

S.S. 'EMPIRE CONSEQUENCE'

The Prudhon-Capus boilers and ancillary equipment of this vessel have been discussed with Mr. D. A. Fotheringham, Superintendent Engineer for the Managers, who stated that the defective tubes removed from the Boiler were all found to be heavily coated with scale. This has been confirmed by the Society's Surveyor. No evaporator is fitted.

It was stated that this prize vessel is to be handed over to the U.S. War Shipping Administration and the present Managers have been instructed by the Ministry of Transport to keep the vessel in service without incurring any heavy expenditure.

Whilst fully realising that the fundamental cause of the failure of the tubes was due to excessive deposit of scale, Mr. Fotheringham felt that a longer life would be obtained by fitting heavier tubes, and the reason prompting his letter of the 12th instant was his wish to safeguard himself in case further defects occurred before the vessel was accepted by the Americans.

It was pointed out to Mr. Fotheringham that, given a scale deposit in the tubes such as he described, the inevitable result would be overheating and failure of the tubes and their life would not be appreciably lengthened by an increase in wall thickness. He was informed that there is very considerable experience to show that tubes thinner than now proposed have been entirely satisfactory in cases where the boiler water has been maintained in a satisfactory condition and, as an indication of this, the undermentioned sizes were quoted:-

Original thickness	.197"
Proposed for renewals	.134"
L.R. Two rows next fire	.155"
L.R. Other rows and superheaters	.133"
B.S.S.1113 (Existing Specification)	
hot finished	.128"
cold finished	.121"
B.S.S.1113 (Proposed Specification)	
hot finished	.128"
cold finished	.092"
American Bureau	.095"
A.S.M.E.	.095"

Mr. H. Cranwell of the Ministry of Transport has been fully informed and entirely agrees that these boilers should be treated as water tube boilers in respect of the purity of feed water and that, given these conditions, a tube thickness of .134" will be satisfactory.

IT IS SUBMITTED Messrs. Shipping & Coal Co. Ltd. be informed with reference to their letter of the 12th instant and the subsequent discussion between Messrs. D. A. Fotheringham and W. J. Ferguson, it is considered that the heavy deposit of scale in the tubes of the Prudhon-Capus boilers of the above vessel has led to overheating of the tubes and subsequent failure.

P.T.O.



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COPY 39-009143-01977/2

Engineer Survey

Provided the boiler water be maintained in a satisfactory condition, it is considered that a tube thickness of 0.134" will prove satisfactory in service; on the other hand, if conditions are such that scale is deposited in the tubes, a thickness of 0.197" would not materially increase the life of the tubes.

It should be pointed out that the feed water treatment is just as important in Prudhon-Capus boilers as in other types of water tube boiler and accordingly it is strongly recommended that the Owners should make suitable arrangements for conditioning and maintaining the boiler water in a satisfactory condition, so as to prevent the deposit of scale.

W. J. Bell

18th September, 1946.

Doubtless he will see this case.



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