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Enquiry into the loss of the s.s. "VARDULIA", held at the County Court, Sunderland, on 24th, 25th and 26th March, 1936 before Judge Richardson.

Assessors : Dr. Robb, Captain Thompson and Capt. Williams.

The "VARDULIA" left West Hartlepool on 12th October, 1935 with a cargo of coal for Newfoundland. The vessel was abandoned on 19th October, 1935, and it is presumed that she, and all hands, have been lost.

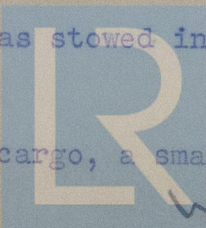
The "VARDULIA" was of the following moulded dimensions :-

420.47' x 55.68' x 31'-3 $\frac{3}{4}$ ".

There were two decks, and poop, bridge and forecastle covering 48% of the vessel's length. The freeboards were the 1906 freeboards giving a summer extreme draught of 25'5", and a summer deadweight of 9220 tons. The last Special Survey was held at various ports, and the record in the Register Book is S.S.Sws.No.1-34. A freeboard renewal survey was held at Glasgow on 28th April, 1934, and the certificate was valid until 28th February, 1939. A freeboard annual survey was held at Glasgow on 11th April, 1935.

In opening the Enquiry, Mr. O.L. Bateson, for the Board of Trade, stated that no charge was being made against the Owners or Managers, but some question would arise as to the stowage of the cargo in the holds and tween decks. The steering gear was steam controlled by telemotor, with leads through the tunnel, and no question would arise regarding its efficiency, nor would any question arise regarding the auxiliary gear, as the Board of Trade were satisfied that it was kept in proper order and was stowed in the wheel house and overhauled each voyage.

With regard to the cargo, a small quantity was



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shipped at Manchester consisting of some bags of Alumina and some soda drums. There was also a quantity of dunnage and paper cores. These were all stowed in the tween decks.

7497 tons of coal were shipped at Hartlepool. This consisted of 4900 tons smalls and 2597 tons large coal. This coal was stowed as follows :-

No.1 hold	$\frac{3}{4}$ " smalls
No.1 tween deck	" "
No.2 hold	Best coal
No.3 "	" "
Nos.2-3 tween decks	" "
Deep tank	$\frac{3}{4}$ " smalls
No.4 hold	" "
No.4 tween deck	" "
No.5 hold	" "
No.5 tween deck	" "

The qualities of coal were divided as follows :-

Large steam coal	1411 tons
Large house coal	1186 "
$\frac{3}{4}$ " dry cleaned smalls	4900 "

TOTAL 7497 tons

The draughts leaving Hartlepool were 25'0" forward, 25'3" aft, 25'1 $\frac{1}{2}$ " mean. This is 3 $\frac{1}{2}$ " less than the summer load draught as it was estimated that when the vessel reached the W.N.A. Zone she would have risen to her W.N.A. freeboard. As a matter of fact it was estimated that she should have a margin of $\frac{1}{2}$ " when entering that Zone.

In view of the above there was no question of overloading.

The calculated deadweight on a mean draught of 25'1 $\frac{1}{2}$ " is 9116 tons, but the weight stated to be on board was:-

Coal (weights from tallies)	7497 tons
Cargo at Manchester, feed water, stores, crew etc. and bunkers	1496 "
	<hr/>
	8993 tons.

It was stated that the discrepancy of 123 tons weight might be accounted for by extra water in the tanks and water taken up by the coal in transit to the ship.

The vessel was stated to have had a list to starboard of about 4° when she left Hartlepool. The attention of the Captain was called to this fact by the Board of Trade Surveyor, and by the Pilot, but he replied that he could easily correct that when he got outside.

Mr. Bateson said there were two points to consider :-

(1) Why did this vessel take a dangerous list very suddenly? There was a great deal more space than the evidence of those loading the ship suggests, and it might be that the cargo was not properly trimmed.

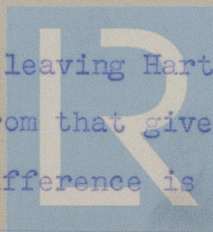
(2) What were the provisions made for seeing that the coal was properly stowed and trimmed, and who was responsible?

No blame was imputed to any one by the Board of Trade, as the purpose of the enquiry was to bring to the notice of those concerned the fact that this type of coal is very liable to shift.

The responsibility rested on the Master by law, but he could not be expected to superintend all that was done, and he had to rely on reports made to him by other parties.

The Captain and Engineer reported to the Owners before leaving Hartlepool that the vessel was in a good and seaworthy condition.

The deadweight on leaving Hartlepool was stated to be 9082 tons (this differs from that given at the top of this page, namely 8993, and the difference is stated to be due to



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the fact that after moving from the tips on account of a falling tide, the vessel return^{ed} and took on board 89 tons of coal).

Plans put in by the Builders showed that an Inclining Experiment was carried out on 11th August, 1930, and this showed that the lightweight was 3647 tons and the K.G. was 21.53 feet.

Captain Findlay, the Owners' Marine Superintendent, stated that steel ends had been fitted to some of the hatch covers in their ships, and these are now being fitted in all cases.

The ship carried a Master, 3 Officers, 4 Engineers, 1 Apprentice, Boatswain, Carpenter, 6 A.B's, 1 ordinary seaman and 1 apprentice. This is one man in excess of the existing scale, but is not up to the standard of the proposed new scale.

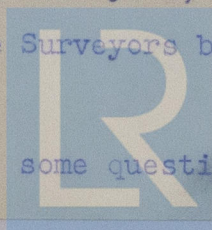
Surveys by the Society's Surveyors :-

The following Surveyors were called to give evidence :-

- (1) W.T.Pyle (Glasgow) regarding damage and docking survey in December 1934, freeboard renewal survey on 28th April, 1934, and freeboard annual survey on 11th April, 1935.
- (2) J.E.Sellex (Swansea) regarding damage and part S.S. 2nd No.1 in January/February, 1934.
- (3) H. McG. Paton (Swansea) regarding survey for assignment of Convention freeboards in April, 1932.
- (4) C.A.Millar (Hartlepool) regarding damage survey on 10th October, 1935, i.e. two days before the vessel left on her last voyage.

With regard to these Surveyors, the reports of Nos. 1, 2 & 3 were accepted, the Surveyors being requested only to confirm their reports.

With regard to No.4, some questions were asked as to



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the nature of the bulwark damage, and what would be the effect on the safety of the vessel and the comfort of the crew. Mr. Millar explained that the bulwark was only slightly set in, and the bulwark stays slightly bent, but no riveting was started. He expressed the opinion that neither the safety of the vessel nor the comfort of the crew would be affected in the slightest degree. Counsel for the Officers and Crew pressed this matter at a later stage, but Mr. Millar's evidence was supported in all details by Mr. A.J. Parkin, Surveyor to the Board of Trade at West Hartlepool, by Mr. T. Stoddart, foreman riveter with Messrs. Wm. Gray & Co., who examined the damage, and by the Owners' Representatives.

A number of trimmers and chargemen gave evidence regarding the trimming of the coal, and they were all agreed that the lower holds were stowed quite full, some of them even declared that the coal was stowed and levelled so as completely to fill the hold up to the under side of the deck plating. They also stated that the coal was well stowed in the tween decks.

There was considerable criticism regarding the fact that foremen trimmers and charge men appeared to be appointed by the vote of the trimmers themselves, and no one man appeared to be responsible for seeing that the trimming as a whole was satisfactory.

The Board of Trade then endeavoured to show that the statements of the trimmers could not be correct, and the following particulars were submitted by them :-

Hold	Captain's Instructions regarding quantity of coal to be put in each hatch.	Quantity put on board, as supplied by the Manager of the Coal Agents from the tally weights.
	Tons	Tons
No.1 hold & tween deck	1500	1606
No.2 hold & tween deck	1640	1601
No.3 hold tween deck	905	985
Deep tank	740	750
No.4 hold & tween deck	1515	1364
No.5 " " " "	1200	1108

The question was then raised as to the stowage rate of the coals carried. Mr. Jackson, the Manager for the Colliery Agents, who appeared to have given much study to the subject, stated that $\frac{3}{4}$ " smalls would stow at 48 cubic feet to the ton, and the other coals at about 50 cubic feet to the ton.

On the other hand, Mr. Parkin, of the Board of Trade, made experiments on coal stowed in a number of trucks, and found as follows :-

$\frac{3}{4}$ " smalls	44.18 cub.ft.- ton.
Blackwall Screened Steam	45.296 " " "
Shotton Screen	47.169 " " "
Cobbles	45.587 " " "
Eden Hill Best	45.857 " " "

An average mixture of the last four, which were the coals carried in the "VARDULIA", gives 45.63 cubic feet per ton.

The decision of the Court on this question of stowage will depend in some measure on which of the foregoing rates are accepted, as will be shown by the following table.

Hold	Empty space in cub. ft. as shown by the calculations made by the Board of Trade.	Empty space in cub.ft. as calculated from the evidence given by the Trimmers.
No.1 hold	2830	Nil
No.1 tween deck	6869	Nil
No.1 upper deck hatch space	Nil	Nil
No.2 hold	5105	Nil
Nos. 2 & 3 tween decks	27448	11864
No.3 hold	Nil	Nil
Deep tank	2802	Nil
No.4 hold	Nil	Nil
Nos.4 & 5 tween decks	20439	11471
No.5 hold	Nil	Nil

Some of these figures are hard to explain.

For example, if the Captain thought that 1500 tons would fill No.1 hold and tween decks, and give good stowage, and the trimmers actually put 106 tons more in the spaces, it is difficult to understand how there could be 9699 cubic feet of vacant space, a space which would represent about 200 tons. Conversely, if the Captain expected to put 1200 tons into No.5 hold and tween decks, and only 1108 tons were put in, it would appear that there must have been considerable empty space instead of there being none as stated.

Sparring was fitted in the holds and tween decks and it is therefore probable that some "settling" took place when rough weather was encountered, and this might conceivably be followed by shifting of cargo. Some trouble was caused on a previous voyage by the hatch wedges being washed out of the cleats and the tarpaulins being washed off, and attention was called to the fact that there were no horizontal stiffeners

on the hatch coamings. Wood beams, however, had been fitted over Nos. 1 & 2 hatchways before the vessel sailed on her last voyage. The last wireless message seemed to indicate that the vessel had turned round "stern to sea". This suggests that something had happened to the hatches forward, and it may be that this, and the shifting of the cargo, caused the loss of the vessel. This view was supported by Dr. Robb.

In closing the case, Counsel for the seamen suggested that Nos. 1 or 2 hatches or both were stove in, or possibly gas accumulated over the surface of the coal when the ventilators were closed, and blew the hatches up. Counsel for the Owners thought it was not hatches that caused the loss, and suggested that it must be regarded as a mystery of the sea. Counsel for the Board of Trade suggested that a misapprehension existed on the North East Coast about the stowage of cargoes, and stated that there was no evidence that anything had happened to the hatches.

A list of the questions submitted by the Board of Trade is attached.

WJ
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