GUIDE FOR

BUCKLING AND ULTIMATE STRENGTH ASSESSMENT FOR OFFSHORE STRUCTURES APRIL 2004

NOTICE NO. 2 – January 2012

The following Rule Changes become **EFFECTIVE AS OF 1 FEBRUARY 2012.**

(See http://www.eagle.org for the consolidated version of the Guide for Buckling and Ultimate Strength Assessment for Offshore Structures 2004, with all Notices and Corrigenda incorporated.)

Notes - The date in the parentheses means the date that the Rule becomes effective for new construction based on the contract date for construction. (See 1-1-4/3.3 of the ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1).)

SECTION 3 PLATES, STIFFENED PANELS AND CORRUGATED PANELS

1 General

(Revise Paragraph 3/1.5, as follows.)

1.5 Buckling Control Concepts *(1 February 2012)*

The failure of plates and stiffened panels can be sorted into three levels, namely, the plate level, the stiffened panel level and the entire grillage level, which are depicted in Section 3, Figure 6. An offshore structure is to be designed in such a way that the buckling and ultimate strength of each level is greater than its preceding level (i.e., a well designed structure does not collapse when a plate fails as long as the stiffeners can resist the extra load they experience from the plate failure). Even if the stiffeners collapse, the structure may not fail immediately as long as the girders can support the extra load shed from the stiffeners.

The buckling strength criteria for plates and stiffened panels are based on the following assumptions and limits with respect to buckling control in the design of stiffened panels, which are in compliance with ABS recommended practices.

- The buckling strength of each stiffener is generally greater than that of the plate panel it supports.
- Stiffeners with their associated effective plating are to have moments of inertia not less than i_0, given in 3/9.1. If not satisfied, the overall buckling of stiffened panel is to be assessed, as specified in 3/5.7.
- The deep supporting members (i.e., girders) with their associated effective plating are to have moments of inertia not less than I_s, given in 3/9.5. If not satisfied, the overall buckling of stiffened panel is also necessary, as given in 3/5.7. In addition, tripping (e.g., torsional/flexural instability) is to be prevented if tripping brackets are provided, as specified in 3/7.7.
- Faceplates and flanges of girders and stiffeners are proportioned such that local instability is prevented (see 3/9.7).
- Webs of girders and stiffeners are proportioned such that local instability is prevented (see 3/9.9).

For plates and stiffened panels that do not satisfy these limits, a detailed analysis of buckling strength using an acceptable method should be submitted for review.

5 Stiffened Panels

(Revise first paragraph of Subsection 3/5, as follows.)

(1 February 2012) The failure modes of stiffened panels include beam-column buckling, torsion and flexural buckling of stiffeners, local buckling of stiffener web and faceplate, and overall buckling of the entire stiffened panel. The stiffened panel strength against these failure modes is to be checked with the criteria provided in 3/5.1 through 3/5.7. Buckling state limits for a stiffened panel are considered its ultimate state limits.