

SOME REFLECTIONS UPON THE NAVIGATION ACT AS AFFECTING THE
DESIGN AND CONSTRUCTION OF SMALL SHIPS.

by

ROBERT S. WESTHORN, MEMBER.

1. The title of this Paper should be amended by making the word "Act" plural as it is proposed to refer to both the Australian Commonwealth and the New South Wales State Navigation Acts, and particularly to Part 11 of the Commonwealth Survey and Equipment Regulations.
2. As explained below, the provisions of the Commonwealth and State Regulations are practically identical, and, for the sake of brevity, extracts will be taken from the Commonwealth Regulations only. The close similarity between the two sets of requirements results from a decision made by the Maritime Services Board of N.S.W. following upon an amendment of the State Act in 1941, when it was considered essential that new regulations should be drafted to cover the extended scope of the amended act, and the Author, then Senior Shipwright Surveyor to the Board was instructed to deal with this as far as technical and practical matters were concerned.
3. Members of the Institution, with their continuous contacts with Rules, Regulations etc. of the various Authorities, will readily appreciate that the formulation of Regulations is not a simple matter, and requires very close attention.
4. The Author had very definite ideas of what he would like to embody in the proposed Regulations, but he was, of necessity, subject to the watchful and censorious eye of the Board's Solicitor, who, in turn, was subject to the final decision of the Parliamentary Draftsman who is reputed to thrive on the frustrations of draftees (if one may coin a word) of Regulations.
5. As a last resort, in order to get them through, the Solicitor suggested that we should follow, with certain slight modifications, the Commonwealth Regulations on the assumption that the Parliamentary Draftsman would more readily accept our drafts if we could produce a precedent. And so it was. The Author accepted this compromise with much mental reservation.

6. The Commonwealth Survey and Equipment Regulations read:-

Reg. 7. A Classification certificate of the following classes, namely, 100A of Lloyds or B.S. of the British Corporation, being a Certificate granted by a corporation or association for the survey and registry of ships approved by the Governor General, shall, while it remains in force, be accepted, under and subject to the provisions of Section 204 of the Act, as exempting from survey under the Act and these Regulations for a Certificate of Survey a cargo steamship in respect of which it has been granted.

Reg. 9 (3). Where application is made for the survey of a ship for a Safety Certificate or a Certificate of Survey and the ship has not been built under the survey of the Board of Trade, the application shall be lodged with the Director, and shall be accompanied by-

(a) Such information, plans, data and the like as would be required under the Instructions as to the Survey of Passenger Steamships issued by the Board of Trade in 1928 as amended to the date of the commencement of these Regulations, and (b) such further information with respect to the ship as the Director, in the circumstances of the case, considers necessary.

Reg. 13. (1) Except insofar as other provision is made by these Regulations, anything required to be done by the Regulations or Instructions made and issued by the Board of Trade under the provisions of the Merchant Shipping Act, as a condition precedent to the grant of Safety Certificates or Certificates of Survey to Passenger steamers, shall be deemed to be a thing necessary to be done before the Safety Certificate or a Certificate of Survey may be granted in respect of any passenger steamer under these Regulations.

(2). The requirements of the last preceding sub-regulation shall also be taken as applying, in so far as they can be read as applicable, to the surveys of cargo steamers and sailing ships for Safety Certificates, Certificates of Survey or Certificates of Equipment."

7. Regulation 7 quoted above is straightforward and is operating very

8. Regulation 9 can start trouble. Suppose a ship is built under Lloyds or B.C. and for some reason she has ceased to hold a current Classification under Lloyds (B.C. being now incorporated therein), then the requirements of this Regulation become operative, and she also comes under the requirements of Reg. 13.
9. It is almost a certainty that a prospective owner of a new cargo ship built of steel would specify that she should be built in accordance with Lloyds Rules. Should he omit to do so a Naval Architect would almost certainly use the Rules, or should the ship be below the limits set out in them he would base the scantlings on the Rule requirements. If the owner decides that classification is not necessary this again brings Regulation 9 into operation.
10. It is suggested that the Ministry of Transport Instructions as to the Survey of Passenger Steamships are, in effect, means to ensure the safety of passenger ships particularly as regards hull subdivision, and the plans, data and the like to be supplied are concerned with this aspect of the hull. Except in the case of unusual vessels it is suggested that Lloyd's Rules are used for hull scantlings generally. The highly qualified staff of Naval Architects employed by the Ministry of Transport are competent to deal with all aspects of ship construction, theoretical and practical.
11. In view of the remarks made in the previous paragraph it is suggested that to require plans etc. which would be necessary to accompany an application in respect of a passenger ship to be submitted with an application in respect of a cargo ship seems to be unnecessary. If the Regulations had specified data similar to that required by Lloyd's Rules for applications regarding cargo ships the position would be much clearer, and the criterion by which applications would be measured would be known precisely.
12. It appears to be unnecessary to consider the construction of steel passenger ships for Australian Registry under either the State or Commonwealth Acts for the development of air services within the Commonwealth has reduced the numbers of sea borne passengers to negligible proportions, and the Shipping Companies appear to have accepted the position in view of their increasing interests

in air-lines. Of course the future may alter this picture, and I think we may be sure our Institution will be capable of meeting any new conditions which may arise

13. The Author does not wish to expand further upon the question of steel cargo ships, and this now leaves wooden ships for consideration.
14. It is appreciated that, perhaps, a fair percentage of the members of this Institution have not had the opportunity (or possibly the desire) to undertake the construction of small wooden ships, and again some members may doubt the necessity for such ships.
15. The Author is bold enough to suggest that small wooden ships are a very good economic proposition for Australia and the Territories. A well designed wooden ship, granted good maintenance, has an effective life which is remarkably long, and vessels 40 years old have been surveyed and found to be in good condition.
16. Apart from the economic aspect, the National aspect is worthy of some consideration. During the last war, notwithstanding very efficient air and land transport and unstinted expenditure upon these two methods, the little ships which were requisitioned and which operated on the coasts contributed in no small measure to the success of the Naval and Military operations. Even the butter box Fairmiles are still to be found in commission, and it is considered that in a similar emergency small ships, both wood and steel, would be necessary.
17. It must be admitted that construction of wooden ships is somewhat of a problem in Sydney due to the difficulty of getting timber of suitable scantlings, this being primarily due to transport difficulties, good timber is available both North and South, whilst Queensland has some beautiful timber, and opinion is expressed that that State will displace New South Wales as the best place for wooden construction.
18. It would be easy to give many reasons for the further development of this form of construction in Australia, but it is hoped that the few remarks made will indicate, at least, the Author's firm opinion on the subject.

19. Let us assume that the construction of a wooden cargo ship is contemplated, and that, according to the intended service, she is subject to survey and certification by either the Commonwealth or State Authorities.
20. The designer, in order to ensure the issue of a certificate of survey, must conform to the requirements of Regulations 9 and 13 quoted earlier, and in all earnestness it is asked: To what good purpose?
21. The Ministry of Transport have no Regulations or Instructions covering the survey, design, or construction, of wooden ships. What then is the criterion?
22. A Naval Architect is justified in asking this question, and he is also within his rights in expecting that the Officer responsible for considering his submissions should be properly qualified and experienced in wooden ship construction.
23. It is probable that one answer to the question posed in paragraph 21 would be that Lloyds Rules for Wooden Ships would be adopted as the yard stick. If this is the answer, then it is emphatically rejected by the Author. The wooden ship Rules are about 100 years old, and when written were based, as were the first iron ship rules, on the usual practice then in operation in the yards. The Rules do not appear to have been amended to conform to the latest technical data available as to the uses of wood etc.
24. Apart from any technical aspects, it is simply impracticable to build a wooden ship in Australia to Lloyds Rules due to the unavailability of suitable timber. Further, a ship built to the requirements specified would be ridiculously heavy and would rot out in a short time.
25. As a case in point, the Author can quote a 60'-0" hull (built about 1928) which followed the Rules very closely, and a 90'-0" hull built in 1950 based on the bent timber principle. The light ship displacement of the 90 footer was less than that of the 60 footer.
26. The Author, who was responsible for the 90 foot design, used the principles of the longitudinal and transverse moduli given in

the freeboard tables, making such adjustments as his experience indicated to be necessary, and also believes it to be correct to say that the Fairmiles were designed on similar principles.

26. A very large number of small wooden ships have been constructed on what has been termed the "bent frame" principle and have proved their efficiency, and a suggestion is made now that the Branch Council of the Institution might consider an investigation of the strength of this type of construction, evolving formulae for both transverse and longitudinal Z. The question of laminated frames might come into the picture in view of the amount of technical data which is now available.
27. The Author has suggested in paragraph 11 that it is illogical to require that the M.O.T. requirements for passenger steamships should be applied to cargo vessels, particularly when Lloyds Rules for Steel Ships so completely contain all the answers, and it is now suggested that, as far as wooden ships are concerned, the requirements in Regulation 9 (3) might read: "Such information with respects to the ship as the Director, in the circumstances of the case, considers necessary."
28. The proposal above must envisage that the Director's Staff, to whom the information is made available, shall include qualified Naval Architects having good experience in wooden shipbuilding.
29. Regulations can be the very deuce, especially when the conditions which obtained when they were first prepared change with the changing years, and the regulations do not change. To the Government Officers who have to administer them they become like to the Laws of the Medes and Persians, and it will be noted that the mandatory "shall" is paramount, very seldom does the gentle and easier "may" get a look in.
30. In consequence of the above Regulation 13, with which the Officers must conform, can result in quite a lot of unexpected requirements.
31. Recently the Author had occasion to propose to import propeller shafts, and, in his innocence, informed the suppliers that he

required Lloyd's approval of the material proposed and the diameter specified, and also that test certificates would be ~~xxx~~ required.

32. The Officer with whom the Author was dealing, and who, I know, will acquit me of any unkind personal reference, informed me that, under the Regulations, certificates from the M.O.T. would also be required. Of course he was acting correctly according to Regulation 13, but Regulation 9 accepts Lloyd's Certificate for a whole ship, Verb. Sap.
33. Just one more reflection, although it would be possible to go on with many more. This one refers to operating costs. Taking a small ship of between 50 and 100 tons nett, powered with, say, 300 B.H.P., it appears that, according to the Act, the manning would be at least 10. The wages and feeding of this number of crew would run into pretty large figures, and in view of the necessarily small earning capacity of the vessel, would make the proposition uneconomic.
34. It is suggested that, in these days of mechanical efficiency, navigational aids, fairly good weather forecasting etc., some consideration might be given to the question of the manning scale.
35. A large number of vessels have made long sea trips to New Zealand and up to the Islands, with thousands of miles to travel, with considerably less than 10 persons, often with only two qualified men on board, and they arrive without mishap.
36. The old phrase 'The perils of the sea' still has an ominous sound, but the airlines never talk of the perils of the air, yet all of us accept, with varying degrees of uncertainty, the fact that, when we fly (often with only two qualified men on board) our chances of surviving an accident equal those of the proverbial Buckley. Every Christmastide we see tiny little yachts, with all their limitations, manned with varying degrees of expertness, and often without an auxiliary engine, blithely setting out for Hobart and getting there despite the rough weather which seems

to be reserved particularly for such adventures.

37. In conclusion the Author wishes to emphasise that he did not present this Paper in a crusading spirit, but rather to fill in some little time after more important business expressing some views which have been in mind for a long time, and which, it was considered, could be expressed by an elderly (or old) Member, whose career cannot be affected if any resentment may be felt, and he would assure Members that no adverse reflections are intended on any of the Officers of either the Commonwealth or State Authorities, many of whom are personal or professional friends.
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