

S. S. "SUNFLOWER".

This vessel was built by Messrs. Philip & Sons, Dartmouth and her two boilers were made by Messrs. J. Neilson & Sons, Glasgow under the survey of the Society's Surveyors.

The vessel was completed in January 1925 and the record of L.M.C. 1,25 was assigned.

In January 1927 a Boiler Survey was held at Bordeaux and they were reported to be in good condition and the record of B.S. 1,27 was assigned.

Up to and including the time of that survey there is no record in this Office of any defects having been found in these boilers.

In September 1927 the Gibraltar Surveyor reported that there were a number of cracks in the combustion chamber plating between the rivet holes of the seam, some rivets were broken and some of the rivet holes were found to be unfair.

In December last the Boilers were removed from the vessel at Newcastle-on-Tyne and new combustion chamber plates and back tube plates were fitted.

The Owners' Superintendent, Mr. Rue, has complained of the original workmanship in these boilers and stated that the defective plates were at Messrs. The Wallsend Slipway & Engineering Co's Works, and several of them had been sawn through the rivet holes so that their condition could be seen.

On the 22nd instant in company with Mr. E.J. Stoddart and Mr. W. Butler, Senior Engineer Surveyors on the Newcastle Staff, I visited Messrs. The Wallsend Slipway & Engineering Co's Works.

We there carefully examined the defective combustion chamber and back tube plates which had been cut out of these boilers.

It was found that on most of the straight parts of

the combustion chamber plating the riveting was quite sound and the faying surfaces of the plating were well closed up.

In some places however chiefly at the corners of the combustion chamber plating, the rivet holes were not fair, some of them had not the usual depth of countersink and the faying surfaces of the plating were not fully closed.

The unfairness of these rivet holes is most probably due to the creeping of the plating when being riveted up and to their not having been properly rimmed out before riveting.

On the 24th instant in company with Mr. A. Campbell Senior Engineer Surveyor at Glasgow, and Mr. J. Davey, Ship & Engineer Surveyor at Greenock, under whose survey the boilers had been built, I visited Messrs. J. Neilson & Sons' works, and discussed the matter with Mr. Neilson, who explained their method of procedure in making and drilling these plates, which is quite in accordance with the usual practice.

After the back plates had been flanged and the wrapper plates bent to shape, they were fitted together and attached by tack bolts, then placed under the hydraulic press in order to close the faying surfaces together as far as possible.

After which the rivet holes are drilled through both plates in place, so they must therefore at that time have been fair holes.

Both Mr. Campbell and Mr. Davey confirmed that this was the Firm's practice at the time these boilers were built, and is so at the present time.

In riveting up these plates there is always a certain tendency, more or less, for a slight creep of the plate to take place, which may make the holes slightly irregular, in which case these holes should be rimmed out.

The work in hand on several boilers in course of

construction at these works was carefully examined and no exception could be taken to the workmanship.

Mr. Davey paid 10 visits during the construction of these boilers, viz:- from February 4th 1924 to April 28th 1924.

He stated, and this is confirmed by his journal, that on his first visit some of the combustion chamber plates were flanged but not drilled. He subsequently saw these plates when the holes were drilled, and he saw no bad workmanship at any time and the boilers were quite tight and sound at the hydraulic test of 360 lb. per sq. inch.

He adds that the Owners' Representative Mr. Campbell, was there several times during the building and also at the hydraulic testing ^{of} ~~the~~ boilers and did not find any bad workmanship.

It should be pointed out that it is impossible for a Surveyor to be present during all operations of riveting and once riveted it is also not possible to determine whether every or any rivet hole is quite true and fair, or the rivet sound unless it does not ring true when hammer tested, or leaking under the hydraulic test.

As already stated the Boilers were found to be tight and sound at the hydraulic test of 360 lb. per sq. inch, which is twice the working pressure. Further, it does not appear that any defects were found in the Boilers for over two years after they were put in commission.

Although when the seams of the plating were sawn through it was found that in some places the rivet holes were not quite fair, it does not follow that this was the cause of the plates cracking between the rivet holes.

Several previous cases have occurred of boiler plates cracking some considerable time after they have been in use.

Some of these cases have been investigated by the

leading metallurgists in this and several other countries, but no definite cause has been found for these failures.

It is ~~an~~ an interesting but quite exceptional occurrence to saw through the seams of combustion chamber plating after nearly three years service.

It is quite possible that if the seams of combustion chamber plating of other boilers, which have given little or no trouble were similarly sawn through, some rivet holes might be found which were not quite true and fair, or all the faying surfaces of the plating entirely closed up.

IT IS SUBMITTED that in the circumstances it is not seen that any blame can be attached to the Surveyor under whose survey these boilers were made.

27. 2. 28.



© 2020

Lloyd's Register
Foundation

0376 4/4