

To accompany report to 1116. (Seattle)

EMPRESS OF AUSTRALIA

Observation: -

As everything in the machinery department was reported normal, just previous to mishap which occurred without any warning, it is difficult to define the specific cause attributable to accident of rotor.

A momentary water gulp (priming), loss of vacuum, defect at Fottenger Gear (racing and momentary shock absorption and distortion transmitted in turn to steam unit) etc. have been advanced.

From the point of rotor design we have a different phase of things. Referring to sketch it will be observed that the rotor is a large hollow steel casting without any, or, intermediate internal strengthening, the span between journal supports being over 22 ft. (weight 21½ tons)

In order for vessel to maintain anything like Canadian Pacific schedules, the Revolutions of turbines Register were over 900 Revs. /m with a speed of over 30,000 ft /m at periphery of Impluse wheels. The Michell Thrusts are reported to have always been uncertain, having to be continually watched due to Registering excess temperatures and under varied adjustments by the thrust people themselves are still wanting.

Conclusion: -

Personally I consider, that due to the Design of Rotors the Revolutions should not exceed a Practical Working speed of 750 revs. /m. Internal subsistence of strengthening in the Initial Construction would have rectified same immensely as the kinetic energy of rotation would have then been increased (as unlike to general make of propelling elements these machines always run in one direction, reverse being accomplished at water gears) - and therefore a tendency to avoid and offset the arising of small discrepancies integrating from the propeller forward would be accomplished. Regarding thrusts it would be very feasible to assume that the heating is due to movement of relative expansion under heat to which the rotors by their peculiar design lend themselves. Then heat distortion for the greater part can probably be attributable for the mishap. The thrust annoyance of high temperatures are relatively, only move moderately in line too.



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