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W.S.

Memo prepared by  
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Provisions in the Rules regarding the provision of additional reinforcement to the strength deck plating in vessels in which it was proposed that in the ballast condition a considerable load of water ballast and/or fuel should be carried amidships.  
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This subject was first raised, so far as the Rules are concerned, in a memorandum submitted to the Technical Committee in March 1925 by the Chief Ship Surveyor, who stated:-

"A case has recently occurred where, in a vessel fitted with a deep tank aft of the machinery space and carrying a large amount of coal abreast and forward of the machinery space, fracture of the bridge deck plating took place abreast of the boiler openings.

A calculation of the strength of this vessel in the conditions indicated above has been made, and it is found that a severe compressive stress was imposed upon the plating of the bridge deck. The alterations which are proposed in the minimum thickness of bridge deck plating will have the effect of reducing the severity of the stress conditions consequent upon the loading<sup>even</sup> of this severe kind.

It has been the practice of the Society to require additional stiffening under the deck where the deep water ballast tanks are fitted amidships, and it is felt that where the circumstances point to a possible concentration of load the Committee should have power to require additional stiffening.

Proposals embodying these views have been included in the suggested amendments."

The clause referred to, Section 13 1(h) of the Rules, reads as follows :-

"Where there is indication of particular concentration of loading the Committee may require additional strengthening to be fitted to the deck."

This clause remains unaltered in the Rules.

In January 1931 the Committee authorised some experimental work to be undertaken, the object of which was to

WS28-02653

secure evidence of the limiting stresses at which failure takes place in comparatively thin plating under compression.

The results of these tests, together with their application to the cases of vessels with concentrated loading amidships such as to produce severe compressive stresses on the deck plating were reported to the Committee and embodied in a paper by the Chief Ship Surveyor, "Experiments on the Compression of Samples of Deck Plating and the Application of the Results in relation to the Thickness of such plating in Certain Conditions of Loading" read on 8th April 1934.

The General Committee referred this report to the Technical Committee for an expression of opinion as to whether any alteration of the Rules was necessary to take account of the concentration of cargo, coal or water ballast amidships, frequently found to be the case in ballast voyages.

The Technical Committee on 16th October 1934 decided that no alteration was necessary in the Society's Rules.

At the same time the Japan Committee while agreeing with the above recommendation suggested that the importance of taking additional precautions in certain cases of concentrated loading should be emphasised by a suitable clause with a suitable sub-heading.

The subject came under the consideration of the General Committee at various date between October 1934 and April 1935 when it was decided that the following clause should be inserted in the General Regulations:-

"The scantlings and arrangements given in the Rules are not framed to provided for any special concentration of loading, and if such is proposed to be adopted the Committee may require additional strengthening to be fitted.

Where an Owner desires the Committee to make provision for exceptional ballast or loaded conditions, arrangements should be made so that the necessary particulars be given on the plans when these are submitted for approval."

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W528-0265 3

This clause appears as clause 3 of the General Regulations, page 12, 1937-8 Edition of the Rules.

23. 6. 38.



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WS28-0265 3  
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