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Effect of Corrosion on Static Strength of Hull Structural Members (6th Report)

[Tatsuro Nakai](#), [Hisao Matsushita](#) and [Norio Yamamoto](#)

(Accepted December 14, 2004)

Summary: The aim of this study is to investigate the effect of pitting corrosion on local strength of hold frames of bulk carriers. In the present study, a series of 3-point bend tests with small structural models which consist of web, shell and face plates has been conducted. Artificial pitting was made on the web plate. In these tests, a concentrated load has been applied at the center of simply supported models so that shear load would act on the web plate. In this testing condition, load increased even after shear buckling occurred. When there is artificial pitting, fracture of web occurs. While no fracture is observed when there is no pitting. It has been revealed that shear buckling load and ultimate load decreases gradually and maximum vertical deflection decreases drastically with the increase of area ratio of pitting. As a result of non-linear FE-analyses, shear buckling load of the structural models where pitting prevailed uniformly on the web plates was found to be almost the same as that of the structural models where the web plates have uniform corrosion corresponding to the average thickness loss.

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