A	AAB(D)	HUBBERSTON
BARKHAM C D	AAB(D)	BRERETON
BARWICK A N	AAB(D)	DULVERTON
BATTERBY J	AAB(D)	FO PLYMOUTH OPS
BEAN W	AAB(D)	FO PLYMOUTH OPS
BLAIKIE D A	AAB(D)	NELSON GUNWHARF
BRADBURY H	AAB(D)	HERON
CANDLER A E	AAB(D)	KELLINGTON
CHEESEMAN M A	AAB(D)	CHALLENGER
COLCLOUGH D A	AAB(D)	KELLINGTON
DIXON A	AAB(D)	SHERATON
DONOHUE S	AAB(D)	NEPTUNE BASE OPS
DORAN S	AAB(D)	CHALLENGER
DOUGLAS S C	AAB(D)	CHALLENGER
ENGLAND A D	AAB(D)	FOSNI OPS
FIRTH M C	AAB(D)	MIDDLETON
GILMAN F D	AAB(D)	ATHERSTONE
GREEN D	AAB(D)	LEDBURY
HARRIS L W J	AAB(D)	WILTON
HELLENS M J	AAB(D)	ATHERSTONE
HODGE C A	AAB(D)	COCHRANE
HOOSON M	AAB(D)	NEPTUNE BASE OPS
JOHNSON P R	AAB(D)	DEF EXP ORD SCHL
JOYNSON Q M	AAB(D)	BRERETON
KIRBY A	AAB(D)	HURWORTH
LLOYD R H	AAB(D)	MIDDLETON
LOFTHOUSE S E	AAB(D)	POSTMOUTH ACDU
MARROW A M	AAB(D)	BRERETON
MARSHALL M T	AAB(D)	FOSNI OPS
MARSTON S T	AAB(D)	BRECON
MCCARTHY D P	AAB(D)	BERKELEY
MEERS A W	AAB(D)	FO PLYMOUTH OPS
MOFFATT D	AAB(D)	BERKELEY
MORRIS G J	AAB(D)	CHIDDINGFOLD
MOYSES P J	AAB(D)	SANDOWN
MURPHY A	AAB(D)	DULVERTON
MURRAY S	AAB(D)	NEPTUNE BASE OPS
MURRELL M F	AAB(D)	SUPT OF DIVING
ORRIS F	AAB(D)	POSTMOUTH ACDU
PARR N R	AAB(D)	SHERATON
PRESCOTT A M	AAB(D)	PORTSMOUTH ACDU
PRICE G M	AAB(D)	FOST
PUGH M A	AAB(D)	SEAHAWK
REID I D	AAB(D)	NEPTUNE BASE OPS
RENNEY N	AAB(D)	LEDBURY
RICKETTS B	AAB(D)	CATTISTOCK
RIGG I D	AAB(D)	NELSON GUNWHARF
SEAMAN R J	AAB(D)	BRINTON
SOUTHWARD M J W	AAB(D)	BICESTER
TAYLOR D B	AAB(D)	HUBBERSTON
TONKINSON A	AAB(D)	COTTESMORE
WALTERS J C	AAB(D)	FOSNI OPS
WHALLEY J	AAB(D)	FO PLYMOUTH OPS
WOOLSEY D M	AAB(D)	NELSON GUNWHARF
HALL G J	AB(R)	BRAZEN
PONTE L M	AB(R)	NELSON GUNWHARF
WATT A J	AB(R)	NELSON GUNWHARF

## MINESWARFARE SUB-BRANCH

NAME	RATE	LOCATION
BAINBRIDGE A S	CPO(MW)	BERKELEY
BARNETT L J	CPO(MW)	CDRE MWV SEA
BASHFORD R B	CPO(MW)	PORTSMOUTH N B
BASSETT A L	CPO(MW)	MCM1 SEA
BLICK N J	CPO(MW)	NELSON GUNWHARF
BROWN D W	CPO(MW)	IVESTON
BURTON G	CPO(MW)	RNR TAY
CLARK R T M	CPO(MW)	CDRE MINOR WAR V
COLLINS P J	CPO(MW)	CDRE MWV SEA
COWARD M W	CPO(MW)	HUBBERSTON
DEAN R	CPO(MW)	MCM4 SEA
HARMER T P	CPO(MW)	MCM2 SEA
HILTON A	CPO(MW)	FSU 03
MOORES D J	CPO(MW)	CDRE MWV SEA
SHEAF A J	CPO(MW)	WILTON
SIMMONS P	CPO(MW)	DRYAD
SMITH D M	CPO(MW)	NELSON GUNWHARF
STANDLEY R N	CPO(MW)	MOD DGUW PTLAND
WARD T	CPO(MW)	LEDBURY
BATTY F	ACPO(MW)	RNR FORTH
CLARKE V S	ACPO(MW)	NELSON GUNWHARF
EVANS P	ACPO(MW)	NELSON GUNWHARF
HORSBURGH D R	ACPO(MW)	ROSYTH FEC
HOWE C	ACPO(MW)	NELSON GUNWHARF
JONES T	ACPO(MW)	RNR SEVERN
KEGG L	ACPO(MW)	NELSON GUNWHARF
PERKINS D A	ACPO(MW)	CHIDDINGFOLD
PRESTON P N	ACPO(MW)	NELSON GUNWHARF
THOMAS G W	ACPO(MW)	CHALLENGER
WHITEHEAD P A	ACPO(MW)	NELSON GUNWHARF
JONES M	LACPO(MW)	NELSON GUNWHARF
BAMBER D W	PO(MW)	SHERATON
BRACE P M	PO(MW)	QUORN
BREBNER G	PO(MW)	LEDBURY
BULSTRODE J G	PO(MW)	BRECON
CAMPBELL P D	PO(MW)	COTTESMORE
CAWSEY P R	PO(MW)	DULVERTON
CLARKE P	PO(MW)	MIDDLETON
COOK I P	PO(MW)	HURWORTH
DARGE R T	PO(MW)	SANDOWN
DAVEY P C	PO(MW)	SANDOWN
DAVIES D J	PO(MW)	BICESTER
DEVLYN J	PO(MW)	KEDLESTON
DOWNEY S M	PO(MW)	DULVERTON
HALLISSEY S J	PO(MW)	NELSON GUNWHARF
HANNA K J	PO(MW)	BRINTON
HAWKINS D R	PO(MW)	NELSON GUNWHARF
HEMBROW G R	PO(MW)	ATHERSTONE
HOGG B V	PO(MW)	CATTISTOCK
LEATHERLAND S P	PO(MW)	RALEIGH
LONG R	PO(MW)	BRERETON
MANN B R	PO(MW)	BERKELEY
MANSELL S J R	PO(MW)	COTTESMORE
MITCHELL R S	PO(MW)	MIDDLETON
MULRAIN W A	PO(MW)	NELSON GUNWHARF
PERRY S K	PO(MW)	NELSON
PRESTON A	PO(MW)	NELSON GUNWHARF
READER P T	PO(MW)	NELSON GUNWHARF
ROBINSON B A	PO(MW)	CDRE MINOR WAR V
RUCK S P	PO(MW)	FSU 01
RUSSELL G J	PO(MW)	BROCKLESBY
SMITH N A	PO(MW)	NELSON GUNWHARF
STARBUCK A J	PO(MW)	BICESTER
STOCKLEY P M	PO(MW)	FSU 02
TURNER R G	PO(MW)	RALEIGH
WARDROPE R J	PO(MW)	CHIDDINGFOLD
WOOD P	PO(MW)	RNR MERSEY
GREENGAM A E	PO(MW)	OSPREY
ARNOLD P J	APO(MW)	BROCKLESBY
BLADON S P	APO(MW)	NELSON GUNWHARF
CLARKE M	APO(MW)	NELSON GUNWHARF
CLARKE R	APO(MW)	NELSON GUNWHARF
COYLE G G	APO(MW)	ARE HELSTON
FULLER F H	APO(MW)	LEDBURY
KIRK A J	APO(MW)	COCHRANE
PROUSE A F J	APO(MW)	BRECON

# SPECIAL SUPPLEMENT

NAME	RANK	LOCATION	NAME	RATE	LOCATION
SEYMOUR S A	APO(MW)	ROYAL ARTHUR	CHADWICK J R	ALS(MW)	ROYAL ARTHUR
SIMMONDS D M	APO(MW)	ARE PORTLAND	CHAPMAN S P	ALS(MW)	COTTESMORE
THOROUGHGOOD N G	APO(MW)	SMOPS NELSON	CLARK W M	ALS(MW)	ATHERSTONE
TRUELOVE R S	APO(MW)	CDRE MINOR WAR V	COLES A M	ALS(MW)	KELLINGTON
LETCHFORD R M	LAPO(MW)	DRAKE RELEASE	CONYERS J T	ALS(MW)	DAEDALUS AES
WALKER R M	LAPO(MW)	RNR ULSTER	CUTLER R A	ALS(MW)	IVESTON
YATES P E	LAPO(MW)	BRITANNIA	DUNNE G	ALS(MW)	PORTSMOUTH N B
ABNETT G W	LS(MW)	GIB NAVAL BASE	ENRIGHT J B	ALS(MW)	FSU 01
ALEXANDER G D	LS(MW)	ROSYTH FEC	EVANS C J	ALS(MW)	COCHRANE
BARCLAY D G	LS(MW)	SHERATON	FIELD K	ALS(MW)	BROCKLESBY
BARKER W	LS(MW)	LEDBURY	FORD M R	ALS(MW)	BERKELEY
BATCHELOR P R M	LS(MW)	RNR ULSTER	FORT M D	ALS(MW)	ARE PORTLAND
BAX R I	LS(MW)	ENDURANCE	GILLAN M A	ALS(MW)	COCHRANE
BOOTH J	LS(MW)	KEDLESTON	HATTLE P M	ALS(MW)	ROSYTH FEC
CLARK N A	LS(MW)	WILTON	HILDER M L	ALS(MW)	CATTISTOCK
COFFEY I M	LS(MW)	BRERETON	HILTON P D	ALS(MW)	NELSON GUNWHARF
COOLING P D	LS(MW)	CHALLENGER	JACK D A	ALS(MW)	COCHRANE
DANIELS S P	LS(MW)	COCHRANE	MACDONALD D A	ALS(MW)	NEPTUNE NT
DODD S M	LS(MW)	BRINTON	MCCAFFRAY D M	ALS(MW)	KEDLESTON
DUDLEY B L	LS(MW)	RSU PORTSMOUTH	MCLEOD D M	ALS(MW)	MIDDLETON
DYCHE P	LS(MW)	QUORN	MILLER R A	ALS(MW)	CATTISTOCK
DYER C I	LS(MW)	COTTESMORE	MUNRO F A	ALS(MW)	NELSON GUNWHARF
FAIRBAIRN J M	LS(MW)	CHIDDINGFOLD	PATERSON W D	ALS(MW)	NELSON GUNWHARF
GALLAUGHER G	LS(MW)	RSU PORTSMOUTH	PERRIN J	ALS(MW)	NELSON GUNWHARF
GRAY K J	LS(MW)	GANNET	POWELL R A	ALS(MW)	SOBERTON
GRIFFITHS P F	LS(MW)	MIDDLETON	RICHMOND K W	ALS(MW)	BICESTER
GRUNDY A F	LS(MW)	SANDOWN	RUSHBROOK S D	ALS(MW)	ROSYTH FEC
HAYES P A	LS(MW)	FOSNI	SCOTT T D	ALS(MW)	HURWORTH
HENNY M W C	LS(MW)	COCHRANE RELEASE	SCOTT C A	ALS(MW)	DULVERTON
HIER G J	LS(MW)	SANDOWN	SIMMONS M A	ALS(MW)	ATHERSTONE
HOLLISTER B N	LS(MW)	ATHERSTONE	SINCLAIR A C	ALS(MW)	RNR SOLENT
HUNT B P	LS(MW)	COCHRANE RELEASE	SMITH A I	ALS(MW)	NELSON GUNWHARF
LAMB D I	LS(MW)	UPTON	ST PIER R R	ALS(MW)	NURTON
LAMBERT M	LS(MW)	CHALLENGER	STOUTJESDYK A H	ALS(MW)	ARE HELSTON
LEEK W	LS(MW)	SOBERTON	SWINDELLS K	ALS(MW)	CHALLENGER
LLOYD-BROWN I	LS(MW)	COCHRANE	TAYLOR J W	ALS(MW)	FSU 03
LOGAN G J	LS(MW)	ROSYTH FEC	UNDERWOOD P M	ALS(MW)	NEPTUNE
LOVELESS P A	LS(MW)	ARE PORTLAND	WARD P J	ALS(MW)	LINDISFARNE
LUCAS R A	LS(MW)	HERALD	WILDING I	ALS(MW)	BLACKWATER
MARSHALL A W K	LS(MW)	ARE PORTLAND	WRIGHT M A	ALS(MW)	NELSON
MATTHEWS J C	LS(MW)	DEFIANCE FMB	ACKERMAN A R	AB(MW)	ATHERSTONE
MCCLOSKEY C G	LS(MW)	SANDOWN	ALLAN S J	AB(MW)	DEF EXP ORD SCHL
MILLER A R	LS(MW)	BLACKWATER	ANGELL J P	AB(MW)	RNR LONDON PTMTH
MILLS A J J	LS(MW)	COLLINGWOOD	ARMSTRONG P A	AB(MW)	FSU 02
MILLS P J	LS(MW)	UPTON	AULD K J	AB(MW)	NELSON
MOORE J	LS(MW)	RNR TYNE	BACON P A	AB(MW)	COCHRANE
MOORE W A	LS(MW)	QUORN	BAILLIE S W	AB(MW)	WILTON
NEAL S P	LS(MW)	SCU LEYDENE	BAKER M J	AB(MW)	ROYAL ARTHUR
NORRIS M T	LS(MW)	COTTESMORE	BANKS S M	AB(MW)	BROCKLESBY
NOTTAGE N J	LS(MW)	HUBBERSTON	BELL J A	AB(MW)	SANDOWN
O'ROURKE J J M	LS(MW)	ANGLESEY	BENNION P W	AB(MW)	HUBBERSTON
PORTER P T H	LS(MW)	COCHRANE	BEST C I	AB(MW)	COTTESMORE
ROBERTSON A	LS(MW)	BRECON	BEVAN L P P	AB(MW)	BRINTON
ROBINSON J V	LS(MW)	BRECON	BEVERIDGE K H	AB(MW)	HURWORTH
SEBRIGHT P A	LS(MW)	NELSON GUNWHARF	BIRKIN S	AB(MW)	BROCKLESBY
SIMMONS A	LS(MW)	NELSON W ISLAND	BLAND P I	AB(MW)	BRERETON
SMITH T P	LS(MW)	BRECON	BOLLON J A	AB(MW)	MIDDLETON
SMITH P J	LS(MW)	VICTORY	BOORMAN S A	AB(MW)	NELSON
SMITH P A	LS(MW)	HURWORTH	BOSWELL R D E	AB(MW)	HUBBERSTON
STEWART K	LS(MW)	CATTISTOCK	BOUQUET S R	AB(MW)	NELSON
STRIDE P C	LS(MW)	LEDBURY	BRIGGS T F J	AB(MW)	SULTAN
TAKEL J W	LS(MW)	CHIDDINGFOLD	BROWN G	AB(MW)	DEFIANCE FMB
TODD A	LS(MW)	BRECON	BROWN P R	AB(MW)	BROCKLESBY
VASSIE W J	LS(MW)	BROCKLESBY	BURRIDGE G A	AB(MW)	BRECON
VENTERMAN K D	LS(MW)	FSU 02	BURROWS N A	AB(MW)	SHETLAND
WALKER G S	LS(MW)	LEDBURY	BURT A P	AB(MW)	ARE PORTLAND
WARREN B	LS(MW)	BICESTER	BUTCHER S A	AB(MW)	PORTSMOUTH N B
WEBSTER S J	LS(MW)	SCU LEYDENE	CABLE C	AB(MW)	RNR FORTH
WESTBY S	LS(MW)	CATTISTOCK	CARROLL B K	AB(MW)	GUERNSEY
WILLIAMS L R P	LS(MW)	CHALLENGER	CHAPMAN R J	AB(MW)	NELSON
WILLIAMS D L	LS(MW)	DULVERTON	CHARLES G	AB(MW)	NELSON
WISHART S A	LS(MW)	FSU 01	CHELL A C	AB(MW)	IVESTON
DICKSON M J	LS(MW)	BRITANNIA	CHERRINGTON A P	AB(MW)	NELSON GUNWHARF
BATCHELOR A M	ALS(MW)	CATTISTOCK	CHILD A J	AB(MW)	KELLINGTON
BERRY R	ALS(MW)	RNR CLYDE	CHRISTIAN A N	AB(MW)	FOREST MOOR
BLINKHORN J W	ALS(MW)	MIDDLETON	CLARKSON K P	AB(MW)	COTTESMORE
BODDY S J	ALS(MW)	ROSYTH FEC	CLAYTON I J	AB(MW)	UPTON
BOWEN J	ALS(MW)	ALDERNEY	COCKRAM M W	AB(MW)	BRITANNIA
BURNETT D J	ALS(MW)	ROEBUCK	COMBE K A	AB(MW)	KIRKLISTON
BUTLER P A	ALS(MW)	BICESTER	CONEY N T	AB(MW)	NEPTUNE BASE OPS
BUXTON I R	ALS(MW)	SANDOWN	CONNELLY R M	AB(MW)	DEFIANCE FMB
CAMPBELL C	ALS(MW)	OSPREY	CGOKE A P	AB(MW)	SULTAN

# SPECIAL SUPPLEMENT

NAME	RANK	LOCATION	NAME	RANK	LOCATION
COOPER D B	AB(MW)	VICTORY	MILLAR M L	AB(MW)	RNR TYNE
CORP T G	AB(MW)	HURWORTH	MITCHELL P C	AB(MW)	SOBERTON
COWIE B	AB(MW)	KELLINGTON	MOORCROFT P	AB(MW)	FSU 03
CROSS A S	AB(MW)	UPTON	MORTON I N J	AB(MW)	COTTESMORE
DALY J	AB(MW)	COTTESMORE	MUIR G M	AB(MW)	ARE PORTLAND
DAVIS M J	AB(MW)	ATHERSTONE	MURPHY S M	AB(MW)	BRECON
DAY J B	AB(MW)	HUBBERSTON	O'DONOGHUE J M	AB(MW)	BRINTON
DEAS G A	AB(MW)	BLACKWATER	OULD S R L	AB(MW)	HUBBERSTON
DEWING N W	AB(MW)	KEDLESTON	OWEN M A	AB(MW)	BICESTER
DOWLING C S	AB(MW)	COCHRANE	PAGE N	AB(MW)	BLACKWATER
DUFFELEN G M	AB(MW)	CUXTON	PAYNE D A	AB(MW)	RSU PORTSMOUTH
DUNN J R	AB(MW)	BICESTER	PEARSON R A	AB(MW)	HUBBERSTON
DURHAM G R	AB(MW)	IVESTON	PENNY S	AB(MW)	RNR CLYDE
ELLIOTT N T	AB(MW)	NELSON	PERRY A V	AB(MW)	PORTSMOUTH N B
ELLISON J	AB(MW)	ROSYTH FEC	PHILLIPS S J	AB(MW)	COCHRANE
ESPLIN S C	AB(MW)	ROSYTH FEC	PICKEN G	AB(MW)	COCHRANE
EVANS S R	AB(MW)	CHALLENGER	POOL T	AB(MW)	KELLINGTON
FEDORUS A J	AB(MW)	LINDISFARNE	POWELL C R	AB(MW)	PORTSMOUTH N B
FINN S M	AB(MW)	BICESTER	PULLEN M W	AB(MW)	CHIDDINGFOLD
FITCH P R	AB(MW)	UPTON	RENNIE R D	AB(MW)	BRINTON
FORT P J	AB(MW)	LINDISFARNE	FOX T A	AB(MW)	SMOPS GUNWHARF
GAFFNEY M P	AB(MW)	CATTISTOCK	HORNSEY L M	AB(MW)	ROSYTH FEC
GARLAND P F	AB(MW)	COMCEN WHITEHALL	MURPHY L G	AB(MW)	NELSON GUNWHARF
GEARING I R	AB(MW)	DULVERTON	RENSHAW P G	AB(MW)	BLACKWATER
GEORGE C T S	AB(MW)	WILTON	RIDLEY D	AB(MW)	NELSON
GILES D	AB(MW)	ROSYTH FEC	ROBERTS C W	AB(MW)	HUBBERSTON
GILMORE A P	AB(MW)	BERKELEY	ROBSON M G T	AB(MW)	ROSYTH FEC
GODFREY R	AB(MW)	DULVERTON	ROMVARI C	AB(MW)	SANDOWN
GRANT M	AB(MW)	KELLINGTON	ROWDEN K N	AB(MW)	SNONI
GRAYSON G W	AB(MW)	ROYAL ARTHUR	RUTTER S J	AB(MW)	CHALLENGER
GREEN C G	AB(MW)	MIDDLETON	SAMUEL A M D	AB(MW)	CHALLENGER
GRIFFITHS D C	AB(MW)	DULVERTON	SAVAGE A J	AB(MW)	BERKELEY
GROVES A T A	AB(MW)	WILTON	SAWYER J L	AB(MW)	WILTON
GUNTER J J	AB(MW)	IVESTON	SAY J A	AB(MW)	ENDURANCE
HABBERLEY N	AB(MW)	IVESTON	SCOTT J	AB(MW)	PORTSMOUTH N B
HALL D E	AB(MW)	CHIDDINGFOLD	SCOTT G G	AB(MW)	COCHRANE RELEASE
HALPIN L C	AB(MW)	BRECON	SHAKESPEARE K	AB(MW)	KEDLESTON
HANDLEY G J	AB(MW)	TAMAR	SHAW N A	AB(MW)	BULLDOG
HARPER K M	AB(MW)	NELSON	SHAW D E	AB(MW)	NELSON
HARRISON R F	AB(MW)	SULTAN	SHIPSEY A M	AB(MW)	NELSON
HARRISON I S	AB(MW)	COCHRANE RELEASE	SILK P S	AB(MW)	CHALLENGER
HASKINS N A	AB(MW)	NELSON RELEASE	SIMPSON I J L	AB(MW)	RNR LONDON
HASLAM D P	AB(MW)	CHALLENGER	SIMPSON P	AB(MW)	COTTESMORE
HAWDON R W	AB(MW)	BRITANNIA	SKELLERN B S	AB(MW)	ROSYTH FEC
HAY J P	AB(MW)	CATTISTOCK	SLOAN C	AB(MW)	CUXTON
HAYNES R	AB(MW)	BLACKWATER	SMITH G J	AB(MW)	ATHERSTONE
HEWITT N D	AB(MW)	DULVERTON	SMITH M R	AB(MW)	CHALLENGER
HIBBERT J L	AB(MW)	CHALLENGER	STAFFORD G	AB(MW)	CATTISTOCK
HIGGINS G W	AB(MW)	RNR FORTH	STANDAGE-SIMPSON C A	AB(MW)	ATHERSTONE
HIGHAM C A	AB(MW)	COCHRANE	STEBBINGS M W	AB(MW)	ROSYTH FEC
HILL J	AB(MW)	HURWORTH	STEVENSON A P	AB(MW)	BROCKLESBY
HILL S	AB(MW)	NELSON	STONE J W	AB(MW)	BERKELEY
HODGES N H	AB(MW)	CHIDDINGFOLD	STRICKLAND A B	AB(MW)	FSU 02
HODGSON D J	AB(MW)	GUERNSEY	STUCHBERRY P	AB(MW)	COCHRANE
HUMPHRIES M	AB(MW)	BRITANNIA	SWAIN M T	AB(MW)	BICESTER
HUNT K C	AB(MW)	BRERETON	TAYLOR M A	AB(MW)	ROSYTH FEC
HUTCHINGS P	AB(MW)	CHIDDINGFOLD	TAYLOR M	AB(MW)	HERON
IGNATOVICH M S	AB(MW)	PORTSMOUTH N B	THOMAS C D	AB(MW)	PORTSMOUTH N B
INNS M R	AB(MW)	KEDLESTON	THOMPSON J E	AB(MW)	HURWORTH
JACKSON C A	AB(MW)	HUBBERSTON	THORNLEY S S	AB(MW)	KELLINGTON
JEFFERY N	AB(MW)	SULTAN	TITCHEN C D C	AB(MW)	ROYAL ARTHUR
JONES B A	AB(MW)	RNR TYNE	WALKER T A	AB(MW)	SULTAN
JONES J I	AB(MW)	BRINTON	WALTON A J	AB(MW)	SHERATON
JONES K F	AB(MW)	RSU PORTSMOUTH	WATERTON N G	AB(MW)	NELSON GUNWHARF
JONES B J	AB(MW)	COCHPANE	WEATHERLEY M	AB(MW)	ARE HELSTON
KEMP J T	AB(MW)	QUORN	WEEKS T N	AB(MW)	UPTON
KINGS S A	AB(MW)	FSU 01	WELLINGS S M	AB(MW)	BROCKLESBY
KIRBY D J	AB(MW)	SMOPS GUNWHARF	WERNER N J	AB(MW)	COMCEN WHITEHALL
KIRLEW D S	AB(MW)	SHERATON	WEST M	AB(MW)	MIDDLETON
KNIGHT G R	AB(MW)	COCHRANE	WHEELER L J	AB(MW)	OSPREY
LAMBERT C	AB(MW)	LEDBURY	WHEELER S R L	AB(MW)	HERON
LAMMIMAN D G C	AB(MW)	CHALLENGER	WILLIAMS A M	AB(MW)	KEDLESTON
LAMP S J	AB(MW)	VICTORY	WILSON T	AB(MW)	SANDOWN
LEONARD J V	AB(MW)	SOBERTON	WYATT S N	AB(MW)	COTTESMORE
LINEHAN S D	AB(MW)	COLLINGWOOD	BELL R I	AB(MW)	BRITANNIA
LONG A E	AB(MW)	BERKELEY	PHILLIPS J	AB(MW)	BRITANNIA
MACDONALD M	AB(MW)	FSU 03	ALLISTER I G	AAB(MW)	SOBERTON
MARATTY L M	AB(MW)	COCHRANE	BETHELL C P J	AAB(MW)	HURWORTH
MARRITT A J	AB(MW)	ROYAL ARTHUR	BLACKLOCK J F	AAB(MW)	BERKELEY
MARSHALL S E	AB(MW)	JERSEY	BURT J A	AAB(MW)	HERON
MARSHALL S W	AB(MW)	COMCEN WHITEHALL	CARTER I E	AAB(MW)	NELSON
MARTIN M M	AB(MW)	NELSON	COCKCROFT N	AAB(MW)	HUBBERSTON
MCCARTHY D J	AB(MW)	FSU 02	COLLYER B W	AAB(MW)	BRERETON
MCEVILLY G J	AB(MW)	NELSON RELEASE	CONDRAN A	AAB(MW)	BICESTER
MCGRATH A	AB(MW)	HURWORTH	DAVIES N P	AAB(MW)	WILTON
MCGUINNESS P L	AB(MW)	BERKELEY	DIXON K R	AAB(MW)	KELLINGTON
MCMONAGLE M	AB(MW)	ARE PORTLAND	GELDER A P	AAB(MW)	COTTESMORE

# SPECIAL SUPPLEMENT

NAME	RANK	LOCATION	NAME	RANK	LOCATION
GEORGE B C	AAB(MW)	SULTAN	JEACOCK S J	S(MW)	WILTON
HILL M R	AAB(MW)	COCHRANE	JEFFRIES P	S(MW)	KELLINGTON
HORN R M D	AAB(MW)	BERKELEY	JOHANSEN D A	S(MW)	DULVERTON
INNES A L	AAB(MW)	FSU 03	KELLAGHER J W	S(MW)	DRYAD
JOACHIM M S	AAB(MW)	BERKELEY	KINNINGS S A	S(MW)	SHERATON
JORDAN W T	AAB(MW)	NELSON	LAMB C N	S(MW)	NEW ENTRY
KIDD A K	AAB(MW)	COCHRANE	LEA K D	S(MW)	DRYAD
LELAIS	AAB(MW)	SOBERTON	LLOYD I G	S(MW)	RSU PORTSMOUTH
MALLETT M S	AAB(MW)	SHERATON	MCCATHIE K G	S(MW)	CATTISTOCK
McKEOWN J W L	AAB(MW)	NELSON	MCINTOSH N B	S(MW)	MIDDLETON
McNAMARA J P	AAB(MW)	NELSON	MCKINNA S L	S(MW)	NEW ENTRY
MILLER J	AAB(MW)	CATTISTOCK	MCLACHLAN S A	S(MW)	MIDDLETON
MILLER Y P	AAB(MW)	SOBERTON	MONAGHAM P G	S(MW)	DRYAD
MILLS K P	AAB(MW)	QUORN	NASH J M	S(MW)	QUORN
MOUNCEY J W	AAB(MW)	KELLINGTON	PAGE S G	S(MW)	BRINTON
MURRAY S H	AAB(MW)	BRECON	PATTISON S C	S(MW)	NEW ENTRY
PURKER A F	AAB(MW)	DULVERTON	PERCIVAL S C T	S(MW)	NEW ENTRY
RIPPOON C H	AAB(MW)	INVESTON	PERREN P J	S(MW)	DRYAD
STAMFORD A J	AAB(MW)	FSU 01	PHILLIPS G V	S(MW)	BRINTON
STEPHEN S C J M	AAB(MW)	LEDBURY	POPE K A	S(MW)	SHERATON
THEAKSTONE M	AAB(MW)	BRINTON	PRICE A B	S(MW)	DRYAD
WASSELL D	AAB(MW)	ATHERSTONE	RAMSDALE M W	S(MW)	NEW ENTRY
WEBSTER K J	AAB(MW)	INVESTON	RENOUF P A	S(MW)	QUORN
WHITBREAD R J	AAB(MW)	NELSON	RIVE D L	S(MW)	NEW ENTRY
WOOLEY P J	AAB(MW)	WILTON	ROBERTSON J G	S(MW)	SHERATON
ABLESON G	S(MW)	BRERETON	ROSS I J	S(MW)	BICESTER
ALDGATE M J	S(MW)	DRYAD	ROSSITTER E B	S(MW)	CENTURION
ALEXANDER D	S(MW)	HURWORTH	ROWBOTHAM G A	S(MW)	DRYAD
ALLEN J R	S(MW)	NEW ENTRY	SLOAN A M	S(MW)	NEW ENTRY
ATKINSON P J	S(MW)	KELLINGTON	SMITH M R	S(MW)	BRERETON
BAKER D A	S(MW)	KEDLESTON	TENNICK D R	S(MW)	DRYAD
BAKER S R	S(MW)	HURWORTH	THORES O	S(MW)	COTTESMORE
BAYLISS D J	S(MW)	UPTON	TWEEDIE D G	S(MW)	BROCKLESBY
BOTT D O C	S(MW)	HURWORTH	WEATHERILL M	S(MW)	UPTON
BOWMAN D S	S(MW)	BRERETON	WELLS A M	S(MW)	LEDBURY
BRADY M S	S(MW)	CHIDDINGFOLD	WELSH H P	S(MW)	NEW ENTRY
BRISTOW P M	S(MW)	SOBERTON	WHITE D	S(MW)	NELSON GUNWHARF
BRYANT R D	S(MW)	NEW ENTRY	WILTON S P	S(MW)	DRYAD
CLARKSON S P	S(MW)	DULVERTON	WOODCOCK L J	S(MW)	DRYAD
CONWAY S	S(MW)	IVESTON	WRIGHT P	S(MW)	HURWORTH
CRANN T	S(MW)	ATHERSTONE	CONNOR W S	JS(MW)	MIDDLETON
CURRAN J P	S(MW)	BROCKLESBY	DAVEY C D A	JS(MW)	DRYAD
CURRIE P J J	S(MW)	BRECON	DORGAN A R	JS(MW)	DRYAD
DAWSON J	S(MW)	WILTON	DYKE A	JS(MW)	NEW ENTRY
DAWSON A J	S(MW)	BRINTON	EDWARDS R L	JS(MW)	NEW ENTRY
DEVINE I C	S(MW)	NEW ENTRY	GRAY K J	JS(MW)	DRYAD
DOWNEY R	S(MW)	ATHERSTONE	GREEN R	JS(MW)	DRYAD
DOYLE S W	S(MW)	NEW ENTRY	HALL C J	JS(MW)	NEW ENTRY
DUGGIE M R	S(MW)	NEW ENTRY	JORDAN S A B	JS(MW)	DRYAD
EDWARDS C R	S(MW)	ROSYTH FEC	LECKEY J W	JS(MW)	DRYAD
GEE C R	S(MW)	DRYAD	PINCOTT K L	JS(MW)	NEW ENTRY
GOLDSMITH R A J	S(MW)	NEW ENTRY	SILCOX A G	JS(MW)	DRYAD
HANKIN P	S(MW)	NEW ENTRY	SWANN M R	JS(MW)	NEW ENTRY
HARDING G L	S(MW)	DRYAD	WESTON S C	JS(MW)	DRYAD
HARRISON L	S(MW)	BRERETON	WILKINSON C J	JS(MW)	DRYAD
HEARD D J	S(MW)	DRYAD	WILLIAMS P G	JS(MW)	WILTON
HULL W N	S(MW)	DEFIANCE FMB			
HUNT D H	S(MW)	COCHRANE			
ISAACS P	S(MW)	RE ENTRY			

## ROYAL NAVAL RESERVE

### MINEWARFARE SUB-BRANCH

NAME	RATE	UNIT	NAME	RATE	UNIT
ADAMS C L	PO(MW)RNR	SUSSEX	CALLAGHAN D S	CPO(MW)RNR	CALLIOPE
ALLUM F W	APO(MW)RNR	EAGLET	CHEW H R	CPO(MW)RNR	GRAHAM
BAKER E J	CPO(MW)RNR	SUSSEX	COTTRELL J	CPO(MW)RNR	PRESIDENT
BALL E J	CPO(MW)RNR	GRAHAM	CREASY D F	CPO(MW)RNR	PRESIDENT
BAXTER R C	CPO(MW)RNR	WESSEX	DAVID I J	CPO(MW)RNR	CAMBRIA
BINSTEAD G	ACPO(MW)RNR	FLYING FOX	DIGWEED J S	APO(MW)RNR	CAMBRIA
BOYD J K	CPO(MW)RNR	CAROLINE	DONALDSON J	PO(MW)RNR	CALLIOPE
BROADLEY C H	PO(MW)RNR	SUSSEX	DRYBURGH C A A C	PO(MW)RNR	CALLIOPE
BROWN I N	APO(MW)RNR	FLYING FOX	DUNN K G	PO(MW)RNR	PRESIDENT
BUNKER R R G	CPO(MW)RNR	WESSEX	DURRANT K W	PO(MW)RNR	SUSSEX
BUSH R H	CPO(MW)RNR	FLYING FOX	EDWARDS B	CPO(MW)RNR	FLYING FOX
CALDERBANK S	CPO(MW)RNR	EAGLET	ELLIS K	CPO(MW)RNR	EAGLET
			ERSKINE R B	CPO(MW)RNR	CLAVERHOUSE
			GAUTIER C	LAPO(MW)RNR	PRESIDENT
			GEE N R	PO(MW)RNR	CAMBRIA
			GIFFORD J	CPO(MW)RNR	GRAHAM
			GORE E A	APO(MW)RNR	DRAGON
			GRAY A	CPO(MW)RNR	CAMPERDOWN

# SPECIAL SUPPLEMENT

NAME	RATE	UNIT
HALES D M	APO(MW)RNR	FLYING FOX
HALES C N C	PO(MW)RNR	PRESIDENT
HAMPSON B S	PO(MW)RNR	WESSEX
HANLEY M O	CPO(MW)RNR	EAGLET
HARRIS T J	PO(MW)RNR	CAMBRIA
HENDRY A	ACPO(MW)RNR	CAMPERDOWN
HOARE A J	CPO(MW)RNR	CLAVERHOUSE
HOTINE A E	PO(MW)RNR	PRESIDENT
HOWARD F L	CPO(MW)RNR	SUSSEX
JOHNS R C	PO(MW)RNR	WESSEX
JOHNSTON P R	APO(MW)RNR	CLAVERHOUSE
JONES A A	CPO(MW)RNR	CAROLINE
JORDAN D	APO(MW)RNR	WESSEX
KEMP M L	CPO(MW)RNR	WESSEX
KNIGHTON M E	CPO(MW)RNR	CALLIOPE-
LEIGH T P F	PO(MW)RNR	FLYING FOX
LIVINGSTONE S G	APO(MW)RNR	CLAVERHOUSE
LLEWELLYN D G	APO(MW)RNR	CALLIOPE
LOADER D T	PO(MW)RNR	PRESIDENT
MACDONALD E	ACPO(ME)RNR	GRAHAM
MARTIN A J	APO(MW)RNR	CALLIOPE
MARTIN S W	LAPO(MW)RNR	CAROLINE
MARTYN R A	ACPO(MW)RNR	EAGLET
MCCONKEY W A	CPO(MW)RNR	CAROLINE
MCGILL M A	CPO(MW)RNR	CAMPERDOWN
MCINTOSH T	PO(MW)RNR	CALLIOPE
MCIVER J	ACPO(MW)RNR	CLAVERHOUSE
MCVEIGH S G	LAPO(MW)RNR	CAROLINE
MELLOR T R	PO(MW)RNR	EAGLET
MITCHELL R D	CPO(MW)RNR	CLAVERHOUSE
MUIR P	APO(MW)RNR	CAROLINE
MULDOW I	CPO(MW)RNR	GRAHAM
O'TOOLE B J	CPO(MW)RNR	PRESIDENT
PHILLIPS W	CPO(MW)RNR	FLYING FOX
POOLE G H	CPO(MW)RNR	FORWARD
POOLE J W	CPO(MW)RNR	CAMBRIA
PREECE M C	PO(MW)RNR	CAMBRIA
RAWLINS K A A	PO(MW)RNR	WESSEX
RICHARDS D J	PO(MW)RNR	CAMBRIA
RIMMER C	PO(MW)RNR	EAGLET
ROSS A	CPO(MW)RNR	CLAVERHOUSE
ROUTLEY R J C	CPO(MW)RNR	CAMBRIA
RUTHERFORD K	PO(MW)RNR	CALLIOPE
SLADE L R J	LAPO(MW)RNR	GRAHAM
SMART G M	CPO(MW)RNR	FLYING FOX
SMITH T	PO(MW)RNR	VIVID
SMITH D S G	ACPO(MW)RNR	ESSEX
SNOW R J	PO(MW)RNR	SUSSEX
ST JEAN M G G	PO(MW)RNR	SUSSEX
STANDRING E N	APO(MW)RNR	EAGLET
STEELE J	PO(MW)RNR	WESSEX
STENT P R	CPO(MW)RNR	PRESIDENT
STONE K J	PO(MW)RNR	EAGLET
STRACHAN R F	CPO(MW)RNR	CAMPERDOWN
STRAIN T R	CPO(MW)RNR	GRAHAM
SUMNER R G	PO(MW)RNR	FLYING FOX
SYMES P F	ACPO(MW)RNR	EAGLET
TONGE A	PO(MW)RNR	CALLIOPE
TORODE B R	CPO(MW)RNR	SUSSEX
TOSH W S	ACPO(MW)RNR	CLAVERHOUSE
TUBMAN V J	CPO(MW)RNR	CALLIOPE
UNDERWOOD J A	APO(MW)RNR	PRESIDENT
WALDRON K J	APO(MW)RNR	CLAVERHOUSE
WALKER P R	CPO(MW)RNR	SHERWOOD
WALLACE R B	CPO(MW)RNR	PRESIDENT
WALTER J	PO(MW)RNR	CLAVERHOUSE
WAUGH G A	PO(MW)RNR	CALLIOPE
WEBB G J	CPO(MW)RNR	FORWARD
WEST B K	CPO(MW)RNR	DRAGON
WHITE J B N	CPO(MW)RNR	CALLIOPE
WRIGHT P J	CPO(MW)RNR	WESSEX

## PORT DIVERS AND DIVERS SUB-BRANCH

NAME	RATE	UNIT
ANDREWS M D	PO(PD)RNR	FLYING FOX
BAKER R A P	PO(D)RNR	CINCNAVHOME
BALSDON R A	CPO(D)RNR	CINCNAVHOME
BROWN A	CPO(D)RNR	CINCNAVHOME
COOPER G B	CPO(PD)RNR	CAMPERDOWN
COWAN J	PO(PD)RNR	EAGLET
CRITTENDEN W F	CPO(PD)RNR	SUSSEX
DAVIES F	CPO(PD)RNR	EAGLET
DENMEAD A R	CPO(PD)RNR	FLYING FOX
HACKING J D	PO(PD)RNR	FLYING FOX
HARDMAN J W	CPO(PD)RNR	WESSEX
HEALD S T	PO(D)RNR	CAROLINE
JAGGER D B	CPO(PD)RNR	GRAHAM
LINCOLN P L	PO(D)RNR	CINCNAVHOME
MCINNES A	CPO(PD)RNR	DALRIADA
MCNEILL P D G	CPO(PD)RNR	FLYING FOX
ONDA M	APO(PD)RNR	FLYING FOX
PARRY D R J	APO(PD)RNR	WESSEX
PETERS C A R	CPO(D)RNR	CINCNAVHOME
RAVILIOUS E M	PO(PD)RNR	SUSSEX
SCARGILL K	CPO(D)RNR	CINCNAVHOME
SELFRIDGE T	PO(D)RNR	GRAHAM
SHEIL R	APO(PD)RNR	EAGLET
SIDWELL D L	CPO(PD)RNR	FLYING FOX
TAYLOR W R	CPO(PD)RNR	CLAVERHOUSE
THOMAS C C	CPO(PD)RNR	WESSEX
WEBB M J	LAPO(PD)RNR	CALLIOPE
WEBSTER R M	ACPO(PD)RNR	CALLIOPE
WRAGG D	LAPO(PD)RNR	WESSEX
YOUNG A	PO(PD)RNR	CLAVERHOUSE

### BY THE MANAGING EDITOR

The preceding 7 pages list all the known Officers, Warrant Officers, Senior and Junior Ratings of the Minewarfare and Diving Community of the Royal Navy and Royal Naval Reserve.

The lists were compiled as at 1 Dec 89 and are believed correct at the time of going to press. Any errors or omissions should be communicated to the respective Appointer or Drafting Officer, info the Editor of this magazine.

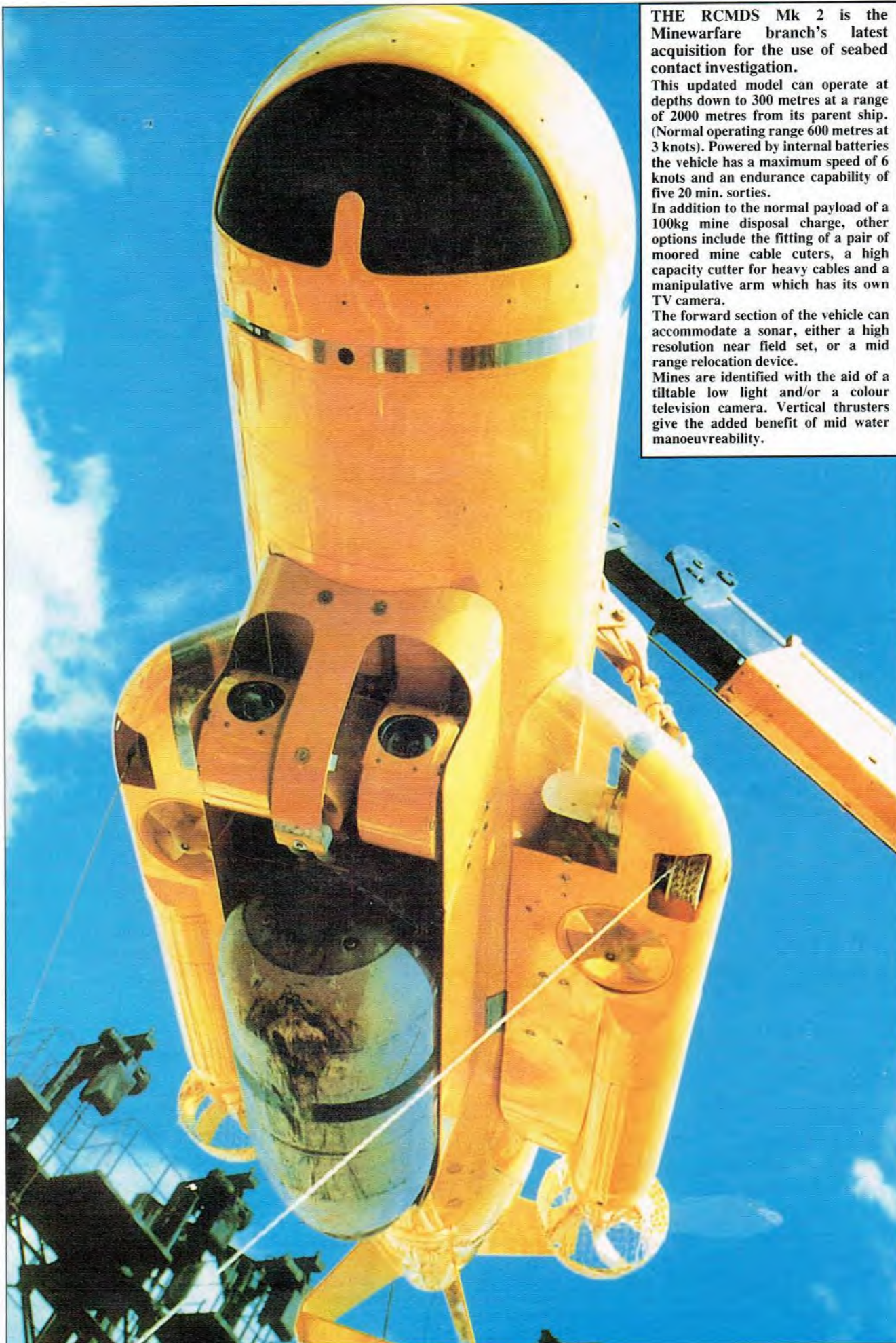
In these days of increased hazards to personal security it is imperative that this supplement is correctly safeguarded. It is intended to repeat the publication of these listings on an annual basis.

The supplement in the next edition will include an update on publications status and relevant DCI's/FTM's.

Comments as to the usefulness of this Supplement would be appreciated, using the proforma on page 28 of the magazine as required.

**D.J. CAREY**  
Managing Editor





**THE RCMDS Mk 2 is the Minewarfare branch's latest acquisition for the use of seabed contact investigation.**

This updated model can operate at depths down to 300 metres at a range of 2000 metres from its parent ship. (Normal operating range 600 metres at 3 knots). Powered by internal batteries the vehicle has a maximum speed of 6 knots and an endurance capability of five 20 min. sorties.

In addition to the normal payload of a 100kg mine disposal charge, other options include the fitting of a pair of moored mine cable cutters, a high capacity cutter for heavy cables and a manipulative arm which has its own TV camera.

The forward section of the vehicle can accommodate a sonar, either a high resolution near field set, or a mid range relocation device.

Mines are identified with the aid of a tiltable low light and/or a colour television camera. Vertical thrusters give the added benefit of mid water manoeuvrability.

## “Sovietsky” Update



This is the first picture of the latest Soviet ocean-going minehunter, known as the *Gorya* class. Photographed in the Baltic last August, this ship was built in a Leningrad shipyard between 1986-87. It went through long yard trials which resulted in small changes to the superstructure and electronics equipment.

With a standard displacement of 800 tonnes (full-load displacement 950 tonnes), this is the largest Soviet minehunter ever built. Length is 65.0 m; width 10.5m.

The minehunter has one 76 mm gun on the fo’c’s’le, one 30 mm gatling gun on the aft deckhouse and a single ‘Bass Tilt’ on the bridge. It is equipped with diesel engines. Note the hydraulic gantries aft. (B.C.C.)

## Historical Section

# HMS ARCTURUS J283 1943-1978

By Jack Williams

### Building Details:

ARCTURUS was one of 14 of the Class ordered by the United States Navy from Canadian shipbuilders to supplement their minesweeping requirements. Officially she was listed as USS ARCTURUS (AM 326), AM being the designation for American Minesweeper. Laid down on 21st February 1942 at Toronto Shipbuilding Company Limited, she was launched six months later on 31st August 1942.

Completed at St. John, New Brunswick, Canada on the 23rd October 1943, some 20 months after being laid down, ARCTURUS was transferred to the Royal Navy under the terms of the Lease Lend Treaty.

### History

After completion ARCTURUS left Canada to arrive in the United Kingdom early in 1943, proceeding to Tobermory in the Isle of Mull, Scotland, to "work-up" for escort and anti-submarine duties. This satisfactorily completed, she joined her sister ships ARIES and ANTARES, both also built in Canada, as part escort of the small convoy KX15 bound for Gibraltar. Leaving the convoy at Gibraltar the three Algerines made for Malta, arriving there in March to join the remainder of the 19th Minesweeping Flotilla RINALDO (MS19 Cdr. Corbet Singleton DSC\*\* RN), ROSARIO BRAVE, WATERWITCH and SPANKER.

For the next few months ARCTURUS was engaged with the 19th in clearance sweeping of the many minefields surrounding Malta. Late in May the flotilla moved to Maddalena, an island off the North of Sardinia, to carry out sweeping in the Straits of Bonifacio.

### Elba Invasion

On 16th June ARCTURUS along with the 19th MSF, four Greek YMS (Yard Minesweepers . . . wooden craft for inshore sweeping), and a number of minesweeping whalers and minesweeping motor launches of the 31st M/S M/L Flotilla, set forth to be the spearhead of the invasion force to capture the island of Elba. The landings were timed for early in the morning of the 17th June, and the 19th MSF and auxiliary sweepers began their sweep of the 18 mile channel shortly before dusk on the evening of the 16th. The start of the sweep was from a point south of Pinosa Island and extended to Campo Bay in Elba. Because the invasion would be taking place in the dark, the channel was lit every one-and-a-half miles by dan buoys. In all 42 mines were cut and great credit was due to all the ships taking part for what was a very difficult and dangerous operation.

As a result of the success achieved by the minesweeping force, the only losses accountable to mines were one LCF sunk and one LCG damaged.

From Elba the 19th went to the west coast of Italy which had been captured by

Allied Forces a few days before. The flotilla carried out more minesweeping in the area, although on some days this was not possible because of gales and rough seas. During this period and the following few weeks ARCTURUS was able to slip away for a few days to the delights of Maddalena for necessary stores.

### Operation Dragoon

August found the flotilla assembling at Castellamare, but without ARIES and WATERWITCH, for rehearsal sweeping prior to the forthcoming invasion of Southern France, Operation "Dragoon", planned for 15th August. On the evening of the 12th August the flotilla sailed from Salerno to Corsica, there to pick up the convoy of LCIs, landing craft containing the first wave of assault troops bound for San Tropez. On the afternoon of the 14th the advance part of the invasion fleet led by the 19th MSF left Corsica and made for France, ARCTURUS and her sisters began sweeping off the beaches as dawn broke and continued until well into the forenoon when the battleships and cruisers of the bombarding force arrived. The next two weeks were very busy for the minesweepers although the 19th did not raise any mines in their area. Finally the flotilla left the South of France at the beginning of September, returning to Malta for a well earned rest and refit.

### Adriatic Operations

At the end of September the flotilla left Malta for Ancona, on the opposite coast of Italy. The purpose was to clear a minefield which stretched across the width of the Adriatic, roughly on a line drawn between Ancona and Split in Yugoslavia, and which was required to be cleared before work could begin clearing channels to the major ports of Venice and Trieste to the north. So the 19th flotilla began its long and laborious, and at times difficult, task of helping to clear the Adriatic, a task it would not leave for twelve months. During the Ancona/Split sweep, several hundred mines were swept, in one sweep alone WATERWITCH was credited with the record sweep of the war when she cut 49 mines in 17 minutes. Early in 1945 the flotilla began a further sweep northwards towards the Gulf of Venice. For this work the 19th was joined by the 5th flotilla. The operation began on 29th April and by 9th May a channel had been opened to Trieste. The work of the sweepers was not helped by the large number of anti-sweeping devices scattered by the Germans, and in particular the presence of "Oboe" mines was a constant hazard to the ships and men. These were mines which, when cut, exploded after a short time on the surface, usually just as the following ship came close by, resulting in internal damage to the ship and injury to any personnel exposed on the upper deck.

### Mine Damage

On 4th June the flotilla was engaged in routine wire sweeping and had already cut four German mines and one Italian anti-submarine mine as well as detonating a ground mine, when ARIES, acting as Senior Officer in the absence of RINALDO (MS19) decided to restrict the area of sweep for the day. At this point ARCTURUS was damaged internally by a near miss from a mine which exploded about 40 feet from her stern. Although there was no visible structural damage the engineroom was starting to take in water and she was unable to steam. She was taken in tow to Ancona for repairs. By curious coincidence both her sister Canadians ARIES and ANTARES also suffered damage in this operation, the only ships of the 19th to do so. Fortunately for ARCTURUS the damage was slight and she was able to resume work with the flotilla within a short time. Not so ARIES and ANTARES. Eventually, the flotilla left Trieste almost exactly 12 months since beginning its long sweep in the Adriatic, during which time it had accounted for at least 600 mines.

### Dispersal

After a short period in Malta, the 19th was allocated to yet more mine clearance, this time of Greece, spending time sweeping off Crete, Athens, Kithera and Piraeus. May 1946 found the flotilla assembling in Malta for the last time. Two-and-a-half years after the first of the 19th entered Grand Harbour, and some 1700 mines later the flotilla was ready for home. ARCTURUS had only swept 96 of the massive total credited to the flotilla and this looks poor in comparison with SPANKER's 379 or BRAVE's 318, but the positioning of the ships determines how many mines are swept and it was merely the luck of the draw which put ARCTURUS at the bottom of the table. ARCTURUS, like every member of the 19th MSF, can be justifiably proud of the work she undertook.

On 26th May 1946, RINALDO led out those of the flotilla destined for the United Kingdom, ROSARIO, BRAVE, ARCTURUS, WATERWITCH, SPANKER and FANCY, past Fort St. Elmo and Grand Harbour for the last time. On 6th June the flotilla entered the English Channel and began to disperse, ARCTURUS with ROSARIO to the home port of Devonport.

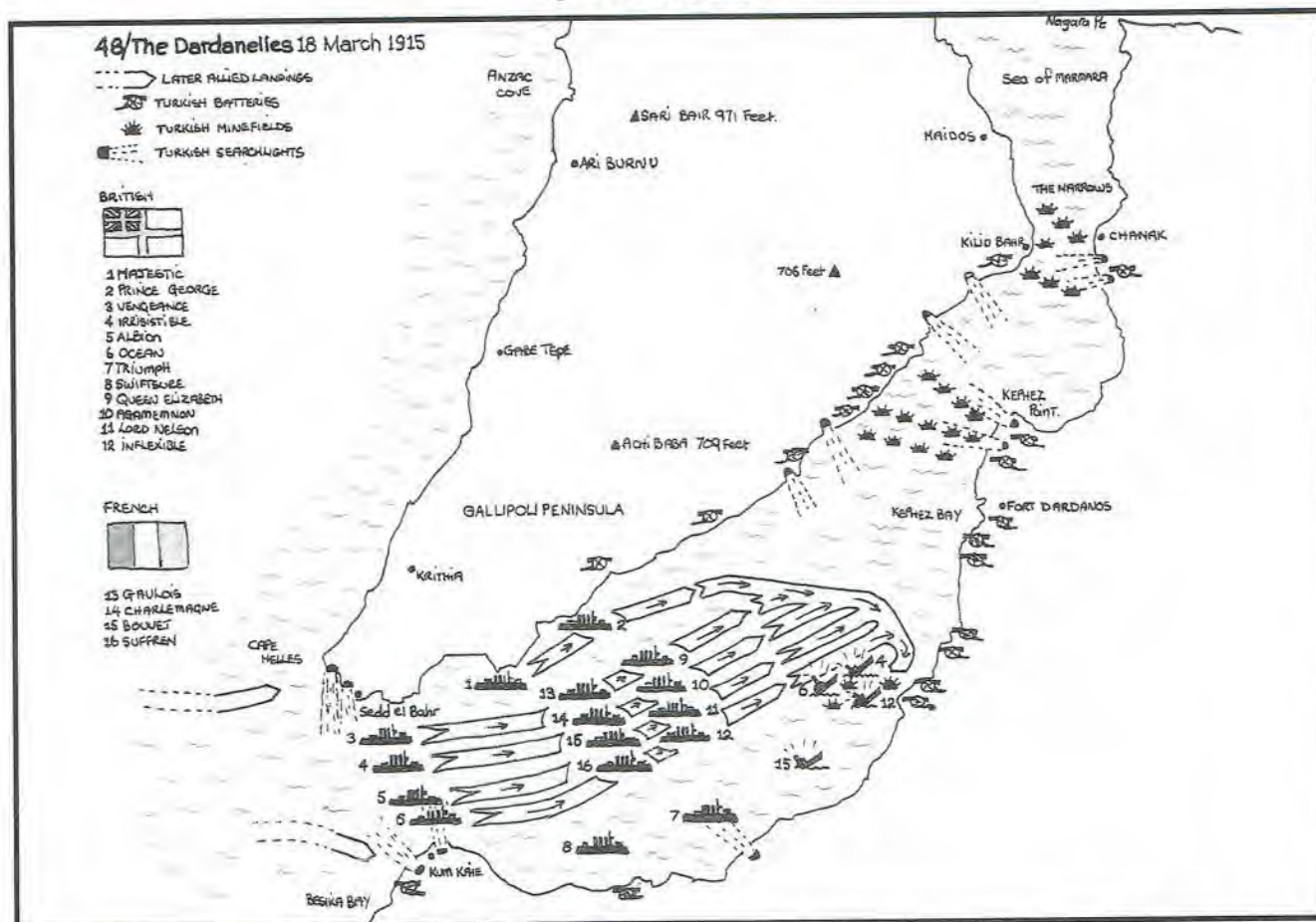
ARCTURUS was decommissioned and allocated to Category B Reserve at Devonport. In the December she was returned to the United States Navy along with her sister ship ARIES.

In 1947 ARCTURUS was transferred by the Executive Committee of Surplus Allied Material to Greece, no longer being required for the defence of the USA. On 9th October 1947 the Greek flag was hoisted and the ARCTURUS was renamed "PIRPOLITIS".

# Historical Section

## The Dardanelles, 1915

By David Jordan



● Taken from "Atlas of Maritime History" copied by CPO (MW) KEGG.

Recent events in the Gulf of Iran have demonstrated yet again how the course of history can be changed when a non-maritime nation uses even the simplest of mines. A prime example of this was the Turkish use of minefields in the Dardanelles in 1915.

The vast opposing armies of Germany, Britain and France had settled into a bloody war of attrition on the Western Front. Churchill, then First Lord of the Admiralty, was determined to break the deadlock by using the Allies' maritime supremacy to force the Dardanelles, a narrow sea channel linking the Mediterranean and the Sea of Marmara. This would create a new theatre of war as a diversion, knocking Turkey out of the war and relieving the Russians, who were already on the brink of defeat.

It was decided to use the Mediterranean Fleet to force the Dardanelles on the assumptions that the Dreadnoughts' 15 inch guns would destroy the Turkish fortifications and the Army could then occupy the peninsula. Both assumptions were proved incorrect because no one had considered how

easily the narrow channel could be mined.

Turkey had very limited stocks of independent and controlled mines, all of which had been bought abroad. There had been no attempt to manufacture mine stocks locally. It may be that as few as twenty mines were actually laid. Nevertheless, after an ineffective bombardment, the French Admiral de Robeck who commanded the fleet took fourteen battleships into the straits on 18 March and those few mines immediately wrought havoc.

The battlecruisers, INFLEXIBLE and IRRESISTIBLE were mined at 1611 and 1615; the battleship OCEAN was mined at 1805; the French battleship BOUVET had been hit by a Howitzer shell at 1354. With four big ships lost in four hours de Robeck decided to withdraw.

His successor, Sir Rosslyn Wemyss said, "The battleships could not force the straits until the minefields had been cleared — the minefields could not be cleared until the concealed guns which defended them were destroyed — they could not be destroyed until the peninsula was in our hands, hence we should have to seize it with the Army."

By 25 April, when the Anzacs were landed, the coast had been so well fortified that it was impregnable. By the time this action was discontinued the British had lost 205,000 troops, the French 47,000 and a further 80,000 tons of allied shipping had been lost. But apart from this human toll, the consequences of those Turkish minefields were both catastrophic and long lasting.

Bulgaria entered the war on the Germans' side and invaded Serbia; Turkey moved onto the offensive, overran Palestine and threatened the Suez Canal; Churchill resigned and a coalition government was formed which introduced conscription. By 1916 Britain and France were locked in total war with Germany on the Western Front, and Russia's continued poor performance in the war led inexorably to the revolution of 1917 with all that has since entailed.

**References:**  
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 Mines, Minelayers and Minelaying.  
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# Letters to the Editor

Dear Editor,

In May 89 ATHERSTONE's reasonably happy running was sent into turmoil by two AB(MW)s being relieved by two LS(MW)s and the replacement of the Navs yeo (AB(R) and the gunners yeo (AB(M) by AB(MW)s.

Prior to the leading hands joining the ship, much discussion had taken place concerning their employment. However, on their arrival, the initial problem was fitting them into the duty watch. After much deliberation it was decided for them to take over the duties of the ABs they had relieved. The reason being not to place an extra burden on the rest of the duty watch.

Letters had previously been received onboard giving suggested employment for the leading hands, jobs like ORS asst. and NBCDI yeo were mentioned. As for the job of ORS asst. most Hunt class ORS's will agree that there would be very little employment for them if any, without under employing the ORS. As to the NBCDI's yeo this job is already being carried out by the leading diver, take that away from him and it would increase the time he spends on his pit from 80% to 90% of the day, the other 10% being used for eating and carrying out other bodily functions.

We eventually employed the leading hands in the following way: one as the sweepstoreman, one as the buffer and the other two as QM's. The other problem we came across was a shortage of hands, although we still have 7 AB(MW) onboard, 2 of these were allocated to the gunners yeo and navs yeo, which is proving highly successful, and they are both carrying out good jobs.

Confusion started to set in with so many chiefs and not enough Indians, as one leading hand would tell the ABs one thing, and another something different.

After a couple of months with the extra leading hands doing normal duty watches and day time QMs, a reorganisation of the watch bill was ordered with the outcome as follows: 3 LS(MW) and LS(D) carrying out daytime QM with only the buffer being available at all times. All leading seamen plus the LRO carry out duty Ops senior rate, with the Bosun and the ORS carrying out second officer of the day duties.

As the result of the implementation of the new duty watch system, when away from naval ports and the ROs have to drop out of the duty watch Ops Senior Rate has to keep the morning watch on the gangway. Consequently there is no I/C of the fire party during this period, and not enough personnel available to carry out attack/attack BA so the fire party cover is degraded.

A suggested solution to this problem would be to place the ship's company into a one in three watch bill system, but this is felt unacceptable as the rest of the fleet are one in four and this would have a detrimental effect on morale.

To conclude, the feeling of us both is, whilst the ship carries this many LS(MW) there is a DEFINITE lack of job satisfaction which may affect the amount of ABs wishing to advance to LS in the future.

However, we have been able to make the changes work and with the extra leading hands an improvement of gangway supervision has been made, but surely this situation is far from the best solution to encourage the leading hands to progress to Petty Officer.

If the extra leading hands are to become a permanent arrangement, a better employment scheme could be to move 2 LS(MW) into the billets of Gunners yeo and Navs yeo which would release 2 AB(MW)s back to the buffer.

Personally we think that to change a ship's complement is not just a matter of taking and adding personnel, as the management structure on a small ship is finely balanced. More thought must be given, before schemes of complements are changed, and rigid guide lines must be given, not just have employment suggested.

Taff leaves ATHERSTONE in the very near future to attend the school of knowledge, trigger remains onboard (sob, sob) until the summer of 90.

**Trigger Rogers**  
**Taff Hembrow**

*Editor's Note:*

*The shortcomings of this trial have been recognised by DGNMP and on completion of current Sea drafts the additional LS(MW) will be relieved by complemented AB (MW).*

Dear Editor

## THE RNR PORT DIVING BRANCH – AND END TO THE MYTHS AND OLD DIVER'S TALES

I have been in the job of RNR port diving branch staff chief diver for about six months now, and felt that it was about time to dispel a few of the myths and rumours of this relatively new branch of the RNR. Also I hope to be able to inform on the ways to join for any of you who are leaving the service soon.

Firstly I would like to say that until I took this job over from Mr Thomas (ex Navy, now RNR!) I did not have a clue what the port diver was, I had this vague idea of a civvy trying to act like a CD on a weekend jolly. In fact nothing could be further from the truth. The port divers are very aware of the differences between a diver and a port diver and have no desire to pretend that they are anything other than what they are, and this is a group of well trained professionals who are proud of what they do and why they do it.

OK then, so what is it that they do? Well all their divers have to pass an aptitude, which is where I come in, it's the same one taken by any prospective ship's diver and no less rigorous. If they pass that, then over the course of many training weekends and on my decision, they attend the last two weeks of a ship's diver course. Before arrival they will have done the same sort of things that the SDRs do on their first two weeks, only it will have taken them months. Quite simply if they don't show regular attendance or the ability required then they don't make it to course. Also the only time a trainee can dive is when myself or the boss is in attendance.

On successful completion of their course they are seamen Port divers, they then have to complete task books and training courses, such as tools, seabed searches, Ordinance recognition, before they can advance up to AB leading port diver and like our own advancement it also requires time in each rate and of course minutes underwater. Once reaching the dizzy heights of PO they have to attend supervisor's courses etc. So that's their training outlined, what's their purpose?

Well its not to steal our bread and butter as quite a few of you think. Their role as the name suggests is to keep ports around the country open in time of conflict or unrest. In peace time they train for this by doing various exercises as well as in-house training. They are required to carry out seabed and ordnance recognition. In times of unrest this will leave the Royal Navy diving teams clear of doing these repetitive but essential time consuming tasks. In conclusion to this part, Port divers do not use anything but air sets, they can do more than a ship's diver but will not be taking any of your bomb jobs away from you (they can only confirm or deny a suspect piece of ordnance, they cannot do any form of disposal) or rob any of your other commitments. They are however only too willing to assist teams who come to their areas in any way they can, so contact them – I am sure you will be pleasantly surprised.

If you are getting ready to go outside but don't want to lose contact with diving or our dry humour why not give the RNR a try. There are two ways of becoming an RNR diver. Firstly, if you want to remain at the rate you are, and have no desire for future advancement and the extra money that entails, then you can join as a list 5 rating or officer which means you are run from our office, you don't have to belong to a particular unit and your annual commitment is less than for a list 3. You would still be a Diver as opposed to a port diver. However your annual bonus and pay is also less than a list 3 and you would be ineligible for any advancement. If you elected to join as a list 3 you would become a port diver in the rate you left the RN and run from one of the 9 units around the country, which are in the following towns: Dundee, Edinburgh, Glasgow, Newcastle, Liverpool, Bristol, London, Southampton, and Brighton. Your annual commitment as a list 3 is 14 days continuous training plus 50 attendances (roughly 1 weekend a month and the odd drill night). Your 14 days can be taken on a training course or on one of our divexes in Gib or Hong Kong or other exotic locales (The Kyles). If you are interested why not give us a call on Port Dkyd ext 23821 or call in at any RNR unit and talk to the recruiters.

I hope this has been a little enlightening for you, and that even if you have no wish to join the RNR you can perhaps be a little more tolerant towards any of the teams you may come across in the future.

**Stan Stanley**  
**CPO (PD)**

# More letters

## Dear Editor

I am writing regarding the two previous ships named ARCTURUS. I wasn't around when the first was in service, but was for the second. I have prepared an article about the second ARCTURUS which I hope you find of some interest.

My interest stems from my service (43-45) in SPANKER which was part of the 19th MSF with ARCTURUS and I remember quite clearly (or so I like to think) seeing the three Canadians joining us in Malta. As I recall they were painted white with no camouflage which was quite a change to the rest of the flotilla.

For two years I researched the history of the Algerine Class, which has never had the credit due to it for the work it performed during and after the war. I am in touch with some 820 ex-Algerine men, including Commanding Officers, who have provided a wealth of material and many personal stories. I expect you will have heard from a number of those who served in ARCTURUS or other Algerine Class ships and if so perhaps you would ask them to write to me.

**J. F. Williams**

**395 Lytham Rd,**

**Blackpool,**

**FY4 1EB**

**Tel. No. (0253) 44157**

● *Jack Williams's article on HMS ARCTURUS – p.17.*

## Dear Editor

### FAREWELL TO A CHALLENGE

I recently had the rather sad experience of witnessing the demise of yet another good run. One that could possibly be matched with other mind boggling experiences such as "Singers" "Honky Konky" and "Momers" just to name a few. To be absolutely honest though I must confess that this particular venue is still in being, but has been altered somewhat in order to facilitate those other travellers who are not of a mariner's disposition (civilians).

It appears that these "other" travellers have a preference for food and are not impressed by the pleasures of a fast free drink. Therefore in an effort to accommodate this (I am sure) minority good drinking time has been conceded to the dubious benefit of consuming "fodder". There is many an old south-north-south travelling mariner who will be turning in his hammock.

I refer of course to the introduction of a meal on the new "super duper" British Airways shuttle. There is no denying that the fare is very good, as far as fare goes but it falls a long way short of the sheer ecstasy of downing three "fast gins" in an hour. Who ever heard of anyone deriving pleasure from consuming three "fast pre-packed" meals?

In addition the sense of competition has been lost forever. No more will there be heard the cry of "lets see how many times we can get that stewardess with the long legs and the moustache to serve us". Never again will be heard from the somewhat effeminate male steward, with the short legs and no moustache, "you will have to wait until I have been round everyone before I can give you another one ducky". (There's no answer to that.)

Until quite recently, I am reliably informed that the record number of "freebies" obtained on any single flight was that achieved by the long gone "Ollie Holsworth" who is reputed to have had a visit from the same stewardess on no fewer than eight occasions. Rumour has it that this record was recently broken by a "smooth talking individual who only had one visit but was given a full pack (no names, no pack drill).

The distinction of "run the stewardess off her feet" is of course not restricted to ratings. The occasional officer (dare I say it) has been seen to indulge in the senior service sport of the "gin run"; I was witness recently to just such an event — however loyalty prevents me from naming those officers of the advanced minewarfare course "wot dunnit".

I have it from a very reliable source (a killick stoker in the NAAFI queue) that introduction of this meal is a ploy to cut costs. He tells me that it is cheaper to supply all those passengers with a meal, (and less of a strain on the stewardesses), than it is to give those matelots free booze.

Regardless of the past few paragraphs it is true to say that there is of course the opportunity to get at least one drink at the end of this enforced meal, and if you gulp your food down and persist in your efforts it may be possible to squeeze in even a second gin before the "fasten seat belt light" illuminates.

Hold everything! Could this be the start of another challenge? Air hostesses! A free meal! And free drinks?? Sounds like a good grippo to me!

**WO(MW) George Turnbull**

## Dear Editor

### LIFE OF A TRAVELLING RN EXCHANGE OFFICER

For those in the branch who have been fortunate enough to serve at the Defence and Civil Institute of Environmental Medicine (DCIEM) in Toronto, Canada, this article will hopefully bring back memories of a good time, spent in a wholly different environment than that which we in the Diving Branch normally experience. Let me explain the set up within the DCIEM organisation there lives the Canadian Experimental Diving Unit, manned by Canadian Clearance Divers and civilian technical personnel.

The unit boasts the second largest military Dive Research Facility in the world and the chamber can be pressurised to nearby 1800 metres, deeper than any other facility in the world.

I served there as an RN Exchange Officer, in the billet of Diving Project Officer 1, for two years and was very fortunate to be responsible for arguably the best two projects running there, namely, Canadian Clearance Diving Apparatus (CCDA) and Canadian Underwater Mine Countermeasures Apparatus (CUMA).

The Canadian Diving Branch has until recently been using our old CDBA, a set which has served them well over the years. There was obviously a need to step into the twentieth century, so they contracted a civilian firm to develop a modern 54M set (CCDA) and a 80M set (CUMA). This has now been achieved in the case of CCDA and the CUMA is coming along very nicely.

In support of these two projects, myself and a project diver from EDU had to travel (shame) to both east and west Canada (FDU(A) and FDU(P)), to Indian Head Washington, over to the UK to teach the Sat team to use the CCDA and several other more local dive locations in order to carry out field trials. Consequently I was fortunate to be able to both dive extensively to 54M and supervise countless operational dives, carrying out a whole host of Clearance Diving scenarios (I reckon I've earned my right to CAT pay). The Canadian Clearance Divers are a very professional bunch, brought up on RN BR 2806 diving rules and regs and are a great crowd to work with.

On the fun side, living in a city like Toronto is a great experience and having one or two acres of prime Canadian wilderness on your doorstep allows for plenty of all year round activities.

This is but a brief look at what working for the Canadian Experimental Diving Unit entails and for any MCD Officer looking for an Exchange job I highly recommend this one. The diving experience, both experimental and practical, is highly beneficial to one's career (I think so anyway) and I only wish we had the manpower available to set up an exchange at the Senior Rate level because there's a lot to be gained from such jobs.

On a final note — in 1989 the Canadian Diving Branch started using CCDA operationally and yet we still have dear old DSSCCD. If you want to dive modern, safe, reliable equipment then join me in getting the RN to look no further than our Colonial cousins for an ideal replacement that will last us well into the next century.

**Steve Marshall**

**Lieutenant Royal Navy**

### TON CLASS ASSOCIATION

The Ton Class Association was formed less than four years ago and membership has just topped 360. It serves the interests of those who wish to keep alive the spirit of this workhorse of the Fleet for the past 35 years and preserve fond memories.

For £5 per year, you can join and receive the bi-monthly illustrated newsletter "TON TALK" which contains articles on the TONS, their commissions and personal reminiscences as well as news of regional get-togethers and general topics of a Minewarfare nature including the activities of modern MCMVs. There is also a stimulating letters feature, updated membership list and reviews of new books, videos, etc.

The membership includes Admirals, previous CMCMs, stokers, communicators, divers and so on from all over the world as well as those serving in the TONS still at sea. If you can spare a fiver and would like to join, send your name and details/dates of previous connections with TONS together with a cheque for £5 to the Secretary of the TCA as follows:

**Mr Jack Worth**

**Amethyst**

**Lerryn**

**Lostwithiel**

**Cornwall**

**PL22 0QF**

**Tel No.: (0208) 872452.**

# Minewarfare Training

## LMCDO MINEWARFARE PHASE

by Paul Raisbeck

At the time of writing, the LMCDO 89A course have just left us and we are preparing for the arrival of the 89B course in early December. Life is one big whirl of excitement here in Gunwharf!

The number of people surviving long enough to get to the Minewarfare module of the course has been very low lately due to the high failure rate in the diving phase of the course. The numbers are not being bolstered up by the MWO's either. On the last course there was only one MWO

but we expect twice as many on the next course - think positive! This low throughput is having an effect on the people in the ships but we can't teach people unless they volunteer for the course in the first place. The old PWO recruiting adage of "get them young" applies equally to budding MCD's and MWO's. Next time you write the OUT's E.190 plant the seed by telling him he's got what's needed to make a good MWO!

There has also been a staff change in the LMCDO training, we have now said goodbye to Lt Cdr Steve Wild and CPO Charlie Howe, and they have been replaced by Lt Paul Raisbeck and CPO Dave Smith. Apart from being the instructional team for the LMCDO's during the minewarfare phase they are the people to call regarding "all things HUNT" and also for CTT bookings of the ARCTURUS Trainer.

The trainer is presently out of action whilst it is updated to MOD 6 but will be back on line early in 1990. Trainer time is tight but the pressure should be relieved during 1990 as the CAAIS CBT setup comes into operation. If you want to discuss CTT call Lt Raisbeck on Portsmouth Dockyard ext 24616. You will have to get your bid in early as the trainer is always booked about 4-5 months ahead. All bookings are checked with COMMW to determine who has priority so discuss it with them if you think you are a deserving case.

Finally, a word of thanks to all the ships who have conducted MCMG sea training in the last year. Despite being overrun with extra bodies the ships teams have done an excellent job in helping the students (and the staff!) learn about the ships and the ways of the minewarfare world. Your time and patience is much appreciated.

## ARCTURUS TRAINER

by Pete Whitehead

The following modifications and inclusions to the 1076 trainer were being implemented in December 1989.

The long-awaited Mod 6 update is being set to work and should be on line and running by January 1990. A HYPERFIX (QX3) receiver has been fitted and will be interfaced with the Simulation and CAAIS.

Real Time Performance Monitoring Equipment (RTPME) has now been installed and is in use, but at present only historical data is used. Full integration should be achieved early in 1990.

The 2059 Mine Disposal Vehicle (MDV) Tracking System and the Bridge Hover Display Unit are further additions soon to be installed.

ARCTURUS is steadily coming into line with the rest of the HUNT Class, with the Trainer staff keen to be the first to get "hands-on time". Thanks go to HMS BERKELEY and her Ops Room team (especially CPO Bainbridge and PO Mann) for their assistance and patience with the Trainer Staff during the Training Week in November 1989.

Allocations for Command Team Training (CTT) slots are tight at present, mainly due to the ARCTURUS Trainer refit period. It is planned to provide more CTT time during the Summer and Autumn terms - all bids via COMMW, so plan ahead. Queries answered on HMNB Portsmouth 24631.

## COURSE DESIGN TEAM by Robin Jack

The team is split into two sections with Joe George defining the training for the SANDOWN Class of Single Role Minehunter and George Coward looking after all other aspects of course design for the Section. The WPE are also collated from this section.

All career and PJT courses for the SANDOWN Class have now been written with the exception of the LMCDOs which will be completed in the New Year. The first SANDOWN PJT will run in April and then they will be scheduled to run at approximately six-month intervals. Career training will not be introduced until the AS 1107 Command and Operator Trainer has been accepted. This will probably not be until March 1994.

All other career courses have been updated in the last year to reflect the introduction into Service of the RTPME, new/updated mines and the latest modifications to CAAIS and Sonar 193M. Currently considerable effort is being expended in rewriting and rationalising the various PJTs that the MW Section run.

Of particular interest to most of the readers of this fine publication is the work being done examining task books and the associated WPEs. It is intended to rewrite these to provide a task book

common to all classes of MCMV presently at sea. It must however be remembered that the ultimate aim of the Task Books and WPEs is to produce a common level of knowledge at the start of the next career course and therefore there will still be a requirement for Mining, Buoyage and Sweeping Sections even for those serving in ships without those capabilities. It is too early at the time of going to press to guess what the new Task Books will look like or whether they will require more or less effort to complete. They will however be directly relevant to the WPEs and will make revision much easier. The WPEs have recently changed slightly in that instead of each section carrying equal marks the marks available are now:

Mining	10%
Buoyage	20%
Minesweeping	25%
Minehunting	45%

This should reflect more accurately the work local within the Flotilla and hence the candidates experience. The Question Bank has also been updated to remove those questions which were considered to be too deep or inappropriate. The WPEs are now considered to be more relevant than they were although those of you serving in Ton Hunters and non MCMV Billets will still need to get up to speed on Influence Sweeping.

## SAUDI TRAINING AT MDDS

by Rob Hoole

The Royal Saudi Naval Force is scheduled to acquire six Single Role Minehunters from Vosper Thornycroft (V.T.) over the next few years. The first of these, "AL JAUF", has already been launched at Woolston.

The Saudi minehunters will be very similar to HMS SANDOWN in having NAUTIS(M) AIO, Sonar 2093 and Remote Controlled Mine Disposal System Mark II (RCMDS 2) but will have

a twin automatic 30mm enclosed mounting and specialised ECM equipment.

Each Saudi crew will spend two years in this country while standing by its ship and undergo English language training and specialist courses at manufacturers and RN training establishments. About 1000 Saudis are expected in Portsmouth over the next five years including crews, families and support staff.

MDDS is planning to start

Minewarfare operator training for the first Saudis in September 1990. Four courses are being developed to teach RSNF personnel SRMH operating principles and general MW career course subjects.

MDDS is developing Computer Based Training (CBT) techniques with V.T. to accompany the subjects which do not lend themselves well to conventional classroom instructional techniques.

Fi-Aminilla!

# Recognition

## MAINLY MINOR MIX

1



Here's a mix of mainly minor war vessels for you to practice your recognition talents. See if you can identify the types of ship shown by reporting class name and nationality. The solutions are on page 29.







2



3



4



8



9



12



13

# RECOGNITION RIPPER

14



FISHING BOAT AT 5 MILES



INDONESIAN FRIGATE AT 12 MILES



MAST OF 'KIROV' AT 19 MILES.....



... NOTE SIMILARITY TO MAN OVERBOARD AT 100 YARDS

## Divers' Dits

# THE IRONMAN SYNDROME

By P L Hatton, Head, Diving Division  
Naval Safety Officer, DCIEM, CANADA

A young diver entered a test tank and sat on a platform 10 feet underwater. Audio speakers were mounted on each side of the platform. The diver was a test subject. Topside, diving technicians started an experiment to find out how much hearing loss divers suffer while operating underwater tools. The technicians transmitted various frequencies and volume levels into the speakers and documented any hearing changes the diver experienced. However, an error was made on the underwater power calculations, and the technicians transmitted the test frequencies much too loudly.

This diver and five other divers sat through this torture for up to 45 minutes. It took a week for the divers to get their normal hearing back. All the divers said that they were in pain during their dives, and one diver said his whole jaw vibrated. When asked why they didn't abort their dive, they said that they thought that the pain was part of the experiment and did not want to quit. All the divers were told before hand to abort their dive if they were experiencing problems.

Navy divers are trained to dive safely, but many of them believe they must be ironmen to be good divers. Young divers, especially, don't always realistically weigh the dangers of a diving operation.

Young divers, all too often, become convinced of their immortality. They

believe they can hack anything. They can also lie to their superiors. They can tell their supervisor that they feel fine and are ready to dive, but in reality they are too tired to dive because they were up most of the night. They can also neglect to tell their supervisor that they have a cold. No wonder most master divers are wrinkled, have grey hair or are bald.

Dive supervisors and managers must recognize that young divers will go to extreme lengths to complete the job. Supervisors must make sure that their planning is error-free and that even the toughest dive is low-risk. They must also constantly remind young lions to abort a dive under unreasonable circumstances. Supervisors do not want to risk their divers' lives. They need diver feedback to decide if they must regroup their men and try a different approach.

## HORSEA ISLAND

By "Chris" Christie

Horsea, known by Sub Aqua Clubs as a quiet spot for diving, known to other people as a handy lake to cool off in, but to most of the Naval diving world it is a lake where blood and a few tears, followed by cussing is commonplace. A great number of suggestions on what to do with the lake have been uttered over the years by those who are part of, and others trying to be part of, the Diving Branch. It seems that other parties were interested, with their own suggestions and ideas for Horsea Island.

For a couple of years, the Municipal Council have had ideas on obtaining Horsea Island from the clutches of the Admiralty and illusions of a fishing port

or a yachting marina or a garden city emerging out of mud that is so well known by many divers. The Admiralty, however, have been very polite but firm when approached by the council, and calmly answered a barrage of leading questions about the merits of keeping the Island.

### Looking Back

The oldest inhabitant was Mr Chivers who lived on the Island for 7 years. He remembered as far back as 78-79 years ago when the lake was first built by convicts and used as a torpedo testing area. Twenty-six years later the Admiralty built a wireless station.

During the war years Horsea began yet another role as a repair yard for landing craft and during the first 100 days no fewer than 38 craft were repaired and sent on their way.

HMS PHOENIX eventually ended up on the Island owing to the popular or rather unanimous demand of the public. The oily smoke used in fire fighting exercises polluted and blackened the neighbourhood, which eventually led to PHOENIX breaking the Clean Air Act.

Another inhabitant of the Island Mr Callard, known to most of the diving

world as "Cowboy". He gained renting rights as a result of an accident his son sustained while working for the Admiralty. Upon delving into the past facts of the inhabitants it was found that "Cowboy" specialises in chickens, geese, rabbits and welsh ponies, or so it said.

But undoubtedly the strongest known tie with Horsea is for the Diving Training Programme and on being questioned why diving couldn't be conducted by HMS VERNON, the answer from the Admiralty was that the water in the harbour was too murky and unsuitable owing to constant boat traffic, also Horsea Island was suitable for administration.

### Looking Forward

Which brings us roughly up to date. The future is not known; who knows, will it eventually emerge as a garden city or fishing port, or a residential area, or even a stepping stone for a by-pass adjoining transport.

Whatever the future, a host of people connected with the diving world will never forget it.

Taken from Diving Magazine 1965. "Its nice to see that nothing has changed where Horsea Island is concerned."

# RIVERS OF GOLD

Bullion from the Californian Gold Rush which could be worth a billion dollars has been discovered approximately 200 miles off the Coast of Southern Carolina, USA.

Hundreds of gold bars have been brought to the surface in one of the biggest sunken treasure finds this century. There are also thousands of gold coins on board and a major economic recession is said to have been sparked off when the treasure was lost. It has been on board the *Central America*, a 300ft paddle steamer, for the

past 132 years since it sank during a hurricane. Most of the 423 passengers who died when it went down were carrying fortunes in gold. It is estimated that the *Central America* carried a third of all the gold mined in California at the time.

The recovery operation is expected to take up to a year and is being carried out by a team of high-tech enthusiasts using a remote controlled robot called Nemo. As images of the wreck are flashed onto a screen on board the recovery team's

vessel, Nemo is given directions to lift the gold free of the wreck.

"It's like story book treasure. We can see rivers of gold . . . dripping from rotten timbers," said one member of the recovery team.

It has long been known that the wreck of the *Central America* carried a fortune, but its deep and remote location has defeated divers up till now. The steamer went down on September 12, 1857 after a three day ordeal of trying to keep the vessel afloat, with every male passenger bailing out water.

## STAN-SPEAK

For anyone about to foray into NATO waters who hasn't got a full grasp of NATORANTO, herewith a few choice phrases that may get you out of (or into) a sticky situation . . .

**Key: English  
French  
German  
Dutch  
Italian  
Spanish**

**May I come alongside?**  
Puis-je accoster?  
Kann ich längsseit kommen?  
Mag ik lanszij komen?  
Posso affiancarmi?  
¿Puedo abarloadarme?

**Can I tie up here?**  
Puis-je m'amarrer ici?  
Kann ich hier festmachen?  
Kan ik hier vastmaken?  
Posso ormeggiare qui?  
¿Puedo amarrar aqui?

**Is this a good anchorage?**  
Est-ce un bon mouillage?  
Ist das ein guter Ankerplatz?  
Is dit een goede ankerplaats?  
L'ancoraggio è buono qui?  
¿Es bueno este fondeadero?

**How deep is it here?**  
Quelle est la profondeur?  
Wie tief ist es hier?  
Hoe diep is het hier?  
Quanto fondo c'è qui?  
¿Qué profundidad hay aquí?

**Where is the public quay?**  
Où est le quai des visiteurs?  
Wo ist der öffentilche Kai?  
Waar is de openbare kade?  
Dove è la banchina pubblica?  
¿Dónde está el muelle público?

**What officials must I see?**  
Quelles autorités dois-je rencontrer?  
Zu welchen Behörden muß ich gehen?  
Bij welke autoriteiten moet ik mij melden?  
Che Autorità Portuali devo vedere?  
¿Qué autoridades tengo que ver?

**Can I use this mooring buoy?**  
Puis-je utiliser ce coffre?  
Kann ich diese Muringboje benutzen?  
Kan ik deze/die meerboei gebruiken?  
Posso usare questa boa?  
¿Puedo usar este/ese muerto?

**Please put out your fenders!**  
Veuillez retirer vos défenses!  
Bitte bringen Sie Ihre Fender aus!  
Hang uw stootkussens uit, alstublieft!  
Metta fuori i parabordi, per favore!  
¿Por favor, coloque sus defensas!

**By the way, what is the name of this port?**  
Au fait, quel est le nom de ce port?  
Übrigens, welcher Hafen ist das hier eigentlich?  
Tussen twee haakjes, hoe heet deze haven?  
A proposito, come si chiama questo porto?  
Por cierto, ¿cómo se llama este puerto?

**Does it dry out here?**  
Est-ce que ça découvre ici?  
Fällt man hier trocken?  
Valt het hier droog?  
Si resta in secco, qui?  
¿Queda en seco este lugar?

**Is it safe to leave my boat unattended?**  
Est-ce prudent de laisser mon bateau sans surveillance?  
Kann man hier sein Boot ohne Aufsicht lassen?  
Kan ik mijn boot veilig onbewaakt achterlaten?  
E' sicuro lasciare la barca da sola?  
¿Puedo dejar mi barco sin guardia?

**Could you take me ashore?**  
Pouvez-vous m'amener à terre?  
Können Sie mich an Land rudern?  
Zoudt u me aan wal willen brengen?  
Mi può portare a terra?  
¿Puede llevarme a tierra?

**What are the port charges?**  
Quels sont les frais de port?  
Wie hoch sind die Liegegebühren?  
Hoeveel is het havengeld?  
Quant'è la tassa di ancoraggio?  
¿Cuáles son las tarifas del puerto?

**Can I get electricity here?**  
Puis-je avoir l'électricité ici?  
Kann ich hier Elektrizität bekommen?  
Kan ik heir stroom krijgen?  
Si può avere la corrente elettrica, qui?  
¿Hay electricidad aqui?

**May I borrow your dinghy?**  
Puis-je emprunter votre annexe?  
Kann ich mal Ihr Beiboot haben?  
Mag ik uw bijboot gebruiken?  
Posso usare il Suo dinghy?  
¿Me puede prestar su chinchorro?

**Would you keep an eye on my boat?**  
Pourriez-vous surveiller mon bateau?  
Könnten Sie auf mein Boot aufpassen?  
Wilt u een oogje op mijn schip houden?  
Può tenere d'occhio la mia barca?  
¿Puede vigilar mi barco?

**Come on board for a drink**  
Venez prendre un verre a bord  
Komm an Bord auf einen Drink  
Kom aan boord voor een drankje  
Venga a bere qualcosa a bordo  
Venga a bordo a tomar algo

**Where is the party tonight?**  
Où est la fête ce soir?  
Wo steigt die Party heute abend?  
Waar is het feestje vanavond?  
Dov'è il ricevimento stasera?  
¿Dónde es la fiesta esta noche?

## Food for Thought



The trial on HMS SHOULTON was so successful . . .

● Trials on the new “silent running” Minehunting Gemini Engine.

## Underwater Engineering

# FDU 2 CHANGE BLADE

By Tug Wilson

On 7 Nov 1989, the Fleet Diving Group were asked by HMS ALACRITY to provide assistance changing a damaged Variable Pitch Propeller (VPP) Blade. Only two and a half months previously FDG had replaced a sheered-off blade on the ship's starboard shaft. The team had been flown to Miami and had carried out the operation under very testing conditions. (warm water, 30ft vis — the problems were endless!).

Divers from FDU2 were recalled from a night attack in Portland to form the nucleus of the team. Because of the urgency of the task it was decided to deploy a twelve-man team with the OIC FDU2 (LT LEANEY) in overall charge.

With only 12 hours notice the team, aided by FDG support staff, mustered the necessary gear and despatched it forthwith to RAF LYNEHAM in preparation for a flight by C130 the following morning.

The flight departed at 1000, with the diving team. The Rapid Response gear and a replacement blade on board. Eight hours later, the intrepid band of frogmen alighted for an overnight stop at Gander, Newfoundland with the temperature a chilly minus 5 degrees centigrade, a few brass monkeys were heard singing soprano. After an entertaining interlude the team once again boarded the boneshaker with an overwhelming desire to get to warmer climes.

After another eight hour flight the team arrived at ROOSEVELDT Roads Naval Base. The cargo was unloaded and transported to the Jetty adjacent to HMS ALACRITY.

The team was split into two watches of six divers each for maximum productivity; CPO(D) Derby Allan i/c night watch, PO(D) Tug Wilson i/c the day watch and LT LEANEY taking overall charge. Whilst awaiting the Rapid Response chacons, initial inspections were carried out and pad eyes were fitted to the hull. Underwater lights were rigged and a floating boom positioned around the stern to prevent any escape of Hydraulic Fluid into the lagoon.

The ship's diving team had already removed the protective covers, thereby exposing the bolt heads and saving the FDU2 team hours of preparation work.

The next task was to rig strops around the Rudder and 'A' brackets. This had just been achieved when one eagle-eyed observer noticed a six foot-long grey object with a rather prominent dorsal fin circling some nine metres below. From this moment on, all work was carried out with the diver in the modified missionary position around the shaft.

During the night the bolts were removed using a mixture of chain hoists and a special hydraulic tool which worked well until the locating pins on the socket head bent and would no longer fit the bolt head. Once the stub of the old blade had been removed, the replacement blade was lowered to depth in preparation for fitting on the hub. The seals were replaced and the area cleaned to prevent the intrusion of swarf and other foreign bodies. It was at this stage that the day watch took over and the night watch slipped away to grab a few hours well-earned rest.

Despite incessant sand-fly attacks, the day watch positioned the blade above the hub and, after a few experiments with the chain hoists, the blade was positioned and lowered onto the hub. The bolts were then replaced and tightened to the required torque. Another attempt was made to use the now repaired hydraulic tool until, predictably, the pins bent again.

The team reverted to handraulic methods and the chain hoists. The whole operation was completed at 2030. Twenty-four and a half hours after the first diver entered the water.

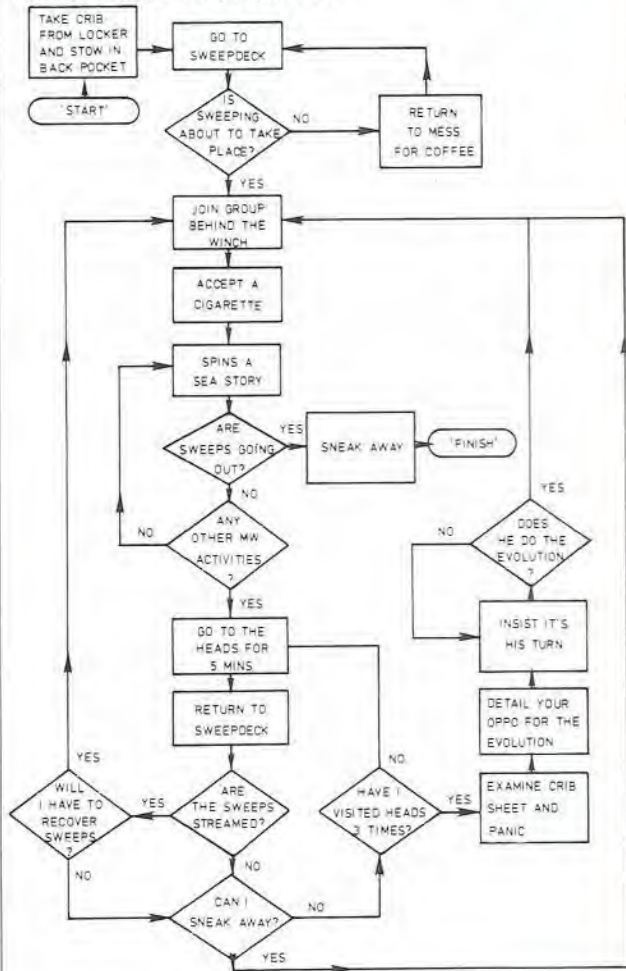
Everyone now waited with baited breath as the various functional and pressure tests were carried out. Once the ship's MEO had given the thumbs up, the gear was recovered, washed off and stowed in the Chacons ready for the transit home.

The next day was spent organising the transportation of the team and cargo to UK. Extra paperwork was required when, during one such trip, the OIC parked the hire car in the direct path of a flying stone propelled through the air by a gardener's Flymo, resulting in extra lateral air conditioning (a broken side window).

The team of now bouyant divers travelled to San Juan to await the flight home — which landed at Gatwick at 1000 on Nov 16th. Once back in the section, more gear was prepared and the team travelled to Tarbert for 75m work up — but that's another story.

# Sweep Store

## SEA TRAINING GUIDE FOR AVOIDING EVOLUTIONS FOR PO(MW) QUALIFYING COURSES



By CPO(MW) R Dean

## US may hunt mines with British airships

By courtesy of Steve Connor

The American Navy is considering using British airships and undersea robots, developed for oil exploration in the North Sea, for minesweeping.

Unlike minesweepers and helicopters, airships are cheap and invisible to radar and are good for covering shallow coastal waters.

The British company Airship Industries is developing an airship which can control a minesweeping robot vehicle similar to those used to inspect oil platforms.

"We hope to conduct a technical evaluation with the US Department of Defence next year," said Mr Graham Winterbottom, the company's military manager. "They are very favourably disposed to the idea."

The airship's equipment will be controlled by light pulses passing along optical fibres which make the airship more immune to electronic warfare.

This "fly by light" technology, and the increasing speed and sophistication of underwater robots, have combined to make a mine-hunting blimp feasible, Mr Winterbottom said.

"All that the airship has to do is to maintain its station, clear a path with the underwater vehicle and mark the cleared path with buoys."

A mine-hunting airship and its equipment costs about £10 million and needs a crew of five, compared to a minesweeper crewed by 20 men and costing £35 million, he said.

Computer simulations comparing a mine-hunting blimp with ships and helicopters have shown the stability of the airship's gondola is a great advantage over existing methods of clearing mines at sea.

Airship Industries has already won a £169 million order to supply a giant 400ft airship to the US Navy to carry early-warning radar above warships.

## NATO COMPUTASPEAK By MWGS Staff EGUERMIN, OSTEND

6502-The year you will finally pay off your computer.  
 6800-The year you will finally pay off your peripherals.  
 BASIC-Computer language used for generating errors. Most billing programs are, apparently, written in BASIC.  
 BATCH PROCESSING-Making lots of cookies at once.  
 BCD-Three of the first four letters of the alphabet.  
 COBOL-Far better than MOBOBOL.  
 COMPONENT-Part of a computer, usually forgotten when the machine was sold to you, that cost extra.  
 CRASH-Normal termination.  
 EBCDIC-Security code for IBM computers. Means "Erase Backup, Chew Disk, Ignite Cards". For a variety of obvious reasons, only IBM computers use EBCDIC code.  
 EXECUTION-What your computer did to your program, also known as murder.  
 FORTRAN-A high level computer language used by those who have mastered BASIC syntax errors and are looking for a challenge.  
 INSTRUCTION-A suggestion made to a computer.  
 KEYBOARD-The most important part of a computer. Resembling a typewriter, a keyboard is used for entering errors into a computer.  
 LOOP-(See LOOP).  
 MANUAL-A handy book, to be used as a guide to your computer, software and peripherals. It is usually a photocopy of some hand-written notes, and tells you how to use the manual and not how to use the computer, software or peripherals.  
 NULL STRING-The result of a four hour sort.  
 RESET-Another method of ending four hour sorts.  
 REDUNDANCY-Kkeybbounce.  
 SCREEN-A wire mesh which protects the computer from the programmer.  
 SCROLL-What the instructions do when you are trying to read them.

SPECIAL CHARACTER-One of the characters used in computer expressions, like &, \$, %, # and |, as in the famous expression "&%\$#"  
 STAND ALONE-What happens to a programmer who starts talking about computers at a party.  
 SAVE-What you should do before you buy a computer.  
 RESERVED WORDS-All the good ones that you wanted to use.  
 SNOBOL-Computer language used in cold climates.  
 OFF-LINE-A computer joke in bad taste.  
 ON-LINE-A computer joke in good taste.  
 PERIPHERAL-Something attached to your computer with wires, cables, or chewing gum, such as the case, the monitor, whips and chains, dynamite, and other programming aids.  
 ERROR-A programmer's decision to skip making a flowchart and exclude comments.  
 OBJECT CODE-Reason given by computer as to why it won't run a program.  
 BOOT-Good way for ending four hour sort.  
 CHIP-Used in computers, they come in four flavours: silicon, potato, chocolates and buffalo.  
 DOCUMENTATION-Instructions which come with hardware or software and explain how much more money you will have to spend in order to get your hardware or software to work.  
 I/O-Abbreviation of the phrase used by programmers while they watch their programs crash, known in full as:  
 "Aaaaaaaaiiiiiieeee Oooooooiiiiiiiiiiiiiiiiiiiiiih...!"  
 MIPS-Meaningless indicator of processor speed.  
 BULLSHIT-Biggest United Liaison of Leading Suppliers of Hardware Innovative Technology.  
 PACMAN-Patiently Awaiting Computer Manufacturer's Arrival News.



# Reader's 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  
 MDDS Faculty of SMOPS  
 HMS NELSON (GUNWHARF)  
 Portsmouth  
 Hants  
 PO1 3HH  
 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 a start — 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, typed, double spaced and word-counted.
  - (b) a photograph  or a slide  (number)
  - (c) a diagram  or otherwise.....
  - (d) a letter to the Editor (see (a) for the preferred format).
  - (e) less than RESTRICTED in classification.
3. I realise that the magazine publication dates are 1 Jan/1 May/1 Sep 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 (delete as applicable) 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 .....



# Book Reviews

## “JANE’S UNDERWATER WARFARE SYSTEMS 1989-90”

1st Edition

Edited by Bernard Blake

(Janes Information Group, 163 Brighton Road, Coulsdon, Surrey  
ISBN 0-7106-0884-5)

After twenty years of annual publication, Jane’s Weapon Systems has been rationalised into a series of eight separate publications, each aimed at a specific defence discipline. The first edition of Jane’s Underwater Warfare Systems (JUWS) – the 1989-90 edition – is therefore a concise compendium compared to it’s forebear.

In tradition with Jane’s Information Group’s (JIG’s) conventional Year Books, this edition is also published in hardback. The style and layout follows the usual Jane’s format of precise detail supplemented by a comprehensive variety of diagrams and photographs.

Bernard Blake, as Editor, has drawn considerable input from Tony Watts, Editor of Navy International, for the sections covering weapons, fire control and acoustic ranges. There is clearly a high proportion of date gleaned from fellow Jane’s publications, but this does not detract from the sub-specialist nature of JUWS.

JUWS is designed to cover the complete scenario of underwater warfare – including mines, sonar systems, ROV’s, mine countermeasures and acoustic ranges & degaussing systems. For ease of reference, the book is divided into fifteen logical sections, matched by a thorough index and series of analysis tables.

In common with most – if not all – of the JIG Year Books, at eighty pounds, this is an expensive tome for the nautical enthusiast. However, for the professional involved in underwater warfare systems, it may prove invaluable.

D.J.C.

## “DESIGNED TO KILL”

Bomb disposal from World War 1 to the Falklands

by Major Arthur Hogben

(Patrick Stephens Limited, Wellingborough, Northants,  
ISBN 0-85059-865-6)

“DANGER.UXB!” made gripping viewing when run as a BBC television series some years ago. “DESIGNED TO KILL” is Arthur Hogben’s equally gripping true-life account of British explosive ordnance disposal (EOD). Himself the recipient of the Queen’s Gallantry Medal in 1974, for his bomb disposal work in the East End of London, Arthur’s book covers the period from EOD’s earliest days when no-one in authority knew who should accept responsibility, training for the task was often measured in hours and experience was only gained – or lives or limbs lost – by actually doing the job itself.

On his retirement from an active and distinguished career in the Royal Engineers EOD Regiments Major Hogben moved to a more sedentary job in the NATO EOD Technical Information Centre. All those who have completed Disposaleer’s Training in the past decade will no doubt have met Arthur, often as a part of their course, in the modern little building just inside the main gate of Lodge Hill Camp: EODTIC.

The book is not just a chronological collection of disposaleer’s dits and heroic achievements (although there are several riveting stories scattered amongst the 271 pages), it is a thoroughly well-researched, fascinatingly narrated piece of history. It should appeal to any EOD operative, past or present by they of a military, nautical, aviation or civilian background.

D.J.C.

# Test Solutions

## Crossword Puzzle: Page 8



## Mainly Minor Mix: Page 22

- 1 BAY CLASS — AUSTRALIA
- 2 CONISTON CLASS — UK
- 3 LERICI CLASS — ITALY
- 4 HUNT CLASS — UK
- 5 ROEBUCK CLASS — UK
- 6 GORYA CLASS — USSR
- 7 SANDOWN CLASS — UK
- 8 MAHAMIRU CLASS — MALAYSIA
- 9 SANDOWN CLASS — UK
- 10 GORYA CLASS — USSR
- 11 LURSSEN M48 CLASS — THAILAND
- 12 NATYA CLASS — USSR
- 13 NATYA CLASS — USSR
- 14 ALL ANSWERS ARE CORRECT

## Embroidered Name Badges

Due to the Sterling/Deutschmark exchange rate, Dave Carey is unable to continue with the service previously provided for Diving and Minewarfare embroidered name badges. Roger Sawell of Rainbows End, Shamrock Quay, Southampton, Hants has volunteered to assume these duties through from January 1990. Details of items, revised prices (using a UK supplier there are different costs and specifications) are available care of the above address. The quality will be as good as Herr Baumler’s, if not better, and orders need no longer require large “batching” hence delivery times will be reduced.



## BIG BADGE CHALLENGE

The above badge was found during a spring clean of the Minewarfare Section filing cabinets, early in 1989. It is intended to publish the best 3 stories – be they factual, fictional, humorous or otherwise – generated from seeing this venerable blazer badge in the next edition. If you possess a similar item or crest that will cause readers to “spin an old dit or two” please forward your contribution to the Editor. All original items will be returned to respective owners. “Well, there I woz . . .”