

TRAINING FOR THE FUTURE AT H.M.S. 'SULTAN'

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ABSTRACT

The Marine Engineering specialization is on the threshold of a technological revolution surrounding the versatile microchip which is changing the way we operate and maintain our ships and providing a challenge for the training system. Artificer training is firmly established at *Sultan* and all career courses are now fully electro-mechanical with non-career courses being adjusted to reflect the new generations of ships and submarines.

The common mechanic, to replace the mechanical and electrical sub-specializations, should go some way towards greater job satisfaction at junior rate level, and ADQUALS at Petty Officer level should enhance long-term career prospects.

The Marine Engineering specialization is on the threshold of a technological revolution as we move into an era of micro-electronics and information technology that will inevitably result in considerable change in the way we operate and maintain our ships, and will have major implications on the way we train our people.

Previous revolutions, the most recent being the emergence of nuclear and gas turbine propulsion, have been accompanied by major upheaval but the latest one has crept up on us. At its heart is the versatile microchip and its public face is the Type 23 frigate, the Single Role Mine Hunter, the UPHOLDER Class SSK and the VANGUARD Class of SSBNs. For Marine Engineers it heralds the age of the intelligent machine and as such it may just turn out to be our most significant engineering event for a long time. The question we must ask ourselves 'is will we be resourceful enough to exploit this intelligent machine?' In other words will we be trained and ready to grasp the opportunities that the new technology holds out for us or will we meet it with old fashioned concepts and unresponsive, demotivated people?

The philosophy of how to operate and maintain the Fleet of the future is not our direct business at H.M.S. *Sultan*. However, making sure that we have well-trained and motivated people is very much our concern and we are confident that we are ready to meet the challenge. Our confidence is based on two recent notable successes in dealing with major change.

Firstly, the smooth transfer of artificer training to *Sultan* under plan PROCTIS, the phased re-location of Artificer Training in *Sultan*, which resulted in the introduction of a brand new fully EBDed artificers' career course and led to the eventual closure of *Fisgard* and *Caledonia*. The first graduates of the new course have now been at sea for just over a year and by all accounts are doing well. The second, and complementary, area of change was the transfer of electrical training from the White City in *Collingwood* to the superb new purpose-built facilities in Faraday Block at *Sultan*. This painless evolution reflects great credit on all who were associated with it and sets the seal on the final phase of EBD.

The new artificers' career course is now fully electro-mechanical and I should stress just how strongly electrical engineering and electronics feature in its make-up. Power and distribution, basic electronics, electrical maintenance and craft are modules common to both ML and EL specializations, with the ELs going on to unravel the mysteries of computing, digital electronics and microprocessor techniques.

We need now to adjust our training to suit the changing shape of the surface Fleet and in particular the shift in emphasis from steam to gas turbine propulsion. For artificers the changes are already under way and this year will see amendments to their career courses whereby only the budding submariners will be taught the full steam machinery syllabus. Those destined for the surface Fleet will be restricted to auxiliary boilers and low pressure steam systems but will receive additional gas turbine and diesel modules as compensation. To this end the machinery installation in *Sultan* is being updated by the inclusion of an SM1A Spey gas turbine, a Type 23 reverse osmosis plant and an update of our controllable pitch propeller rig to include an open circuit system. The submariners have the development of the UPHOLDER Class propulsion Valenta diesel engine to play with and in an attempt to add some submarine gloss to the steam platform a bid has been made for the redundant steam machinery from *Vulcan*.

The Leading Rates Qualifying Course (LRQC) is also being modernized in order to introduce new technology, increase the engineering content and, as with the artificers' courses, insert a dedicated engineering module for the submariners, thereby eliminating one of the major criticisms of the current course.

The picture for the long-term future is cloudy. A necessary pre-requisite to training is a clear view of what our young men will be serving in. What will be the Type 22 replacement? In the medium term, the new technology in the Type 23 frigate, Single Role Mine Hunter, UPHOLDER Class SSK and VANGUARD Class SSBN all call for a full re-appraisal of the operating qualifications, maintenance skills and manning levels of their respective ME Department complements. For all the new ships and submarines, the D86 microprocessor features as the linchpin of either the machinery control or surveillance systems, and with it the age of the intelligent machine has arrived.

Microprocessors can do much to ease the machinery management load and remove the routine drudgery of information gathering and collation. In turn this can help reduce watchkeeping manning levels and improve machinery availability figures but it does place much greater emphasis on the quality and training of the senior rates responsible for that vital area of propulsion system control engineering. EL specialists now receive an excellent grounding in digital electronics, computer technology and microprocessor techniques during their career training ashore and, providing they retain their basic skills during the turbulence of their sea training period, they have a sound basis from which to tackle the intricacies of micro-electronics system engineering.

But what of the mechanics? We would like to see considerable improvement in their career prospects, employment pattern and job satisfaction. For the senior mechanics the new petty officer level ADQUALs (in diesel engineering, hull engineering and electronics, for the MICE, MHULL and MEL respectively) are well received and go a long way to equip them for useful roles in the HUNTS and OPVs, where they can be of real assistance to the hard-pressed sole artificer. For the Type 23, the D86 based machinery control system will allow a major increase in responsibility for the petty officer mechanic as he takes on EOOW duties alongside his petty officer artificer counterparts.

So for the seniors, heading at last to be true operator/maintainers, things seem to be looking up. For the junior rates, the introduction of the common mechanic, a single specialization with both electrical and mechanical skills to replace the two separate specializations we have at present, would allow a much more flexible and efficient employment pattern than is currently the case. In turn this should lead to greater job satisfaction for the man as he gets the chance to use his skills in wider and more varied fields than those available to the separate specialists of today. If he is then given the opportunity to increase his skills level, by means of an ADQUAL, at petty officer level there opens up the prospect of a well-balanced worthwhile long-term career, the best antidote there is to the creeping tide of increasing premature voluntary release (PVR).

The ME specialization has come a long way since EBD. We have successfully taken on the major part of the overall electrical engineering task and, with the advent of digital control systems, have gone further than many of us ever thought possible. We never need be afraid of new technology and on our record so far we can enter the era of micro-electronics with the same confidence as our WE and AE counterparts.