

**International Association of Classification
Societies (IACS)**

**FSA of Bulk Carriers
Fore-end Watertight Integrity**

**Annex 10
Risk Control Options Identified In
Brainstorming Sessions**

1. Introduction

Brainstorming sessions were conducted in Italy, Japan, and Norway, with the objective of identifying Risk Control Options (RCOs) and recommending some of the options for further evaluation.

2. Brainstorming sessions

Additional RCOs compared to list generated from MSC literature and UK/EC Assessors' report of the Derbyshire accident, see Annex 9:

- Strengthening of more bulkheads
- Recalculate the strength of the ship as the ship ages
- Reduce loading/increase freeboard as the ship ages
- Recommend safe loading rates depending on BC size (commercial pressure may presently lead to small BCs being loaded with very high rates).
- Approved loading procedure should be part of contract with terminals? (Today, there may be a conflict of interest between the terminals and the masters, due to the commercial pressure.)
- Cleating of hatch covers (self cleating mechanisms compared to manual cleats)
- Common IACS Minimum Thickness Criteria/"acceptance criteria"
- Loading instrument warning
- Design and operational measures against sloshing in ballast tanks during ballast water exchange.

3. Recommendations

The following risk control measures were evaluated as most promising (for existing ships) and recommended for further analysis in the IACS BC FSA study:

- Forecastle (new and existing ships)
- SOLAS Ch. XII (including IACS UR, e.g. strength of bulkheads included) and strengthening of bulkheads on existing BCs
- Hatch cover strength and user friendly systems for hatch cover closure (automatic cleat closing systems)
- Reduced loading/increased freeboard
- Mandatory weather routing mandatory
- Bilge alarm/Early warning
- Pumping automation systems (emergency pumping)
- Ventilator design/fitting automatic closure
- Double skin structure
- Coating