

CORRESPONDENCE

SIR,

I have read with interest the article entitled "H.M.S. *Glasgow*—Steaming on Three Shafts" which you have published in Vol. 4 No. 3 dated October, 1950.

It may be of interest to some of your readers to recall that, during the War, H.M.S. *Glasgow* was steamed for some months on the two outer shafts only; the two inner propellers having been removed in consequence of a hit from a torpedo dropped by an Italian aeroplane in Suda Bay.

The after engine room was kept shut down, and spares being hard to come by in those days, the after unit soon came to be known as Peter, the forward unit being Paul.

Operational requirements of the time stood in the way of the refinements of analysing in detail the effects of running the ship on two shafts. On the occasion, however, of her aircraft sighting the German pocket battleship *Sheer*, *Glasgow* gave chase at her utmost speed on two shafts with a fine disregard for the limitation of the loading on gearing and shafting. She achieved over 25 knots, developing 110% full power in the forward engines with three boilers, instead of the normal two supplying steam—one boiler in the after unit being cross connected.

The resultant torque in the forward shafts and gearing was some 25% in excess of the normal full power figure, and subsequent examination showed two teeth in the port L.P. pinion had failed in fatigue. This was remedied by exchanging the port L.P. pinions of Peter and Paul—and had interchangeability been our policy in those days the job would have been considerably easier.

(Sgd.) W. A. HAYNES,
Commander (E) R.N.

SIR,

Assuming that, like the Editor of the *Times*, you are open to assault by correspondence and in the belief that our journal has a wide circulation, I wish to plead for more imaginative thinking by headquarters staff when naming equipment or engineering material for the Navy.

The choice of a name for a thing is important as any parent will agree and this is true of material as well as of junior personnel.

There are, I suggest, three requirements for a name; to identify, to be as convenient in use as possible and to indicate function.

The third requirement is not always necessary but the following examples show how it has not been met in cases where it is desirable and could easily have been done :—

"*CO2 Room*"—This is still used in H.M. ships instead of "(Main) Refrigerator Room" and has even persisted in later ships where the main refrigerant is Freon, thus exposing the inefficiency of the name. Ship's staff cannot easily correct this error since it is embodied in many official drawings and in tallies on ventilation and other systems.

"*50 ton Pump*"—meaning a Hull and Fire pump. The name is just unhelpful as the capacity of a pump is of negligible importance compared with its function.

“*Transmitting Station*”—Whilst admitting a proper respect for tradition this name gives an inadequate and confusing indication of the function of the compartment and should be abolished.

The second requirement, that a name should be convenient in use, appears to have been overlooked by many of those responsible for designing or supplying naval equipment.

E.M. Article 527 (2), (a) is a classic example. Others are :—

“Pattern 230 breathing apparatus”, “Gas/water fire extinguisher” and “Admiralty Boiler Compound”.

The fault lies in not providing a short name for the user in addition to what may be called the “store-keeping” name. This is specially important in the case of equipment used by Damage Control teams. If convenient short names are not provided officially then ships will invent their own to the detriment of a uniformity which is usually desirable.

When choosing short names there is scope for ingenuity and imagination. Names like “VIM”, “GUNK” and “SPAM” (all single syllabled) were not chosen idly.

Initials are not always suitable since although they look short they are essentially many-syllabled to speak.

e.g. “R.D.F.” (3 letters, 3 syllables) compares unfavourably with “RADAR” (5 letters, 2 syllables) ;

and “w.t.c.” (3 letters, 3 syllables) is not as good as “Void” (the 4 letter, 1 syllable U.S.N. equivalent).

When “Admiralty Evaporator Compound” (27 letters, 11 syllables) was recently introduced by AFO 3264/50 the opportunity might have been taken to introduce a suitable short name at the same time.

For example, how refreshing it would have been to see the order headed :—
“*Admiralty Evaporator Compound (SKOFF)—introduction.*”

(Sgd.) A. S. C. SANDERSON,
Commander (E) R.N.

Sir,

I have read with great interest the article by Commander (E) I. G. Aylen, O.B.E., D.S.C., R.N., in No. 3 of Volume 4 on the effect of fouling on fuel consumption.

Attention was drawn to this matter in 1924 or 1925 from the Mediterranean Fleet owing to some ships using an apparently excessive amount of fuel during summer cruises as compared to others doing the same cruises.

A series of fuel consumption trials was arranged for one “C” class and one “D” class cruiser just before docking. The trials were then repeated immediately after docking.

Engineer Rear Admiral Crousaz was at the time an assistant in Malta Dockyard and he had the task of organising the trials. It is of interest to mention that for a fixed number of nozzles, the steam pressure in the first stage is within limits very nearly proportional to the power being developed and this fact was extensively used to assist in getting consistent and reliable results.

As far as my memory serves, the increase in consumption at about 15 to 20 knots was in the region of 60% falling to 40% at higher powers. An interesting conclusion which was drawn was that at economical speed the cost of docking was saved in 4 days, while at high speeds the saving was effected in 12 hours.

My personal experience at Alexandria during the early summer months of 1937 showed that H.M.S. *London* could get into a state which limited the

maximum speed to under 27 knots, whereas with clean bottom a speed of just over 27 knots was obtained with half power. Thus at $26\frac{3}{4}$ knots, the increase in fuel consumption as compared to clean bottom conditions was 112%. Shortly after this had been pointed out, special arrangements were made for the whole squadron to proceed in turn to Malta for special docking.

(Sgd.) W. F. BAILY,
Captain (E) R.N.

Sir,

As far as I can recall Commander Ayles's article in the October number about the effect of Fouling on Fuel Consumption in H.M. Ships is the first that has appeared in the *Journal* or its predecessor on this specific subject. This is surprising since it is a subject which concerns all Engineer Officers at sea and particularly those responsible for the fuel logistics of their Flotilla, Squadron or Fleet.

On the other hand the whole question of endurance and performance of H.M. Ships under varying Service conditions is a very involved subject which on closer investigation reveals more and more variables and so discourages the seeker for truth, unless he is very determined and has plenty of time to devote to it. Nevertheless, I am certain it should be tackled and brought to a more logical and manageable form, as is done in the U.S.N. and Merchant Navy, compared with the present very limited and frequently erroneous relationship between skin friction and time out of dock.

To be slightly constructive rather than the reverse, I would suggest the following lines of approach :—

- (a) Certain variables, revs, power and fuel consumption can be measured with reasonable accuracy for any particular state of the hull at the time, and from spot readings of these at, say, two powers a factor, which might be called the "Hull Condition Factor" deduced.
- (b) With modern Navigational Aids it is probable that reasonably accurate speed estimates can now be deduced more frequently than were possible when Land Fixes were the only reliable short time observation.
- (c) The general form of the curves can be deduced theoretically so that having the "Hull Condition Factor" at any time the speed consumption relationship over the whole power range is immediately calculable.
- (d) Machinery operational factor and factors due to sea-water temperature, displacement, etc., could also be regularized and reported to the Administrative Authority at stated intervals.

Logistic planning in war is now accepted as a prime requirement but the tools provided at present in the form of data, rules, etc., are totally inadequate for the accuracy required.

The problem is many sided and fraught with difficulties so that if left till war occurs, when all concerned are under heavy pressure of work and other distractions, usually defies logical solution, nor is it fully appreciated except by those who have been saddled with the problem in large dimensions.

I would therefore strongly advocate that it be examined and tackled resolutely in peace time and if pressure of work at the Admiralty precludes this, consideration could be given to one or more of the following :—

- (a) A special team including a competent Mathematician.
- (b) The subject of a Thesis by Dagger M/E officers.

Consideration of your space limits my remarks to a brief posing of the problem and I hope a slightly provocative plea for a serious effort to produce something better for the future.

(Sgd.) J. G. C. GIVEN,
Captain (E), R.N.

Official Comment

A great deal of attention has been given to the question of endurance both in obtaining accurate data for planning purposes and in investigation to reduce the fouling of hulls and the effect on endurance, but, as Captain Given has stated, it is a many-sided problem.

As regards his proposed lines of approach :

- (a) It is not considered that a "Hull Condition factor", so deduced, would necessarily be of great help—this factor would vary on the same trip should there be any prolonged high speed, and should that trip be followed by a period in harbour. Once again a variation would occur and the factor would be no more help than records normally now made.
- (b) D.N.C. has recently produced a C.A.F.O. laying down procedure for obtaining accurate speed data with the aid of radar, and this should be a real help for ships in company.
- (c) A series of curves are of great help, but the "Hull Condition factor" would not give any special accuracy in selecting the correct curve.
- (d) It would be extremely difficult to establish a machinery operation factor and the factors due to sea-water temperature and to displacement. Displacement can be taken into account and the effect of sea-water temperature on vacuum established, but under present conditions, with so many varying sets of machinery in the ships in use, and the great divergence in the standards of maintenance, it would not be possible to establish within the limits of accuracy necessary machinery operation factors.

Some of these points were considered in the course of the revision of Form S.231, now being undertaken, and it was decided to concentrate on obtaining from ships as many reports of actual steaming performance as possible. This may produce more accurate planning data, but really thorough war conditions trials are necessary. To this end, E.-in-C. is hoping to be able to obtain a ship and run trials to enable the effects of weather, fouling and zigzag to be better assessed.

The U.S.N. have tackled this problem with typical thoroughness and, it is felt, they have shown great wisdom in quoting their endurances in engine miles and/or hours. This is a method that might be adopted and is at present under discussion.

It should be recognized that the R.N. problems are very much more complex than those faced by the Merchant Navy. If our ships ran with the regularity, frequency and steady speeds of a liner, then the factors so necessary for really accurate planning could be readily obtained. It is the long periods in harbour, the great variety of conditions in those harbours, the low speeds interspersed with occasional bursts of high revolutions that make this problem such a difficult one.

The proposals that the problem should be tackled by a special team, or made the subject of a thesis for dagger officers will be considered, but it is felt that more information, especially of the type it is hoped to obtain from the trials mentioned, will be necessary before they really can get down to work. Perhaps even then they may find themselves asking, as so often it could be asked at headquarters :

" Does the road wind up hill all the way ?
 Yes to the very end.
 Will the day's journey take the whole day long ?
 From morn to night, my friend."