Reference is made to KC #353 and to the supplement questions KC#453 submitted to IACS on 20 April 2007.

Q1 According to latest information available to us, we understood that the shear force correction may be applied to each uneven loading condition according to [2.2.2] and thereby compared to the uncorrected shear force capacity curve according to [5.1.2]. The procedure is drawn up in items 1 to 3 below. Please review and confirm.

1. Shear force capacity curve.
Qp according to [5.1.2] are drawn up based on direct shear force calculation as given in [2.2.1]. Shear force capacity to be established based on direct calculation meaning shear flow analysis. See figure 1. Please confirm.

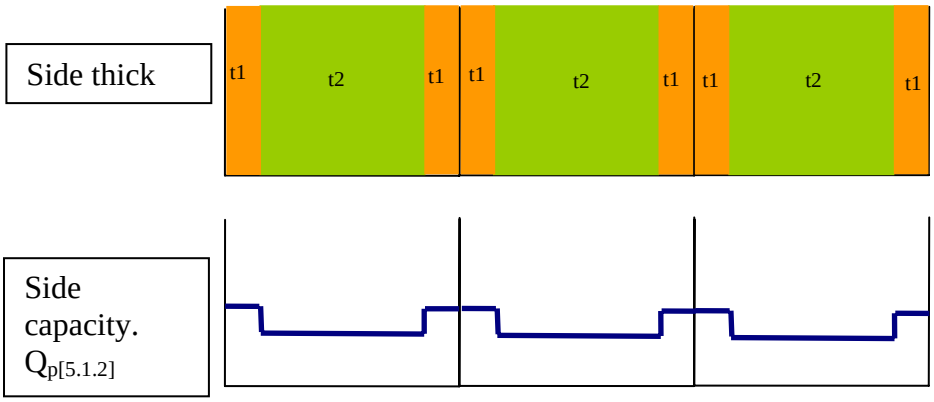


Figure 1 Shear force capacity according to [5.1.2]

2. Approval verification.
Design loading conditions in the loading manual should be plotted with both corrected and uncorrected shear force. Corrected shear forces are compared against Qp according to Ch.5 Sec.1 [5.1.2]. The correction is performed according to [2.2.2] and performed for uneven loading conditions only. See figure 2. Please confirm.

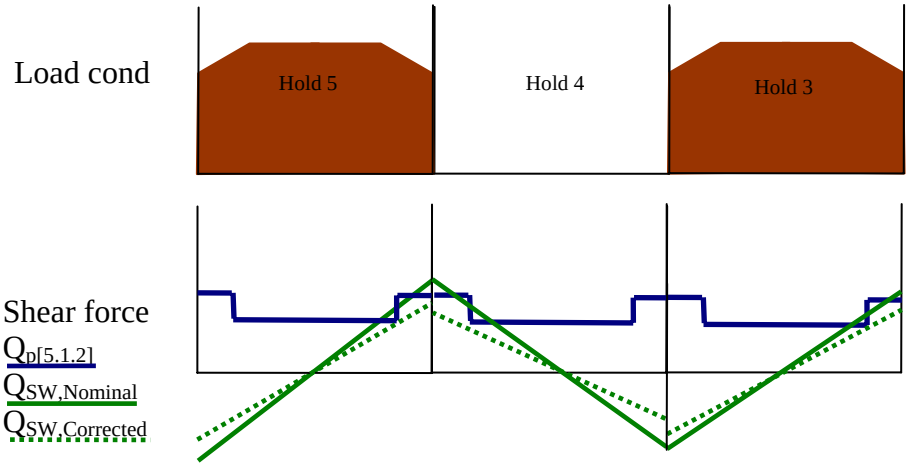


Figure 2 Strength check according to [2.2.2] and [5.1.2]

3. In service verification with loading computer.
When the ship crew enters an uneven loading condition into the loading instrument, the strength verification is performed similar to item 2 above. That is, the loading computer computes the corrected shear force according to [2.2.2] and compares the results with the $Q_{p[5.1.2]}$ according to the direct approach. Please confirm.

Q2 If above iQ1 is confirmed the, definition of Qp is different between [5.1.2] and [5.1.3] regarding application of shear force correction.
The Qp defined by [5.1.2] should be compared to “net shear forces” after shear force correction applied to each uneven loading condition calculated by Loading Computer onboard. Same with such conditions included in the Loading Manual.
Qp given in [5.1.3] includes shear force correction Delta-Qc which is absolutely “added” on top of the capacity limit based on the given scantlings and allowable stress. We suppose the intention of Qp as given in [5.1.3] is to make shear force correction unnecessary in each loading condition calculated by the Loading Computer onboard. Please refer to figure 3 where the correction is made for one alternate loading condition.

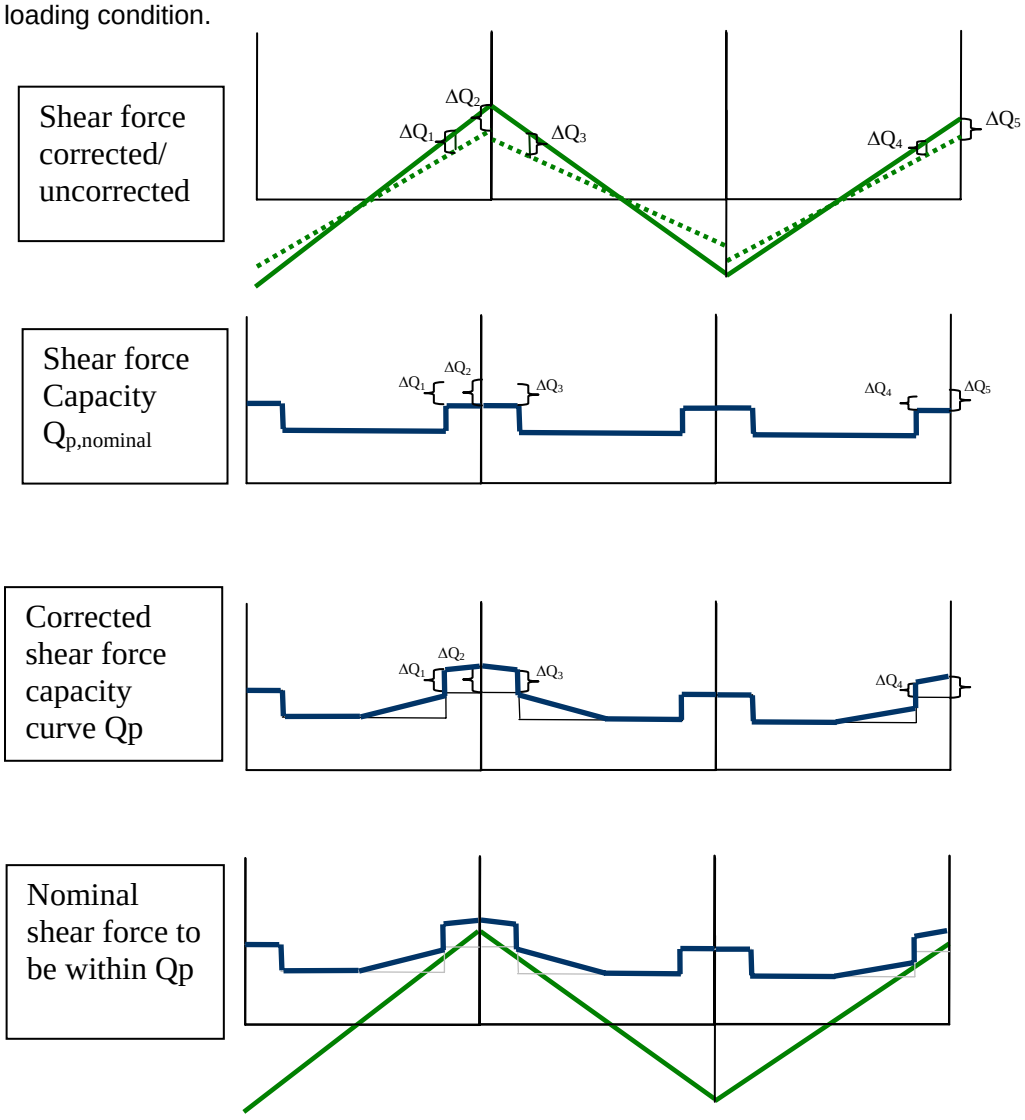


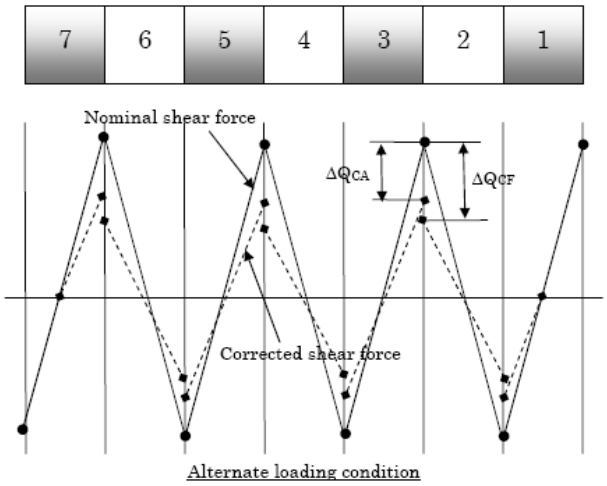
Figure 3 Shear force approach according to [5.1.3]

This has created some confusion and uncertainty of Qp as defined by [5.1.3] such as:
1) Uncertainty of shear force correction Delta-Qc included in Qp when applied to a new loading condition calculated by Loading Computer onboard.
2) A few sets of Qp need to be established to deal with different uneven loading conditions correctly.
3) In case of flooding conditions, the above two issues 1) and 2) will be more confusing and difficult to deal with.

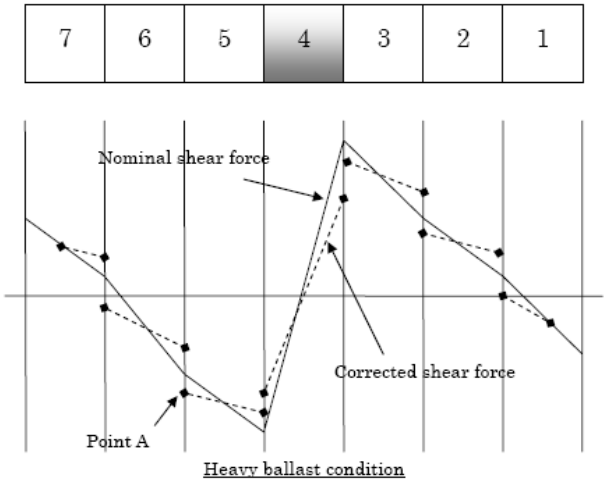
To avoid any confusion and uncertainty, we therefore propose to take out Delta-Qc term from the Qp formula given in [5.1.3] and instead add texts in both [5.1.2] and [5.1.3] to the effect; “shear force correction as given in [2.2.2] should be applied to uneven loading conditions calculated by Loading Computer onboard. Corrected shear forces are then compared against Qp.” Same applies to Qpf formula in [5.3.3]. Please consider.

Q3 As discussed in above Q2, we assume that [5.1.3] does not apply if Qp is obtained by [5.1.2]. Similarly, [5.3.3] does not apply if Qpf is obtained by [5.3.2] for flooding cases.
Please confirm.

Q4 In this connection, we find it difficult to agree to the answer to Q3 of KC #353 where it is stated that “shear force correction should be done at the bulkhead where adjacent holds are in non-homogeneous loading condition.” As we mentioned in Q2 submitted on 20 April 2007, the answer will not correctly reflect the physics behind the shear force correction in case of heavy ballast condition. Please see Point A in the attached illustration. This is more prominent in case of Capesize. Please re-consider.



Alternate loading condition



Heavy ballast condition