

# CORRESPONDENCE

## COMMERCIAL REFITS

SIR,

As Programme Manager for the COMPEX refits, I was not able to comment on the articles by Cdr Dawe and Mr Burns on the refit of H.M.S. *Euryalus* (vol. 30, no. 1, pp. 6-17) until the official reports had been issued. There were, however, two important issues upon which we have to be very clear.

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Firstly, it was stated that Tyne Shiprepairers had expected to undertake the refit to commercial standards. Perhaps this was wishful thinking as the Specification was very clear and was the reason why so many references were quoted. Further, one volume of the specification, the general conditions, defined, amongst other things, interpretations of terminology used elsewhere in the specification and, in particular, what was meant by 'refurbish' and the standard to be applied. Surely nobody really thought that the standards required and paid for by the average Greek owner were to be applied to one of Her Majesty's Ships! I suspect, as it is known that sub contractors had not sighted the General Section at the Tender stage, that Tyne Shiprepairers had also not taken account fully of these requirements in order to win the tender and then had used the subject of quality or standards to justify additional money.

The second point, which is not unrelated to the first, concerns the approval of price for extra/emergent work. If the *price* quoted, and we are really talking hours as a Weighted Average Hourly Rate had been agreed at the tender stage, is fair and reasonable, then approval can be given almost immediately. If the price quoted is unreasonable or inflated for any reason, then it has to be investigated, and the more unreasonable, the longer it takes. I will quote one example. The price quoted for one extra work item was £680 K with a statement that, if it was not agreed that day, then the price would rise to £1.2 M. The agreed price was of the order of £200 K and, whilst the work was put in hand on a without prejudice basis, it took many hours to agree that price.

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## DIGITAL CONTROLS TRAINING IN THE ROYAL NAVY

SIR,

In response to Lieutenant-Commander Heemskerk's interesting article 'Digital Controls Training in the Royal Navy' (Vol. 30, No. 1), whilst it is true that definition of the systems and equipment training requirements for inclusion in PJT courses for classes of ship has proved to be difficult due to recent changes in the platform procurement process, considerable effort is being mounted in H.M.S. *Sultan* and elsewhere to encourage as speedy release of information from the shipbuilder as possible. Measures include the appointment in *Sultan* of a Future Project Officer with responsibility for identifying specific training requirements in support of new build, with emphasis on the Type 23 and SRMH. The aim is to ensure that training courses are ready to satisfy the requirements of both the manning programme and the different technology the new ships contain.

Happily the picture with regard to training preparation for digital systems, and the D86 microprocessor in particular, is much more cheerful and considerable success and progress in microprocessor training has already been achieved. A comprehensive training package, including digital, analogue, microprocessor and computer theory, programming (machine code) and fault diagnosis, lasting a total of 15 weeks, now forms part of artificer career training for the MEA(EL). Thus, whilst WE ratings similarly trained may provide a source of additional expertise on board, the ME Department's digital front line, the CPOMEA(EL), will have had the training, background

and operating experience to enable him to diagnose and rectify faults in existing and future propulsion control systems. As such, the requirements of EBD are being met in full, with the operator/maintainer principle alive and well and thriving in a new and rewarding engineering environment.

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## NAVAL ELECTRICAL PROPULSION SYSTEMS

SIR,

With reference to the article in the June 1987 *Journal*<sup>1</sup> on electric propulsion systems, I would like to comment on the remarks under Superconducting Motors (p. 358).

Firstly, the last MOD superconducting motor programme was abandoned in 1982, not because of problems with brush gear, but for the following reasons<sup>2</sup>:

- (a) Absence of any definite advantages for conventional warships.
- (b) Absence of a firm naval role for unconventional vessels (e.g. SWATH), which could utilize the flexibility of layout offered by superconducting transmission systems.
- (c) Financial constraints.

Secondly, the specified technical goals for the performance of monolithic metal/carbon brushes were achieved<sup>2</sup>. The brush wear rate equated to a brush life of at least 4 years, with some 2 cm total wear over that period based on typical ship operating profiles.

Finally, it is of interest to note the present exciting developments in superconductors operating at temperatures above the boiling point of liquid nitrogen<sup>3,4</sup> (i.e. above 78° K instead of below 8° K for the present superconducting motors). Although these materials are in a ceramic form, the possibility of manufacturing tapes or wires<sup>5</sup> or of a suitable film technology could result in engineering applications. Whilst much development is needed, the use of superconductors at such temperatures would be revolutionary and their potential impact enormous. Major R & D has recently been funded in Europe, the U.S.A. and Japan.

### References

1. Firth, S. K.: Naval electrical propulsion systems; *Journal of Naval Engineering*, vol. 30, no. 2, June 1987, pp. 342-359.
2. Adams, V. W.: Superconducting machines for marine use; *Journal of Naval Science*, vol. 9, no. 4, Nov. 1983, pp. 296-303.
3. Wu, M. K., *et al.*: Superconductivity at 93 K in a new mixed-phase Y-Ba-Cu-O compound system at ambient pressure; *Physical Review Letters*, vol. 58, no. 9, 2 Mar. 1987, p. 908.
4. Sutton, C., *et al.*: Superconductors come in from the cold; *New Scientist*, no. 1552, 19 Mar. 1987, p. 15.
5. Johnstone, B.: Japan edges up on the superconductor race; *New Scientist*, no. 1556, 16 April 1987, p. 22.

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