SOME VIEWS ON ENGINEER'S OFFICE RECORDS

by

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The author's object is to suggest that the arrangement for keeping records in the Engine Room Register and Engineer Officer's Notebook could be improved, and we would welcome other views on this subject of Engineer's Office Records. A new Register is under consideration at the moment but large stocks left over from the war must be used before the publication of a new Register can be made.

Most people who have charge of machinery keep some sort of record of its working and maintenance, from the motorist who works out his petrol consumption and tyre mileage, to the engineer in charge of a power station or the Engineer Officer of a ship. The motorist and power station engineer, however, have in common an advantage which is denied to the Engineer Officer—a continuity among the record staff which, even in normal peace-time conditions, can never be attained afloat. The extent of this handicap varies with the type of ship. In a battleship the Engineer Officer's writer is usually a petty officer with some years' experience in the routine work of an office ; but in a small ship no trained writer may be borne, while some officers feel an innate aversion from detailed clerical work, which they overcome with difficulty.

The Purpose of Records

The value of records of what has happened in the past should be judged mainly by the extent to which they are a guide to what should be done in the future. Secondary considerations are that they provide statistical information such as fuel and water consumption, serve as a reminder of authorised periodical examinations and tests, and may reveal to an inspecting officer errors in the operation of the machinery (though it is possible to make most peculiar entries in the Engine Room Register without attracting adverse comment, provided that the figures are numerically correct). The undiscriminating craving for complete information for its own sake should be subordinated to the question, Is there a reasonable probability that the record may serve some useful purpose ? If it is suggested that the only way to ensure the availability of all information which could possibly be wanted is to keep a record of everything which has ever occurred, the answer is that though this would be perfectly possible with a permanent trained office staff, it is rarely a practicable proposition in a ship.

A Ship's Machinery Records

Machinery records fall into two main classes ; operation and maintenance, or, what the machine does and what is done to the machine. The two categories cannot be completely dissociated, because the maintenance required will depend upon the period and conditions of operation to which the machinery has been subjected. The principal machinery records kept on board in the Engineer's Office are the Engine Room Register (S.353 or S.467) and the Engineer Officer's Notebook. The Engine Room Register attempts to combine these two classes of record.

It is suggested that, as a general principle, the Register should contain the records of machinery operation, and the Notebook those of maintenance and

repair. Each must contain reference to the other ; in the Register there would be, where appropriate, a note that details of a repair are shown in the Notebook, while in the Notebook there would be an indication of the total hours or period in use between repairs or overhauls, which would be obtained from the Register.

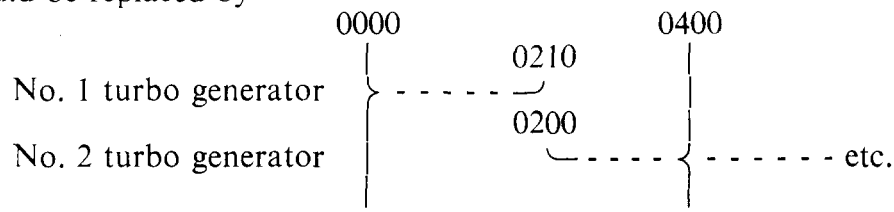
The Future Engine Room Register

The writer does not venture to offer a detailed plan for the Register, but makes the following, by no means exhaustive, suggestions :—

(i) The " record of the working of the main and auxiliary machinery " should not consist, as at present, of a chronological narrative of events, whose completeness depends upon the individual concerned, interspersed with notes on the employment of the staff and of " abnormal occurrences," but of notations of the times at which particular events occurred. The method adopted might, perhaps, be partly graphical, so that, to give a simplified example—

0200 Started No. 2 turbo generator
0210 Stopped No. 1 turbo generator

would be replaced by—



Such an arrangement can be adapted to cover the working of other main and auxiliary machinery, and it gives a clearer picture than does a narrative ; uniformity should be assured, and calculations of hours in use, or time under way, are clarified. The choice of the machinery to be included in the left-hand column would vary with different classes of ship. This column would therefore be left blank by the printers, and would be filled in by ship's staff in accordance with instructions issued by some co-ordinating authority to each class of ship. Minor auxiliaries, such as fresh water pumps, and those of whose working no permanent record is required, such as fire and bilge pumps, would not be included.

(ii) Space should be provided for the aggregate hours in use of those machines or fittings whose examinations are governed by the actual time during which they have been working, with a column in which minor periodical attentions could be noted, *e.g.*—

No. 3 Diesel

Date	*Hours*	*Total since decarbonising*	*Remarks*
15th November	20.00	900.00	
16th November	18.10	918.10	Changed lub. oil, cleaned filters.
18th November	17.55	936.05	
	etc.		

(iii) There should be a space for reference each day to repairs whose details would be included in the Notebook, and for recording minor work whose importance does not justify inclusion in the Notebook, but of which a record might be useful, *e.g.*—

Completed overhaul of starboard extraction pump (v. Notebook).

Changed lubricating oil of all boiler-room fans (15th-17th Nov.).

There would also be a note in the same space of authorised periodical examinations, with a reference to the Notebook if the examination revealed anything of importance as—

Examined turbines in accordance with E.M.175 (7) (v. Notebook).

(iv) Space for detailed records of steaming conditions, such as are shown on the left-hand pages of the present fair Register, should not be included, though they should be retained in the rough Register to ensure attention by the watchkeepers, and for the information of the Engineer Officer. Such permanent records are valueless except under steady conditions : the space is not used at all in harbour, so that a waste of paper is entailed which is out of keeping with the contemporary economic situation. When conditions justify the taking of detailed records they should be entered on a fly sheet, which could be inserted at the end of the Register, or opposite the day in question.

(v) Consumption of fuels (except oil fuel) and lubricating oil should be entered weekly. A daily dip of, say, the Diesel tanks may give an inaccurate result unless the ship is steady, and does not take into account possible differences in the amounts in the ready-use tanks : if the amount of fuel actually used each day is obtained from the watchkeepers' and motor-boat drivers' logs, it may not in practice agree exactly with the result given by a weekly dip of the Diesel tank, and in any case the information is of little value unless the machines are running under trial conditions. It will not appear indiscreet to suggest that it is already common practice, at any rate in small ships, to read the lubricating and Diesel oil tanks weekly, and to distribute the total consumption so obtained among the preceding seven days.

(vi) Entries concerning the employment of the engine room staff should be omitted. It is doubtful if the Engineer Officer of a large ship would learn any more on the subject from the Register than he would from a perusal of the workbook, or a discussion with the Senior Engineer ; while if it can be imagined that the entire Engine Room Department overslept during one forenoon, it is unlikely that the Register would reveal the fact to an inspecting officer.

It must be admitted that, whereas uniformity should be attainable in the entries referred to in paragraphs (i) and (ii), there is room for a wide diversity of opinion as what could usefully be included in (iii) ; but if the question is faced, agreement should not be beyond reach, and appropriate instructions could be included in the foreword to the Register.

The Future Engineer Officer's Notebook

The Notebook, which is to contain the constructional details of, and a record of the work done to, each machine, must be adaptable to each class of ship. A plain notebook, filled in by the ship's Engineer Officer, meets this requirement, but it does not avoid the exasperation caused by having to continue the entries under one heading on a later page because insufficient space has been allowed. The solution is the loose-leaf book, which has been adopted for H.M.S. *Vanguard* (see *Journal of Naval Engineering*, No. 1, page 56) and in at least two destroyers, or the card index. These are capable of unlimited expansion as information accumulates, or contraction if machinery is scrapped or transferred to another ship. If they are made of standard size the record

accompanying, for example, a portable pump can be assimilated without difficulty in the office records of the new ship.

Conclusion

The Engineer's Office should be the nerve centre of the whole Department, though limited space alone must prevent it from working with the degree of efficiency which prevails ashore. The limitation of space and frequent changes among an imperfectly trained staff impose severe handicaps, but Engineer's Office records should be so designed that these handicaps can be overcome.