

# **Cantilever Beam Systems for General Cargo Ships**

## **Amended Rules**

Rules for the Survey and Construction of Steel Ships Part C and CS

## **Reason for Amendment**

Damage to the fillet welds which connect the webs of cantilever beam systems to hatch side girders located on lower decks has been found in certain general cargo ships. This damage occurred at locations subject to tensile loads caused by the deformation of members (defined as “receivers”) used to support hatch covers bearing cargo loads.

The damage was discovered at structurally severe locations where the top plating of the receiver was intersectionally touched to the web of the cantilever beam. In addition, the ends of stiffeners (snipped ends) provided to prevent the web plates from buckling were arranged at positions located immediately behind the top plating of the receivers. These structural discontinuities caused a high stress concentration to occur. Furthermore, it was also discovered that the leg lengths of the damaged fillet welds were smaller than the leg lengths for the fillet welds used at similar locations on other general cargo ships. These smaller leg lengths are believed to be the primary reason such damage occurred because the fillet welds were unable to withstand the high stress generated by the aforementioned structural discontinuities.

Accordingly, in order to prevent such damage, based on damage records and the results of our investigation, relevant requirements have been amended.

## **Outline of Amendment**

- (1) Where cantilever beams support hatch covers on lower decks, it has been specified that the leg length of the fillet welds between the webs and hatch side girders is to be  $F1$ .
- (2) Where stiffeners are provided to prevent web plates from buckling, it has been specified that consideration is to be given to the arrangement of the ends of stiffeners to ensure that there are no stress concentrations at the connections between web plates and receivers.