A.M.T.E. (N.A.M.D.)

HASLAR AND PORTLAND NEWSLETTER

BY

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Throughout my time as Superintendent, I have had in mind that someone should write an article to update that in the *Journal of Naval Engineering*, Vol. 17, No. 3 of June 1968, on the role of the above units—the former AMEE and ADES to many of you.

To do that at a time of uncertainty due to successive staff cuts, compounded more recently by recommendations from the Strathcona Review of the research and development establishments about devolvement of our work to industry, could be inappropriate. But, lest some may have thought that silence meant that we had already faded away, I write of the recent past in this brief newsletter just to reassure you.

It is now almost eighty years since Engineer Lieutenant Fryer started the first marine engineering unit at Gosport, Hampshire, alongside the Admiralty Experiment Works, Haslar, to look at the problems connected with ships' use of liquid fuels.

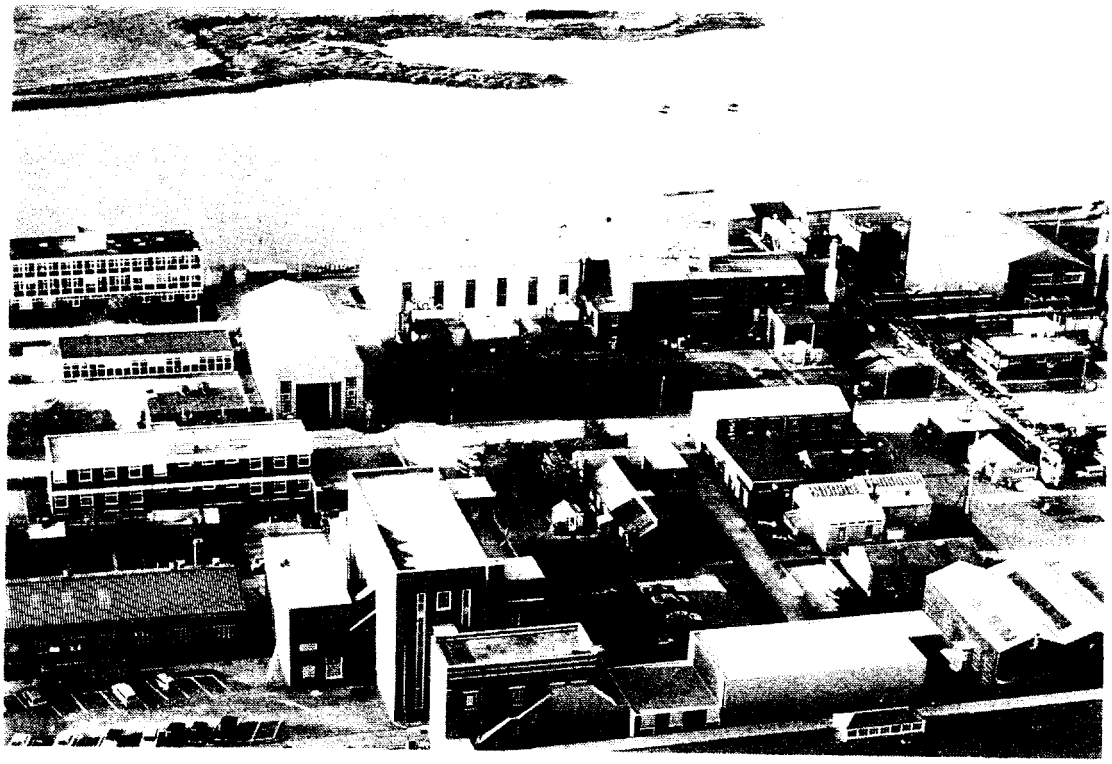
He and a continuous succession of naval officers as Superintendent may raise eyebrows or turn in their graves when I report that the last prototype oil-fired ship's boiler was condemned in September 1980 to go for scrap. The Y100 prototype had just had its 25th anniversary. Better only whisper as I mention that two VDU terminals to a computer were made operational in NAMD in that same month, as well as noting delivery of a micro-processor development kit.

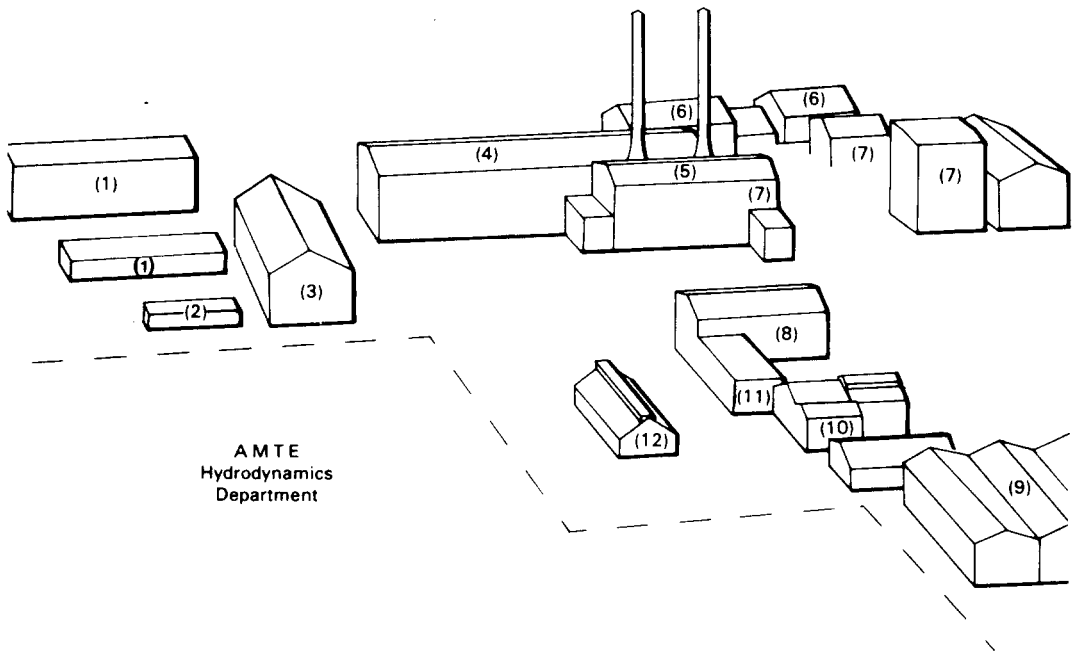
But fear not, hot fog still pervades the south bank of Haslar Creek, and 'mark you, I've got photos to prove it!' See FIG. 2. Two La Mont Station Boilers each producing 90000 lb/hr of steam at 1200 psi, 950°F supply a number of rigs associated with developments for nuclear submarine propulsion plant, and their exhaust is still condensed in ex-H.M.S. *Implacable* and H.M.S. *King George V* main condensers supplied with sea water from ponds trapping the tide in that creek. Apart from this steam propulsion development work, which has even spread into Portland, the Steam Test Facility has a continuing commitment for many years to come for the production testing of safety valves destined for nuclear submarines in building and refit. 1980 saw national, and even international, interest in using the facility on repayment when capacity comes available.

This steam-orientated side of NAMD's work currently occupies about one third of the effort and two thirds of the money; the rest is devoted to evaluation of auxiliary machinery and assistance with ship trials and defect occurrences at sea.

Availability of large quantities of sea water is essential to the close simulation of the ship or submarine environment we attempt in evaluating much of this auxiliary machinery. The water quality available at Portland approaches mid-Channel which is important to some studies, e.g. desalination; that at Haslar is rather more estuarine, but quite typical enough for testing pumps and heat exchangers.

Unfortunately much of the work must be Commercial-in-Confidence by its very nature, and therefore it does not lend itself to writing up in detail for the *Journal*. Indeed with some 115 projects current at any one time, it would be a





KEY

1 Administration and Offices
2 Fire Test Lab
3 A M T H Annex
4 Auxiliary Machinery Test House
5 Station Boilers
6 No.'s 1 & 2 Condenser Houses
7 Steam Rigs
8 Instrumentation Lab
9 Workshops
10 Refractory Lab
11 Flow Test Lab
12 A M E Y Sports and Social Club

FIG. 1—AERIAL PHOTOGRAPH OF THE NAVAL AUXILIARY MACHINERY DIVISION OF THE AMTE

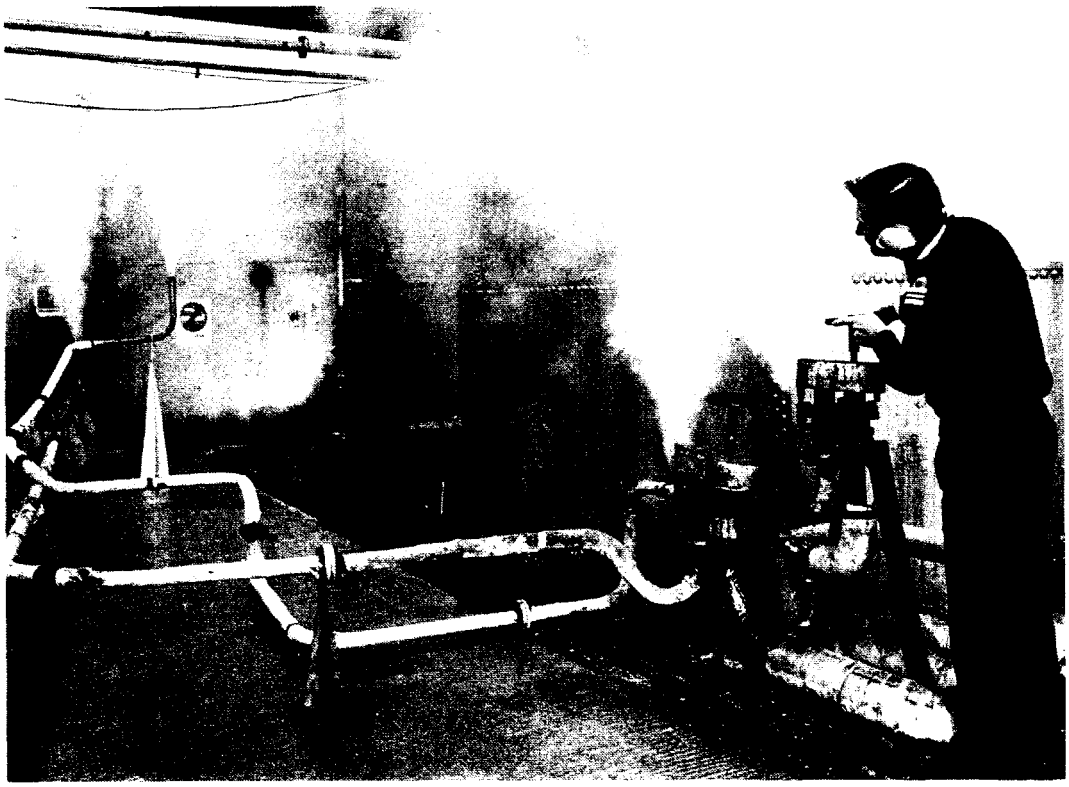


FIG. 2—'HOT FOG' AS A GMD STEAM DRENCH SYSTEM IS TESTED TO CHECK ADEQUACY OF WHISTLE WARNING AND STEAM DISTRIBUTION AFTER WATER-LOGGING

mammoth task. However, *J.N.E.* Vol. 25, No. 3, June 1980 contained an article on refractories for warship boilers by Mr. Parnham, written immediately before he retired after 29 years in NAMD, and much of the work described in Cdr. Bowen's article on Atmosphere Control and Compressed Air Systems was undertaken at Haslar.

Steam atomization, developed at Haslar, is now in fourteen ships, and our last connections are about to be severed as we terminate the consultancy and training service to H.M.S. *Sultan.* Please note that defective atomizers and fuel metering valves are now handled by Blackbrook Farm.

Desalination by Reverse Osmosis has been pursued since the article in *J.N.E.* Vol. 24, No. 2, June 1978 to the point that Portland is evaluating a prototype Ames Crosta Babcock plant with conventional submarine use in mind. Vapour-compression and waste-heat plants are not forgotten, and there are still additives for trial in conventional evaporators.

Apart from macerator pump trials, sewage treatment work came to a close in 1979 following some further investigatory work after the Marland plant had run into trouble with filter chokage in H.M.S. *Hecla.* Haslar are now completing trials on their sixth and seventh commercial incinerators, and await an eighth. Besides proving that the best could burn satisfactorily all our ships' waste including heavily sea-water-contaminated oil from quite a crude oily/water separator, we anticipate being asked to look at the feasibility of burning sewage (What fun!).

Amongst the more urgent projects are: identifying the problems with non-magnetic air compressors for the BRECON Class; life assessment of flexible hoses and bellows; and selecting from a number of commercial possibilities, the most satisfactory pump for the likely duty to be encountered as a contaminated-dieso-transfer and centrifuge-supply pump.

Hazard testing ME and hull items usually involves fire situations and FIG. 3 illustrates an oblique example.

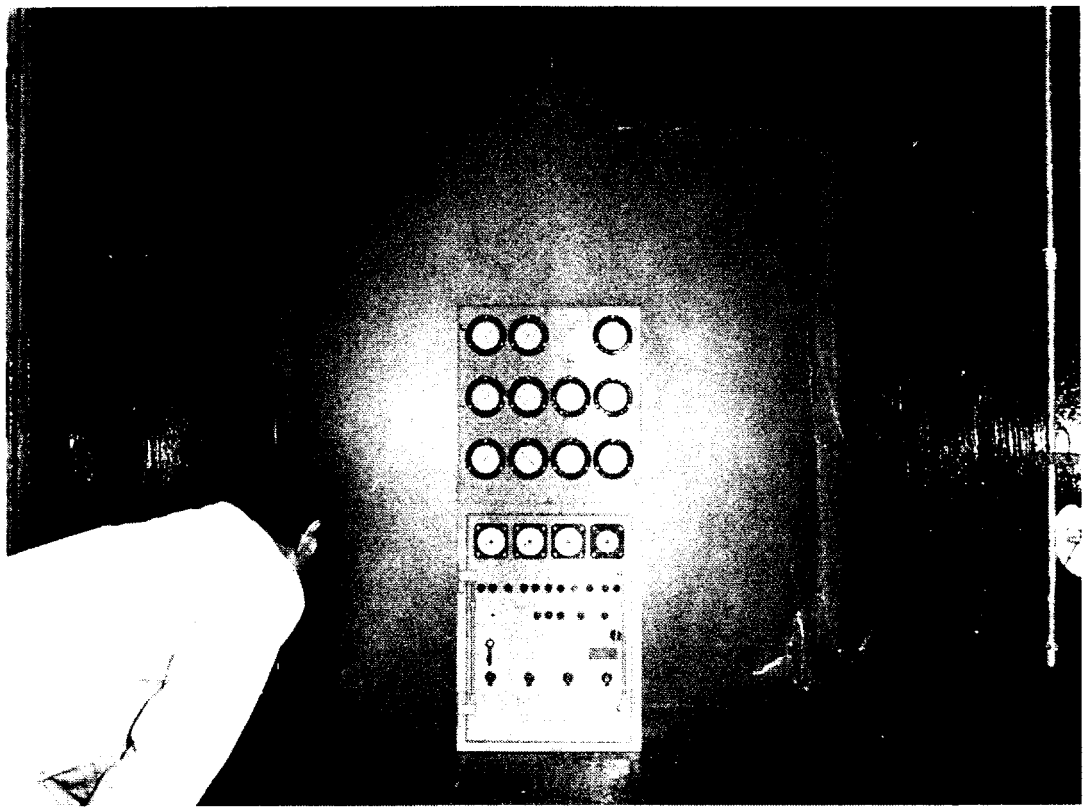


FIG. 3—CHECKING THE EFFECT OF SPRAYS COMING FROM INSTALLED FIRE-FIGHTING NOZZLES IN PENETRATING THE TYNE GAS TURBINE LOCAL CONTROL PANEL

Much of the work entails a high degree of trust, and regard for our commercial impartiality, by industry. Most machinery on receipt is stripped, dimensionally and metallurgically checked, even rotating parts weighed before reassembly. It is operated in as close a manner as possible to the treatment it will get at sea on rigs which we design and build ourselves. The co-operation of the manufacturer in accepting our findings and putting right any defects without trying to allege incompetence on our part is generally proportionate to his experience of dealing with us. Fortunately, most recognize that here is a splendid opportunity to learn by an authentic commentary from quasi-operational use of their product. There is little direct research and development in NAMD on equipment itself. What R and D there is arises from suiting it to the system application, and matching components from different manufacturers. However, there is an indirect involvement with the equipment's improvement as DG Ships increasingly brings NAMD staff into the dialogue with the manufacturer in getting him to undertake R and D leading to modifications.

Incidentally, this whole procedure for accepting reliable marine engineering equipment (I assure you it would be worse without our efforts!) has been examined recently by a Four Nations team and now provides a valuable guarantee to assist Defence Sales of British equipment in this field to the US, Germany, and France.

Our success owes much to the unique blend of experience brought to bear in the current staff of 9 scientists, 26 constructor and P and TO grades, and 6 naval officers, who are ably supported by 18 naval ratings and 88 civilian industrials. Many of the latter are ex-naval personnel who are of particular value in shift watchkeeping so as rapidly to accumulate running hours in the endurance testing of machinery.

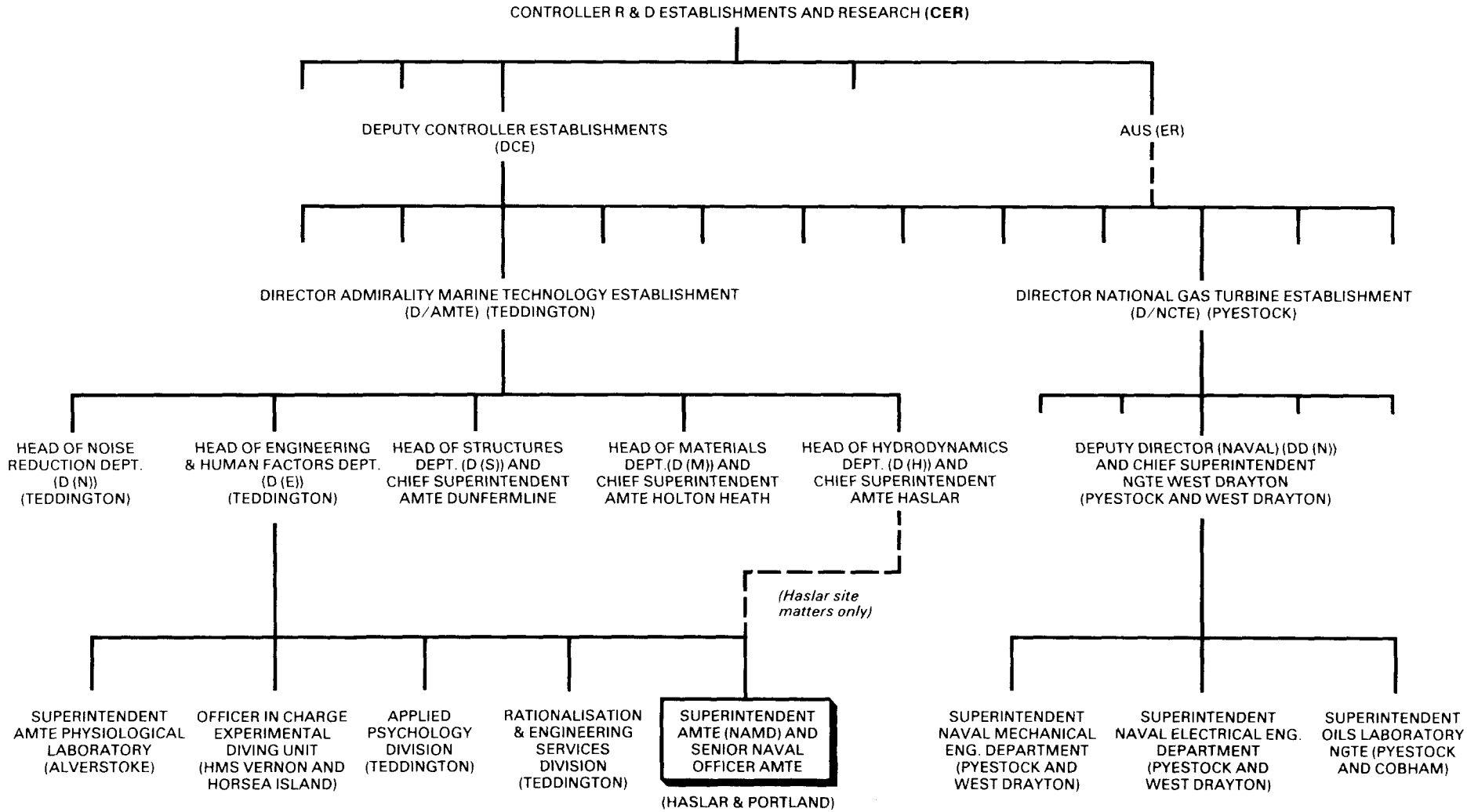


FIG. 4—ADMINISTRATIVE ORGANIZATION OF NAVAL R AND D IN THE ENGINEERING TECHNOLOGICAL FIELD

The majority of our non-industrial technical staff move on to DG Ships with the benefit of their experience here (15 in as many years).

Haslar houses as lodger units, the Machinery Trials Unit and Machinery Controls Trials Team which are parts of DG Ships. Much 'rubs off' in both directions in consequence, as it does from having our own staff go out to ships building, at sea, and in dockyards. NAMD also provides a trials staff service to investigate, with specialist instrumentation, any problems found in the Fleet, or ships and submarines building. This covers propulsion as well as auxiliary machinery aspects, with particular involvment in measuring thrust and torque including transient conditions on contractor's sea trials. NAMD still provide a fuel trials senior rating to go round certain of the gas-turbine ships conducting investigations and taking samples to NGTE(C) and AMTE(DL) Eastney. *J.N.E.* Vol. 23, No. 2, Dec. 1976, p. 215, and Vol. 24, No. 3, Dec. 1978, pp. 252–9 refer. Eighty years on there are still problems with the use of liquid fuels!

FIG. 4 shows the administrative relationship with other naval orientated engineering R and D units. NAMD has but one customer, DG Ships. Whilst the NAMD units are always delighted to have anyone visit to see what they are doing on behalf of marine engineering and to hear your problems, all queries for actual work assistance should still be directed through DG Ships.