



Lloyd's Register of Shipping.

95, Bothwell Street,

Glasgow, C.2. 3rd April, 1948.

Dear Sir,

I beg to submit for consideration the following report upon a sample of Special Quality Steel deck plating from the S.S. "MONARCH OF BERMUDA". The ship had been gutted by fire and the sample was said to have been taken from a position which appeared to have been subjected to severe heat and probably to severe water quenching.

The chemical composition of the plate material was:

Carbon	.250
Silicon	.060
Sulphur	.040
Phosphorus	.040
Manganese	1.120
Nickel	.040
Chromium	.050
Molybdenum	.030

The physical properties of the plate material were:

Sample No.	1(L)	2(L)	3(X)	4 (X)
L.O.P. tons/sq. in.	10.15	13.10	10.75	16.05
.02% Proof, " "	15.20	15.20	14.90	16.90
Tensile } " "	33.60	33.60	33.40	34.00
Strength }				
Elongation %	28	30	30	30
Contraction %	56	57	49	37.

Impact tests /

Cont'd overleaf.



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Impact tests, Charpy test piece with Izod notch.

Sample No.	21°C		0°C	
	Ft. lbs.	% Cleavage	Ft. lbs.	% Cleavage
1 (L)	54	50	50	70
2 (L)	53	60	49	80
3 (X)	37	55	27	90
4 (X)	37	60	27	90

The microstructure of the steel was normal and there was no evidence of structural alteration due to the heating and quenching of the material.

The heating and quenching action had, however, warped the sample and, while the test specimens were selected from the most even localities, it is considered that the low L.O.P. shown in the test of the samples is due to a slight curvature of the pieces.

The .02% proof stress is that at which the stress-strain curve has deviated from the "Hook's Law" straight line by .0004" on a gauge length of 8". This deviation is equivalent to the .0004" permanent set permitted by the Rules for the quality and type of special quality steel for shipbuilding, and it is considered that the proof stresses reported above are indicative that the material has suffered no deterioration through fire damage.

I am, Dear Sir,
Yours faithfully,

W. L. ...

G. Webster, Esq., O.B.E., D.Sc.,

GLASGOW.



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