

1989 **Title:** **Analysis of the Causes of Superheater Tube Metal Loss and Failures on an Eighteen Month Old Recovery Boiler**

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**ABSTRACT:**

Tubes in the secondary superheater of an eighteen month old kraft recovery boiler failed, causing a serious safety concern. The tube failures were caused by high tube metal temperatures brought about by internal scale deposits and high flue gas temperatures. The high metal temperatures melted the slag layer on the outside of the tubes generating rapid wall corrosion. Analyses have shown that a tube metal temperature on the order of 1100°F was present, sufficiently high to melt the slag layer and generate rapid stress rupture. The affected tubes were replaced and the unit was returned to service. Recommendations for limiting the future occurrence of these conditions were developed and implemented by the Mill. Of particular importance was the installation of a "sweet water" condenser that will assure a high quality water supply to the attemperator and prevent the buildup of internal deposits in the superheater that was a principal cause of the tube failures.