

S.S. "M I E L E R O".  
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Dimensions: 389' B.P. x 54'6" Mld. x 32'6" to Upper Deck  
Transverse No: 87.0  
Longitudinal " 33,908  
L/D = 11.97  
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Vessel classed - 100 A.1. "Carrying Petroleum in bulk".  
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For a general description of the vessel see Mr. Fowling's Memo. dated 4. 2. 20 and for a report on the loss of the vessel, made on behalf of American Underwriters, vide a confidential letter written on the 26th April this year and addressed to Mr. Scott.

Since the above particulars have come to hand, an investigation has been made in this office of the longitudinal strength of the vessel under certain conditions. The information available is incomplete, but may be considered sufficient as a basis for comparative results, which have alone been attempted.

The conditions assumed are -

- (1) Vessel in sagging condition, i.e. with the crests of two waves at ends and hollow amidships, and loaded in the manner reported for the vessel on her last voyage.
- (2) Generally similar to condition (1) though with a re-arrangement of cargo and in accordance with the freeboard assigned.

Taking Condition (1), the total displacement of the vessel at the time of the loss and distribution of cargo are as shewn below:-

	<u>Tons.</u>
Assumed weight of hull & machinery ...	3,800
Oil fuel in No.1 Tank ...	25
Molasses in No.3 " ...	850
" " No.4 " ...	1,355
" " No.5 " ...	1,375
" " No.6 " ...	1,360
" " No.7 " ...	1,340
" " No.8 " ...	1,320
Oil fuel in aft peak ...	25
Feed water under Engine Room ...	150
Sundry F.W., stores &c... ..	50

Total deadweight - 7,850 tons.  
Mean load draught 24'3½"

11,650  
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From the longitudinal strength calculation carried out in the usual way, it is seen that the vessel is subject in this condition to an approximate bending moment of 171,400 ft. tons, which gives the following stresses:-

Compressive stress at Upper Deck	...	8.85 tons sq.in.
Tensile " " Keel	...	7.55 " "

In case (2) the cargo has been more uniformly distributed throughout the vessel, and the draught limited to that prescribed by the official freeboard. The distribution of cargo &c. in this condition is as follows:-

						<u>Tons.</u>
Assumed weight of hull & machinery	...					3,800
Oil fuel	...					50
Molasses in No. 1 Tank	...					950
" " No. 3 "	...					1,280
" " No. 4 "	...					1,290
" " No. 6 "	...					1,290
" " No. 8 "	...					1,295
" " No. 9 "	...					1,195
Feed water under Engine Room	...					150
Sundry F.W. stores &c.	...					50
						<u>11,350</u>

Total deadweight - 7,550  
Mean load draught 23'8 $\frac{1}{2}$ "

It is seen that the approximate bending moment for the vessel in case (2) is 71,560 ft. tons and the corresponding stresses -

At Upper Deck (compressive)	3.7 tons per sq. in.
At Keel (tensile)	3.15 " " "

Prints are appended shewing for the two cases considered the distribution of cargo together with curves of weight buoyancy and shearing force.

A copy of the calculation for the moment of inertia of section is also attached.

A.S.A.  
1.9.20



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