

s.s. "CONTE ROSSO".

Loeffler Boiler Installation.

Dr. Ledenegg and Dr. Bredtschneider of the Witkowitz Engineering Co., together with Mr. Blenkinsop and Mr. Schaaf of Messrs. Mitchell Engineering Co. Ltd., the London Agents of the Firm, called at this Office and discussed with members of the Chief Engineer Surveyor's Staff the proposed Loeffler Boiler Installation for this vessel.

The limiting creep stress as defined by the Firm was discussed in some detail and the conclusion was reached that in order to determine suitable working stresses, it would be necessary to reduce somewhat the limiting creep stresses given by the Firm for the various materials on the basis of their own definition.

A number of plans have now been further examined in the light of explanations forthcoming at this interview, and in the Trieste Surveyors' letter of the 29th ultimo, with enclosures.

IT IS SUBMITTED the Trieste Surveyors be informed of this interview and that the remarks contained in their letter of the 29th ultimo, with enclosures, have been carefully noted.

Plans Nos. 2497, 2500, 2499, 2504 and 2529 have been further examined in the light of the remarks contained in the letter and enclosures mentioned above.

Plan No. 2529H, showing detail of intermediate superheater, merits approval for a working pressure of 14 kgs. per sq. cm. on the shell and 140 kgs. per sq. cm. in the tube, provided the superheater be constructed under the usual conditions of survey and testing and the welding be carried out to the Surveyors' entire satisfaction.

It is concluded that the thickness and external radius of the end plate shown at the right hand end of the plan will be 8 mm. and 270 mm., respectively.

Plans Nos. 2499H and 2500A, showing details of radiation superheater, and Plan No. 2947, showing detail of convection superheater, merit approval for a working pressure of 140 kgs. per sq. cm., provided the parts be made under the usual conditions of survey and testing, and the welding be carried out to the Surveyors' entire satisfaction.

Plan No. 2504H showing details of steam pipes, merits approval for a working pressure of 140 kgs. per sq. cm., provided the thickness of pipes Nos. 2 & 3 be increased to $12\frac{1}{2}$ mm. and that of pipes Nos. 11 & 12 be increased to $6\frac{1}{2}$ mm., the pipes be made under the usual conditions of survey and testing and the welding be to the entire satisfaction of the Surveyors.

The Surveyors' attention should be drawn to the tensile strength of the material of these pipes.

It is understood that the headers, tubes and steam pipes will be submitted to a normalising heat treatment, and further, that the headers will be protected from the direct impact of the heat in the radiation and convection superheaters, and the Surveyors should give these matters their special attention.

With reference to the Firm's desire to have approval for the evaporator drum for 140 kgs. per sq. cm., it should be pointed out that, as stated in the Secretary's letter of the 27th July, 1935, the maximum pressure for which the evaporator drum could be considered suitable is 136 kgs. per sq. cm. A working pressure of 140 kgs. per sq. cm. could be assigned provided the thickness of the shell of the drum be not less than 61.8 mm.

It should be added that the representatives of Messrs. Witkowitz state that the thickness of the shell of the evaporator drum will be increased to 62 mm.

It is noted that the final temperature of the steam



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will not exceed 475°C .

It is further noted that all welding is to be carried out by the oxy-acetylene process, and in these circumstances certain of the modifications previously suggested for the circumferential seam of the headers are not considered necessary and have been deleted on the plans.

The Surveyors should arrange to carry out the series of welding tests, suggested in the memorandum enclosed with the Secretary's letter of the 17th July, and the results should be reported to this Office as early as possible.

With reference to the sketch showing a welded joint of tube, it is considered that the effective thickness in way of the weld is somewhat excessive, and might lead to serious local over-heating, particularly in the case of the radiation superheater tubes.

It is noted that the boiler will be built at Witkowitz and fitted on board at Trieste, where the tubes will be welded in place.

In these circumstances, the Vienna Surveyors should be fully advised regarding this case.

The Trieste Surveyors should be asked to forward the approved plans which are in their possession to the Vienna Surveyors for their guidance.

With reference to the materials for this boiler, the Surveyors should be advised that it will be necessary to carry out the usual tensile and bend tests, and in addition to carry out tensile tests of the material for the various parts at their working temperature, in the case of those materials whose working temperature is 450°C . and above, and, further, to carry out some tests in order to verify that the creep properties are as stated on the plan.

The Surveyors should be asked to forward for consideration



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plans showing details of evaporator drum end plates containing steam pump, safety valves, water gauges, blow-down valves and salinometer cocks, Escher Wyss turbine and gearing, as requested in the Secretary's letter of the 5th April, together with a plan showing a typical steam shut-off valve for this installation.

Further, particulars of the arrangement for controlling the oil fuel supply and for recording the temperatures at various parts of the boiler should also be submitted.

It should be added that a condition of acceptance of this installation will be that the boiler will be subject to examination by the Society's Surveyors at half-yearly intervals.

IT IS FURTHER SUBMITTED a copy of the Secretary's letter to the Trieste Surveyors regarding this case be forwarded to the Vienna Surveyors, together with a copy of the appropriate part of the memorandum forwarded to the Trieste Surveyors with the Secretary's letter of the 17th July.

The Vienna Surveyors should be asked to carry out the series of preliminary tests on welding referred to in this memorandum and report the results to this Office as soon as possible. They should be advised that the approved plans will be forwarded to them by the Trieste Surveyors for their guidance in due course.

The Surveyors' special attention should be called to the requirements regarding tests of material at the working temperatures, and they should see that the tensile and creep properties correspond with those given on the approved plans, and a report on these tests should be forwarded to this Office as soon as they are available.

The Surveyors should be advised that the Firm's definition of limiting creep ^{stress} is as follows:-

The limiting creep stress is the stress which causes in the test piece a mean hourly rate of elongation equal to 0.0015% of its length, between the 25th and 35th hour of the test at the particular temperature under consideration.

The Surveyors should further be advised the representatives of Messrs. Witkowitz in this country have stated that facilities will be afforded for them to make an examination and a report of the Loeffler Boiler Installation Trebovie.

Accordingly, they should arrange to make this examination and make as full a report as possible, paying particular attention to working pressures, temperatures, materials, condition of tubes and pipes after a period of service, and, if possible, any troubles which may have been experienced.

[Handwritten signatures]
13.8.1935.

Return plans nos 2499 H.
 2500 H.
 2504 H. To the Trieste Surveyors.
 2497 H.
 Return copies of the above plans also 2529 H.

Note to 'H' Dept
 14/8/35.
[Signature]



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