

"SAM" SHIP FINDINGS

"Leicester's" Inadequate Shifting Boards

COURT'S RECOMMENDATIONS FOR BALLASTING

The findings of the Ministry of Transport Court of Inquiry which investigated the listing and abandonment of the *Leicester* (ex *Samesk*) were announced yesterday by Mr. K. S. Carpmael, K.C., sitting with Mr. J. P. Thomson, Commander W. A. Williamson and Mr. E. F. Spanner. The Court acquitted the owners and the registered manager of any blame, but was of the opinion that the marine superintendent could not escape criticism. The shifting boards, it was found, were badly designed and lacking in strength. The Court strongly urged that the provision of adequate measures for preventing any shift of solid ballast should be made a condition of seaworthiness, and laid down the opinion that solid ballast was liable to shift at angles of roll exceeding 20 deg. Another recommendation was that some of the solid ballast in "Sam" ships should be carried in the after lower holds.

In their findings, the Court said the *Leicester* was built in 1944 at Baltimore, United States, and was owned by the Federal Steam Navigation Company, Ltd., of Leadenhall Street, E.C. 3. She left Tilbury on Sept. 4, 1948, in ballast, carrying 1498 tons of solid ballast in the 'tween decks, and 191 tons of solid ballast in Nos. 2, 3, 4 and 5 bilges. Shifting boards were fitted but they were not well designed or of sufficient strength. From Sept. 14 until the abandonment of the vessel, the weather deteriorated, and six members of the crew lost their lives. Presence of the shifting boards probably prevented the ship capsizing.

On this voyage the ballast in the 'tween decks consisted of approximately 1250 tons of Thames ballast and 250 tons of dry sand ballast. The Court's findings continue: "There is a considerable difference between these two kinds of ballast, the Thames ballast containing a high proportion of large stones with wet sand, while the dry sand or pit ballast consists of small stones and dry sand.

"SAMKEY" MISUNDERSTANDING

"It is very important in the first place to clear away a misunderstanding which arose in the *Samkey* inquiry held in July, 1948. In that case, evidence was given that 1500 tons of Thames ballast was loaded on board the vessel and it was so described in the report. It became clear, however, during the course of the present inquiry that the ballast actually loaded on board the *Samkey* was dry sand or pit ballast. Fortunately, however, a sample of the ballast shipped was before the *Samkey* Court, and it was upon that sample that the conclusions of the Court were based, and all that is necessary therefore is for the description of the ballast in the *Samkey* report to be altered accordingly.

"Turning again to the case of the *Leicester*, a ballast voyage to New York having been decided upon, the question of the precautions to be taken with regard to the loading of solid ballast was considered by the marine superintendent in the light of experience he had gained in connection with the inquiries into the loss of the *Samkey*, which had been under his superintendence on behalf of the Federal Steam Navigation Company, Ltd., who were the managers of the vessel for the Minister of Transport. It is material in this connection to have in mind the previous practice of the owners of the *Leicester* with regard to the stability of their vessels.

"It is very much to their credit that they have for many years taken the greatest interest in the question of stability. They and, naturally, their masters too, consider that it is best to have a comparatively low metacentric height (G.M.); that is to say, round about two and not more than 3 ft. corrected for free service, both when in ballast and when laden. There can be no doubt that they are entitled to hold this view, which is based on good reason, but (and it is a very big but) it is fundamental to this view that there should be no shift of ballast or cargo. If there were any such shift the margin of safety in a vessel like the *Leicester* would be much too small.

"The light G.M. of the *Leicester* is in the vicinity of 11½ ft. and if no solid ballast had been shipped, she would have sailed with a corrected G.M. of 8.5 ft. It is obvious that had she been sent to sea in that condition she would have been a very uncomfortable sea-boat and it is for this reason that the practice has grown up of shipping in the *Leicester* and sister vessels, when proceeding on ballast voyages, solid ballast so disposed that a very high G.M. is avoided. The Court is of opinion that in the case of such vessels the practice is well justified provided that this solid ballast cannot shift.

"There is no doubt, however, that opinion in the past has varied with regard to the necessity of fitting shifting boards when carrying this type of ballast. It is clear that before the case of the *Samkey* the marine superintendent did not believe that either Thames ballast or dry sand or pit ballast was liable to shift. The Court formed the opinion that in spite of the

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case of the *Samkey* the marine superintendent was still reluctant to believe that such ballast could shift, and the Court has come to the conclusion that this reluctance led to his failure to take any active interest in the precautions taken to prevent any shift. He did, however, give a general order to the assistant marine superintendent to arrange for the fitting of shifting boards by Messrs. Green & Silley Weir. Before giving the order he had had an informal discussion with the owners' naval architect on the subject, but no calculations, detailed or otherwise, were made of the strain and stresses involved if, for example, the vessel were to roll 30 deg., which one would have thought would have been very likely to occur in the circumstances."

The finding of the Court in the case of the *Samkey* that a shift in bulk of the so-called "solid" ballast caused her loss, was necessarily based on circumstantial evidence, as the ship herself was lost with all hands. Evidence given in the case of the *Leicester* firmly established (1) that solid ballast of well-reputed type and well trimmed, when rolled to an angle of about 30 deg., shifted in bulk very rapidly, and (2) that great strength and great stiffness was necessary in both stiffeners and shifting boards if these were to be effective in preventing such shift in bulk.

In the effort to justify the decision taken to carry the whole of the ballast in the 'tween decks, long and somewhat theoretical arguments were advanced to establish that a low G.M. was more favourable than a high G.M. to the avoidance of synchronism when rolling in waves. In the opinion of the Court these arguments had no bearing on the case of the *Leicester*. The evidence available suggested that the *Leicester* received, at the critical moment, a somewhat heavier impulse to port than any she had previously experienced, and that it carried her to such an angle that a serious shift of ballast in bulk occurred, which gave her a mean permanent list of more than 30 degrees, which thereafter increased.

FACTS FROM BERMUDA INSPECTION

Dealing with the circumstances of the abandonment, the Court stated: "There was no suggestion made that the decision to abandon ship was otherwise than proper in the circumstances and the Court has no criticism to offer on this aspect of the matter. The vessel was, however, eventually taken in tow by a tug and was taken to Bermuda where she arrived on Oct. 3. Steps had been taken to have representatives of both the Ministry and the owners on the spot for the purposes of surveying the condition of the vessel. This enabled valuable information to be obtained, as already indicated, and established the following further important facts:—

- (a) That all four sets of shifting boards placed longitudinally along the port sides of the four hatchways had carried away.
- (b) That the ballast had taken charge and run to the port side.
- (c) That a considerable quantity of ballast had spilled over from the starboard side to the port in Nos. 3, 4 and 5 'tween decks.
- (d) That the whole of the ballast in No. 2 'tween deck had shifted over to the port side, carrying both sets of shifting boards with it, and
- (e) The list was about 40 degrees.

"As stated above the Court has come to the conclusion that the shifting boards were badly designed, and were lacking in strength, and that the shoring of the 'thwartship wooden bulkheads in No. 2 'tween deck was wholly insufficient. While acquitting the owners themselves and the registered manager of any blame in this matter the Court is of opinion that the marine superintendent cannot escape criticism for his failure to take more active interest, and his failure to see that a proper investigation was made to find out what was necessary to be done.

RECOMMENDATIONS

"For the future the Court desires to urge with all the force it can that full official effect should be given to the recommendation made in the *Samkey* report, namely that the provision of adequate measures for preventing any shift of solid ballast should be made a condition of seaworthiness. In all these cases of the *Sameveron*, *Samkey* and *Leicester*, sudden external forces have played a critically important part, and emphasise the need for a high standard of strength and stiffness in all measures adopted for the purpose of preventing shift of so-called 'solid' ballast in bulk.

"In working out the strength, layout and detail of such measures, the Court is strongly of opinion that all types of so-called 'solid' ballast should be regarded as being liable to shift at angles of roll exceeding 20 deg. from the vertical.

"In making these recommendations the Court is of opinion that it is established that in most ballast voyages it is desirable to carry some solid ballast in 'Sam' ships, of a quantity round about 1500 tons, but that at least a third of this amount should be carried in the after lower holds on either side of the tunnel. This would, of course, render the vessel stiffer than if the whole quantity were carried in the 'tween decks, but in the opinion of the Court not to an undesirable extent.

"Finally, the Court urges that further consideration should be given to the question of the provision of small buoyant apparatus and lifebelt lights and whistles. Had such things been available in this case the work of rescue would have been facilitated and it is possible that some lives might have been saved."



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