The IMO has conducted a Goal Based Standard (GBS) verification audit of the IACS Common Structural Rules. Based on this audit, changes have been implemented in the January 2017 version of the CSR, which is now effective from 1 July 2017, i.e. mandatory for new contracts signed from 1 July 2017. This technical news contains a short summary of the most important changes and their impact.

The most important changes of the modified CSR are as follows:

1. The IMO has considered the assumptions in the CSR on how vessels are operated in heavy weather as not sufficient. The consequence of this is increased hull girder vertical wave bending moment, shear force and external sea pressure by 5% for yielding and ultimate strength check. The loads related to the fatigue requirements have not been increased.

2. The IMO has considered the assumptions in the CSR on how much time smaller bulk carriers are operated in heavy ballast condition as not sufficient. The consequence for fatigue capacity evaluation is to increase the time in heavy ballast condition from 15% to 25% for bulk carriers (BC-B and BC-C) with a length less than 200 m.

3. The IMO has considered the assumptions in the CSR on the effectiveness of the corrosion protection systems as not sufficient. For fatigue calculations, the time in a corrosive environment shall be increased:
   a. From 5 years to 10 years for water ballast tanks, oil cargo tanks and lower parts of bulk cargo holds and water ballast cargo holds
   b. From 2 years to 5 years for bulk cargo holds and water ballast cargo holds, except lower parts

The application of these changes to existing ship designs may influence steel weight and certain design details. The magnitude of these changes depends on the size of vessel, type of stiffener profiles used and the degree of optimization of the existing designs.
In summary, the rule changes in the January 2017 CSR rule version may require some strengthening of existing ship designs. The actual change in steel weight is expected to be limited due to some margin on the existing scantlings.

Recommendations
The modified CSR rules are applicable for bulk carriers (L ≥ 90m) and oil tankers (L ≥ 150m) contracted for construction on or after 1 July 2017. Owners and builders need to know which rule version applies for their vessels:

- In case a new contract is signed on 1 July 2017 or later, the January 2017 version applies.
- In case of a contract signed before 1 July 2017, the previous rule version applies if not otherwise agreed.
- The previous rule version will also apply to options covered by contracts signed before 1 July 2017 and which are declared within 12 months from contract date.

References
CSR Rule at IACS website at: http://iacs.org.uk/publications/common-structural-rules

In general, the following changes can be experienced in the parallel mid-ship area:

1. The required hull girder sectional modulus is increased by about 1% to 3% due to the increased vertical wave bending moment. The scantling consequence depends on the sectional modulus margin of existing design.

2. Typically, a 3 years’ reduction in fatigue life may be expected due to increased dynamic load and increased time in a corrosive environment. Fatigue critical details may need to be improved or the scantlings may need to be increased to reduce the dynamic stress range by approx. 5%.

3. For limited areas in the bottom, plate thickness may need to be increased by 0.5 mm due to the local plate requirements.

4. Required sectional modulus for longitudinal stiffeners on the inner bottom is increased by about 2% to 3% to meet the local stiffener requirement.

5. Longitudinal stiffeners in way of deck and upper part of longitudinal bulkheads may need to be increased to satisfy stiffener buckling requirements.

It is worth noting that minimal impact is expected for vessels with DNV GL fatigue class notations, e.g. CSA or PLUS. This is because these class notations already contain provisions on increased global strength and detailed fatigue check for deck attachments.